



Power Unit

without solenoid valves, energy-saving intermittent cycling
 max. flow rate 0.5, (0.8) l/min, max. operating pressure 200 bar



Advantages

- Energy-saving intermittent cycling
- No electric valves required
- Electronic pressure switch (option) with digital pressure display (clamping pressure)
- Quick pressure adjustment by teach-in function
- As an option terminal box or electric control ready for connection
- Available for 3 supply voltages
- Oil level and temperature control (accessory)
- Manual switch or foot switch (accessory)
- Handle for mobile use (accessory)

Safety features

- Operating pressure infinitely adjustable, therefore precisely defined clamping force
- Electronic pressure switch (option)
- Repeatability ± 1 bar
- Renewed oil supply after a pressure drop of max. 10 %
- Machine tool interlock can be connected (option)
- Screen disks in the ports
- Oil level and temperature control (accessory)

Application

These power units are especially suitable for the operation of small and simple hydraulic clamping fixtures.

One clamping circuit for single or double acting cylinders is available.

The low weight also allows mobile use.

Description

Using this power unit, extension and retraction of the cylinders is effected by the change of the sense of rotation of the electric motor.

The pump alternatively supplies to port A or port B. The other port is discharged by opening a pilot-controlled check valve.

Important notes

Connect single acting cylinders always to port A. The hydraulic pressure can only be adjusted at port A by means of the electronic pressure switch (digital pressure display).

The mechanical pressure switch (without pressure display) at port B is pre-set to 60 bar. If necessary, a pressure change is possible.

These power units are exclusively designed for the industrial use of pressure generators for hydraulic fixtures that allow intermittent cycling (see opposite example).

All connected hydraulic components must be leakage-free and designed for the maximum operating pressure of the power unit.

The power unit generates very high pressures. The connected cylinders generate very high forces so that there is a permanent danger of crushing in the effective area of the piston rod. The manufacturer of the fixture or the machine is obliged to provide effective protection devices.

Installation, start up and maintenance have to be made according to the operating instructions by authorised experts. This also applies for mobile use.

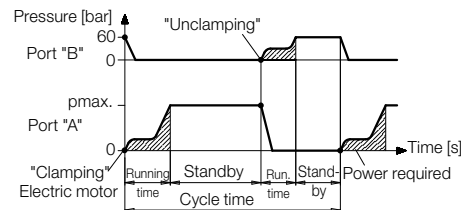
Energy-saving intermittent cycling

The electric motor is only running, as long as hydraulic oil is really required, that means to

- extend and retract the clamping cylinder
- build up the operating pressure

Example

Pressure-time diagram for double-acting clamping cylinders



In this example of a hydraulic clamping fixture the running time of the electric motor corresponds to the clamping and unclamping time, which is only a few seconds.

In standby mode the power consumption is relatively low.

The pressure control is made by a pressure switch, that switches on the electric motor for a short time in case of a pressure drop.

The conditions are leakage-free clamping elements and accessories.

Available supply voltages

Three-phase current 400 V

Mainly for stationary use.

With terminal box or with complete electric control.

On request also with cable and CEE plug.

Direct current 24 V

For the low voltage range.

Only available with terminal box.

Single-phase alternating current 230 V

Available on request.

