

General Catalogue

mäder
pressen



Manual presses

Pneumatic presses

Hydropneumatic presses

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mäder, the company

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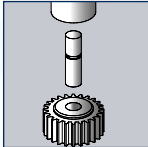
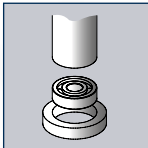
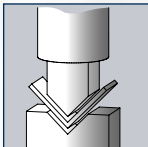
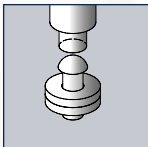
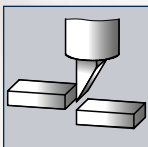
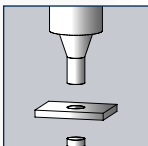
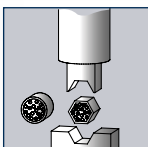
Press & Tool Concept

- ▶ Press/tool overview
- ▶ KP 2.1 Hand-operated toggle presses
- ▶ KP 3.1 Pneumatic presses
- ▶ Tool systems

mäder presses, the applications

A number of processes can be performed quickly, precisely and easily with mäder presses.

For example:

3		
4		
5		
7		Assembly
8-11		
12-15		
16-17		Pressing
18-19		
20-21		
22-25		Bending
26-29		
30-31		Riveting
32-45		
46-47		
48-49		
50-51		Edge cutting
52-55		
56-57		
58		
59		Punching
60-63		
64		
65		
66-67		Crimping
68-69		
70-71		

We would be happy to determine the press force required based on your parts.

DA range

DA presses are the logical implementation of modern press technology for direct-acting pneumatic presses. Due to their modular design, exactly the size needed for the application can be selected, thus optimising the price/performance ratio. Standard stroke lengths from 40 mm to 120 mm are available in 20 mm steps. Special lengths can be provided on request. Direct-acting pneumatic presses produce a constant force over the whole stroke length. All direct-acting pneumatic presses can be provided as automation components or with **mäder** controllers for individual workstations.

The processing of sheet metal, printed circuit boards and other bulky components requires presses to have a larger throat. XL-DA presses with 250 mm and 300 mm throat enable even these workpieces to be processed. L-DA presses with up to 350 mm daylight are used for tall parts which require more vertical space. For dimensions which lie outside the standard, presses with press frames in welded design can be manufactured to your specifications.

DA presses are practically maintenance-free, as all moving parts are mounted in bearings. Cylinders are pre-greased and are therefore suitable for oil-free operation.

Quality features:

- ▶ Anti-twist, hard-chrome-plated ram guided in Teflon bushes
- ▶ Simple adjustment of the height of the press head using a threaded spindle and right-angle gearbox
- ▶ Side-mounted measuring strip for fast reproduction of settings when changing the tool
- ▶ Practically maintenance-free double-acting cylinder
- ▶ Adjustable cylinder end-position damping
- ▶ Low noise: less than 75 dB





Sensors are not included

Adjusting the stroke of DA presses

DA presses are fitted as standard with an innovative, precise and easy-to-use system which enables accurate stroke adjustment and protects the ram against twisting.

Operation:

