INSTALLATION, SERVICE AND MAINTENANCE INSTRUCTIONS

Electric linear actuators Rematic with the DMS 3 electronic control STR 0.1PA

REGADA®

74 1040 02

TEST CERTIFICATE

ELECTRIC LINEAR THRUST ACTUATOR STR 0.1PA

Type number 438.....	Power supply.....V .....Hz
Serial number	Max. load thrust .....N
Production year	Switch-off thrust .....N
Wiring diagram	Operating speed .....mm/min
.....	Set stroke ..... mm
.....	Control .....
.....	Input operation signal .....
Warranty period ..... months	Output signal .....

Serial number of electric motor .....

Serial number of control unit .....

Tests made by	Packed by .....
Date	Signature and stamp .....

COMPLETENESS CERTIFICATE

Used valve .....

Assembled by: Firm .....

Name.....

Warranty period ..... months

Date ..... Signature and stamp.....

INSTALLATION CERTIFICATE

Location .....

Installed by: Firm .....

Name .....

Warranty period..... months

Date ..... Signature and stamp.....

Please read these instructions carefully before mounting and operating the actuator!

Preventive and safety-measures applied on the actuator can not offer required safety level till the actuator and its safety systems are not applied by required and described way and if installation and maintenance is not applied according to applicable instructions and rules!

Contents

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The Installation, Service and Maintenance Instructions are drawn up according to requirements of EC Executive Nr. 2006/42/EC "Uniform requirements for machines and devices from the point of view of safety and health care", to save life and health of users and to avoid material damages and exposure environment to danger.

1. General data

1.1 Purpose and applications

Electric linear actuators **Rematic** (hereinafter referred as EA only) with the DMS 3 electronic control of the **STR 0.1PA** type are set up by the program to be controlled on the 24 V DC voltage level, or are set up by the program to be controlled by **analogue input signal.**
Electric linear actuators **STR 0.1PA** types are high-powered electric-mechanical products designed for direct installations onto controlled devices (regulating bodies - valves, etc.). EA of STR 0.1PA types are provided for remote control of closing bodies, or for automotive control of regulating bodies in both directions of their movement. They can be equipped with means of measuring and control of technological processes where an unified analogue direct current resp. voltage signal is an information bearer on their input and/or output. They can be used in heating, energy, gas, air-conditioning and other technological systems, which they are suitable for, regarding their features. They are connected with the controlled devices with flanges according to EN 15714-2 or using pillars and flanges.

1. It is forbidden to use EA as a lifting mechanism!

1.2 Safety instructions

EA of STR 0.1PA types are reserved technical devices with higher rate of danger, with possibility of installation in areas specially danger regarding casualties caused by electric current.

Electric actuators are according to directive LVD 2014/35/EU and standard EN 61010-1 within valid edition assigned for installation category II (overvoltage category).

1.2.1 Product influence to environment

Electromagnetic compatibility (EMC): the product complies with the requirements of the Directive 2014/30/EU of the European Parliament and of the Council on the approximation of the laws the Member States relating to the electromagnetic compatibility and with the requirements of standards EN 61000-6-2, EN 61000-6-4+A1, EN 61000-3-2, EN 61000-3-3 within valid edition.
.
Vibrations caused by the product: product influence is negligible.
Noise produced by the product: the maximum allowable noice level (A) of the product measured in a place of operation is 80 dB (A).

1.2.2 Requirements for professional qualification of people performing installation, service and maintenance

***Electric connection** can be performed only by an acquainted person, i.e. an **electrical engineer** with*

professional education of electrical engineering at an apprentice school or a technical school (secondary, complete secondary or university education) and whose qualification was verified by an educational facility authorized to verify professional qualification.

1.2.3 Instructions for stuff training

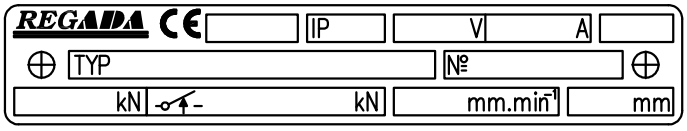
Service can be performed only by workers professionally qualified and trained by the producer or contracted service centre.

1.3 Warning for safety use

Product protection:
There must be included suitable protective device into the power supply (circuit breaker or fuse) which serves at the same time as main switch.
EA **STR 0.1PA** is provided with its own short-circuit protection of 1-phase motor power supply circuits and space heater. There must be included suitable protective device into the power supply of 3-phase motor (circuit breaker or fuse) which serves as main switch as well.
Type of equipment from a connection point of view: The equipment is designed for permanent connection.

1.4 Data specified on electric actuator

Nameplate:

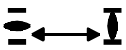


Warning plate:

Nameplate contains the basic data concerning identification, performance and electricity: indication of producer, type, serial number, load thrust and switching-off thrust, operating speed, protection code, operating stroke, supply voltage and current.

Graphic symbols on electric actuator

The graphic symbols used on electric actuator substitute the text messages. Some of them are in accordance with EN ISO 7010, ISO 7000 and IEC 60417 within valid edition.

	Dangerous voltage	(EN ISO 7010-W012)
	Stroke of the electric linear actuator	
	Switching-off thrust	
	Manual control	(0096 ISO 7000)
	Protection terminal	(5019 IEC 60417)

1.5 Guaranty Conditions

The supplier is responsible for completeness of the delivery and guarantees proprieties of the product, stated by technical conditions (TC), or proprieties agreed upon on purchase contract.

The supplier is not responsible for product deteriorated properties caused by the customer during storing, non professional assembly, or non professional operation.

1.6 Under-guarantee and after-guarantee service

Under-guarantee service is performed by the service department of the production plant, or by a contracted service centre according to a written claim.

In case of occurring of any fault please let us know it and state:

- basic data from nameplate: type code and serial number
- type of fault - description of claimed fault (actuator employment, ambient parameters (temperature, humidity...), duty cycle including frequency of switching, type of switching-off (position or thrust), set switching-off thrust, contact to the company implementing the installation and electric connection
- it is recommended to place also Installation certificate.

It is recommended to have **after-guarantee service** performed by the service department of the production plant, or by a contracted service centre. Serviceman makes the record about service mission after warranty actions and sends it to the production company.

1.7 Operation conditions

1.7.1 Product location and operation position

- The assembly and operation of electric actuators in standard make can be on covered places of industrial objects without the regulation of temperature, humidity and with protection against direct exposure of climate influence (e.g. direct sun shine).
- Electric actuators must be placed with access to the manual handle (5), Fig.4 and Fig.6, to the cover of control box, to control box, to cable glands, to local electric control.
- Installation and operation of actuators is possible in either position. Common position is the one with vertical position of exit part axis and control box above. Avoid to arrange the electric actuator under the armature if possible.

Warning:

Actuator installed on the open place must be protected against a direct climate effects by shelter, mainly from sunshine. In applications placed in an ambient of a relative moisture above 80%, in external ambient under shed, it is necessary to change the preset thermostat temperature +25°C to +70°C by a PC and program to prevent switching off the heating resistor.

1.7.2 Operation Environment

According to valid standard IEC 60 721-2-1, there are delivered these versions of electric actuators:

1) Version **„temperate“** for type climate temperate
2) Version **„tropical“** for type climate tropical and dry

In accordance with IEC 60 364-1, IEC 60 364-5-51 and IEC 60 364-5-55 within valid edition the EA have to resist external effects and operate reliably:

In the conditions of the following types of environment:

- warm mild to very hot dry with temperature in range -25°C to +55°C .....**AA 7***

in industrial environment: at temperatures stated above

- with relative humidity 10 to 100 %, including the condensation of up to 0,029 kg water content per 1 kg of dry air at 27 °C, at above stated temperature .....**AB 7***
- with height above sea level 2 000 m, with barometric pressure range 86 to 108 kPa .....**AC 1***
- with effect of salient water from all directions - (product in enclosure IP x5).....**AD 5***
- a possibility of partial or complete immersion - (products with protection enclosure IP x7) .....**AD 7***
- with strong dustiness – with a possibility of influences of inflammable, non-conducted and non-explosive dust; the middle layer of dust; the dust drop more than 350 but not more than 1000 mg/m^2 per day (products with protection enclosure of IP 6x) .....**AE 6***
- with atmospheric appearance of corrosive and spoiling materials (with high degree of corrosive aggressiveness of the atmosphere; the presence of the corrosive spoiling materials is significant .. ..**AF 2***
- with permanent exposure of big amount of corroding or contaminated chemicals and salt fog in execution for sea environment , for sewage water disposal plant and some chemical plant....**AF 4***
- with a possibility of influences of mechanical stress:.
  - of mean sinusoid vibrations with frequency in range 10 to 150 Hz, with amplitude of shift 0,075 mm for f<f_p and with amplitude of acceleration 9,8 m/s^2 for f>f_p; (contact frequency f_p is 57 to 62 Hz).....**AH 2***
  - of mean sinusoid vibrations with frequency in range 10 to 150 Hz, with amplitude of shift 0,15 mm for f<f_p and with amplitude of acceleration 19,6 m/s^2 for f>f_p; (contact frequency f_p is 57 to 62 Hz) – applies for 4 pillars version .....**AH 2***
  - medium impacts, shakings and vibrations ..... **AG 2***
- growing of plants and moulds .....**AK 2***

- with strong danger of presence of animals (insects, birds, small animals) ..... **AL 2***
- with harmful effects of radiation:
  - of escaping stray current ..... **AM 2-2*** with intensity of magnetic field (direct and alternating of power supply frequency) to 400 $A.m^{-1}$
  - mean sunshine with intensity > 500 and ≤ 700 W/m^2 ..... **AN 2***
- mean seismic effects with acceleration > 300 Gal ≤ 600 Gal ..... **AP 3***
- with indirect danger of storm activity ..... **AQ 2***
- with fast moving of air and strong winds ..... **AR 3 , AS 3***
- with frequent contact of the staff with earth potential (persons often touch conductive parts or they stand on the conductive basement) ..... **BC 3***
- without occurrence of dangerous media in the object ..... **BE 1***

** Marking in accordance with IEC 60364-1, IEC 60 364-5-51 and IEC 60 364-5-55 within valid edition*

1.7.3 Power Supply and Operation Modes

Power supply:

Electric motor..... 110/120 V AC, 220/230/240 V AC, 3x400 /3x380 ±10% V AC resp.24 V AC ±10%
Control .....binary inputs 24 V DC ±10%
....input control signal 0/4/12 up to 20 mA, 4 up to 12 mA resp. 20 up to 0/4/12 mA, 12 up to 4 mA, or 0/2 up to 10 V, resp. 10 up to 0/2 V
Electronic positional transmitter (EPV) without power supply (passive) .....18 up to 30 V DC ±10%
Frequency of power supply ..... 50/60***** Hz ±2%

****** At frequency of 60 Hz operating speed is increased by 1.2 times.*

Duty cycle - according to EN 60034-1,8 (IEC 60034-1, 8)**:**

EA STR 0.1PA are designed - ***for remote control:***

- short-time operation S2-10 min
- intermitted operation S4-25%, 6 up to 90 cycles per hour

- for automatic regulation:

- intermitted operation S4-25%, 90 up to 1200 cycles per hour.

Note: The operation modes consist of the loading type, load factor and connection/switching frequency.
Warning: Non-compliance with operating mode may result in inactivation of the EA as a result of failure of the integrated thermal fuse (protection) of the electric motor.

1.8 Description

The **STR 0.1PA** electric actuator is controlled by 24 V DC voltage fed to the electric actuator's terminals according to the wiring diagram, resp. by 0/4/12 up to 20 mA, 4 up to 12 mA (0/2 up to 10 V) (input control signal and provides for moving the output part of the EA automatically to a position corresponding to the value of the input signal) and other functions as well.

The electric actuator consists of these main parts (**Fig. 1**):

The electric actuator is driven by an **electric motor (1)** supplied and controlled from the **source board (3)** and **control unit (2)** of the DMS 3 electronics.

Position of output element of EA is scanned by **contactless absolute sensor**. Thrust is scanned with thrust switches S1 and S2.

Depending on the version, the DMS3 electronic circuit board may include **an electronic position transmitter** (EPV) without power supply (passive) with output signal 4 through 20 mA.

Space heater (5) is placed at the control board.

In case of power cut or damage of switches the actuator can be controlled by **manual handle** according to instructions stated in chapter 4. Service and Maintenance.

Basic modules of DMS3 electronic control system for STR 0.1PA:

Control unit (2) – main part of system DMS3 – it contains microprocessor, 6 signal LED and 4 buttons for simple adjustment and control of EA, connectors for connection of thrust scanner and sourcing board and communication connector (connection to PC for adjustment and diagnostic), 2 free programmable relays R1 and R2,, 1 relay READY and terminals for electric connection.

Sourcing board for single-phase version **(3)** – secures power supply of electronic and provides an output voltage of 24 V DC, 40 mA for the user, it contains user terminal board, switching circuits, connector for connection with control unit.

Position scanning unit (4) – secures contactless magnetic position scanning of output element.

LED display (7) – shows instant position of EA output member and reports and displays potential errors, which would occur when EA is operated. Signalling motion and failure of the EA is also indicated by LEDs diode. LED display is used only pro type of construction EA without local control.

Manual control: manual handle on the upper cover of the EA.

Other accessories – as optional accessories:

- Module 3, or 6 additional relays (8).
- local electric control module equipped with 2-line LCD display (fig. 7).

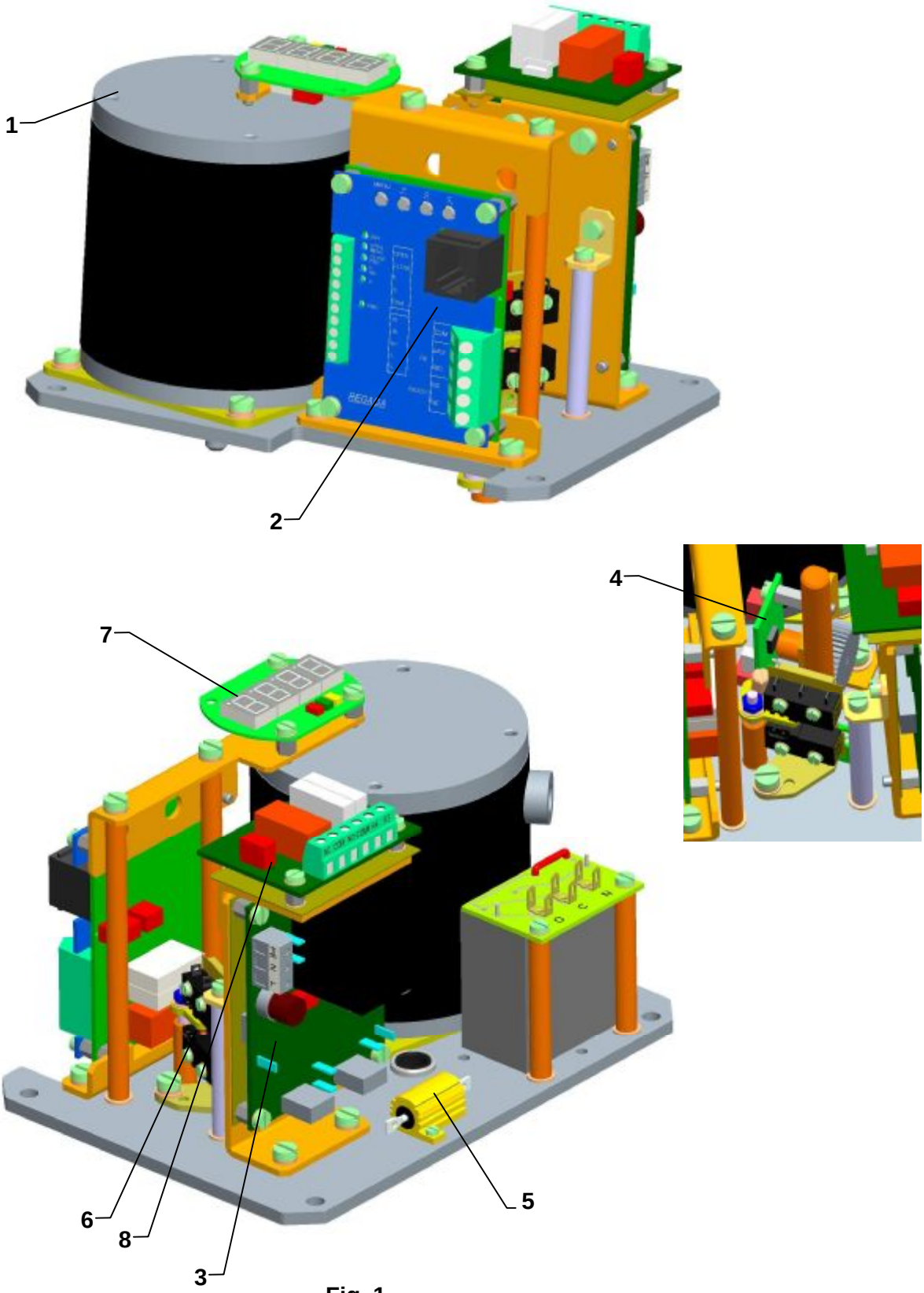


Fig. 1

1.9 Basic specifications

Basic EA specifications:
Max. load thrust [N], **operating speed** [mm/min], **operating stroke** [mm], **switching-off thrust** [N], and **electric motor parameters** are given in Table 1.

