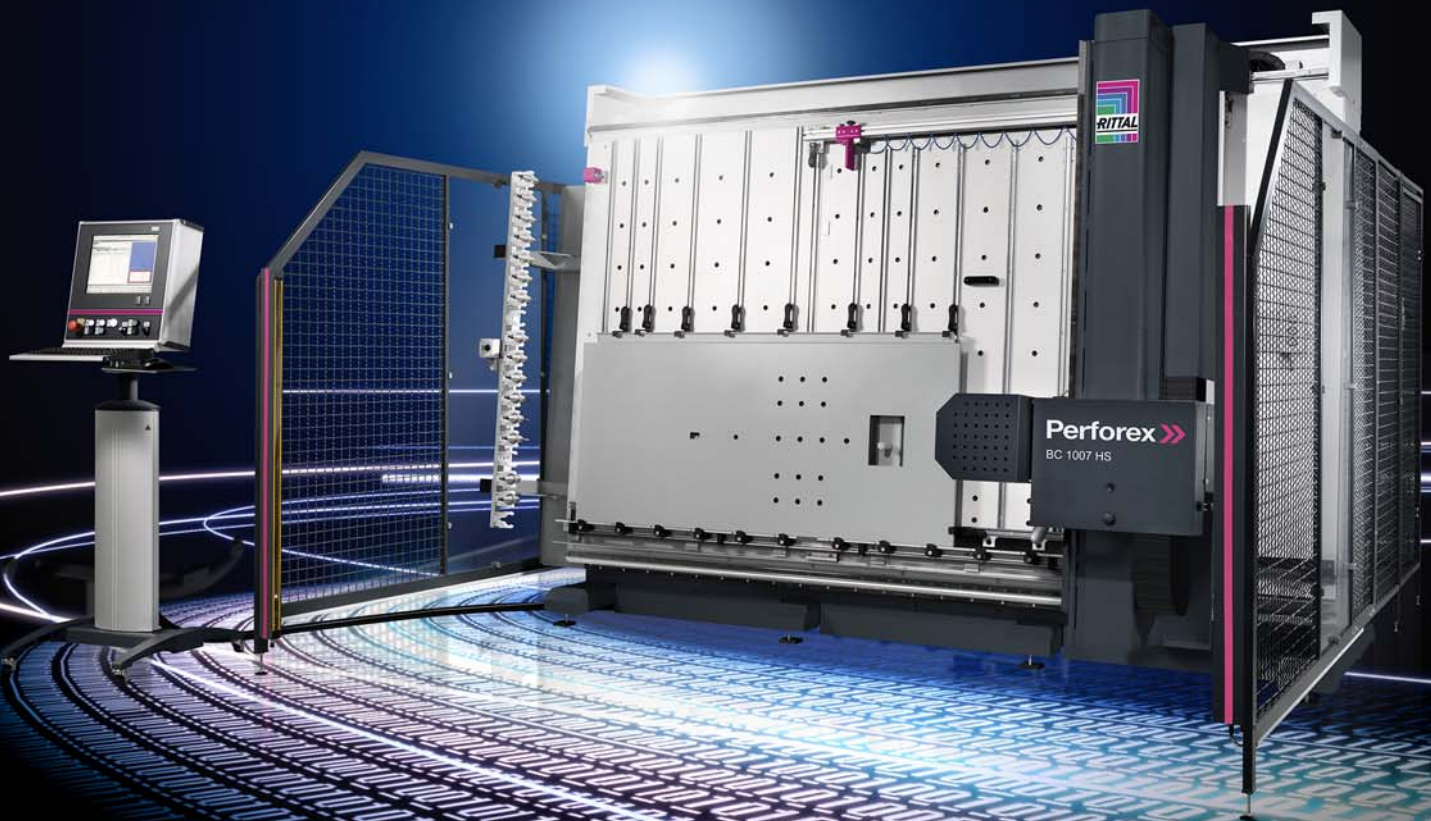


# Rittal – The System.

Faster – better – everywhere.

## ▶ Rittal Automation Systems We automate panel building



ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

IT INFRASTRUCTURE

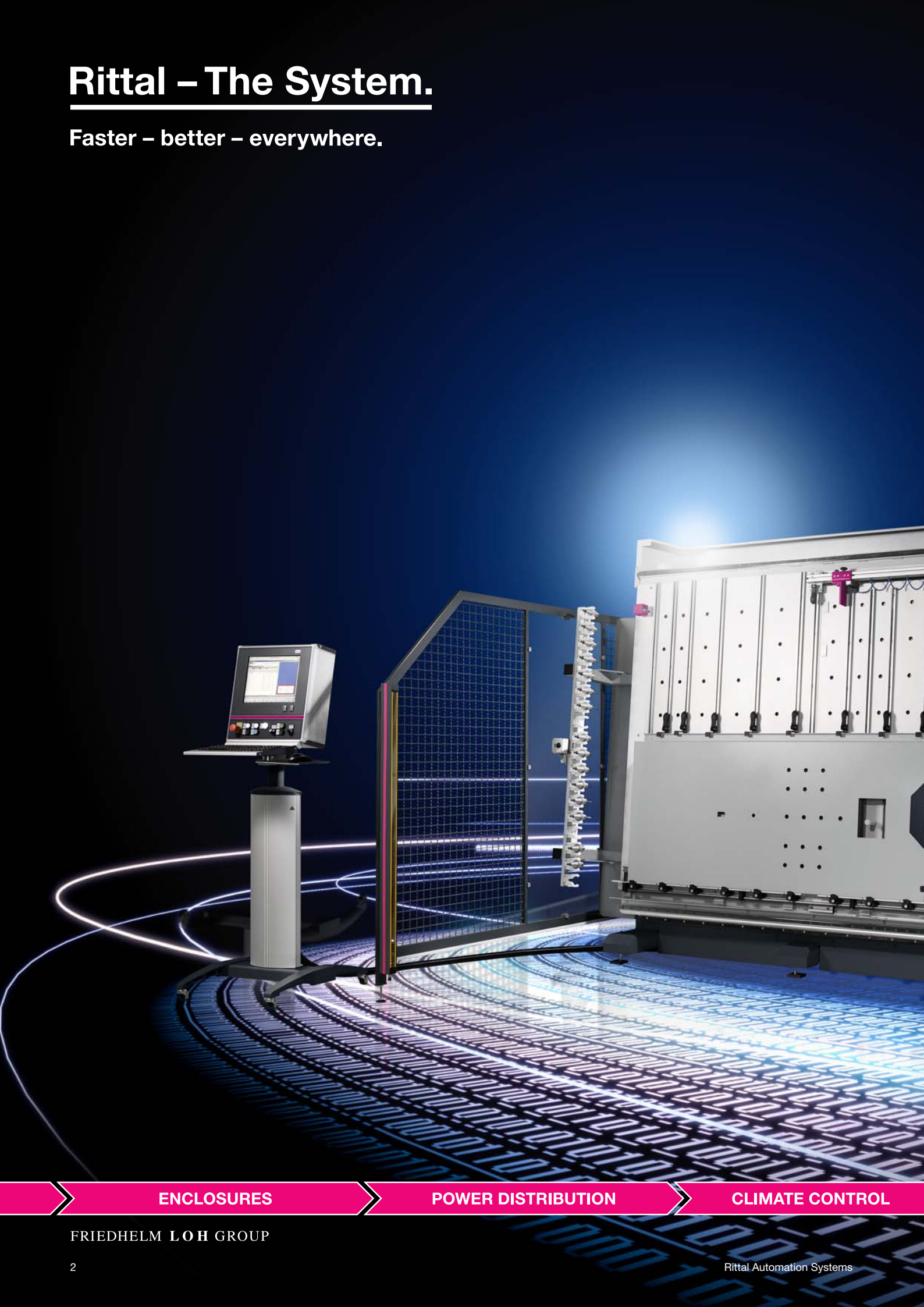
SOFTWARE & SERVICES

FRIEDHELM LOH GROUP



# Rittal – The System.

Faster – better – everywhere.



ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL



# AUTOMATION

## Machining

Perforex machining centres BC.....	8
Perforex laser centre LC.....	10
Secarex AC 15 cutting centre.....	12
Busbar machining, static CW 120-S.....	14
Busbar machining, mobile CW 120-M.....	16

## Assembly

Athex TC 80 CS terminal block assembly machine.....	18
---	----

## Wire processing

Cutting machine C8.....	20
Stripping machine S22.....	21
Crimping machine L8 and R8.....	22
Crimping machine R8 E.....	23

## Handling

Assembly frames.....	24
LT 1000 storage and transport trolley.....	25
Functional trolley.....	26

## Manual tools

Tool bags.....	28
Screwdrivers.....	29
Hex wrench.....	33
Bits and bit holders.....	34
Crimping pliers.....	37
Wire end ferrules.....	40
Insulation stripping tools.....	42
Cutting tools.....	44
Pliers.....	46
Hole punching tools.....	48

## Accessories

Consumables for Perforex.....	62
Accessories for Perforex.....	66
Machine options for Perforex.....	71
Accessories for assembly frame.....	73

IT INFRASTRUCTURE

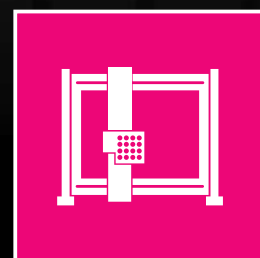
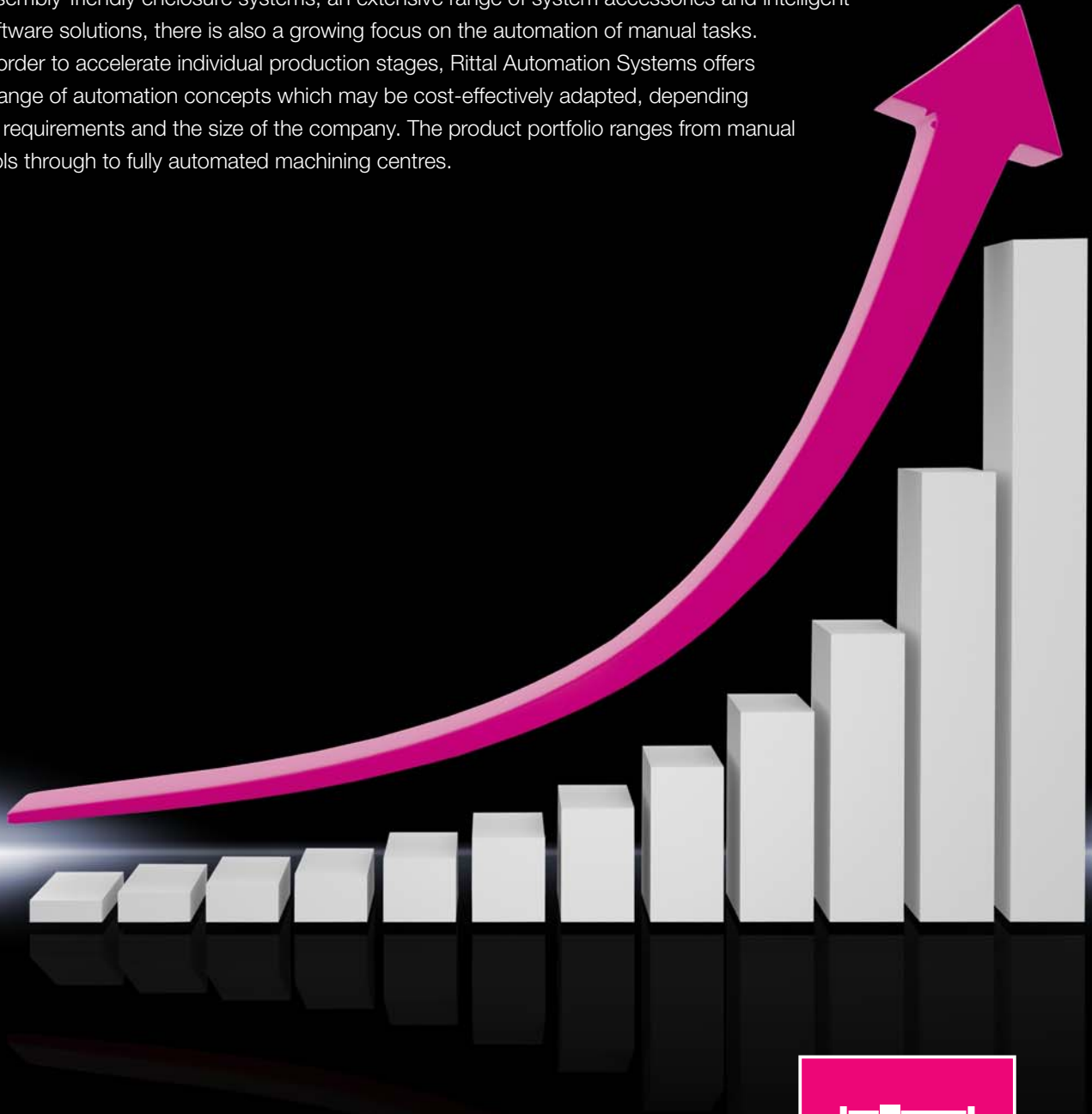
SOFTWARE & SERVICES



New business unit "Rittal Automation Systems"

# Rittal automates enclosure manufacturing

The new Rittal Automation Systems business unit extends Rittal's comprehensive range of solutions for control and switchgear engineering. By taking over the entire product range of its sister company Kiesling, Rittal is continuing to expand "The System", offering a comprehensive range of equipment for professional workshop operation. Alongside the potential efficiency gains from using assembly-friendly enclosure systems, an extensive range of system accessories and intelligent software solutions, there is also a growing focus on the automation of manual tasks. In order to accelerate individual production stages, Rittal Automation Systems offers a range of automation concepts which may be cost-effectively adapted, depending on requirements and the size of the company. The product portfolio ranges from manual tools through to fully automated machining centres.



Automation

ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

# Optimisation of the complete workflow in enclosure manufacturing

The Rittal Automation Systems business unit with its portfolio of services supports all process stages in control and switchgear engineering. From manual tools through to fully automated systems, find your customised solutions for process-optimised workshop operations.

- Machining of enclosures and components
- Assembly of terminal blocks on DIN rails
- Assembly of wires and cables
- Automated wiring solutions
- Handling systems and tools



Machining



Tools



Handling

## Machining:

Discover our solutions for the fully automated, fast, precise and reliable milling or laser machining of enclosures and cases, plus cut-optimised machining of cable ducts and support rails.

