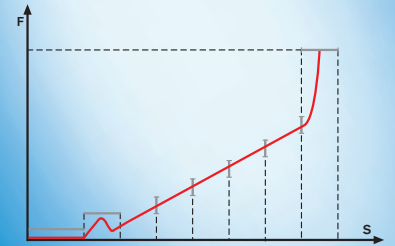


Product Catalogue Press-Fit Systems



The Drive & Control Company



Press-fit station



Press-fit station in injection-pump production

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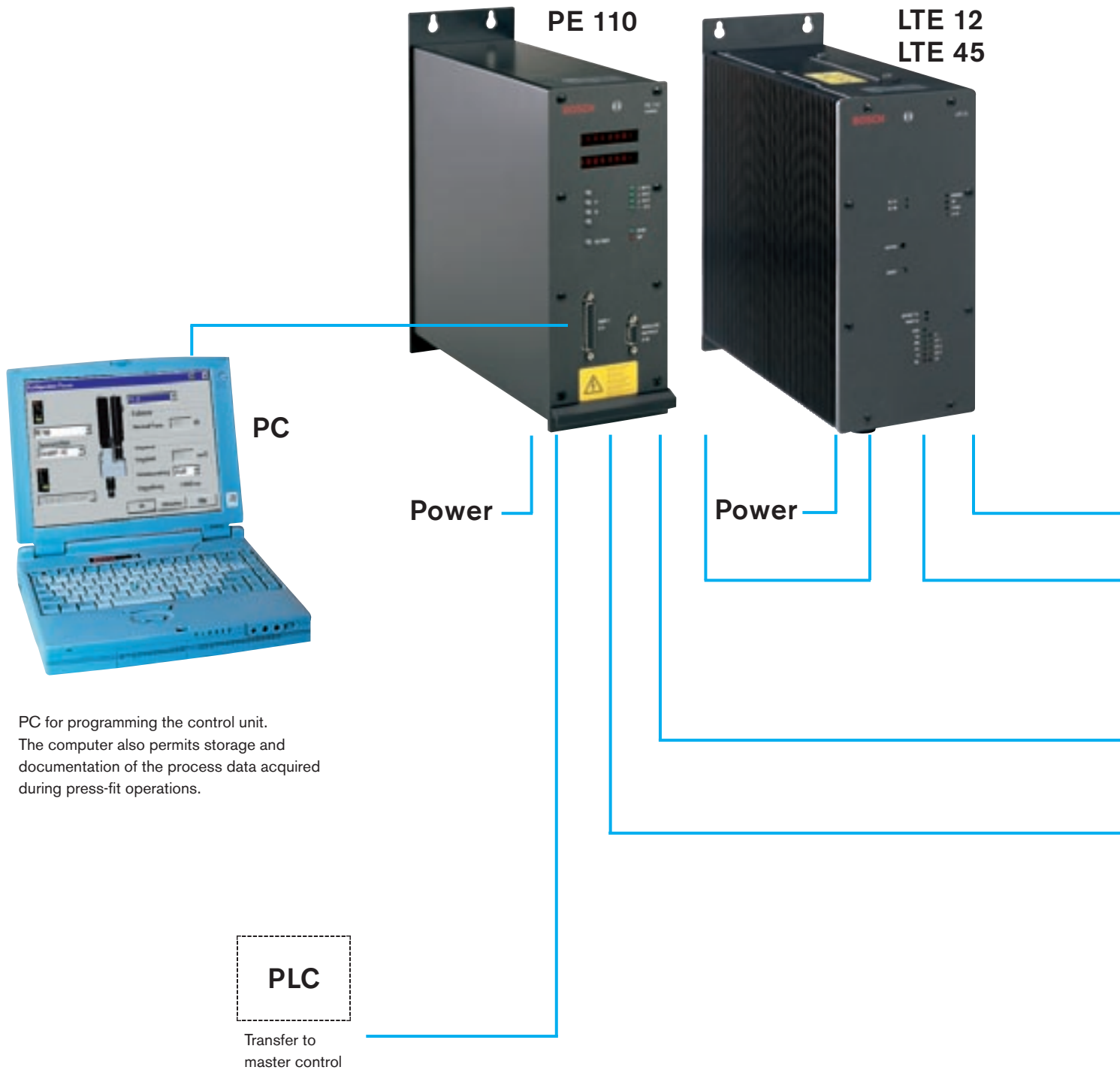
System overview

The Rexroth press-fit system is particularly suitable for use in automatic production lines. High flexibility is guaranteed by the fact that various setpoint sets can be selected. Moreover, the integrated transducer system also permits simple conversion into a different workpiece type.

