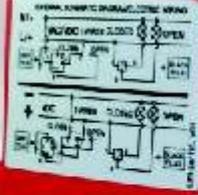


Manual

for

Quarter Turn Actuators J2, J3, J3C



MOD: H20 TYPE: J3C

VOLTAGE AC 230V 50/60Hz
TORQUE 10 Nm
MATERIALS PC/ABS

CE 01/04 10248000

Content

Foreword	4
General advise	5
Safety advise	6
Device description	8
Model Overview	9
Part description	10
Type label	11
Status LED	12
Emergency manual override	13
Assembly	14
Environmental conditions	14
Maintenance	14
Mounting of the valve	15
Alternation multi flange plate in model 10 and 20	17
Conversion double square adapter	18
Electrical Installation	19
Position Adjustment	22
FAQ`s	25
<u>Special models</u>	
Actuators with BSR - Battery Spring Return	27
Actuators with DPS Positioner	29
Change the signal	29
Working angel adjust	30
adjustment the DPS positioner systems	30
FAQ`s	32
Actuators with potentiometer	33
3 positions actuators	34
Actuators with 2 phases control	35
<u>Appendix</u>	
Technical data	37
Current consumption	38
Wiring diagrams	39
Dimensional drawings	44

Foreword

Dear customer, dear assembler and user

these mounting and operating manual apply to all Electrical Part Turn Actuators of the series J2, J3, J3C. It should provide information and knowledge for you to execute the assembly and instalation. Pay attention particularly to the security indications!

The actuators are designed for the automation of industrial valves, e.g., ball valves and butterfly valves - divergent applications requires a consultation by the manufacturer. They are delivered in two voltage versions.

Low version (L):	J3/J3C 20-85	12 - 24 V AC/DC (50/60 Hz)
	J2 10/J3C140/300	24 V AC/DC (50/60 Hz)
High version (H):	all models	85 - 240 V AC/DC.

The operational areas lie, e.g., in the sectors of machinery and plant engineering and the ventilating and air-conditioning systems, solar technology, water treatment and irrigation.

If you have any questions regarding the Electrical Part Turn Actuator do not hesitate to contact us.

General advise

Transportation

The transportation to the installation location should always take place in a fixed packaging. Do not carry the actuator on the hand wheel and do not attach any hoists to the hand wheel.

Receiving control

Check directly after delivery the actuator for possible damages in transit and faults. Don't leave any parts in the packaging. Check on the bases of the delivery note and the type label at the actuator whether the delivered goods correspond to your order.

Storage

Camp down actuators in well ventilated, dry rooms. They must be protect against humidity, dust, dirt, temperature change and solar radiation.

If a storage is not possible under the described conditions, the built-in control room heater has to be wired actively. For this purpose, the actuator must be connected to the mains voltage corresponding to the voltage indicated on the nameplate.

Damages in transit

Claims for damages related to shipping damage are immediately reported to the delivering transport company. The transport packaging should be kept. Customize a damage report for return (due to damage / repairs). Damage claims can be made only as asserted. Return the delivery, after agreement, back to us, if possible with their original packaging und and completed return form.

Send us the document via fax or mail. After our approval send you the goods together with the return document and return material authorization number to our service departmant.

Safety advise

Generally

These safety instructions are to be considered by any person concerned with the operation, maintenance or repair of the actuators. The proper and safe operation requires proper transport, proper storage, mounting and careful operation

Maintenance and repair work may only be performed by qualified personnel. When wiring electrical equipment the applicable VDE and EVU regulations are observed. Electrical protection measures (grounding resistance, etc.) are to be checked. When working on the actuator or connected to these devices and system components, the supply voltage must be switched off. Perform the installation, repair work in compliance with the applicable statutory and professional safety and accident prevention regulations!

The safety aspects are always depending on the circumstances and the timing of the assembly, disassembly, adjustment, commissioning and are therefore always to adapt to the application

Example: The actuator is operated in an operational chemical plant. The hazards of commissioning are in a different dimension than when it is operated only for testing purposes in a dry part of the system

Since we do not know the circumstances at the time of installation / removal / dismissal / commissioning, refer to the following descriptions may be hazards that are not relevant to you. Note which apply to your situation!

Mounting

Switch off all equipment, machinery, equipment which is affected by the installation or repair and disconnect the equipment, machinery, plant, where appropriate, from the net! Check whether the plant shut-down causes potential danger ! Inform the shift foreman, safety engineer or the conductor immediately to prevent a fault in the actuator, by run out or spilling of liquids or leakage of gases, with suitable measures!

Check the correct functioning of the safety devices (e.g. Emergency-Stop-Switch/Safety valves etc.)!

Provide for adequate vibration isolation! Vibrations can cause damage depending on the type or resonance with the actuator components. Be particularly sensitive to wearing parts such as potentiometers, motors or electronic components. The use in vibration-prone environments has to be coordinated with the actuator manufacturer.

When installed in wet environments and in areas with significant temperature changes in each case the built-in control room heater has to be kept actively after the actuator is stopping in the end position.

Fireplaces, stoves, direct sunlight and other heat sources can emit large amounts of energy. This heat radiation should be avoided by appropriate shielding of the actuator.

Safety advise

Settings and Commissioning

Make sure that the starting or the test settings on the actuator, no potential hazards to personnel or the environment. If necessary, set to warning signs, so that unintentional operation is prevented!

During commissioning of the electric part turn actuator manually or electrically, the position of an attached valve is changed. This allows the flow of gases, vapours, liquids, etc. are enabled or interrupted.

Check that the valve is actually closed 100 percent when the controller signals the corresponding position!

Avoid being trapped by suitable measures that by moving parts limbs!
Check the correct function of all safety devices (e.g. emergency stop buttons, safety valves ...)
We assume that you have a sound mechanical and electrical skills.

First, check the following circumstances :

- Does the actuator the required version (torque, protection, voltage, swivel angle, etc.).
- Does the wiring acc. to the voltage (see diagram/type label).
- Is it possible to adjust the valve on the manual override.

Switch from AUTO to MAN, move the handwheel / handlever to synchronize the transmission then exit the adjustment path manually and turn back to the starting position. Then switch from MAN to AUTO and move the handlever / hand wheel onesmore.

The actuator may be used only for the purpose it was designed. Open the electric rotary actuator only so far as it is described in this documentation.

Before mounting the actuator is the ease of movement of the actuator to consider. All cables that are to be connected to the supply, before the electrical installation.

Upon completion of maintenance or repair, check the correct function and possibly adhering to the target angular position of the actuator and the function of the adjusted to the angular positions switch. To clean the housing, do not use abrasive, corrosive or flammable cleaners or high-pressure cleaning equipment.

Device Description

Application

The electro-mechanical actuators for actuation of valves with a rotation angle of 0° -90° / 0° -180° / 0° -270° or freely definable pivot angles are built extremely compact and fully equipped.

Features:

- Clear structure
- maintenance
- flexibility
- security

Integrated Systems:

- ETL (electronic torque limiter)
- AVS (auto voltage sensing)
- ATC (automatic temperature control)
- PEC (protected electrical connection)
- mechanical unlocking

Function

ADC-motor actuate the main shaft via a gearbox.

The path control is via two integrated micro switches and signaling via two potential free limit switches. They are operated by cams on the main shaft, before it reaches the limit switch. A mechanical travel limit is omitted.

The visual position indicator provides information on whether the valve is open or closed. On the standardized interface fittings valves can be mounted directly or through appropriate adapters. The electrical connection is via DIN connector. The type label and the wiring diagram to make every actuator easily identifiable.

Equipment

ETL: All actuators are equipped with an Electronic Torque Limiter (ETL), this function is displayed for series models J3 and J3C by the LED on the cover, it protects the actuator and the valve from damage by high torque.

AVS: The Voltage Sensing system covers all voltages and voltage types from each model with only two variants. Voltage ranges are controllable without any configuration from:

Version L (Low) : Series J3/J3C20 to 85	12 to 24 VAC/DC (50/60 Hz)
Series J210 and Series J3C140/300	24 V AC/DC(50/60 Hz)

Version H (High) : Models 10 to 300	85 to 240 VAC / DC (50/60 Hz)
-------------------------------------	-------------------------------

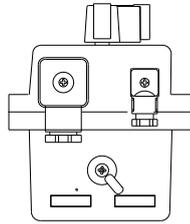
ATC: The control room heater is integrated and active as long as voltage is applied to the power connector.

mechanical unlocking: The actuator electronics enables easy switching from automatic mode (AUTO) to Manual mode (MAN). The transmission is automatically unlocked, when limiter is active, by a slight backward rotation of the motor.

Device Description

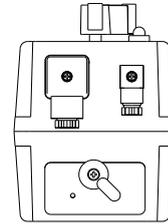
Model Overview

J2 L/H 10



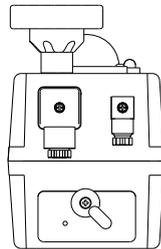
Torque:1	0 Nm
Break torque: 1	2 Nm
Voltage range L:2	4 V AC/DC
Voltage range H: 8	5 - 240 V AC/DC
Protection:I	P65

J3 L/H 20



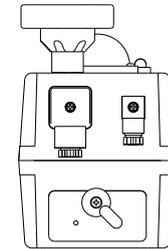
Torque:2	0 Nm
Break torque: 2	5 Nm
Voltage range L:1	2 - 24 V AC/DC
Voltage range H: 8	5 - 240 V AC/DC
Protection:I	P65

J3C L/H 20



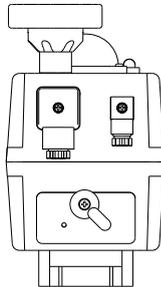
Torque:2	0 Nm
Break torque: 2	5 Nm
Voltage range L:1	2 - 24 V AC/DC
Voltage range H: 8	5 - 240 V AC/DC
Protection:I	P67

J3C L/H 35



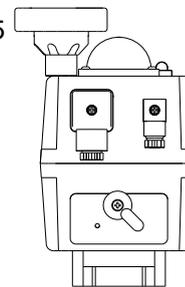
Torque:3	5 Nm
Break torque 3	8 Nm
Voltage range L:1	2 - 24 V AC/DC
Voltage range H: 8	5 - 240 V AC/DC
Protection:I	P67

J3C L/H 55



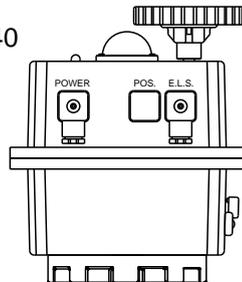
Torque:5	5 Nm
Break torque: 6	0 Nm
Voltage range L:1	2 - 24 V AC/DC
Voltage range H: 8	85 - 240 V AC/DC
Protection:I	P67

J3C L/H 85



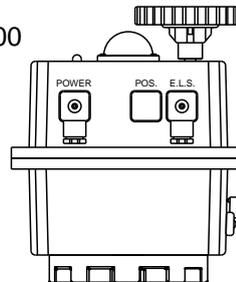
Torque:8	5 Nm
Break torque: 9	0 Nm
Voltage range L:1	2 - 24 V AC/DC
Voltage range H: 8	85 - 240 V AC/DC
Protection:I	P67

J3C L/H 140



Torque:1	40 Nm
Break torque: 1	70 Nm
Voltage range L:2	4 V AC/DC
Voltage range H: 8	5 - 240 V AC/DC
Protection:I	P67

J3C L/H 300

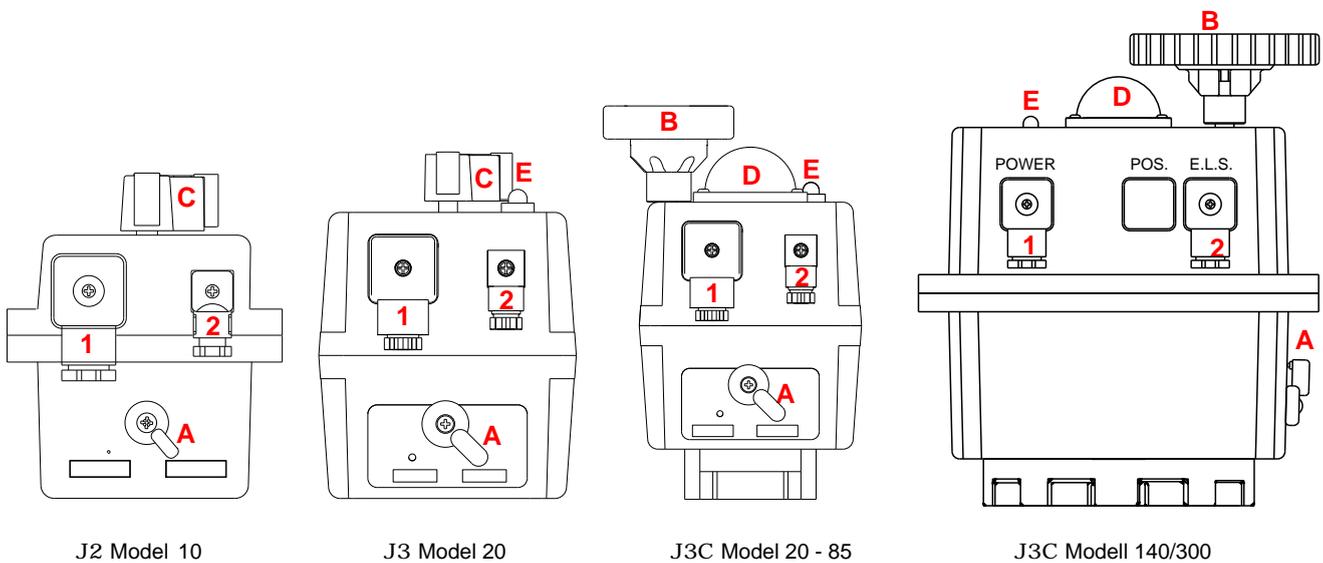


Torque:3	00 Nm
Break torque: 3	50 Nm
Voltage range L:2	4 V AC/DC
Voltage range H: 8	5 - 240 V AC/DC
Protection:I	P67

Device Description

Parts Description

- 1** - Power Connector
- 2** - Connector for the Additional Limit Switches
- A** - Switch from Automatic to Manual (AUTO/MAN)
- B** - Hand Wheel
- C** - Hand Lever/Indicator
- D** - Optical Position Indicator/Dome
- E** - Power LED (not for model 10)



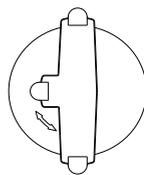
J2 Model 10

J3 Model 20

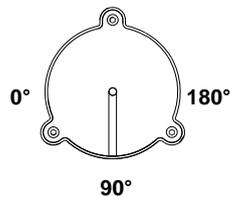
J3C Model 20 - 85

J3C Modell 140/300

Optical Position Indicator:



Hand lever / Position Indicator
- Models J2 10 and J3 20



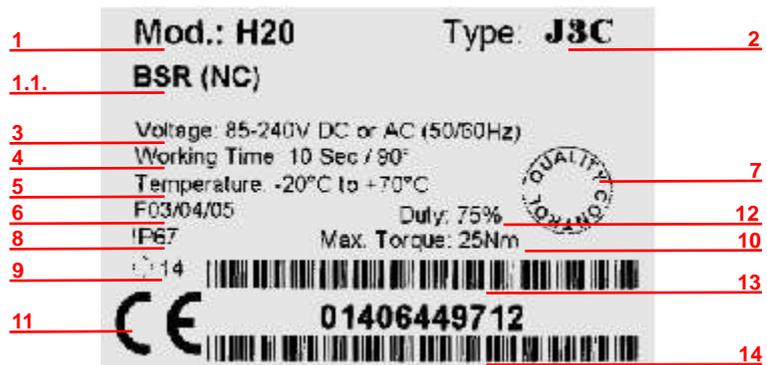
Dome Position Indicator
- Models J3C

Device Description

Type label

By means of the nameplate identifies each actuator.

