

Operating Manual

Type 1304

(Type 2121 with fitting)

→ See page 10 for extensions

Control valve with
electromotive linear drive

Actuating power 450 N



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1 OPERATING MANUAL

This operating manual describes the entire life cycle of the device. Ensure that this manual is easily accessible to every user, as well as to any new owners of the device.



WARNING!

The operating manual contains important safety information!

Failure to observe these instructions may cause serious safety hazards.

- The operating manual must be read and understood before the device is used.

1.1 Warnings



DANGER!

Warns of an immediate danger.

Ignoring this warning may result in death or serious injury.



WARNING!

2 INTENDED USE



WARNING!

Warns of possible danger!

- Ignoring this warning may result in moderate or minor injuries.



CAUTION!

Warns of a potentially dangerous situation!

- Ignoring this warning may result in death or serious injury.

CAUTION! (without the hazard symbol)

Warns of material damage!

- Ignoring this warning may result in damage to the device or equipment.



describes important additional information, tips and recommendations, which are important for your safety and correct functioning of the device.



refers to information in this operating manual or in other documentation.



indicates an obligatory step in the process

Incorrect use of the electromotive linear drive may pose a serious hazard to individuals, local installations, and to the environment.

- The device should not be used outdoors.
- Permissible data, operating and application conditions specified in the contract documents and the operating manual described in Chapter 6 (Technical Data), should be observed when the device is used.
- The device should only be used in conjunction with external devices and components recommended or approved by PSK.
- Proper transportation, storage and installation, as well as careful operation and maintenance, are prerequisites for the safe and faultless operation of the device.
- Use the device only as intended.

2.1 Restrictions

If you intend to export the device, make sure that you become aware of existing export control and compliance restrictions.

2.2 Foreseeable misuse

The electromotive linear drive should not be used in potentially explosive environments. Do not load the housing mechanically (e.g. by placing objects on top of it or by using it as a step).

Do not make any external changes to the device housing.
Do not paint any of the housing parts or screws.

3 GENERAL SAFETY NOTES

These safety instructions do not take into account any

- contingencies and events that may arise during assembly, operation and maintenance of the device.
- The operator is responsible for site-specific safety regulations or for any compliance with them. This also applies to assembly personnel.



DANGER!

Danger: high voltage!

Tampering with the device poses an acute risk of.

- Always switch off the power before carrying out work and ensure that the device is not re-started.
- If you wish to connect more than one electromotive drive, always do so **with phase separation** via a switch.
- Protect the device with a socket-dependent fuse.
- Please observe any applicable accident prevention and safety regulations for electrical devices.



WARNING!

Hazardous situations may arise during installation and maintenance work.

- This work must only be carried out by an authorized specialist and with the appropriate tools.
- Ensure a defined or controlled restart of the process if the supply of electricity has been interrupted.



CAUTION!

The general technological guidelines apply to the utilization and operation of the device.

Not paying attention to the safety regulations may result in personal injury, in damage to the device or of local installations.

- Please do comply with the general technological guidelines



CAUTION!

Electrostatically sensitive components/assemblies

- The device contains electronic components that are sensitive to electrostatic discharge (ESD). Contact with electrostatically charged individuals or objects may endanger these components. In a worst-case scenario, this could destroy and damage the device, once installed.
- Please observe the requirements based on EN 100 015 - 1 in order to minimize or avoid damage caused by sudden electrostatic discharges. Ensure that you do not touch any of the electronic components when the electricity to the device is turned on.



WARNING!

Accidentally turning on the device or unauthorized tampering with it may create a hazardous environment that can cause personal injury.

- Use appropriate measures to ensure that the device does not get turned on or operated accidentally.



The electromotive linear drive has been developed in accordance with the most modern and accepted safety standards. Nevertheless, hazards may arise. Operate the device only when it is perfect operating condition and in compliance with the operating manual. No liability will be accepted if the instructions are not followed or if the device has been tampered with. In addition, non-observance of the instructions or unauthorized tampering will void the warranty for the device and any accessories associated with it.