Table 1: Basic EA Specifications

Type/ type number	Operating speed ±10[%] [1)]		Operating stroke	Max. load thrust (regulation mode)	Max. load thrust (remote control)	Switching-off thrust ±10 [%]	Weight	Electric motor					
								Supply voltage nominal voltage/ frequency		Nominal			Capacitor capacity.
										power	revolutions	current for	
	mm/min			[N]	[N]	[N]	[kg]		[V/Hz]	[W]	[1/min]	[A]	[µF/V]
	50 Hz	60 Hz											
1	2	3	4	5	6	7	8	9	10	11	12	13	14
STR 0.1PA, type number **438**	10	12	10 - 50	2600	3200	3600	5,5–8,5 -in accordance with version of mechanical connection	Single-phase	24/50-60 120/60 220/50 230/50 240/60	15/18 18 15 15 18	2750/3350 3350 2750 2750 3350	2,1 0,44 0,28 0,28 0,22	150/63 6/250 1,5 2,2/350 1,5 2,2/350 1,5/400
	16	19											
	25	30											
	32	38											
	40	48											
	63 [2)]	75											
	10	12		3200	4000	4600							
	16	19											
	25	30											
	32	38											
	40	48											
	10	12		4000	5000	5800							
	16	19											
	25	30											
	32	38											
	40	48											
	10	12		5000	6300	7200							
	16	19											
	25	30											
	32	38											
	40	48											
STR 0.1PA, type number **438**	10	12	10 - 50	2600	3200	3600	5,7–8,7 -in accordance with version of mechanical connection	Three-phase	3x400/3x380	15	2680	0,10	–
	16	19											
	25	30											
	32	38											
	40	48											
	63 [2)]	75											
	10	12		3200	4000	4600							
	16	19											
	25	30											
	32	38											
	40	48											
	10	12		4000	5000	5800							
	16	19											
	25	30											
	32	38											
	40	48											
	10	12		5000	6300	7200							
	16	19											
	25	30											
	32	38											
	40	48											

1) Anomaly of operating speed: - 15% at temperature under - 10°C
2) For automotive regulation the operating speed 63mm/min is not recommended

Other specifications:

Protection enclosure of EA: ..... IP 67 EN 60 529 (IEC 60 529)
Mechanical ruggedness:
sinusoid vibrations ..... see Chapter 1.7.2
resistance by drops..... 300 drops with acceleration of 5 $m.s^{-2}$
seismic resistance ..... 6 degrees of Richter's scale
Self-locking: ..... declared in range 0% to 100% of rated thrust
Motor´s thermal protection: ..... through the Thermik 01.135.5 thermo-contact

Electric control:
remote control - movement of output part of the electric actuator is controlled :
- by binary inputs 24 V DC, or
- by unified input signal 0/4/12 up to 20 mA, 4 up to 12 mA resp. 0/2 - 10 V according to version.

Power supply of electronics:
- Power supply Z2, resp. ZS is used for single phase versions and feeds the electronic modules built in EA.
- It provides the 24V DC, 40 mA output voltage.

Power sources contain a protective fuse with parameters according to chapter 1.9.2 Troubleshooting.

Position scanning:
- contactless absolute magnetic.

End positions adjustment:
End position relays are adjusted to the specified stroke with accuracy of ± 0.5mm.
It is possible to set up (with buttons situated on the control unit, resp. with buttons situated on the local control, resp. program after connecting the EA with PC) the shutting off in end positions as follows:
- Z = Torque + O = Torque
- Z = Torque + O = Position
- Z = Position + O = Torque
- Z = Position + O = Position

Notes:
C = Torque - shutting off at end limit - thrust „Closed“
O = Torque - shutting off at end limit - thrust „Opened“
C = Position - shutting off at end limit - position „Closed “
O = Position - shutting off at end limit - position „Opened“

Factory's setup of shutting off in end positions is described in the chapter “Adjusting of actuator”.

Thrust scanning: - using thrust switches S1 and S2.

Thrust switches adjustment:
Thrust switches switch-off in the interval stated in the Specification table and they cannot be adjusted by user.

Thrust blocking:
The switching-off from thrust can be blocked within a certain range of the stroke starting from a stroke end position (max..5%), for time agreed on, in range of 0 to 20 sec..

Output relay :
- 3x relays (standard) (**READY**, **R1**, **R2**) max. 250 V AC/1 A/cos phi=1; max. 30 V DC/2A
- 3x additional relays (options) (**RE3, RE4, RE5)** max. 250 V AC/1 A/cos phi=1; max. 30 V DC/2A
- - 6x additional relays (options) (**RE1, RE2, RE3, RE4, RE5, READY)** max. 250 V AC/1 A/cos phi=1; max. 30 V DC/2A
- relays **READY, R1, R2, RE3, RE4 and RE5** are free programmable (their function can be changed with buttons on the control unit, with buttons on the electric local control, or through a PC with the program).

READY relay: - programme selections option – error indication, error or warning, error or not remote, error or warning or not remote. READY relay factory set is shown in the "Adjusting of actuator" Chapter. Relay READY on the control unit and supply unit are doubled (it is not possible to set different functions on these units).

R1 and R2, RE3, RE4 and RE5 relay: - programme selections option – disabled, Position O (position open), Position C (position close), Torque O (torque open), Torque C (torque close), Torque O or Torque C, Torque O or Position O, Torque C or Position C, opens, closes, movement, movement – flasher, to position, from position, warning, control – remote, control – local, (not valid for EA without local control), control OFF.
Relay R1 is doubled with relay RE1 and relay R2 is doubled with relay RE2 (it is not possible to set different functions on these units).
RE3, RE4, RE5 relays are independent. Factory setting up of the individual relays is shown in the "Adjusting of actuator" Chapter.

Transmitter (output signal)

Electronic position transmitter (EPV) passive (for single phase versions)- 2-wire connection (without inbuilt power supply)

Current signal ..... 4 ÷ 20, resp. 20 ÷ 4 mA (DC)
Voltage at connection of EPV passive .....18 up to 30 V DC
Load resistance .....max. R_L= 500 Ω
Tolerance of value of output signal of electronic transmitter in end positions: ..... ±0,5 %[1)]:
Tolerance of linearity of transmitter..... ±1 [%][1)]
Hysteresis of transmitter ..... max. 1 [%][1)]

1) from nominal value of transmitter referred to output values

Galvanic separation..... output signal is galvanically separated from input control signal

Program possibilities of output signal : 4 ÷ 20 mA, 20 ÷ 4 mA. Factory's setup of output signal is described in the chapter "Adjusting of actuator".

Electronic controller (N) – actuation by input control signal

Input control signals - analogue: ..... 0 - 20 mA (0 – 10 V according to version)
..... 4 - 20 mA(2 – 10 V according to version)
.....12 - 20 mA
.....4 - 12 mA
..... 20 - 0 mA(10 – 0 V according to version)
..... 20 - 4 mA(10 – 2 V according to version)
.....20 - 12 mA
.....12 - 4 mA
Input resistor for signal 0/4/12 up to 20 mA. 4 up to 12 mA:..... Rin = 120 Ω
Input resistor for signal 0/2 up to 10 V..... Rin = 30 kΩ
Tolerance of controller's linearity: ..... 0,5 %
Dead of controller: ..... program adjustable within 1 - 10%

Factory's setup of input signal is described in the chapter "Adjusting of actuator".

Control by binary inputs 24 V DC:
- by feeding of 24 V DC to terminals CLOSE and OPEN

Programming possibilities of binary inputs I1 and I2 (change is possible only through the programme of PC or using buttons local control)

- for the input **I1** : DISABLED; ESD; DBL (local releasing - not valid for EA without local control), STOP
- for the input **I2** : DISABLED, ESD; DBL (local releasing - not valid for EA without local control), 2P (the EA can undergo control for the opening direction or closing with the controller ON and I2 input activated with 24 V DC voltage supplied to the terminals to OPEN or CLOSE).

Factory's setup is described in the chapter "Adjusting of actuator".

Programmable FAILURE REACTION : OPEN, CLOSE, STOP, SAFE POSITION

Factory's setup is described in the chapter "Adjusting of actuator".

Adjustable elements of electronics:
The EA is possible to adjust with or resetting to different parameters operating the control unit buttons, or with buttons on the local control (according to version), or once it is connected to the PC using the programme and the communication cable connected to the EA control unit communication connector and the EA cover removed.

Space heater (E1)

Space heater - supply voltage: .....corresponding with motor supply voltage (max. 250 V AC)
Space heater power output: ..... cca 10 W/55°C

Electronic board provides switching of heating element. It is possible to change switching temperatures of the switch from –40°C to +70°C with help of PC and particular software. Factory's setup for shut down of heating element (thermostat) is +25°C.

Manual control:
- with manual handle on the upper cover of the EA. Turn the manual handle clockwise to move the output shaft of the EA in the direction "Z – closed".

Output part clearance: .....max. 0, 5 mm (at 5 % of maximum thrust load)

Grease: see chapter 4.2 Maintenance - extent and periodicity.

1.9.1 Mechanical Connection

- with pillars
- with flanges

Main and connecting dimensions are given in the **dimensional drawings**.

1.9.2 Electric connection

To the terminal board (X, X1, X2):
- 3 terminals (PE, N, L) on the sourcing board with intersection of connection wire 0,05 - 1,5 mm^2 for solid wire and for flexible wire. Max. terminal screw tightening torque 0,5 Nm.
- 3 terminals ((2(L1), 3(L2), 4(L3)) – for version with 3- phase electric motor) with intersection of connection wire max. 1,5 mm2 . Max. terminal screw tightening torque 0,285 N.m.
- 2 terminals (0 V,+24 V) with intersection of connection wire 0,05 – 1,0mm^2 for solid wire and for flexible wire. Max. terminal screw tightening torque 0,19 Nm.
- 5 terminals (READY, R1, R2) with intersection of connection wire 0,05 – 1,5 mm^2 for solid wire and for flexible wire. Max. terminal screw tightening torque 0,5 Nm.
- 10 terminals (COM, CLOSE, OPEN, I1, I2, +IN,-IN,SH,+L,-L) with intersection of connection wire 0,05 – 1 mm^2 for solid wire and for flexible wire. Max. terminal screw tightening torque 0,19 Nm.
- 6 terminals (COM1, RE3, RE4, COM5, NO5, NC5) - for module 3 additional relays with cross-section of connection wire 0,05 – 1,5 mm2 for solid wire and for flexible wire. Max. terminal screw tightening torque 0,5 N.m.

- 11 terminals (COM1, RE1, RE2, RE3, RE4, COM5, NO5, NC5, COM, NO, NC - for module 6 additional relays with intersection of connection wire 0,05 – 1,5 mm2 for solid wire and for flexible wire. Max. terminal screw tightening torque 0,5 N.m.

.Attention: Thermic resistance incoming wires must be minimum +80°C

Wire cross-section conversion table (mm^2 – AWG)	
Wire cross-section	
mm^2	AWG
0,05	30
0,2	24
0,34	22
0,5	20
0,75	18
1,5	16
2,5	14
Tightening torque conversion table (N.m – lbs.-in)	
Tightening torque	
N.m	lbs.-in
0,2	2,7
0,3	4
0,5	7

Cable glands :
- 1 cable gland M20x1,5 - cable diameter from 8 to 14,5 mm.
- 2 cable glands M16x1,5 - cable diameter from 6 to 10,5 mm.

Protection terminal:
During start-up - during installation of device:
- outside and inside ground terminal must be connected for safe operation of the actuator. The position of the outside and inside ground terminal can be seen in Fig. 2 and Fig. 2a. For forcing - in wires in external ground terminal be needed use pliers HP3 for insulated eyelet (firm CEMBRE).
- a switch / circuit breaker must be installed on the power supply line, as close as possible to the device, easily accessible to operators and identified as the actuator isolation switch.
Outside and inside, are together connected and marked with the mark of protection grounding.
The electric connection should be made according to wiring diagrams pasted into the upper cover of the EA.

Fuses:
Actuator power supply board is installed with power supply fuse (F3). Location of the fuse on the power supply board can be seen in Fig.2.
Fuse values and parameters:

Type	Order code	Voltage	Frequency (Hz)	Motor Power / Input (W)	max. current EA (A)	Fuse F3 value
STR 0.1PA 438	**438.1-0XXXX/YY**	230 VAC	50	15/39	0,3	F 2,5 A / 250 V
	438.1-VXXXX/YY	240 VAC	60	18/48		
	438.1-TXXXX/YY	120VAC	60	18/48	0,6	F 2,5 A / 250 V
	438.1-3XXXX/YY	24 VAC	50	15/39	2,8	T 3,15 A / 250 V
	438.1-JXXXX/YY	24 VAC	60	18/48		
	438.1-2XXXX/YY	3x400 V AC	50	15/40	0,25	F 2,5 A / 250 V
	438.1-NXXXX/YY	3x380 V AC	50	15/40	0,25	F 2,5 A / 250 V

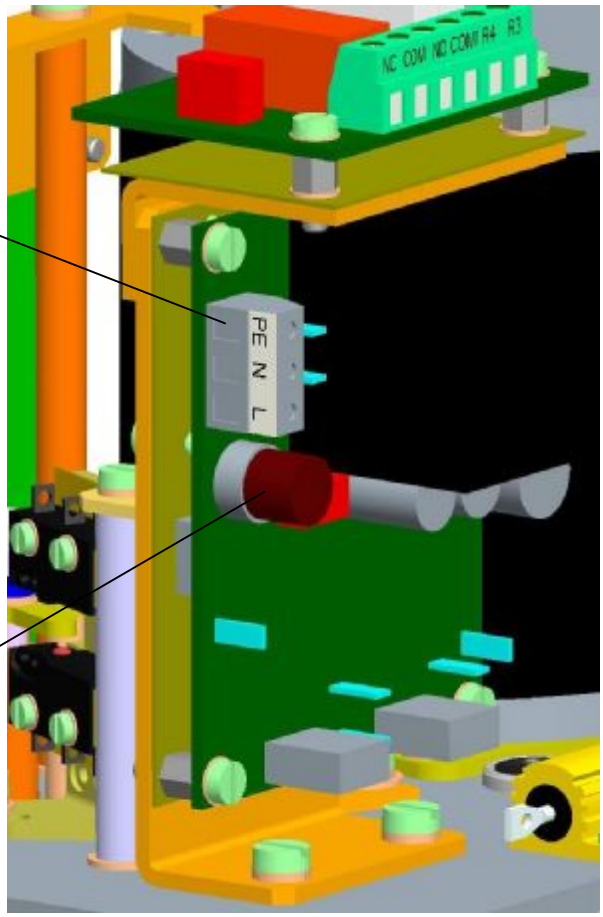

INTERNAL
PROTECTION
TERMINAL
FUSE
SUPPLY
(F3)
PE N L
NC COM NO COM R4 R3

Fig.2

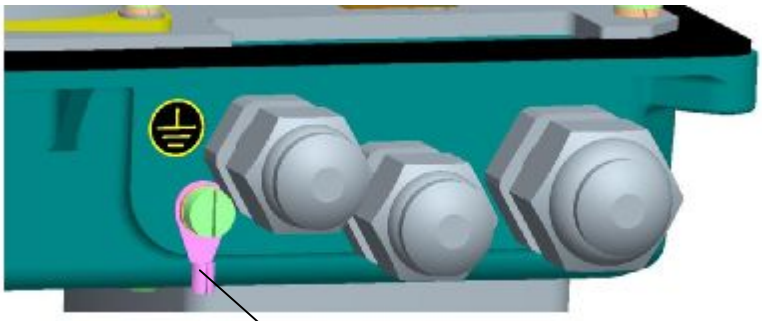

EXTERNAL
PROTECTION
TERMINAL

Fig.2a

1.10 Conservation, packing, transport, storing and unpacking

Surfaces without surface treatment are treated by conservation preparation MOGUL LV 2-3 before packaging .
Conservation is not necessary if the following storage conditions are complied with:
• Storage temperature: -10 to +50 °C
• Relative air humidity max.80 %
• Electric actuators and their accessories must be stored in dry, well ventilated covered spaces, protected against impurities, dust, soil humidity (by placement to racks, or on palettes), chemicals and foreign interventions
• There shall be no corrosive gases present in the storage areas.

The EA are delivered in solid packages guaranteeing resistance in accordance with EN (IEC) 60 654.

Package is a box. Products in boxes is possible to load on the pallets (pallet is returnable). On the outer side of the package is stated:

- manufacturer label,
- name and type of product,
- number of pieces,
- other data – notices and stickers.

The forwarder is obliged to secure packed products, loaded on transportation means, against self-motion; if open transportation means are used, to secure their protection against atmospheric precipitations and splashing water. Displacement and securing of products in transportation means must provide their stable position, exclude the possibility of their inter-collision and their collision with the vehicle walls.
Transportation can be executed by heatless and non hermetic spaces of transportation vehicles with influences within the range:

- temperature: -25° C up to +70° C (a strange version – 45 ° C up to + 45 ° C)
- humidity : 5 up to 100 %, with max. water content 0.029 kg/kg of dry air
- barometric pressure 86 up to 108 kPa.

Upon receiving of EA examine, if during transportation, resp. storing did not come to its damage. At the same time verify, if the data on the labels corresponds to accompanying documentation and purchase-sale contract / order. Eventual discrepancies, faults and damages should be reported without any delay to supplier.

Electric actuators and their accessories must be stored in dry, well ventilated covered spaces, protected against impurities, dust, soil humidity (by placement to racks, or on palettes), chemicals and foreign interventions, at ambient temperature from -10°C up to +50°C and at relative air humidity max. 80 %.

It is not acceptable to store EA outdoors, or in areas not protected against direct climate influence!

Eventual damages to surface finish remove without delay – thus preventing damage by corrosion.

If storing takes longer than 1 year, it is necessary to inspect lubrication fillings before putting EA into operation and in case of need perform maintenance.

Assembled EA, but not put into operation is necessary to protect by the equivalent method as during storage (for example suitable protective cover).

After assembly to the armature in free and wet areas, or in areas with temperature changes, connect without delay heating resistor – thus preventing damages caused by corrosion from liquefied water in the control area.

Excessive preserving grease remove just before putting EA into operation.

1.11 Assessment of the product and packaging and removal of contamination

The product and its package are made of recycling materials. Do not throw the single parts of the package and of the product after their life but sort them according to instructions in corresponding executives or regulations of environment protection, and allow their recycling.

The product and its packing are not a source of any environment pollution or contamination and do not contain any dangerous waste.

2. Installation and dismantling of actuator

2.1 Installation

Abide by safety measures!

Note: Check again whether the EA is place in accordance with the Chapter "Operation Conditions". If the installation conditions are different than recommended it is needed to consult the situation with the producer.

Before starting of mounting the EA onto the valve:

- Check again whether the EA was not damaged during storing.
- Check whether the adjusted operating stroke and connecting dimensions of the actuator (see the nameplate) are in compliance with the valve parameters.
- In case of inconsonance, perform adjusting according to the part Adjusting of actuator.

2.1.1 Mechanic connection of electric actuator to the armature

STR 0.1PA electric actuators can be assembled and operated in any position. In horizontal position an actuator with two pillars should be placed with pillars above each other

During assembly must be take care for the space for disassembly of upper cover and with the option to set up elements.

a) Mechanical connection with connection dimensions according to ISO (DIN) Standards (Fig. 3)

Connection procedure:

- Check the labels whether valve and actuator strokes are the same.
- Set the actuator (A) and the valve (B) to the position "closed".
- Put the actuator (A) onto the valve (B).
- Screw the actuator output shaft (2) into the valve coupling (6) until the actuator flange reaches the valve upper body (7).
- Tighten the screws (3) to fasten the actuator flange (1) with the valve upper body (7).
- Check connection dimensions in accordance with dimensional drawing.
- Turn the valve output shaft by one revolution and lock it with the nut (5).