Note: The label should not be damaged or removed.



1. MOD. - Model	Specifying the model. The name is composed of the voltage variant L or H and the output torque Nm.
1.1. Option	e.g. DPS, BSR, etc.
2. TYPE - Type	Specifying the series.
3. VOLTAGE - Voltage	Indication of the voltage range in which the drive can be operated (It's to be noted that the L-variant models 20 to 85 with a DC circuit must applied of at least 11.8 V to ensure a secure function.)
4. WORKING TIME	Specifying the operating time.
5. TEMPERATURE	Specifying the temperature range in °C.
6. Flansch	Specifying the potential to build up to ISO 5211 flange versions.
7. Quality control	It is tested - next to production-based tests - the function, duration, torque limit feedback, all of the parameters and the presence of all parts.
8. Protection Class	Protection according to EN 60529
9. Receiving	specifying the receiving square bar in mm. The conformation consists of an octagon for direct construction for valves with parallel or 45° offset shaft
10. MAX.TORQUE	Specifying the torque. The starting torque results from an increased effort to drive out of the seat fittings. The break torque is not the working torque!
11. CE Marking	By affixing the CE marking the manufacturer confirms that the product complies with the European Directive.
12. DUTY - Duty Rating	Maximum permissible duty. The duty cycle always refers to 10min (100 % = 10 min).
13. Barcode	production data
14. Barcode	serial number, indicating the serial number. With the serial number, the ensure uniqueness of the actuator and the history of the actuator can be tracked

Device description

Status LED

The operating status of the actuator is displayed by the signal light in the lid. The flashing frequency is shown in the table below as a binary number (in the "Display" column). The time per binary is 200 msec.. A reporting cycle consists of 4 columns of 4 binary numbers.

The configuration of the binary numbers is as follows:

1 = LED on

0 = LED off



Situation for models J3/J3C 20 to 85	Time	Indicator
Actuator has no supply voltage	100%	0000 0000 0000 0000
Actuator is ready for operation	100%	1111 1111 1111 1111
Protection circuit limiter is activated	200 msec	1010 1010 1010 1010
Actuator in MANual mode	200 msec	0111 1011 1100 0000
Actuator in MANual mode and one limit switch is actuated	200 msec	0111 0111 1111 1111
<u>Only for actuators with BSR (Battery Safety Pack)</u>		
Actuator without power and working with the BSR system (max. 3 min).	200 msec	1000 0000 0000 0000
Only for actuators with BSR (Battery pack safety) The battery requires charging.	200 msec	1010 1000 0000 0000

Situation for models J3C 140/300	Time	Indicator	Colour LED
Actuator has no supply voltage	100%	0000 0000 0000 0000	LED off
Actuator with power being supplied "OPEN"	100%	1111 1111 1111 1111	green
Actuator with power being supplied "CLOSE"	100%	1111 1111 1111 1111	red
Actuator moving from "OPEN" to "CLOSE"	100%	1111 1111 1111 1111	flashing red/orange
Actuator moving from "CLOSE" to "OPEN"	100%	1111 1111 1111 1111	flashing green/orange
torque limit function on, from "OPEN" to "CLOSE"	200 msec	1010 1010 1010 1010	flashing red
torque limit function on, from "CLOSE" to "OPEN"	200 msec	1010 1010 1010 1010	flashing green
Actuator in MANual mode	200 msec	1111 0110 1000 0000	flashing orange
Actuator without power and working with the BSR system (max. 3 min) BSR NC	200 msec	1000 0000 0000 0000	red/off
Actuator without power and working with the BSR system (max. 3 min) BSR NO	200 msec	1000 0000 0000 0000	green/off
Battery protection. Danger!			
The battery needs recharging. BSR disabled.	200 msec	1010 1000 0000 0000	orange/off
Actuator move via DPS signal STOP	200 msec	1111 1111 1111 1111	blue
Actuator move via DPS signal OPEN	200 msec	1111 1111 1111 1111	blue/green
Actuator move via DPS signal CLOSE	200 msec	1111 1111 1111 1111	blue/red

Device description

Emergency manual override

All J2 and J3/J3C models have a manual override for the operation in case of power failure. The lever for this purpose located on the side of the actuator.

The drives have two operating modes: - Automatic mode = **AUTO**
 - Manual operation mode = **MAN**

Position switch MAN

The motor is mechanically disconnected from the transmission.

The actuator can be instantly adjusted manually with the hand wheel / lever. The motor current is interrupted after about four times the driving period.



Manual Operation - MAN

Position switch to AUTO

The switching from the position MAN to AUTO gets done with slight rotation of the hand wheel/lever, so that the transmission is synchronized with the motor and the gear engages.



Automatic Operation - AUTO

There are two ways of switching from "MAN" to "AUTO" to activate the motor again:

1. It is in MAN position an end position manually approached (Open or Closed). Upon actuation of the limit switch the motor is activated again. If the motor is running, you can switch the lever from MAN to AUTO and the actuator is ready for operation.
2. The actuator is switched from MAN to AUTO. The supply voltage is briefly turned off and turned on again. This will reset the actuator and is ready for operation. For model 20 to 85, the hand lever/hand wheel rotates with the electrical travel.

For model 20 to 85, the hand lever/hand wheel rotates with the electrical travel.

The hand lever / hand wheel must not be blocked!

Never remove the screw of the switch/lever, since defects in this transmission may result. If the screw gets removed, the warranty expires.

Assembly

Environmental conditions

The actuator must be protected against outdoor heating by solar radiation, freezing, UV radiation (e.g. shelter / roof).

To avoid condensation, the control room heater must be active, i.e. the supply voltage must be applied continuously. Cabling and connector seals should be checked for proper fit and tightness. In cold or hot liquids above or below the temperature range (-20°C to 70°C), a temperature derivative should be provided.

In applications where vibrations are expected, e.g. compressors, motors, line strokes, in the pipeline pipe compensators have to be provided.

Mounting

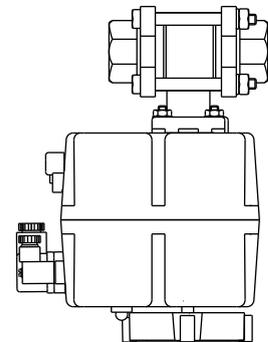
According to the use- and safety- requirements, the part of the plant design or operator has to require inspection- and maintenance- cycles as well as instructions and documentations on the operating characteristics of the actuators.

It should be noted that the manual override is accessible and the position indicator is visible. Depending on the version the actuator is pre-adjusted according to the imprint. You may adjust the swivel angle (see "position adjustment").

The assembly of the actuator is limited to the mechanical assembly in that equipment / machinery / plant part, which contains the actuating device and to the terminal of the actuator to the motor actuator- and control lines.

To the following description we assume that you have read the previous chapter carefully. Pay attention to the assembly and disassembly instructions and warning notes written in **the chapter on safety advise**.

Actuators must not be installed headlong. (flange / fitting above)



not permissible installation

Maintenance

The actuators require no maintenance.

A control test to function according to the security requirements of the plant system is recommended, especially for seldom-used actuators.

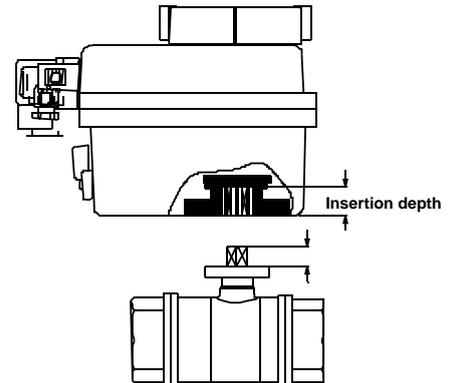
After commissioning, the connection of the actuator with the valve should be checked after some time. Here also the ease of the assembled valve is to be tested. Generally attention must be paid to tight fit of the lid and the tightness of the cable gland. Unused connectors must be covered accordingly.

After long plant shut-downs valves can be extremely stiff. A manual actuation (without any actuator) might be necessary before restarting (notice instructions of the valve suppliers).

Assembly

Mounting of the valve

The valves shall be designed according to interface DIN3337/ISO5211. An alignment of actuator and valve shaft must be ensured. The technical requirements must comply with the performance of the actuators. Blocking the output shaft or the hand controls may result in damage to the actuator.



Insertion depth of the actuator drive adapter

The insertion depth of the valve's square socket to be assembled to the actuator's double square socket should be always less than or equal to the insertion depth of actuator.

As a rule of thumb for planners is at least:

Insertion depth = size of the specified double squares

Should this not be considered, it may cause a malfunction or even damage of the actuator!

Insertion depth in detail:

Type	Octagon - 9mm	Octagon - 11mm	Octagon - 14mm	Octagon - 17mm	Octagon - 22mm
10	-	-	15mm	-	-
20	11mm	13mm	15mm	-	-
35	11mm	13mm	15mm	-	-
55	-	-	16mm	19mm	-
85	-	-	16mm	19mm	-
140	-	-	-	19mm	24mm
300	-	-	-	19mm	24mm

Thread engagement of fastening material

It is to ensure a sufficient depth. In models 10, 20 and 35, the screw / the threaded pin must not be screwed lower than the thread of the multi flange plate to prevent a lifting of this flange plate.

Insertion depth in detail:

Typel	F03/05	F03/04/05	F05/07	F07/10	F07/10
10	9mm	-	-	-	-
20	-	9mm	-	-	-
35	-	9mm	-	-	-
55	-	-	25mm	-	-
85	-	-	25mm	-	-
140	-	-	-	25mm	25mm
300	-	-	-	25mm	25mm

Recommendation:

If possible, use headless screws with nuts and washers for the construction of the valve, thus raising the flange is prevented.

The use of threaded pins depends on the valve flange. Details can be found in the valve data sheet.

Advantages of using threaded pins:

- fast centring of the valve and actuator
- easier removal of the valve and actuator in the place of assembly, e.g. during maintenance, replacement of components

Assembly

Flange hole thread:

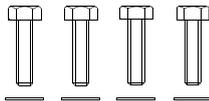
Flange	F03	F04	F05	F07	F10	F12
Screw	M5	M6	M6	M8	M10	M12

Required mounting material:

Material for the direct actuator design

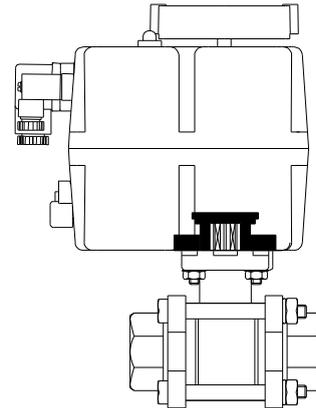
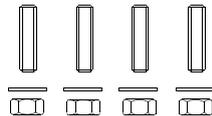
With screws:

- 4 screws
- 4 washers



Alternatively with headless screws:

- 4 headless screws
- 4 washers
- 4 nuts



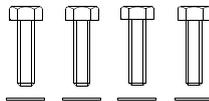
Direct mounting

Material for Assembly - actuator on valve bridge and adapter

- a bridge
- adapter

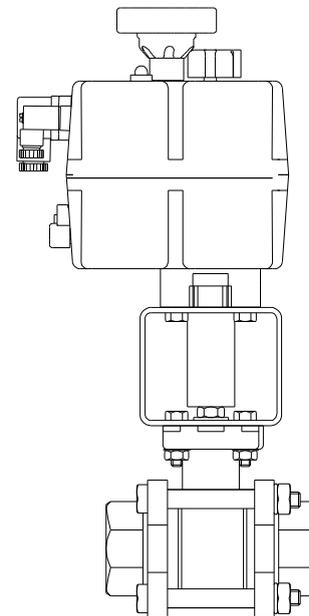
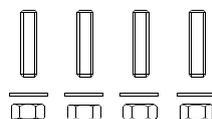
with screws:

- 8 screws
- 8 washers
- 4 nuts



alternatively with headless screws

- 8 headless screws
- 12 nuts
- 12 spring washer



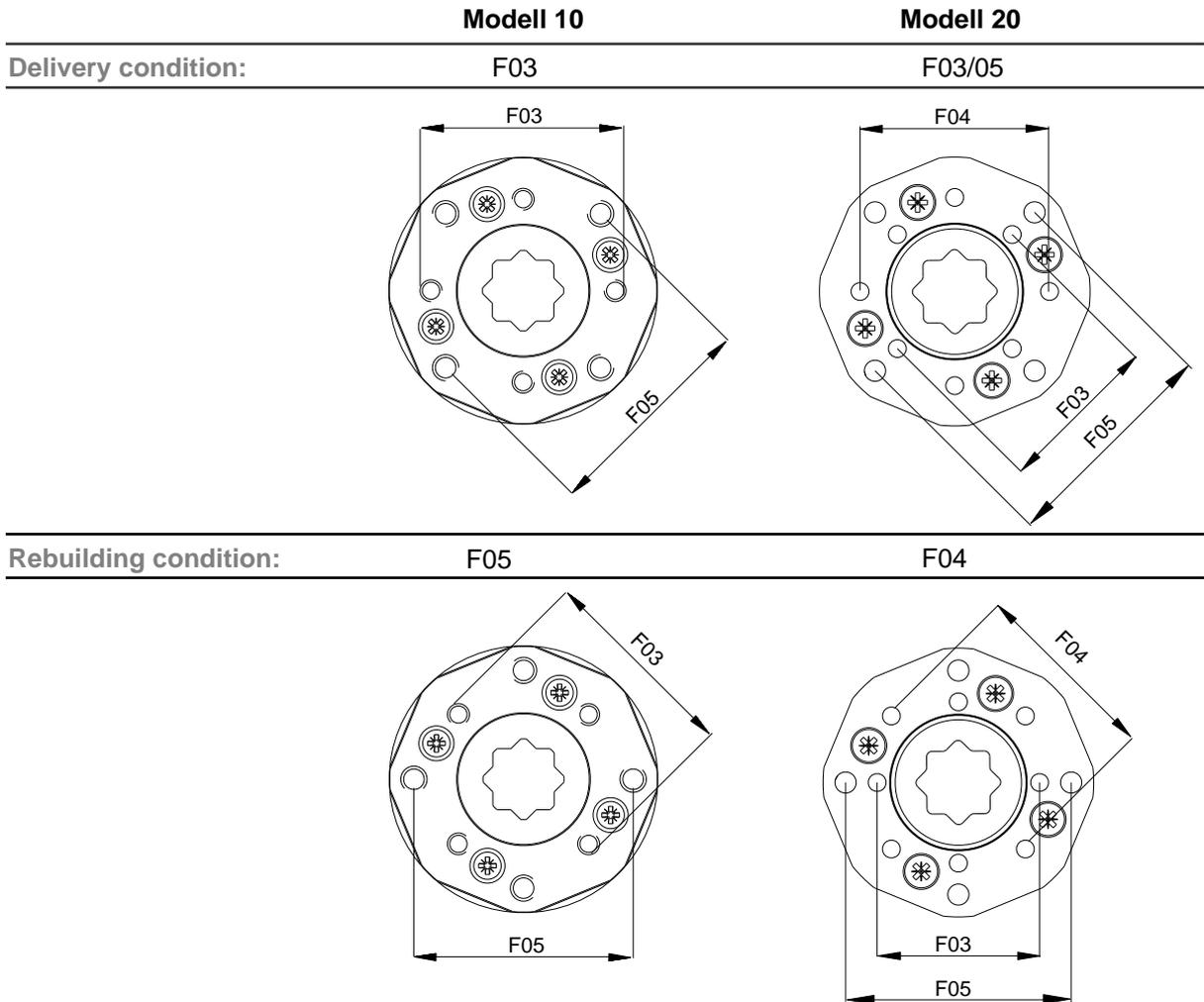
Assembling with bracket and adapter

Assembly

Alternation multi flange plate in types 10 and 20

To use all flanges sizes according to ISO 5211 is structurally necessary (for model 10 and 20) to rotate the multi flange plate.

Thus the position indicator of the actuator matches with the function of the valve (on / off), the multi flange plate must be rebuilt with model 10 and 20, if necessary.



Remodeling of the plate is as follows:

1. Loosen the screws.
2. Threaded pins/ screws into the threaded hole and thus press the flange of the housing fit.

Note: Please do not try to pull out the flange with a pliers at the threaded holes (see picture). The threaded holes may be damaged!



3. Turn the flange by 45°, and tighten screws.

Assembly

Conversion double square adapter

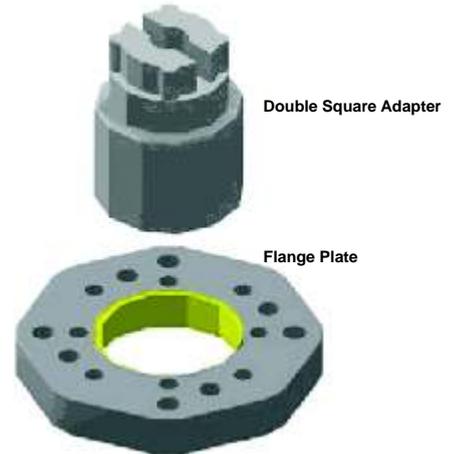
Appropriate double squares inserts available from your specialist dealer.

Model 20/35

Possible double square - 9 mm/11 mm/14 mm

Working steps are as follows:

- remove the multi flange plate
- remove the adapter
- insert appropriate adapter
- inserte the multi flange plate again

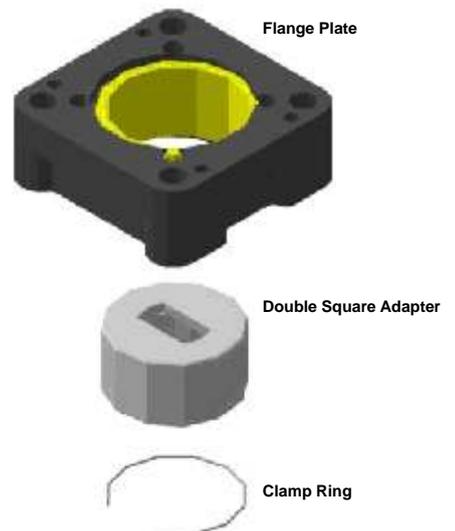


Model 55/85/140/300

Possible double square - Model 55/85 - 14 mm/17 mm
- Model 140/300 - 17 mm/22 mm

Working steps are as follows:

- remove the clamp ring
- remove the double square adapter
- insert appropriate adapter
- insert the clamp ring



Electrical Installation

Electrical Installation

Basically, valid for wiring, voltages and other data the wiring diagram and type label sticker on the actuators.

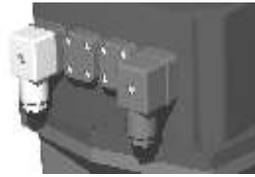
In case of discrepancies or malfunctions necessarily consult us, to prevent damage or consequential damage.

Complete units consisting of valve and actuator need only be wired via the connector. Opening the housing cover is only necessary to readjusting of the cams . Connecting, operating or open the actuators may only be performed by qualified personnel in accordance with VDE regulations.

Standard actuators are single phase to connect and must be interlocked controlled by relay or switch. An external fuse must be provided. It must not be connected a consumer in parallel to the actuator.



J2 10/J3 20
J3C 20/35/55/85



J3C 140/300

The connectors of the actuator are DIN connectors. Make sure that the connection cables have the correct diameter and the gaskets are installed correctly in the connector gland, otherwise the protection class can not be guaranteed and humidity enters the actuator. The connectors are secured to the actuator with a screw.

Make sure that the screw will not overwound!

Cable diameter:

model	small plug		large plug	
	min. Ø	max. Ø	min. Ø	max. Ø
	DIN EN 175301-803c		DIN EN 175301-803A	
10 - 85	5mm	5mm	8mm	10,5mm
140 - 300	-	-	8mm	10,5mm

Electrical Installation

Mechanical connection of power supply and control line

- loosen the fixing screw of the plug and pull it from the actuator terminal
- open the plug by pulling the clamp from the housing
- lead the cable through to the cable gland on the connector housing
- connect the cable according to the wiring diagram
- Secure the cable glands on the plugs

Attach the connector to the actuator and secure it with the provided screws.

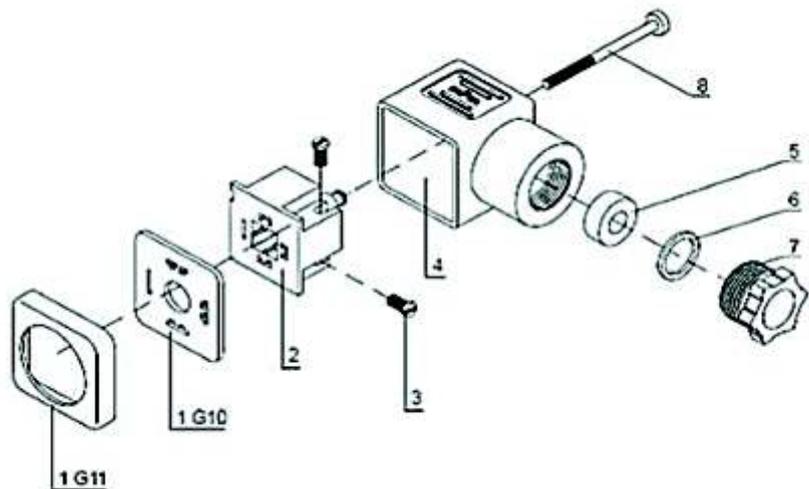
Tighten the cable glands so tight that the effective strain relief and grommet set of protection (IP) corresponds. If too large cable diameter, sub-distribution is provided.

Route the two cables to their origin positions (possibly in conduits or cable shafts). A drip loop shall be provided at the cable laying.

Make sure that the cables are not pinched or sheared off and they are not under pressure or strain.

Do not route the control cables in parallel to other cables that lead to large electricity consumers. Strong electromagnetic fields could induce currents in the control lines, which may lead to malfunction, possibly shielded cables must be used.

- 1 Seal
- 2 Spindle Clamp
- 3 Cable Clamp
- 4 Housing
- 5 Seal
- 6 Disc
- 7 Cable Gland
- 8 Locating Screw

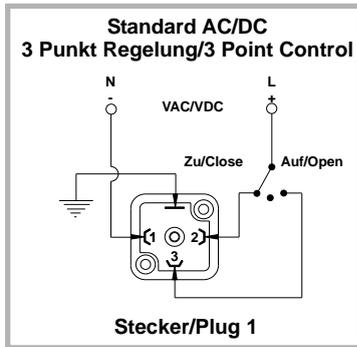


Electrical Installation

Electrical connection of the standard actuator (off/on)

Loosen the screws of the connector plug and pull this off.

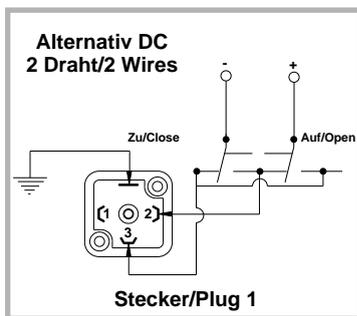
Connecting the power cable to the voltage (AC / DC): Connector 1



= grounding connection
 Pin 1 = neutral conductor (N/-)
 Pin 2 = phase conductor "close" (L/+)
 Pin 3 = phase conductor "open" (L/+)

Alternative connecting the supply line to direct current (DC): Connector 1

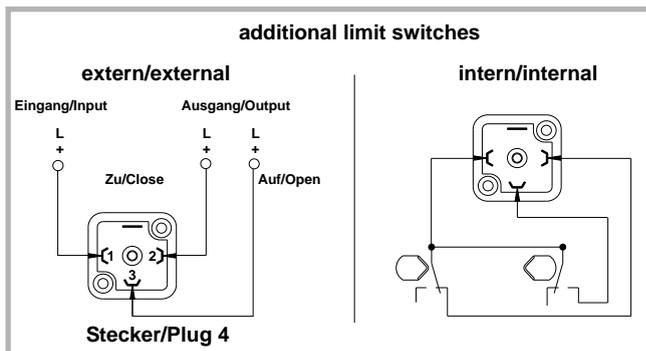
This connection is bi-polar. The reversal of the movement is realized by a changeover relay between PIN 2 and PIN 3.



= grounding connection
 Pin 2 = + and - changer
 Pin 3 = - and + changer

Connection of additional limit switch: Pin 4

The electric actuators are equipped as standard with two additional volt- / potential- free limit switches.



Pin 1 = Input (+/L)
 Pin 2 = output "close" (+/L)
 Pin 3 = output "open" (+/L)

Position Adjustment

Safety

All work in the actuator must be carried out only by qualified personnel and disconnected power source. Touching live components can have a dangerous electrical shock and damage the electronics!

Purpose

The actuators are pre-adjusted. Depending on the envisaged use, clearance or lack of alignment of valve connections or adapters it may be necessary to adjust the actuator in his travels to the particular valve or to adjust feedback different due to the circuit. After prolonged use or under strong vibrations, readjustment may be required.

Note

All bolts and gaskets are to set to its original position for the assembly. Please note the instructions of the valve manufacturers and system operators.

preparatory measures

1. Pull the connector after loosening the screws (note seals) .
2. Loosen the screws on the hand wheel and remove it, respectively remove the T-handle gently pull upwards with a wide-edge screwdriver.
3. Loosen and remove the housing screws.
4. Carefully pull cover straight up and do not twist, possibly for type 140 and 300 push the upper part with both hands up (levering with a screwdriver can lead to leaks). Put the cover to one side (cables can stay connected to the board). Note, however, the cable lead that needs to be restored for the assembly.

Setting the limit switches

Procedure:

Switch actuator from automatic to manual mode and approach to changing position of the manual override.

Engine shut-down for Models 10 to 85

Now you can plug a 2 mm allen wrench or a small screwdriver into the gap of the cam and twist it until a clicking sound of the switch is heard. Turn the cam always from the direction in which the main shaft will rotate to the position of the switch.

The adjustment tool may not be supported on actuator components when adjusting the end positions!

The cams are secured by a snap ring on the shaft and can be adjusted with a 2mm Allen wrench.