4 GENERAL INFORMATION

4.1 Scope of delivery

When you receive your shipment, please immediately verify that the contents are not damaged and that they match the delivery note or the packing list.

In the case of any discrepancies, please contact us immediately.

Contact address:

PSK Ingenieurgesellschaft mbH
Gustav-Tauschek-Str. 6
D-99099 Erfurt
Tel. : +49 (0)361 - 600245 - 0
Fax: +49 (0)361 - 600245 - 23
E-mail: info@psk-weimar.com
www.psk-weimar.com

4.2 Warranty Provisions

This publication does not constitute a warranty. In this regard, we refer to our Terms and Conditions of Sale.

The prerequisite for our warranty is the intended use of the electromotive linear drive, taking into account the specified operating conditions.



The warranty only applies to defects related to the control valve with the flange connection and the electromotive drive type 1304, as well as its components.

No liability whatsoever shall be accepted for consequential damages of any kind that might result from the failure or malfunction of the device.

4.3 Certifications

The approval confirmation applied to the PSK type plates (see Chapter 5.4 Identification Plates) refers to the PSK products.

5 SYSTEM DESCRIPTION

5.1 General descriptions

The basic device, the electromotive linear drive type 1304, can be extended by many options, thanks to its modular design and is then referred to as Type 2121.

The linear drive is designed for 24 V DC and is available for an actuating force of 450 N (1000 N actuating power on request). The materials used ensure maintenance-free operations and a low thermal load. The drive operates in a controlled environment. The controls can be selected from 0-10 V and 4-20 mA.

5.2 ORDERING CHART

(Additional versions, such as needle valves, can be provided on request)

Housing	Nominal diameter DN (mm)	Pressure range (bar)	Voltage/frequency (V/Hz)	Version	Order No.
Angle seat valve	NW 13 (G3/8 and G1/2)	10 bar	24 VDC	Positioner (0-10 V; 4-20 mA)	P1001111
	NW 20	5 bar			P1001112
Straight seat valve	NW 10	10 bar			P1001113
	NW 15	10 bar			P1001114
	NW 20	5 bar			P1001115
Diaphragm valve	NW 8	6 bar			P1003128
	NW 10				P1001117

5.3 Identification Plates

The linear drive is equipped with an identification plate that provides unique identification of each device and shows the most important technical data.



Do not remove the identification plate from the linear drive. It is of crucial importance for identification during the installation and maintenance processes.

Identification plate

Type designation	Type 1304
Power supply voltage	24 VDC
Rated current	max. 2.4 A
Duty cycle	50 %
Actuating power	450 N
Actuating speed	max. 2 mm / sec.
Potentiometer	5 kΩ
Type of protection	IP 67
Item No.	P100....
Date of manufacture	MM/YY

6 TECHNICAL DATA

6.1 Operating Conditions



WARNING!

The linear drive is not designed for outdoor use.

- Do not install the device outdoors.

