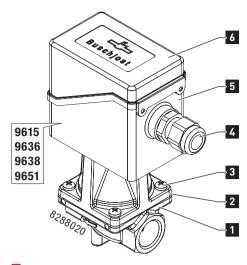
Operation manual for motor control valves (series 82880)

Document-No. EN1270006BA Revision 2

Keep documentation for future use!



About this documentation

This operation manual guides you to mount, to maintain and to replace motor control valves of series 82880 with drives 9615, 9636, 9638 and 9651.

1.1 Documentation validity

This operation manual applies to valves of series 82880.

Order No.	Connection	ND	Drive
8288 2 xx	G 1/2	15	9615
8288 3 xx	G 3/4	20	9636
8288 4 xx	G 1	20	9638
8288 5 xx	Cartridge mounting	15	9651

This operation manual is intended for: distributor/operator, installers and service technicians.

1.2 Structure of safety instructions

Safety instructions warns against dangerous situations and must be observed in particular. Safety instructions are structured as follows:

SIGNAL WORD

Type of hazard

Consequences of non-observance

→ Precautions necessary to avoid the hazard

1.3 Hazard classes (ANSI Z535.6)

⚠ DANGER

Safety information indicates a hazardous situation with high risk which, if not avoided, will certainly result in death or (serious) injury.

⚠ WARNING

Safety information indicates a hazardous situation with moderate risk which, if not avoided, can cause death or severe injury.

⚠ CAUTION

Safety information indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Information indicates a hazardous situation which, if not avoided, could result damage to property.

1.4 Styles and symbols

This documentation uses the following styles and symbols:

•	list
\rightarrow	instruction
1. 2.	preset order of instructions
102	part number (according to part list)
1	flexible part number (section)

♠ + DANGER / WARNING / CAUTION; NOTICE: embedded safety message

given limits or fixed value

1.5 Intended use

The motor control valve is solely intended to control or stop a fluid flow within approved operating limits.

Comply with these conditions of use:

- Only use the motor control valve in the commercial sector.
- You must **not** use the motor control valve outdoors
- You must not use the motor control valve in EX-protected areas.

1.6 Improper use

Only operate the valve within approved operating limits.

In the following cases it is prohibited to operate the valve:

- The valve is not suitable for the intended purpose in permanent operation.
- The valve is operated with fluids that are not permitted.
- The permitted temperature and pressure ranges are exceeded.
- Damages or malfunctions were detected but the valve remains in operation.
- The valve has been modified without authorization of the manufacturer.
- The safety instructions of this documentation are not observed.

1.7 Obligations of the operator

- → The operator is responsible to comply with applicable laws, directives and regulations that apply to the motor control valve during the whole life cycle. The instructions of this operation manual must be observed and followed.
- \rightarrow Ensure as operator that persons who work on or with the valve are sufficient qualified for this job.
- → Comprehensively train the operating personnel in terms of safety.
- → Only allow trained specialists to perform electric connections, commissioning, maintenance and trouble shooting

2 General safety instructions

→ Compare the details on the rating plate and technical data of the motor control valve to the operating data. The limits for the particular application must not be exceeded.

⚠ WARNING



Danger from pressurized pipelines Pressurized pipelines may burst

resulting in injuries.

→ Depressurize the pipe system and block the fluid stream prior to open or unmount the valve.

Residual risks



Weight of the valve Phases: transport, storage, assembly, maintenance, disposal Risk: falling off, tipping over PPE: protective footwear



Sharp threads and edges

Phases: transport, assembly, maintenance, disposal Risk: risk of cuts PPE: protective gloves

Avoid damage to property

NOTICE

Damage of the drive

The drive may overheat if the permitted temperatures are exceeded.

- → Make sure that the given temperature limits are not exceeded permanently.
- → Install a design with a lifted drive if a higher operating temperature is necessary.

