

Manual

for

J+J Quarter Turn Actuators



Imprint

© by **J+J[®] Deutschland GmbH**

For this documentation the **J+J[®] Deutschland GmbH** claims author's legal protection. This documentation may not be extended without previous written agreement of the company J+J Deutschland GmbH, neither amended, multiplied nor transmitted for use to third party. To the demand of these documents, please, address J+J Deutschland GmbH.

This documentation may not be extended without previous written agreement of the company J+J Deutschland GmbH, neither amended, multiplied nor transmitted for use to third party.

Ausgabedatum: 03/2017

Subject to technical changes.

Index

Introduction	4
General advise	5
Return consignment	5
Safety notes	6
Device description	8
Model Overview	9
Part description	10
Type label	11
Status LED	13
Emergency manual override	14
Installation	15
Environmental conditions	15
Maintenance	15
Mounting of the valve	16
Alternation multi flange plate in model 10 and 20	18
Conversion double square adapter	19
Electrical Installation	20
Position Adjustment	22
Jumper Configuration	26
FAQ`s	27
<u>Special models</u>	
Actuators with BSR - Battery Spring Return	29
Actuators with DPS Positioner	31
Alignment of DPS positioner	31
Adjust working angel	32
Functions of status LEDs	33
FAQ`s	34
Actuators with potentiometer	35
3 positions actuators	36
Actuators with 2 phases control	37
<u>Appendix</u>	
Technical data	39
Current consumption	40
Wiring diagrams	42
Dimensional drawings	46

Introduction

Dear customer, dear assembler and user

these mounting and operating manual apply to all J+J Electrical Part Turn Actuators of the series J2, J3, J3C. It should provide information and knowledge for you to execute the assembly and installation. 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.

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.

J+J® **Deutschland GmbH**
Komponenten für die Armaturenautomatisierung

General advice

Transportation

The transport 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.

Entry 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

Store the actuators in well ventilated, dry rooms. They must be protected 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 department.

Return consignment

You find a return document on our homepage www.juj-deutschland.de/service.

Safety notes

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.

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.

Mounting

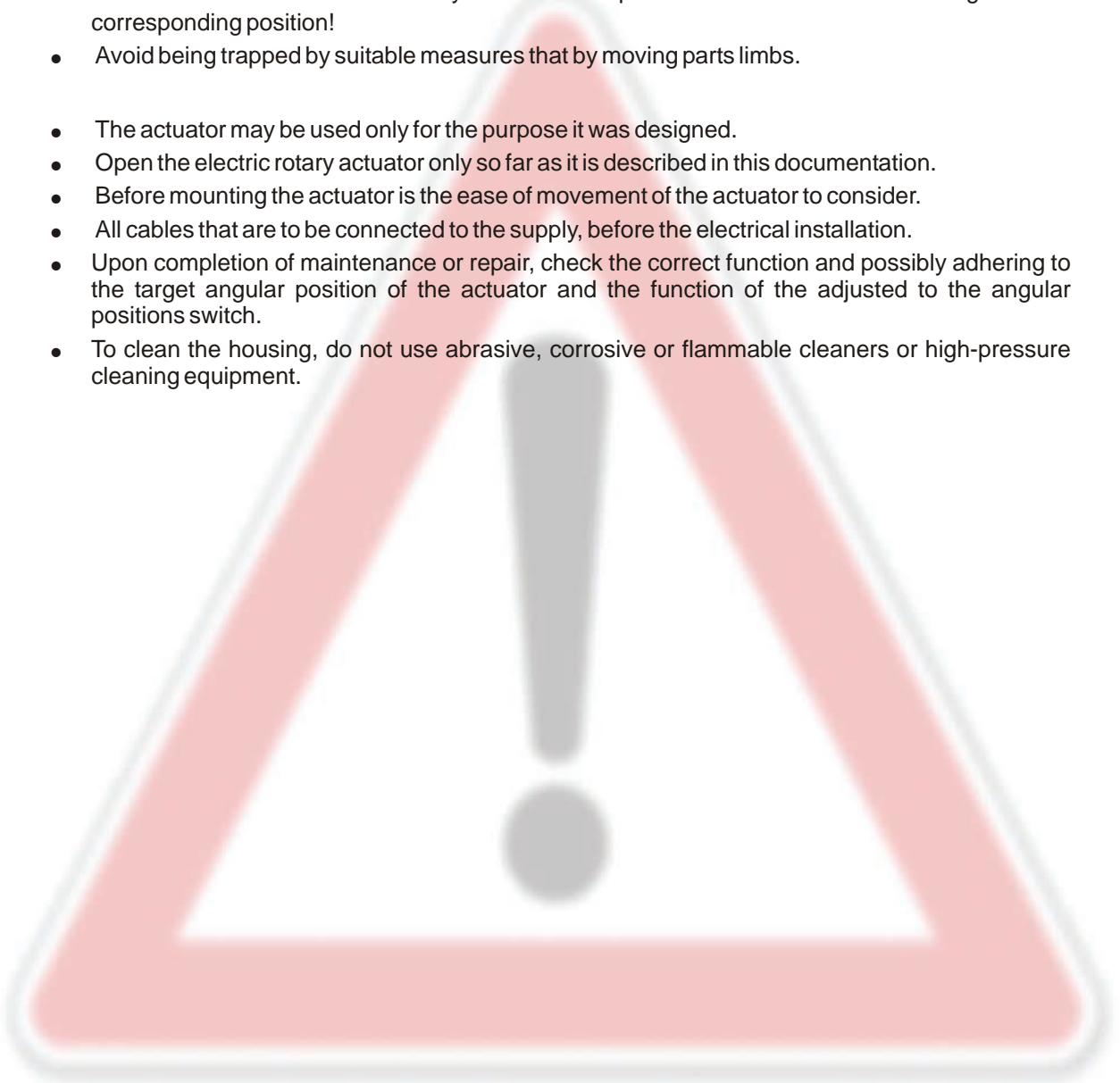
- Switch off all equipment, machinery, equipment which is affected by the installation or repair and disconnect the equipment, machinery, plant, where appropriate, from the net! Check whether the plant shut-down causes potential danger ! Inform the shift foreman, safety engineer or the conductor immediately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

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 up 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.

- 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.

Integrated Systems:

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

Function

A DC-motor actuate the main shaft via a gearbox. The path control is done 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:

J3 S20, J3C S20 bis 85	24 - 240 V AC/DC (50/60Hz)
J2 L10, J3C L140/300	24 V AC/DC (50/60Hz)
J2 H10, J3C H140/300	85 - 240 V AC/DC (50/60Hz)

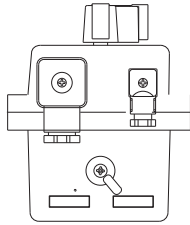
ATC: The control room heater is integrated and active as long as voltage is applied to the power connector.

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

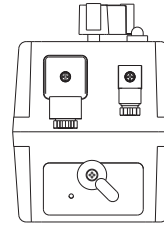
Model Overview

J2 L/H 10



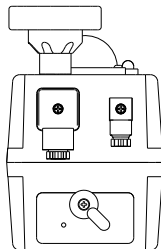
Torque: 10 Nm
Break torque: 12 Nm
Voltage range L: 24 V AC/DC
Voltage range H: 85 - 240 V AC/DC
Protection: IP65

J3 S20



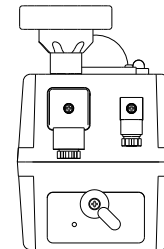
Torque: 20 Nm
Break torque: 25 Nm
Voltage range: 24 - 240 V AC/DC
Protection: IP65

J3C S20



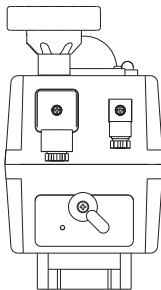
Torque: 20 Nm
Break torque: 25 Nm
Voltage range L: 24 - 240 V AC/DC
Protection: IP67

J3C S35



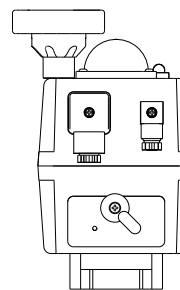
Torque: 35 Nm
Break torque: 38 Nm
Voltage range: 24 - 240 V AC/DC
Protection: IP67

J3C S55



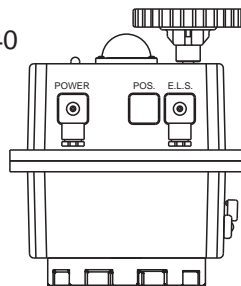
Torque: 55 Nm
Break torque: 60 Nm
Voltage range: 24 - 240 V AC/DC
Protection: IP67

J3C S85



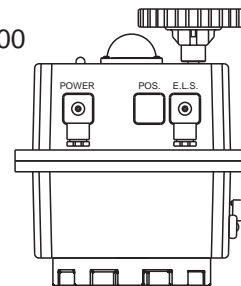
Torque: 85 Nm
Break torque: 90 Nm
Voltage range: 24 - 240 V AC/DC
Protection: IP67

J3C L/H 140



Torque: 140 Nm
Break torque: 170 Nm
Voltage range L: 24 V AC/DC
Voltage range H: 85 - 240 V AC/DC
Protection: IP67

J3C L/H 300

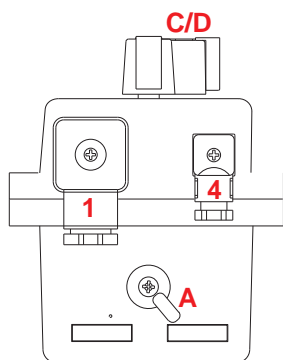


Torque: 300 Nm
Break torque: 350 Nm
Voltage range L: 24 V AC/DC
Voltage range H: 85 - 240 V AC/DC
Protection: IP67

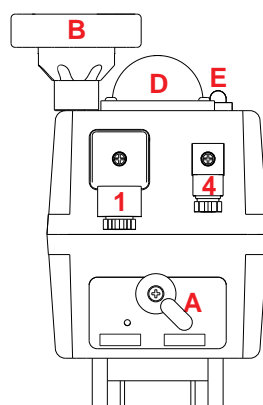
Device Description

Parts Description

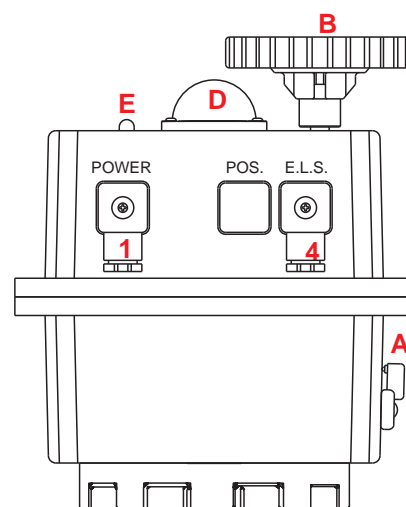
- 1** - Power Connector
- 4** - Connector for the Additional Limit Switches
- A** - Switch from Automatic to Manual (AUTO/MAN)
- B** - Hand Wheel
- C** - Hand Lever/Indicator
- D** - Optical Position Indicator/Dome
- E** - Status LED (not for model 10)



J2/J3 Model

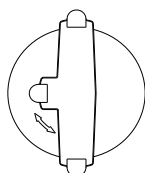


J3C Model S20 - 85

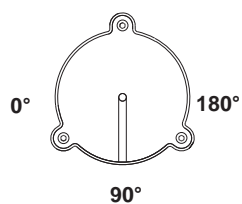


J3C Modell 140/300

Optical Position Indicator:



Hand lever / Position Indicator
- Model J2/ J3



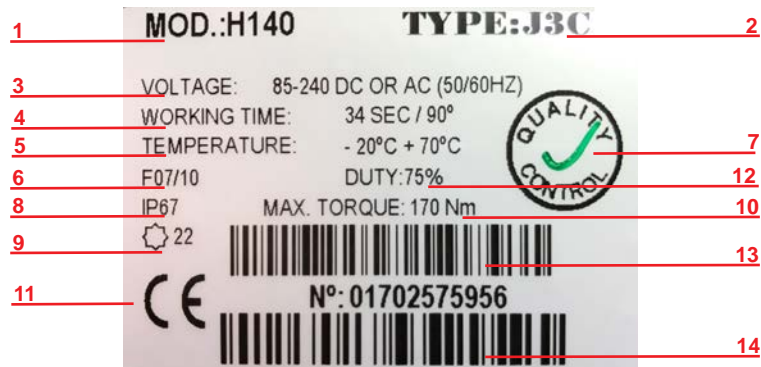
Dome Position Indicator
- Models J3C

Device Description

Type label J2/ J3

By means of the nameplate identifies each actuator.

Note: The label should not be damaged or removed.



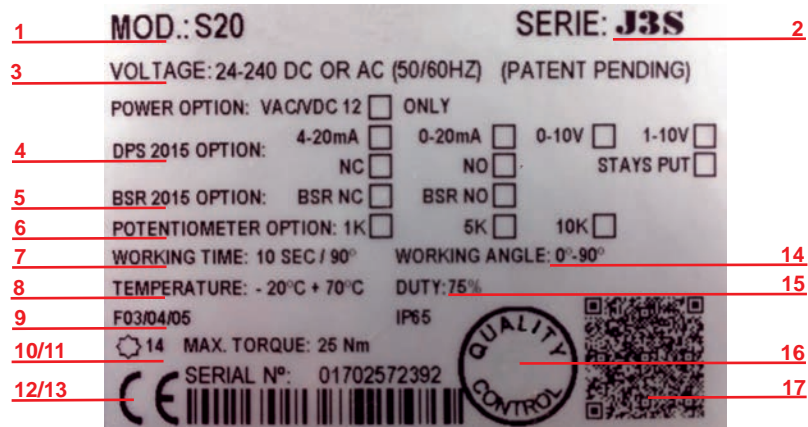
1. Model	Specifying the model. The name is composed of the coltage variant L or H and the output torque Nm.
2. Type	Specifying the series.
3. Voltage range	Indication of the voltage range in which the drive can be operated.
4. Working time	Specifying the operating time.
5. Temperature	Specifying the temperature range in °C.
6. Flange	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. Attachment	Specifying the attachment square bar in mm. The conformation consists of an octagon for direct construction for valves with parallel or 45° offset shaft or two flat.
10. 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 rating	Maximum permissible duty. The duty cycle always refers to 10min (100 % = 10 min).
13. Barcode	Production data
14. Barcode	Serial number in form of numbers and barcode, wich ensures the uniqueness of the actuator and makes it easily trackable.