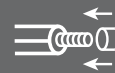
- **Perforex BC** – Milling, thread tapping, drilling
- **Perforex LC** – Laser cutting of stainless steel and powder-coated sheet steel enclosures
- **Secarex** – For cutting cable ducts and support rails to length
- **Copper processing CW 120** – Bending, punching, cutting

..... from page 8

# Optimisation of the complete workflow in enclosure manufacturing



Assembly



Wire processing



Tools



Handling

## Assembly:

Our component mounting products are used for the automated manufacturing of terminal strips in control and switchgear engineering.

- **Athex** – Terminal configuration and labelling

..... from page 18

## Wire processing:

Take advantage of our professional, rational solutions in wire processing.

- **Cutting machine**
- **Stripping machine and crimping machines**

..... from page 20

## Tools:

The right tool for every application.

- **Screwdrivers**
- **Pliers**
- **Insulation stripping and crimping tools**
- **Hole punching tools**

..... from page 27

ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL



## Wiring



## Tools



## Handling

### Wiring:

The efficient interplay between engineering, handling, assembly and hand tools makes your wiring process swift, ergonomic and safe.

To complete the process chain, our automation team are dedicated to the development of pioneering wiring solutions through to full automation.

### Handling:

We support you with ergonomic, efficient handling systems for a wide range of transport and lifting operations in the workshop.

- **LUT 1000** – Warehousing and order picking
- **Assembly frames** – Ergonomic assembly and wiring
- **Functional trolley** – Functional solution for transportation and commissioning

..... from page 24

IT INFRASTRUCTURE

SOFTWARE & SERVICES



# Perforex machining centres BC

Perforex machining centres were designed specifically for panel building and switchgear manufacturing to optimise the machining of enclosure panels and cases in the workshop and boost efficiency. Perforex machining centres can automatically create holes, threads and milled surfaces in the workpiece. All standard materials used in enclosure manufacturing, such as steel, stainless steel, aluminium and copper, as well as various plastics and other machinable materials, mounting plates, chamfered and spray-finished doors, covers, console plates, housings etc. may be machined.

## Software

The user interface of a Perforex machining centre is an intuitive workshop programming system which supports remote maintenance. The software is networkable, uses a central database, and may be used on an unlimited number of different PCs within the company.

This means that all programmed jobs are immediately available on the machine and can be reused. Alternatively, almost any standard CAD and E-planning system can be used for programming.

Ask about our interfaces.

- User-friendly workshop programming with interfaces to all standard CAD systems (DXF import), plus direct transfer of the drilling data from EPLAN Pro Panel
- Transfer of configuration data from the Rittal Configuration System (RiCS)

## Hardware

Depending on the model, enclosure panels up to (W x H) 3600 x 2200 mm and enclosures up to (W x H x D) 2300 x 2200 x 2200 mm may be clamped and pneumatically secured. As standard, the tool magazine can simultaneously accommodate 18 or 20 tools. Up to 40 tools are optionally available. With the motorised depth adjustment for enclosures and a wide range of options, Perforex machines are equipped for the optimum handling of all parts.

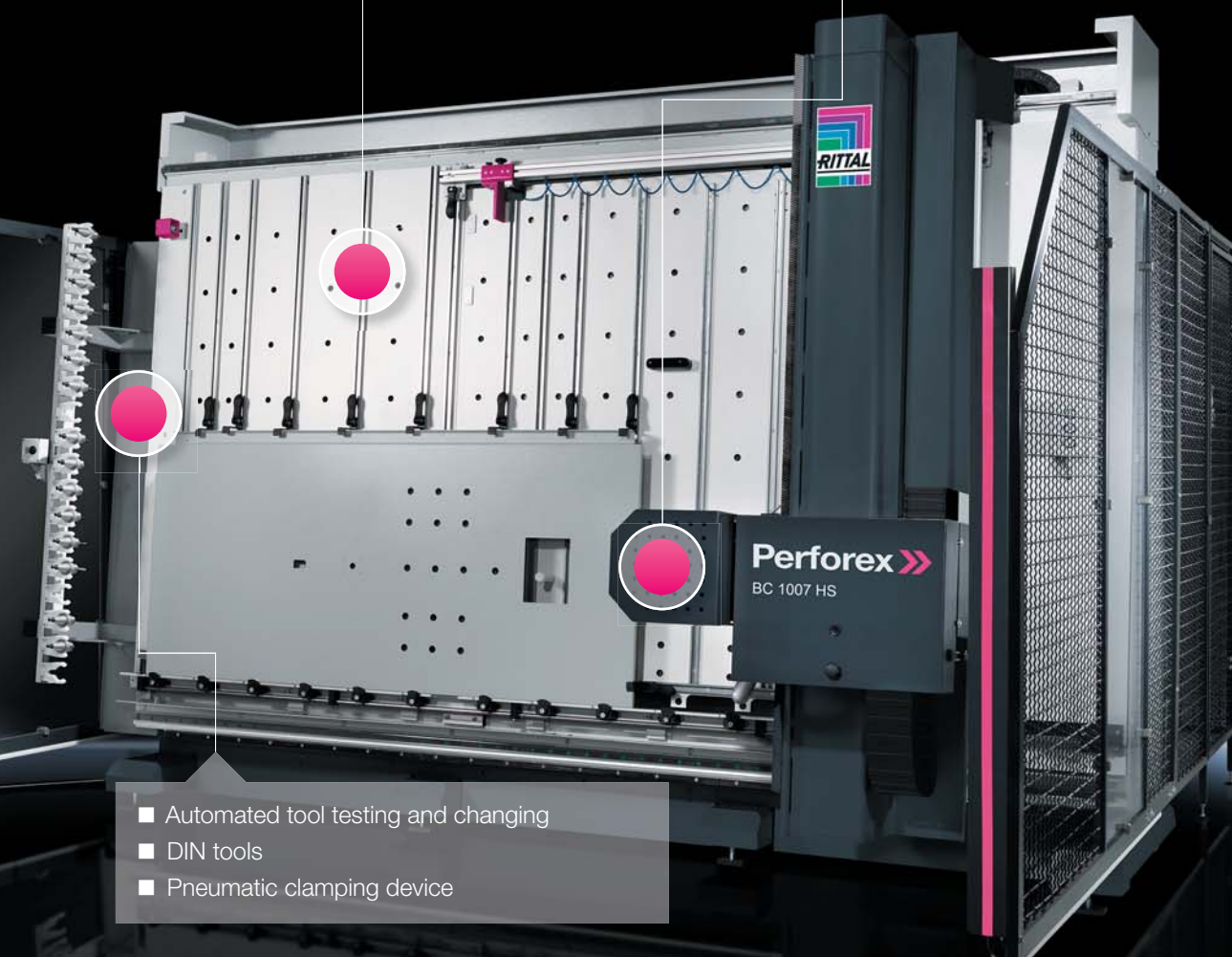


Item name	Perforex BC 1001 HS	Perforex BC 1007 HS	Perforex BC 1008 HS	Perforex BC 2014 HS
Clampable enclosure panels (W x H) mm	2500 x 1500	2450 x 1700	2300 x 1550	3600 x 2200
Maximum machinable area for panels (W x H) mm	2260 x 1500	2200 x 1700	2300 x 1700	3600 x 2200
Clampable cubic parts (W x H x D) mm	1200 x 1400 x 1400	1400 x 1600 x 1600	2300 x 1600 x 2200	1400 x 2200 x 2200
Option of extended carriage (W x H x D) mm	–	1400 x 1600 x 2000	–	–
Maximum machinable area for cubic parts (W x H) mm	750 x 1400	1200 x 1600	2300 x 1600	1100 x 2200
Two-door option (W x H x D) mm	–	–	–	2300 x 2200 x 2200
<b>Model No.</b>	<b>4050.101</b>	<b>4050.107</b>	<b>4050.108</b>	<b>4050.230</b>