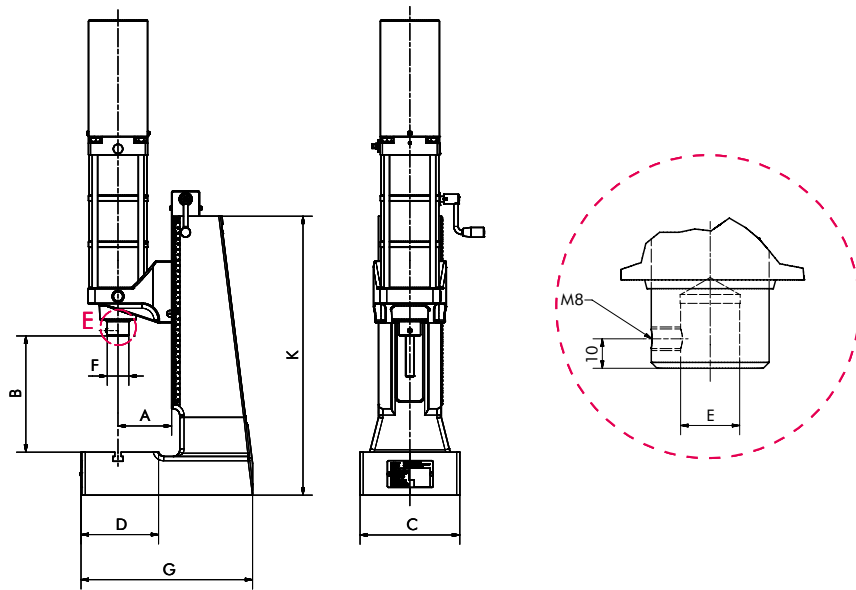
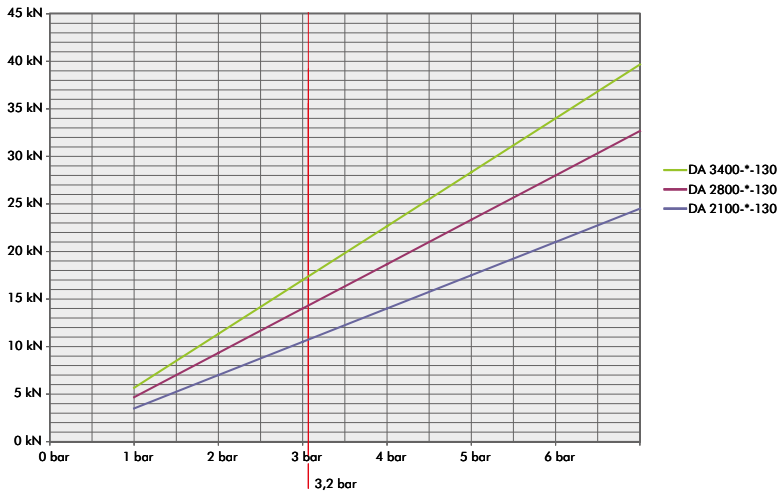
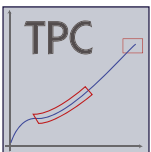
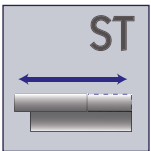
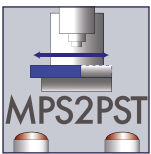
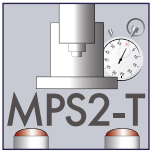
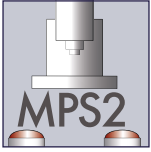
- ▶ The press depth can be adjusted to a reading accuracy of 0.01 mm over the whole stroke length with only one scale nut (A). The stroke length can be read off using the side scale (B) and the vernier on the scale nut (A).
- ▶ The position of the ram can be checked by means of reed contacts (C) which are slid onto the standard scale.
- ▶ The sensors do not have to be readjusted when the stroke length is changed, as the stroke length control magnets always move to the same end positions.



Tandem cylinders

The energy-efficient tandem cylinder design is used for larger forces. Several pneumatic cylinders are connected in tandem, thus increasing the force of the cylinder accordingly. The air consumption is optimised, as the return stroke is only via one cylinder chamber. The press can be operated using only two air connections, as the air is channelled within the pneumatic cylinder.

The accessories



For details of fine stroke adjustment see page 37



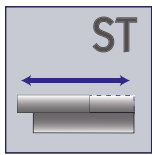
DA 3400-40-130

Type			DA 2100- [*] -130	DA 2800- [*] 130	DA 3400- [*] -130
Capacity at 6 bar		kN	21.0	28.0	34.0
Working stroke max. [*]		mm	40/60/80/100/120	40/60/80/100/120	40/60/80/100/120
Throat	A	mm	130	130	130
Daylight	B	mm	75 - 330	75 - 330	75 - 330
Table size	CxD	mm	200 x 190	200 x 190	200 x 190
T-slot width similar to DIN 650		mm	14	14	14
Ram bore Ø x Depth	E	mm	20H7 x 25	20H7 x 25	20H7 x 25
Ram Ø	F	mm	40	40	40
Air connection			G 3/8"	G 3/8"	G 3/8"
Air consumption/cm cyl. stroke		l	3.0	3.7	4.5
Space requirement	CxG	mm	200 x 385	200 x 385	200 x 385
Stand height	K	mm	580	580	580
Weight		kg	ca. 92	ca. 99	ca. 105

^{*} Specify the stroke length when ordering.

Valve and service unit only included with controller. Design may vary.

Direct-acting pneumatic presses



mäder pneumatic and manual slide tables simplify manual and automatic insertion and therefore increase the economic efficiency of assembly processes.

