

Tooling for press-in technology

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HARTING modular tooling adapted to customer specific needs

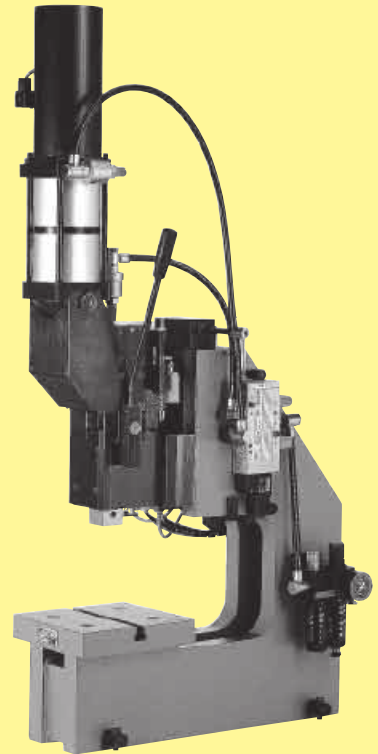


### Hand bench press

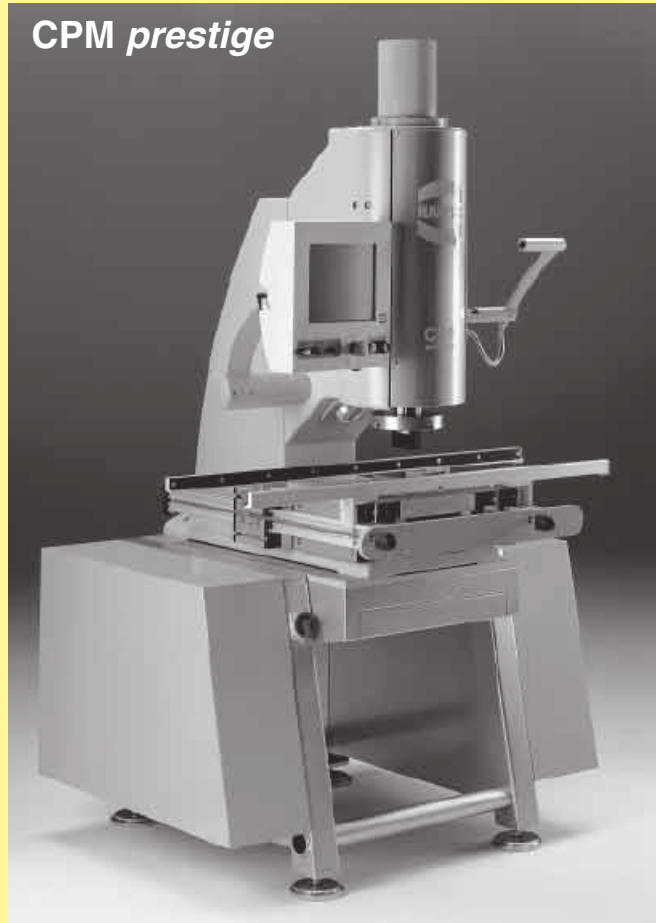
- Easy to install
- No need of electrical or pneumatic power
- Ideal for prototyping and small series

### Pneumatic press

- Easy handling
- Limitation of press-in force adjustable
- Ideal for medium series



### CPM *prestige*



### The state of the art CPM press-in machine

- Fully programmable press-in machine
- Ideal for volume series



Bestseller **CPM *prestige*** with insertion removal station, adaptable to all HARTING press-in machines

Tooling compatible for complete interface connectors range

The **CPM prestige** press-in machine with a graphical user interface

The **CPM prestige** is a consequential development of the successful CPM 2001 press-in machines. The excellent design, supported by a wide range of tools presents a convenient, easy and comfortable way of processing backplanes and daughtercards. The machine is fully programmable and is supplied with a graphical user interface for control and visualisation of the complete process. The use of a microprocessor control allows the recognition and storage of different component heights, so that the pressing-in of different components is initiated simultaneously with only one button. The user-friendly touch-screen guides the user through the menu-orientated process controls.