4 Identifying the valve



Rating plate (example)

- 1 Order number
- 2 Operating voltage
- 3 Power consumption inrush/hold
- 4 Operating pressure range
- 5 Date of manufacture (week/year)

Variants

Variant key (8288xXX.96xx.xxxx)

- 14 seat seal made of EPDM
- 33 additional materials + surfaces free of silicone
- 60 seat seal made o FPM, K_{vs} 1.1
- 61 seat seal made of EPDM, K_{vs} 1.1
- 62-64 maximum pressure: 10 bar
- 65-67 K_{vs} 3.4 (drive until 200 Ncm)
- 68-70 all wetted parts free of oil and grease
- 71, 72 lifted drive; pressure mex. 10 bar 73, 74 lifted drive; pressure mex. 6 bar
- Oxygen application: all wetted parts free of oil and grease, seat seal EPDM: Valve in closed position NOT gas-proof. There is no BAM approval.
- \rightarrow Refer to data sheet for further specification.

Transport and storage

→ Only transport and store the motor control valve inside its delivery packaging.

Prolonged storage at 10 °C to +20 °C

Avoid during transport:

mechanical loads: impacts, tipping over

Damages endanger the safety and may lead to malfunctions

Principle of Operation

The motor control valve is made as seat valve with two adjustable control discs as closure element.

The valve is controlled by a motorized actuator. The motorized actuator turns the upper control disc via the valve spindle. The fluid stream is finely dosed or completely locked by rotation of the control discs.

Positioning characteristics

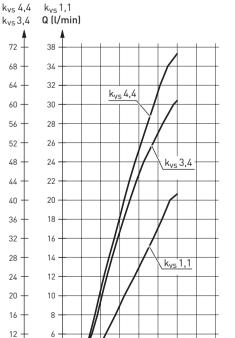
The diagram shows characteristics of the standard control discs. The graphs show the flow rate in relation to the actuating angle.

Control disc k_{vs} 4.4
Control disc k_{vs} 3.4

(Q_{max.} 70 I/min) (Q_{max.} 61 I/min)

(Q_{max} 20.5 I/min)

Control disc k 1.1



0 15 30 45 60 75 90 105 120 °C Characteristics k_{vs} 1.1 / k_{vs} 3.4 / k_{vs} 4.4

Δp: 1 bar

Fluid: water

Mounting

Dimensions (mm)

Valve type	Length	Width	Height
8288 2 XX (G 1/2)	65	55	147
8288 3 XX (G 3/4)	95	70	164
8288 4 XX (G 1)	95	70	164

Mounting position

motor drive vertically upwards (±60°)

Flow direction

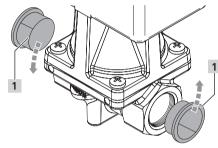
see arrow on valve body 1

8.1 Preparation

- → Check the valve for externally visible damages.
- → Make sure that there is enough free space for dismantling the valve or the drive in case of maintenance.
- → Clean the pipe system prior to mounting the

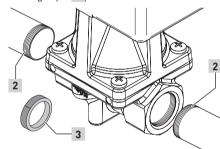
8.2 Mounting motor control valve

- → Mount the valve to the designated pipeline. Comply with existing connections.
- 1. Take valve out of the packaging immediately prior to mounting.
- 2. Take out the blanking plugs 1 from valve inlet and valve outlet.



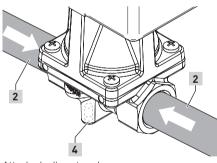
Take out blanking plugs

- 3. Install a strainer in front of the valve inlet if necessary.
- 4. Firmly seal pipeline's thread 2 with an appropriate sealing material (e.g. PTFE sealing tape 3).



Firmly seal thread of the pipeline

- 5. Arrange the valve according to the flow direction of the pipeline.
- 6. Attach the pipelines to the valve. NOTICE Make sure not to distort the valve
- 7. Attach pipelines threads to the valve's connection threads.

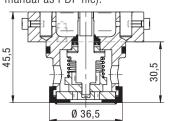


Attach pipelines to valve

8. Underneath the valve body 82882xx you find two connection threads 4 (M4, thread depth 8 mm, distance 30 mm) for fixing the valve to the installation.

8.3 Cartridge mounting (82885xx)

→ Mount valve cartridge to corresponding counterpart (request separately operation manual as PDF file).