The advantages:

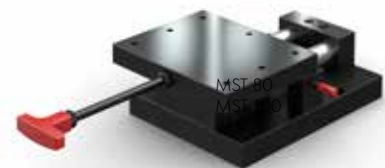
- ▶ Insertion is carried out outside the danger area
- ▶ Parts can be preassembled spatially unhindered by the press
- ▶ Versatile options for automation and feed tasks
- ▶ Precise positioning of workpieces

Other quality features:

	MST 80	MST 100	MST 130	PST 130
Manual slide table	•	•	•	
Pneumatic slide table				•
Teflon slideway	•	•		
Hardened and ground guide columns	•	•		
Precision cross-roller guide with high loading capacity			•	•
Slideway adjustable without play			•	•
Installs transversely or longitudinally	•	•	•	•
Damping at both end positions			•	•
Self-latching in end position	•	•	•	•
Different strokes on request	•	•		



MST 80



MST 100

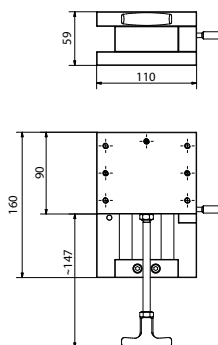


MST 130

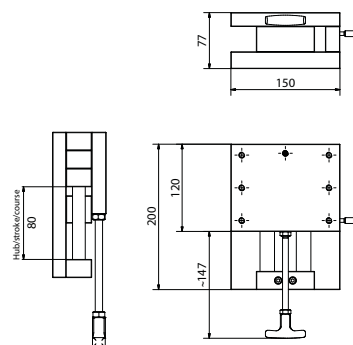


PST 130

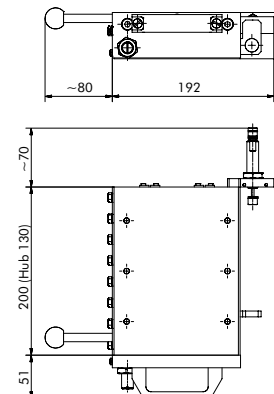
MST 80



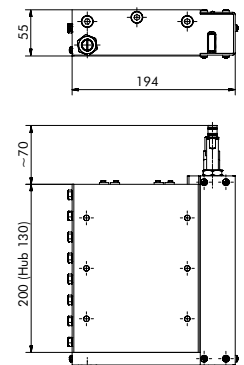
MST 100



MST 130



PST 130



Installation examples



EP 500 with MST 80



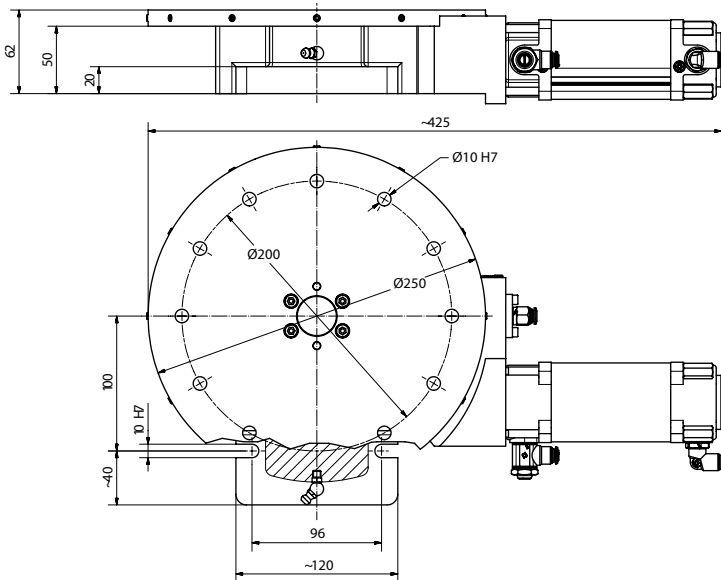
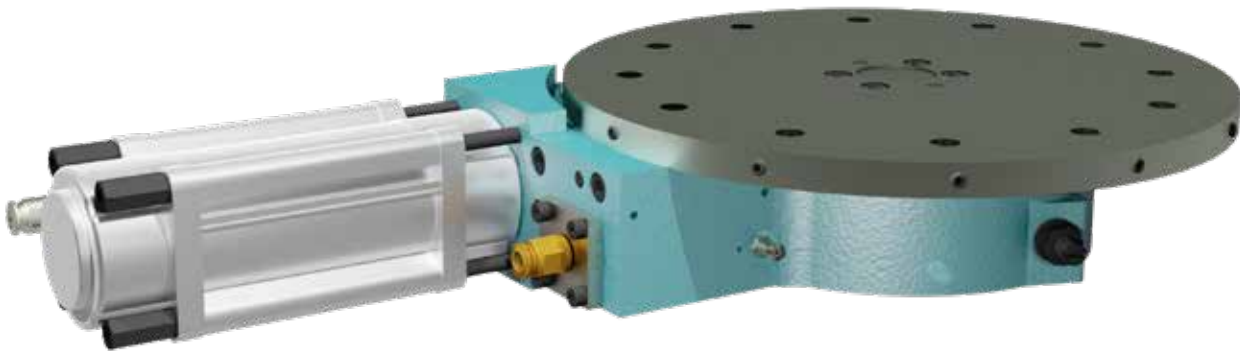
DA type press with PST 130
Installation from the front