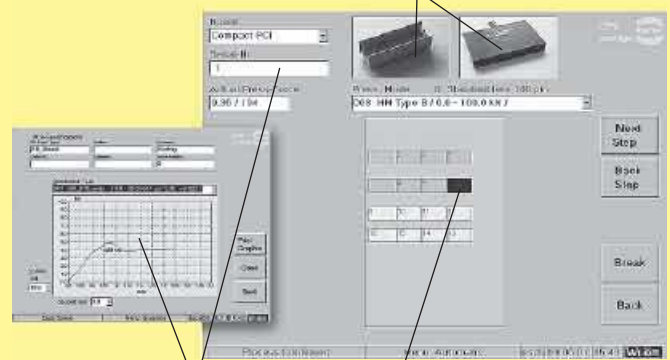
The visualisation of the entire press-in process (the position of the connector, press-in forces etc.) allows the rapid recognition and eradication of the possible error sources. With the addition of a barcode reader (1D and 2D)<sup>1)</sup> the parameters of every pcb layout can be stored, recalled and loaded into the automated press-in programme. The extensive operation monitor functions simplify the service and support of the machine.

The machine employs the automatic switch-off system "autosense", known worldwide for its reliability. The different connector types and the tolerances of the pcb are automatically recognised and taken into consideration at the press-in operation, thus maximising the process security.



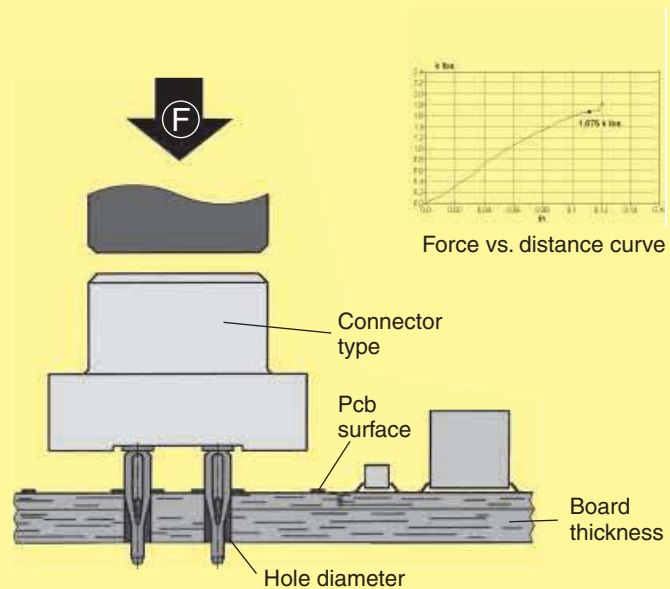
Visual guiding system via touch monitor

Real photos of connectors and tools



Process data

Layout with current position highlighted

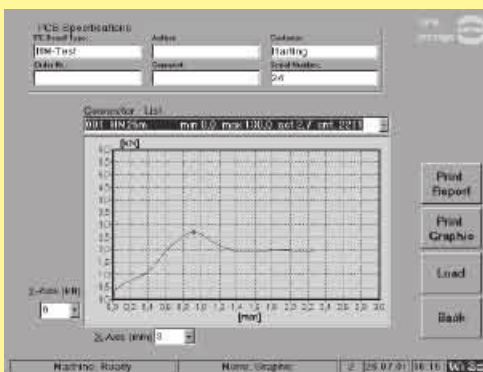


Shown are the four most considerable influences of the press-in process.

Tooling  
press-in

<sup>1)</sup> optional

Tooling compatible for complete interface connectors range



### Quality control of press-in termination

The press-in force correlates with the diameter of the plated through hole and with the friction coefficient of the surface; therefore it can be used for a continuous monitoring of the process.

The retention force, as an indirect measure of the normal force, serves to qualify the process or random tests.



**Part No. 09 89 040 0000**

#### Technical characteristics

Drive	electro-mechanical, servo
Press-in force	100 kN
max. pcb dimensions	600 x 1000 mm
Floor space	1200 x 1150 mm
Weight	980 kg
Power supply	208 / 380 / 400 / 415 V
Consumption	< 1 kW
Colour	on request

**CPM prestige**  
(incl. PC, control software, barcode reader, keyboard, touch screen)

#### Built-in features:

- Guiding rails (carbon/spring-loaded) for the secure positioning of the pcb
- Touch-screen and Industrial PC with UPS (uninterruptable power supply)
- Barcode reader for management ease of press-in programs
- All dimensions allow an easy integration into production lines

