RE 51 142/11.02

Replaces: 09.01

Clamping and drive module Type UPE 2

Drive power 1.1 kW / 2.2 kW

Series 1X

Maximum operating pressure 700 bar

UPE2-1X3.TIF

Clamping and drive module type UPE 2-1X/1,1...

Table of contents

Features

- Duty cycle, short-time operation S2 and intermittent operation S3
- Compact build
- Low noise
- Wide field of applications
- Wide variety of variants
- Complete hydraulic control possible (see RE 51 144)
- Ready for connection

Possible applications

- Clamping, locking, releasing and indexing on machines
- Drive for hydraulic tools
- Drive for lifting and slewing equipment
- Use in the general machinery construction sector
- Testing machines and test rigs

Description, symbol

UPE 2 clamping and drive modules form complete drive systems that are supplied ready for connection. They are used to provide hydraulic fluid for hydraulic circuits.

For reasons of thermal loading, the clamping and drive module must be operated in short-time and intermittent duty. The duty cycle depends on the output power and the ambient conditions and must be selected so that the maximum permissible operating pressure of 80° C is not exceeded.

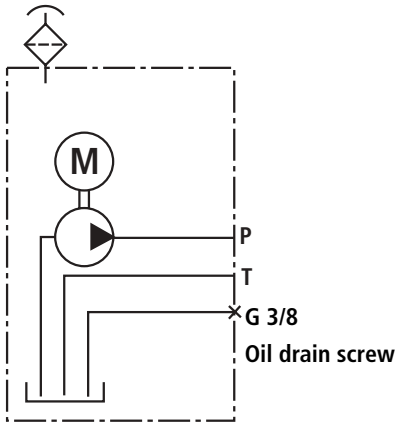
The clamping and drive module basically consists of an aluminium housing, the pump (radial piston pump or external gear pump) and an oil-immersed motor. The stator of the oil-immersed motor is pressed into the aluminium housing. It transfers the heat of the winding directly to the exterior wall of the aluminium housing.

- For mounting purposes, four through-bores are provided for the fixing screws in the reservoir base. The clamping and drive module must be operated in the vertical installation position.

Optionally, the UPE 2 clamping and drive module can be fitted with an electrical oil level monitor, a breather filter and a complete hydraulic control (see RE 51 144).

☞ ⚠ **Caution!** The clamping and drive module can heat up during operation => **risk of injury!**

Symbol



Ordering code

UPE 2 –1X/ | / | – | | | V | *

Series 10 to 19 (10 to 19: unchanged installation and connection dimensions) **= 1X**

Drive power

1.1 kW	**= 1,1**
2.2 kW	**= 2,2**

Radial piston pump
Flow

0.49 litres/min	**= R0,49**
0.82 litres/min	**= R0,82**
1.00 litres/min	**= R1,00**
1.25 litres/min	**= R1,25**
1.70 litres/min	**= R1,70**
1.95 litres/min	**= R1,95**
2.55 litres/min	**= R2,55**
2.60 litres/min	**= R2,60**
4.00 litres/min	**= R4,00**
5.25 litres/min	**= R5,25**

External gear pump
Flow

1.4 litres/min	**= G1,40**
2.8 litres/min	**= G2,80**
4.4 litres/min	**= G4,40**
5.6 litres/min	**= G5,60**
7.0 litres/min	**= G7,00**
8.8 litres/min	**= G8,80**
11.2 litres/min	**= G11,2**
14.0 litres/min	**= G14,0**

Further details in clear text

Seal
V = FKM seals

Built-on hydraulic control (see RE 51 144)
0 = **Without** control
1 = **With** control

Carrying handle
No code = **Without** carrying handle
T = **With** carrying handle

Filling plug
No code = Filling connection with dipstick
B = Breather filter

Oil monitoring
A = Oil level indicator
AN = Oil level indicator with level switch
AT = Oil level indicator and temperature switch
ANT = Oil level indicator with level and temperature switch

Tank size

1.1 kW drive power
3 = [1] Oil capacity 2.4 litres
4 = Oil capacity 4.5 litres

2.2 kW drive power
5 = [1] Oil capacity 4.3 litres
7 = Oil capacity 7.2 litres

[1] Version not available with external gear pump!