Permissible temperatures

Ambient temperature: -20 to +60 °C

Storage temperature: -40 to 55 °C

Permissible humidity: <70 %

Permissible operating range: Altitude 0 to 2000 m

Protection class: IP 67

6.2 Conformity

CE-mark compliant with EMC directive 89/336/EEC

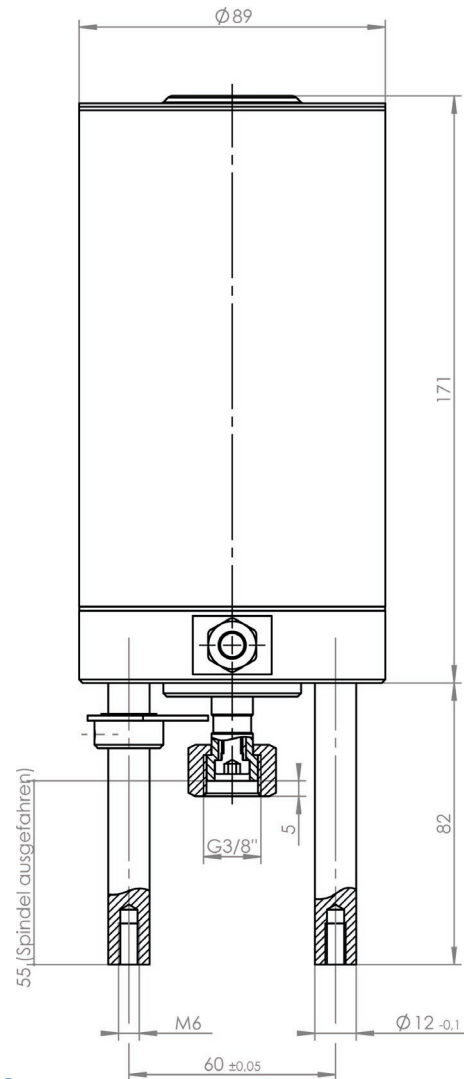
(Only if the cable or plug and sockets are connected correctly)

6.3 General Technical Data

6.3.1 Mechanical data

Dimensions:	See Chapter 6.3.2 "Dimensions"
Housing	Type 1304 stainless steel
Mass:	Type 1304 stainless steel 3.5 kg
Screws:	Stainless steel
Actuating power:	450 N
Actuating speed:	2 mm / sec. (max.)
Duty cycle:	50 % (depending on the ambient temperature)