Single-acting cylinders

Port A

Clamping

30...200 bar

Control

Electronic pressure switch

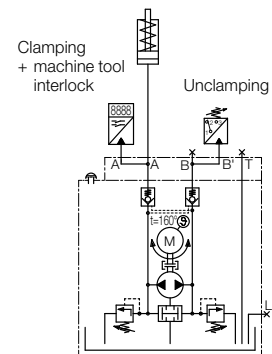
Port B

Closed

approx. 60 bar

Control

Mechanical pressure switch



Double-acting cylinders

Port A

Clamping

30...200 bar

Control

Electronic pressure switch

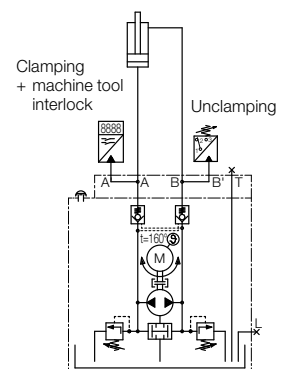
Port B

Clamping

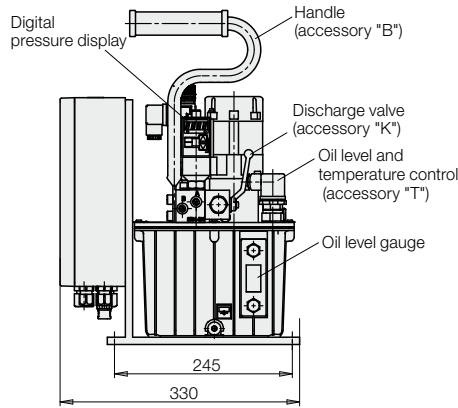
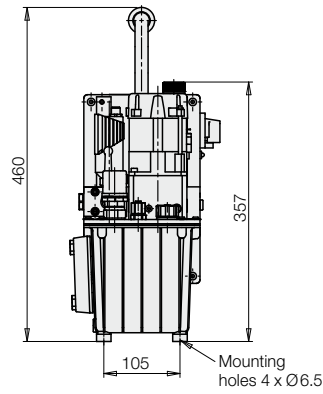
approx. 60 bar

Control

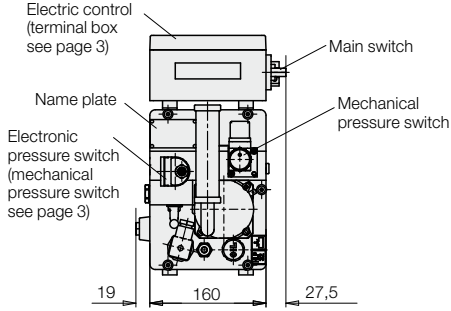
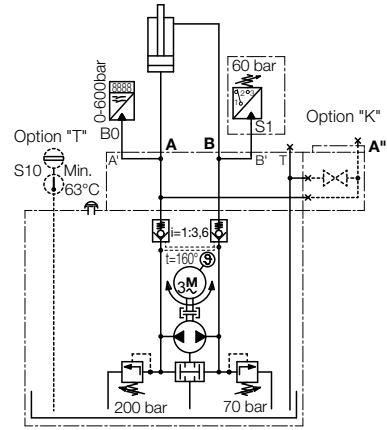
Mechanical pressure switch



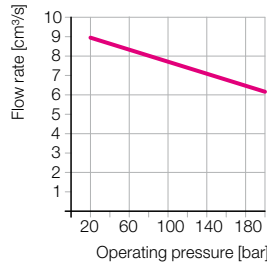
Mains voltage 400 V Y 50 Hz
Flow rate max. 8.75 cm³/s (0.52 l/min)



Hydraulic circuit diagram



Flow rate as a function of the operating pressure



General characteristics

Configuration	Radial piston pump
Swing direction	Clockwise / counterclockwise rotation
Connection	Fittings G1/8 with screwed plug type B or E as per DIN 3852
Mounting	4 screws M 6
Mounting position	upright
Environmental temperature	-10... +40 °C
Max. oil temperature	+60 °C

Hydraulic characteristics

Max. flow rate	8.75 cm ³ /s (0.52 l/min) (see diagram)
Operating pressure range "A" and "B"	30... 200 bar
Port "B" preset	60 bar
Control surface ratio of pilot-controlled check valve	1 : 3.6
Viscosity range	10... 100 mm ² /s
Recommended viscosity class	ISO VG 22 as per DIN 51524
Recommended hydraulic oil	HLP 22 as per DIN 51524-2 (other media on request)
Filling quantity	3.5 l usable 1.5 l