#### Process monitoring and quality assurance:

- Touch screen interface with graphical and verbal menus for all machine functions
- Autosense: automated press-in interruption at incorrect press-in forces
- Storage and validation of all press-in parameters via quality assurance software (press-in force tolerances)
- Continuous high-precision measurement and recording of press-in forces and distances
- Remote determination of errors and maintenance
- High flexibility through a modular tool range

#### Options:

- Rotatable tool changer
- Insertion removal station

Tooling compatible for complete interface connectors range

**Insertion removal station**

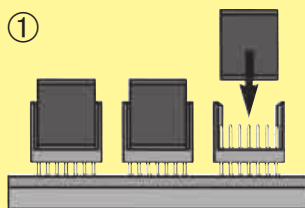


Power supply 220 V / 50 Hz  
Air pressure 6 bar (15-16 l/min.)

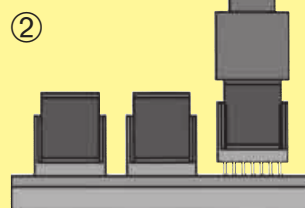
Part No. 09 89 040 3000  
for pcb dimensions of max. 710 mm x 540 mm

Bestseller **CPM prestige** with insertion removal station, adaptable to all HARTING press-in machines.

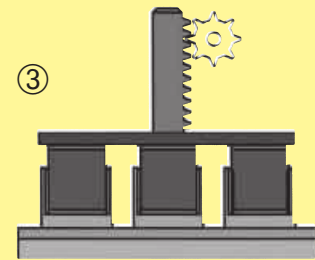
**Principle:**



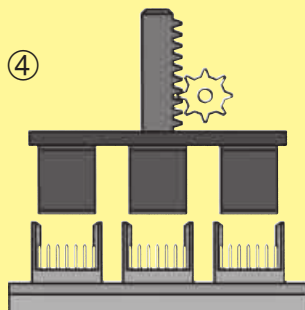
① Load all headers with inserts for **one press-in cycle**



② Press-in all connectors with a flat die

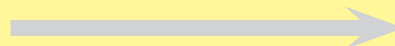


③ Position the magnetic plate



④ Remove all press-in inserts in one operation

Remove the processed pcb from the machine

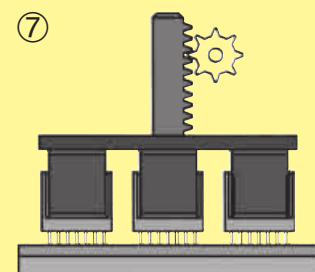


⑤



⑥

Move the next pre-assembled pcb to the press-in machine

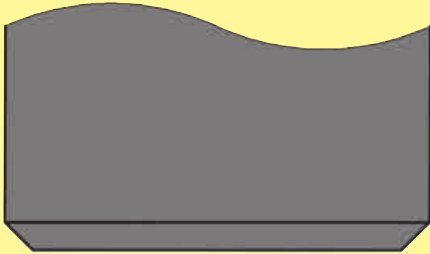


⑦ Load all headers in one operation

The insertion removal station has been developed both for the **CPM prestige** and the CPM 2001/s. It can additionally be used as stand alone equipment.

Tooling compatible for complete interface connectors range

Today nearly all female connectors are designed for flat rock tooling. For every type of male connector specific tooling and a high degree of X-Y-process accuracy is required. Therefore HARTING offers press-in insert blocks that transfer all well known assembling advantages from female connectors to male headers.