Overview of accessory modules

U-1X4.TIF

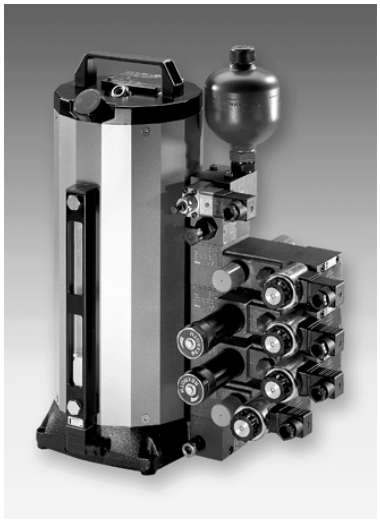
Basic module "G"

Basic module "G"

– Basic module with integrated pressure relief valve for simple lifting/lowering or pressure-holding functions

– When basic module "G" is used, no futher stacking modules can be added

– For further details, see data sheet "Control blocks for clamping and drive modules, type UPE 2" RE 51 144



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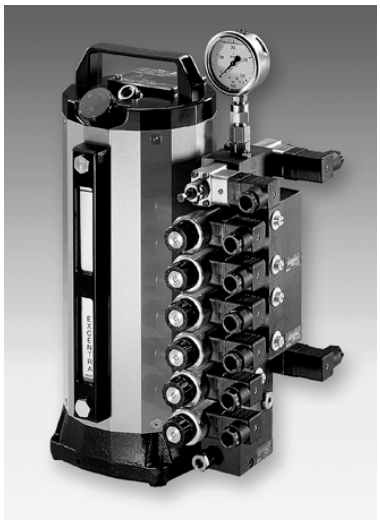
Directional valve module "W"

Directional module "W" [1)]

– Allows the design of controls using valves with porting pattern to DIN 24 340 form A

– The number of directional valve modules depends on the draw-off volume and the displacement of the pump

– For further details, see data sheet "Control blocks for clamping and drive modules, type UPE 2" RE 51 144



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Poppet valve module "S"

Poppet valve module "S" [1)]

– Poppet valve modules generally consist of:
  - A pressure relief block
  - One or several control blocks
  - An end block

– The control is designed in accordance with the application at hand

– The number of poppet valve modules depends on the draw-off volume and the displacement of the pump

– For further details, see data sheet "Control blocks for clamping and drive modules, type UPE 2" RE 51 144

[1)] Directional valve modules and poppet valve modules can be combined!

Technical data (for applications outside these parameters, please consult us!)

Hydraulic fluid			Mineral oil (HLP) to DIN 51 524, part 2 **Please observe our specifications in data sheet RE 07 075!**								
Hydraulic fluid temperature range		°C	– 20 to + 80								
Degree of cleanliness			Max. permissible degree of contamination of the hydraulic fluid to NAS 1638 class 9. For this we recommend a filter with a minimum retention rate of $\beta_{10} \geq 100$.								
Optimum viscosity range		mm^2/s	10 to 200								
Direction of rotation			Optional (radial piston pump), clockwise (external gear pump)								
Installation position			Vertical								
Operating mode			Any operating mode in which the steady-state oil temperature remains below 80 °C.								
Radial piston pump											
Flow [3]		q_V in L/min	0.49	0.82	1.00	1.25	1.70 [2]	1.95	2.55 [2]	2.60	4.00 [2]	5.25 [2]
Drive power	RPM [3]	n in min^{-1}	1380	1380	2820	1380	2820	1380	2820	1380	2820	2820
1.1 kW [1]	Nom. pressure [3]	p_{max} in bar	700	700	700	450	310	250	200	180	140	120
	RPM [3]	n in min^{-1}	1400	1400	2890	1400	2890	1400	2890	1400	2890	2890
2.2 kW [1]	Nom. pressure [3]	p_{max} in bar	700	700	700	450	700	350	450	250	280	220
External gear pump												
Flow [3]		q_V in L/min	1.40	2.80	4.40	5.60	7.00	8.80	11.2	14.0		
Drive power	RPM [3]	n in min^{-1}	1380	1380	1380	1380	1380	1380	2820	2820		
1.1 kW [1]	Nom. pressure [3]	p_{max} in bar	260	180	140	110	90	70	55	45		
	RPM [3]	n in min^{-1}	1400	1400	1400	1400	1400	1400	2890	2890		
2.2 kW [1]	Nom. pressure [3]	p_{max} in bar	260	260	260	220	170	140	110	85		
Type of protection to VDE 0530 / EN 60034			IP 54 for the completely assembled unit									
Tank size / type			3/R		4/R		4/G		5/R		7/R	7/G
Weight (without hydraulic fluid)		kg	17.8		18.4		19.6		23.0		25.0	26.6