End position

The adjustment of the end positions is accomplished in the same manner, with the aid of a resistance meter . The resistance meter is connected to pin 1 and 2 (closed position) or to pin 1 and 3 (open position) of the limit plugs (see wiring diagram). The signal switches must be set so that they are triggered just before reaching the engine shut-down. Of course, they can also be adjusted to any point in the pivot range of the actuator, such as intermediate positions to display.

To avoid problems, you should adjust the cams 3 and 4 always about 3 degrees before the engine shut-down.

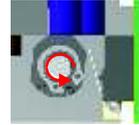
Position Adjustment

The standard actuator is always set to 0° and 90°.

1. Adjusting the closed position of more than 0°.

Turn the cam 1 and 3 counter clockwise.

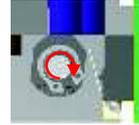
The cam 3 has to reach the switch certifier approximately 3° earlier than cam 1.



2. Adjusting the closed position to less than 0°.

Rotate the cam clockwise 1 and 3.

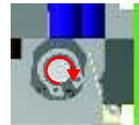
The cam 3 has to reach the switch certifier approximately 3° earlier than cam 1.



3. Adjusting the open position of more than 90°.

Turn the cam 2 and 4 clockwise.

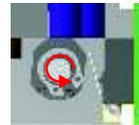
The cam 4 must reach the switch certifier approximately 3° earlier than cam 2.



4. Adjusting the closed position is less than 90°.

Turn the cam 2 and 4 counter-clockwise.

The cam 4 must reach the switch certifier approximately 3° earlier than cam 2.



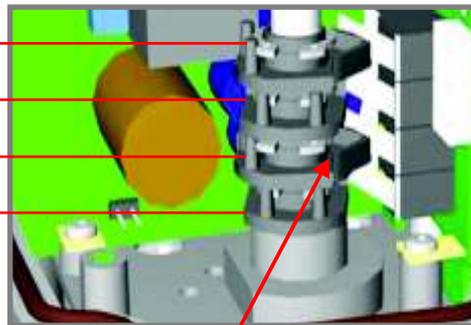
Arrangement of the cams

Cam 4 actuates the micro switch volt-free feedback "OPEN"

Cam 3 actuates the micro switch volt-free feedback "CLOSED"

Cam 2 actuates the micro switch for the stop "OPEN"

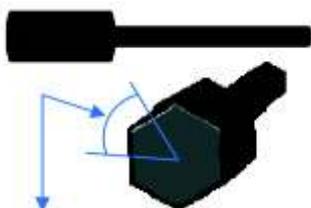
Cam 2 actuates the micro switch for the stop "CLOSED"



Place 2 mm Allen wrench in position to adjust cams.

Engine shut-down for Models 140 and 300

Tool: One special plastic wrench. The wrench was supplied with the actuator and mounted in the Handwheel. To move the cams, introduce the special plastic wrench in the hole of the cam and turn it round (see both options on the enclosed pictures).



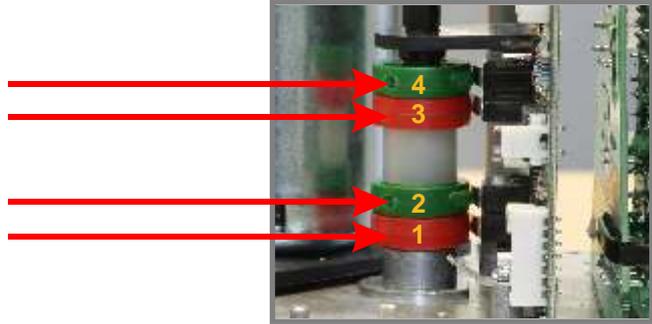
Tool
A turn flat to flat adjust the travel angle 2°
A complete turn adjust the travel angle about 12°



Position Adjustment

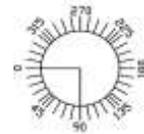
- Cam 4 is to adjust the open position confirmation
- Cam 3 is to adjust the closed position confirmation

- Cam 2 is to adjust the open position
- Cam 1 is to adjust the closed position



To ensure that the position confirmation works, adjust the confirmation cams (3 & 4) 3° (+/-1°) before the motor stop. To avoid problems, you should adjust the cams 3 and 4 always about 3 degrees before the engine shut-down.

The standard actuators are always adjusted at 0° (close) and 90° (open).



To adjust the close position at less than 0°.

Turn the wrench to clockwise direction - cams 1 and 3.

The cam 3 should press the lever of the micro switch approximately 3° earlier than the cam 1.



To adjust the close position at more than 0°.

Turn the wrench to counterclockwise direction - cams 1 and 3.

The cam 3 should press the lever of the micro switch approximately 3° earlier than the cam 1.



To adjust the close position to more than 90°.

Turn the wrench to clockwise direction - cams 2 and 4.

The cam 4 should press the lever of the micro switch approximately 3° earlier



To adjust the close position to less than 90°.

Turn the wrench to clockwise direction - cams 2 and 4.

The cam 4 must press the lever of the micro switch approximately 3° earlier than the cam 2.



Assembly

After calibration, the lid has to be replaced carefully.

Be sure to route the cables around the shafts and the engine as in the origin situation, so it can not cause malfunction by pinching. The lid must now lie close to the base. If this is not the case, a cable is located between the motor and the cover, or may be clamped between lower part and lid. When the lid rests tight, you can replace the screws and tighten them crosswise. Then put on and fixed the handlever or the hand wheel. Once the electrical connections have been made and the actuator has been switched from AUTO to MAN by rotating the hand wheel / lever, you can check the electrical function. If the function is incorrect, the procedure must be repeated carefully.

FAQ`s

If you have difficulties, please consult this list first. If you find no solution to the problem in this information, please contact your dealer.

Nothing happens, the actuator does not move.

Power light does not function.

- Check the wiring.
- Is the plug connected?
- Is there power at the plug?
- Is the actuator suitable for the applied voltage? - Check type label

The actuator runs and then stops.

The power light flashes:

The limiter is activated – the valve e.g. is sluggish, blocked or unsuitable for operation by the type of actuator. Eliminate cause of overload or select next strongest actuator.

Power light is not flashing:

Check external fuse and replace if necessary, check the wiring and supply voltage.

The actuator is set to "OPEN" position, the valve is closed, however, and does not open or close completely.

Actuator is twisted mounted or the end position adjustment is wrong with the valve match. The release cams have to be readjusted, and/or the actuator is to set up correctly.

The limit switches for position feedback does not respond.

Check the wiring.

Check the adjustment of the release cams and adjust it so that the switches are activated just before reaching the travel limit (about 3 °).

The actuator moves, but the valve does not.

The interface between the valve and actuator is faulty or damaged, forgotten assembling accessories - consult the valve assembling company and check the complete documentation of the actuator for clues.

The end position is reached, but the limiter is activated (power light flashes).

Mark the position of the position indicator, switch to MAN, manually turn the actuator back slightly from the end position and back again.

If you come up against some increased resistance while manual rotation, the valve must be tested.

Are there travel stops that were not removed? - Remove travel stops

Are there foreign substances in the valve (e.g. swaps)? - Remove foreign substances

Is the seal damaged? - Repair the valve or consult with valve supplier.

The integrated limiter acts as a protective device to prevent damage to such problems.

A constant use (e.g. driving on travel stops) may cause damage to the valve, adapters and actuator.

Such errors therefore must be eliminated as soon as possible!

Special Models

Actuators with Battery Spring Return

These options are not available for the series J2 10

The BSR Safety Kit includes a battery pack and a charging electronic, which ensures a safety position (open or closed) of the valve in case of power failure. The battery pack is integrated in the housing at all models. Continuous operation during power failure is not possible with the built-in BSR kit, otherwise the actuator can be operated like a standard actuator.



J3/J3C BSR Kit built-in

When reaching the end position "open" or "closed", the voltage must be applied to charge the battery. If the actuator is opposite to the reference safety position, and there is a power failure, the actuator moves to its reference position (fail safe). Again energized, the actuator moves to the position selected by the switch position of the system (wiring diagram). The batteries have a long lifetime, but it depends on the operating conditions. A standard test of the actuators, as measured by the security requirements, is to be provided. Before commissioning, the battery pack is to be charged for at least 36 hours at the power supply (connector 1).

The desired reference position during a power failure, "valve OPEN" (NO) or "valve CLOSED (NC)", is to be specified when ordering the actuator. If you have incorrectly ordered the safety position, the reference position can be reconfigured.

J3/J3C Series - Changing the safety position in case of power failure (NC / NO)

The reference position can be changed by using jumpers on the motherboard.

The configuration is as follows:

If the jumper is plugged, during a power failure the actuator moves in the "close" position (NC).

If the jumper is removed, during power failure the actuator moves to the "open" position (NO).

Models 140/300



Jumper



Models 20 - 85



Jumper plugged = NC
Jumper removed = NO

Actuators with Battery Spring Return

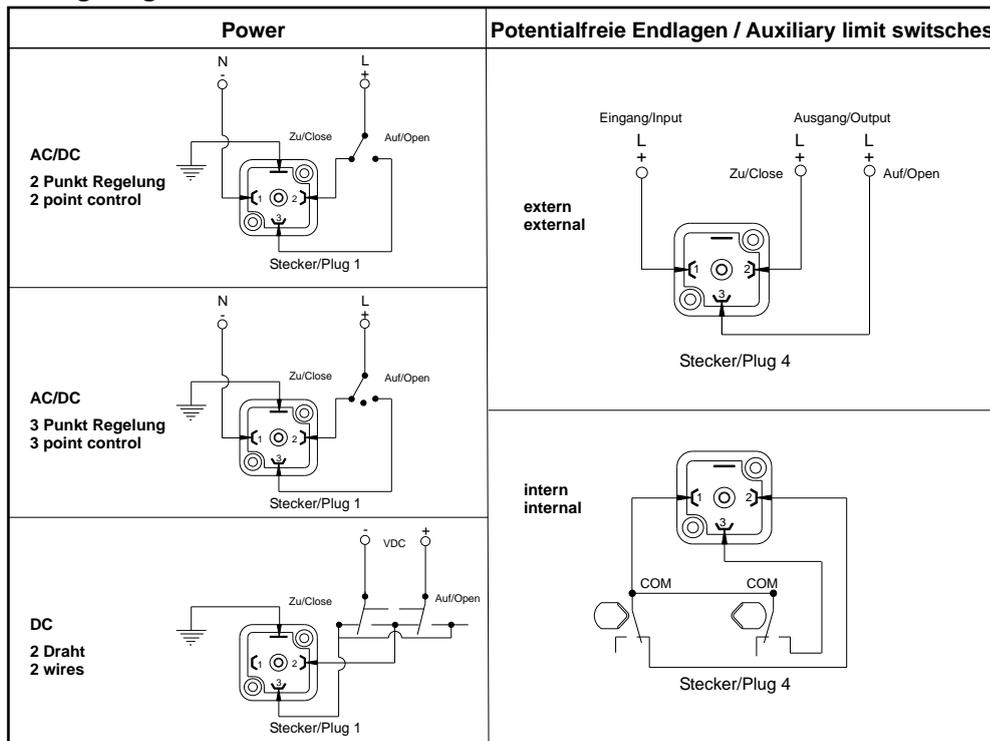
General technical data and wiring diagram

Technical data:

Modell	J3 20	J3C 55	J3C 85	J3C 140	J3C 300
	J3C 20/35				
Max. Working Operations without battery charge	5	5	5	2	1
Recharge time after one battery operation	8 min	10 min	20 min	30min	50 min
Full charge time / 100% (implementing)	28 h			27 h	
Battery consumption for one operation	6,2 W			23 W	
Nominal capacity +/- 5%	1000 mA				
Weight BSR unit	0,23 kg			0,375 kg	

Indicator LED	Time	Indicator	LED Colour	
			J320 J3C 20-80	J3C 140/300
Actuator without power and working with the BSR system, max. 3 minutes	200 msec	1000 0000 0000 0000	1 = Rot 0 = aus	1 - NC = Rot 1 - NO = Grün 0 = aus
Battery protection. Danger The battery needs recharging. BSR disabled.	200 msec	1010 1000 0000 0000	1 = Rot 0 = aus	1 = Orange 0 = aus

Wiring Diagramm



Actuators with DPS Positioner

This Option isn't available for series J2 series model 10!

The DPS electronic positioner converts the actuators into servo-controlled control device for valves. Using the input signal of the DPS, it is possible to adjust to any pivoting range of the actuator. The DPS Module controlled by an integrated internal micro-processor (CPU) the analog input-and output signal (4-20mA, 0-20mA or 0-10V) and compared with the position of the actuator.

Control signal

The Input signal must be switched potential free (buffer amplifier)

Possible configurations with the standard DPS positioner
(How to adjust? You can find it in the DPS manual)

Configuration	A	B	C	D	E	F	G	H
Input	4-20mA	0-10V	20-4mA	10-0V	0-20mA	1-10V	On/Off 4 - 20 mA	On/Off 0-10V

Technical Data:

Präzision	3% *
Linearität	2% *
Histerese	3% *
Division	Min. 70 steps (independently of the swivel angle)
Min Auflösung /90°	1,30%
Class	B+C to E DIN EN 15714 Inching + Modulation
Impedanz Input	0-10V = 13 KOhm
	4-20mA = 100Ohm
Weight	0,525 Kg

Actuators with positioner system are adjust according to the order and name plate. The actuators are equipped with three connectors. The wiring is printed on the actuator or see wiring diagram.

The use of the connector is as follows:

- Plug 1: power supply (voltage see actuator label)
- Plug 3: control signal (available 0 -10 V or 4 - 20 mA)
- Plug 4: feedback signal position open / close (volt free contacts)

Change the signal

After delivery it's possible to change the input signal from 0 - 10 V to 4 - 20 mA or vice versa. 0-20 mA control signal must be so ordered. For all description up from now you have to fill up the main safety rules for work at electric plants. For all you have to remove the handwheel / lever and the cover.