The modular structure, comprising individual components, simplifies integration of the system in the overall assembly line and assures you easy integration of additional components, in the future too.

System overview

The Rexroth press-fit system comprises the control PE 110, the servo amplifier LTE 12 or LTE 45 and the press spindle PS 6, PS 20 or PS 50. The press spindles consist of the following components: motor, adapter, planetary gearbox, press component and measurement converter.



PC for programming the control unit.
The computer also permits storage and documentation of the process data acquired during press-fit operations.

PLC

Transfer to
master control

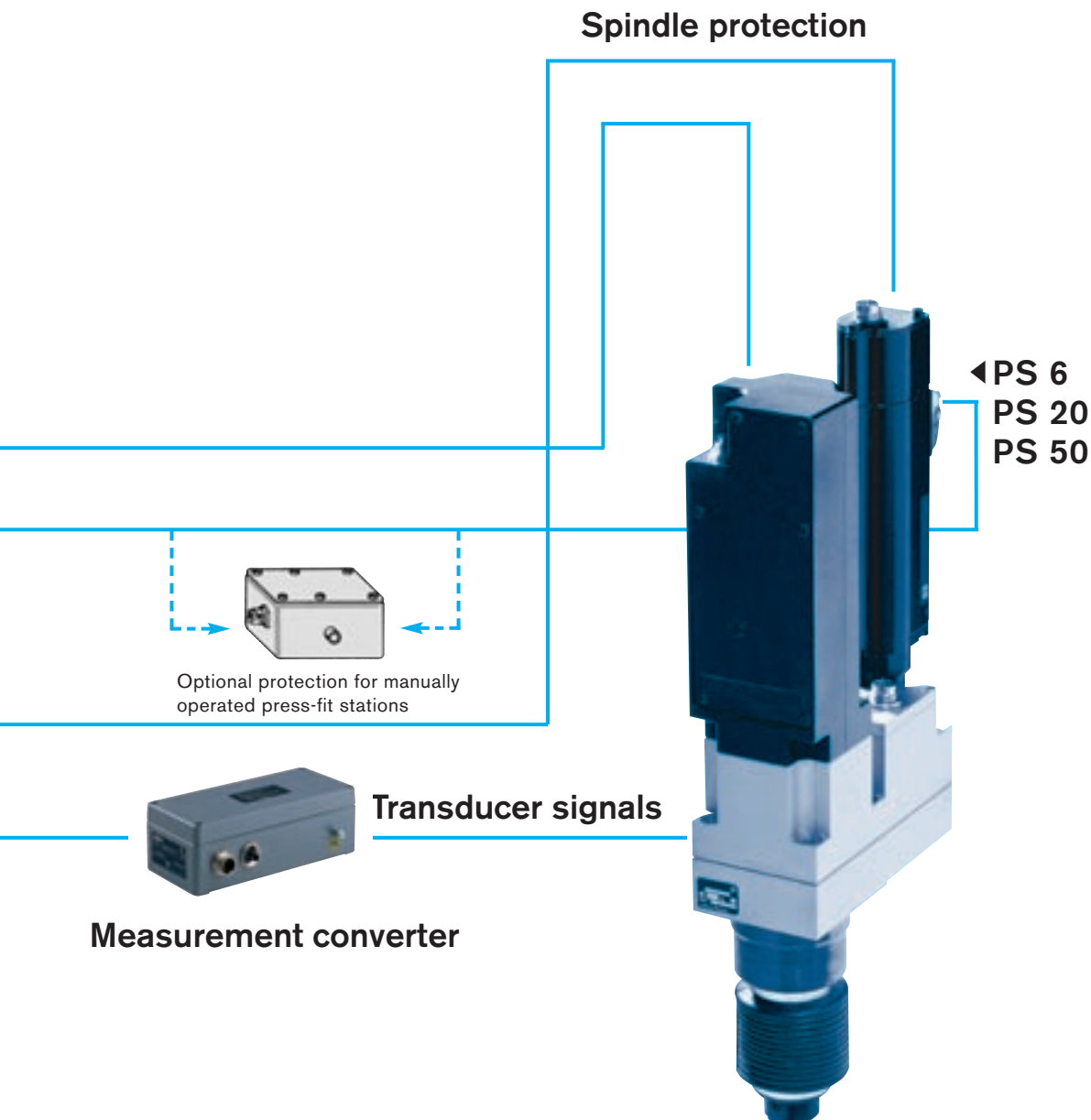
Press control PE 110 serves to control and monitor the press-fit process. Incoming transducer signals are compared with the programmed setpoints so that every NOK press-fit operation is detected. Current process data and causes of errors of the overall system are displayed in plain text. A variety of interfaces permits integration of extensive peripheral equipment.