A..... electric actuator
1 ..... actuator flange
2 ..... actuator output shaft
3 ..... screw

B..... valve
4 ..... valve output shaft
5 ..... lock nut
6 ..... valve coupling
7 ..... valve upper body

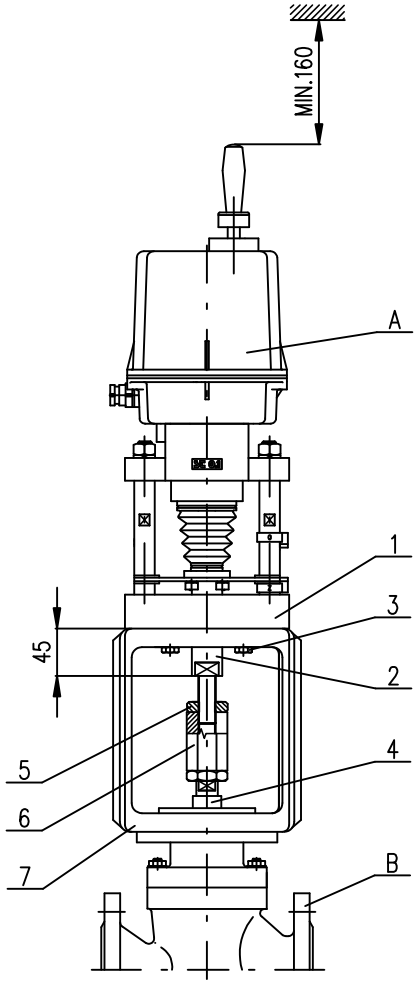


Fig.3

b) Mechanical connection for pillar version - Fig. 4

Connection procedure:

- Check the label whether valve and actuator strokes are the same.
- Put the valve (B) to the position "closed" and the actuator (A) to a mid-position.
- Loosen the screws (2) located on the pillars (4).
- Screw alternatively the pillars (4) into the valve flange (8).
- Fasten the pillar nuts (2).
- Unscrew the coupling screws (3) to dismantle the coupling.
- Screw the coupling nut (1) onto the valve shaft (6) to reach the connection dimension H in accordance with the Table and the actuator label.
- Unscrew the coupling nut (1) by one revolution and lock it with a nut. (7).
- Use the handle (5) to have the actuator output shaft close to the valve shaft (6) and screw the coupling parts together.

A..... electric actuator
1 ..... coupling nut
2 ..... pillar nut
3 ..... coupling screw
4 ..... pillar
5 ..... handle for manual control

B..... valve
6 ..... valve shaft
7 ..... lock nut
8 ..... valve flange

Order number	H
498.X-XXXX**P**	110
498.X-XXXX**N**	57
498.X-XXXX**M**	27
498.X-XXXX**L**	80
498.X-XXXX**K**	42
498.X-XXXX**J**	127

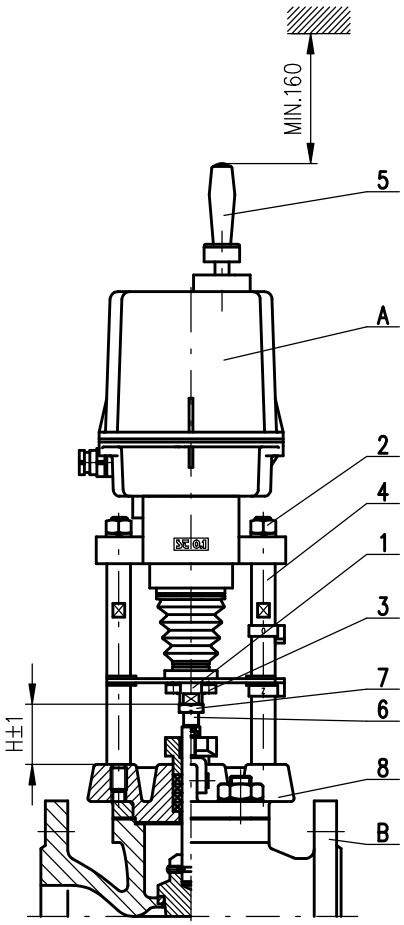


Fig.4

c) Mechanical connection for versions with flange (Fig. 5)

Connection procedure:

- Check the labels whether the actuator and the valve strokes are the same.
- Set the actuator (A) to a mid-position and the valve (B) to the position "closed".
- Put the actuator (B) onto the valve (A).
- Unscrew the coupling screws to dismantle the coupling into parts.
- Screw the coupling nut (1) onto the valve output shaft (3) until the actuator shaft (2) contacts the valve flange (4).
- Connect the flanges with tightening of the central nut (5).
- Check the connection dimension H between the coupling and the flange (2) in accordance with the Table and the type Nr. in accordance with the actuator label.
- Unscrew the coupling nut (1) by one more revolution to the left and lock with the nut (6) to create the prestress onto the valve seat.
- Use the handle to have the actuator output shaft close to the valve shaft (3) and screw the coupling parts together.

A.....electric actuator
1 .....coupling screw
2 .....actuator flange
B.....valve
3 .....valve shaft
4 .....valve flange
5 .....central nut
6 .....lock nut

438.X-XXXX**V**	66
438.X-XXXX**H**	86
438.X-XXXX**G**	59
438.X-XXXX**4**	124
438.X-XXXX**3**	94
438.X-XXXX**F**	102
438.X-XXXX**E**	92
438.X-XXXX**D**	112
438.X-XXXX**C**	110
438.X-XXXX**B**	103
Order number	**H**

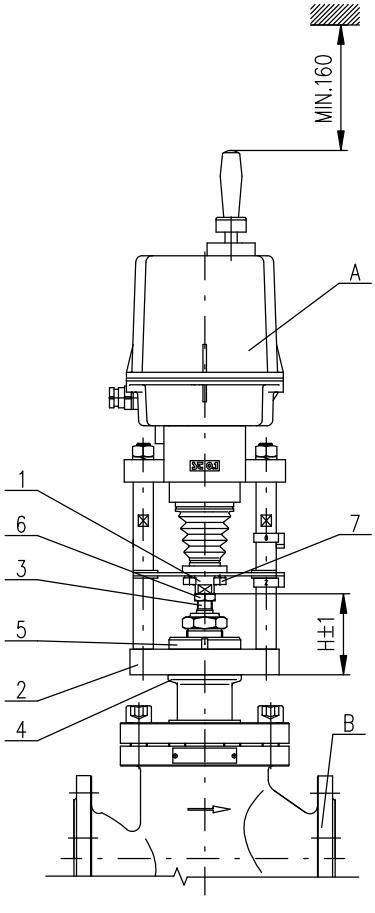


Fig.5

d) Mechanical connection for versions with flange (Fig. 6)

Connection procedure:

- Check the labels whether the actuator and the valve strokes are the same.
- Put the valve (B) to the position “closed“ and the actuator (A) to a mid-position.
- Screw up and remove from the actuators flange (7) screws M8x50 (6).
- The actuator with flange (A) put onto the valve (B).
- Screw alternatively screws M8x50 (6) to lock the actuator and valve connection.
- Unscrew the coupling screws (3) to dismantle the coupling.
- Loosed holder of coupling (1) put onto valve shaft (8) in this way that it was possible to plug-in segments (2) into groove of valve shaft.
- Put onto segments (2) and stop tube (4).
- Use the handle (5) to have the actuator output shaft close to the valve shaft (8) and screw the coupling parts together.
- Check correctness of mechanical connection using the handle (5).
- Follow up with electric connection of EA according to wiring diagram placed in top cover of actuator.
- After electric connection perform checking of function.

A ..... actuator
1 ..... holder of coupling
2 ..... coupling segment
3 ..... coupling screw
4 ..... stop tube
5 ..... handle
6 ..... flange screw
7 ..... actuator flange

B ..... valve
8 ..... valve shaft

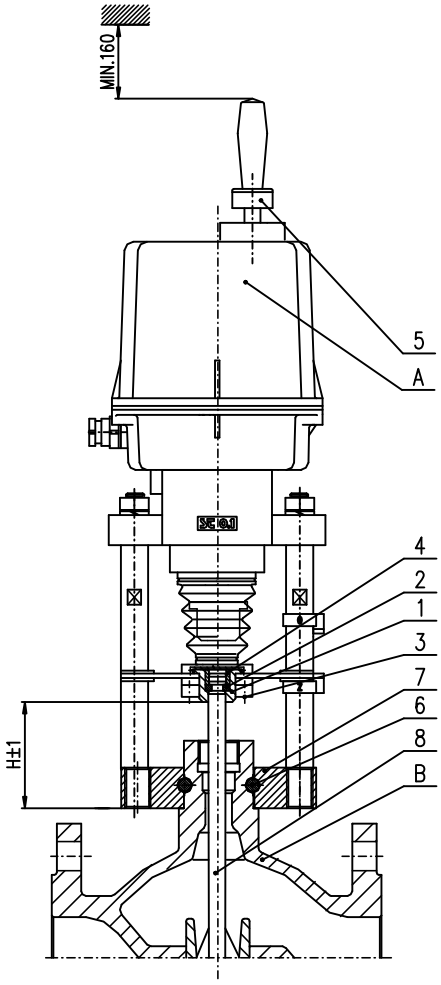


Fig. 6

2.1.2 Electric connection and checking of function

Follow up with connecting the EA with mains or master system.

1. *Follow instructions in the part "Requirements for professional qualification"!*
2. *While laying electrical line abide by the instructions for heavy current installations. Power supply cables must be of the type approved. Minimum thermal resistance of power supply cables and wires must be +80°C.*
3. *Cables to terminal boards or connectors lead through cable glands.*
4. *Before putting EA into operation it is necessary to connect inside and outside grounding terminal.*
5. *Wires of input control signals to controller and output signals from current converter it is necessary to lead them separately with thrust wires or it is necessary to use shielded wires.*
6. *To prevent moisture from entering the actuator around the connecting cables, the cables must be sealed with silicone material at the point of penetration through device shell.*

Connecting with the master system:
EA can be controlled by: - by analogue signals through the built-in controller
- by binary inputs 24 V DC

EA is connected according to wiring diagram under the cover of EA.

Notes:
1. Wires of input control signals to controller and output signals from current converter it is necessary to lead them separately with thrust wires or it is necessary to use shielded wires.
2. Together with EA are delivered sealing cable glands which make possible enclosure protection IP68 in case of tight mounting onto supply lead. For required enclosure it is necessary to use rings according to real diameter of cable and required thermal resistance.
3. When fastening the cable it is necessary to count with allowable diameter of bending so it will not be damaged or there will not be deformation of sealing element of cable bushing. Supply cable have to be fastened to solid construction furthest 150 mm from cable glands.
4. Sealing areas of cover of the control part have to be clean before repeated fastening.
5. Reversation of EA is guaranteed when time interval between switch-on and switch-off the power supply for reverse direction movement of output part is min. 50 ms.

In version ***STR 0.1PA*** it is necessary to do **autocalibration** in operation according by enclosure assure the optimal function.

Abide by instructions of valve producers, whether switching-off end positions is to be realised with position or thrust!

2.2 Dismantling

Before dismounting it is required to disconnect the EA from power supply!
Do not connect and disconnect live connectors!

- Disconnect the EA from mains phases.
- Disconnect the leads from the EA terminal boards and loosen the cables from cable glands.
- Loosen the fixing screws of the EA flange and of the coupling and disconnect the EA from the valve.
- While sending the EA to be repaired put it into a package solid enough to avoid damages of the EA during transportation.

3. Adjusting of actuator

Attention! *See the Chapter 1.2.2 Requirements for Professional Qualification …*
Keep safety regulations!

EA are delivered adjusted onto parameters according to type label from Production plant.

Adjustment is made onto mechanical and electrical connected actuator. This chapter describes how to set up the EA to parameter values within a range applicable for the software. Location of adjustable parts of control board is on **Fig. 7**.

Adjusting is possible:
- by operating the control unit buttons (see Fig. 7);
- by operating the local control panel buttons (see Fig. 8) – only for the EA s equipped with local control;
- through the programme once the EA is connected to the PC using the communication cable.

For the specific adjustment procedure or individual parameters reset see individual appendixes **74 1053 02, 74 1076 02**.

For facilitating the simple setting of required operation parameters, the control unit is equipped with :

- four setting buttons: **MENU, P, O, C**
- six signal lamps according (LED diode) to **Fig. 7**

Status indication by means of LED diodes:

LED ERROR (red) – blinks red in case of failure eventually lights in the parameter setting mode
LED OPEN / MENU (green) – in the ON/OFF mode it lights with a control action for the **opening** direction eventually blinks with accessing the MENU mode
LED CLOSE / PAR (red) – in the ON/OFF mode it lights with a control action for the closing direction eventually blinks besides the chosen parameter in the menu and lights up at writing the parameter into the memory
- LED I1 / SEL (yellow) – permanent lights with active input I1, or flash in the mode of parameters set up.
- LED I2 (yellow) – permanent lights with active input I2
- LED POWER (green) – it light on at leading the power supply.

Electronics - programme selections option

- **relay R1; R2**: : disabled; open position, close position, torque-open, torque – close, torque open or torque close, torque open or position open, torque close or position close, open, close, movement, movement flasher, to position, from position, warning, remote control, local control, control shut off.
- **relay READY**: errors, errors or warnings, errors or no remote, errors or warnings or no remote.
- **output signál** (from EPV passive): 4 to 20 mA; 20 to 4 mA.
- **control (regulating**): 2P, 3P, 3P/2P I2
- **input control signal** (N): 0/4/12 up to 20 mA, 4 up to 12 mA or 0/2 up to 10 V.
- **input I1**: DISABLED, ESD, DBL (local releasing - not valid for EA without local control), STOP
- **input I2:** DISABLED, ESD, DBL (local releasing - not valid for EA without local control), 2P (with active controller - to enable program control 3P/2P I2 - enables control by binary inputs 24V DC with active input I2).
- **FAILURE REACTION**: OPEN, CLOSE, STOP, SAFE POSITION

The identical functions cannot be set on I1 & I2 inputs in addition to the OFF state (e.g., if the ESD) function is set on I1 input, it is not possible to select the ESD function on I2 input at the same time).

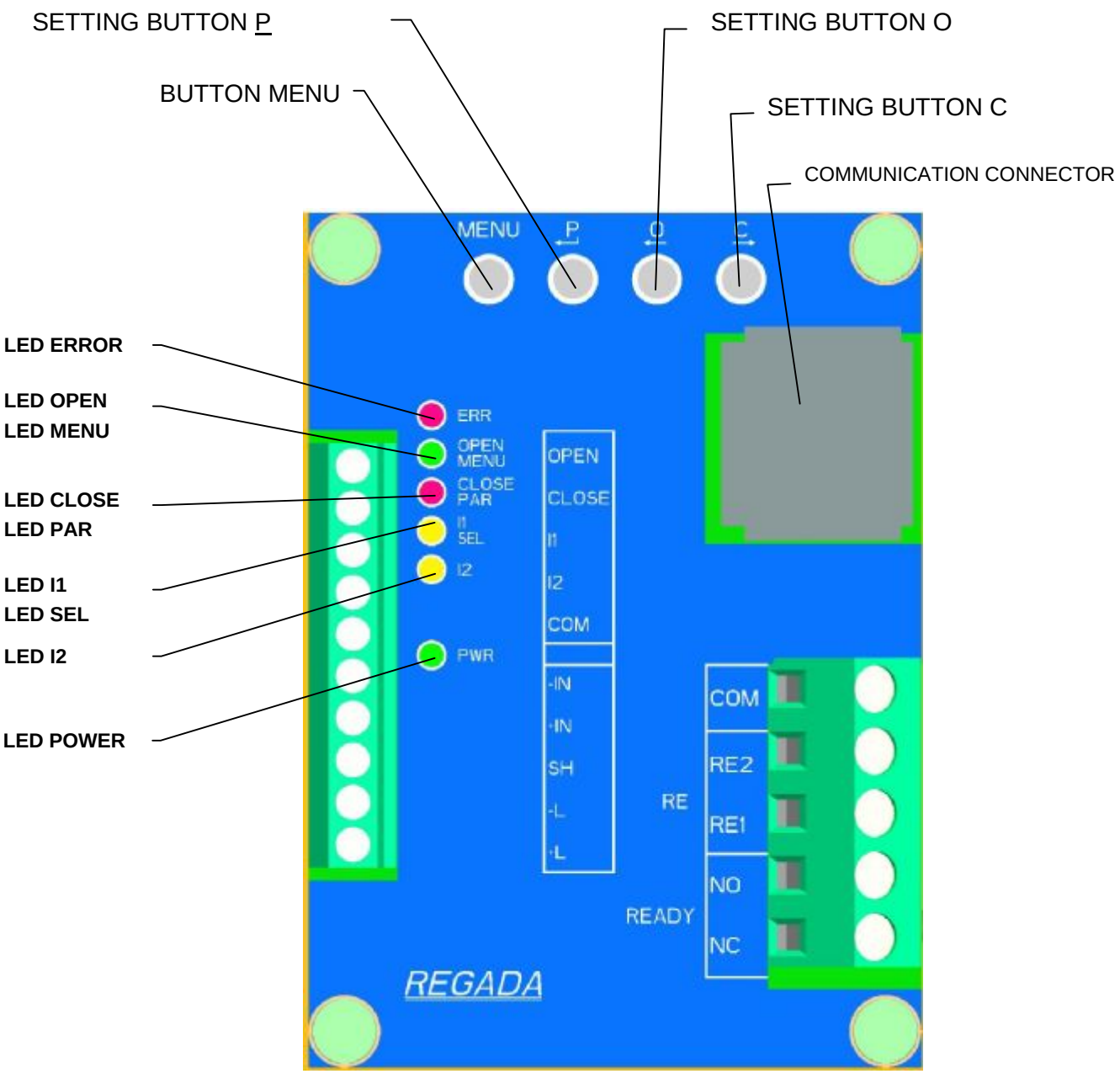


Fig. 7

3.1 EA control set-up options (regulating)

2P CONTROL
Setting-up: **2P** control + other functions, in addition to **STOP** on I1 terminal:
The EA moves either to the OPEN or CLOSE direction with **24V DC** voltage supplied to terminals **OPEN or CLOSE.** The EA stops if power supply is cut-off or the end position is reached.

2P PULSE CONTROL
Setting-up: **2P** control + **STOP** function on I1:
The EA moves either to the OPEN direction or closes with **24V DC** voltage pulse supplied on connectors **OPEN** or **CLOSE.** The pulse may not be shorter than xx seconds.
The EA stops – shutting off - once the 24V DC voltage is supplied on I1 connector (STOP) or the set end position is reached.

3P CONTROL (REGULATING)
Setting-up: 3P control + other functions, in addition to STOP on I1 and other ones in addition to 2P on I2 input.