Device Description

Type label J3C S

By means of the nameplate identifies each actuator.

Note: The label should not be damaged or removed.



1. Model	Specifying the model.
2. Type	Specifying the series.
3. Voltage range	Indication of the voltage range in which the drive can be operated
4. DPS Options	Digital Positioning System; 4-20mA, 0-20mA, 0-10V, 1-10V (optional)
5. BSR Options	Battery Spring Return; NC or NO (optional)
6. Potentiometer Options	Potentiometer; 1k, 5k, 10k (optional)
7. Working time	Specifying the operating time.
8. Temperature	Specifying the temperature range in °C.
9. Flange	Specifying the potential to build up to ISO 5211 flange versions.
10. Attachment	Specifying the attachment square bar in mm. The conformation consists of an octagon for direct construction for valves with parallel or 45° offset shaft or two flat.
11. 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!
12. CE Marking	By affixing the CE marking the manufacturer confirms that the product complies with the European Directive.
13. Barcode	Serial number in form of numbers and barcode, which ensures the uniqueness of the actuator and makes it easily trackable.
14. Working angle	
15. Duty rating	Maximum permissible duty. The duty cycle always refers to 10min (100 % = 10 min).
16. 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.
14. QR-Code	Production data

Device description

Status-LED J3/ J3C



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 "Indicator" 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

Operating state	Time	Indicator	LED Status
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/ Actuator without power and working with the	200 msec	1111 0110 1000 0000	flashing orange
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 moving via DPS signal STOP	200 msec	1111 1111 1111 1111	blue
Actuator moving via DPS signal to position OPEN	200 msec	1111 1111 1111 1111	blue/green
Actuator moving via DPS signal to position 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.

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.

Installation

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.

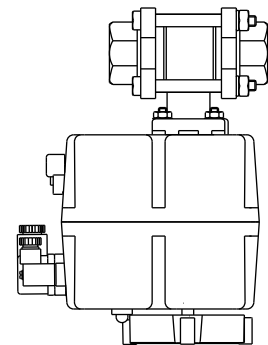
To the following description we assume that you have read the previous chapter carefully. Pay attention to the assembly and disassembly instructions and warning notes written in **the chapter on safety advise**.

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).



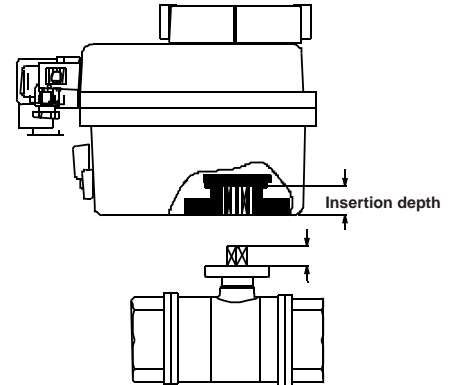
not permissible installation

Installation

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 wave socket

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 of octagon and adaption 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	Double square					Two flat	
	9mm	11mm	14mm	17mm	22mm	11x16mm	17x22mm
10	-	-	15mm	-	-		
20	11mm	13mm	15mm	-	-	20mm	
35	11mm	13mm	15mm	-	-	20mm	
55	-	-	16mm	19mm	-	17mm	18mm
85	-	-	16mm	19mm	-	17mm	18mm
140	-	-	-	19mm	24mm		33mm
300	-	-	-	19mm	24mm		33mm

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.

Screw-in depth in detail

Type	F03/05	F03/04/05	F07/10	F07/10
10	9mm	-	-	-
20	-	9mm	-	-
35	-	9mm	-	-
55	-	-	-	-
85	-	-	-	-
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

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

Installation

Flange hole thread:

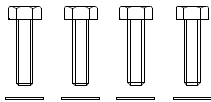
Flange	F03	F04	F05	F07	F10	F12	Stecker	Gehäuse
Screw	M5	M6	M6	M8	M10	M12		
Mounting torque	5,1 Nm		8,8 Nm	21,5 Nm	44 Nm	65 Nm	0,5 Nm	2,6 Nm

Required mounting material:

Material for the direct actuator design

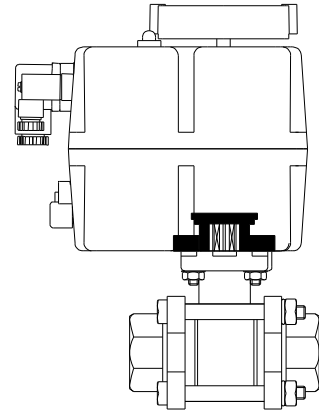
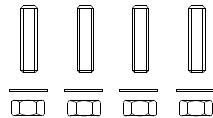
With screws:

- 4 screws
- 4 washers



Alternatively with headless screws:

- 4 headless screws
- 4 washers
- 4 nuts



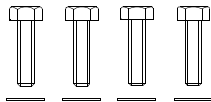
Direct mounting

Material for Assembly - actuator on valve bracket and adapter

- a bracket
- adapter

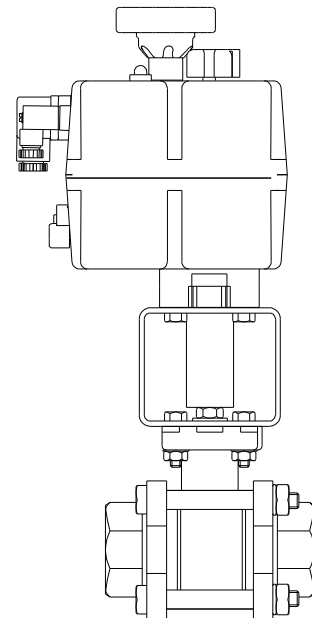
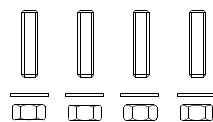
with screws:

- 8 screws
- 8 washers
- 4 nuts



alternatively with headless screws

- 8 headless screws
- 12 nuts
- 12 spring washer



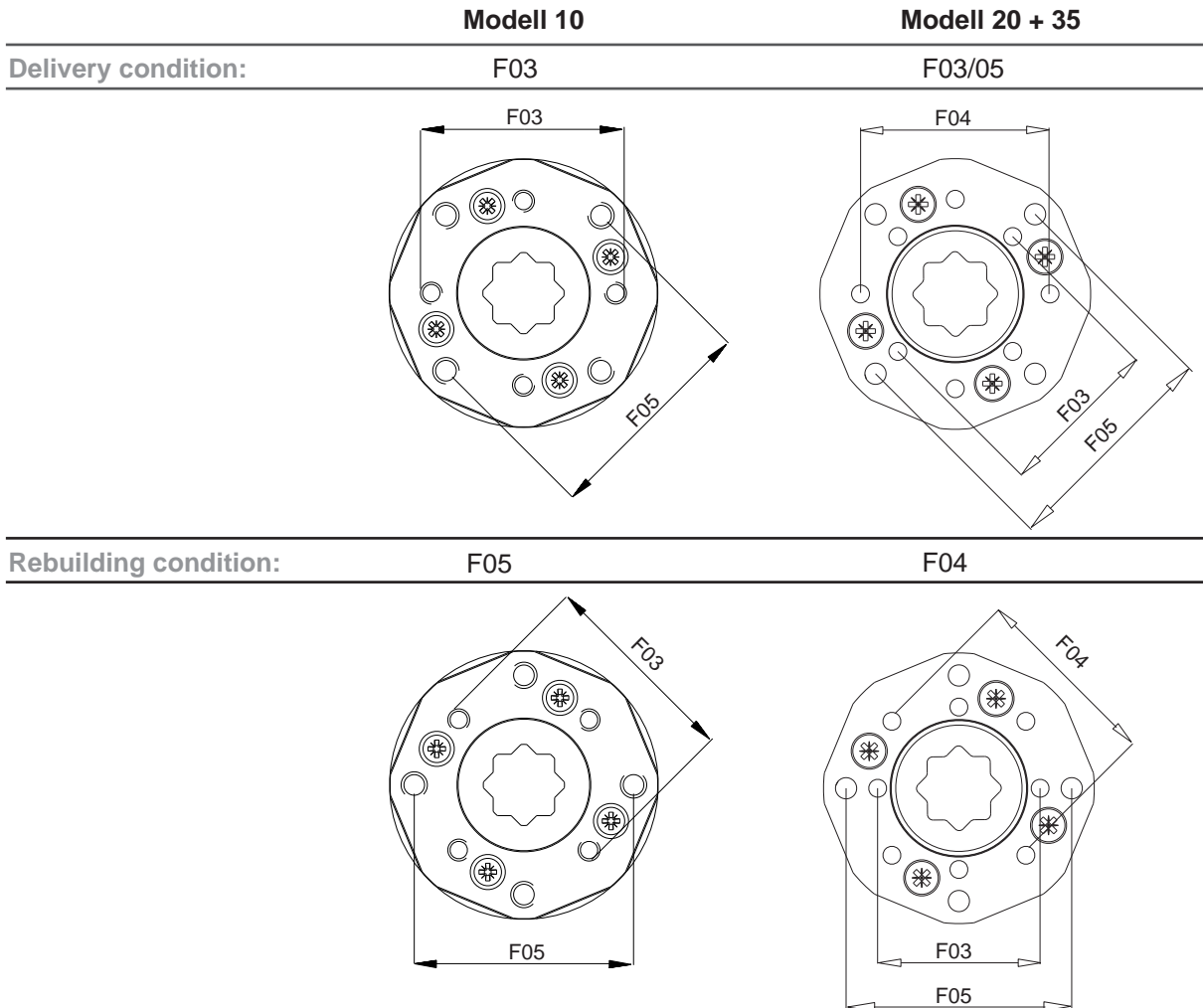
Assembling with bracket and adapter

Installation

Alternation multi flange plate in types 10 to 35

To use all flanges sizes according to ISO 5211 is structurally necessary (for model 10 and 35) 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. Undo the screws
2. Screw two threaded pins/ screws into the flange plate, until they press the plate out 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.

Installation

Conversion double square adapter

Appropriate double squares adapter available from your J+J specialist dealer.

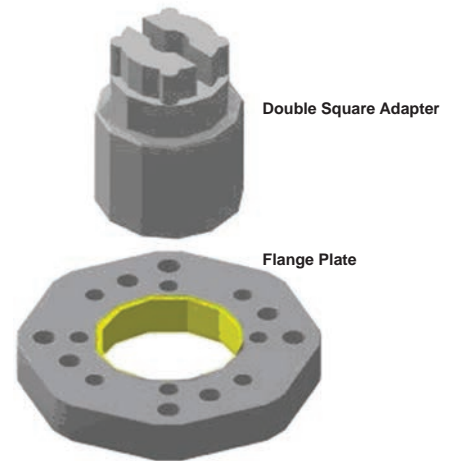
Model 20/35

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

Possible two flat - 11 x 16 mm

Working steps are as follow:

- Remove the multi flange plate
- Remove the adapter
- Insert appropriate adapter
- Insert the multi flange plate again



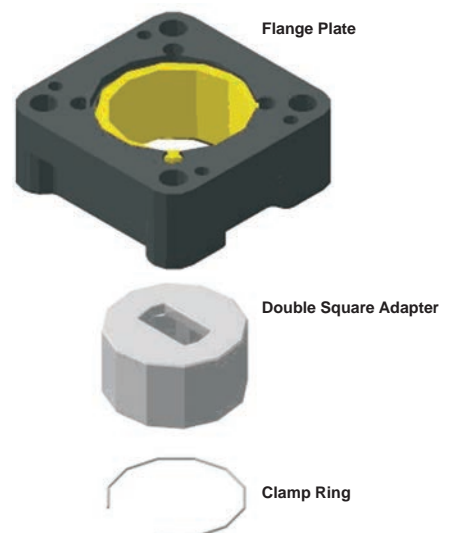
Model 55 - 300

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

Possible two flat - Model 55/ 85 - 11 x 16 mm/ 17 x 22 mm
- Model 140/ 300 - 17 x 22 mm

Working steps are as follow:

- Remove the clamp ring
- Remove the adapter
- Insert appropriate adapter
- Insert the clamp ring



Electrical Installation

Electrical Installation

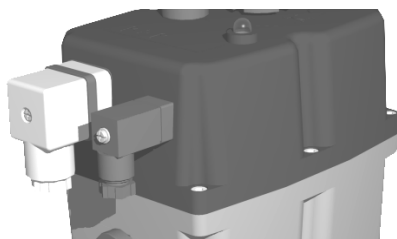
Basically, valid for wiring, voltages and other data the wiring diagram and type label sticker on the actuators.

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

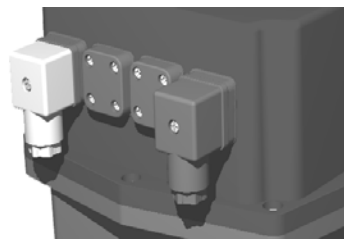
Complete units consisting of valve and actuator need only be wired via the connector. Opening the housing cover is only necessary to readjusting of the cams . Connecting, operating or open the actuators may only be performed by qualified personnel in accordance with VDE regulations.

Standard actuators are single phase to connect. An external fuse must be provided. Do not connect consumers in parallel to the actuator.