Servo amplifier LTE 12/LTE 45

for controlling the highly dynamic electronically commutated (EC) motor in the press spindle.

A constant traverse speed of the spindle is guaranteed by a servo loop between the EC motor and the servo amplifier.

Press spindle for generating the press-fit stroke. The press-fit forces and the paths occurring are measured constantly by the integrated transducer system and are transferred as measured values directly to the control unit. The press component is mounted on any type of base frame by means of only 4 bolts.



Press spindles - Technical data

Configuration

The Rexroth press spindle is a compact configuration component. It consists of the press component, an EC motor flanged on via an adapter, the speed of which is stepped down by a planetary gearbox, and the measurement converter included with the press component.

The tool mount of the press component is designed in accordance with DIN standards.

Press components

The press components consist of a sturdy cast aluminum housing.

The housing incorporates a digital angle encoder as the displacement transducer and a force transducer incorporating tried-and-tested strain-gauge technology. The associated amplification electronics are accommodated in the separate measurement converter.

The spindle in the press component is a planetary recirculating roller thread spindle.

This is supported on the housing via the force measuring ring. The spindle can move freely, thus ruling out the possibility of load distortion. The operating range is limited upwards and downwards by contactless inductive transducers.

Planetary roller thread spindle

This linear drive, manufactured to high-precision specifications, can cope with high axial forces despite its compact dimensions. The mode of operation is similar to that of a planetary gearbox: a rotating threaded nut, which is axially fixed, transfers a torque to planetary rollers. These, in turn, cause axial movement and axial force on the spindle by their rotation.

Transducer system

The force transducer is a ring fitted with strain gauges. The strain gauges are configured as a full-bridge circuit. This guarantees insensitivity to temperature and zero drift. The path is measured by an angle encoder integrated in the press component. This digital displacement encoder permits a high path resolution over the entire die stroke.

Brushless DC motor ("EC motor")

The drive motor is an electronically commutated electric motor – abbreviated "EC motor" – which is powered by a servo amplifier. Constant speed with variable torque is guaranteed by a servo loop to the servo amplifier.

Mounting

The press component is mounted with only 4 bolts on any type of base frame.

A flange on the underside of the housing centers the press spindle. This easy mounting allows the press components to be used for a wide range of applications.

A horizontally mounted press component requires a die guide.

Press spindle		
Designation		
Press component		
Measurement converter		
EC motor/Servo amplifier	Operation at 230 V	EC-motor
		LTE
	Operation at 110 V	EC-motor
		LTE
Planetary gearbox		
Adapter with extension		
Technical data		
Mechanical system		
Nominal force:		
Max. overload at max. stroke:		
Maximum stroke:		
Die speed:		
(Infinitely adjustable in both directions)		
Path repetitive accuracy:		
(at 25% max. speed and idle stroke;		
also refer to note in "Spindle protection unit")		
Transducer system		
Force transducer		
Nominal force:		
Force measuring range:		
Measuring accuracy:		
Analog output signal:		
Power supply:		
Displacement transducer:		
Digital displacement encoder		
Measuring accuracy:		
Power supply:		
Electrical system		
Degree of protection:		
Spindle protection unit:		
3 outputs to PLC		
Temperatures		
Permitted temperature range:		