The EA moves either to the OPEN or CLOSE direction with **0/4/12 up to 20 mA, 4 up to 12 mA (0/2 up to 10V) input control signal** supplied on terminals **+IN, -IN.** The EA stops once the required position is reached (corresponding with the input control signal supplied) or the set end position is reached.

Note: The ES fails to stop in case that the STOP function is selected on I1 input with 3P control mode and 24V DC voltage supplied on I1 terminal.

3P/2P switched over to I2
Setting-up: **3P/2P** control switched over to **I2** (**2P** function is automatically selected for **I2** input function in selecting this control option) + other functions in addition to STOP on I1:
The EA moves either to the OPEN or CLOSE direction with ***0/4/12 up to 20 mA, 4 up to 12 mA* (0/2 up to 10 V) input control signal** supplied on terminals **+IN, -IN.** The EA stops once the required position is reached (corresponding with the input control signal supplied) or the set end position is reached.
The EA stops to respond to **0/4/12 up to 20 mA, 4 up to 12 mA (0/2 up to 10 V)** input control signal and rests in case of **I2 active input** (with 24V DC constantly ON or OFF – as per I2 function set-up to ACTIVE – or supplied on I2 connector). The EA is allowed to move either to the **OPEN** or **CLOSE** direction with **24V DC** voltage supplied to terminals **OPEN** or **CLOSE.** The EA stops if power supply is cut-off or the end position is reached. The EA stops to respond to the input control signal and fixes its position once the supply voltage on I2 is OFF.

3P/2P switched over to I2 (PULSE 2P)
Setting-up: **3P/2P control switched over to I2** (**2P** function is automatically selected for **I2** input function in selecting this control option) + other functions in addition to **STOP** on I1:
The EA moves either to the OPEN or CLOSE direction with **input control signal 0/4/12 up to 20 mA, 4 up to 12 mA (0/2 up to 10 V)** supplied on connectors **+IN, -IN.** The EA stops once the required position is reached (corresponding with the input control signal supplied) or the set end position is reached.
The EA stops to respond to **0/4/12 up to 20 mA, 4 up to 12 mA (0/2 up to 10 V)** input control signal and rests in case of **I2 active input** (with 24V DC constantly ON or OFF – as per I2 function set-up to ACTIVE – or supplied on I2 terminal). The EA is allowed to move either to the OPEN or CLOSE direction with **24 V DC** voltage pulse supplied connectors **OPEN** or **CLOSE**. The EA stops once the 24V DC voltage is supplied on I1 terminal (STOP) or the set end position is reached.
The EA stops to respond to the input control signal and fixes its position once the supply voltage on I2 is OFF.

3.2 Procedure for setting individual parameters and the register of errors and warnings

- is given in the separate attachment 74 1053 02 resp. 74 1076 02 of these operating instructions.

The factory default setting of individual programmes shown in Table 2 and Table 3, as long as otherwise specified by the customer:

Table 2
Factory default settings of individual parameters in version without local control; possibility to set-up by operating the control unite buttons.
For the individual parameters set-up see appendix **74 1053 02**

MENU	NAME	FACTORY SETTING-UP	
1	TORQUE	100% of value shown on nameplate for OPEN & CLOSE direction.	
2	END LIMIT	**- C = Position + O = Position** - end position switching closed and open from position **if valve type is not specified** **- C = Torque + O = Position** - closed in end by thrust position and end position switching open from position for single-seat valves **- C = Torque + O = Torque** – switching in both end positions by thrust for double-seat valves	
3	TORQUE BLOCKING	- 2 sec. blocking time - 5% blocking position for OPEN & CLOSE direction	
4	RELAY READY	- errors (READY COM-NO relay contacts closed in error free conditions)	
5	RELAY 1...5	- position O for relay R1 - position C for relay R2 - from position 95% for relay RE3 - from position 5% for relay RE4 -disabled for RE5 relay	
6	CPT (output signal)	4 to 20 mA	
7	REGULATION – (according to specification)	2P	3P
	ANALOG INPUT	-	4 to 20 mA (2 to 10 V)
8	DEAD ZONE	-	3 %
9	FAILURE REACTION	STOP	

Other parameters set-up is possible to change only by using the PC software

TITLE	FACTORY SETTING-UP
THERMOSTAT TEMPERATURE	25 °(space heater OFF temperature)
INTERNAL DEAD ZONE	2 % (only for 3P)
Safe position	0 %
FUNCTION I1	ESD
ACTIVE I1	high level
FUNCTION I2	DISABLED
ACTIVE I2	high level
THERMAL FUSE FAILURE	functionless with this EA type
THERMAL FUSE RESET	functionless with this EA type
CYCLE MODE	DISABLED
CYCLE RUNNING TIME	10 s
CYCLE PAUSE	50 s
CYCLE POSITION O1	0 %
CYCLE POSITION O2	100 %
CYCLE POSITION C1	0 %
CYCLE POSITION C2	100 %
O AND C TOLERANCE	1 %
CREATE BACKUP	START
RESTORE FROM BACKUP	START
RESTORE FACTORY SETUP	START
ACTIVE ERRORS	CLEAR

Table 3
Factory default settings of individual parameters in version with local control; possibility to set-up by operating the local control buttons. For the individual parameters set-up see appendix 74 1076 02.

MENU	NAME	FACTORY SETTING-UP	
1	JAZ/LANGUAGE	English (select language on LCD display)	
2	POSITION O	work angle range set as per EA specification	
3	POSITION C		
4	REG. CALIBR.	START	
5	END LIMIT	**- C = Position + O = Position** - end position switching closed and open from position **if valve type is not specified** **- C = Torque + O = Position** - closed in end by thrust position and end position switching open from position for single-seat valves **- C = Torque + O = Torque** – switching in both end positions by thrust for double-seat valves	
6	TORQUE O	100% of value shown on nameplate	
7	TORQUE C	100% of value shown on nameplate	
8	BLOCK. TIME	2 s	
9	BLOCK. POS. O	5 %	
10	BLOCK. POS. C	5 %	
11	CPT (output signal)	4 to 20 mA	
12	REGULATION-(according to specification)	2P	3P
13	ANALOG. INPUT	-	4 to 20 mA
14	DEAD ZONE	-	3 %
15	INT. DEAD Z.	-	2 %
16	FAIL. REACT.	STOP	
17	SAFE POSIT.	0 %	
18	FUNCTION I1	ESD	
19	ACTIVE I1	high level	
20	FUNCTION I2	DISABLED	
21	ACTIVE I2	high level	
22	THERMO. FAIL. (THERMAL FUSE FAIL)	functionless with this EA type	
23	THERMO. RESET (THERMAL FUSE RESET)	functionless with this EA type	
24	RELAY READY	error	
25	RELAY 1	Position O (POSITION OPEN)	
26	RELAY 1 POS.	0 %	
27	RELAY 2	Position C (POSITION CLOSE)	
28	RELAY 2 POS.	0 %	
29	RELAY 3	FROM POSITION	
30	RELAY 3 POS.	95 %	
31	RELAY 4	TO POSITION	
32	RELAY 4 POS.	5 %	
33	RELAY 5	DISABLED (OFF)	
34	RELAY 5 POS.	0 %	
35	CYCLE MODE	DISABLED	
36	CYCLE RUN. T.	10 s	
37	CYCLE PAUSE	50 s	
38	OC TOLERANCE	1 %	
39	INFORMATION	TORQUE	
40	RESTORE BACK.	START	
41	CREATE BACK.	START	
42	RESTORE FACT.	START	
43	ACTIVE ERR:	CLEAR	

Other parameters set-up is possible to change only by using the PC software

NAME	FACTORY SETTING-UP
DIRECTION OF ROTATION	clockwise.
THERMOSTAT TEMPERATURE	25 °(space heater OFF temperature)
CYCLE POSITION O1	0 %

CYCLE POSITION O2	100 %
CYCLE POSITION C1	0 %
CYCLE POSITION C2	100 %
LCD CONTRAST	0

Warning 1: W*hen the input control signal is set to the value 0 ¸ 20 mA* (0 to 10 V)*, or 20 ¸ 0 mA* (10 to 0 V) *and the input control signal fails, then the EA keeps the position as with a 0 mA* (0 V) *input signal (EA doesn't recognise between input signal fail and 0 mA* (0 V) *input signal).*

Warning 2: Auto-calibration process doesn't run if triggered in time when the EA is in error state, e.g. EA is overloaded (EA is switched -off from torque). In such case is necessary to resolve issue, e.g. the EA must be moved in a position in which is not switch-off from torque and to start the auto-calibration again.

Warning 3: Calibration process must be performed at any change of the operating angle value of more than 10%.

Warning 4: Operate adjusting button ***P*** *on the control to activate the calibration process or start it from* ***MENU 4*** *in the version with local control (use the buttons on local control) or from the programme once the EA is connected to the PC. All calibration start methods have been equal.*

Warning 5: In case that EA with supply voltage 3x400V AC after calibration start shows the error „rotation direction" (error No. 7), it is necessary to stop EA by switching-off the supply voltage and change the phases sequence on the terminals 2 and 3 (change mutually phases wires) and after switching-on the supply voltage run n the calibration agai.

Rotation direction definition of the electric actuator´s output element

The output rod of the actuator while rotating in the direction "Close" protrudes from the actuator. It means that the direction of rotation of the actuator is set as **clockwise**.

In case the direction of rotation shall be changed the parater „Direction of rotation of the actuator" must je adjusted as **anticlockwise**. This parameter can be adjusted through the PC only by use of the EHL Explorer SW. The PC must be connected to the actuator via communication cable and the window "Parameters" used for direction adjustment.

3.3 Putting an EA into operation when the EA is set up and connected with the armature already in the production plant (starting the calibration)

If EA is delivered from manufacturing plant joined with valve, or with control device, **calibration** must be performed to ensure correct operation, under actual pipeline conditions.
The procedure is as follows:

- fit the given assembly into the specified technology complex
- connect the EA on the supply voltage electrically according to the wiring diagram and chapter Electric connection and checking of function.
- introduce the EA into an mid-position (see *Note 2* presented above)
- switch on the supply voltage
- **start the EA calibration** by pressing the **P** button on the control unit **for 2 seconds as minimum** until LED ERROR (red), LED MENU (green) and LED PAR (red) light up – see also the procedure in the separate attachment **No.74 1053 02**
- release the **P** setting button
- after releasing the **P** button the calibration procedure starts – inertia measuring
- after the calibration procedure is finished, the EA is prepared for its operation and starts to response to control inputs
- if changes to some parameters would be necessary, proceed please according to the instructions given in the separate attachment **No. 74 1053 02**.

3.4 Putting an EA into operation when the stroke and parameter setting done by the producer suit to your needs

When an EA is delivered from the producer without armature and the setting of stroke (stroke end positions) and other parameters done by the producer suit Your needs, please proceed as follows:

- connect the EA with the armature to be controlled (**according to chapter 2**) and fit this assembly into the specified technology complex
- connect the EA electrically according to the wiring diagram and chapter Electrical connection and checking of function
- introduce the EA into an mid- position (see *Note 2* presented above)
- switch on the supply voltage
- start the EA calibration by pressing the **P** button on the control unit **for 2 seconds as minimum** until LED ERROR (red), LED MENU (green) and LED PAR (red) light up – see also the procedure in the separate attachment No. 74 1053 02
- release the **P** setting button
- after releasing the **P** button the calibration procedure starts
- after the calibration procedure is finished, the EA is prepared for its operation and starts to response to control inputs
- if changes to some parameters would be necessary, proceed please according to the instructions given in the separate attachment No. 74 1053 02.

3.5 Putting an EA into operation when it is necessary to do a change to the stroke (setting new end positions), and the other parameter setting done by the producer suits to your needs

When an EA is delivered from the producer without armature, and the setting of other parameters done by the producer suit to your needs, and it is necessary to do a change to the EA stroke, proceed as follows:

- connect the EA with the armature to be controlled (according to chapter 2) and fit this assembly into the specified technology complex,
- connect the EA electrically according to the wiring diagram and chapter Electrical connection and checking of function,
- turn on the power supply, without connection of the control signals fed into ES (input control signal - ES reports error/warning No.2 - no binary input),
- set the ES (*using manual control**) to end position **closed** and push button **C for at least 2s,** until LED ERROR (red), LED MENU (green) and LED PAR (red) come on – the **closed** end position is thus recorded in memory – see description in separate annex **No. 74 1053 02**,
- release the **C** setting button,
- set the ES (*using manual control**) to end position **opened** and push button **O for at least 2s,** until LED ERROR (red), LED MENU (green) and LED PAR (red) come on – the **opened** end position is thus recorded in memory – see description in separate annex **No. 74 1053 02**,
- **release** the **O** setting button,
- **introduce** the EA into an mid osition (see *Note 2* presented above),
- by pressing the **P** pushbutton on the control unit **for at least 2s** activate the EA calibration until LED ERROR (red), LED MENU (green) and LED PAR (red) come on – see also description of the procedure in separate annex **No. 74 1053 02,**
- release the adjustment pushbutton **P -** upon release of the **P** pushbutton, the calibration process is started,
- turn on the control signals, EA is ready for operation and responds to control inputs,
- if any of the parameters need to be changed, proceed according to the instructions in separate annex **No. 74 1053 02.**

* *This applies to the standard setting of menu 9 (in the menu on the control unit)* FAILURE REACTION*: STOP! If the input control signal is set to one of the ranges starting from 0 mA, it is necessary to change the range to a different one. If this is not the case and a control signal is not supplied, the servodrive output component will take up the position corresponding to 0 mA. After recording the new limit positions change the value of the input control signal and response to error to the required parameters.*

Note: in cases where the sequence is implemented using a PC in the EHL Explorer programme or using local control, neither the change of response to error nor disconnection of the control signals is required.

3.6 Setting other parameters

If changes to some parameters would be necessary, proceed please according to the instructions given in the separate attachment **No 74 1053 02**.

3.7 Error messages from the control unit

The EA electronics makes possible to identify some failures of EA. The failure is signalled by flickering LED ERROR (red) on the control unit **(Fig.7)**. An error has also been indicated on the LED display. An error is indicated on the LCD display in the local control EA version.
The list of errors and warnings compiled by the producer is presented in **table 4** (chapter 4.3).
The list of errors and warnings and the way for identifying a given error as well are presented in the separate attachment No **74 1053 02**.

A field serviceman is only entitled to change the errors and warnings set using the programme once the EA is connected to the PC.

4. Service and Maintenance

4.1 Service

1. In general it is provided that service of the EA is performed by a qualified worker in accordance with requirement given in Chapter 1!
2. After putting the EA into operation it is needed to verify whether during manipulation any scratch on surface occurred, it is to be removed to prevent actuator against corrosion!

The EA STR 0.1PA requires just negligible service. Proper putting into operation is a recondition of reliable operation.

The service of the EA leads from the operation conditions and usually resides in information processing for further arranging of required functions. The EA can either undergo electric remote control or manual control from the installation site. Operate the service handle for manual control.

The stuff has to perform prescribed maintenance to prevent the EA during operation against impacts of environment, which exceed the frame of allowed influences.

At a power outage or voltage breaking off, an electric actuator will stop in a position, in which it had been before the power outage occurred. In case of need it is possible to preset the electric actuator with manual operation.

Manual control:

If needed (during adjusting, function checking, failure etc.) the stuff can change setting of the controlled body using the handle.

Instructions for manual control:

- Switch the power supply off.
- Turn the button for gear disengagement to the right by 90° (Fig. 11, the button arrow shows the symbol of hand) what disengages the gear in the actuator.
- Set the actuator to the chosen position:

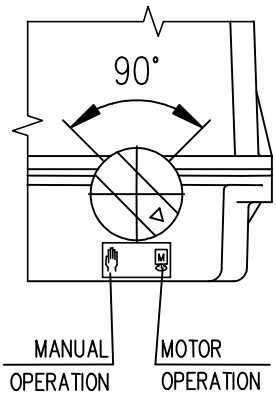


Fig.11

a) *For actuators with manual control:* push and turn the handle located on the actuator upper cover. While turning counter-clockwisely the valve is turning in the direction "open". Having the valve in the required position turn the button for gear disengagement to the position "motored operation" what engages the gears[1)]. Put the handle back to its original position.
b) *For actuators without manual control* - using the fork wrench. Remove top cover, put fork wrench on 6-edged shaft of manual control. While turning counter-clockwisely the valve is turning in the direction "open". After resetting of the valve put the gear disengagement button to the original position[1)] and cover the actuator.

[1)] After putting the button for disengaging of gearing again to the position of motor operation if the gearing is not connected it is needed to turn the handle to put the gears into mesh.

In case of manual control the set of end positions and transmitter are not detuned.

Electric local control: - additional equipment (**Fig.8**)

If necessary in the case of accession, function check and so on, it is possible to preset EA or change some parameters by local electric control with secured power feeding.

It is possible to control after removing of the padlock (1). Control mode selection is changed by sequential pressing of the button (2) **REMOTE-OFF-LOCAL** to **“Remote” “Shut off”, “Local”, “Shut off”**, which is displayed on 2 rows LCD (6). Signalling motion and failure of the EA is also indicated by LEDs diode (7).

Mode “Shut off” – it is possible to change some parameters in this mode in particular menus.

Mode “Local” – it is possible to control EA by the local buttons in this mode - (3) **OPEN**, (5) **STOP**, (4) **CLOSE**.

Mode “REMOTE” – it is possible to control EA by the commands from superior remote system

Proceeding in setup of particular parameters in the mode **“SHUT OFF”** is described in the independent amendment No. 74 1076 02, which is delivered together with EA equipped by local electric control.

When you finish the work in the “REMOTE” mode put the padlock on the button (2) again. This measure would be received because of potential unauthorized person’s intervention.

Note: Modes of Local or Remote control is conditioned by program choices of inputs I1 and I2. In the case that inputs I1 or I2 are programmed for “Local releasing”, it is only possible to control the EA by local control with active input I1 or I2.