Description

For change the signal, plug off the external power and positioner plugs. After open the cover you have to look at the positioner signal cable which comes from terminal 3 (cover). This cable is connected on the DPS board, plug off the cable from the board and connect it, at the inscribe terminal acc. to your which positioning signal 4 - 20 mA or 0 - 10 V. After plug in the cable in the terminal the actuator works acc to the signal. Now you have to close the cover and plug on the power and signal cable. Please take care to the cable route. Don't wedge the cable with the cover.



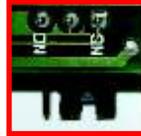
Actuators with DPS Positioner

Change the direction of rotation of the input signal:

Standard rotation NC = 0 V/4 mA „CLOSE“

For change the direction of rotation of the input signal NC to NO (0 V/4 mA = "Open") please switch off the voltage for power and position confirmation contacts. After please open the cover .At the DPS circuit board you found the jumper, position "SETDIR" (JP3), this jumper you have skin and put it one PIN left to the position NO. After it the direction of the input signal is changed.

Jumper Position NC = 0 V/4 mA "close position"



Jumper Position NO = 0 V/4 mA "open position"



Working angel adjust

For change the working angel of the positioner system you have to adjust first the motor stop cam (position "open" or "close"). Please note if you want to use the position confirmation of the voltfree contacts (plug 4) , you have to adjust the cams for it too, after you adjust the motor stop cams. For adjust the cams you can get more informations at our main manual chapter "adjust the cams". After the adjustment of the cams you have to adjust the positioner system too. For this read the next chapter "adjust the DPS positioner system"

Adjust the DPS positioner systems

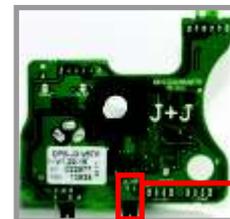
At the adjustment of the DPS positioner system the system indicate the adjusted positions of the motorcams. For this the actuator drives in both positions, indicate the border micro switch and set it in the system. You have to make these adjustment always after you have adjust the cams for motor stop.

Electric adjustment at J3/J3C series actuators with open cover:

For the adjustment drive you have to wire and switch on the power supply at plug 1.

Note: At actuators with DPS and BSR you have to unplug the BSR Accupack from the circuit board before you start the adjustment drive!

- switch off the power supply and open the cover
- Make a short circuit at the two "SETUP" Pins on the DPS board (exampel with a little screw driver)
- switch on the power supply
- release the short circuit at "Setup" Pin`s
- now the actuator drives in both end positions



Jumper (JP6)

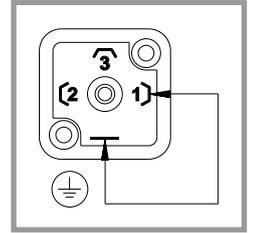
After the adjustment drive the actuator drives to the position according to your input signal.

The adjustment is finished. If the actuator don't work fine you have to look at the LED "OPEN" und "CLOSE" are they blinking, please read chapter "FAQ" below.

Actuators with DPS Positioner

Electric adjustment with closed cover (J3/J3C series):

- switch of the power supply
- release the plug 3 from the terminal 3 (Positioning signal)
- make a short circuit at terminal 3 between Pin 1 and Ground
(see wiring diagram/right side)
- switch on the power supply
- release the short circuit
- now the actuator drives in both end positions



After the adjustment drive the actuator drives to the position according to your input signal. The adjustment is finished.

If the actuator does not work correctly it will be necessary to open the cover to control the LED „ OPEN“ and „Close“.

The actuators are designed without travel end stops. With the selectable manual override in “Manual” mode it is possible to turn the actuator by handwheel/lever. Please take care to move the actuator between the adjusted angel positions (standard = 0°/90°). Should you have turned the actuator manual wise more than 300° or to a position less than 0° the actuator will be dis-adjusted in case of automatic mode movement. Then the actuator drives, via the internal motor, 270° onto close direction and stops at the motor stop micro- switch. The DPS System then is out of the adjusted strokeway as the internal potentiometer has a death part.

Manuell adjustment without readjust the actuator

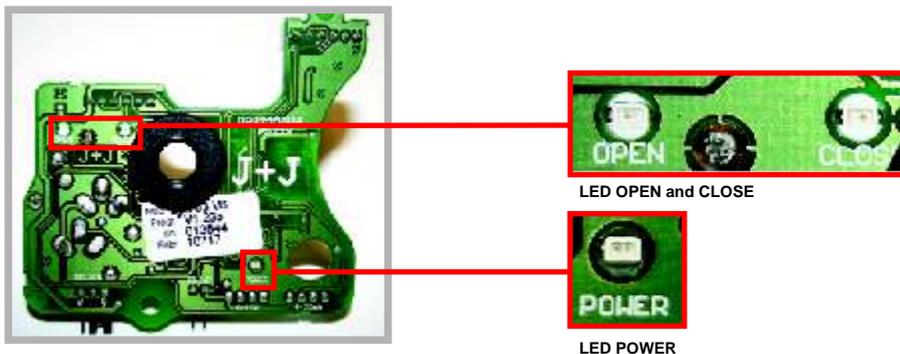
To readjust the factory positioning please follow the next steps:

- Switch the selectable manual override in “Manual” Mode
- Turn by handwheel /lever the actuator indicator one 360° turn
- Switch the selectable manual override in “Automatic” Mode
- Switch the Power on and check via the positioner signal (0-10V/4-20mA) the positions

If the input signal not acc. to the factory adjusted postions (exampel: 5V/12mA = 45°)repeat the procedure in the same direction ones more. After maximum six turnarounds the system is adjusted.

Function feedback by internal LED on DPS board:

- POWER LED on = power supply of the positioning system is ok
- OPEN LED on = input signal is not acc. to the position - actuator drives to “OPEN” direction
- CLOSE LED on = input signal is not acc. to the position - actuator drives to “CLOSE” direction



Actuators with DPS Positioner

Error message shown y LED on the positione circuit board:

If both LED's, "OPEN" und "CLOSE", blinking , and the actuator doesn't drive , is the death point of the potentiometer arrive and the system is adjusted. To solve the problem turn the potentiometer for this loose the screw on DPS board. After the turn you have to be readjust the system, for this see chapter adjust the DPS system.

FAQ - DPS Position

-The actuator positions is not acc. to the input signal .

reason: drive over the adjusted angel by hand

help: see chapter "adjust the DPS positioner systems"

-The actuator doesn't drive but the LED in the cover is on.

reason: death point of the potentiometer is arrived

help: see chapter "adjust the DPS positioner systems"

-The actuator drives in the wrong direction at positioner signal (e.g. 0 V = valve is opened)

reason : valve is wrong mounted or the rotating direction is changed

help: mount the valve correctly or see chapter "Change the direction of rotation of the input signal"

-The motor cams are adjusted by the user but the actuator drives in the same position like before.

reason : after the adjustment of the cams you have to adjust the DPS system too

help: see chapter "adjust the DPS positioner systems"

-The angel positions are not according to the signal. The actuator stopps earlier

reason : the motor stop cam is adjusted in the adjustment area of the DPS Systemr

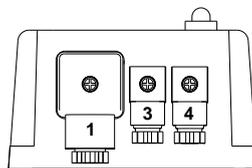
help : see chapter "Working angel adjust" after it chapter "adjust the DPS positioner systems"

The volt free contacts have no function after arrive to the end position

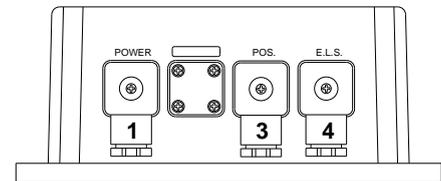
reason: the cam doesn't arrive the position or is adjusted

help: adjust the cam see in the main manual

position of the plugs:



Models H/L 20, 35, 55, 85



Models H/L 140, 300

Wiring Diagramm DPS AC/DC

StandardAC/DC	Steuersignal/Control signal	Zusätzliche Endschalter/Auxiliary limit switches
<p>Stecker/Plug 1</p>	<p>Stecker/Plug 3</p>	<p>Stecker/Plug 4</p>
<p>Alternativ DC</p> <p>Stecker/Plug 1</p>	<p>Stecker/Plug 4</p>	<p>Stecker/Plug 4</p>

Actuators with Potentiometer

This option is not available for model series J2 type 10

The potentiometer output signal shows the actual position of the valve shafts. The signal is shown in an ohmic value. This can be evaluated by an appropriate control and then processed. The following three potentiometer values are available:

- 1 KOhm
- 5 KOhm
- 10 Kohm

The potentiometer must be specified in the order, as subsequent conversion is not possible.

The electric quarter turn actuator has two adjustable, potential- / volt- free signals for the position confirmation.

Example: The standard actuator with the settings 0° and 90°

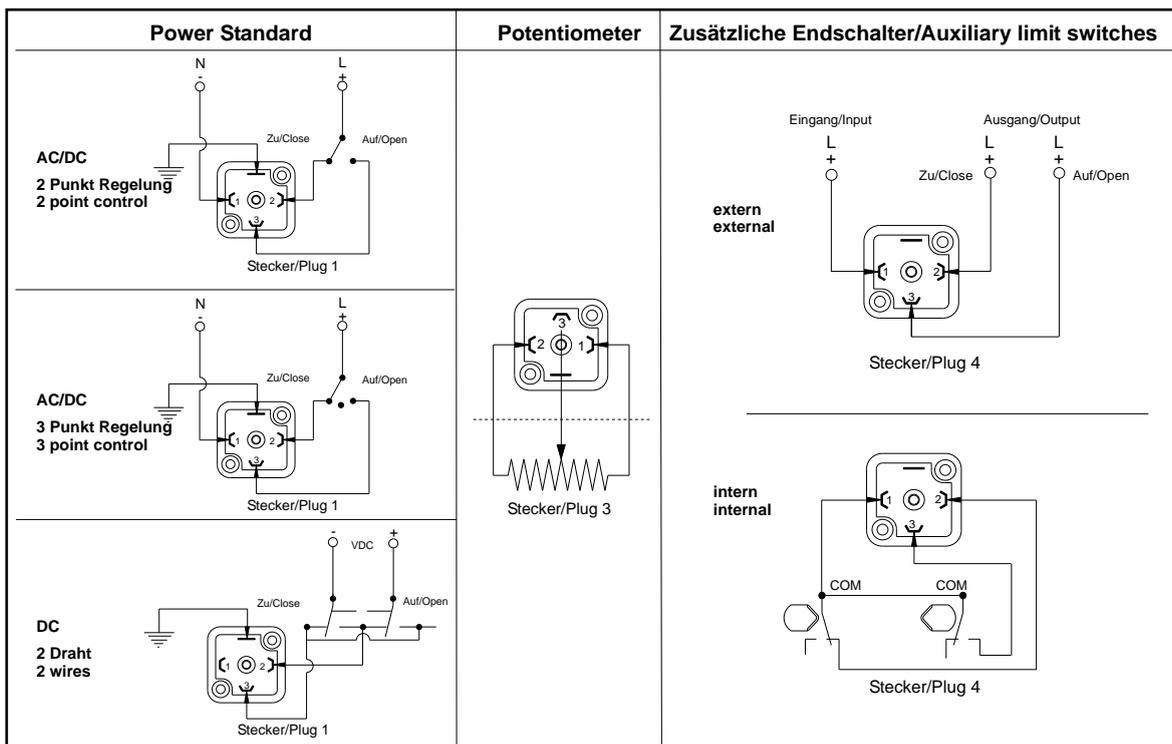
Mounting

The electric actuator must not be operated in manual mode with the hand wheel moving out of its factory setting/swivel range. It is used a rotating potentiometer. By the gear ratio the zero point will shift when turning over the working angel. If you have deadjusted the zero point, as long as the actuator is to twist in the manual mode with 360° turns, until the measured value is the same as the origin value.

The potentiometer output signal is an ohmic value which varies in a range between 0 K Ohm and the specified maximum value. The minimum and maximum value can not be shown, caused by the design. It is simply a sector. The ohmic values can vary from actuator to actuator, for the same position. Each actuator is individually to calibrate during installation and put into operation. For the corresponding positions you can either tap the ascending or descending value of the potentiometer.

Reference

If it is desired that the actuator stops in intermediate positions without major effort, the model with positioner DPS is to choose. The model is available in versions 0 - 10 V, 4 - 20 mA or 0 - 20 mA / Input and output signal.

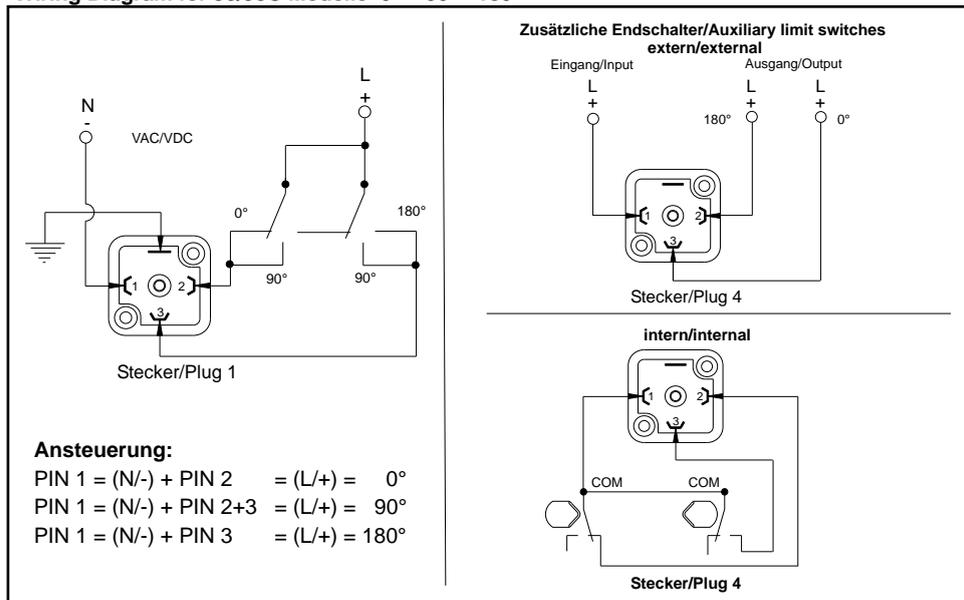


3 Positions Actuator

J3/J3C series:

The three position types of the series J3/J3C are fitted with two confirmation potential- / volt-free signal for the max. / min. end positions(0° / 180°) . All other features (heating, torque protection circuit ...) of J3/J3C standard actuator are retained in this model.