Connectors



Model 10 - 85



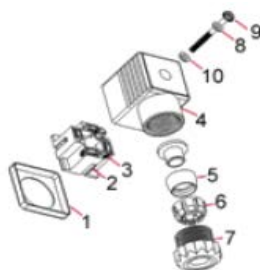
Model 140/300

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	
	Type C industrial standard		Type A DIN EN 175301-803A	
	min. Ø	max. Ø	min. Ø	max. Ø
10 - 85	5mm	5mm	8mm	10,5mm
140 - 300	-	-	8mm	10,5mm



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

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.

Wiring

See wiring in appendix

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.

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.

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.

Position Adjustment

General

Switch actuator from automatic to manual mode and approach to changing position of the manual
Turn the cam always from the direction in which the main shaft will rotate to the position of the switch
override.

Endposition

The adjustment of the end positions is accomplished in the same manner, with the help 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.

Assembly

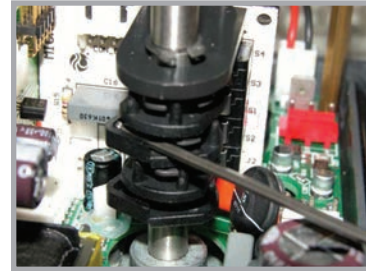
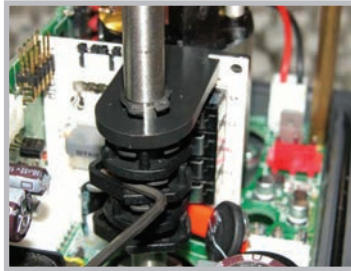
After calibration, the lid has to be replaced carefully. Be sure to route the cables around the shafts
and the engine as in the origin situation, so it can not cause malfunction by pinching. The lid must
now lie close to the base. If this is not the case, a cable is located between the motor and the 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 whee. 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.

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

Position Adjustment

Setting instruction of limit switches Model 10 + J3 20

The configuration takes place with a 2 mm allen wrench or a small screwdriver, which have to stick into the gap of the cam and twist it until a clicking sound of the switch is heard. Alternative you can order the special tool from the picture below.

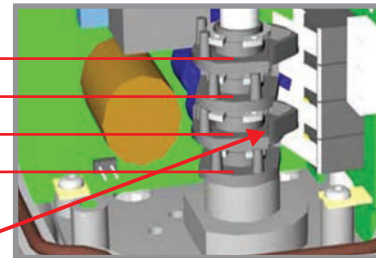


Cam 4: Micro switch potentialfree feedback "OPEN"

Cam 3: Micro switch potentialfree feedback "CLOSE"

Cam 2: Micro switch for engine shutdown "OPEN"

Cam 1: Micro switch for engine shutdown "CLOSE"



Use 2 mm hex key to change the cams

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 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 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.

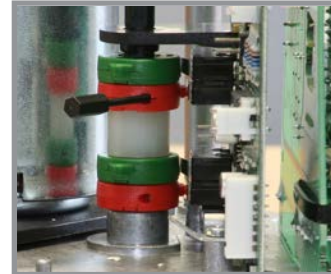
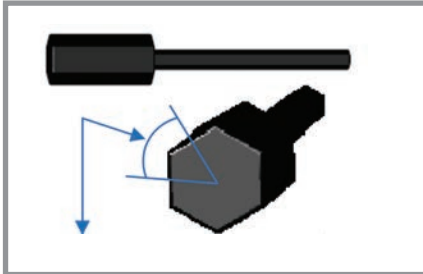
The cam 4 must press the lever of the micro switch approximately 3° earlier than the cam 2.



Position Adjustment

Setting instruction of limit switches J3C Series

Tool: One special plastic wrench. The wrench was supplied with the actuator and mounted inside the housing. 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°

To ensure that the position confirmation works, adjust the confirmation cams (3 & 4) $3^\circ (+/-1^\circ)$ 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).

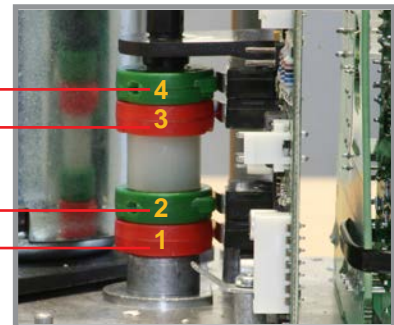


Cam 4: Micro switch potentialfree feedback "OPEN"

Cam 3: Micro switch potentialfree feedback "CLOSE"

Cam 2: Micro switch for engine shutdown "OPEN"

Cam 1: Micro switch for engine shutdown "CLOSE"



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.



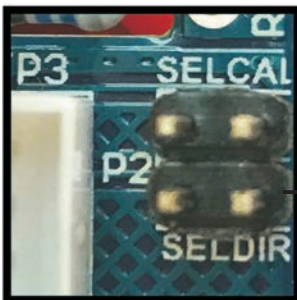
Jumper Configuration

Basic configuration



Heater active

Optional Configuration



Heater inactive

FAQ

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.

If there is moisture in the inside of your actuator.

The mounting of the cable has to be gland at the connectors. Please check also the diameter of the used cables. Please see also in chapter "connectors".

Such errors therefore must be eliminated as soon as possible!

Special Models

Series J3/J3C

Actuators with Battery Spring Return

*This instruction is additional to your „ Basic instruction **J3 S+ J3C S** “. For further technical details and advices please mind those.*



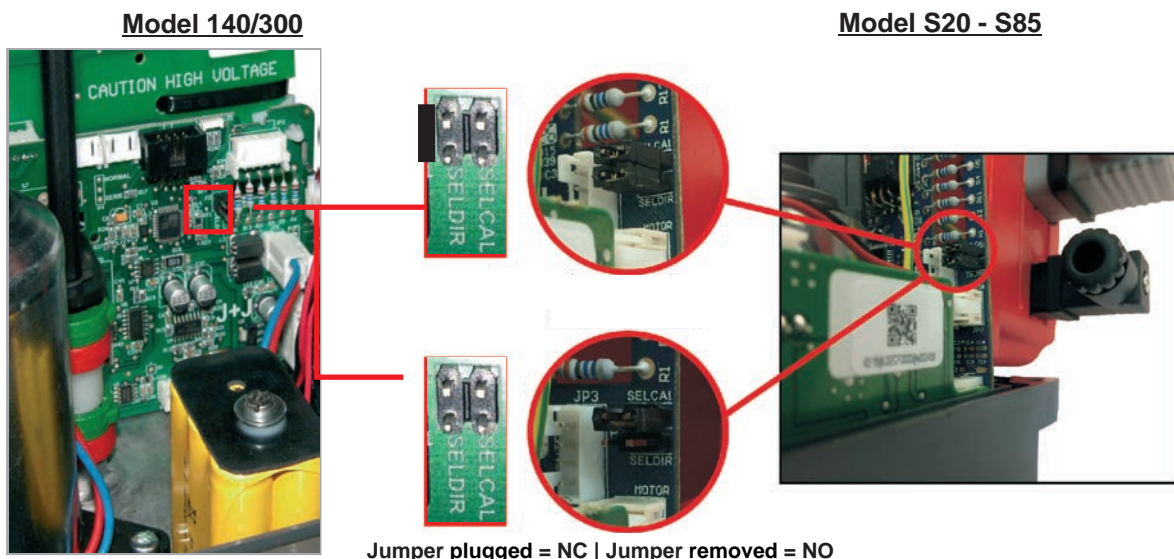
General

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. 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.

If the actuator is out of external power supply, therefore the security function comes into operation, the limiter function cease to be effective.

Functional check

If the security function is active, the actuator LED is flashing. (see Basic Instruction **J3 S + J3C S**). With reaching the limits, LED and heater will be active for 3 more minutes, then these functions turn



Actuators with Battery Spring Return

Functional check

There is no servicing required! Regular functional checks, must be scheduled, considering to the security requirement. To make a functional test, do it in the following way:

To prevent an unwanted „Opening“ or „Closing“ by the valve, it is advisable to separate the actuator from the valve.

Take away the actuator from power supply and toggle it from “automatic” to “manual”. Unloose the four fixing screws at the flange and detach the the actuator from the valve. Turn the actuator manually out of position (min. 45°). Afterwards you have to toggle the actuator back to „automatic“ and switch on the power supply for short-time. If the actuator initiate, switch off the power supply immediatly. Now the actuator have to drive in it defined position (Open or Closed). In the end, you have to attach the actuator back on the valve.

Status-LED



Status	Time	Indicator	LED Status
Actuator without power and working with the BSR system, max. 3 minutes	200 msec	1000 1000 1000 1000	Red
Actuator without power and working with the BSR system, max. 3 minutes	200 msec	1000 1000 1000 1000	Green
Battery protection. Danger The battery needs recharging. BSR disabled.	200 msec	1010 1000 0000 0000	Orange

Technical data:

Model	S20	S35	S55	S85	H140/300	L140/300
Capacity	1000 mA					
Full charge time 100%	28 Std.					
Charging time after drive	8min	8min	10min	20min	30min	50min
Battery consumption/ working operation	6,2W				23W	
Working operation without recharge	5				2	1
Configuration security option (NO/NC) Jumper on position "SELDIR"	with jumper = NC („closed“) without jumper = NO („open“)					
Battery charge	40mA/h					
Working operation with battery	2,4mA		3,3mA	7,1mA	15,1mA	25,7mA
Weight (BSR Kit)	0,23kg				0,375kg	

Actuators with DPS Positioner

This instruction is additional to your „ Basic instruction J3 S+ J3C S “. For further technical details and advices please mind those.



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. 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. After 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.

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

Technical Data:

Accuracy	3% *
Linearity	2% *
Hysteresis	3% *
Teilung	Min. 142 steps 90° 4/20mA Min. 88 steps 90° 0/10V Min. 166 steps 90° 0/20mA Min. 85 steps 90° 1/10V
Min Auflösung /90°	1,30%
Class	B+C nach E DIN EN 15714 Inching + Modulation
Input signal impedance	0-10V = 25KOhm / 4-20mA = 100Ohm
Weight	0,600 kg

Alignment of DPS positioner (J3 S + J3C S)

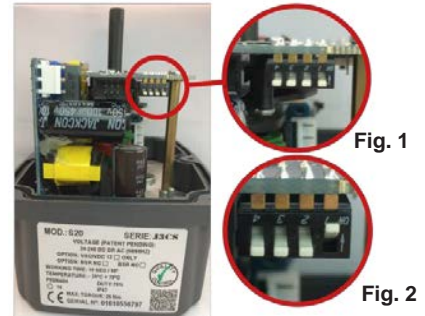
The „alignment of DPS positioner“ means to approach the configured switch cams of the actuator, to set, or adjust the DPS limits. This is necessary, every time when the swivel angle where changed. Please ensure, to only change in the configuration range of the actuator (0°- 90°, 0°- 180° ...). If the actuator is twisted out of this range, it will re-configure itself after you put the power supply back on. Because the system works potential-free, it maybe could be out of adjustment.

Actuators with DPS Positioner

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

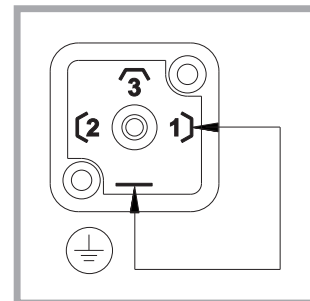
Electrical alignment

1. switch off power supply and open the cover
2. Put DIP-switches in neutral position (see fig. 1)
3. put DIP-switch 1 to position „on“(see fig. 2)
4. switch on the power supply
5. put DIP-switch 1 back to neutral position



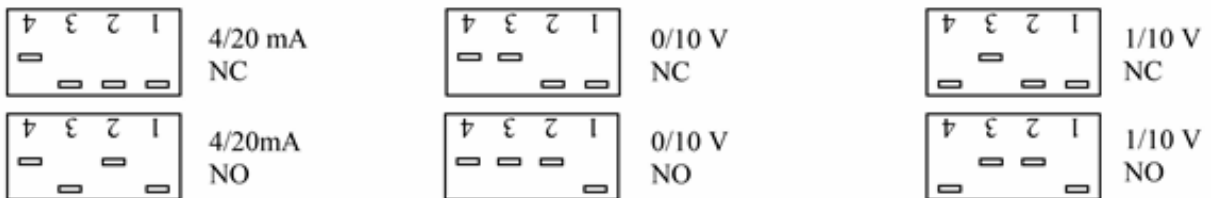
Manual alignment

1. switch off power supply and open the cover
2. release plug 3 from terminal 3 (Positioning signal)
3. make a bypass on terminal 3 between Pin 1 and Ground
4. switch on the power supply
5. release the bypass
6. now the actuator drives in both end positions



Configuration of signal

The signals mode could be configurate by DIP-switches. Plug off the external power and positioner plugs and easily configurated those switches as seen in the image below.



Adjust working angel

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 information at our main manual,. After the adjustment of the cams you have to adjust the positioner system too.