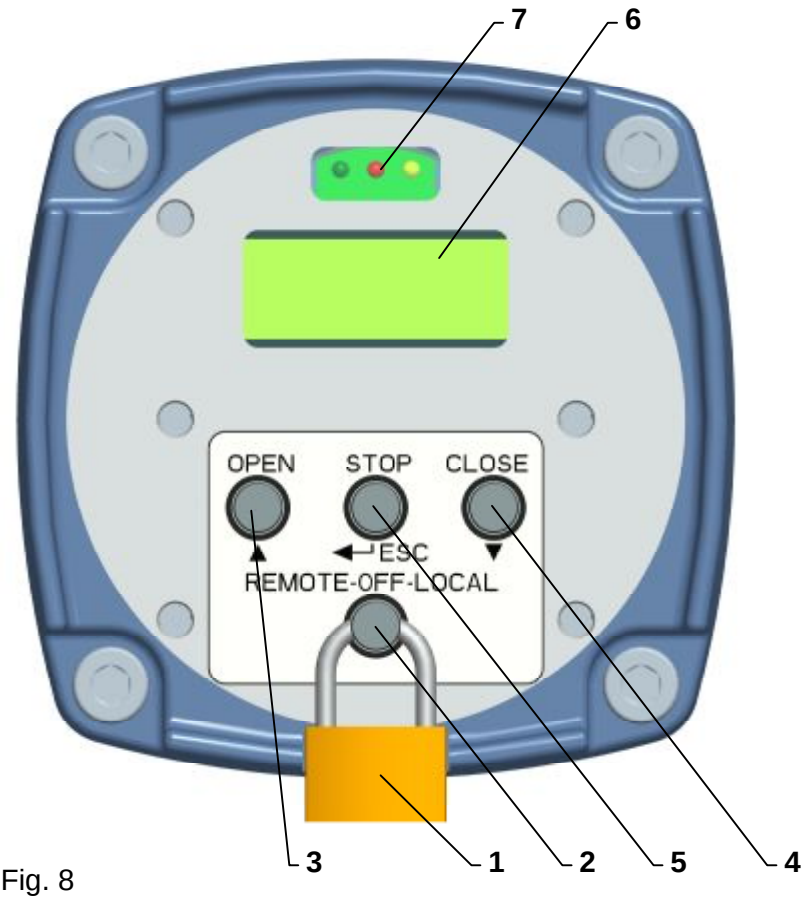


Fig. 8

4.2 Maintenance - extent and periodicity

All screws and nuts affecting tightness and protection (IP) must be tighten during the inspection and maintenance. Similarly, once a year should be checked and if necessary tighten mounting screws of the terminal wires and assuring of the slip-on joints with wires The internal between two preventive inspections is four years.

In case of damage or after 6 years of the actuator´s operation the replacement of cover seals and oil filling seals must be done.

The grease in the supplied actuators is designed for the lifetime of the product.
It is not necessary to change the grease during the operation of the actuator.

Lubrication:

- - gear part – grease HF 401/0 (GLEIT-μ) resp. GLEITMO 585 K
- - linear adapter – grease GLEIT- μ - HP 520M.

Lubrication of the valve stem is independent on maintenance of the EA!

After every potential flooding of the product check, whether there is no water inside. After eventual water penetration, dry the product before repeated putting into operation and replace damaged sealings, resp. other parts of EA. identically check also tightness of cable bushings and replace them, if they are damaged.

- Every six months it is recommended to perform one check move in frame of adjusted operation stroke to verify reliability of functioning with setting back to the original position.
- If the audit rules do not determine else the inspection of EA is performed ones a year and tightening of all connecting and grounded screws have to be checked to avoid overheating.
- After 6 months from putting of EA into operation and once a year it is recommended to check tightening of fixing screws between the EA and the valve. (Tighten the screws with the cross system.)

- While connecting and disconnecting of the EA check the tightness of cable glands – those with damaged sealings should be replaced by new ones of the approved type!
- Keep the EA clean and take care about removing impurities and dust. The cleaning has to be performed regularly according to the operation possibilities and requirements.

4.3 Troubleshooting

At failure of power supply the EA stops in the position where it was before the failure. If needed the EA can be set only with the manual control (the hand wheel). After restoration of power the EA is prepared for operation.

In case of failure of any element of the EA it can be changed by a new one. Entrust the change to a service centre.

In case of an EA failure, which cannot be eliminated directly in operation, follow instructions for under-guaranty and after-guaranty service.

The EA electronics makes possible to identify some failures of the electric actuator. The control unit blicking LED ERROR indicates the failure **(Fig. 7)** or the error is displayed on the LED **(see Fig. 1)**, or the LCD display **(see Fig. 8)**. The list of errors and warnings and the way for identifying a given error as well are presented in the separate attachment No 74 1053 02.
The list of errors and warnings compiled by the producer is presented in **table 4**. A change to the list of errors and warnings in the EA is only possible within a service intervention, through the program installed in a PC.

Table 4 setting error flags and warning flags as at the delivery

PARAMETER	ERROR	WARNING
ESD		X
Analog Input		X
Wrong command	X	
Torque		X
Torque check		X
Torque calibration	X	
Regulator calibration		X
Stroke (turns sum)	X	
Wrong position	X	
Spin	X	

Spin direction	X	
RAM	X	
ROM	X	
EEPROM		X
Bus	X	
I2C	X	
Reset		X
Voltage +5V		X
Parameters	X	
Set mode		X
Relay		X
Temperature <		X
Temperature >		X
Phase	X	
Power frequency	X	
Thermal fuse	X	
Manual control	X	
Position module	X	
Position module type	X	
Position sensor 1	X	
Position sensor 2	X	
Position sensor 3	X	
Position sensor 4	X	
Torque module	X	
Torque module type	X	
Torque sensor	X	
LED module	X	
LED module type	X	
LCD module	X	
LCD module type	X	
Power Supply/Relay module	X	
Power Supply/Relay module type	X	

Notes: **X** – the error or warning flag is activated.
With the **error flag**, the EA takes the positron defined for the FAILURE REACTION function eventually stops (depending on the kind of the error), and it will not operate until the error is removed.
With the **warning flag**, the EA continues in operation.
The user is advised on error or warning through the READY relay (according to the relay setting), eventually through the program after connecting the EA with a PC.

Note 1*: In some cases having the error removed the electric actuator must be restarted by switching-off the voltage supply to the electric actuator for about 3 sec.*
Note 2 *: One of the possible errors may be failure to return disengagement button after the manual control to the position mechanical control. In such case the EA will remain standing.*
If some EA element would fail it can be replaced with a new one. The **producer's service centre** only is allowed for such replacement.

If your EA would fail, proceed please according to the instructions for the under guarantee and after-guarantee

For repairing eventually the electronics use the fuse – see Fig.2 (F3) for example SHURTER MSF 250, or sub miniature SIBA 164550 xxx (see chapter 1.9.2), which is located on source board.

Note:
If the EA requires dismantling follow the chapter "Dismantling".

⚠ ***Taking the EA to pieces for repair purposes is allowed only by professionally qualified persons trained in the production plant or by a contracted service centre!***

5. Accessories and spare parts

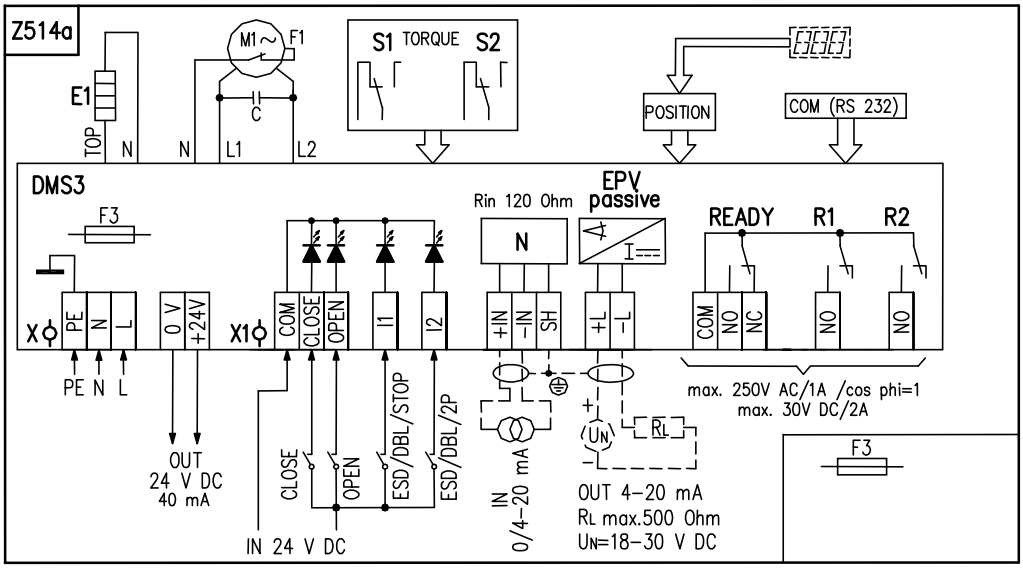
5.1 Accessories

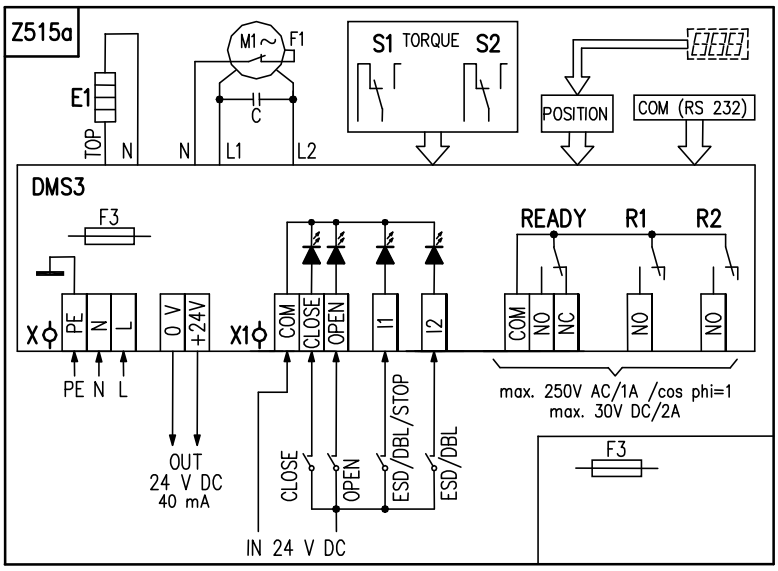
The EA is delivered with the service handle and communication cable DB-9F/RJ45.

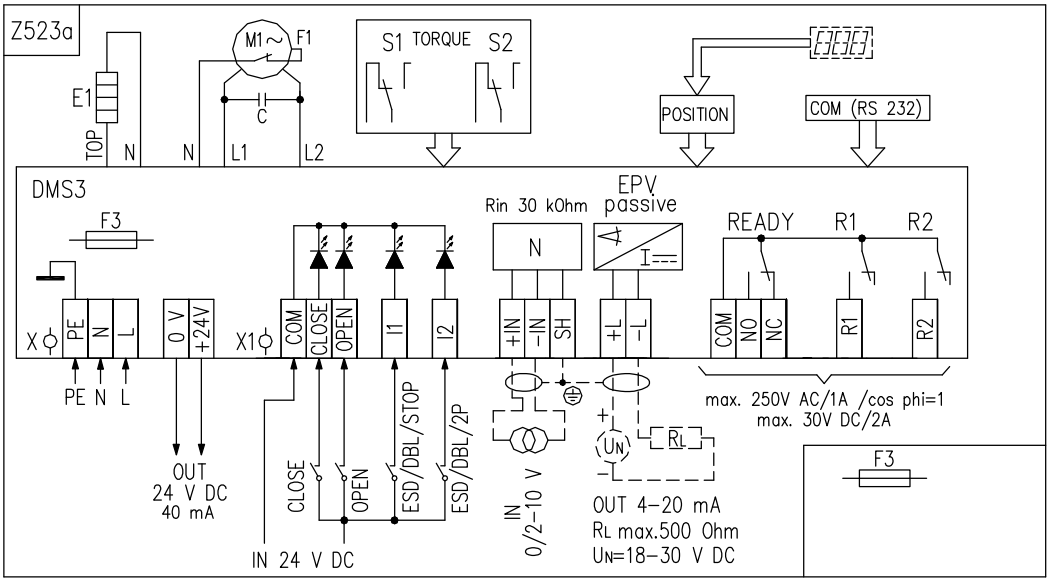
Table 5 Spare part	Order Nr.	Position	Figure
Electric motor; 15W/39 VA; 230/220 V AC; 50 Hz	63 592 314	1	1
Electric motor; 15W/39 VA; 24 V AC; 50 Hz	63 592 356	1	1
Electric motor; 18W/48 VA; 24 V AC; 60 Hz	63 592 061	1	1
Electric motor; 18W/48 VA; 240 V AC; 60 Hz	63 592 059	1	1
Electric motor; 18W/48 VA; 120 V AC; 60 Hz	63 592 058	1	1
Electric motor; 15 W; 230/220 V AC; 50 Hz	63 592 306	1	1
Electric motor; 15 W; 400 V AC; 50 Hz	63 xxx xxx	1	1
Microswitch CHERRY DB 3G B1RB	64 051 198	6	1
DMS3 Z2 24A source board of electronic for 24 V AC	64 051 072	3	1
DMS3 ZS 24A switch – mode power supply for 24 V AC	64 051 103	3	1
Position scanning unit DMS3 SP	64 051 079	4	1
Control unit of the electronics DMS3 J1 (0/4/12 up to 20 mA or 4 up to 12 mA)	64 051 075	2	1
Control unit of the electronics DMS3 J3 (0/2 - 10 V)	64 051 061	2	1
Control unit of the electronics DMS3 J2 (without input and output)	64 051 060	2	1
DMS3 L2 LED display	64 051 081	7	1
DMS3 LCD display	64 051 082	6	7
DMS3 H3.4 local contorl sensor	64 051 084	-	7
DMS3 RE3 Module of additional relays	64 051 065	8	1
DMS3 RE6 Module of additional relays	64 051 066	8	1