Installation from the side

Slide tables

Type		MST 80	MST 100	MST 130	PST 130
Stroke	mm	80	100	130	130
Load capacity	kN	12	30	50	50
Suitable for presses with throat	mm	63/80	80/100	100/130/150/250/300	100/130/150/250/300
Weight	kg	5	8	14	15



Example of application with pneumatic press

Pneumatic rotary indexing plate

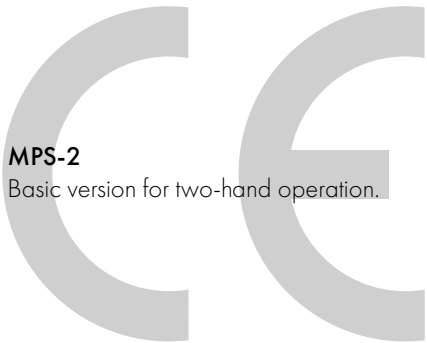
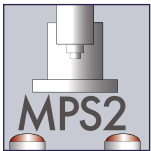
- Ideal for presses up to 13 kN compressive force with centric force application to the integrated anvil
- 12 mounting holes with fixing screws for workpiece carriers in the turntable
- Maximum load per bore hole: 200 g
- Pneumatic locking of the turntable in the working position
- Direction of rotation: clockwise

Type		ST 250
Plate Ø	mm	250
Pitch circle Ø	mm	200
Pitch		12
Mounting hole	mm	10H7
Installed height	mm	62
Indexing precision	mm	0,02
Operating pressure	bar	6
Air connection		G1/8" / G 1/4"
Weight	kg	13

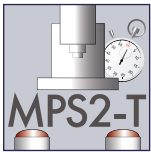
The controller model MPS-2 conforms to the safety requirements which must be applied according to the EC Machinery Directive 2006/42/EC and to the standards for the safety of pneumatic presses. MPS-2 two-hand controls fulfil all requirements of type IIIC according to DIN EN ISO 13851. mäder presses can therefore be used at workstations with manual loading and open tools. Safety is provided here by the controller, which is designed to be both electrically and pneumatically redundant.

MPS-2 controls include a press safety valve, maintenance unit, push button with protective collar, PLC with free interfaces, Ethernet interface and an integrated web server for remote maintenance, as well as an insert for standard micro SD cards and an electronic piece counter.

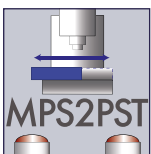
A key switch can be used to select between 2-hand operation or external control.



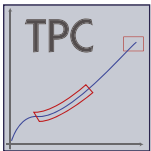
MPS-2
Basic version for two-hand operation.



MPS-2 T
MPS-2 controller with additional stop time function. When the press has reached its end position, a timer can be used to determine when the return stroke should take place.



MPS-2 PST
This type of MPS-2 controller is used to control a pneumatic slide table in addition to the press. The scope of supply also includes the stop time function (see MPS-2 T)



MPS-2 TPC
MPS-2 controller with an additional module TPC-MIDI for force/ displacement monitoring.



Applications:

Joining and assembly processes using presses must today be carried out safely and if possible without retrospective checking. Specified parameters which define the press process must be maintained during production. Only in this way can the quality and safety of the manufactured product be guaranteed. For this reason, TPC-MIDI is used wherever consistent joining processes are required, the progress of which has to be checked and if applicable documented by means of software.

TPC-MIDI monitors the press operation, compares the actual progress with the requirements and subsequently evaluates it. In this way, reject parts can be reliably detected and separated out.