Actuators with DPS Positioner

Functions of status LEDs

External status indicator LED

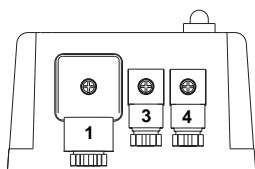
status	time	indicator	LED colour
reached position	100%	1111 1111 1111 1111	blue
power supply on / actuator moving to „open “	100%	1111 1111 1111 1111	blue / green (flashing)
power supply on / actuator moving to “closed “	100%	1111 1111 1111 1111	blue / red (flashing)

Status-LED DPS board (internal)

- OPEN control signal “OPEN” – actuator moving to “OPEN”
- CLOSE control signal “CLOSE” – actuator moving to “CLOSE”
- OPEN+CLOSE configuration mode

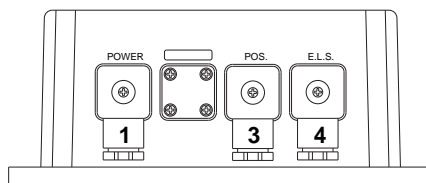


Plugs



Model S20, S35, S55, S85

- plug 1:
- plug 2:
- plug 3:

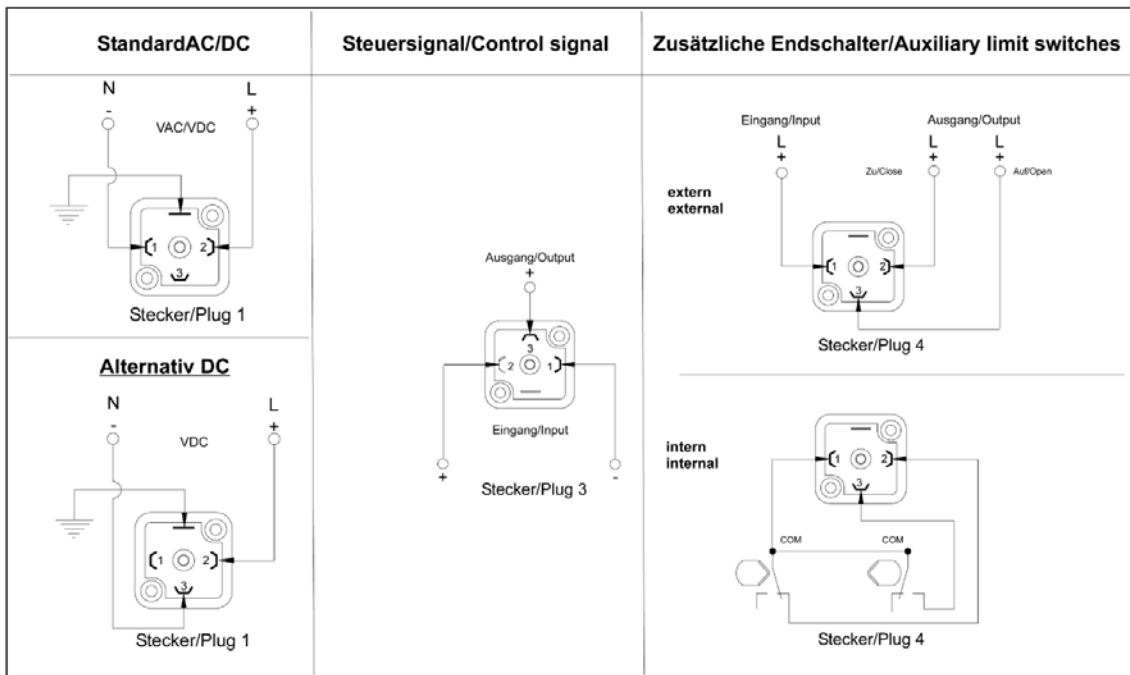


Model H/L 140, 300

- power supply (according to label)
- driving signal (0 - 10 V, 4 - 20 mA or 0 – 20 mA)
- limit switch signal open/close (potential free)

Actuators with DPS Positioner

Wiring diagram DPS AC/DC



Error analysis (FAQ)

The actuator positions are not acc. to the input signal

reason: drive over the adjusted angel by hand

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: see chapter "adjust the DPS positioner systems"

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 System

help: see chapter "Adjust working angel" 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 as its shown in the main manual

Actuators with Potentiometer

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.

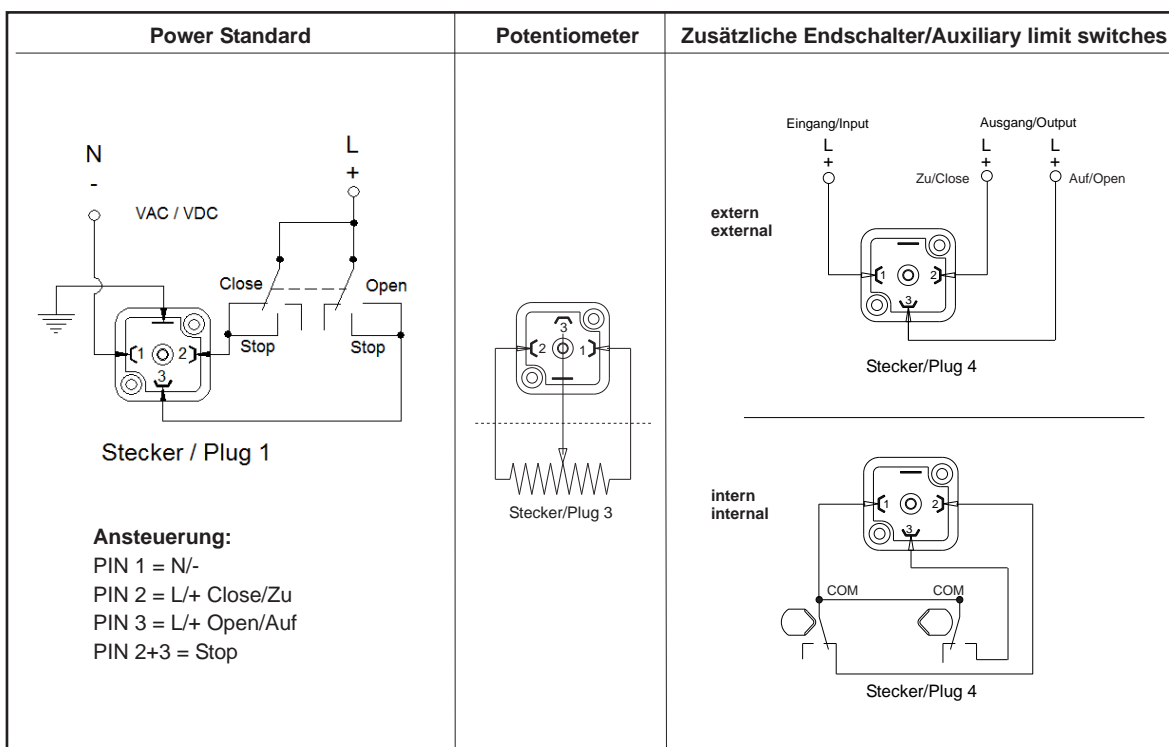
The electric quarter turn actuator has two adjustable, potential- / volt- free signals for the position confirmation.

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.

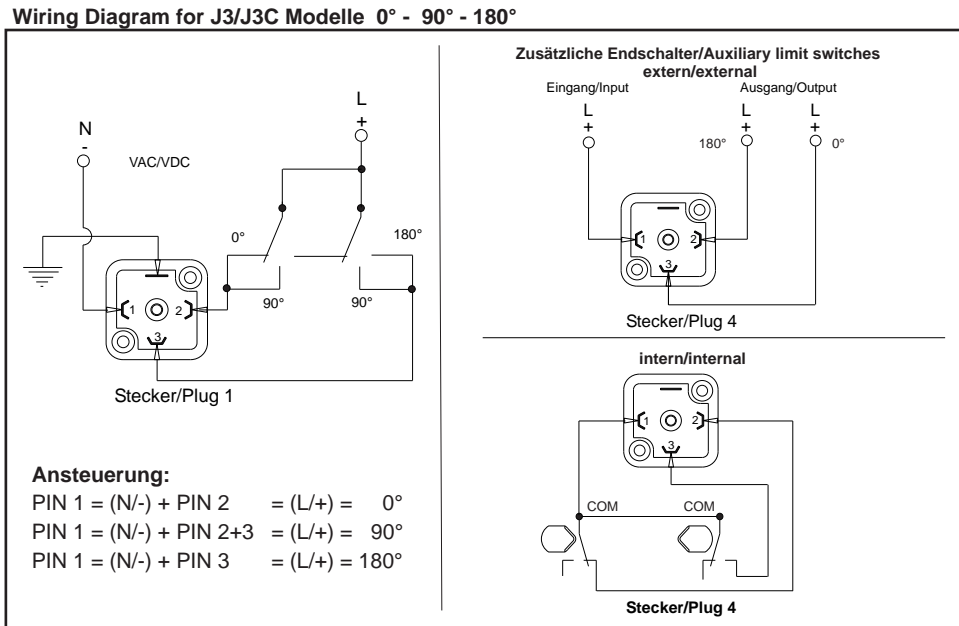


3 Positions Actuator

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.

Example: J+J Standard 0° - 90° - 180°



The models of J3/ J3C Series electrical displace in 3 positions. There are 2 potentialfree end position feedback, more are not possible. The feedbacks are generally adjusted on max. and min. of the ordered swivel angle.

Justage of Positions

See "Position Adjustment" in our manual, or the basic instruction.

End position

Cam 6: Micro switch for engine shutdown "0° to 90°"

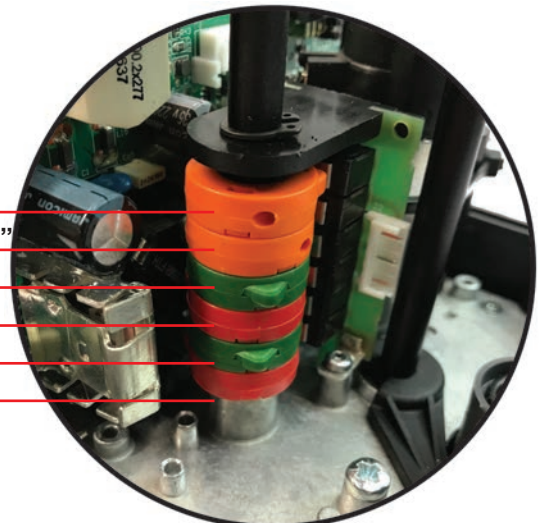
Cam 5: Micro switch for engine shutdown "180° to 90°"

Cam 4: Micro switch potentialfree feedback "180°"

Cam 3: Micro switch potentialfree feedback "0°"

Cam 2: Micro switch for engine shutdown "180°"

Cam 1: Micro switch for engine shutdown "0°"



Actuators with 2 control phases

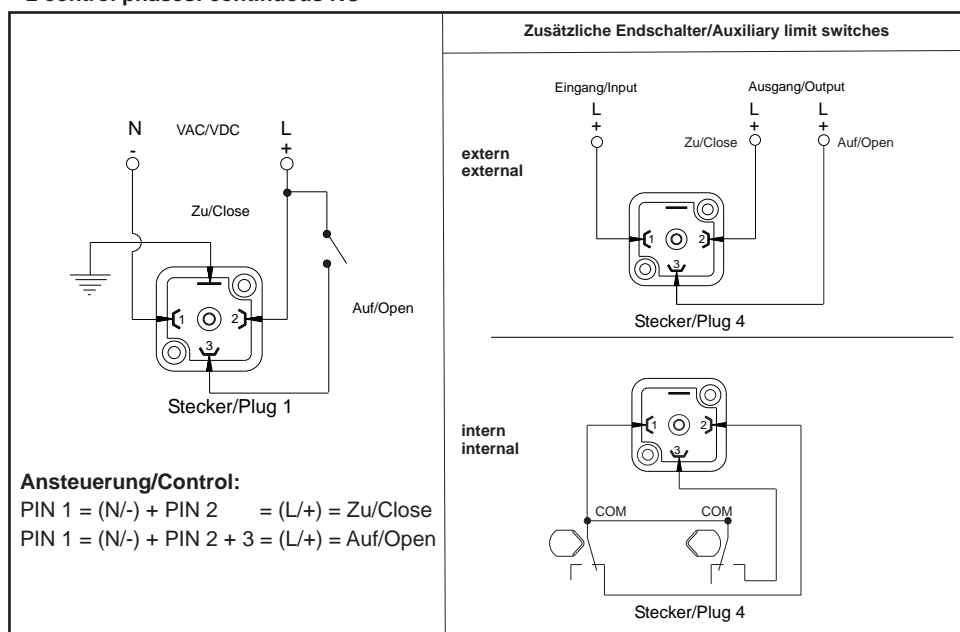
This option is not available for J2 10

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

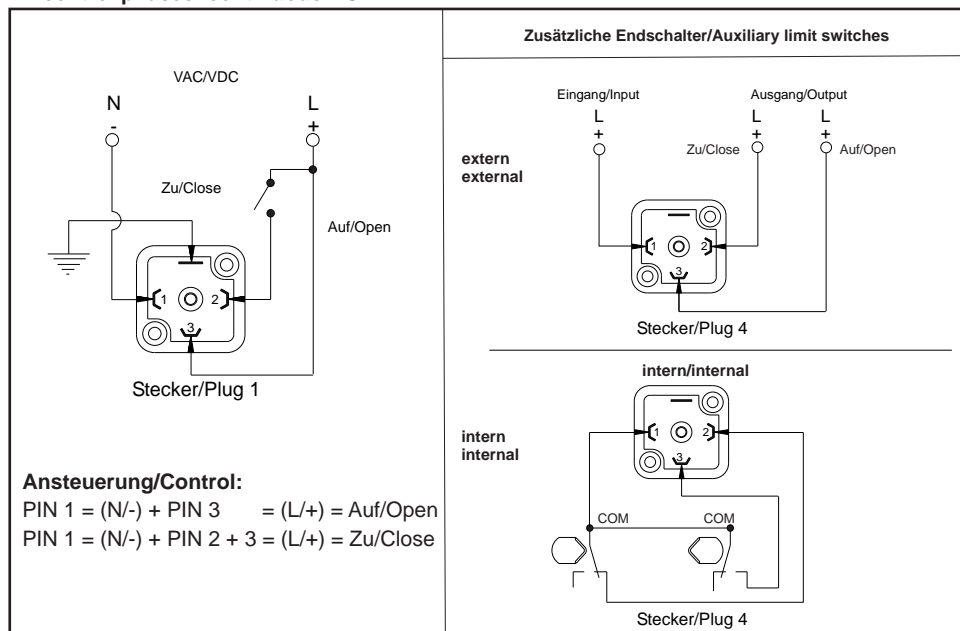
This on/off actuator travels in the ordered phase direction (NO or NC). If the second phase contact the actuator travels to the opposite direction.