Wiring Diagram for J3/J3C Modelle 0° - 90° - 180°



Actuators with 2 control phases

This option is not available for J2 10

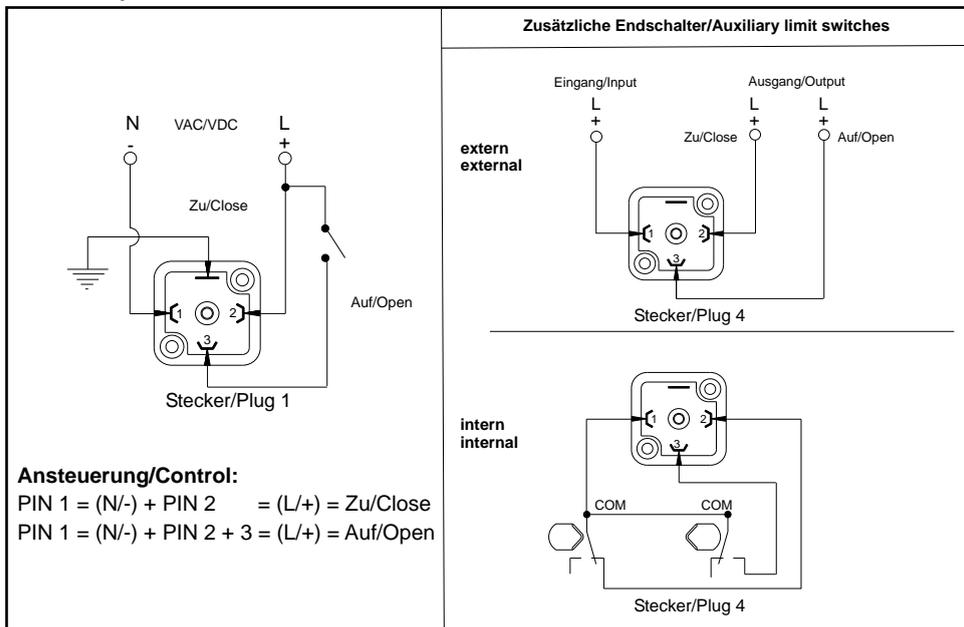
This option can be ordered with continuous phase NO or NC.

This on/off actuator travels in the ordered phase direction (NO or NC). If the second phase contact the actuator travels to the opposite direction.

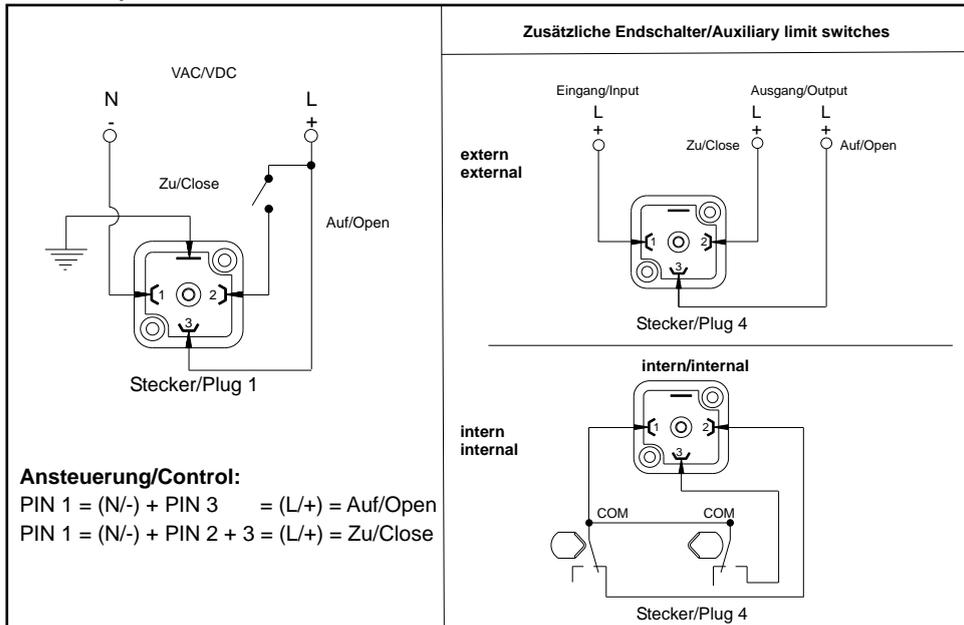
This actuator is connected very well suited for the exchange of solenoid valves. You can use the of the solenoid valve in the control panel and must remain stuck to the actuator only a permanent phase.

Advantages: No programming required, less wiring!

2 control phases: continuous NC



2 control phases: continuous NO



Specifications

Technical data

	J2 10	J3 20	J3C 20	J3C 35	J3C 55	J3C 85	J3C 140	J3C 300
voltage range L	24 V AC/DC	12-24 V AC/DC	12-24 V AC/DC	12-24 V AC/DC	12-24 V AC/DC	12-24 V AC/DC	24 V AC/DC	24 V AC/DC
voltage range H	85-240 V AC/DC	85-240 V AC/DC	85-240 V AC/DC	85-240 V AC/DC	85-240 V AC/DC	85-240 V AC/DC	85-240 V AC/DC	85-240 V AC/DC
current consumption L	0,2 A - 0,39 A	0,18 A - 2,14 A	0,33 A - 3,3 A	0,33 A - 3,2 A	0,35 A - 2,7 A	0,6 A - 2,4 A	1 A - 2,8 A	
current consumption H	0,2 A - 0,28 A	0,01 A - 0,21 A	0,01 A - 0,24 A	0,04 A - 0,31 A	0,04 A - 0,31 A	0,15 A - 0,5 A	0,15 A - 0,7 A	
running time (90°)	L:19s / H:16s	10s	10s	L:13s / H:14s	30s	34s	58s	
starting torque	12 Nm	25 Nm	38 Nm	60 Nm	90 Nm	170 Nm	350 Nm	
working torque	10 Nm	20 Nm	35 Nm	55 Nm	85 Nm	140 Nm	300 Nm	
duty (ED)	75%	75%	75%	75%	75%	75%	75%	
protection	IP65	IP65	IP67	IP67	IP67	IP67	IP67	IP67
temperature range	-20°C to 70°C							
flange	F03/F05	F03/F04/F05		F05/F07		F07/F10 (F12)		
double square	14 mm	9 mm, 11 mm, 14 mm		14 mm, 17 mm		17 mm, 22 mm		
potential-free limit switches	125 V AC 5 A / 250 V AC 3 A							
connectors	DIN 43650 ISO 4400 C-192 / C-193							DIN 43650 ISO 4400 C-192
torque control	X	X	X	X	X	X	X	X
heater	3,5 W	3,5 W	3,5 W	3,5 W	3,5 W	3,5 W	3,5 W	3,5 W
housing	Polyamid (PA6)							
weight	0,90 kg	1,8 kg	1,9 kg	1,9 kg	2,4 kg	3,0 kg	5,2 kg	5,2 kg
optional equipment	0° - 180°	BSR / Battery Safety Pack, DPS / Positioning System (Input- and output signal optional 0-10V or 4-20mA), BSR and DPS combined, Potentiometer (optional: 1K , 5k or 10K), 3 Positions (Default = 0°-90°-180°), 2 Phases Control (optional NC or NO - not for J2 model)						

Appendix

Specifications

Current consumption

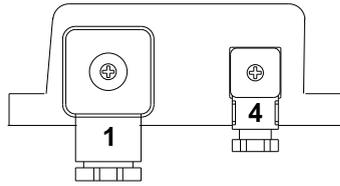
Current consumption and performance for max. torque +/-5%

	J2 L10	J3C L20 J3 L20	J3C L35	J3C L55	J3C L85	J3C L140	J3C L300
voltage range	24 V AC/DC (-0%/+5%)	12 V - 24 V AC/DC (-0%/+5%)				24 V AC/DC (-0%/+5%)	
12 V AC		1900 mA 22,8 W	2709 mA 32,5 W	3080 mA 37 W	2174 mA 26,1 W		
12 V DC		2132 mA 25,6 W	3234 mA 38,8 W	3182 mA 38,2 W	2699 mA 32,4 W		
24 V AC	390 mA 9,4 W	1100 mA 26,4 W	1100 mA 26,4 W	1300 mA 31,2 W	1400 mA 33,6 W	2290 mA 55 W	2800 mA 67,2 W
24 V DC	390 mA 9,4 W	913,5 mA 21,9 W	1491 mA 35,8 W	1430 mA 34,3 W	1180 mA 28,3 W	1890 mA 45,5 W	2280 mA 54,6 W

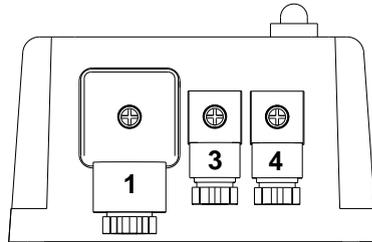
	J2 H10	J3C H20 J3 H20	J3C H35	J3C H55	J3C H85	J3C H140	J3C H300
voltage range	85 V - 240 V AC/DC (+/- 5%) 50/60 Hz						
110 V AC	272 mA 29,9 W	168 mA 18,5 W	231 mA 25,4 W	252 mA 27,7 W	168 mA 18,5 W	520 mA 57,6 W	610 mA 66,7 W
110 V DC	272 mA 29,9 W	210 mA 23,1 W	242 mA 26,6 W	258 mA 28,4 W	221 mA 24,3 W	290 mA 31,6 W	310 mA 34,6 W
230 V AC	272 mA 62,6 W	190 mA 43,7 W	190 mA 43,7 W	160 mA 36,8 W	150 mA 34,5 W	310 mA 68,2 W	360 mA 79,4 W
230 V DC	272 mA 62,6 W	110 mA 25,3 W	130 mA 29,9 W	130 mA 29,9 W	95 mA 21,8 W		

Wiring Diagrams

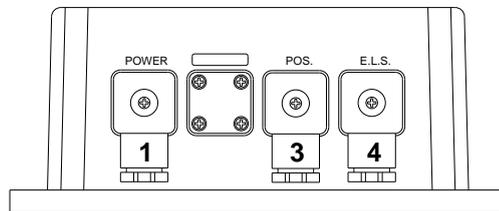
position of plugs



Model H/L 10

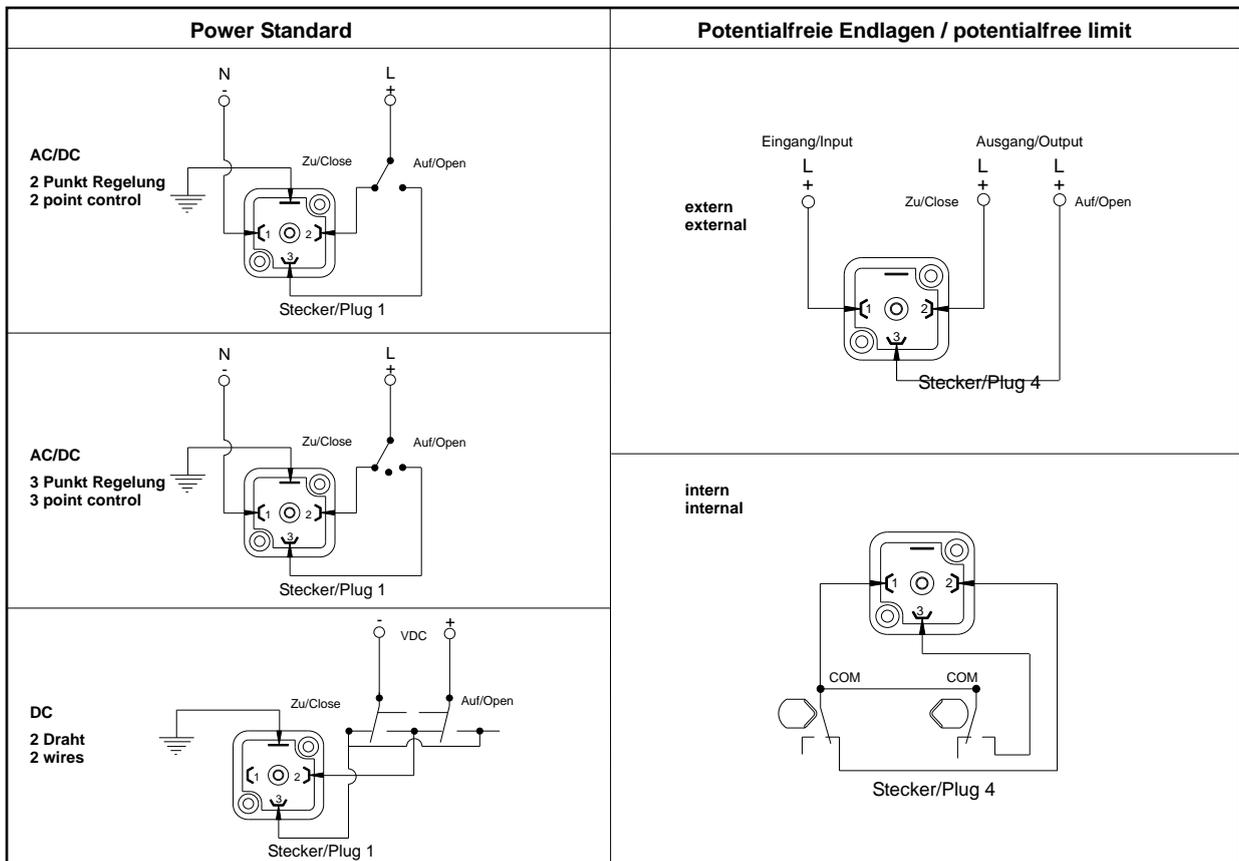


Models H/L 20, 35, 55, 85



Models H/L 140, 300

J2+J3/J3C Standard + BSR



Wiring Diagrams

J2 + J3/J3C with Potentiometer

Zusätzliche Endschalter/Auxiliary limit switches	Potentiometer	Power Standard
		<p>AC/DC 2 Punkt Regelung 2 point control</p> <p>AC/DC 3 Punkt Regelung 3 point control</p> <p>DC 2 Draht 2 wires</p>