PS 6			PS 20			PS 50		
Code	Order number	Weight [kg]	Code	Order number	Weight [kg]	Code	Order number	Weight [kg]
-	0 608 600 005	7,5	-	0 608 600 006	12,00	-	0 608 600 007	40,00
-	Included in scope of delivery	0,6	-	Included in scope of delivery	0,6	-	Included in scope of delivery	0,6
3 E 48-1 12	0 608 701 002 0 608 750 040	1,4 -	4 E 510-1 45	0 608 701 003 0 608 750 041	2,5 -	5 E 713-1 45	0 608 701 004 0 608 750 41	6,0 -
3 E 48-2 45	0 608 701 014 0 608 750 041	1,4 -	4 E 510-2 45	0 608 701 015 0 608 750 041	2,5 -	- -	- -	- -
-	Not required	1)	4 GE 19	0 608 720 056	0,7	-	Included in scope of delivery	1)
-	Included in scope of delivery	1)	4 A	0 608 810 026	0,6	-	Not required	1)
						1) included in weight of the press component		
6 kN 20% of nominal value 70 mm 1-150 mm/s < ± 0,05 mm			20 kN 20% of nominal value 119 mm 1-110 mm/s < ± 0,05 mm			50 kN 20% of nominal value 180 mm 3-100 mm/s < ± 0,05 mm		
6 kN 0,6-6 kN ± 1% 0 to +5 V +12 V 0,01 mm +5 V			20 kN 2-20 kN ± 1% 0 to +5 V +12 V 0,01 mm +5 V			50 kN 10-50 kN ± 1% 0 to +5 V +12 V 0,01 mm +5 V		
IP 54 24 V power supply			IP 54 24 V power supply			IP 54 24 V power supply		
+10 to +50° C			+10 to +50° C			+10 to +50° C		

Press control PE 110



Configuration

Press control in all-metal housing for connection of the Rexroth press spindle. Process results, status and errors are displayed via plain-text and LED display elements.

Functions

Force, path and time-programmable monitoring functions.
14 programs with up to 8 process steps can be programmed.

Display

The 16-digit alphanumeric LED dot-matrix display, displays status, errors and process results in plain text.
Power supply monitoring and display of operational standby is done by means of 5 green LEDs. System error display via red LED. Display of the process results via 5 multicolored LEDs.

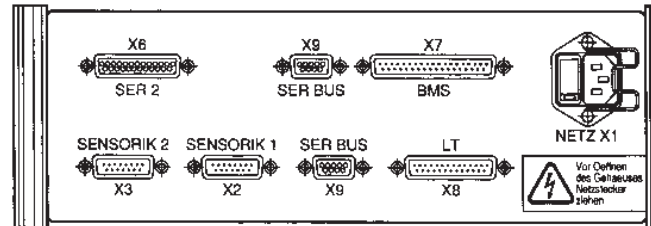
Programming

For programming, a computer with Windows 95/98 or Windows NT > 4.0 and the Rexroth WinPEPR operating program for press controls is required.

Technical data

Dimensions:	309 x 106 x 310 mm (L x W x H)
Weight (not including cables):	3.5 kg
Mains:	110-240 V / 50-60 Hz
Power consumption:	approx 50 W
Degree of protection:	IP 40
Permitted ambient temp.:	0° to 45° C (32° to 113° F)
Protection against mains overvoltage:	in acc. with VDE 0160

Interfaces



X1 Mains connection

Cold appliance plug (m) with ON/OFF switch

X2 Transducer system 1

15-pin Sub-D (f) interface to the measuring transducers for force and path in the press spindle

X3 Transducer system 2

15-pin Sub-D (m) interface to the press protection board of the press spindle

X4 Serial interface (front panel)

25-pin Sub-D (f) for connection of a programming unit or data evaluation unit, complying with RS 232-C standard.

X6 Serial interface 2

25-pin Sub-D (f) for connection of a printer or data evaluation unit, complying with RS 232-C standard.

X7 PLC interface (parallel/serial)

37-pin Sub-D (m) for connection of the PLC; contains a data output interface in accordance with RS 422 standard.