TPC-MIDI can be used both with hand-operated presses and with pneumatic presses. However, the TPC-MIDI is also available as a pure system component if a PLC environment already exists, e.g. in an automation system.

The advantages:

- ▶ TPC-MIDI can be programmed via the membrane keyboard or conveniently using the PC software.
- ▶ TPC-MIDI stores 16 different measuring programs
- ▶ Modern curve evaluation via freely parameterisable windows
- ▶ Evaluation options: Window, trapezoid window, block window, envelop curve, thresholds on the x or y axis.
- ▶ Interfaces: Ethernet and USB. Optional fieldbus integration with PROFIBUS, PROFINET or EtherNet/IP.
- ▶ Force measurement directly in the force characteristic with DMS sensor developed especially for presses.
- ▶ Software for programming and saving monitoring programmes, as well as for documentation of the individual press-fit processes

Clear OK / NOK message

With OK parts, the indicator light is green and the press is ready for the next working stroke.

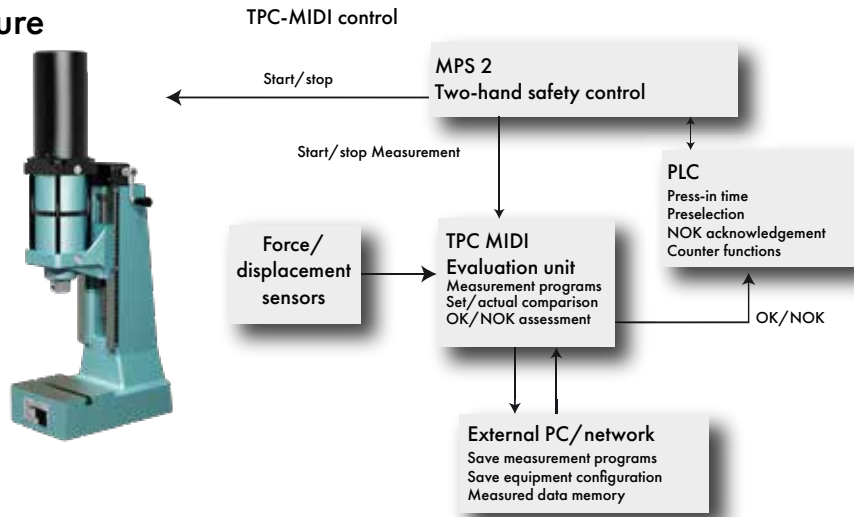
NOK parts are reliably reported by the TPC-MIDI as an audible signal and by a red indicator light.

The next press stroke cannot be initiated until the error has been acknowledged.



DA 2800-40-130 with MPS-2 TPC

System structure



Load cell force sensors for TPC-MIDI

The load cell force sensor is fixed inside the ram bore. The tool holder can be fixed in the hole at the other end of the sensor. The force sensor is therefore always directly in the force flow between the press ram and the tool.

Messbereich	Messwert-abweichung	Werkzeug-aufnahme
0 – 500 N	≤ ± 0.5% of EV	10H7 x 24 mm
0 – 1 kN	≤ ± 0.5% of EV	10H7 x 24 mm
0 – 2 kN	≤ ± 0.5% of EV	10H7 x 24 mm
0 – 5 kN	≤ ± 2.0% of EV	10H7 x 24 mm
0 – 10 kN	≤ ± 2.0% of EV	10H7 x 24 mm
0 – 20 kN	≤ ± 1.0% of EV	10H7 x 24 mm
0 – 50 kN	≤ ± 1.0% of EV	20H7 x 24 mm
0 – 100 kN	≤ ± 1.0% of EV	20H7 x 24 mm

Unless expressly required to the contrary, the load cell force sensor is selected to match the maximum capacity of the press used



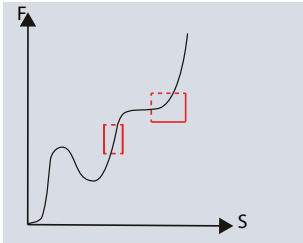
Potentiometric travel meter

Travel is measured potentiometrically. The service life of the sensors is 10⁸ movements

Pressenhub	Auflösung	Linearitäts-Fehler
40 mm	0.025 mm	0.42%
60/80 mm	0.038 mm	0.41%
100 mm	0.050 mm	0.40%
120 mm	0.075 mm	0.40%

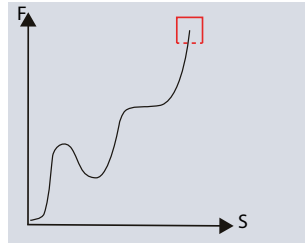
Monitoring windows

Pass-through window



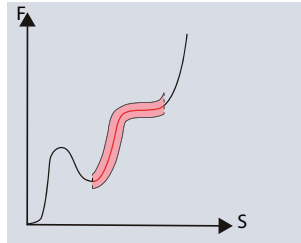
The force/displacement curve must pass through the window from the entry to the exit side as defined without one of the other window boundaries being infringed. The entry and exit sides can be freely selected.