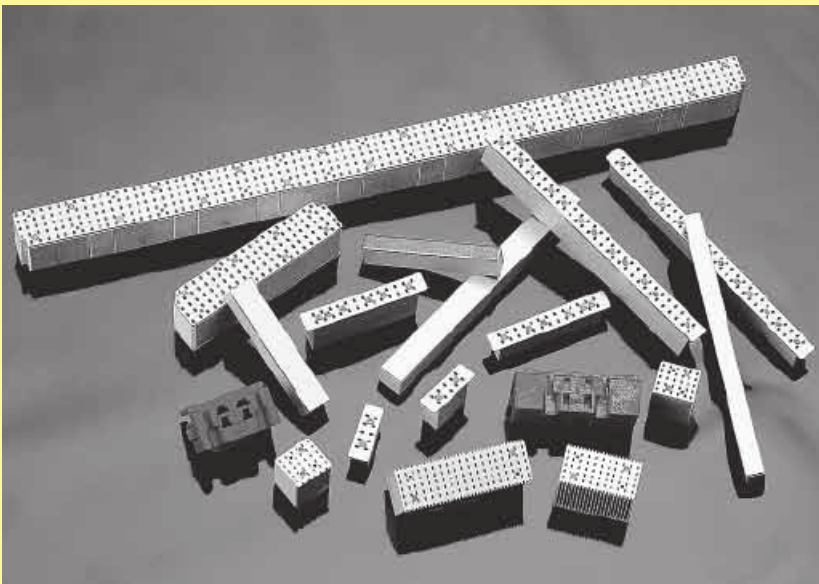
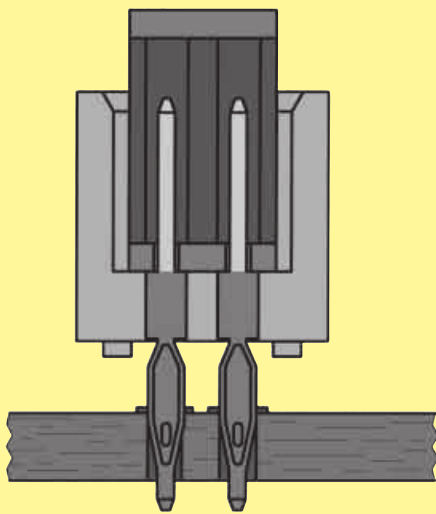


### Advantages of press inserts

Robust tooling

No lateral force to pcb hole

No abrasion of the contact mating surface by the press tool



HARTING has already developed press-in inserts for all major male connector families on 2.54 mm, 2.5 mm and 2 mm pitches.

Inserts for any other special components can be developed on request.

The additional process for inserting and removing the press-in inserts can be efficiently done with the insertion removal station. This station removes all press-in inserts with a magnetic plate in one operation and inserts them into the next pre-assembled pcb with the necessary precision. (Principle see page 30.05).

The cycle time for loading all headers is between 4 and 6 seconds, independent from the amount of press-in inserts.

To load the inserts automatically means also that connectors assembled in a wrong way will be recognised and errors consequently prevented.