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.

2 control phases: continuous NC



2 control phases: continuous NO



Appendix

Specifications

	J2 10	J3 S20	J3C S20	J3C S35	J3C S55	J3C S85	J3C 140	J3C 300
voltage range S	-	24-240V AC/DC	24-240V AC/DC	24-240V AC/DC	24-240V AC/DC	24-240V AC/DC	-	-
voltage range L	24V AC/DC	-	-	-	-	-	24 V AC/DC	24 V AC/DC
voltage range H	85-240V AC/DC	-	-	-	-	-	85-240V AC/DC	85-240V AC/DC
operating time (90°)	L:19s / H:16s	10s	10s	10s	14s	30s	34s	58s
break torque	12Nm	25Nm	25Nm	38Nm	60Nm	90Nm	170Nm	350Nm
operating torque	10Nm	20Nm	20Nm	35Nm	55Nm	85Nm	140Nm	300Nm
duty rating (ED)	75%	75%	75%	75%	75%	75%	75%	75%
protection class	IP65	IP65	IP67	IP67	IP67	IP67	IP67	IP67
temperature range	-20°C bis +70°C							
flange	F03/F05	F03/F04/F05		F05/F07		F07/F10(F12)		
double square DIN3337	14mm	9mm, 11mm, 14mm		14mm, 17mm		17mm, 22mm		
potentialfree limit switches	125 V AC 5 A / 250 V AC 3 A							
electr. connectors	EN175301-803 (Typ A + C)							
torque limiter	X	X	X	X	X	X	X	X
heater	X	X	X	X	X	X	X	X
housing	Polyamid (PA6)							
weight	0,90kg	1,8kg	1,9kg	1,9kg	2,4kg	3,0kg	5,2kg	5,2kg

Options

BSR / Battery-Safe-Pack, DPS / Positionersystem (Input und Output signal 0-10V or 4-20mA), BSR and DPS combined, Potentiometer (1K?, 5k? or 10K?), 3 Positions (Standard = 0°-90°-180°), 2 Phases control (NC oder NO - not available for J2 Models)

Specifications

Current consumption

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

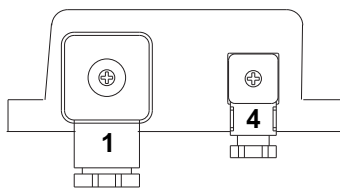
	J3C S20/ J3 S20	J3C S35	J3C S55	J3C S85
24 V AC	1200 mA 27,6 W	1600 mA 38,1 W	1730 mA 41,6 W	1170 mA 28 W
24 V DC	800 mA 20,3 W	1200 mA 28,2 W	1250 mA 30 W	900 mA 21,2 W
110 V AC	300 mA 27,6 W	300 mA 38 W	370 mA 40,7 W	270 mA 29,5 W
110 V DC	100 mA 14,3 W	200 mA 18,6 W	180 mA 19,6 W	150 mA 16,5 W
240 V AC	200 mA 39,6 W	200 mA 45,9 W	200 mA 48 W	160 mA 38 W

	J2 H10	J3C H140	J3C H300
110 V AC	272 mA 29,9 W	520 mA 57,6 W	610 mA 66,7 W
110 V DC	272 mA 29,9 W	290 mA 31,6 W	310 mA 34,6 W
230 V AC	272 mA 62,6 W	310 mA 68,2 W	360 mA 79,4 W
230 V DC	272 mA 62,6 W		

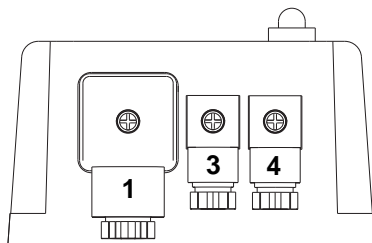
	J2 L10	J3C L140	J3C L300
12 V AC			
12 V DC			
24 V AC	390 mA 9,4 W	2290 mA 55 W	2800 mA 67,2 W
24 V DC	390 mA 9,4 W	1890 mA 45,5 W	2280 mA 54,6 W