Block window



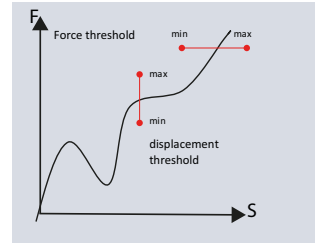
The block window monitors the final values of the press operation. With this type of window, the force/displacement curve must enter the specified entry side and must not leave the window again.

Envelope curve



The measuring curve must pass continuously through the envelope curve and must not infringe it. The envelope curve is taught by means of a teach-in process. Its X-axis parameters and the delta-Y, i.e. the force tolerance range, are then defined.

Monitoring window

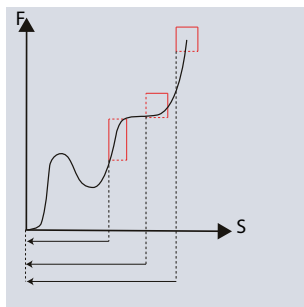


Thresholds define minimum values that must be reached within a certain range and may no longer be undershot. A force threshold (Y-axis) and alternatively a displacement threshold (X-axis) are available.

The reference points of the monitoring windows

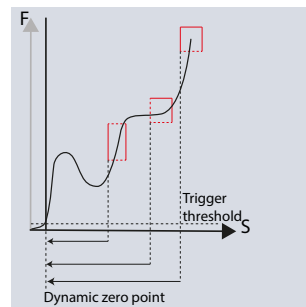
The reference points of the monitoring windows on the X-axis can be defined both rigidly and dynamically.

Absolute



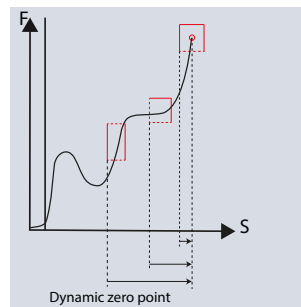
In the case of assembled parts with high repeat accuracy, the calibrated zero point of the displacement sensor on the X-axis is used as the reference point.

Trigger



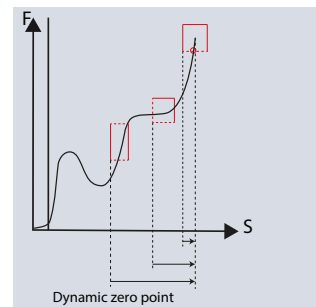
If the assembly sequence is identical as such, but the start of assembly has a major deviation on the X-axis, the beginning of the measurement can be defined by setting a trigger threshold on the Y-axis.

End force



If a measurement with an absolute or a trigger reference point is not useful, the position of the end force (Fmax) on the x-axis can be selected as the reference point. The position of the evaluation window on the X-axis then relates in reverse to this dynamic zero point.

Block window



If the end force shows a wide spread, the reference point of the evaluation windows can also be defined using the entry of the curve into the block window. Any values after the block window has been reached are no longer taken into account. The position of the evaluation windows on the X-axis then relates in reverse to this dynamic zero point.

PC Software

TPC-MIDI is supplied as standard with the basic version of the software, with which the configuration of TPC-Midi and measurement programs can be set up and saved.

Equipment configuration

- ▶ Settings or teach-in of the force and displacement sensors (X/Y axes)
- ▶ Stipulation of measurement method and reference points
- ▶ Backup of complete unit configurations (up/download)

Measurement programs

- ▶ Creation and internal saving of 16 measuring programs. Further measurement programs can be created, saved and reloaded when required.
- ▶ Input of sets of curves
- ▶ Creation of monitoring windows and envelope curve
- ▶ Test runs with OK or NOK assessment

With the licensed full version, the production data per press-in operation can be recorded in addition.

- ▶ Production mode
- ▶ Measured data recording
- ▶ Clear-cut part reference
- ▶ Besides the programme's own format automatic print and export to ASCII and Excel