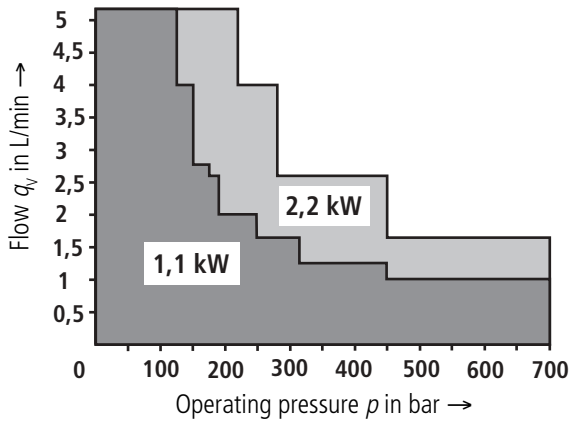
[1] See performance diagram below

[2] 60 Hz is not possible!

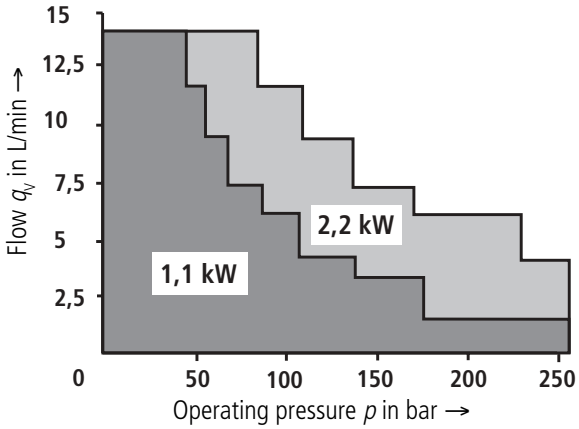
[3] Referred to RPM at 50 Hz

Performance diagram [4]

Radial piston pump



External gear pump



[4] The data are valid at a frequency of 50 Hz

Electric motor

The clamping and drive module is designed for use in accordance with VDE 0530 (EN 60 034) for short-time operation S2 and intermittent operation S3 within the nominal power range. The electric motor complies with insulation class F, and the complete clamping and drive module with type of protection IP 54.

The electric motor's direction of rotation depends on the pump installed (see technical data on page 4) .

Technical data (for applications outside these parameters, please consult us!)

Voltage [1]	*U*	V	230 / 400 ±6% Δ/Y
Frequency	*f*	Hz	50 / 60
Operating mode			S2 short-time operation, S3 intermittent operation
Insulation class			F (winding)
Type of protection			IP 54
Number of poles			2 / 4

Frequency 50 Hz

Power kW	RPM min^{-1}	Power factor cos φ	Nom. current at Δ 230V	Y 400V
1.1[2]	1380	0.80	4.70 A	2.70 A
1.1[3]	2820	0.85	4.45 A	2.55 A
2.2[2]	1400	0.82	9.20 A	5.30 A
2.2[3]	2890	0.85	8.35 A	4.80 A

Frequency 60 Hz

Power kW	RPM min^{-1}	Power factor cos φ	Nom. current at Δ 230V	Y 400V
1.1[2]	1670	0.84	4.45 A	2.55 A
1.1[3]	3380	0.88	4.10 A	2.35 A
2.2[2]	1690	0.83	8.70 A	5.00 A
2.2[3]	3420	0.88	7.80 A	4.50 A

[1] Other voltages on enquiry
[2] 4 poles
[3] 2 poles

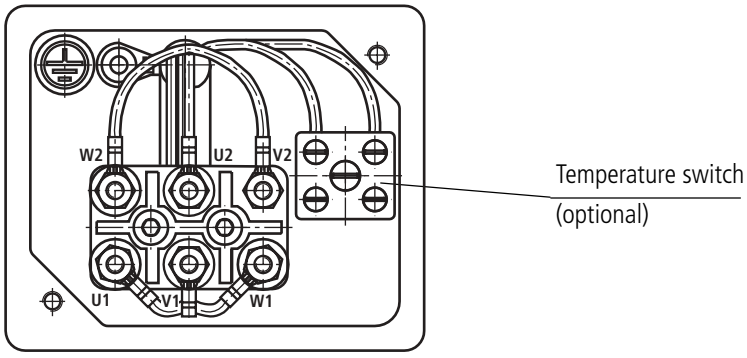
Electromagnetic compatibility of apparatus (German EMVG)