not available for J2 10

Wiring Diagrams

J3/J3C with DPS

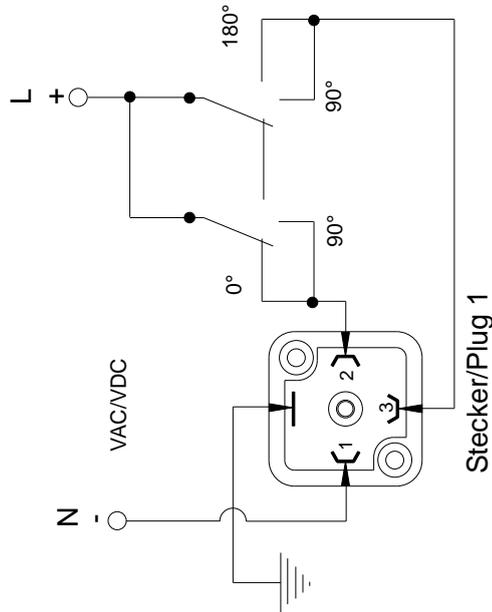
Standard AC/DC	Steuersignal/Control signal	Zusätzliche Endschalter/Auxiliary limit switches
<p>Standard AC/DC</p> <p>Stecker/Plug 1</p>	<p>Steuersignal/Control signal</p> <p>Stecker/Plug 3</p>	<p>extern external</p> <p>Stecker/Plug 4</p>
<p>Alternativ DC</p> <p>Stecker/Plug 1</p>	<p>intern internal</p> <p>Stecker/Plug 4</p>	<p>Zusätzliche Endschalter/Auxiliary limit switches</p>

not available for J2 10

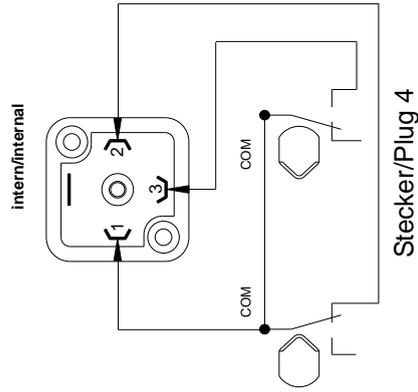
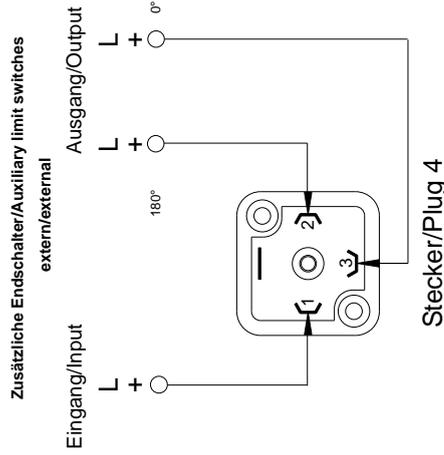
Wiring Diagrams

3 Positionen actuator - 0°, 90°, 180°

Schaltplan für 3 Positionen Antrieb am Beispiel: 0° - 90° - 180°
 Wiring diagram for 3 Position actuator for example: 0° - 90° - 180°



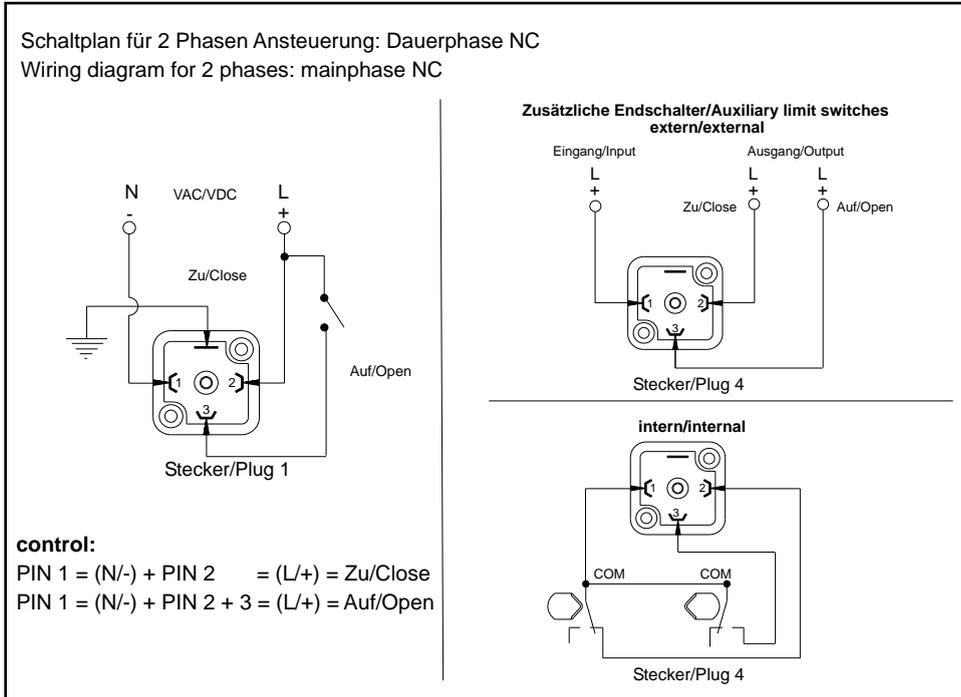
control:
 PIN 1 = (N/-) + PIN 2 = (L/+) = 0°
 PIN 1 = (N/-) + PIN 2+3 = (L/+) = 90°
 PIN 1 = (N/-) + PIN 3 = (L/+) = 180°