Tooling  
press-in

Tooling compatible for complete interface connectors range

Modular tooling system  
for starting connector press-in

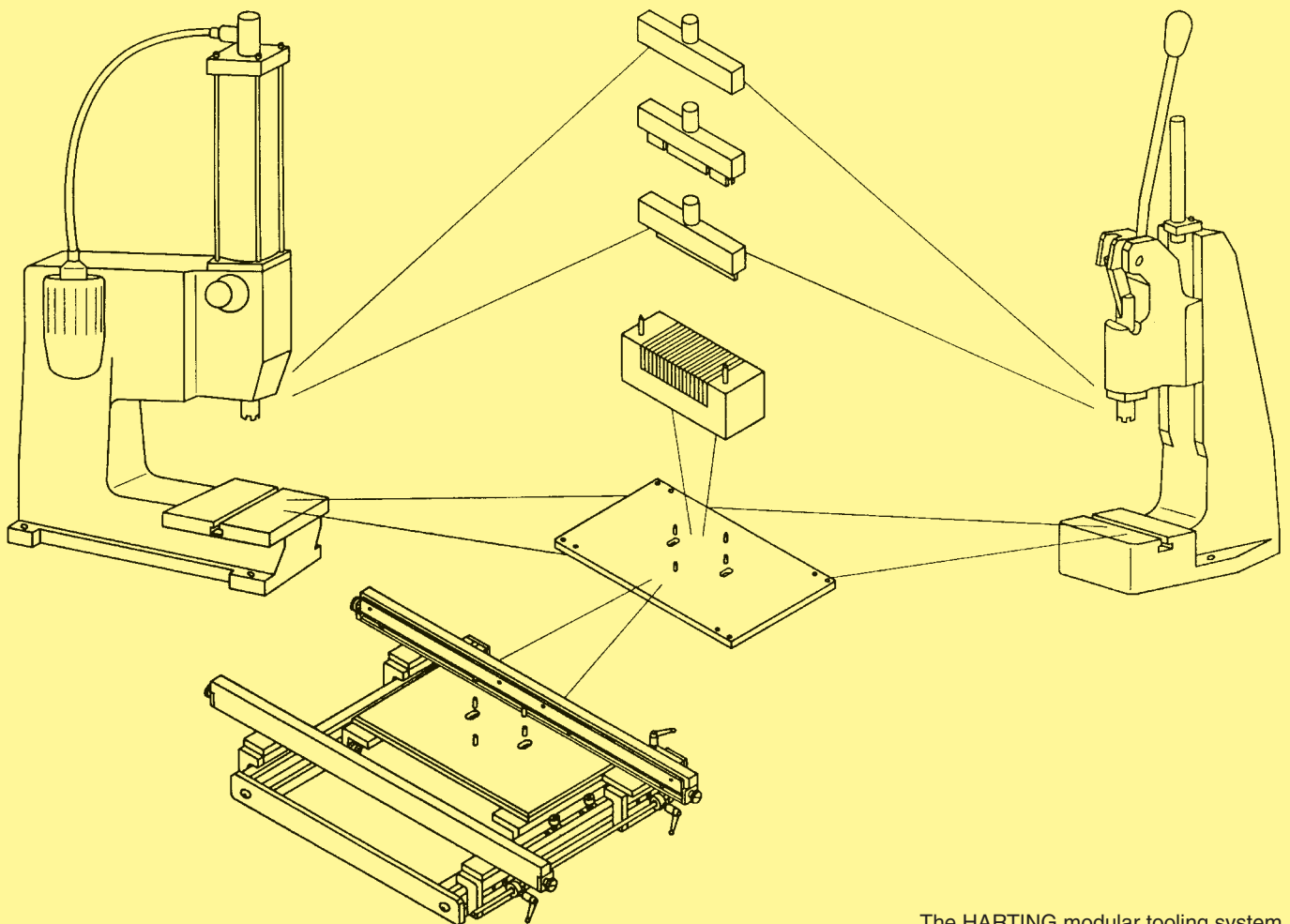
The diversity of connector types with press-in terminations and varying termination styles make it necessary to have a simple, flexible tooling system that can be continuously updated.

The HARTING modular tooling system has significant advantages in terms of economic assembly of the many connector types with press-in terminations. The basic modules of the tooling system which will always be required are:

- Press
- Top tool
- Bottom tool
- Base plate

To increase automation and productivity the following modules may be added to the basic assembly:

- Guide frame with base plate for accurate positioning of the pcb up to a length of 600 mm
- Guide frame "Standard" for hand bench press and pneumatic press and pcb height of 123.5 up to 309.5 mm
- Guide frame "Long" for pneumatic press and pcb height of 123.5 up to 668.5 mm



Tooling  
press-in

Tooling compatible for complete interface connectors range

### Handling indications

When setting up an assembly machine it is not necessary to set the working height of the press and adjust the base plate more than once. There is no need for further adjustments. All the other adaptations for various applications are performed efficiently and are reliant by various combinations of individual modules.

### Positioning the bottom tool in relation to the top tool

The ram of the HARTING press is generally provided with a cross-shaped groove which accurately positions the top tool in steps of 90°.

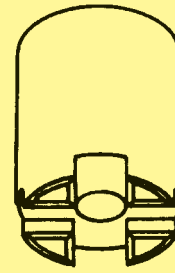
Two guide pins position the bottom tool in relation to the top tool simply and accurately.

These guide pins cannot be used for positioning the pcb or the connector!

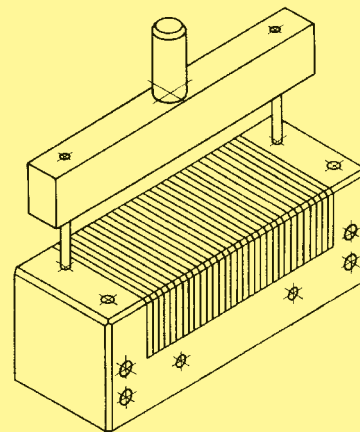
Two pairs of pins on the base plate locate the bottom tool in relation to the top tool in steps of 90°.