- Performance Package for fast, low-vibration, noise-optimised milling, comprised of brush strips and special milling cutters

- Patented plate with integral extraction of the milling swarf
- High-performance spindle including minimal quantity lubrication for drilling, milling, thread tapping and thread forming



- Automated tool testing and changing
- DIN tools
- Pneumatic clamping device

Item name	Options	BC 1001 HS	BC 1007 HS	BC 1008 HS	BC 2014 HS
Performance package		4050.041	4050.042	4050.044	4050.045
Enclosure machining	For machining fully welded enclosures (door)	4050.010	Standard	Standard	Standard
Motorised depth adjuster	Electric depth adjustment of the end stop in enclosure machining	-	4050.020	Standard	Standard
Depth adjuster extension 2000 mm	Motorised depth adjuster extension for enclosures up to 2000 mm	-	4050.022	-	-
Circular thread milling tool		4050.050	4050.050	4050.050	4050.050
Aluminium and plastic machining		4050.051	4050.051	4050.051	4050.051
Mounting aid for tools		4050.030	4050.030	4050.030	4050.030
Magnetic swarf wand		4050.067	4050.067	4050.067	4050.067
Swivel stops for multiple machining		4050.066	4050.066	4050.066	4050.066
Clamping height extension 1700 mm		-	-	4050.035	-

Other accessories/options from page 62

# Perforex laser centre LC

The 3D laser technology of the Perforex LC series is ideally suited to the machining of stainless steel and sheet steel, as well as powder-coated metals such as enclosure doors, side panels etc. Spray-finished metal parts are cut without any visible paint damage or discolouration, even with delicate contours. What is more, there is no tarnishing of the cut edges when machining stainless steel. The Perforex LC series is cost-effective from machining volumes of around 150 stainless steel enclosures or 300 sheet steel enclosures per annum.

## Technical specifications

- Machining of material thicknesses up to 5 mm
- Machining range (W x H x D) 2300 mm x 1270 mm x 800 mm for product ranges from AE to TS 8
- Machining of cubes on all sides
- Very narrow cutting width of just 0.3 mm (approx.)
- No need to clamp the workpieces

Item name	Model No.
LC 3015 Perforex laser centre, 1500/150 W	4050.315
LC 3030 Perforex laser centre, 3000/300 W	4050.330

Options	Model No.
Thread tapping function (includes an additional drive unit plus thread tappers, including clamping jaws for M3 – M10)	4050.318
Roof-mounting	4050.317

Consumables:	Model No.
Cover glass	4050.321
Nozzle	4050.322
Stop blocks	4050.323
Lubricants	4050.324
Filter cartridge set	4050.325
Gland plate set	4050.326
Cleaning cloths	4050.327
Cleaning spray	4050.328
Welding gun spray	4050.329

### Note:

– The machine housing (roof) 4050.317 is mandatory if the machine can be viewed from above.

## Scope of supply

- Laser centre including encapsulation
- Compressor
- Filter system
- Operating unit



- User-friendly workshop programming similar to Perforex BC with central database
- Machine operation with 3D visualisation
- Interfaces to EPLAN Pro Panel and processing of the neutral format "DXF"
- Transfer of configuration data from the Rittal Configuration System (RiCS)

- Simple attachment of enclosures
- Contactless, low-vibration manufacturing process
- Simultaneous machining of five sides

- Clean, non-wearing cutting without coolant/lubricant
- Machining speed in stainless steel 20x faster than with conventional milling process



- 3D laser machining

- Ergonomic design, thanks to the extendible support surface for enclosure and panel machining

# Secarex AC 15 cutting centre

The Secarex cutting centre is convenient to use and cuts wiring ducts, cable duct covers and support rails to length quickly, precisely and reliably. The integral label printer provides project-specific labelling of the support rails and cable trunking. The cutting centre contributes to improved quality, an optimisation of cutting waste, lower costs and an accelerated overall process.

## Benefits

- Very low costs for cutting waste thanks to optimisation of the cutting process
- Significant time savings compared to manual cutting
- Clean cuts with high-performance tools
- Five DIN rail sizes in one template

## Scope of supply

- Secarex cutting centre
- Label printer
- Operating solution

## Technical specifications

- Modern operating solution: 18.5" monitor, top hat rail, industrial PC with i3 processor, and keyboard with trackball
- Electrical connection: 230 V, 50/60 Hz
- Pneumatic connection: 6 bar
- Machinable cable trunking:  
Width 15 to 125 mm, height 100 mm
- Machinable support rail type:
  - C rails 30/15 (to EN 60 715)
  - Top hat rails 15 (to EN 60 715)
  - Top hat rails 35/15 (to EN 60 715)
  - Top hat rails 35/7.5 (to EN 60 715)
  - Busbars CU 3/10

Item name	Model No.
Secarex AC 15 cutting centre	4050.405

Options	Model No.
Mousepad support, vertically hinged	2383.020
Other support rails may be cut to size, thanks to changing system	4050.491
Drawer system, left side	4050.441
Storage system, right side	4050.442



- Manual input of dimensions or direct data transfer from CAD systems (EPLAN Pro Panel) or Perforex workshop programming
- USB interface

- Cut optimisation across multiple projects
- Automatic length stop

- Five DIN rail sizes in one template

- Safe, two-handed operation for cutting wiring ducts

# Busbar machining, static CW 120-S

The units in the CW 120-S product series are ideal for bending, punching and cutting busbars. The integral precision laser facilitates the cutting and bending process.

## Technical specifications

### Busbar bending and hole-punching unit

- Machine dimensions (L x W x H) 461 x 700 x 410 mm
- Weight 60 kg
- Round holes  $\varnothing$  6.6 – 21.5 mm
- Slots up to (L x W) 21 x 18 mm
- Bends up to 120 x 12 mm bars
- Max. bending radius 90°

### Busbar cutting, static

- Machine dimensions (L x W x H) 275 x 335 x 370 mm
- Weight 18 kg
- Cuts up to 120 x 12 mm bars
- Option: Ride-up roller for busbar
- Side length minimum 50 mm
- U-bending min. 100 mm
- Z-bending min. 72 mm  
(depends on the material thickness)

### Electrohydraulic pump

- Machine dimensions (L x W x H) 335 x 400 x 325 mm
- Weight 29 kg
- Motor voltage 230 V, 50 Hz
- Motor output 1.3 kW
- Max. operating pressure 700 bar



■ Electrohydraulic pump

■ Busbar cutting, static

## Benefits

- Flexible and easy to use
- Simple tool changes
- High level of bending and punching accuracy
- Independent busbar machining