Sectional view - valve cartridge





8 Connect drive electrically

MOTICI

Disturbance of the electronicsOther live cables may disturb the electronics

Do not lay the connecting cable to drive together with cables that are carrying large electrical currents.

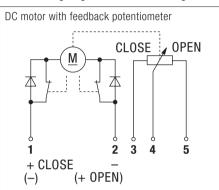
8.1 Open drive housing

- 1. Open valve cover 6 at the cover flap 1. NOTICE You must not bend up the cover flap not more than 25°.
- 2. NOTICE Avoid damages through electrostatic discharge (ESD) by touching a grounded pipeline prior to touching the printed-circuit board. You must not directly touch the electronics components.

8.2 Connecting cable

- 1. Lead the connecting cable through the pressure screw of cable gland 4.
- Connect flying leads according to wiring diagram to the terminals. Refer to following wiring diagrams for drives 9615, 9636, 9638, 9651.
- 3. Tighten pressure screw of cable gland 4

9615 - wiring diagram and terminal assignment

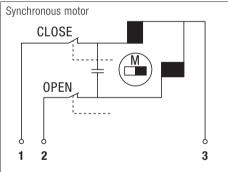


The actuating angle of the potentiometer is only partly used.

+ at 1	– at 2	Direction of movement CLOSED
+ at 2	– at 1	Direction of movement OPEN

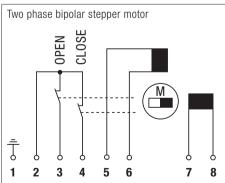
End position disconnection via micro-switch Resistance between 3 and 4: Minimum value - Valve closed Maximum value - Valve open

9636 – wiring diagram and terminal assignment



	Direction of movement CLOSED	
	Direction of movement OPEN	
End position disconnection via micro-switch		

9638 – wiring diagram and terminal assignment

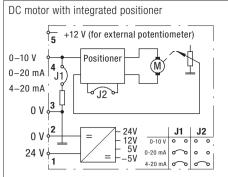


Operation of the motor drive is only possible by control electronics for stepper motors.

1	Drive housing (for possible shielding)
2	Reference potential for contacts
3	End position feedback OPEN; contact open in end position
4	End position feedback CLOSED; contact open in end position
5 , 6	Connections phase 1

7, 8 Connections phase 2

9651 - wiring diagram and terminal assignment



2	4 V = -5V 0-20 mA 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
1, 2	Supply voltage	
3, 4	3, 4 Input control voltage	
5	5 Output voltage/auxiliary voltage	

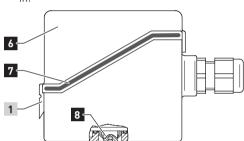
8.3 9651 – Adjusting set point input

→ Set the set point input through positioning the jumpers J2 and J2 at the circuit board:

Set position	Jumper J1	Jumper J2
0-10 V	without	without
0-20 mA	plugged	without
4-20 mA	plugged	plugged

8.4 Closing drive housing

→ Firmly close the drive housing cover 6 to restore protection of the terminal compartment. The sealing ring 7 must be placed between drive housing and drive housing cover. The cover flap 1 must firmly snap in.



Close housing cover

Commissioning

- 1. Check whether the pipeline threads are properly sealed.
- 2. Check whether the cover 6 is properly seated on drive housing 5 and correctly sealed.
- 3. Switch off solenoid's power supply.

 NOTICE Brief dips of the supply voltage may lead to malfunctions of electronics. One reason may be that this voltage is applied by an electromechanical relay.
- Check whether the motor control valve is properly controlled and the adjustment speed complies with operational requirements.

Drive	Adjustment speed	
9615	90° within 10 to 14 seconds	
9636 9638	90° within 10 seconds	
9651	90° within 13 to 16 seconds	

Recommended operating data – motor drives

Drive	Pulse length	Currentless interval during reversing the direction of rotation
9615	> 100 ms	> 600 ms
9636	> 100 ms	40 ms
9638	Step frequency 200 Hz	-
9651	-	-

info Refer to the product information for series 82880 for further technical data of motor drives.

10 Operation

Distance to sources of interference

NOTIC

Disturbance of the drive electronicsElectromagnetic sources of interference may affect the drive electronics of the valve and lead to blocking of the drive.