6.3.2 Dimensions



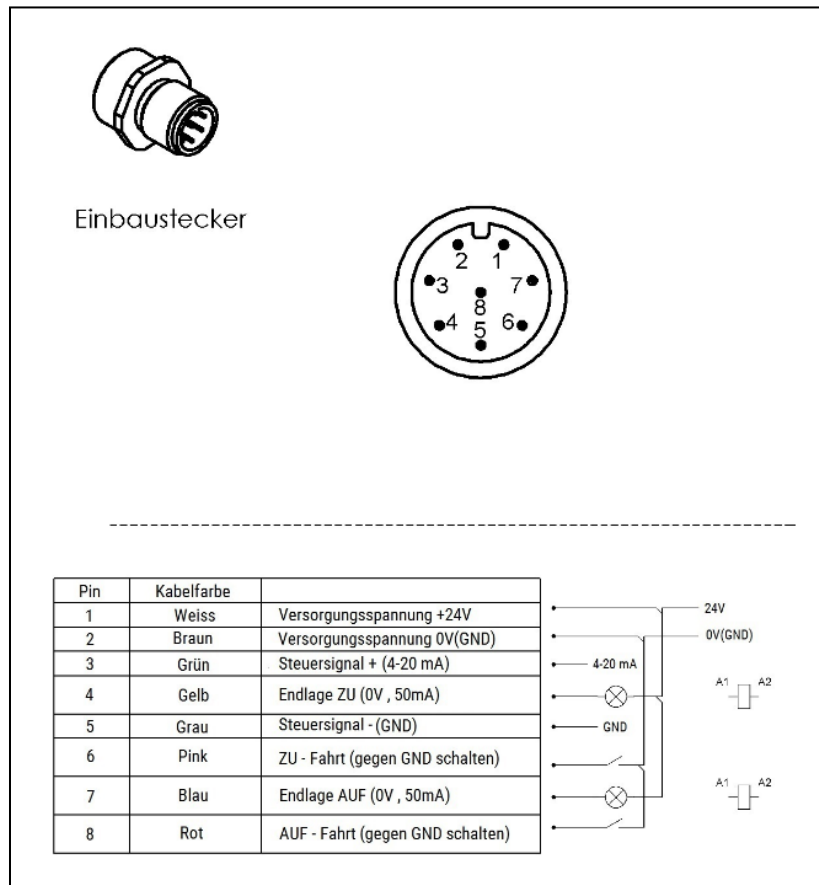
Type 1304

6.3.3 Electrical data

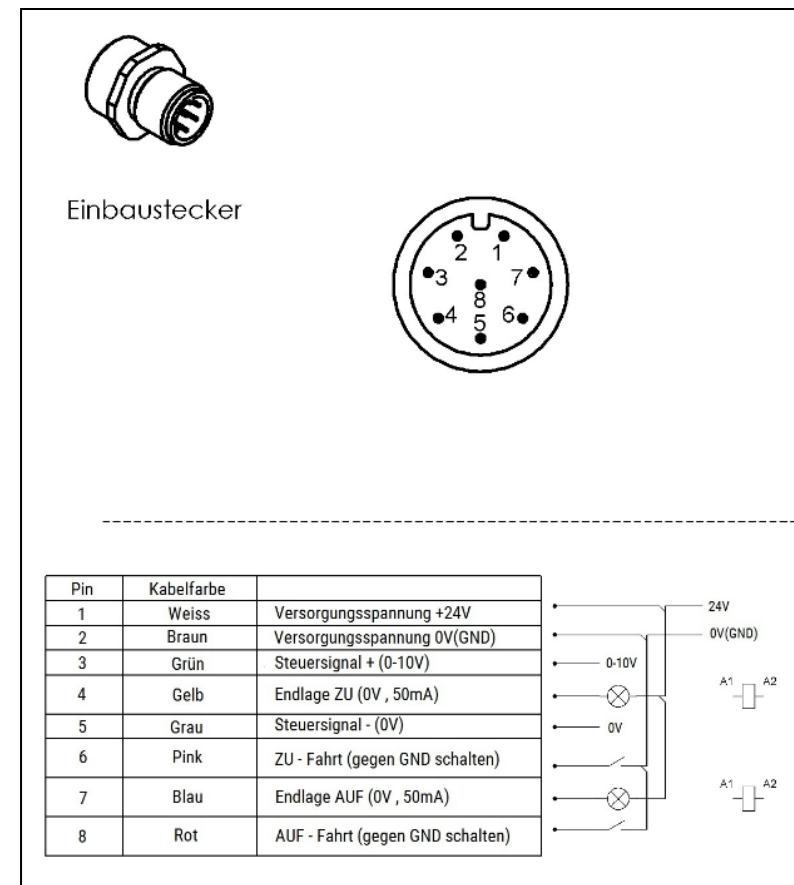
Operating voltage:	24 VDC
Voltage tolerance:	$\pm 10\%$
Rated current:	max. 2.4 A at 24 VDC
Nominal operation type:	Intermittent operation 50% duty cycle
Electrical connection:	Panel connector M12x1, 8-pin
Protection class:	IP 67
Mounting position:	Any, preferably with the drive facing up
Version:	Controlled operation (optionally available as an OPEN/CLOSE valve)
Connection of drive with actuator:	Coupling G 3/8"
Drive design:	- Standard interface - Potentiometer 5 K Ω

6.3.4 Electrical interfaces

6.3.4.1 - 24 V DC - Standard signal 4-20 mA



6.3.4.2 - 24 V DC - Standard signal 0-10 V



7 INSTALLATION

7.1 Safety notes



DANGER!

High voltage danger!

There is an acute risk of injury if the device is tampered with.

- Before removing the cover, always switch off the power and protect the device from being switched on again.
- If you intend to use more than one linear drive, always connect them with **phase separation** by using a switch
- Protect the linear device with a socket-dependent fuse
- Do observe any applicable accident prevention and safety regulations related to electrical devices.



WARNING!

Device damage caused by improper installation

Improper assembly may cause personal injury, as well as damage to the device or local installations.

- Any work on the device itself should only be carried out by an authorized specialist and with the appropriate tools.
- Observe the specifications in Chapter 6 "Technical Data".



WARNING!

Danger related to accidentally turning on the device!

Unintentionally starting-up the device during assembly may cause personal injury or property damage.

- Do take appropriate measures to prevent the device from being accidentally turned on.