Electric motor

Type	Three-phase motor, 2-pole
Rating	0.15 kW
Speed	3000 min ⁻¹
Nominal voltage / supply voltage	380 ÷ 420 V Y 50 Hz
Nominal current at 400 V	0.55 A
Operating mode	Intermittent cycling wS3 as per VDE 0530
Max. relative cycle time	10 % ED (running time 60 s)
Motor overload protection	Thermal element 160 °C

Electric control

Main switch	with thermal overload protection, can be padlocked
Control electric motor	Reversing contactor control by pressure switch
Control voltage	24 V DC
Fuses external	required 3 x 6 A slow
Code class	IP 54
Supply line required	4 x 1 mm ²
Manual switch	6 x 1 mm ² approx. 3m long
Foot switch	7 x 1 mm ² approx. 3m long

Terminal box	Electric control	Pressure switch		MI	External release	Switch			Part-no.
		mechanical	electronic			without	manual	foot	
•		2				•			8403-242
•		1	1	•		•			8403-244
	•	1	1	•	•	•			8403-288
	•	1	1	•	•		•		8403-283
	•	1	1	•	•			•	8403-284

Terminal box

Electric motor, motor temperature switch and the two pressure switches are connected to a terminal strip. Motor control and direct current voltage supply have to be provided by the customer.

Electric control

The CEE connecting line and a switch for "clamping - unclamping" have to be connected.

External release

In the electric control the terminals 1 and 2 are provided for an external release the control voltage (24 VDC).

Machine tool interlock

Two potential-free terminals are available, that can be connected with the control of the machine tool.

Messages:

- (1) Clamping pressure available
→ workpiece can be machined
- (0) Clamping pressure dropped below 80 %
→ Stop machining immediately

The lower switching point (80 % of the clamping pressure) of the electronic pressure switch is firmly programmed and is automatically stored in teach mode for the desired clamping pressure by pressing a button.

Power units with accessories

CEE connecting line "A"

Length approx. 3.5 m with CEE plug

Part-no.	8403-288A
	8403-283A
	8403-284A

Handle "B"

Part-no.	8403-288B
	8403-283B
	8403-284B

Discharge valve "K"

During operation either port "A" (clamping) or port "B" (unclamping) are under pressure. Hoses should be disconnected, if both lines must be depressurised. After switching off the power unit, port "A" can be depressurised by means of the discharge valve.

Part-no.	8403-2XXK
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Oil level and temperature control "T"

Switches off the electric motor, if the oil level is too low and/or the oil temperature rises above 63 °C.

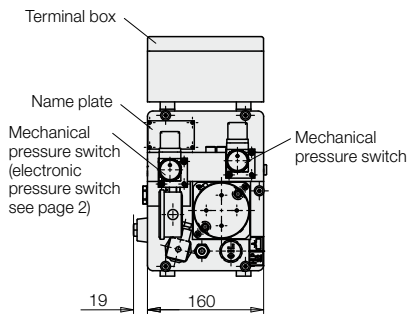
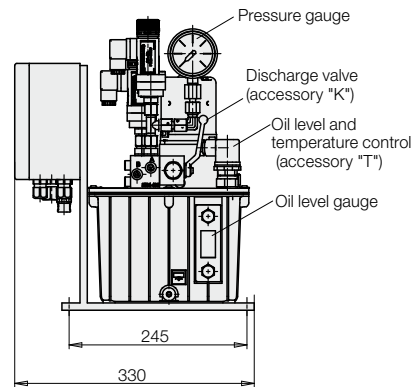
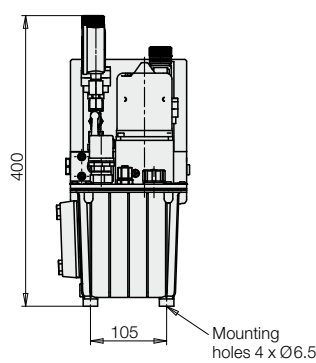
Part-no.	8403-2XXT
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Different combinations

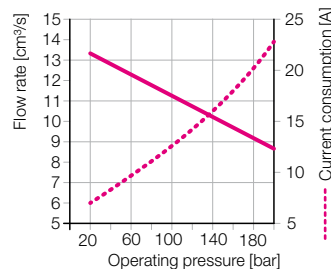
The options described above can also be combined, e.g.