According to the "law on electromagnetic compatibility of apparatus (§2, section 4)" and the EEC Directive, the clamping and drive module is not an apparatus that is ready for operation. In order to prevent the occurrence of electromagnetic disturbance, we recommend the use of suppressors made by Murr-Elektronik in 71570 Oppenweiler, e.g. type 23050, 3 x400 VAC, 50-60 Hz.

Terminal assignment

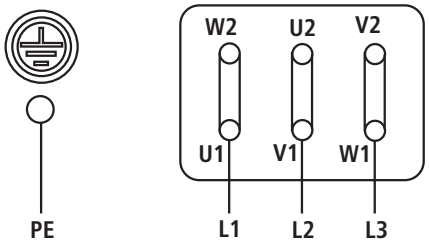
Terminal assignment within the terminal box on the clamping and drive module

Factory side:



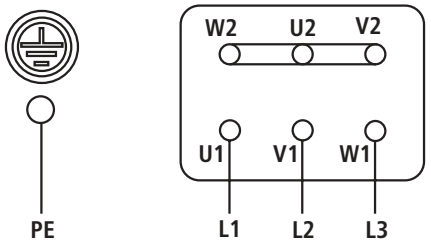
Customer side:

Δ delta *U* = 230 V

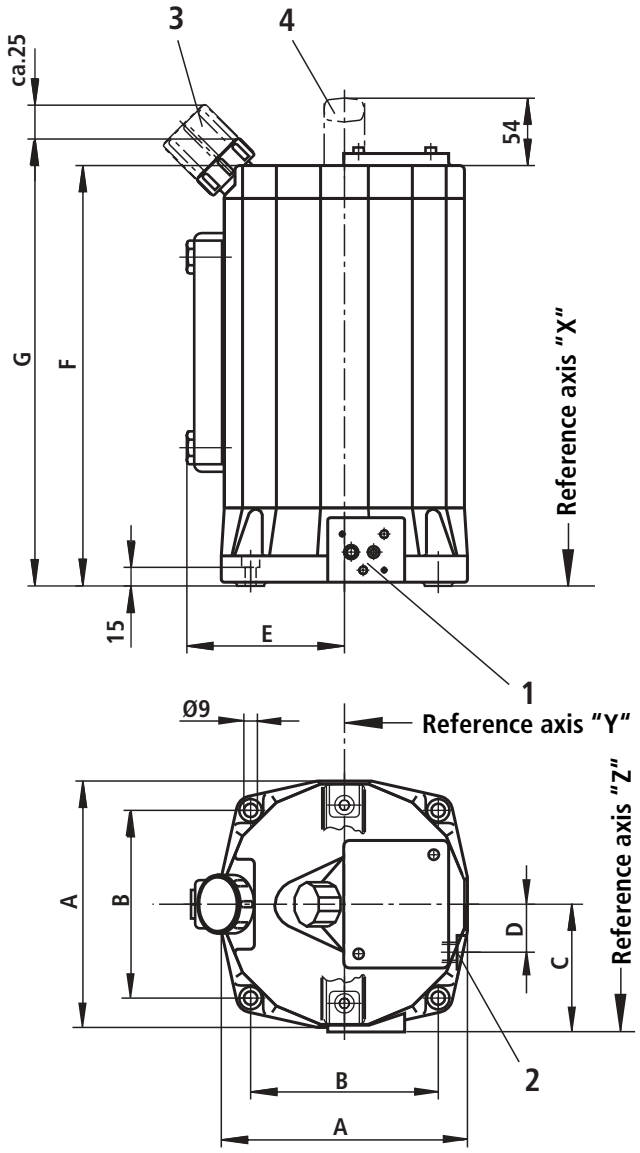


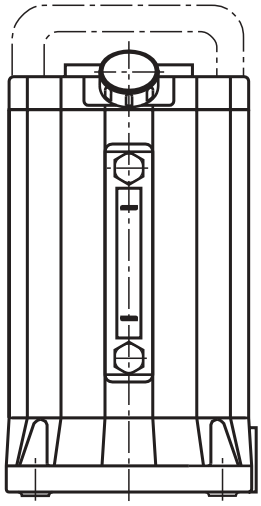
Customer side:

Y star *U* = 400 V



Unit dimensions (dimensions in mm)





Tank size	A	B	C	D	E	F	G
3	164	125	85	40	105	280	295
4	164	125	85	40	105	390	405
5	190	156	98	50	118	320	335
7	190	156	98	50	118	450	465

X, Y and **Z** are **reference axes** for establishing the installation dimensions when control blocks are mounted.