Wiring Diagrams

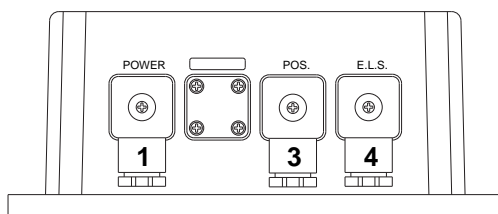
position of plugs



Model H/L 10



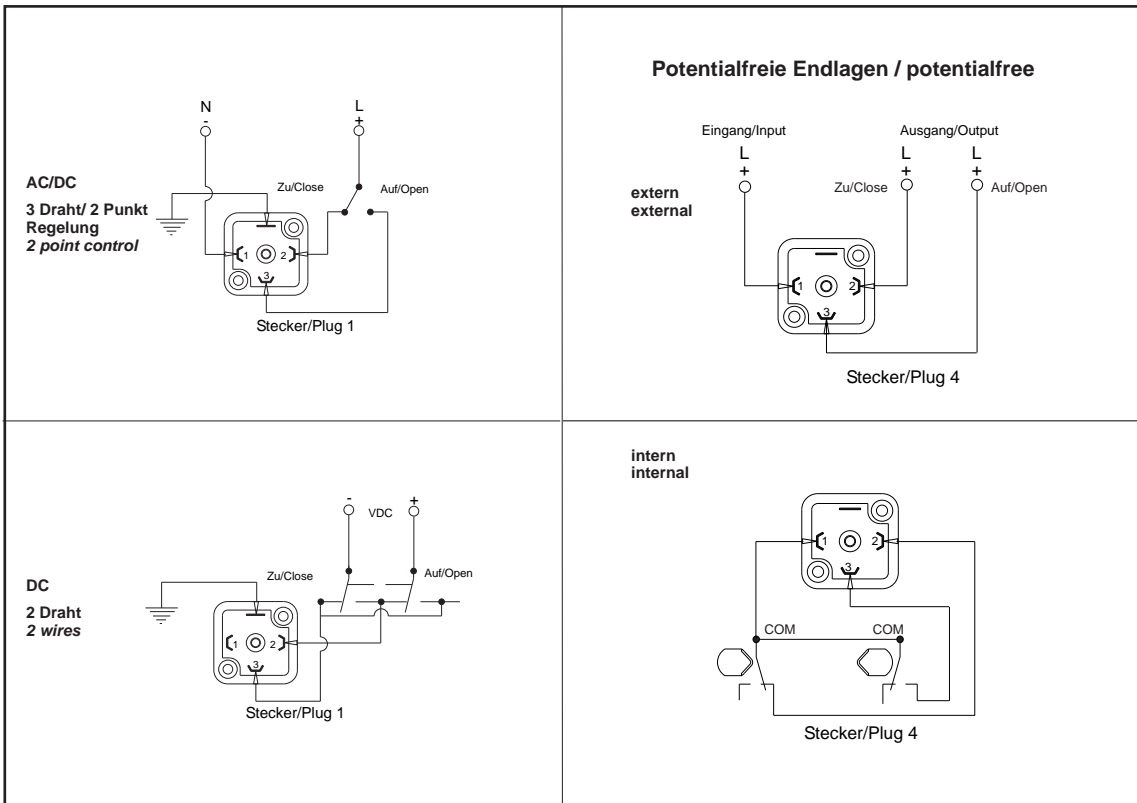
Models H/L 20, 35, 55, 85



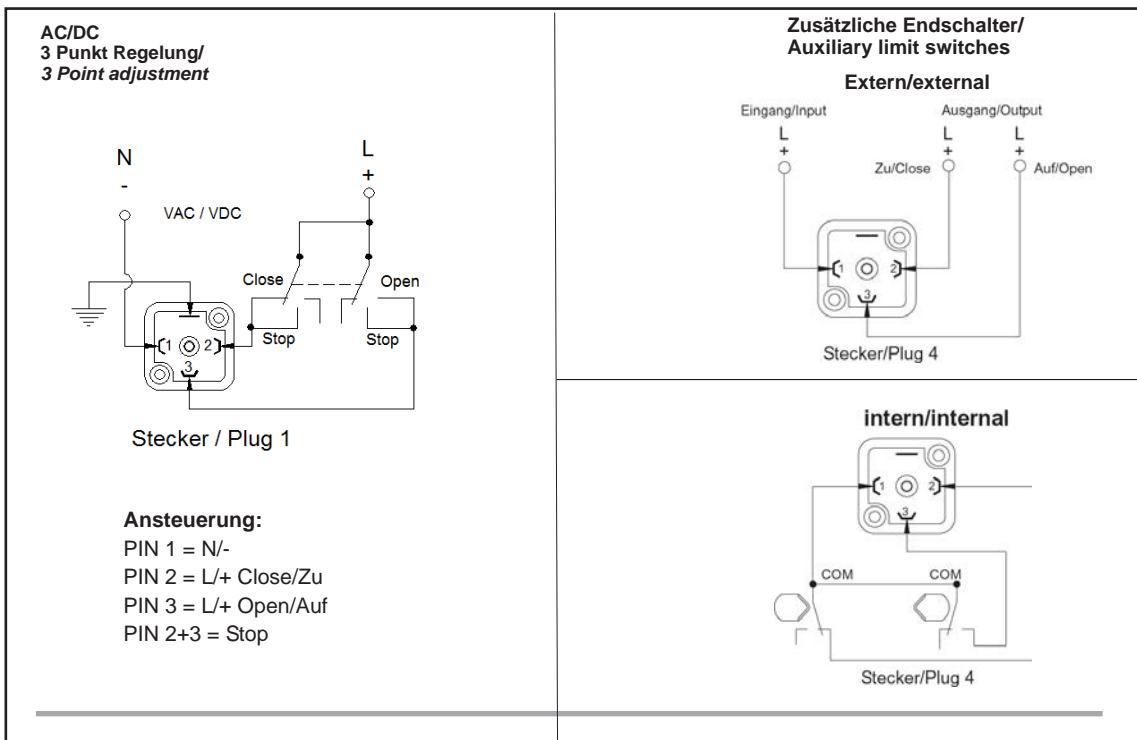
Models H/L 140, 300

Wiring Diagrams

J2 / J3 / J3C Standard + BSR



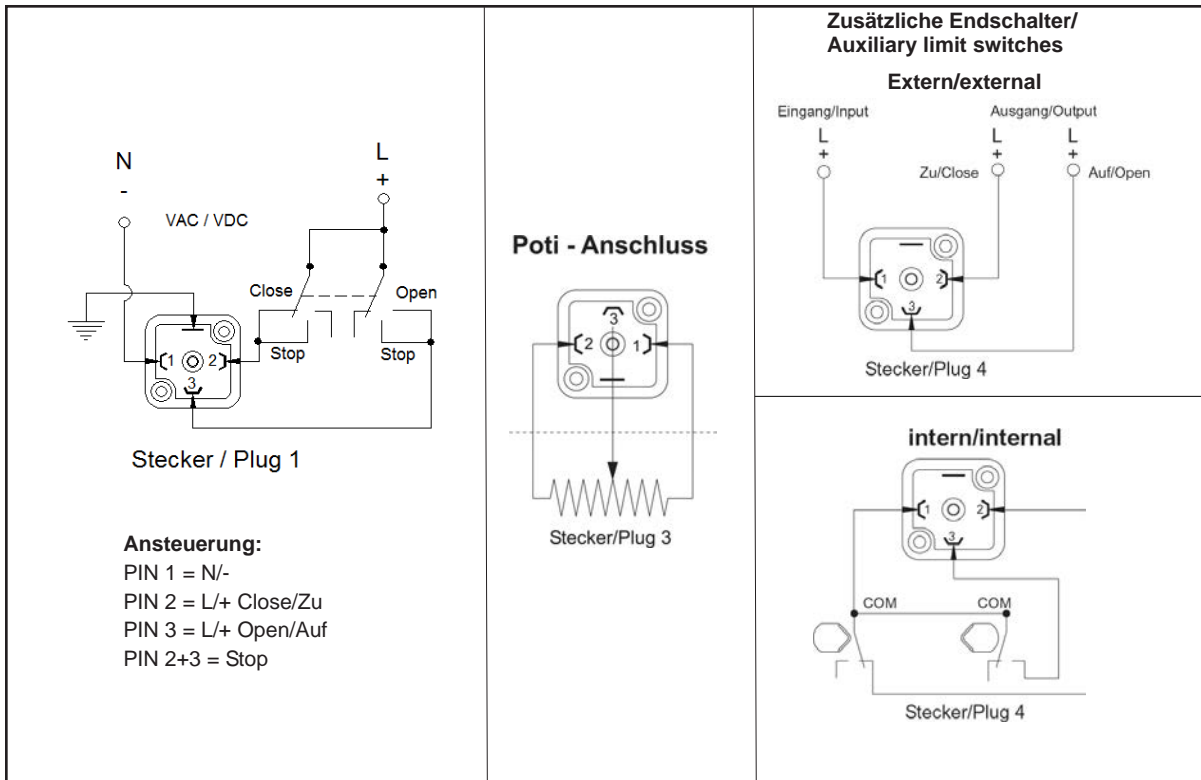
J2 / J3 / J3C Standard + BSR



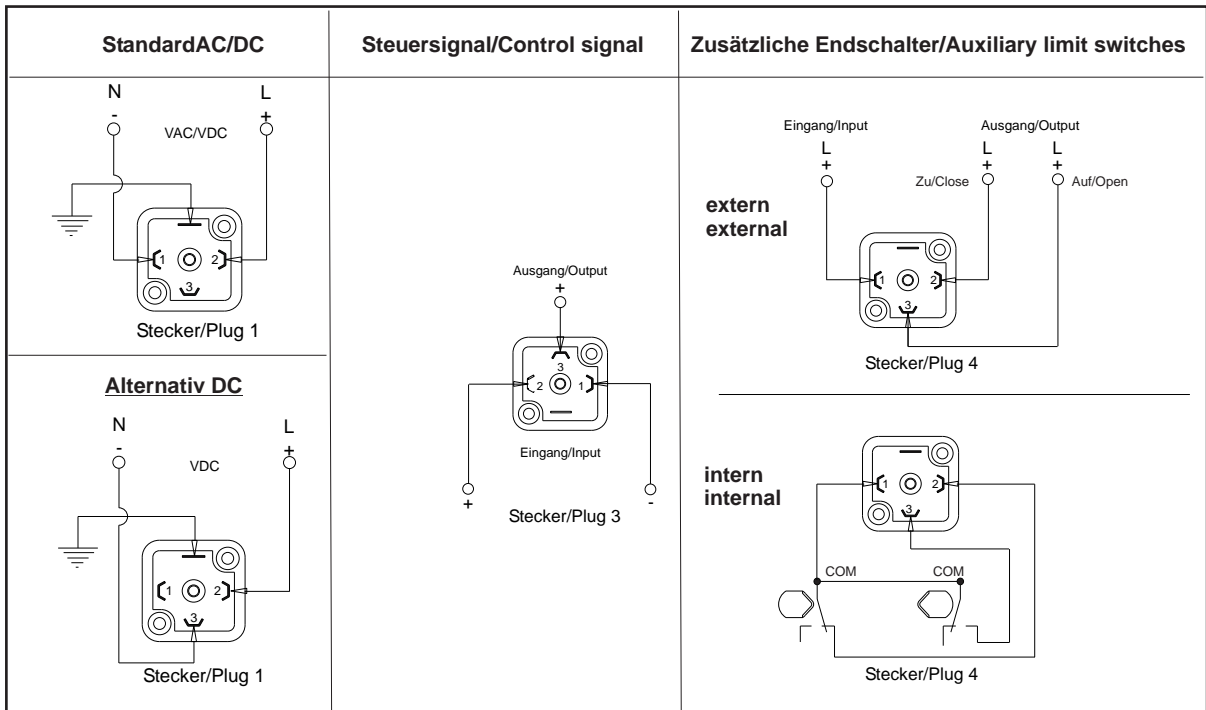
BSR not available for J2 Model 10

Wiring Diagrams

J3/ J3C with Potentiometer



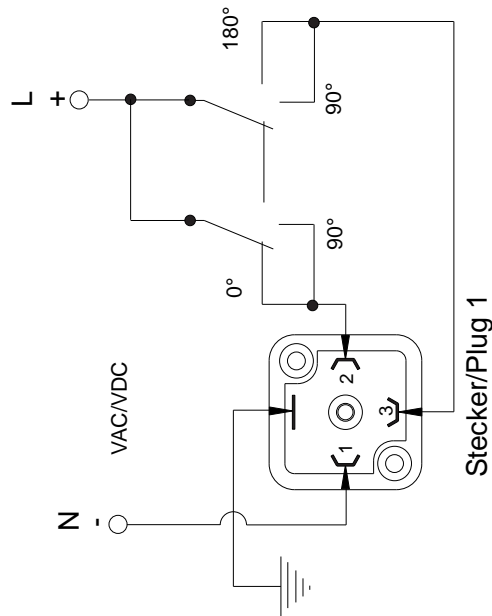
J3/ J3C with DPS



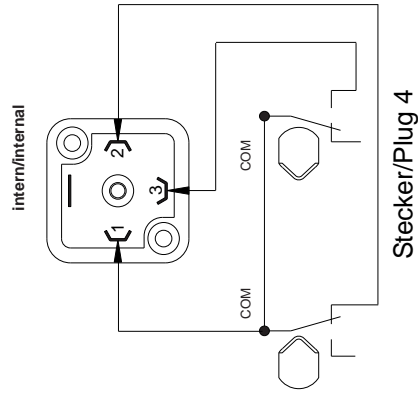
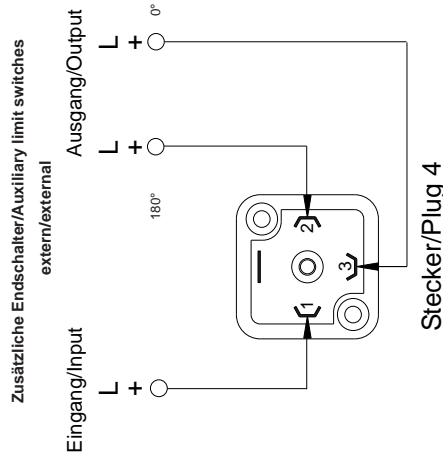
Wiring Diagrams

J3/ J3C 3 position 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°

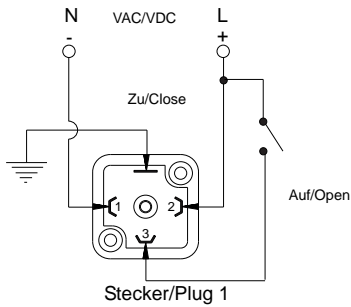


not available for J2 10

Wiring Diagrams

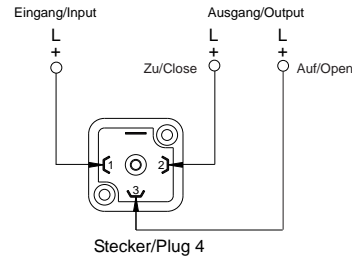
J3/ J3C 2 Phasen control NC

Schaltplan für 2 Phasen Ansteuerung: Dauerphase NC
 Wiring diagram for 2 phases: mainphase NC

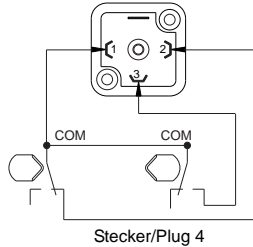


control:
 PIN 1 = (N/-) + PIN 2 = (L/+) = Zu/Close
 PIN 1 = (N/-) + PIN 2 + 3 = (L/+) = Auf/Open

Zusätzliche Endschalter/Auxiliary limit switches
 extern/external



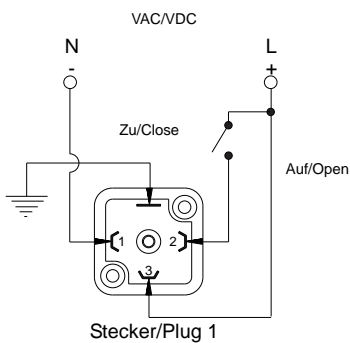
intern/internal



not available for J2 10

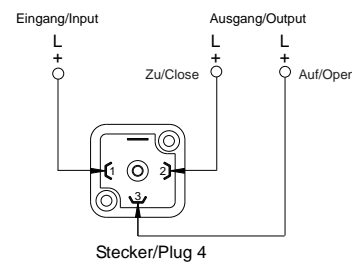
J3/ J3C 2 Phasen control NO

Schaltplan für 2 Phasen Ansteuerung: Dauerphase NO
 Wiring diagram for 2 phases: mainphase NO

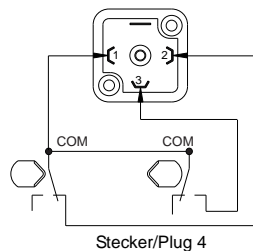


control:
 PIN 1 = (N/-) + PIN 3 = (L/+) = Auf/Open
 PIN 1 = (N/-) + PIN 2 + 3 = (L/+) = Zu/Close