7.2 Current and Control Connections

Steps:

- Cable sleeve M12x1 on housing.
- Wire the connections according to Section 6.3.4.1 or 6.3.4.2



Use cables with a diameter of 3 to 6 mm
Cable sleeve M12x1

- Tighten the cable sleeve M12x1 after connecting the terminals, as described in Sections 6.3.4.1 - 6.3.4.2.

8 COMMISSIONING

8.1 Safety Notes



WARNING

Improper Use of the Device is Dangerous!

Improper operation can result in personal injury, as well as damage to the device and local installations.

- Prior to commissioning, it is important to ensure that any personnel charged with operating the device know and understand the operating manual.
- Particular attention should be paid to the safety instructions and the intended use.

8.2 Procedure

→Ensure that connections and settings have been made correctly, based on Chapter 7 "Installation".

→Check whether the linear drive and the fittings are in a defined end position. The fittings should not block anything when the device is turned on.

9 OPERATION



9.1 Safety Notes

DANGER!

High voltage danger!

There is an acute risk of injury if the device is tampered with.

- Turn off the power before operating the linear drive manually.



WARNING!

Risk of personal injury due to incorrect operation.

Improper operating the device can result in personal injury, as well as damage to the device and local installation.

- Any operating personnel must be familiar with and understand the contents of the operating instructions.
- Particular attention must be paid to the safety instructions and the intended use.
- The device should only be operated by personnel who has be sufficiently trained.



WARNING!

Danger caused by manual operation.

In the event of any manual overriding of the device, the device may enter an undefined status, which could become dangerous.

- After any manual intervention, ensure a defined or controlled restart of the process.

10 MAINTENANCE, TROUBLESHOOTING

10.1 Safety notes



DANGER!
High voltage danger!

There is an acute risk of injury if the device is tampered with.

- Always switch off the power before carrying out work and ensure that the device does not accidentally restart.
- Do observe any applicable accident prevention and safety regulations for electrical devices.



WARNING!
Risk of injury due to incorrect maintenance!

Incorrect maintenance can lead to serious personal injury, as well as damage to the device or local installations.

- Maintenance work should only be carried out by an authorized specialist and with the appropriate tools.

Accidental starting of the device.

Unintentional starting up of the machine during maintenance or repair work may result in personal injury or damage to the device.

- Take appropriate measures to prevent the machine from being operated accidentally.

10.2 Maintenance work

The linear drive is maintenance-free when used in accordance with the instructions given in this manual.

10.3 Malfunctions

Malfunction	Remedy
The linear drive does not work (first commissioning).	Check the power supply.
	Check the connections according to the wiring diagram provided.
The linear drive is stuck in the OPEN position.	Check the power supply.
	Check the connections according to the wiring diagram provided.
	Check whether the electrical valve can be moved.
The valve does not completely open or close.	Check the power supply.
	Check the connections according to the wiring diagram provided.
	Check the potentiometer.
The linear drive is stuck in the CLOSED position.	Check the power supply.
	Check the connections according to the wiring diagram provided.
	Check whether the electrical valve can be moved.
The linear drive is stuck in a middle position.	Check the power supply.
	Check the connections according to the provided wiring diagram.

	Check whether the electrical value can be moved.
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11 ACCESSORIES



CAUTION!

Using the wrong parts creates a risk of personal injury and damage to the equipment!

Incorrect accessories may cause personal injury or damage to the device and local installations.



12 PACKAGING, TRANSPORTATION

CAUTION!

Transport damage.

- Insufficiently protected devices can be damaged when transported.
- Transport the device in protective packaging, and protected it against moisture and dirt.
- Avoid exposing the device to heat and cold, which could result in going above or below the permitted storage temperature.



13 STORAGE

CAUTION!

Incorrect storage may cause damage to the device.

- Store the device in a dry and dust-free environment.
- Storage temperature: -40 to 55 °C

14 DISPOSAL

→ Dispose of the device and its packaging in an environmentally friendly manner.

CAUTION!

Environmental damage due to device components contaminated by media.

- Comply with the applicable disposal and environmental regulations.



Please observe the national waste disposal regulations.