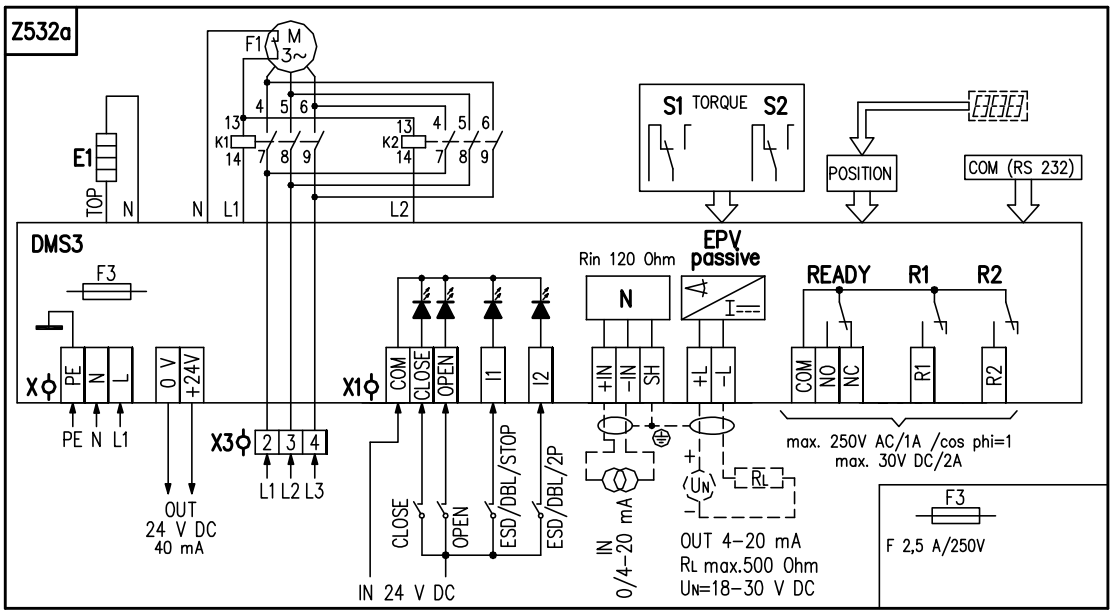
6. Enclosures

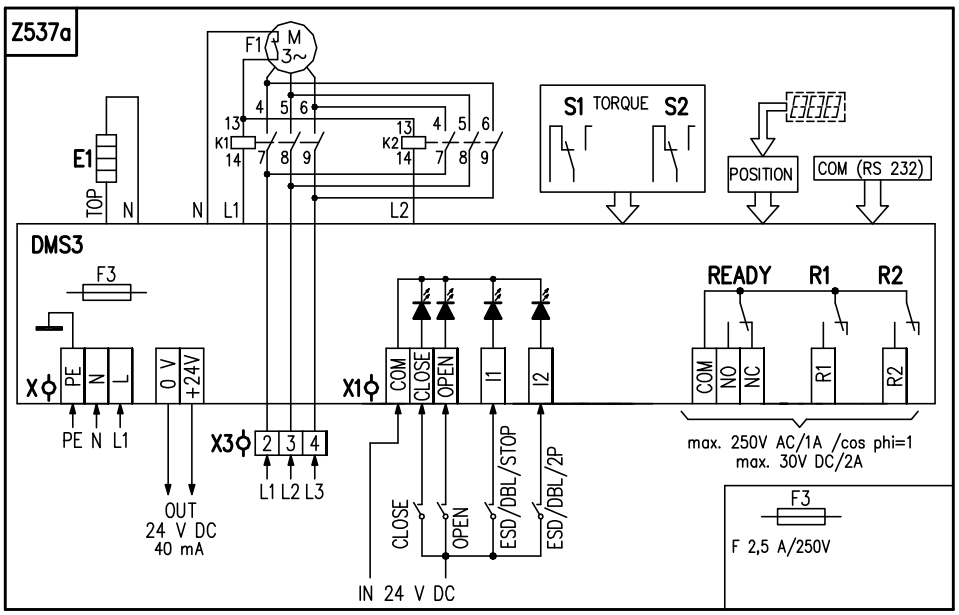
6.1 Wiring diagrams

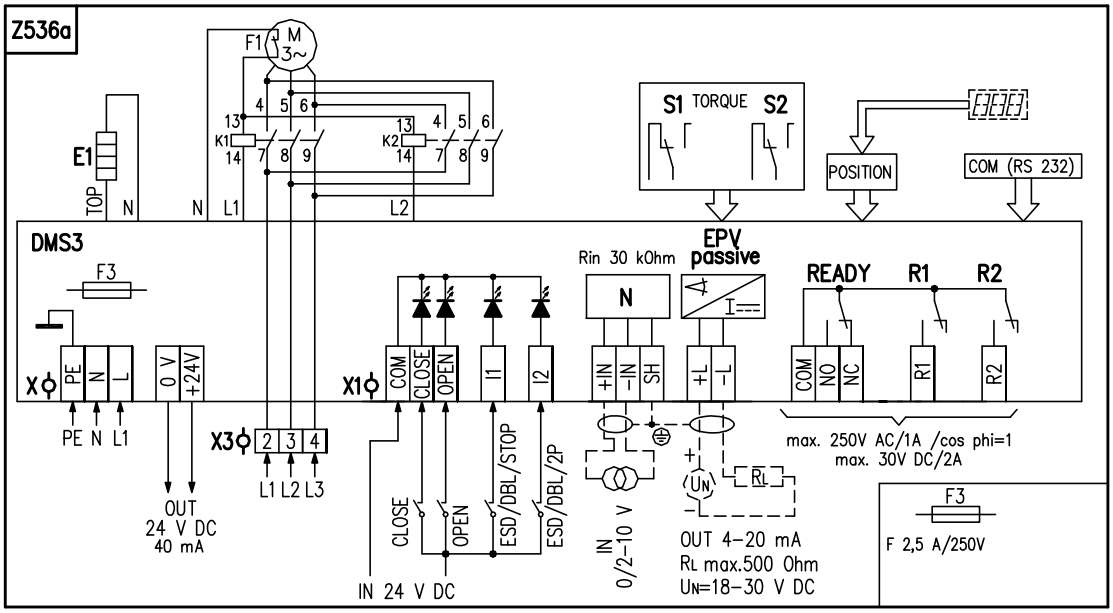


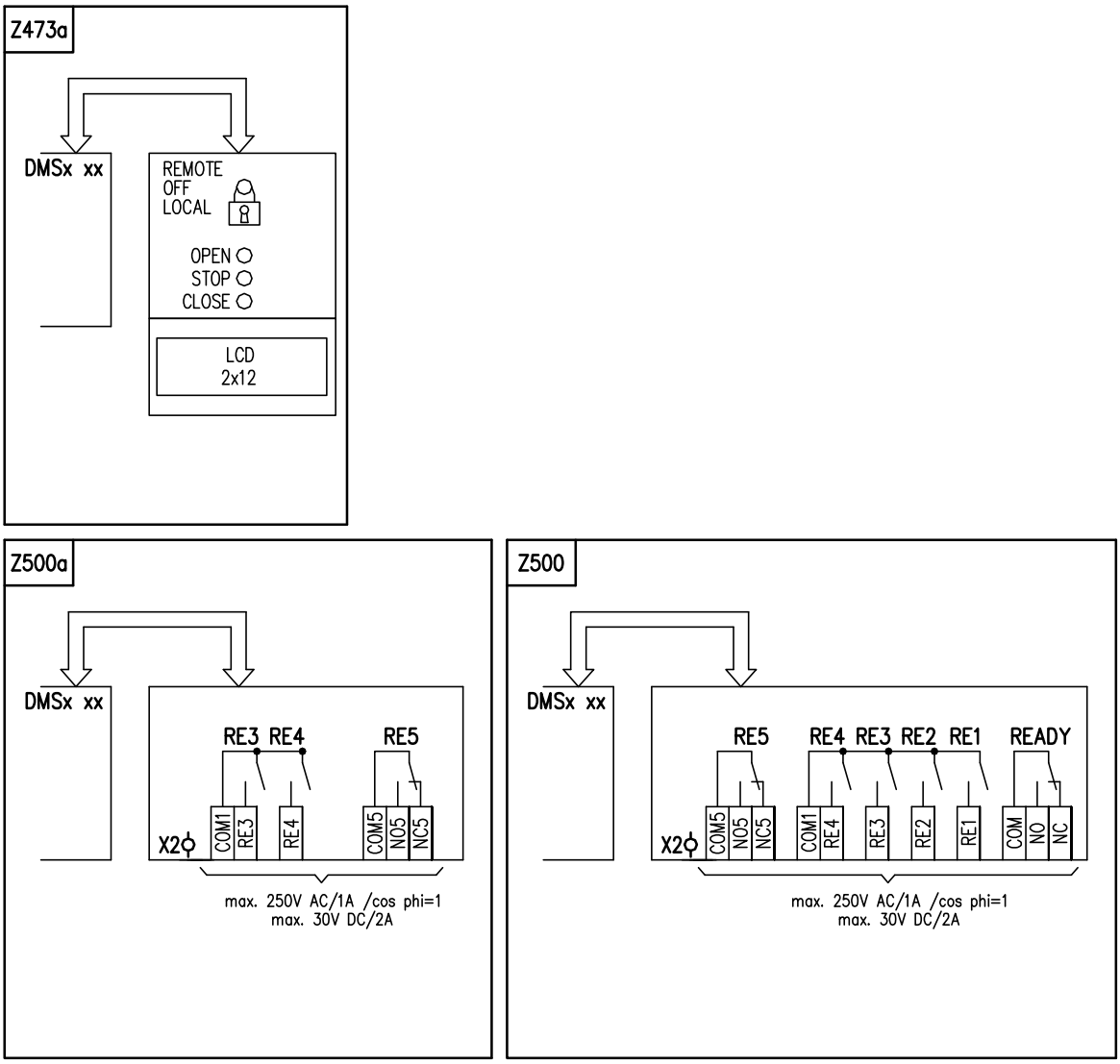





Z532a
F1
M
3~
E1
TOP
N
L1
L2
K1
K2
S1 TORQUE S2
POSITION
COM (RS 232)
DMS3
F3
EPV
passive
Rin 120 Ohm
READY
R1
R2
X
PE
N
L
0 V
+24V
X1
COM
CLOSE
OPEN
I1
I2
+IN
-IN
SH
+L
-L
NO
NC
X3
PE N L1
L1 L2 L3
OUT
24 V DC
40 mA
IN 24 V DC
CLOSE
OPEN
ESD/DBL/STOP
ESD/DBL/2P
IN
0/4-20 mA
OUT 4-20 mA
RL max.500 Ohm
UN=18-30 V DC
max. 250V AC/1A /cos phi=1
max. 30V DC/2A
F 2,5 A/250V


Z537a
F1
M
3~
E1
TOP
N
L1
L2
K1
K2
S1 TORQUE S2
POSITION
COM (RS 232)
DMS3
F3
READY
R1
R2
X
PE
N
L
0 V
+24V
X1
COM
CLOSE
OPEN
I1
I2
NO
NC
X3
PE N L1
L1 L2 L3
OUT
24 V DC
40 mA
IN 24 V DC
CLOSE
OPEN
ESD/DBL/STOP
ESD/DBL/2P
max. 250V AC/1A /cos phi=1
max. 30V DC/2A
F 2,5 A/250V


Z536a
F1
M
3~
E1
TOP
N
L1
L2
K1
K2
S1 TORQUE S2
POSITION
COM (RS 232)
DMS3
F3
EPV
passive
Rin 30 kOhm
READY
R1
R2
X
PE
N
L
0 V
+24V
X1
COM
CLOSE
OPEN
I1
I2
+IN
-IN
SH
+L
-L
NO
NC
X3
PE N L1
L1 L2 L3
OUT
24 V DC
40 mA
IN 24 V DC
CLOSE
OPEN
ESD/DBL/STOP
ESD/DBL/2P
IN
0/2-10 V
OUT 4-20 mA
RL max.500 Ohm
UN=18-30 V DC
max. 250V AC/1A /cos phi=1
max. 30V DC/2A
F 2,5 A/250V



Legend:

Z473a..... wiring diagram of electric local control
Z500..... wiring diagram module with 6 additional relays
Z500a..... wiring diagram module with 3 additional relays
Z514a..... wiring diagram of EA STR 0.1PA for the ON/OFF control or for analogue input 0/4/12 up to 20 mA, 4 up to12 mA and output signal 4 - 20 mA
Z515a..... wiring diagram of EA STR 0.1PA for the ON/OFF control
Z523a..... wiring diagram of EA STR 0.1PA for the ON/OFF control or for analogue input 0/2 - 10 V and output signal 4 - 20 mA
Z537a..... wiring diagram of EA STR 0.1PA with 3-phase electric motor for the ON/OFF control
Z532a..... wiring diagram of EA STR 0.1PA with 3-phase electric motor for the ON/OFF control or for analogue input 0/4/12 to 20 mA, 4 to 12 mA and output signal 4 - 20 mA
Z536a..... wiring diagram of EA STR 0.1PA with 3-phase electric motor for the ON/OFF control or for analogue input 0/2 - 10 V and output signal 4 - 20 mA

C.....capacitor
COM(RS232) .....possibility for connecting the control unit to and PC
EPV passive .....electronic position transmitter is passive with output current signal
E1.....space heater
F1.....motor`s thermal protection
F3.....fuse of voltage supply source
K1, K2 .....coil of relay

M ..... single phase electric motor
N..... controller
POSITION..... position scanning
R_{in}..... input resistance
R_L ..... load resistance
U_N ..... voltage for EPV
R1..... free programmable relay
R2..... free programmable relay
READY..... READY relay (free-programmable)
R1 to RE5 ..... additional relays
S1..... thrust switch “open”
S2..... thrust switch “closed”
DMS3 ..... electronic module

X..... voltage supply source terminal board with screw terminals
X1..... terminal board with screw terminals on the control unit
X2..... screw terminal box on the additional relays board

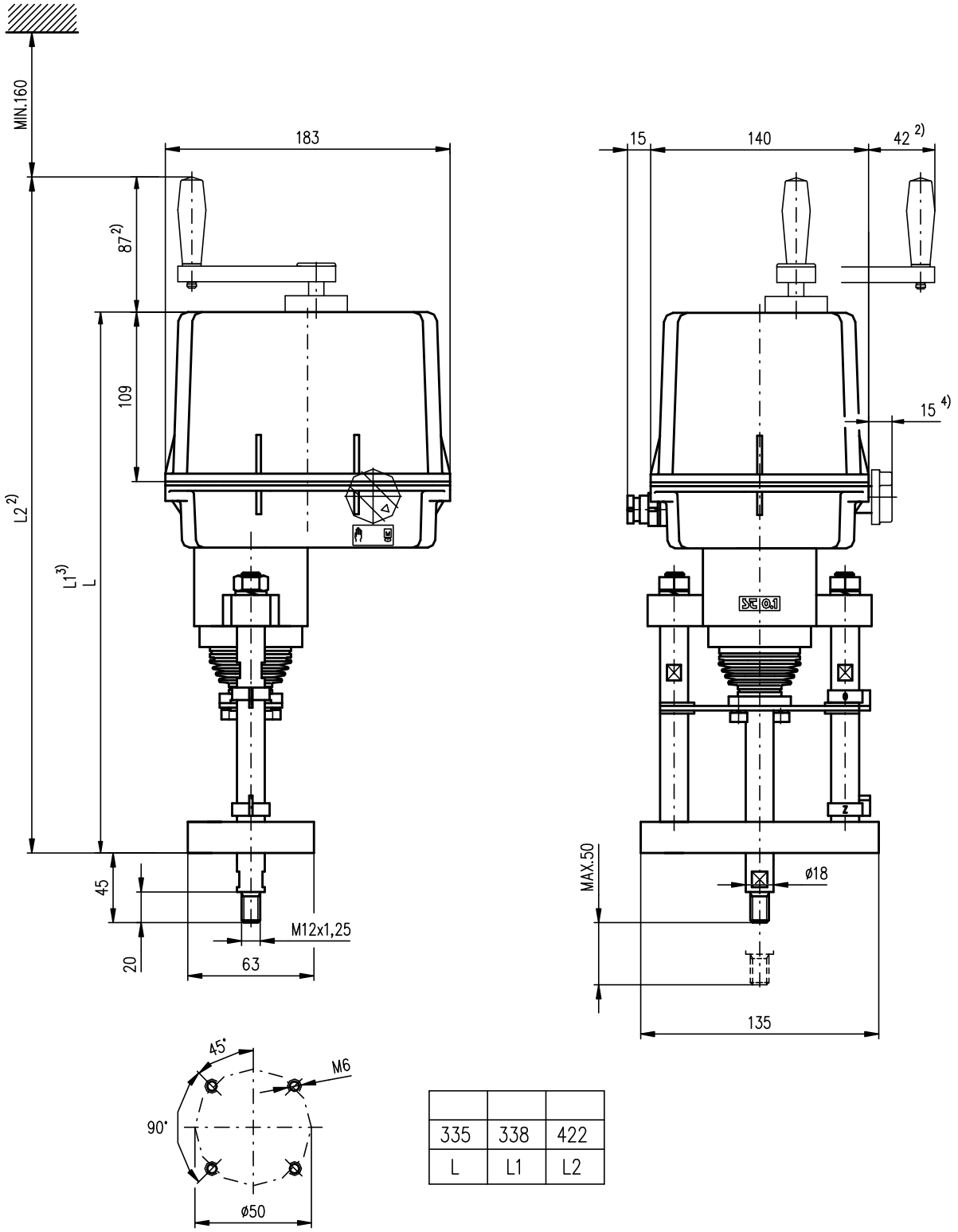
Terminals:
PE, N, L – terminals (0,05-1,5 mm^2) of supply (24 V AC resp. 110/120 V AC, resp. 230/240 V AC, 50/60 Hz (according to the specification – voltage and frequency are stated on nameplate of EA)
0 V, +24 V – terminals (max. 0,05 - 1 mm^2) of output voltage 24 V DC (40 mA)
COM, CLOSE OPEN, I1, I2 – terminals (0,05 - 1 mm^2) of control inputs 24 V DC
+IN, -IN, SH – terminals (0,05 - 1 mm^2) of unified input current signal resp. voltage signal
+L, -L, SH – terminals (0,05 - 1 mm^2) of output current signal (passive) 4-20 mA
COM5, NO5, NC5 – terminals (0,05 – 1,5 mm^2) relay RE5
COM, NO, NC – terminals (0,05 – 1,5 mm^2) of relay READY
COM, NO– terminals (0,05 - 1,5 mm^2) of relay R1, R2
COM1, RE3, RE4 – terminals (0,05 - 1,5 mm^2) relay RE3, RE4.

Note 1: On terminal N, L terminal power supply (X) feed supply voltage 230 V AC, or 24 V AC by you - specified type of construction EA. For supply voltage 24 V AC no need connect ground wire PE. For a version of EA with the supply voltage 3x400 or 3x380V, terminals N, L on terminal board of power supply (X) are fed by power supply 220 respectively 230 V AC.

*Note 2: Program possibilities for **R1**, **R2, RE1, RE2, RE3**, **RE4**, **RE5** relays: DISABLED, open position, close position, torque-open, torque – close, torque open or torque close, torque open or position open, torque close or position close, open, close, movement, movement flasher, to position, from position, warning, remote control, local control, control shut off.*
*Program possibilities for **READY** relay: errors, errors or warnings, errors or no remote, errors or warnings or no remote.*
*Program possibilities for output signal (from **EPV** passive): 4 to 20 mA, 20 to 4 mA.*
Control programme options (regulating): 2P, 3P, 3P/2P switched over to I2
*Program possibilities **for input control signal (N)**: 4 to 20 mA (2 to 10 V), 20 to 4 mA (10 to 2 V), 0 to 20 mA (0 to 10 V), 20 to 0 mA (10 to 0 V), 4 up to 12 mA, 12 up tož 4 mA, 12 up to 20 mA, 20 up to 12 mA*
*Program possibilities for **inputs I1**: DISABLED, ESD, DBL (local releasing, remote releasing - not valid for EA without local control), STOP.*
*Program possibilities for **inputs I2**: DISABLED, ESD, DBL (local releasing, remote releasing), STOP*
2P (when controller is switch on)(for control programme option 3P/2P I2)) allows control using the binary 24V DC inputs with I2 input activated.
*Program possibilities of **FAILURE REACTION**: OPEN, CLOSE, STOP, SAFE POSITION.*
The identical functions cannot be set on I1 &I2 inputs in addition to the disabled state (e.g., if the ESD function is set on I1 input, it is not possible to select the (ESD) function on I2 input at the same time.

Relay READY on the control unit is doubled with relay READY on the module of the additional relays.
Relay R1 and relay R2 on the control unit is doubled with relay RE1 and relay RE2 on the module of the additional relays.

6.2 Dimensional drawings



335	338	422
L	L1	L2

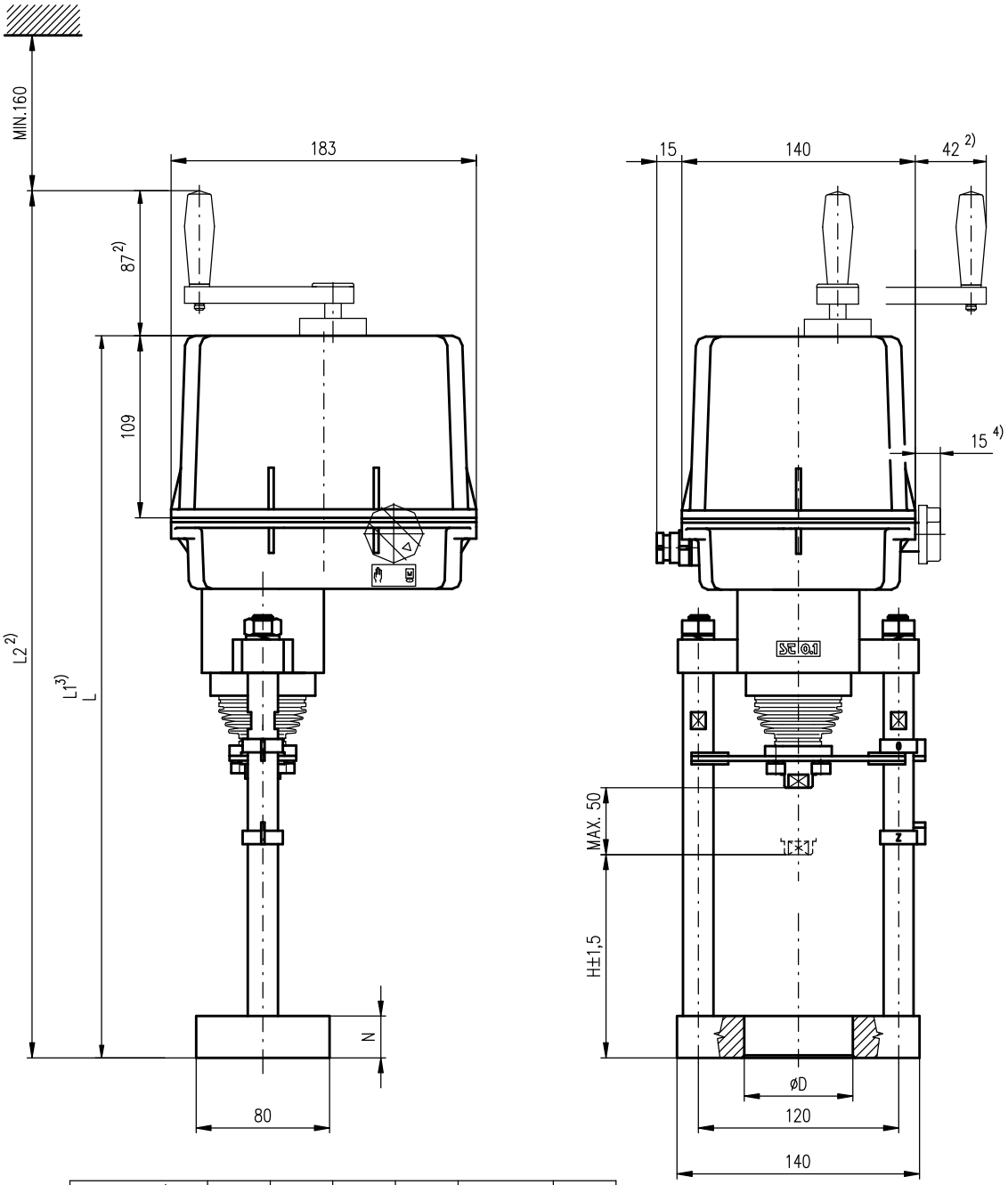
POZNÁMKY \ NOTES \:

2) PLATÍ PRE RUČNÉ OVLÁDANIE S TRVALOU POHOTOVOSŤOU \ VALID FOR MANUAL CONTROL WITH PERNAMENT STANDBY \

3) PLATÍ PRE RUČNÉ OVLÁDANIE BEZ TRVALEJ POHOTOVOSTI \ VALID FOR MANUAL CONTROL WITHOUT PERNAMENT STANDBY \

4) PLATÍ PRE RUČNÉ OVLÁDANIE \ VALID FOR MANUAL CONTROL \

VYHOTOVENIE S MIESTNYM OVLÁDANÍM S OVLÁDACOU DOSKOU DMS3 PODĽA P-2045
\ DIMENSIONS OF VERSION WITH LOCAL CONTROL WITH CONTROL BOARD DMS3 ACCORDING TO P-2045 \ P-1201



P1202/G	446	449	533	124	58	25
P1202/F	416	419	503	94	58	20
P1202/E	426	429	513	102	57,15	17
P1202/D	416	419	503	92	57,15	17
P1202/C	434	437	521	112	80 H8	–
P–1202/B	434	437	521	110	65,12 H12	25
P–1202/A	425	428	512	103	65,12 H12	25
VYHOT.	L	L1	L2	H	D	N

P-1202/A, B

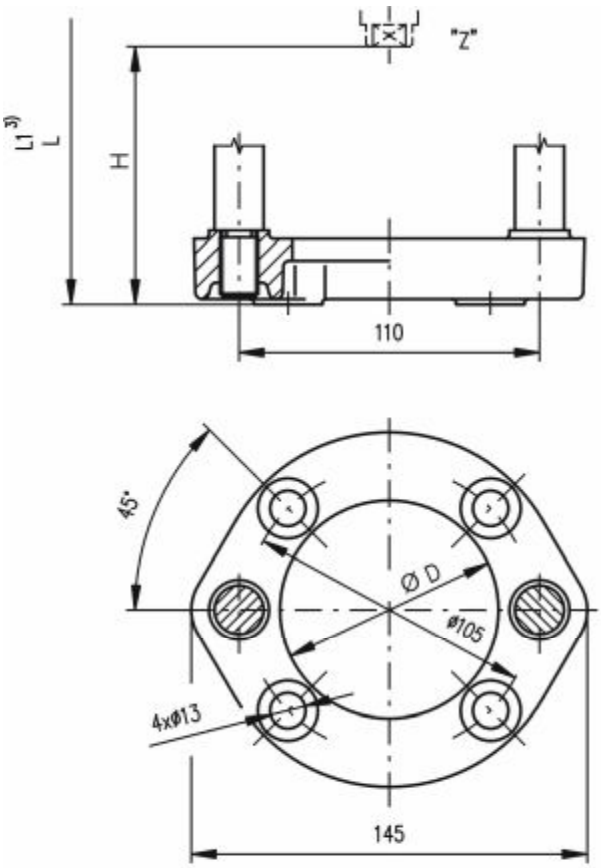
POZNÁMKY \ NOTES \:

2) PLATÍ PRE RUČNÉ OVLÁDANIE S TRVALOU POHOTOVOSŤOU \ VALID FOR MANUAL CONTROL WITH PERNAMENT STANDBY \

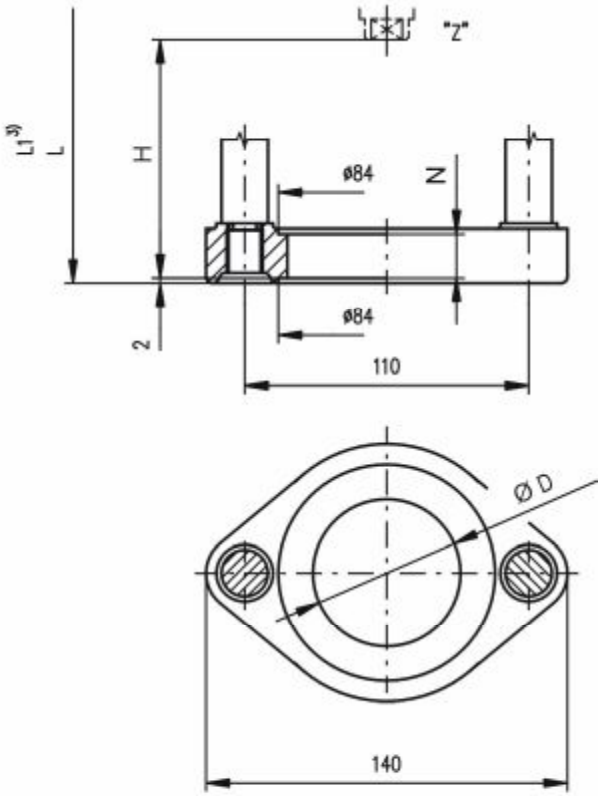
3) PLATÍ PRE RUČNÉ OVLÁDANIE BEZ TRVALEJ POHOTOVOSTI \ VALID FOR MANUAL CONTROL WITHOUT PERNAMENT STANDBY \

4) PLATÍ PRE RUČNÉ OVLÁDANIE \ VALID FOR MANUAL CONTROL \

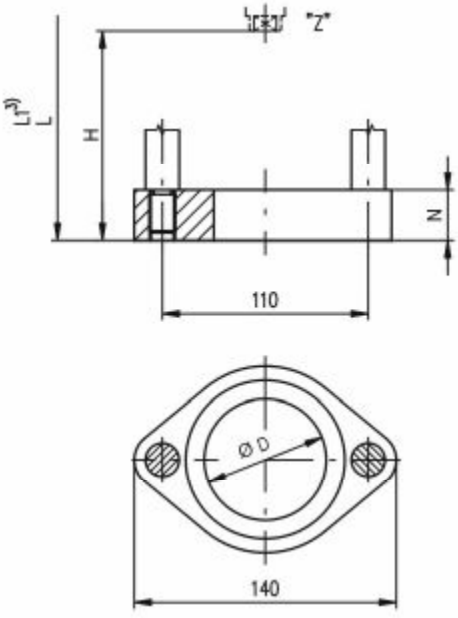
VYHOTOVENIE S MIESTNYM OVLÁDANÍM S OVLÁDACOU DOSKOU DMS3 PODĽA P-2045
\ DIMENSIONS OF VERSION WITH LOCAL CONTROL WITH CONTROL BOARD DMS3 ACCORDING TO P-2045 \



P - 1202/C

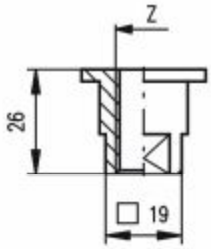


P - 1202/D, E

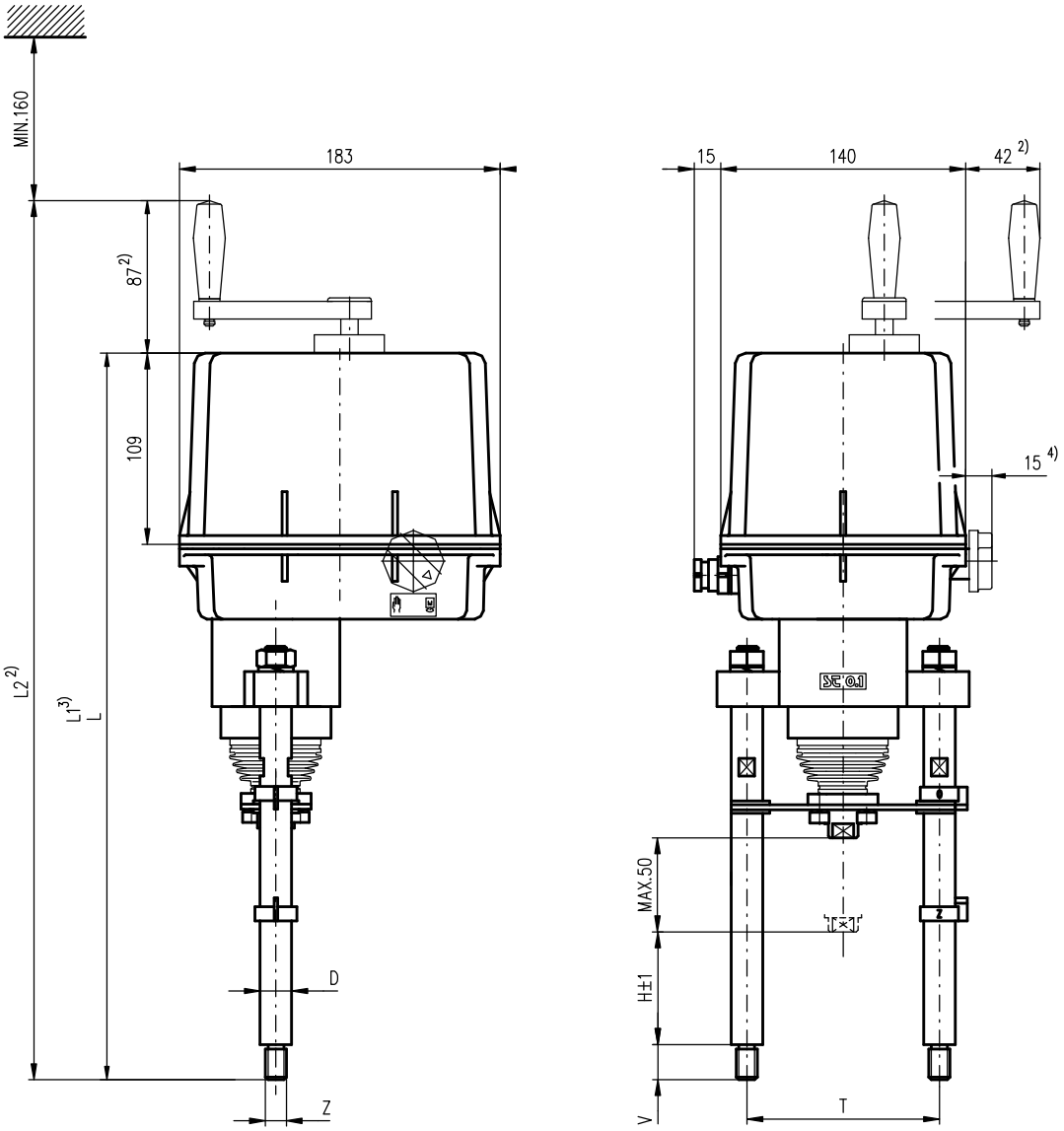


P - 1202/F, G

Rozmery spojky
\Coupling dimensions\



M14	
M12x1.25	
W1/2"	
W3/8"	
W5/16"	
M16x1.5-6H	
M12x1.5-6H	
M12-6H	1/2" - 13 UN
M10x1.5-6H	3/8" - 16 UN
M10x1-6H	5/16" - 18 UN
Z	



F	100	110	18	M16	16	448	451	535	
E	100	57	18	M16	16	395	398	482	
D	100	27	18	M16	16	365	368	452	
C	110	80	18	M12	32	434	437	521	S MATICAMI\WITH NUTS\
B	110	42	18	M12	20	384	387	471	
A	110	127	18	M12	20	469	472	556	
VYHOT.\VERSION\	T	H	D	Z	V	L	L1	L2	POZN.\NOTE\

POZNÁMKY \ NOTES \:

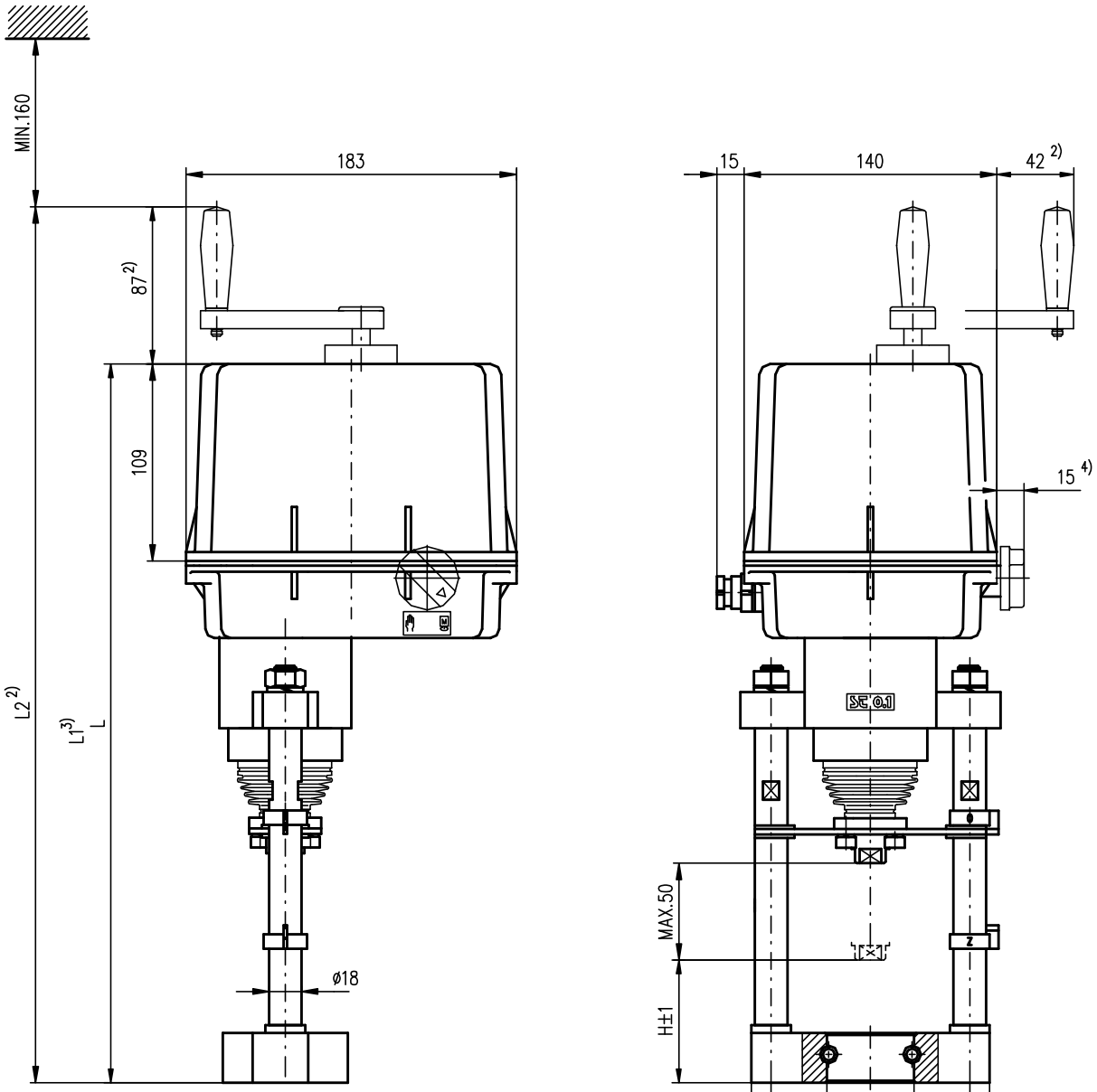
2) PLATÍ PRE RUČNÉ OVLÁDANIE S TRVALOU POHOTOVOSŤOU \ VALID FOR MANUAL CONTROL WITH PERNAMENT STANDBY \

3) PLATÍ PRE RUČNÉ OVLÁDANIE BEZ TRVALEJ POHOTOVOSTI \ VALID FOR MANUAL CONTROL WITHOUT PERNAMENT STANDBY \

4) PLATÍ PRE RUČNÉ OVLÁDANIE \ VALID FOR MANUAL CONTROL \

VYHOTOVENIE S MIESTNYM OVLÁDANÍM S OVLÁDACOU DOSKOU DMS3 PODĽA P-2045
\ DIMENSIONS OF VERSION WITH LOCAL CONTROL WITH CONTROL BOARD DMS3 ACCORDING TO P-2045 \

P-1203



P–1418/B	86	60	400	409	487
P–1418/A	59	38	373	376	460
VYHOT.\VERSION\	H	D	L	L1	L2

POZNÁMKY \ NOTES \:

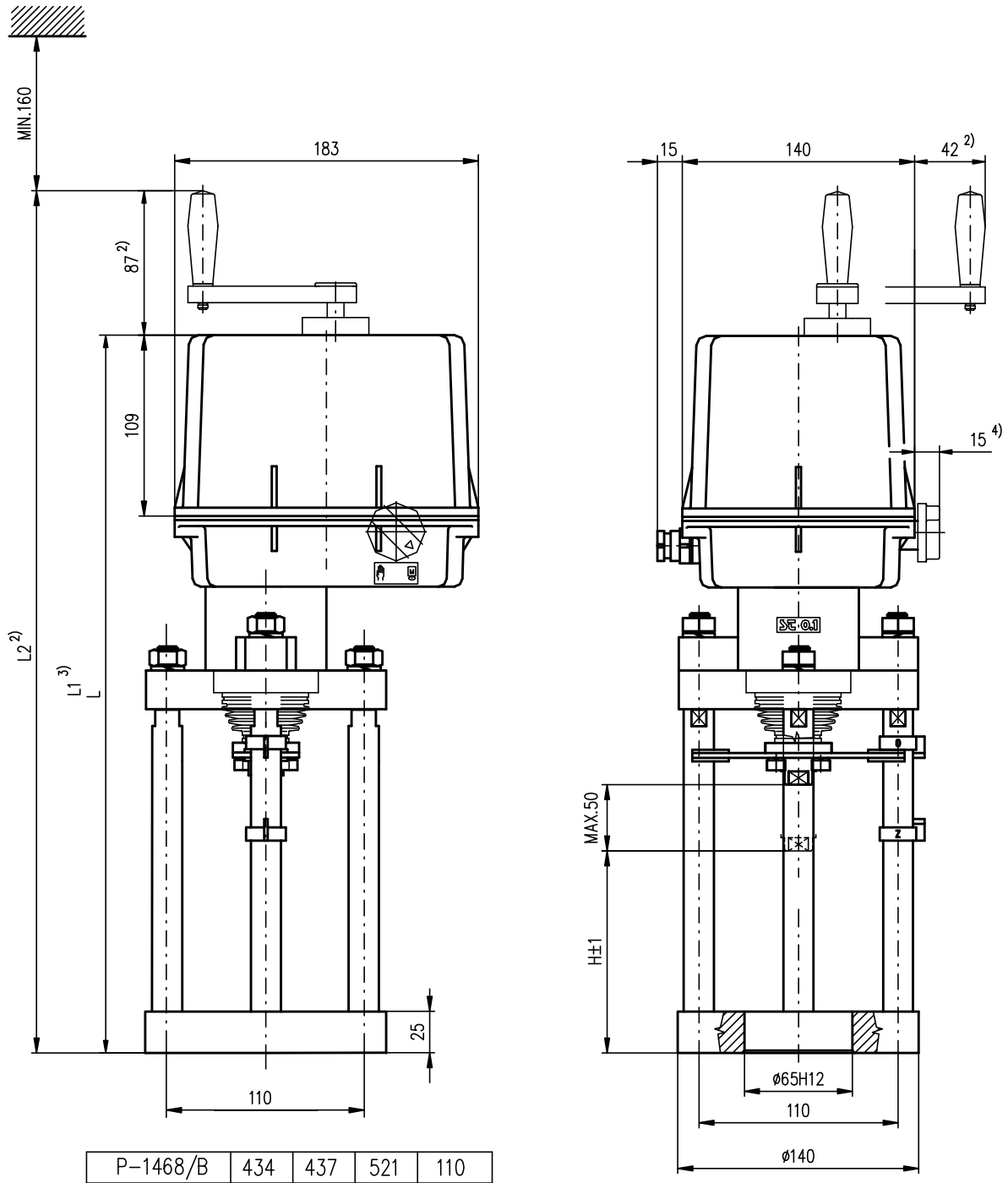
2) PLATÍ PRE RUČNÉ OVLÁDANIE S TRVALOU POHOTOVOSŤOU \ VALID FOR MANUAL CONTROL WITH PERNAMENT STANDBY \

3) PLATÍ PRE RUČNÉ OVLÁDANIE BEZ TRVALEJ POHOTOVOSTI \ VALID FOR MANUAL CONTROL WITHOUT PERNAMENT STANDBY \

4) PLATÍ PRE RUČNÉ OVLÁDANIE \ VALID FOR MANUAL CONTROL \

VYHOTOVENIE S MIESTNYM OVLÁDANÍM S OVLÁDACOU DOSKOU DMS3 PODĽA P-2045
\ DIMENSIONS OF VERSION WITH LOCAL CONTROL WITH CONTROL BOARD DMS3 ACCORDING TO P-2045 \

P-1418



P–1468/B	434	437	521	110
P–1468/A	425	428	512	103
VYHOTOV.\VERSION\	L	L1	L2	H

P-1468/A,B

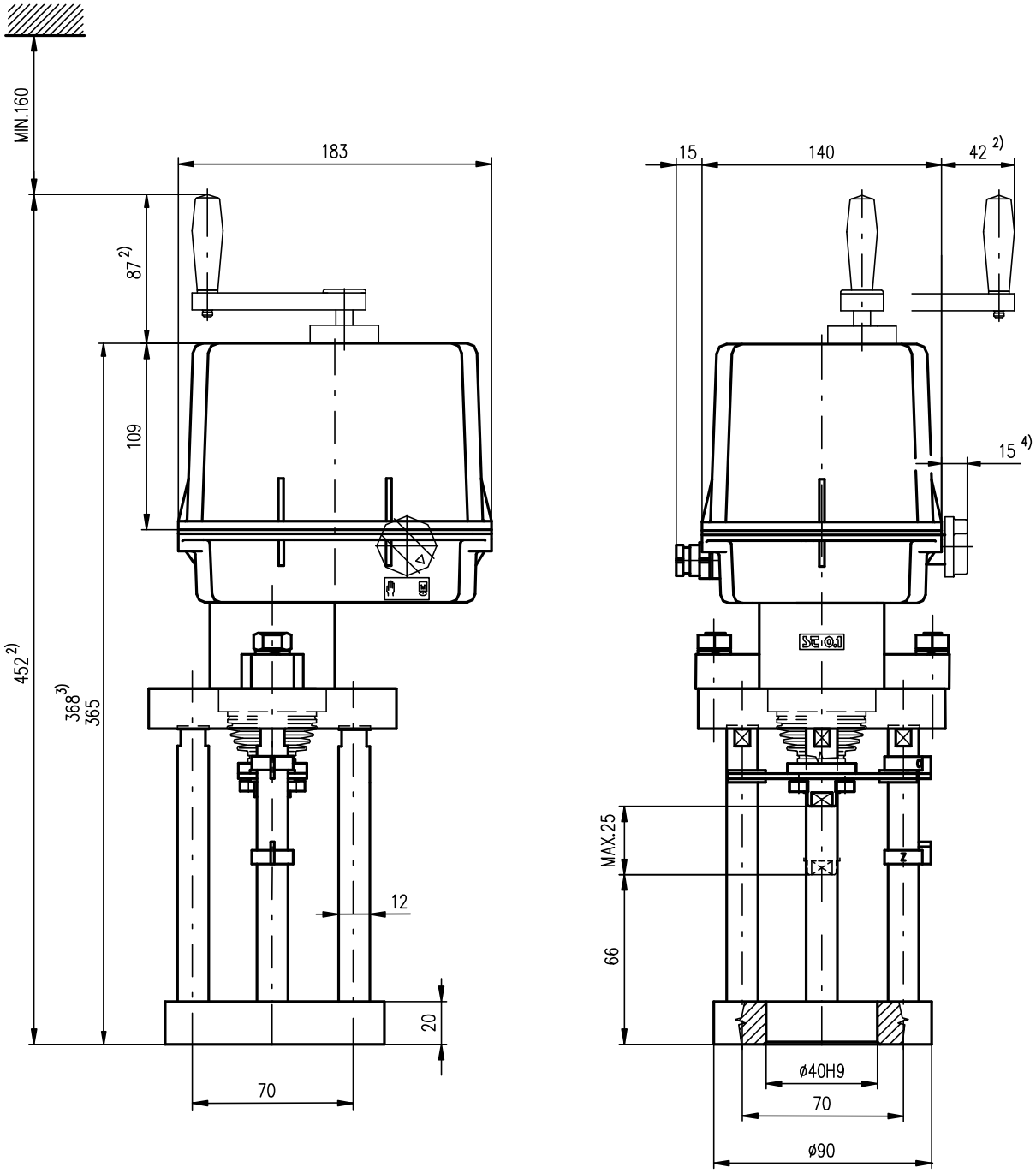
POZNÁMKY \ NOTES \:

2) PLATÍ PRE RUČNÉ OVLÁDANIE S TRVALOU POHOTOVOSŤOU \ VALID FOR MANUAL CONTROL WITH PERNAMENT STANDBY \

3) PLATÍ PRE RUČNÉ OVLÁDANIE BEZ TRVALEJ POHOTOVOSTI \ VALID FOR MANUAL CONTROL WITHOUT PERNAMENT STANDBY \

4) PLATÍ PRE RUČNÉ OVLÁDANIE \ VALID FOR MANUAL CONTROL \

VYHOTOVENIE S MIESTNYM OVLÁDANÍM S OVLÁDACOU DOSKOU DMS3 PODĽA P-2045
\ DIMENSIONS OF VERSION WITH LOCAL CONTROL WITH CONTROL BOARD DMS3 ACCORDING TO P-2045 \



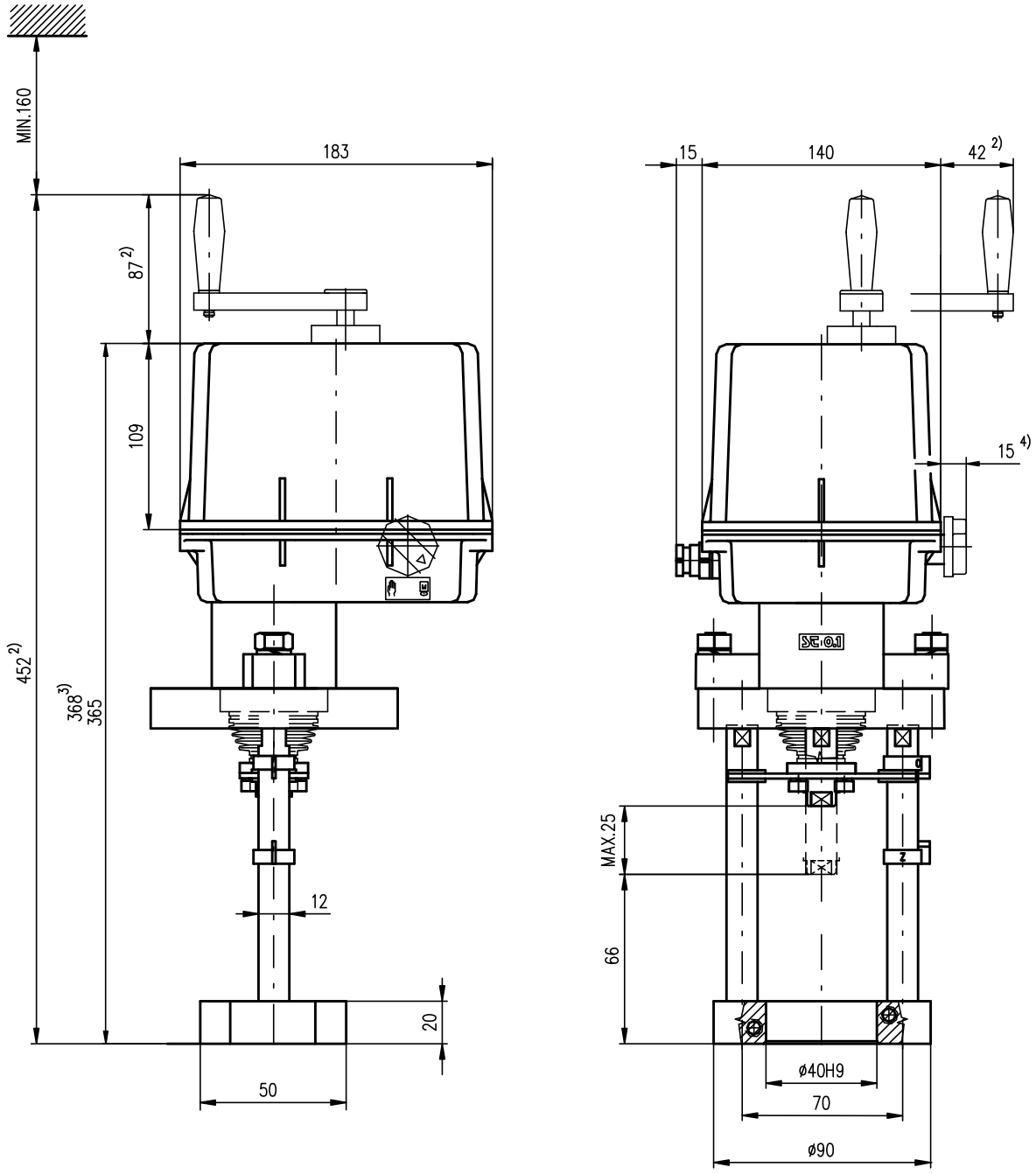
POZNÁMKY \ NOTES \:

2) PLATÍ PRE RUČNÉ OVLÁDANIE S TRVALOU POHOTOVOSŤOU \ VALID FOR MANUAL CONTROL WITH PERNAMENT STANDBY \

3) PLATÍ PRE RUČNÉ OVLÁDANIE BEZ TRVALEJ POHOTOVOSTI \ VALID FOR MANUAL CONTROL WITHOUT PERNAMENT STANDBY \

4) PLATÍ PRE RUČNÉ OVLÁDANIE \ VALID FOR MANUAL CONTROL \

VYHOTOVENIE S MIESTNYM OVLÁDANÍM S OVLÁDACOU DOSKOU DMS3 PODĽA P-2045
\ DIMENSIONS OF VERSION WITH LOCAL CONTROL WITH CONTROL BOARD DMS3 ACCORDING TO P-2045 \ P-1470



POZNÁMKY \ NOTES \:

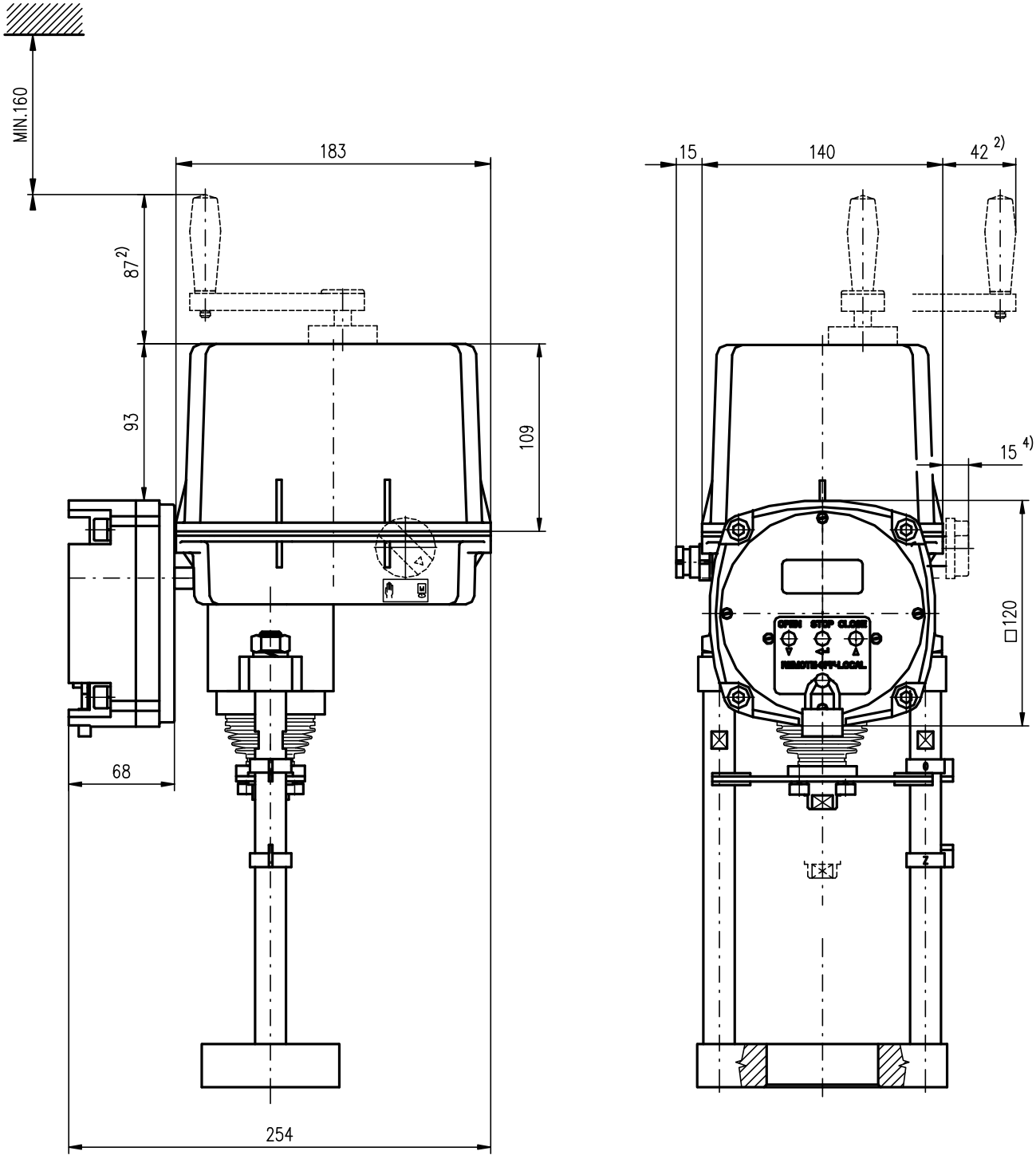
2) PLATÍ PRE RUČNÉ OVLÁDANIE S TRVALOU POHOTOVOSŤOU \ VALID FOR MANUAL CONTROL WITH PERNAMENT STANDBY \

3) PLATÍ PRE RUČNÉ OVLÁDANIE BEZ TRVALEJ POHOTOVOSTI \ VALID FOR MANUAL CONTROL WITHOUT PERNAMENT STANDBY \

4) PLATÍ PRE RUČNÉ OVLÁDANIE \ VALID FOR MANUAL CONTROL \

VYHOTOVENIE S MIESTNYM OVLÁDANÍM S OVLÁDACOU DOSKOU DMS3 PODĽA P-2045
\ DIMENSIONS OF VERSION WITH LOCAL CONTROL WITH CONTROL BOARD DMS3 ACCORDING TO P-2045 \

P-1472



POZNÁMKY \ NOTES \:

2) PLATÍ PRE RUČNÉ OVLÁDANIE S TRVALOU POHOTOVOSŤOU\ VALID FOR MANUAL CONTROL WITH PERNAMENT STANDBY \

4) PLATÍ PRE RUČNÉ OVLÁDANIE \ VALID FOR MANUAL CONTROL \

P-2045

6.3 Guarantee service check report

Service center:D	
Date of repair:	***Guarantee repair no.:***
User of actuator:	***Claim applied by:***
Actuator type number:	***Actuator production number:***
Product claim fault:	***Detected product fault:***
Used spare parts:	
Remarks:	
Issued on a day:	***Signature:***

6.4 *Post guarantee service check report*

Service center:	
Date of repair:	
User of actuator:	***Actuator operating place :***
Actuator type number:	***Actuator production number:***
Detected product fault:	
Used spare parts:	
Remarks:	
Issued on a day:	***Signature:***

6.5 Commercial representation

Slovak Republic:

Regada, s.r.o.,
Strojnícka 7,
080 01 Prešov
Tel.: +421 (0)51 7480 460,
Fax: +421 (0)51 7732 096,
E-mail: regada@regada.sk

Czech republic:

REGADA Česká s.r.o. (Ltd.) – exclusive representation REGADA, s.r.o. (Ltd.) for sale of electric actuators
Regada Česká, s.r.o.
Kopaninská 109
252 25 Ořech
PRAHA – západ
Tel.: +420 257 961 302
Fax: +420 257 961 301