X8 Servo amplifier interface

25-pin Sub-D (m) for connection of the servo amplifier LTE 45.

X9 Serial bus

inactive (f)

X10 Analog out (front panel)

9-pin Sub-D (f) analog signal interface

Designation	Description	Order number
PE 110	Press control	0 608 830 186

Servo amplifier LTE 12, LTE 45



Configuration

Single-channel servo amplifier in all-metal housing.

Function

The servo amplifiers LTE 12 and LTE 45 for EC motors are non-ferrous servo-amplifiers that convert the mains voltage to a regulated 3-phase voltage.

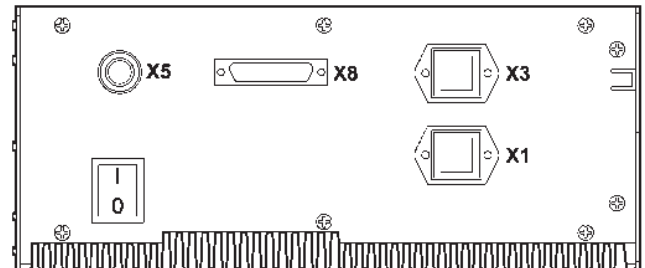
The servo amplifiers can be operated both with 110 V and with 230 V. When selecting the EC motors, observe the respective mains voltage with which the power sections are operated.

(Refer to pages 6 and 7 for information about the EC motors.)

Technical data

Dimensions:	310 x 125 x 310 mm (L x W x H)
Weight:	11.2 kg
Power dissipation, LTE 12:	45 W
Power dissipation, LTE 45:	75 W
Degree of protection:	IP 40
Permitted ambient temperature if following motors are connected:	
2E37; 3E48 and 4E510:	0° to 45°C (32° to 113° F)
5E713:	0° to 40°C (32° to 104° F)

Interfaces



X1 Mains connection

7-pin Amphenol C 146 (m)
110 – 240 V, 50 – 60 Hz,
24 V contactor control.

X3 Motor connection

7-pin Amphenol C 146 (f),
3-phase motor control
and PE wire.

X5 Motor encoder connection

7-pin, circular (f)
2-channel incremental encoder
with index pulse.
Motor temperature monitoring.