## Equipment

- Electric L-blade
- Length stop
- Mandrel R10
- Bending die

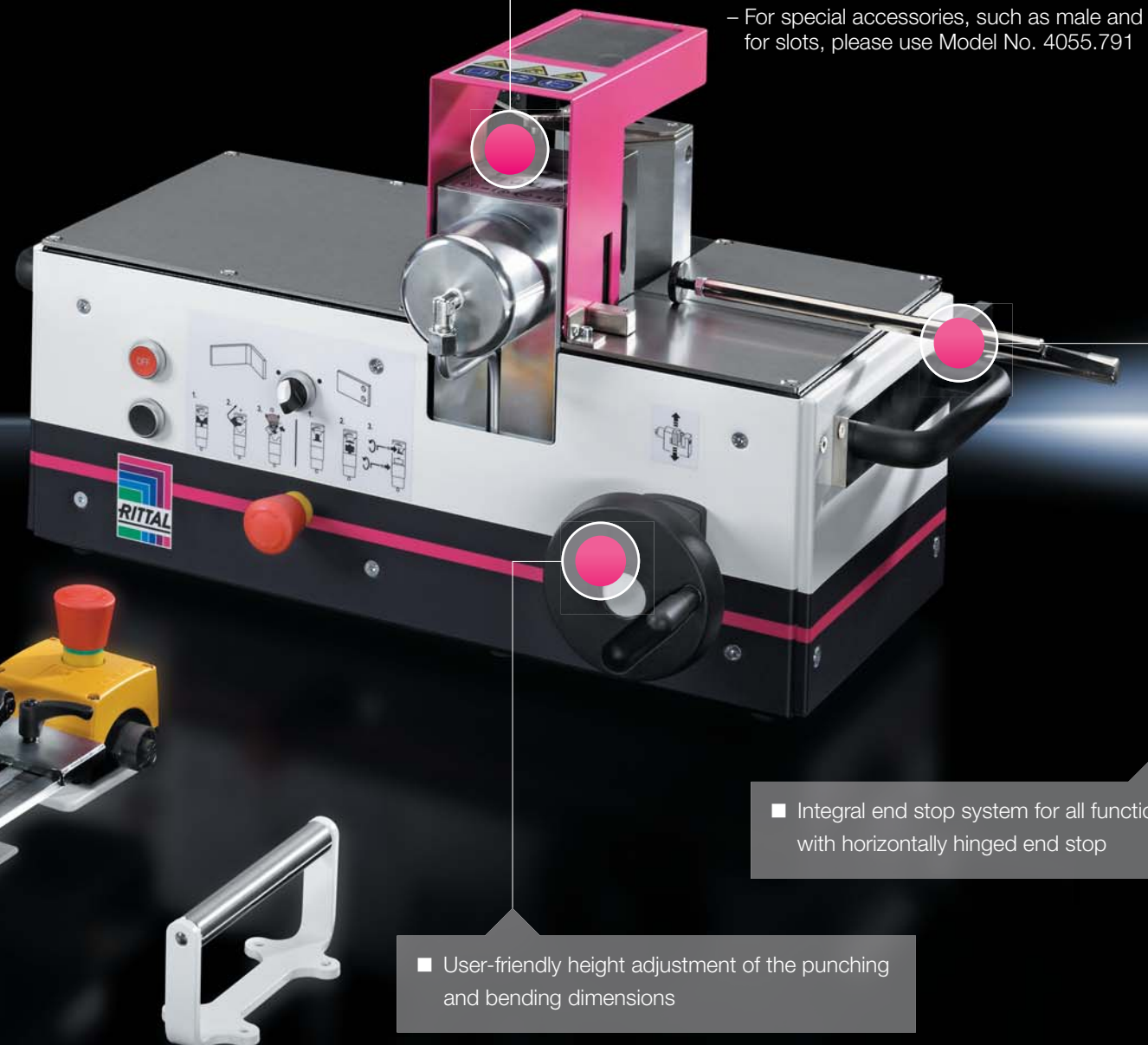
- Busbar bending and hole-punching unit
- Integral laser

Item name	Model No.
Busbar bending and hole-punching unit	4055.700
Busbar cutting, static	4055.710
Electrohydraulic pump	4055.720

Accessories	Ø mm	Model No.	
		Stamp	Dies
Male and female dies, round	6.6	4055.740	4055.770
	9.0	4055.741	4055.771
	9.5	4055.742	4055.772
	11.0	4055.743	4055.773
	11.5	4055.744	4055.774
	13.5	4055.745	4055.775
	14.0	4055.746	4055.776
	17.5	4055.747	4055.777
	18.0	4055.748	4055.778
	21.0	4055.749	4055.779
	21.5	4055.750	4055.780
Ride-up roller for busbar		4055.714	
Foot-switch		4055.712	
Hydraulic cylinder		4055.806	
Hydraulic hose		4055.807	

### Note:

– For special accessories, such as male and female dies for slots, please use Model No. 4055.791



- Integral end stop system for all functions, with horizontally hinged end stop

- User-friendly height adjustment of the punching and bending dimensions

# Busbar machining, mobile CW 120-M

The Copper Workstation CW 120-S is ideal for bending, punching and cutting busbars. Cutting and bending is easily achieved up to a maximum width of 12 mm and a thickness of 12 mm. The integral precision laser facilitates the cutting and bending process. Generally speaking, round holes with a diameter of 6.6 to 21.5 mm and slots up to a maximum width of 21 mm and a length of 18 mm may be punched.

## Benefits

- High level of bending and punching accuracy
- Simple tool changes
- Flexible workshop use

## Equipment

- Electric L-blade
- Mandrel R10
- Bending die
- External 230 V power inlet
- Pull-out side support extension for long rails
- External hydraulic connection for almost all machining options
- 4 rollers, 2 of which are movable and lockable for mobile use in the workshop
- Drawers
- Integral hydraulic pump
- Foot-switch

## Technical specifications

- Machine dimensions (L x W x H) approx. 1000 x 1350 x 1302 mm
- Machining surface (L x W x H) 811 x 1211 x 972 mm
- Weight approx. 400 kg
- Max. bending radius 90°
- Motor voltage 230 V, 50 Hz
- Motor output 2.2 kW
- Max. operating pressure 700 bar
- Side length minimum 50 mm
- U-bending min. 100 mm
- Z-bending min. 72 mm (depends on the material thickness)

Item name	Model No.
Busbar machining, mobile CW 120-M	<b>4055.800</b>

Accessories	Ø mm	Model No.	
		Stamp	Dies
Male and female dies, round	6.6	<b>4055.740</b>	<b>4055.770</b>
	9.0	<b>4055.741</b>	<b>4055.771</b>
	9.5	<b>4055.742</b>	<b>4055.772</b>
	11.0	<b>4055.743</b>	<b>4055.773</b>
	11.5	<b>4055.744</b>	<b>4055.774</b>
	13.5	<b>4055.745</b>	<b>4055.775</b>
	14.0	<b>4055.746</b>	<b>4055.776</b>
	17.5	<b>4055.747</b>	<b>4055.777</b>
	18.0	<b>4055.748</b>	<b>4055.778</b>
	21.0	<b>4055.749</b>	<b>4055.779</b>
21.5	<b>4055.750</b>	<b>4055.780</b>	
Hydraulic cylinder		<b>4055.806</b>	
Hydraulic hose		<b>4055.807</b>	





# Athex TC 80 CS terminal block assembly machine

The Athex TC 80 CS terminal block assembly machine processes data from EPLAN Pro Panel or manually configured XML formats. During machining, support rails from the buffer store are measured and automatically cut to size, then marked on the underside with a needle engraver for order picking / project planning. In a subsequent operation, the terminals required are either fitted directly on the terminal strip with a gripper system, or optionally labelled with the laser marking system prior to positioning. The finished terminal strip is output from the machine via the sorting unit and can then be removed.