1 Control mounting surface

2 Oil drain screw G 3/8

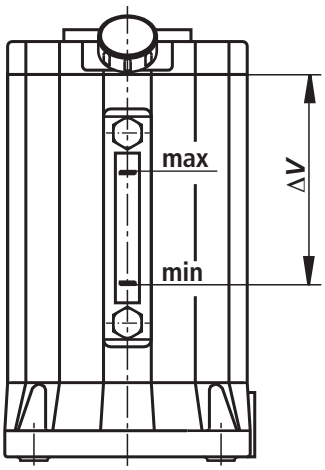
3 Breather filter

4 Carrying handle

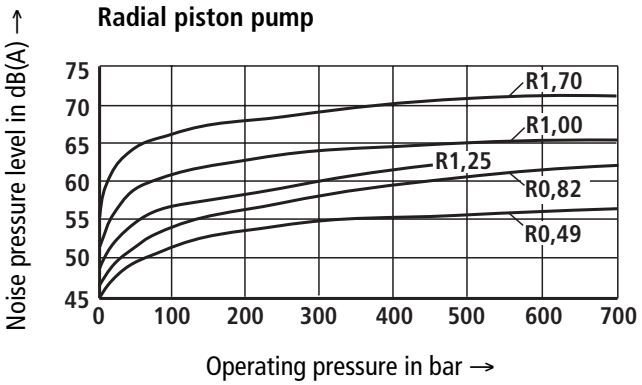
Filling and draw-off quantity

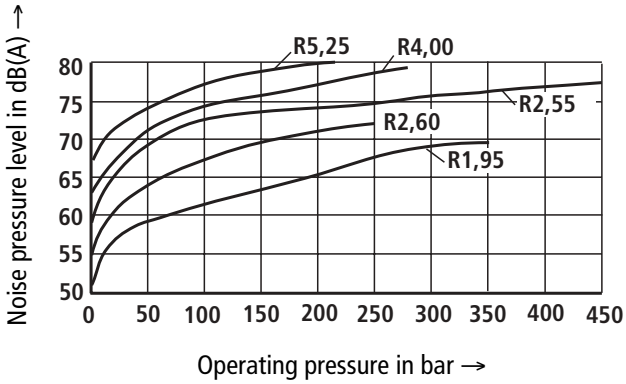
	Tank size	Quantity in litres Radial piston pump	External gear pump
Filling quantity	**3**	2.4	
	4	4.5	4.1
	5	4.3	
	7	7.2	6.8
Draw-off quantity	**3**	1.0	
	4	3.0	2.6
	5	2.3	
	7	5.1	4.7
Draw-off quantity up to switching point of level switch	**3**	0.8	
	4	2.8	2.4
	5	2.0	
	7	4.8	4.4