Part-no.	8403-288ABKT
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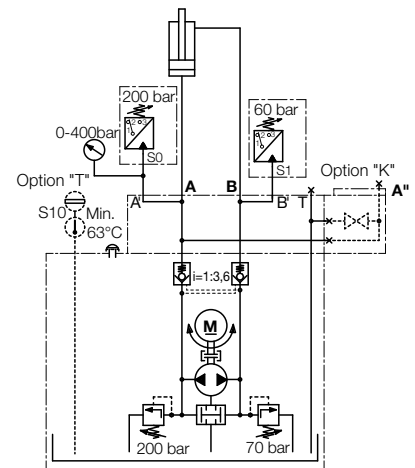
Supply voltage 24 V DC
Flow rate max. 13.3 cm³/s (0.8 l/min)



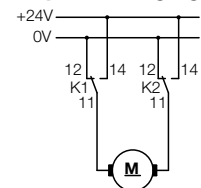
Flow rate and power consumption as a function of the operating pressure



Hydraulic circuit diagram



Example for pole changing



General characteristics

Configuration	Radial piston pump
Swing direction	Clockwise / counterclockwise rotation
Connection	Fittings G1/8 with screwed plug type B or E as per DIN 3852
Mounting	4 screws M 6
Mounting position	upright
Environmental temperature	-10... +40 °C
Max. oil temperature	+60 °C

Hydraulic characteristics

Max. flow rate	13.3 cm ³ /s (0.8 l/min) (see diagram)
Operating pressure range "A" and "B"	30... 200 bar
Port "B" preset	60 bar
Control surface ratio of pilot-controlled check valve	1 : 3.6
Viscosity range	10... 100 mm ² /s
Recommended viscosity class	ISO VG 22 as per DIN 51524
Recommended hydraulic oil	HLP 22 as per DIN 51524-2 (other media on request)
Filling quantity	3.5 l usable 1.5 l

Electric motor

Type	Direct current brush motor
Rating	0.19 kW
Nominal voltage	24 V DC
Nominal current	max. 25 A
Operating mode	Intermittent cycling S3 as per VDE 0530
Max. relative cycle time	10 % ED (running time 60 s)

Electric control

Control electric motor	Pole changing (by the customer) switching by pressure switch
Control voltage	24 V DC
Code class	IP 40

Terminal box	Pressure switch		MI	without switch	Part-no.
	mechanical	electronic			
•	2		•	•	8403-342
•	1	1	•	•	8403-344

Terminal box

Electric motor and both pressure switches are connected to a terminal strip. Direct current voltage supply (25 A) and motor control (pole changing) are to be realised by the customer (see example).

Machine tool interlock

A connecting terminal of the switching output of the electronic pressure switch is available (24 VDC; 1 A; pnp switching).

That can be used to control a switch relay (on the customer side). The control of the machine tool will be switched to a contact free of potential.

Messages:

- (1) Clamping pressure available
→ workpiece can be machined
- (0) Clamping pressure dropped below 80 %
→ Stop machining immediately

The lower switching point (80 % of the clamping pressure) of the electronic pressure switch is firmly programmed and is automatically stored in teach mode for the desired clamping pressure by pressing a button.

Power units with accessories

Discharge valve "K"

During operation either port "A" (clamping) or port "B" (unclamping) are under pressure. Hoses should be disconnected, if both lines must be depressurised. After switching off the power unit, port "A" can be depressurised by means of the discharge valve.

Part-no. 8403-3XXK

Oil level and temperature control "T"

Switches off the electric motor, if the oil level and/or the oil temperature is too low rises above 63 °C.

Part-no. 8403-3XXT

Different combinations

The options described above can also be combined, e.g.

Part-no. 8403-344KT