## Flexibility:

Individual design of the terminal magazines supported. Advance, project-specific completion of the terminals you are using is an essential requirement.

## Equipment

- Assembly arm for manufacturer-independent machining of terminals in the following sizes:
  - Terminal width 40 – 110 mm
  - Terminal height 28 – 80 mm
  - Terminal thickness 3.5 – 20 mm
- Up to a max. of 80 terminal magazines on 5 levels
- Machining of support rails from a length of 100 mm
- Standard module for a rail length of 2 m (optionally extendible up to 3 m)
- Automatic cutting of support rails 35/15 and 35/7.5 (to EN 60 715)
- Management of offcuts from a minimum length of 230 mm.

## Benefits

- Consistent quality, due to fully automated process
- Optimum accessibility across the entire workspace
- Simple installation options for extending the terminal magazine
- Direct printing of user-defined information onto the support rails for subsequent reuse
- Fully automated measurement of rail offcuts for excellent cut optimisation

## Technical specifications

- Machine dimensions (W x H x D):  
6266 x 2354 x 3138 mm, width dimension without support console (max. bar length 2 m; may optionally be extended by 876 mm to a bar length of 3 m).
- Weight approx. 3000 kg
- Connected load: 3 x 400 V AC + N + PE; 11 kW
- Compressed air: 6 – 10 bar, dry and unoled
- Air consumption: 10 l/min (peak load 60 l/min)
- Network connection: RJ 45



## Scope of supply

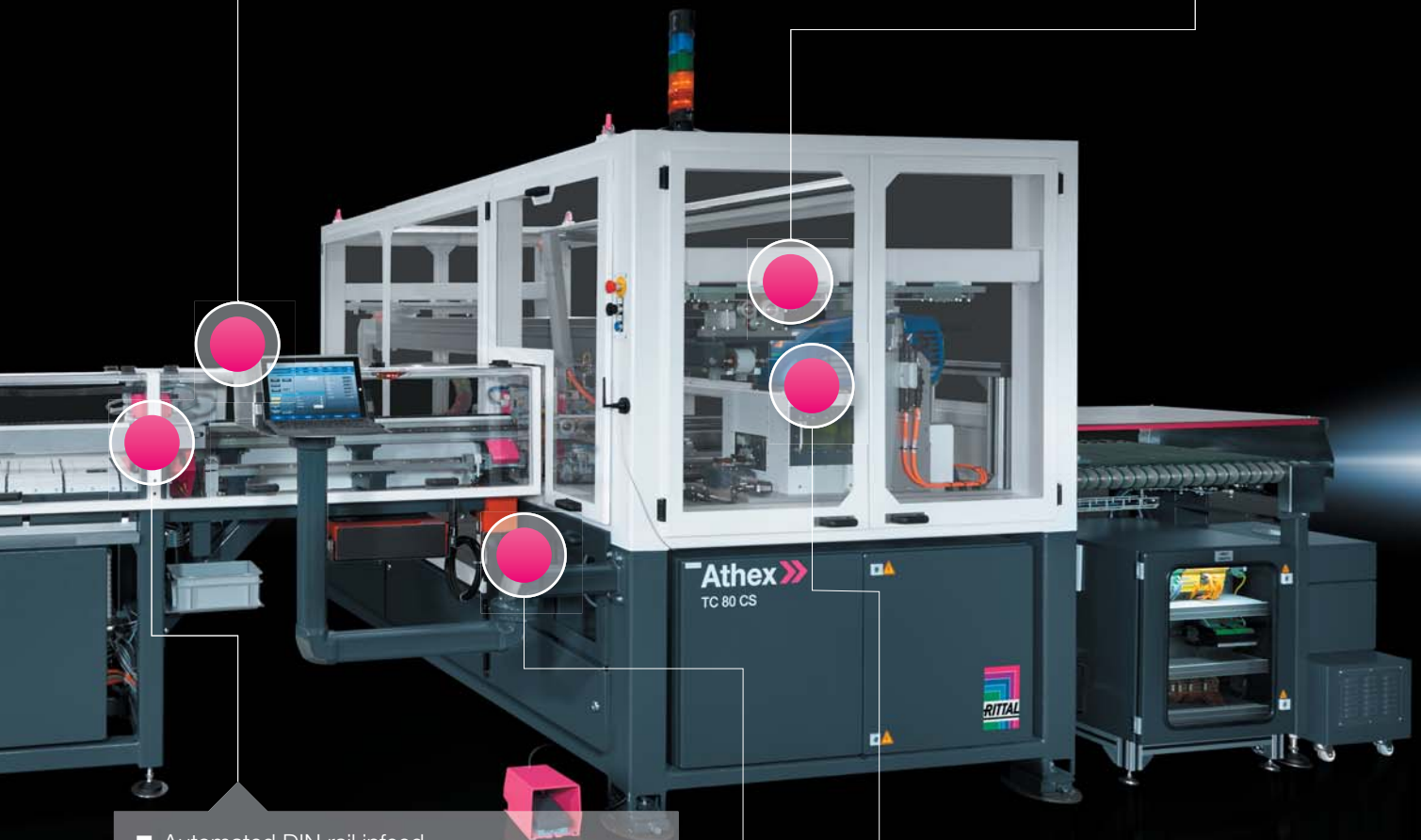
- Buffer stores for support rails (28 pieces)
- Measurement device for bar cutting
- Automatic cutting of support rails:
  - 35/15 (to EN 60 715)
  - 35/7.5 (to EN 60 715)
- Needle marking system for labelling the rail underside
- Gripper system for manufacturer-independent machining of terminals
- Sorting and buffer stores

Item name	Model No.
Athex TC 80 CS terminal block assembly machine	4050.505

Options	Model No.
Magazine for terminal blocks etc.	4050.520
Magazine support	4050.522
Laser labelling system	4050.524
Rotating device	4050.526
Scanner	4050.528
Scanner software	4050.530

- System-independent data imports from EPLAN Pro Panel and of XML formats

- Upgradable with up to 80 magazine slots
- Up to 800 terminals per hour (excluding printing)



- Automated DIN rail infeed

- Engraving function for order picking

- Labelling of terminals during assembly, thanks to a laser marking system

# Cutting machine C8

The C8 length-cutting machine is sure to impress with its simple, reliable handling. Wires with up to 8 mm or 10 mm<sup>2</sup> diameter may be cut to an individually set length, ensuring more efficient operating processes. Additionally, excellent repetition accuracy is guaranteed thanks to the precise servo DC drive. Cutting jobs from the cutting machine can also be managed, documented and transmitted with a PC via a USB interface.