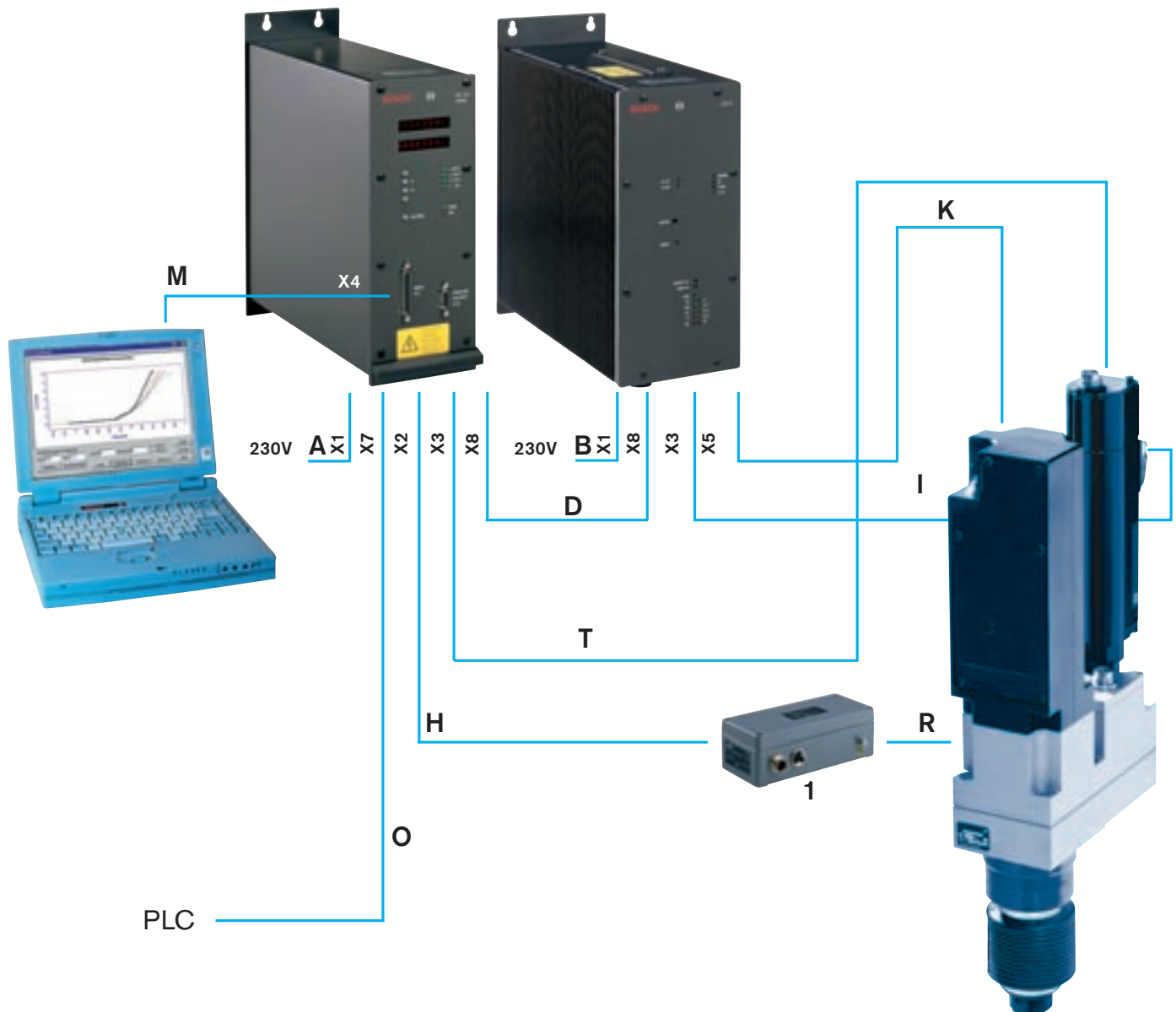
X8 Control connection

25-pin Sub-D (f).
Tightening step control
(digital) or analog
rpm control optional.

Order numbers for servo amplifiers

Designation	Description	Order number
LTE 12	Servo amplifier with 12 A peak current for operation of the EC motor for the press component PS 6 at 230 V	0 608 750 100
LTE 45	Servo amplifier with 45 A peak current for operation of the EC motor for the press component PS 20 and PS 50, PS 6 at 110 V	0 608 750 101