### Bottom tool (narrow version)

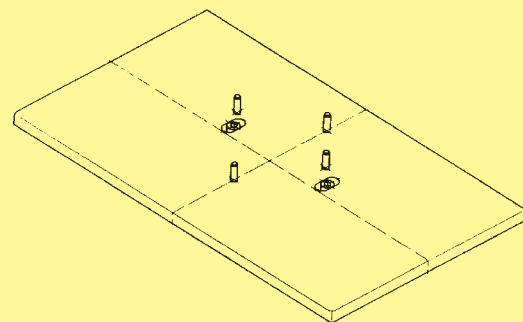
In addition to the square bottom tool with multi-functional properties, HARTING offers the alternative of a narrow bottom tool for assembling connectors with straight press-in terminations. This tool supports the pcb within the press-in connector zone and therefore makes it possible to assemble connectors where electronic components are to be placed in close proximity.



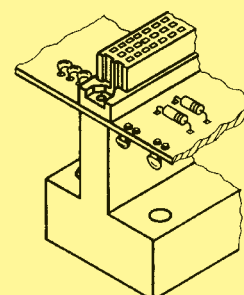
Ram with cross-shaped groove



Positioning the bottom tool in relation to top tool



Base plate with pairs of location pins at 90°



Narrow version of the bottom tool for special applications



Tooling compatible for complete interface connectors range

Identification	Part No.	Drawing	Dimensions in mm
Hand bench press	09 99 000 0201		<p>Technical characteristics</p> <p>Working stroke 25 mm</p> <p>Press force 15 kN max.</p> <p>Hole <math>\varnothing</math> in the ram <math>\varnothing</math> 10 mm</p> <p>Net weight approx. 23 kg</p>
Pneumatic press 40 kN	09 99 000 0282		<p>Technical characteristics</p> <p>Total stroke 48 mm</p> <p>Working stroke 0-6 mm</p> <p>Press force 40 kN max.</p> <p>Air pressure 6 bar</p> <p>Hole <math>\varnothing</math> in the ram <math>\varnothing</math> 10.01 mm</p> <p>Net weight 136 kg</p> <p>Power supply 110 V / 220 V AC</p>
Top tool	09 99 000 0197		Top tool
Base plate	09 99 000 0255		Base plate
			Bottom tool

Tooling  
press-in

Specific tooling for har-mik and D-Sub

Identification	Part No.	
Bottom tool for har-mik	60 99 000 0031	
Press-out tool for har-mik	60 99 000 0032	
Bottom tool narrow for D-Sub  Only one tool for all polarities, with or without grounding pins	9-37 way 09 99 000 0600 50 way 09 99 000 0523	 Bottom tool
Plastic with metal plate insert tool for D-Sub male	9 way 09 99 600 0709 15 way 09 99 600 0715 25 way 09 99 600 0725	
Other toolings on request		

Tooling  
press-in

## Specific tooling for SEK male standard

Identification	Part No.	Drawing	Dimensions in mm
<p><b>Top tool</b> for SEK standard connectors</p> <p>10 way 09 99 000 0710            14 way 09 99 000 0714            16 way 09 99 000 0716            20 way 09 99 000 0720            26 way 09 99 000 0726            34 way 09 99 000 0734            40 way 09 99 000 0740            50 way 09 99 000 0750            60 way 09 99 000 0760            64 way 09 99 000 0764</p>		<p>X Length depends on number of contacts</p>	

## Specific tooling for SEK male low-profile

Identification	Part No.	Drawing	Dimensions in mm
<b>Bottom tool</b> narrow for SEK	09 99 000 0256		
<b>Top tool</b> for SEK male low-profile connectors	6 way 09 99 000 0 06 10 way 09 99 000 0 10 14 way 09 99 000 0 14 16 way 09 99 000 0 16 20 way 09 99 000 0 20 26 way 09 99 000 0 26 34 way 09 99 000 0 34 40 way 09 99 000 0 40 50 way 09 99 000 0 50 60 way 09 99 000 0 60 64 way 09 99 000 0 64	<b>Top tool including insert</b> <p>X Length depends on number of contacts</p>	
Top tool including insert ➤ 4 Modular insert ➤ 5		<b>Modular insert</b> 	
<b>Press-out tool</b> for complete SEK male connectors with 5.5 mm terminations	09 99 000 0220		
<b>Support block</b>	09 99 000 0218		