## Scope of supply

- Cutting machine C8
- Software on CD-ROM
- power pack

- Simple opening of the feed rollers
- 0.08 – 10 mm<sup>2</sup> (round conductor)

- Jobs are easily programmed and executed with an integrated operating terminal
- EPLAN Pro Panel interface

- Controllable pressing force of the feed rollers



- Simple insertion of the wires



- Optional accessories for convenient removal and dispensing of cables and wires

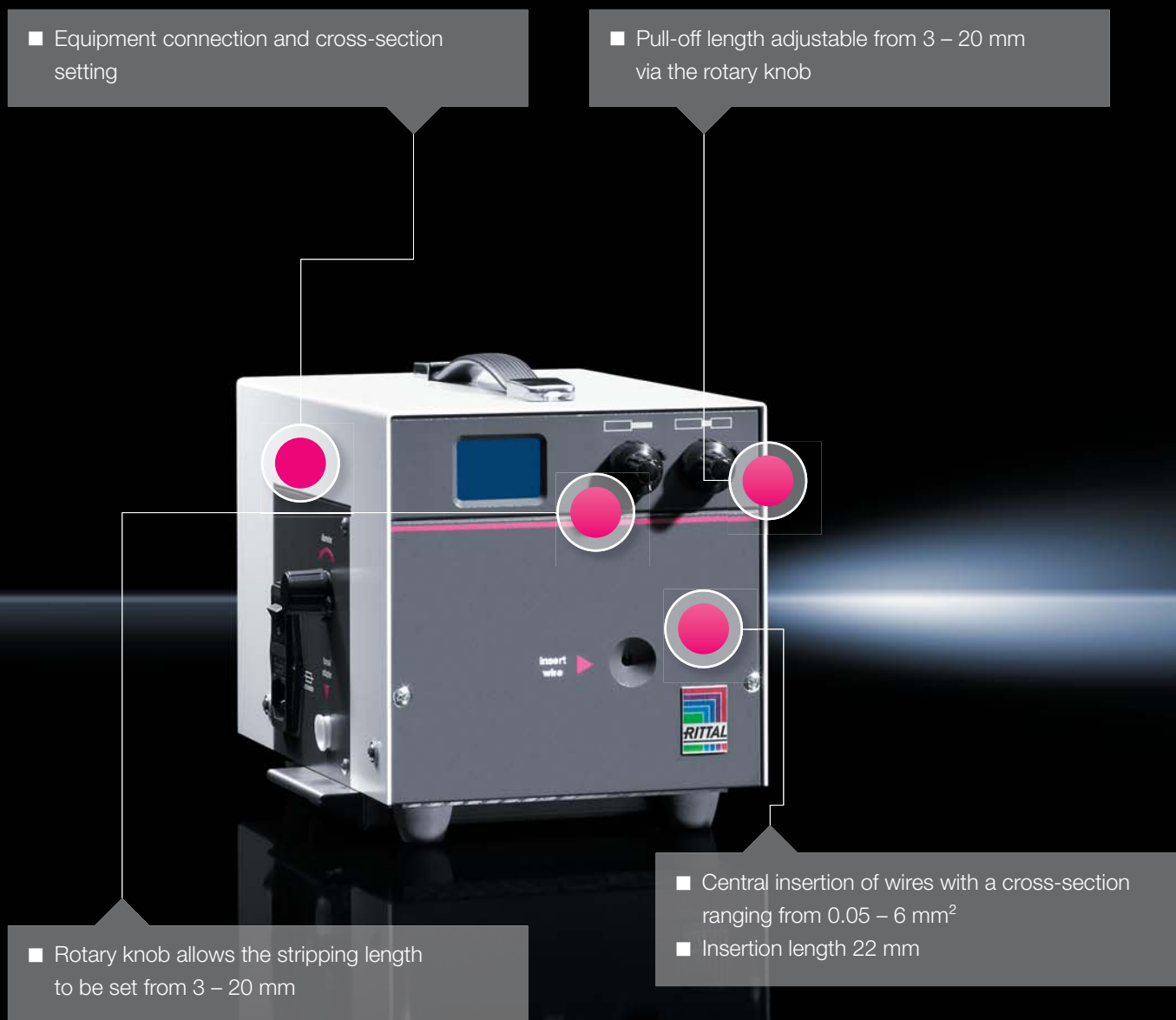
Item name	Model No.
Cutting machine C8	4050.450
Wire dispenser	4050.463
<b>Accessories</b>	
Spare blade, titanium	4050.465

# Stripping machine S22

The stripping machine S22 is electrically driven. It ensures accurate, careful stripping of the insulation from your wires. The draw-off and stripping length is set with linear control. The stripping machine also features a pre-integrated spare blade inside the enclosure. You benefit from the running total counter and daily counter, which are easily read from the touch display.

## Scope of supply

- Stripping machine S22
- Mains connection cable



Item name	Model No.
Stripping machine S22	4050.451
Accessories	
Insulation stripping blade, titanium	4050.464

# Crimping machine L8 and R8

Electropneumatically driven wire stripping and crimping machine for safe, fast processing of insulated wire end ferrules. The particular value-added feature of the electropneumatic crimping machines is its fully automated detection of the wire cross-section and processing of the wire end ferrules, with no tool changes required. Thanks to linear adjustment of the blades and the high force of the pneumatically driven crimping unit, all standard cables as well as special ferrules (AWG) in the application range from 0.5 to 2.5 mm<sup>2</sup> (AWG 20 – 14) may be processed with a crimping length of 8 mm. The integrated daily unit counter ensures you have an overview of your project quantities at all times.

## Scope of supply

- Crimping machine L8
- Oscillating conveyor (2 pcs.)
- Mains connection cable

## Scope of supply

- Crimping machine R8
- Mains connection cable

- Wire cross-sections from 0.5 to 2.5 mm<sup>2</sup> can be machined
- Automatic detection of cross-sections
- Handling of special wires supported
- UL-certified crimping in conjunction with wire end ferrules from Rittal

- Simple filling and processing of loose wire end ferrules

- User-friendly menu prompting via touch display



Item name	Model No.
Crimping machine L8	4050.452
<b>Accessories</b>	
Oscillating conveyor 0.5 – 1.5 mm <sup>2</sup>	4050.467
Oscillating conveyor 1.5 – 2.5 mm <sup>2</sup>	4050.468
Insulation stripping blade kit, titanium	4050.466

Item name	Model No.
Crimping machine R8	4050.453
<b>Accessories</b>	
Insulation stripping blade kit, titanium	4050.466

## Wire processing in enclosure manufacturing

# Crimping machine R8 E

Electrically powered wire stripping and crimping machine for taped wire end ferrules on a reel. The R8 E crimping machine is suitable for fast, careful processing of insulated wire end ferrules and standard PVC cables in cross-sections ranging from 0.5 to 2.5 mm<sup>2</sup> (AWG 20 – 14) with a crimping length of 8 mm. For flexible use in the workshop, all you need is a power connection.

### Scope of supply

- Crimping machine R8 E
- Mains connection cable

### Note:

- All units for cable assembly support multiple voltages from 100 – 240 V, 50/60 Hz
- Wire end ferrules for crimping machines, see page 40  
Standard crimping form: Trapezoid – others available on request

- Locator for taped wire end ferrules on a reel



Item name	Model No.
Crimping machine R8 E	4050.454

- Easy replacement of consumables
- Simple adjustment
- Flexible use in the workshop

# Assembly frames and LT 1000 storage and transport trolley

When it comes to the automation and rationalisation of processes throughout every stage of machining, assembly, wiring and testing of enclosures, we have the right ergonomic solution for you. Our assembly frames are mobile, tiltable and (depending on the version) height-adjustable frames for machining mounting plates and enclosures. All types offer simple, variable fixing of mounting plates using quick-release fasteners, are independent from the mains power, and take up minimal space when not in use. For easier handling of enclosure panels, we additionally offer the storage and transport trolley LT 1000.