→ Do not operate the valve near to strong sources of interference (for example solenoid coils, transformers, frequency converters). **info** The motor drives apply to standards EN 61000-6-3:2007 + A1:2011 and EN 61000-6-2:2005 to fulfill the EMC directive 2014/30/EU.

11 Maintenance

11.1 Preparing maintenance

- $ightarrow \Delta$ WARNING Disconnect motor drive from power supply.
- → ▲ WARNING Depressurize the pipe system. Drain the pipe system or lock the pipe system before and behind the motor control valve.

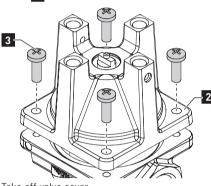
11.2 Replacing spare parts

⚠ CAUTION

Risk of injury caused through the installation of wrong parts

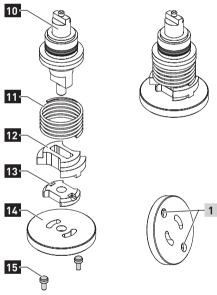
Installation of wrong components may lead to early wear and early failure of the component. This increases the risk of injury.

- → Ensure that only original spare parts are installed.
- → Specify the valve number when ordering a spare part kit.
- 1. **A CAUTION** Depressurize the pipe system. Disconnect drive from power supply.
- 2. Loosen fixing screws **9** and pull drive in upward direction.
- 3. Loosen cover screws 3 and take off valve cover 2.



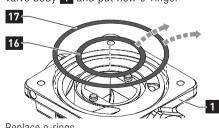
Take off valve cover

4. Take out all components from valve cover.



Overview – components at the valve spindle

5. Take out o-rings **16** and **17**. Clean the valve body **1** and put new o-rings.

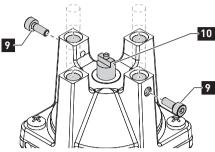


Replace o-rings

- Replace the valve spindle 10 and compression spring 11.
- 7. Put components 12 to 14 according to figure onto valve spindle.
- 8. Feed the preassembled valve spindle 10 into valve body 1. Inside valve body are two pins 15. These pins must placed in the two holes 1 of the lower control disc 14.
- 9. Put the valve cover 2 on valve body. Tighten four cover screws 3.

11.3 Replacing drive

- 1. Disconnect drive from power supply and loosen junction box.
- Loosen fixing screws 9 and pull drive in upward direction.
- 3. Manually turn valve 10 spindle parallel to the flow direction Use combination pliers where appropriate. NOTICE If the drive is mounted turned 90° the control signals have the opposite effect.
- 4. Put the new drive parallel to the flow direction on the valve cover 2. The adjusting element 3 (mechanical interface) of the drive must interlink into valve spindle 10. Valve cover 2 and drive must be mounted flush.



Fix drive to valve cover

5. Tighten both fixing screws 9

Tightening torque: 1 Nm

6. Connect drive electrically as described in chapter 8.

11.4 Trouble shooting

→ Observe section 11.2 for disassembly and reassembly of valve parts.

Error table

Standstill of the drive	Standstill of the drive
Possible cause: no supply voltage	Possible cause: cable damagedt
Remedy: check power supply; check connection cable	Remedy: check cable; repalace defective cable
Spindle blocked	Spindle blocked
Possible cause: foreign particles inside valve body	Possible cause: control discs has been jammed
	Remedy: unmount
Remedy: unmount valve cover and clean valve parts	drive and turn valve spindle through 180° manually
valve cover and clean	drive and turn valve spindle through 180°

Possible cause: drive does not interlink

Remedy: loose both fixing screws; fix drive flush to the valve cover

12 Disposal

- 1. Disassemble valve parts according to chapter 11 "Maintenance".
- 2. Unmount valve body from pipeline.
- 3. Dispose the individual parts of the motor control valve as follows, to return recyclables to the material cycle:

Component	Disposal
Valve body, spindle, compression spring	Metal recycling
Drive housing, control discs, o-rings	industrial waste (similar category to domestic refuse)
Printed-circuit board, motor drive	Electrical waste recycling



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