not available for J2 10

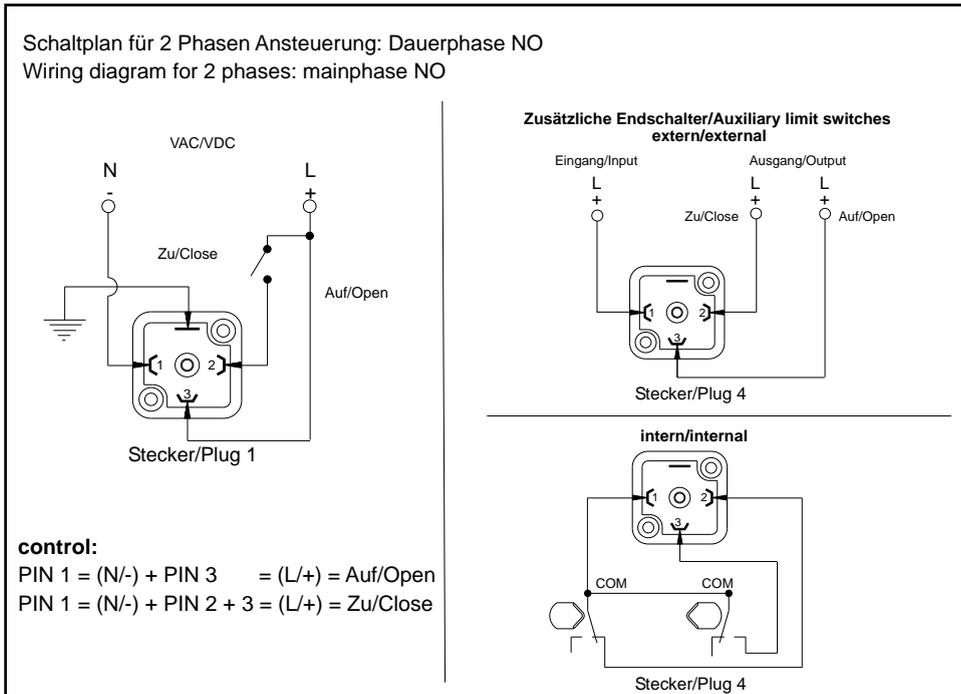
Wiring Diagrams

2 Phasen control NC



not available for J2 10

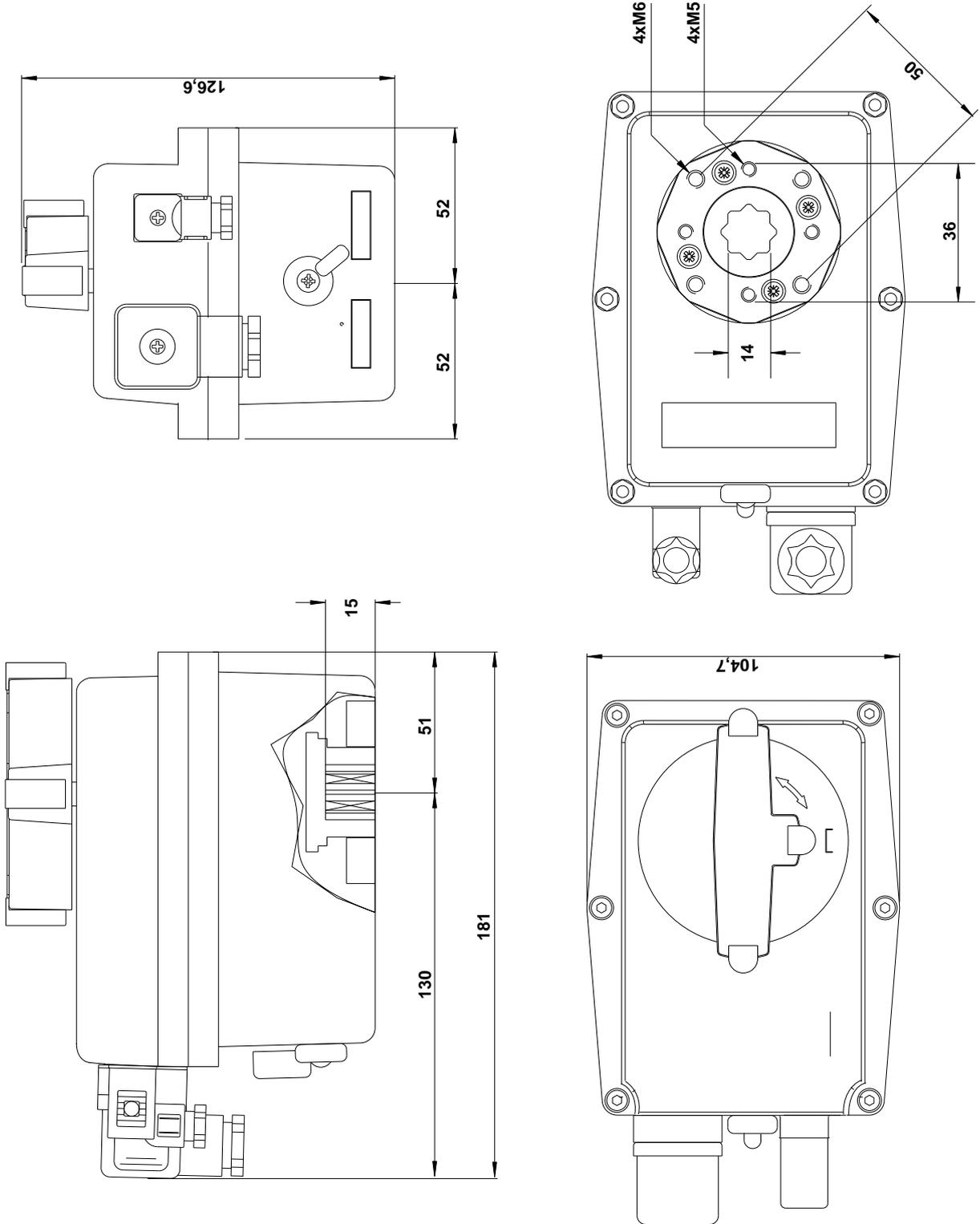
2 Phasen control NO



not available for J2 10

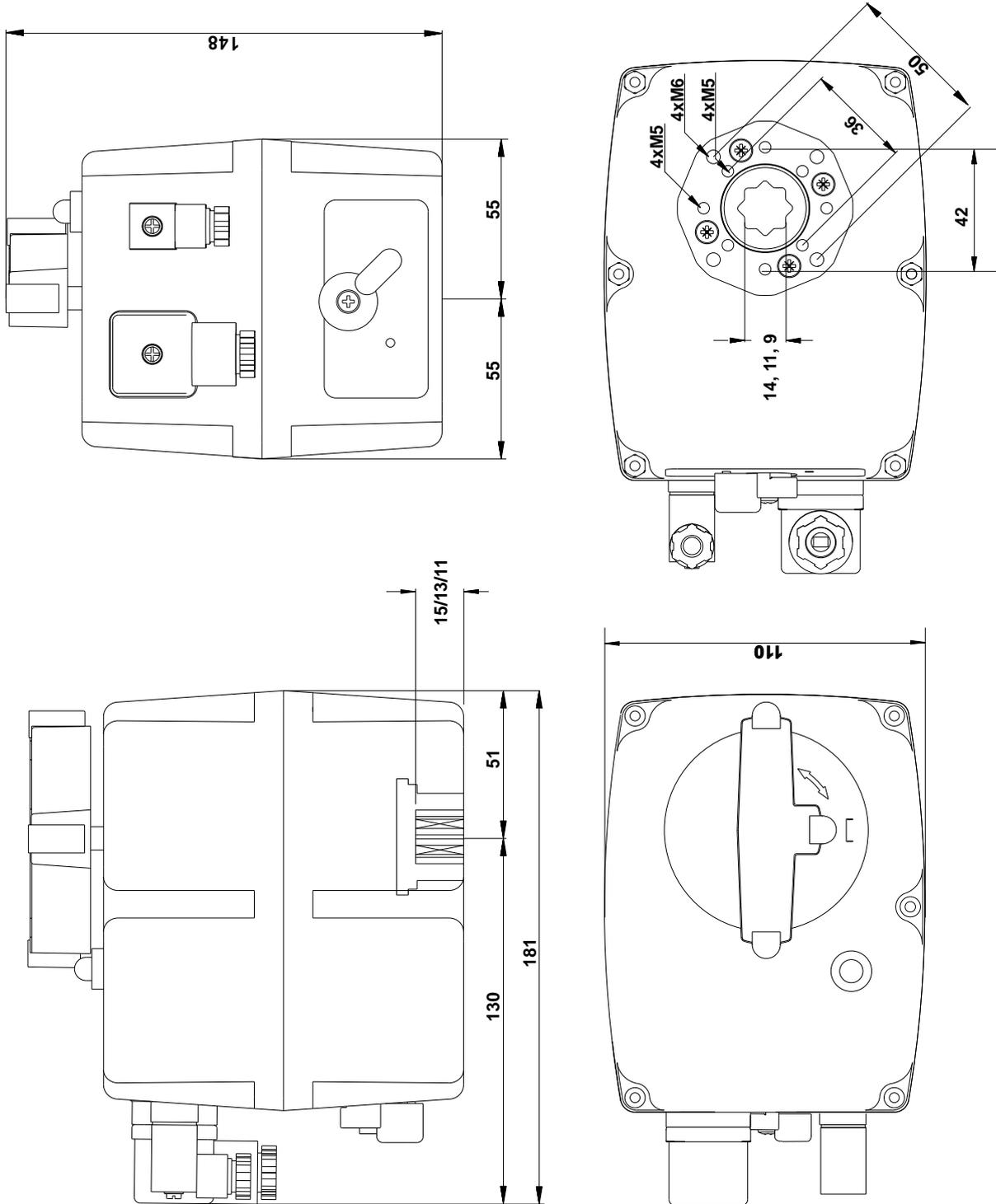
Dimensional Drawing

J2 H/L 10



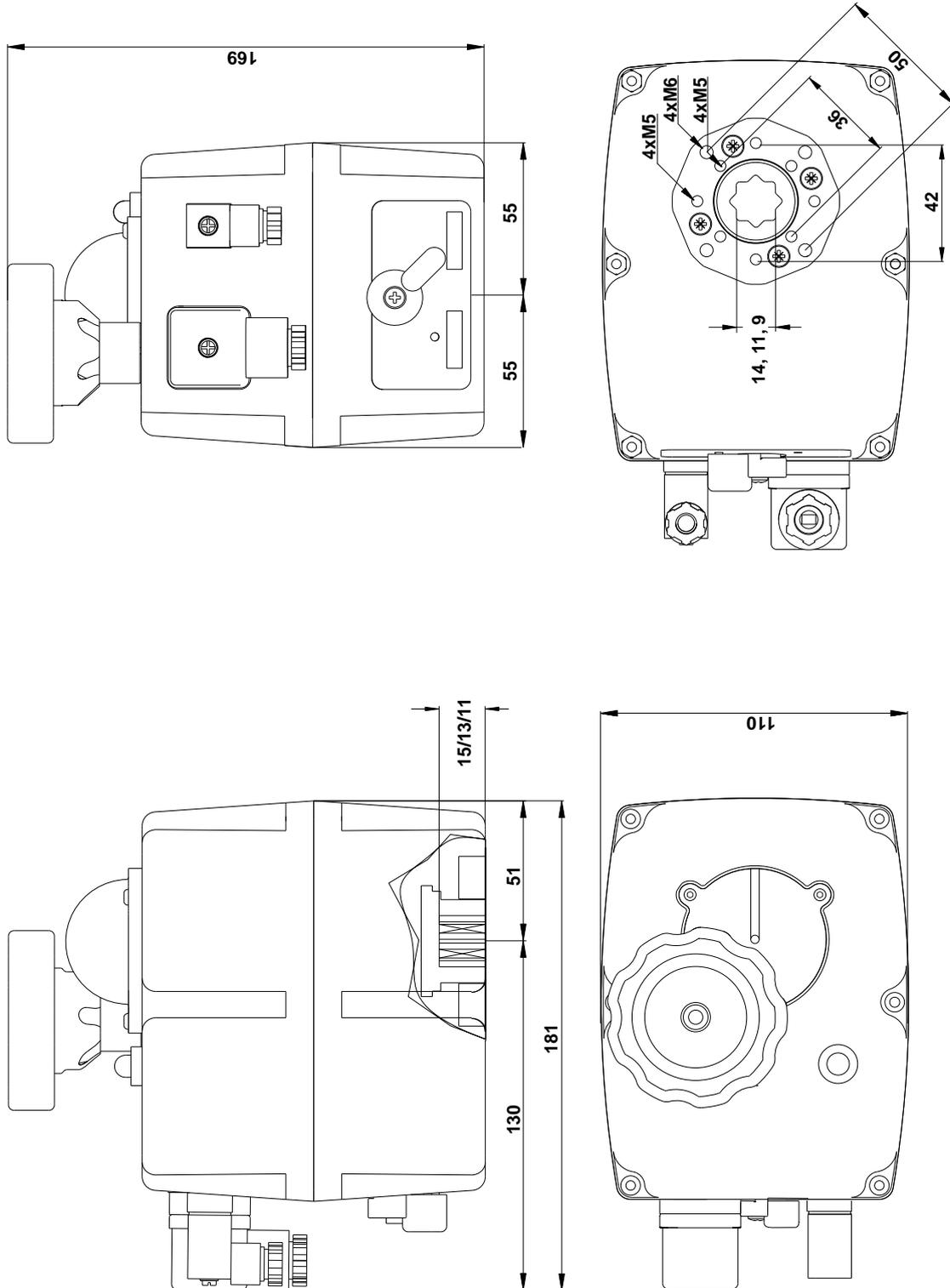
Dimensional Drawing

J3 H/L 20



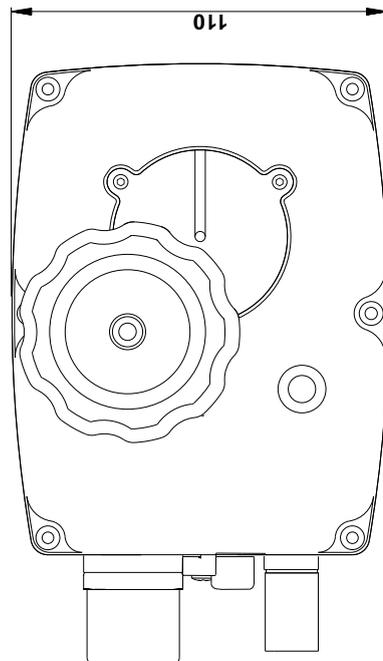
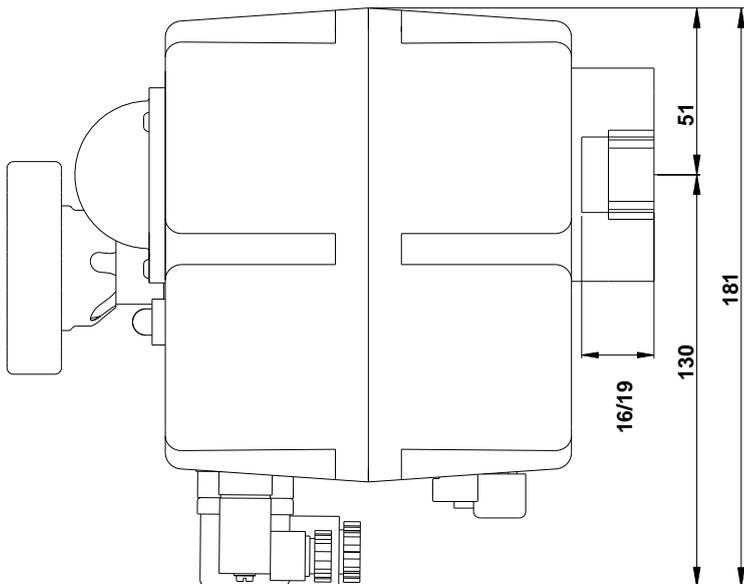
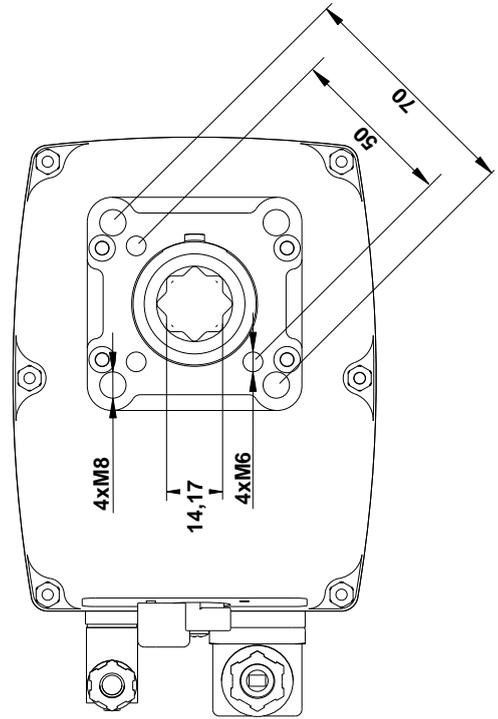
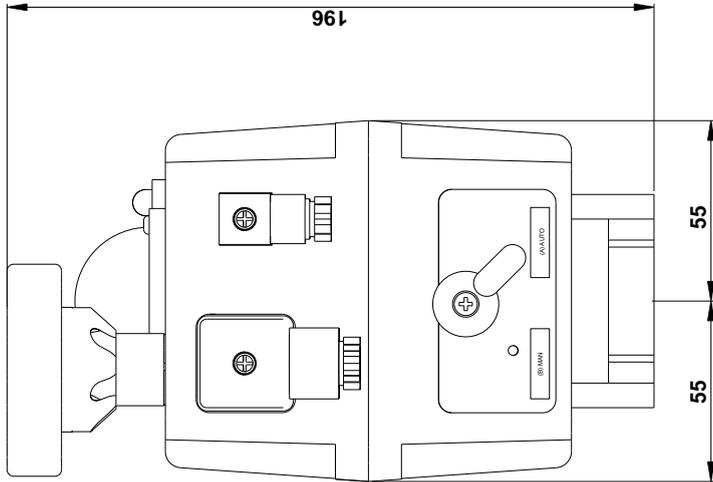
Dimensional Drawing

J3C H/L 20/35



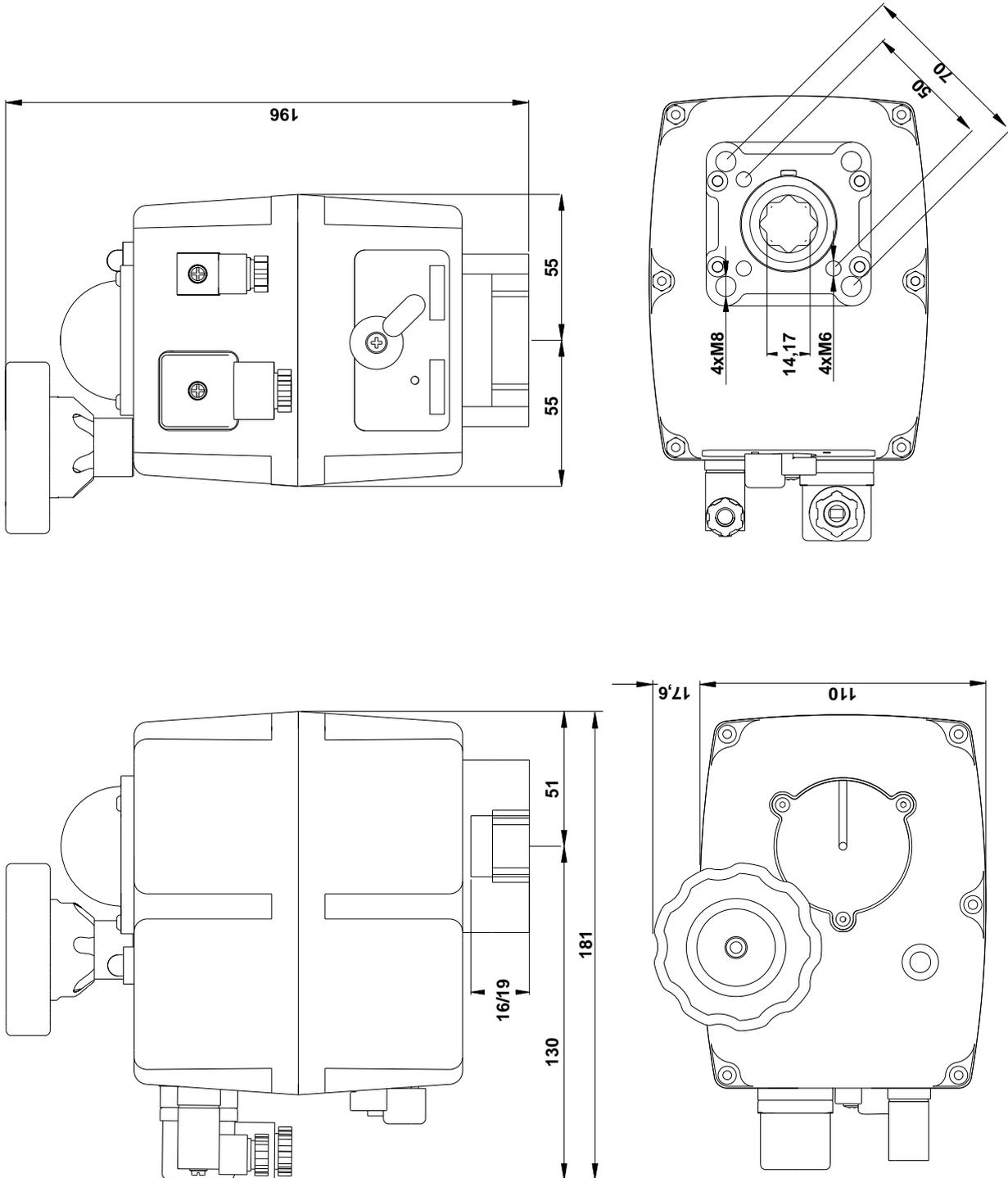
Dimensional Drawing

J3C H/L 55



Dimensional Drawing

J3C H/L 85



Dimensional Drawing

J2 H/L 140/300