Cable overview for PE 110



Connection cables and accessories

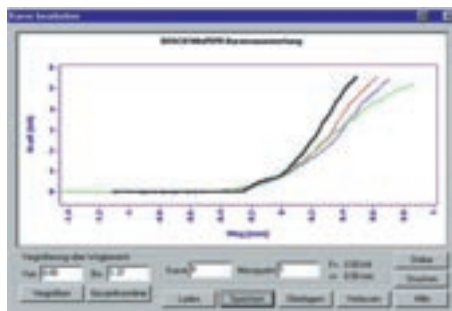
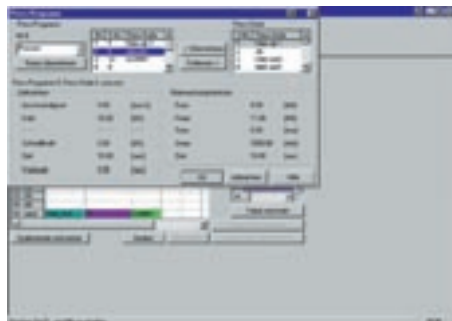
Identifier	Designation	Code length in [m]	Order no.	Plug	Connection from ▼ to	Max. perm. length [m]	Remarks
A	Main power cable Control	NKS 5	3 604 462 046	Euro power 7-pin contact (f)	Euro power ▼ PE 110	30	Enclosed with PE 110
B	Main power cable Servo amplifier	NKV 5	3 604 461 003	Euro power 7-pin contact (f)	Euro power ▼ LTE 12/45	30	Enclosed with LTE 12/45
D	Command cable for single- channel servo amplifier LTE 12/45	SK 0,5 SK 1 SK 3 SK 5 SK 10	0 608 750 042 0 608 750 043 0 608 750 044 0 608 750 045 0 608 750 046	25-pin Sub-D (f) 25-pin Sub-D (f)	PE 110 X8 ▼ LTE 12/45 X8	30	–
H	Transducer cable	LPE 1 LPE 3 LPE 5 LPE 7 LPE 10 LPE 15 LPE 20	0 608 830 148 0 608 830 149 0 608 830 150 0 608 830 151 0 608 830 152 0 608 830 153 0 608 830 154	15-pin Sub-D (m) 12-pin round (f)	PE 110 X2 ▼ Measurement converter	30	–
I	Motor cable	MV 3 MV 5 MV 10 MV 15 MV 20	0 608 750 003 0 608 750 004 0 608 750 005 0 608 750 022 0 608 750 023	7-pin contact (f) 7-pin contact (m)	LTE X3 ▼ EC and a motor	30	–
K	Motor transducer cable	MG 3 MG 5 MG 10 MG 15 MG 20	0 608 750 047 0 608 750 048 0 608 750 049 0 608 750 050 0 608 750 051	7-pin round (m) 7-pin round (f)	LTE X5 ▼ EC and a motor	30	–
M	Programming and statistics cable	PK 5	0 608 830 052	9-pin Sub-D (f) 25-pin Sub-D (m)	Programming unit ▼ PE 110 X4	30	2/3 transposed 7-5 ground
O	PLC connection cable	–	Plug enclosed with PE 110	37-pin Sub-D (f) –	PE 100 X7 ▼ Customer's PLC	–	–
R	Transducer cable	LPS 4	3 608 870 348	12-pin round (f) 12-pin round (m)	PS xx ▼ Measur. converter	4	Enclosed with PS xx
T	Spindle protection cable	SSL 3 SSL 5 SSL 10 SSL 15 SSL 20	0 608 830 212 0 608 830 213 0 608 830 214 0 608 830 215 0 608 830 216	15-pin Sub-D (f) 7-pin round (f)	PE 110 ▼ Press spindle protection PS 6	30	–
		SSL 3 SSL 5 SSL 10 SSL 15 SSL 20	0 608 830 217 0 608 830 218 0 608 830 219 0 608 830 220 0 608 830 221	15-pin Sub-D (f) 7-pin round (f)	PE 110 ▼ Press spindle protection PS 20, PS 50	30	–
1	Measurement converter	–	3 608 870 347	–	–	–	Enclosed with PSxx

Special accessories

Cable separation	For intermediate connection of a contactor for motor decoupling on manually-operated press-fit systems.
Die guide	The press can be equipped with a customer-specific die guide if desired. The die guide is urgently recommended if the press spindle is installed in horizontal position.

Use the cables listed above in order to ensure system compatibility. Minimum bending radii of the above-listed cables: 15 x cable diameter. **Non-standard cables, e.g. extension cables suitable for robots or non-standard lengths on request.**

Operating program WinPEPR



Programming software

The operating program for programming a Rexroth press control meets, to a great extent, the requirement for simple operation. Created as a user program for the Windows 95/98 or Windows NT > 4.0 operating system, the user-friendly operator interface permits rapid input and modification of the required process data.

The very clear menus include the following functions:

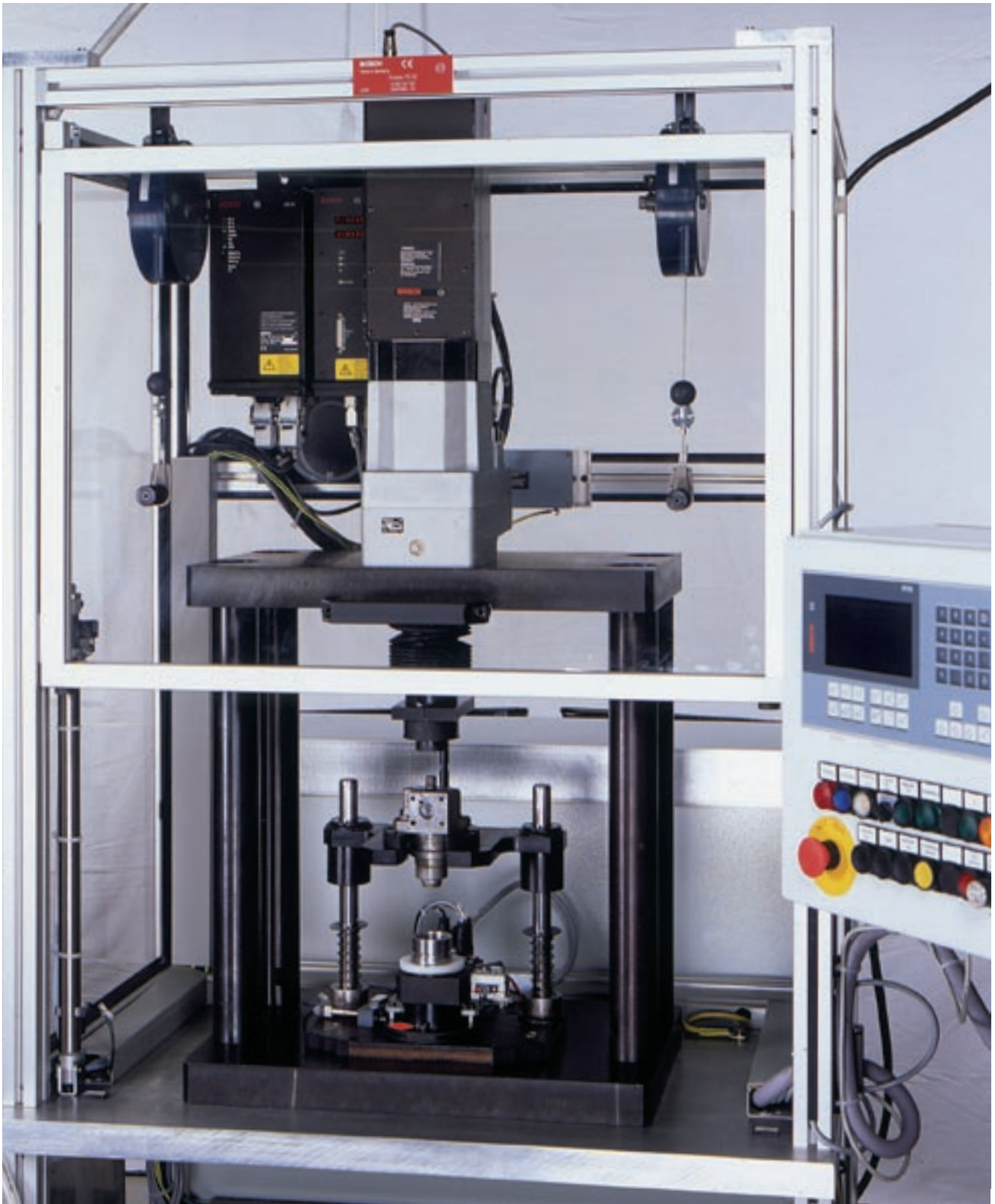
- Basic menu for branching off after program start-up
- Data transfer from the computer to the control
- Checking user access authorization via login
- Entry of the spindle and interface characteristics
- Definition of the press-fit process
- Definition of several press-fit programs
- Display of the press-fit force characteristics with various overlay options
- Output of the process results in tabular form on the computer or on a printer
- Print-out of press-fit processes, press-fit programs, results and press-fit force characteristics
- Service access in case of password loss

The operator is supported by invocable help menus.

The program package is supplied with software manuals and work materials.

Designation	Order number
Operating program Press-fit system (WinPEPR) Single licence	0 608 830 209
10-fold licence	0 608 830 210
Plant licence	0 608 830 211

Press-fit station



Press-fit station in ABS production

Sales Organization



-  Russia
-  Czech Republic
-  Hungary
-  Poland
-  Slovak Republic
-  Slovenia



 China
Shanghai
Hongkong

 Singapore

 Indonesia
 Malaysia
 Philippines
 Thailand

 India

 South Korea

 Australia

Internet

<http://www.einpresstechnik.com>



Germany, Murrhardt – Development, Production and Sales Head Office.

The Tightening and press-fit systems division of Bosch Rexroth AG has been active on international markets since 1982. Our many years of experience are available to you at all times. With each and every one of our products you acquire a piece of that reliability and quality, which sets all Rexroth products apart.

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