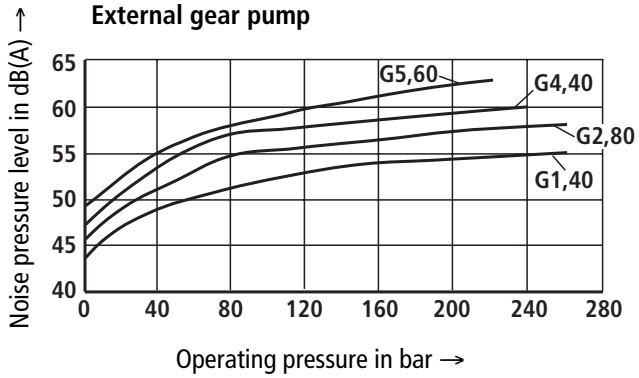
Not possible

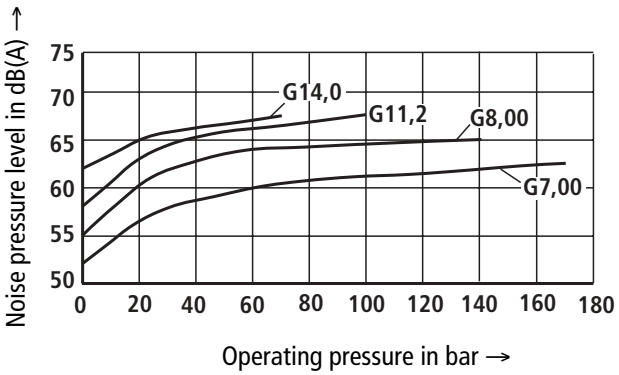


Noise pressure level (measured at $\nu = 41$ mm^2/s and $\vartheta = 50$ °C)







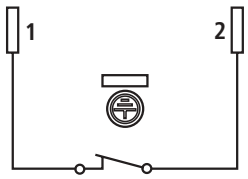


Level switch (optional)

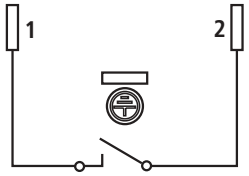
Description

The level switch electrically monitors the level of the hydraulic fluid. When the minimum oil level is reached, the contact opens and outputs a signal to the control.

Electrical function



Maximum level



Minimum level

Technical data

Maximum voltage	V	50 AC / DC
Maximum current consumption	A	0.25
Maximum power consumption	W	3.0
Type of protection		IP 65
Type of contact		NC

Temperature switch (optional)

The temperature switch helps to protect the clamping and drive module from being operated at impermissibly high fluid temperatures. The temperature switch has a fixed switching point that switches at a hydraulic fluid temperature of 80 °C.

The reset hysteresis is ca. 10 K.

Electrical function

Temperature < 80 °C

Temperature ≥ 80 °C

Continued on page 8

Temperature switch (optional) – continued!

Technical data

Maximum voltage	V	50 AC / DC
Maximum current consumption	A	0.25
Maximum power consumption	W	3.0
Type of protection		IP 65
Type of contact		NC

Breather filter (optional)

When the clamping and drive module is to be used in a heavily contaminated environment, we recommend the use of a breather filter.

The breather filter has a filter rating of 10 µm.

Notes on commissioning

- Check to see whether the clamping and drive module is correctly connected (hydraulically and electrically) to the machine to be powered.
- To connect the motor electrically, use the washers and connection bridges that are included in the scope of supply.
- The electric motor must be protected by means of a system with overload relay.
  This must be set to the nominal current indicated on the nameplate / performance label.
- When installing the clamping and drive module with an external gear pump, observe the motor's direction of rotation, see direction of rotation arrow.
  (Practical check: Briefly switch on the motor and check whether the pump starts to displace oil.)
- The hydraulic fluid must be filled in through a filter with the required minimum retention rate.
- Fill the clamping and drive module with hydraulic fluid, with the fluid level not exceeding the point where the dipstick is reached.
- In no case may the clamping and drive module be operated without hydraulic fluid.
- Start up the clamping and drive module under no-load conditions and allow it to deliver oil at zero pressure for a few seconds in order to ensure sufficient lubrication.
- Bleed the hydraulic control and the actuators by moving them in and out or opening existing bleed points and, if necessary, top up hydraulic fluid in the clamping and drive module to the required level.
- The clamping and drive module must only be used within the permissible data limits. Moreover, it must only be operated when it is in perfect condition.
- Before carrying out work on the clamping and drive module, depressurise the unit and switch the power supply off.
- Any unauthorised changes and conversions that affect safety and function are not permitted.
- Do not remove any protective equipment and guards.
- The generally valid safety regulations and regulations for the prevention of accidents must be observed and complied with.

Note in accordance with EC Machinery Directive 89/392 EEC, Annex II, Section B:

The assemblies have been manufactured in accordance with the harmonised standards prEN 982, prEN 983, DIN EN 292 und DIN EN 60 204-1.

Commissioning is strictly prohibited until evidence has been furnished that the machine, into which the assembly is to be installed, is also in compliance with the regulations of the EC Directive.

☞⚠ **Caution!**

The clamping and drive module can heat up during operation => **risk of injury!**

Settings, maintenance work and repairs on the clamping and drive module may only be carried out by authorised, trained and instructed personnel.

For repairs only use genuine Bosch Rexroth spare parts!

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