Zusätzliche Endschalter/Auxiliary limit switches
 extern/external



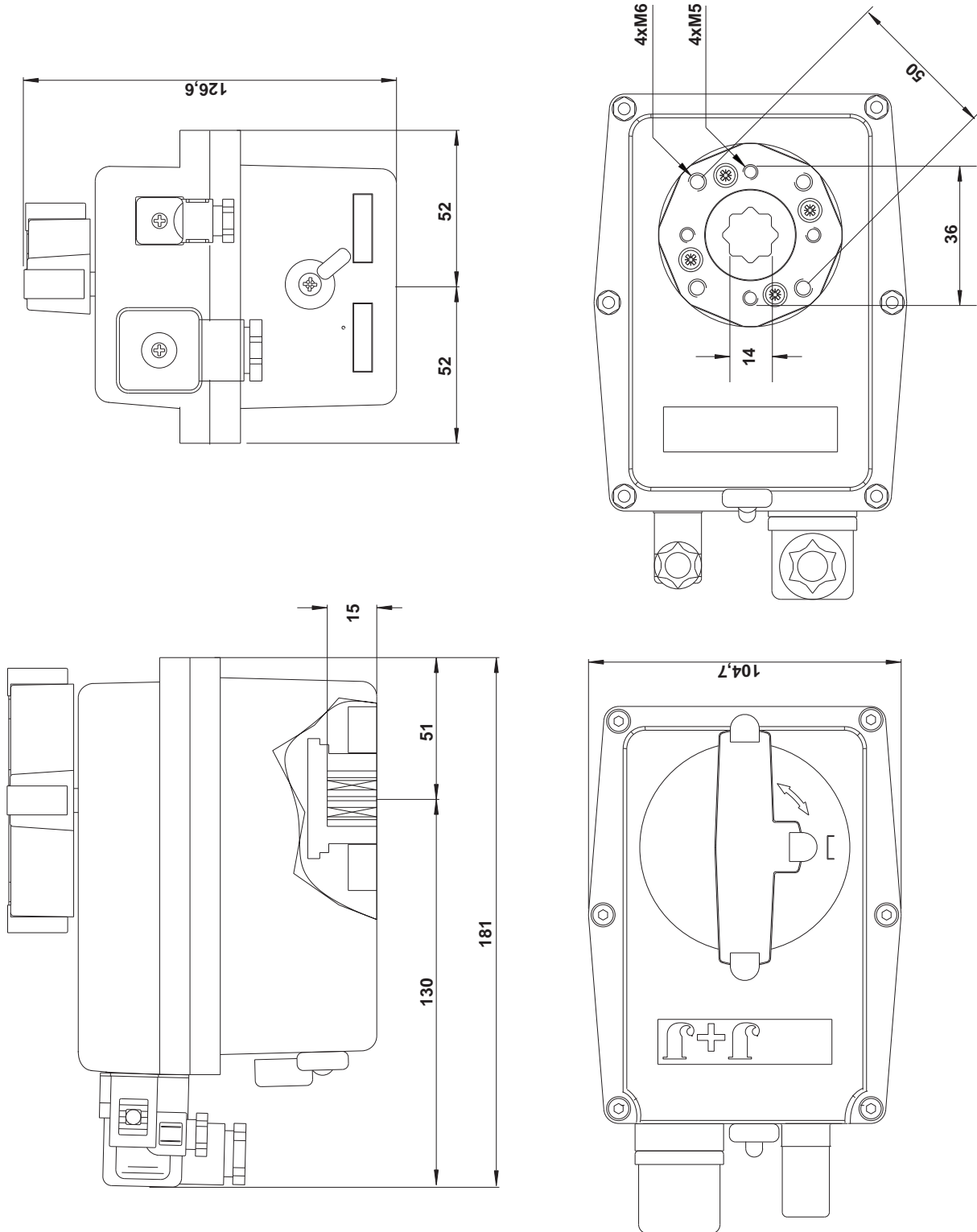
intern/internal



not available for J2 10

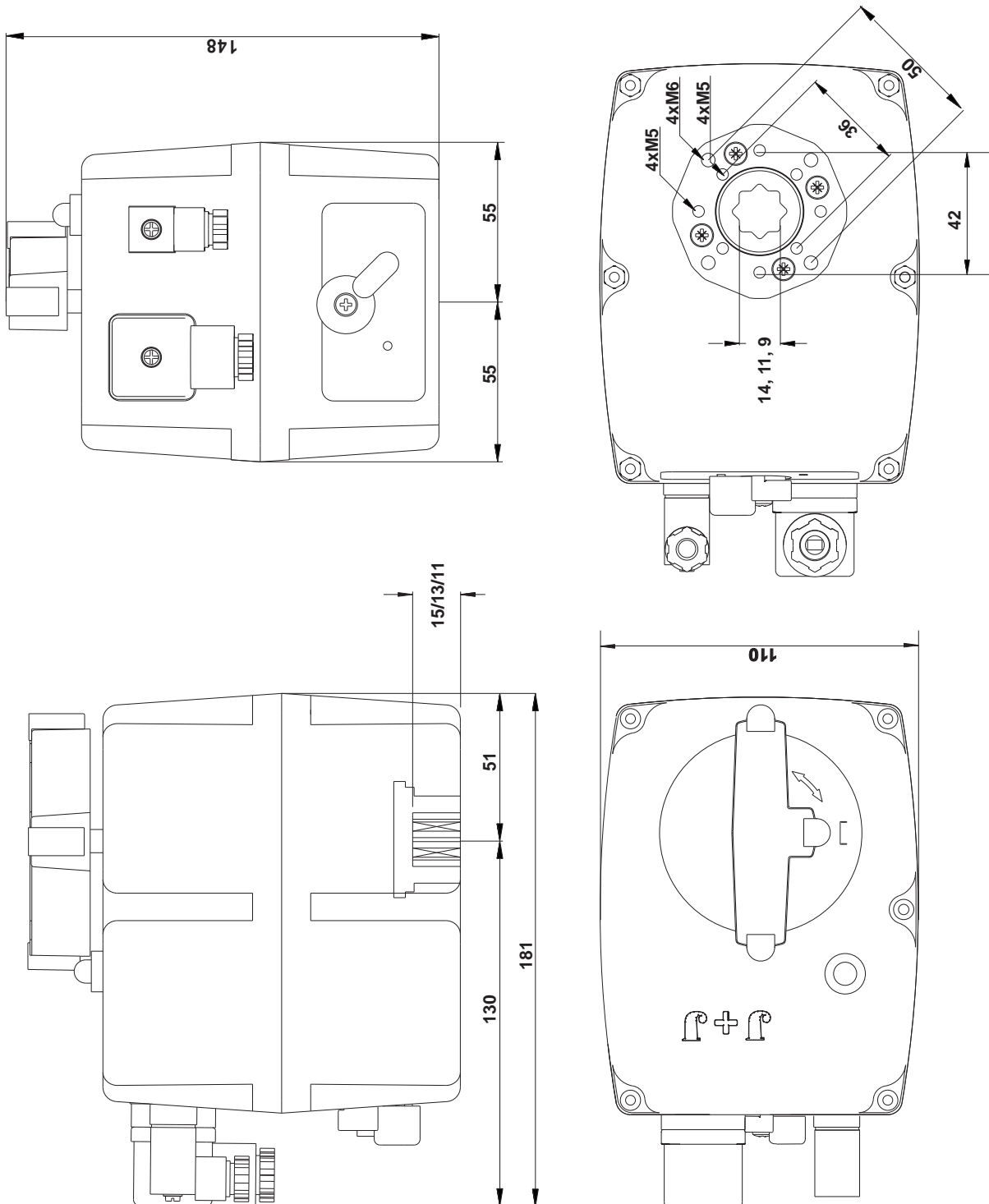
Dimensional Drawing

J2 H/L 10



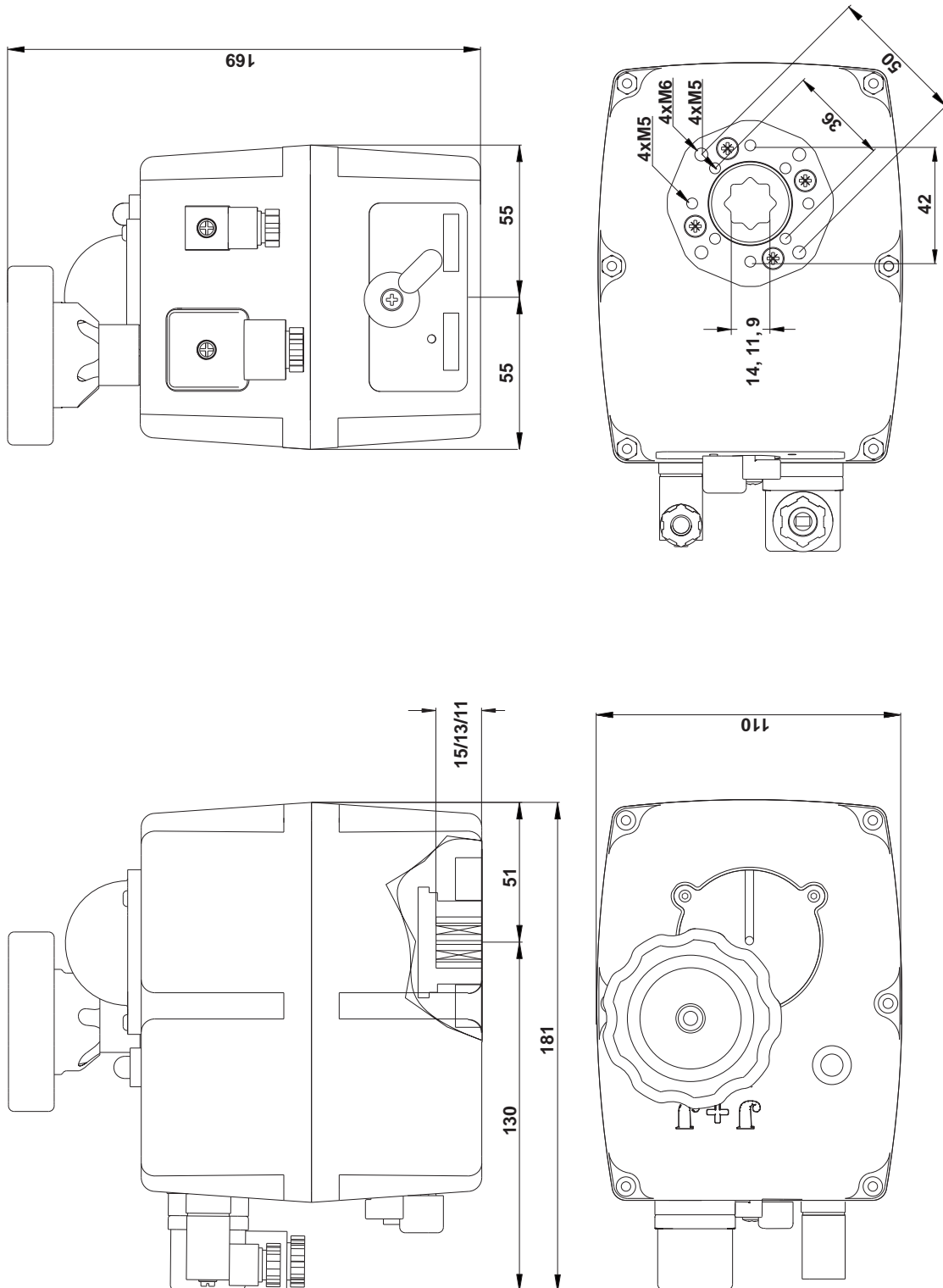
Dimensional Drawing

J3 S20



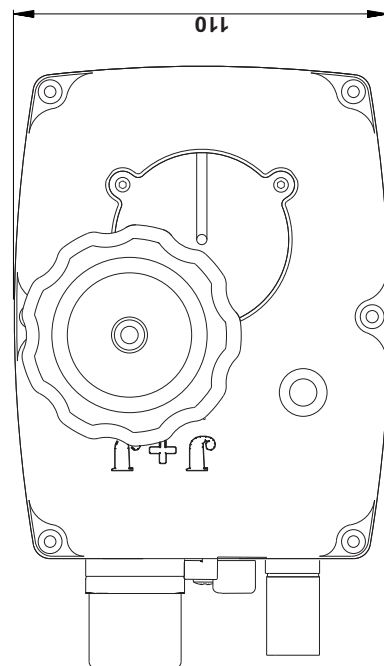
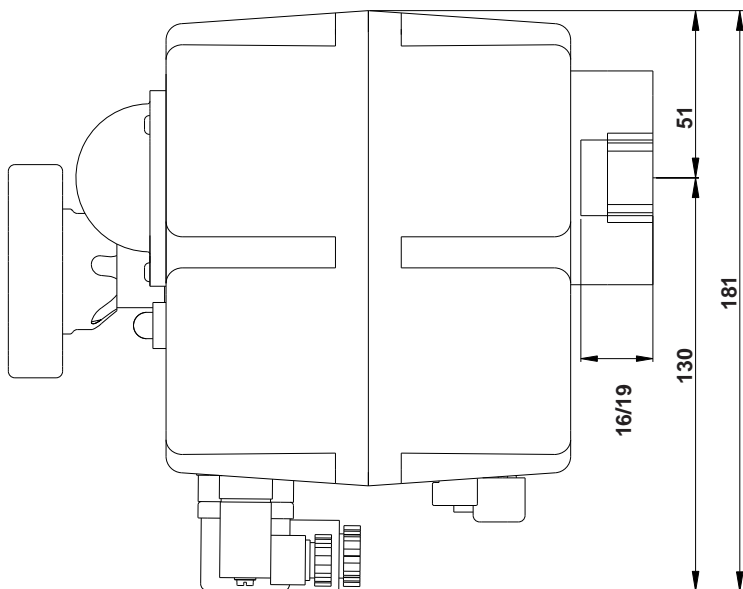
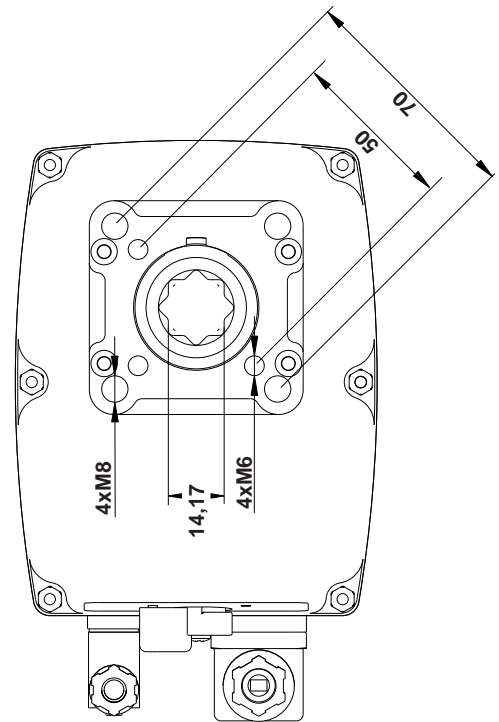
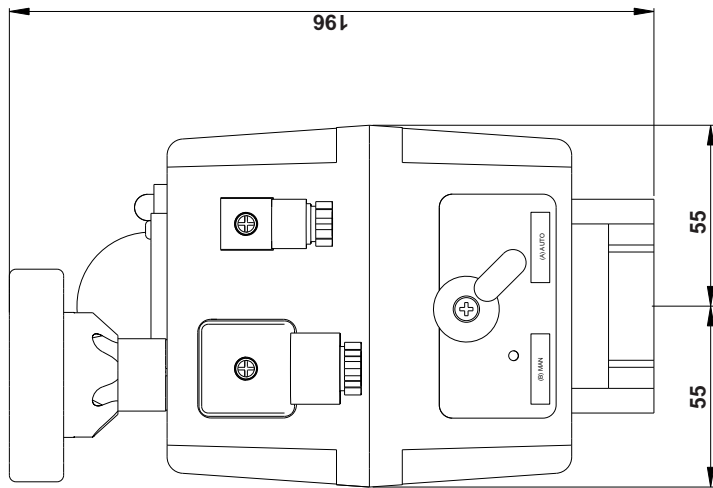
Dimensional Drawing

J3C S20/35



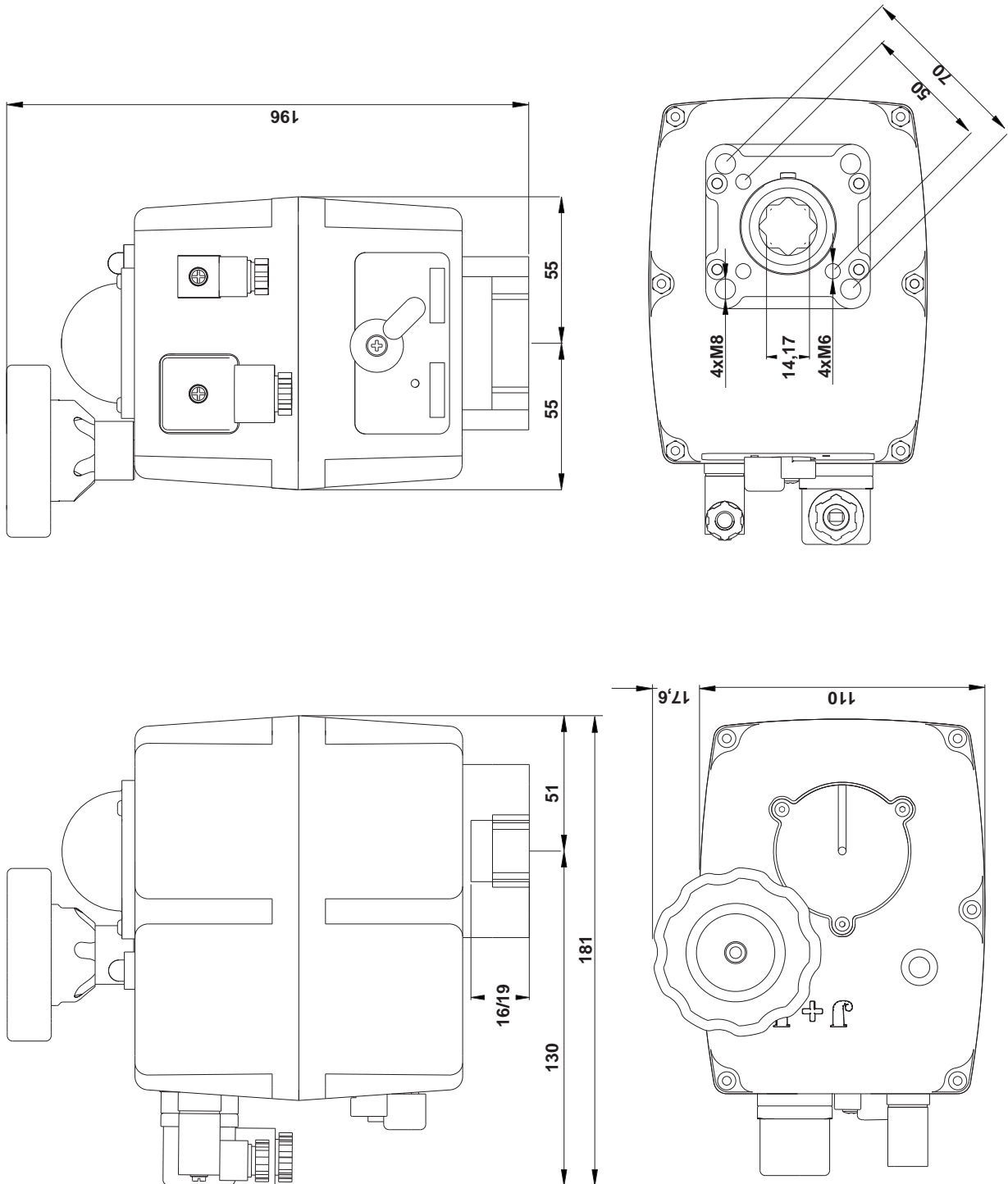
Dimensional Drawing

J3C S55



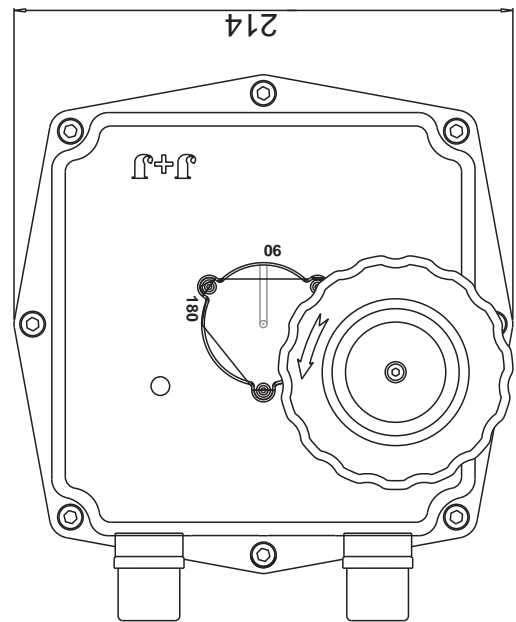
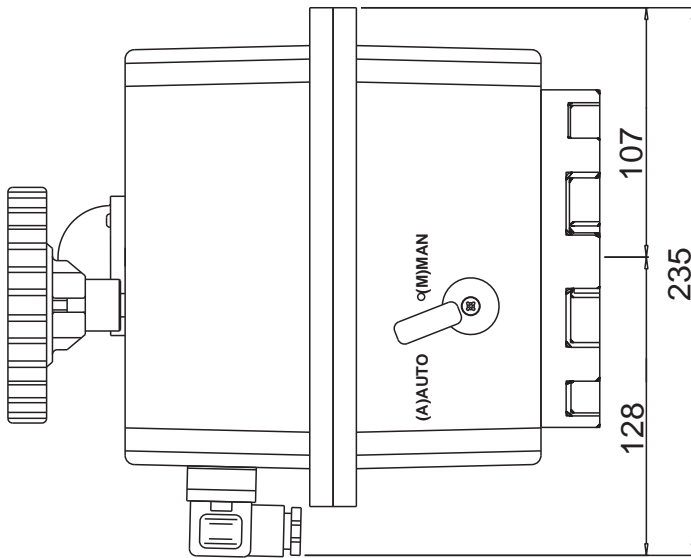
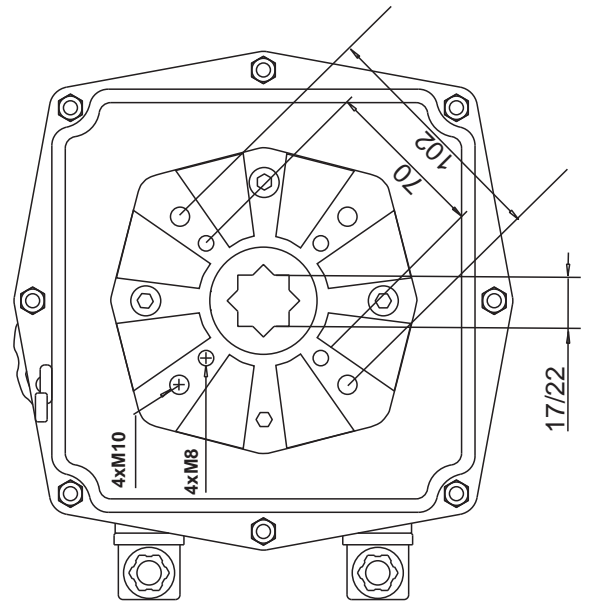
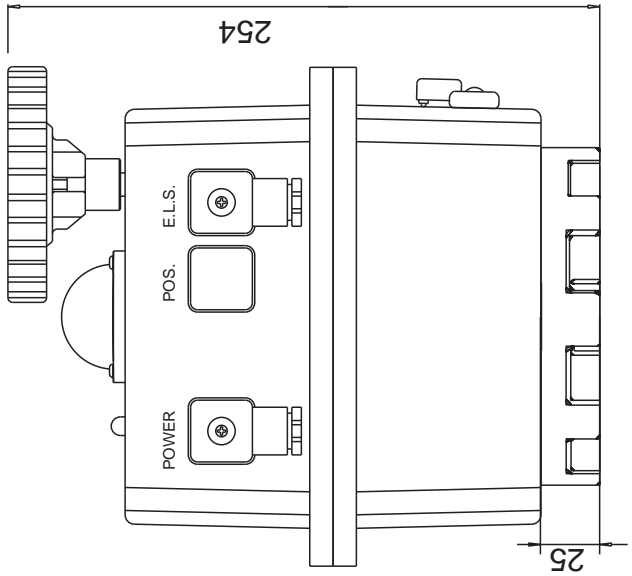
Dimensional Drawing

J3C S85



Dimensional Drawing

J3C H/L 140/300



J+J[®] Deutschland GmbH

Komponenten für die Armaturenautomatisierung



Additional instruction for J+J actuators
J3 S + J3C S –Series with Positioner (DPS)



⚠ This instruction is additional to your „ Basic instruction J3 S+ J3C S “. For further technical details and advices please mind those.

General:

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. 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. After 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. **The Input signal must be switched potential free (buffer amplifier)!**

Technical Data:

Accuracy	3% *
Linearity	2% *
Hysteresis	3% *
Teilung	Min. 142 steps 90° 4/20mA Min. 88 steps 90° 0/10V Min. 166 steps 90° 0/20mA Min. 85 steps 90° 1/10V
Min Auflösung /90°	1,30%
Class	B+C nach E DIN EN 15714 Inching + Modulation
Input signal impedance	0-10V = 25KOhm / 4-20mA = 100Ohm
Weight	0,600 kg

Alignment of DPS positioner (J3 S + J3C S)

The „alignment of DPS positioner“ means to approach the configured switch cams of the actuator, to set, or adjust the DPS limits. This is necessary, every time when the swivel angle where changed. Please ensure, to only change in the configuration range of the actuator (0°- 90°, 0°- 180°...). If the actuator is twisted out of this range, it will re-configure itself after you put the power supply back on. Because the system works potential-free, it maybe could be out of adjustment.

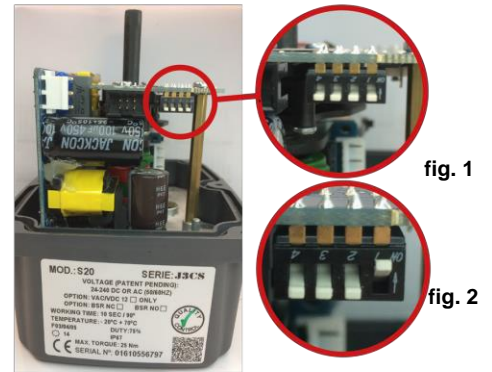
altered: 18.05.2017	additional manual J3 C + J3C S actuators with Positioner (DPS) technical changes reserved	Dat.: 10 08 14 0	
compiled: 03.02.2017 Name: AB			

Electrical alignment

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!

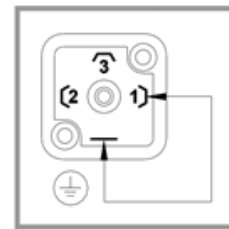
1. switch off power supply and open the cover
2. put DIP-switches in neutral position (see fig. 1)
3. put DIP-switch 1 to position „on “(see fig. 2)
4. switch on the power supply
5. put DIP-switch 1 back to neutral position
6. now the actuator drives in both end positions



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

Manuel alignment (J3 S + J3C S)

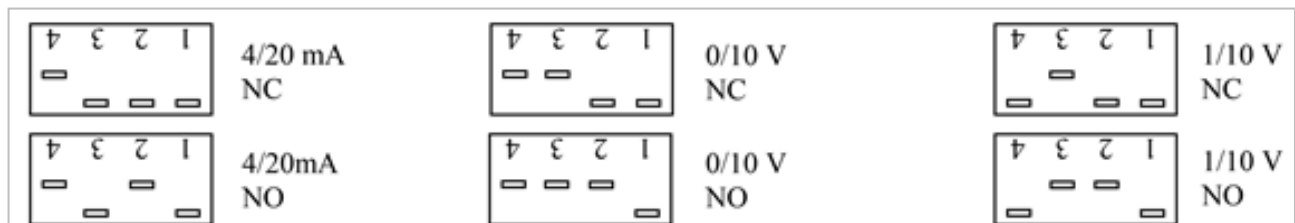
1. switch off power supply and open the cover
2. release plug 3 from terminal 3 (Positioning signal)
3. make a bypass on terminal 3 between Pin 1 and Ground
4. switch on the power supply
5. release the bypass
6. now the actuator drives in both end positions



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

Configuration of signal

The signals mode could be configurate by DIP-switches. Plug off the external power and positioner plugs and easily configurated those switches as seen in the image below.



Adjust working angel

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 information at our main manual, chapter “adjust the cams”. After the adjustment of the cams you have to adjust the positioner system too.

altered: 18.05.2017	additional manual J3 C + J3C S actuators with Positioner (DPS) technical changes reserved	Dat.: 10 08 14 0	
compiled: 03.02.2017 Name: AB			

Functions of status LEDs

External status indicator LED

status	time	indicator	LED colour
reached position	100%	1111 1111 1111 1111	blue
power supply on / actuator moving to „open “	100%	1111 1111 1111 1111	blue / green (flashing)
power supply on / actuator moving to “closed “	100%	1111 1111 1111 1111	blue / red (flashing)

For further information about status functions consult our “Basic instruction **J3 S+ J3C S** “.

Status-LED DPS board (internal) (Abb. 4)

- OPEN control signal “OPEN” – actuator moving to “OPEN”
- CLOSE control signal “CLOSE” – actuator moving to “CLOSE”
- OPEN+CLOSE configuration mode

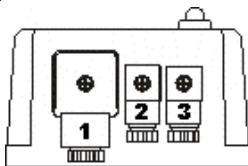


Abb. 4

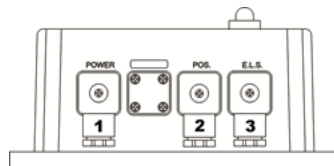
Connections and wiring diagram

plugs:

Actuators including DPS, are adjusted and equipped with three plugs. You can see the wiring on the actuators imprint or the wiring diagram.



model S 20/ 35/ 55/ 85



model H/L 140/ 300

- plug 1: power supply (according to label)
- plug 2: driving signal (0 -10 V, 4 - 20 mA or 0 – 20 mA)
- plug 3: limit switch signal open/close (potential free)

altered: 18.05.2017	additional manual J3 C + J3C S actuators with Positioner (DPS) technical changes reserved	Dat.: 10 08 14 0
compiled: 03.02.2017 Name: AB		

Wiring diagram DPS AC/DC:

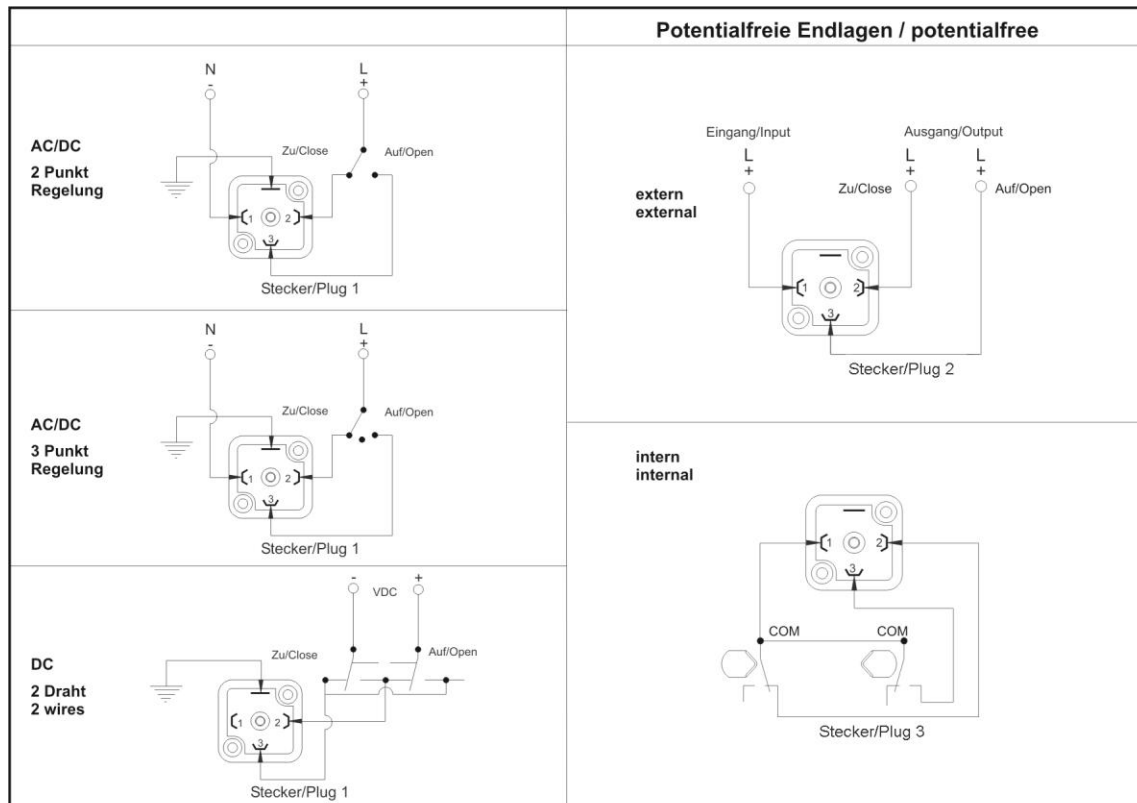


Abb. 4

Error analysis (FAQ)

The actuator positions are not acc. to the input signal

reason: drive over the adjusted angel by hand

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: see chapter "adjust the DPS positioner systems"

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 System

help: see chapter "Adjust working angel" 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 as its shown in the main manual

altered: 18.05.2017	additional manual J3 C + J3C S actuators with Positioner (DPS) technical changes reserved	Dat.: 10 08 14 0	Subject to Change
compiled: 03.02.2017 Name: AB			