Numerous adaptation options available:

- Widening to 1900 mm
- Wire routing
- Wire reel holder
- Reel track for side insertion of mounting plates

More options from page 73

■ Tilt-adjustable and optionally height-adjustable for ergonomic, effective, time-saving construction, wiring and testing of mounting plates or complete enclosures

■ Simple handling due to four castors including total lock function

Item name	Assembly frame 150 MN	Assembly frame 200 EN	Assembly frame 300 ENH
Adjustment range	Infinitely adjustable from the vertical to the horizontal using a crank handle	Infinitely adjustable tilt angle via battery-powered electric motor	Infinitely adjustable height and tilt angle via battery-powered electric motor
Working height	1 m	0.90 m	0.80 – 1.10 m
Tilt adjustment	approx. 0 – 80°	approx. 0 – 80°	approx. 0 – 80°
Dimensions (W x D) mm	1400 x 1250	1400 x 1250	1400 x 1250
Clampable workpieces (W x H) mm	min. 1110 x 1250 max. 1110 (1900) x 1900	min. 1110 x 1250 max. 1110 (1900) x 1900	min. 1110 x 1250 max. 1110 (1900) x 1900
Max. support load	150 kg	200 kg	300 kg
<b>Model No.</b>	<b>4050.150</b>	<b>4050.200</b>	<b>4050.300</b>





■ Individually adjustable thanks to height-adjustable supports

■ User-friendly transportation through the workshop on castors

■ Eight wide compartments for effortless storage and transportation of enclosure panels

## Technical specifications

- Support surface W x D 1000 x 1000 mm
- Height 1500 mm
- Max. load capacity 500 kg

Item name	Model No.
LT 1000 storage and transport trolley	4050.000

Practical and mobile

# Functional trolley

The functional trolley is a veritable multi-talent. Whether for transporting materials and tools to the installation site or for commissioning, the functional trolley is perfectly suited for assembly technicians and service personnel.

The refined system with its fold-out concept is the ideal solution when you are on the road, and its compact dimensions mean it can be transported by car.



Item name	Model No.
Functional trolley	4050.130

■ Surface suitable for computer mouse



■ Made from V2A stainless steel for robustness and durability



■ Converts from a transport function to a desk by simply unfolding

All from a single source

# The right tool for every application!

Rittal offers a comprehensive range of hand-held tools for professional support with your work operations. All the machining and handling technology you need for time-saving and cost-cutting manufacturing processes, all from a single source.

■ Pliers  
■ Cutting tools

■ Tools for cable assembly

■ Screwdrivers, insulated  
■ Screwdrivers, uninsulated  
⊕ ⊖ ⊕ ⊖

■ Bits  
■ Bit holders

■ Manual and electric hand-held hydraulic punches

■ Hole punches

RITTAL  
AS 4055.040

18 V/3,0 Ah  
NMH

Ø 32,5 mm

# Tool bag



## Tool bag

### Configured

Configured tool bag comprising a selected range of Rittal hand tools, designed especially for electricians. The practical, high-quality shoulder bag may be used either as a tool bag or laptop case.

### Design:

- 19 separate compartments for tools
- Cushioned compartment for laptop or tablet
- Document wallet
- Two additional storage pockets inside

### Benefits:

- Careful storage
- Shoulder pad for comfortable carrying
- Flexible use

### Material:

- Polyester

### Supply includes:

- Screwdriver, insulated SL 3.5 x 0.6 (Model No.: 4052.102), SL 6 x 1.2 (Model No.: 4052.107), PZ 2 (Model No.: 4052.122)
- Screwdriver, non-insulated PZ 2 (Model No.: 4052.022), SL 6 x 1.2 (Model No.: 4052.011), TX 20 (Model No.: 4052.055), TX 25 (Model No.: 4052.056), TX 30 (Model No.: 4052.058)
- Bit holder with handle, magnetic (Model No.: 4053.300)
- Bit set with bit holder, 7-piece (Model No.: 4053.420)
- Crimping pliers for wire end ferrules, for cross-section 0.5 - 6 mm<sup>2</sup>, square crimp (Model No.: 4054.001)
- Wire stripper for wire end ferrules, for cross-section 0.02 - 11 mm<sup>2</sup> (Model No.: 4054.300)
- Stripping tools for cables Ø 2.5 - 11 mm (Model No.: 4054.400), for cables Ø 8 - 13 mm (Model No.: 4054.405)
- Side cutter for cables Ø 0.2 - 11 mm (Model No.: 4054.600)
- Electrician's scissors for cables Ø 0.1 - 3.7 mm (Model No.: 4054.700)
- Combination pliers with insulated handle (Model No.: 4054.800)
- Needle-nose pliers with insulated handle (Model No.: 4054.850)
- Tool bag (Model No.: 4053.000)

Width mm	Height mm	Depth mm	Packs of	Model No.
420	340	190	1 pc(s).	<b>4053.500</b>



## Tool bag

### Unconfigured

The practical, high-quality shoulder bag may be used either as a tool bag or laptop case.

### Design:

- 19 separate compartments for tools
- Cushioned compartment for laptop or tablet
- Document wallet
- Two additional storage pockets inside

### Benefits:

- Careful storage
- Shoulder pad for comfortable carrying
- Flexible use

### Material:

- Polyester

Width mm	Height mm	Depth mm	Packs of	Model No.
420	340	190	1 pc(s).	<b>4053.000</b>

## Screwdriver

### insulated

With a long, slender handle and high-performance tip with non-transfer insulation.

### Benefits:

- Minimal force required, thanks to ergonomically styled handle
- Handle head with anti-roll protection and clear screw labelling
- Black coated blade tip to preserve precision and accuracy of fit
- Handle 30% and insulation up to 50% slimmer than comparable tools
- Optimum interconnection of hand and handle supports higher torques and longer, fatigue-free working

### Material:

- Blade: Chrome-molybdenum-vanadium alloy
- Handle core: Hard plastic
- Handle body: Elastic, highly flexible plastic

### Colour:

- Handle: Anthracite and Rittal pink

### Standards:

- IEC 60 900

### Approvals:

- VDE
- Tested safety GS

### For slot-head screws

Blade tip	Blade (width x thickness) mm	Blade length mm	Blade dia. mm	Handle length mm	Handle dia. mm	Packs of	Model No.
SL	3 x 0.5	100	3.5	105	25	1 pc(s).	<b>4052.101</b>
SL	3.5 x 0.6	100	3.5	105	25	1 pc(s).	<b>4052.102</b>
SL	4 x 0.8	100	4	105	25	1 pc(s).	<b>4052.104</b>
SL	5.5 x 1	125	5.5	115	27	1 pc(s).	<b>4052.106</b>
SL	6.5 x 1.2	125	6.5	115	27	1 pc(s).	<b>4052.107</b>

### For pozidrive screws

Blade tip	Blade (width x thickness)	Blade length mm	Blade dia. mm	Handle length mm	Handle dia. mm	Packs of	Model No.
PZ 1	-	80	4.5	105	25	1 pc(s).	<b>4052.121</b>
PZ 2	-	100	6	115	27	1 pc(s).	<b>4052.122</b>

### For Phillips-head screws

Blade tip	Blade (width x thickness)	Blade length mm	Blade dia. mm	Handle length mm	Handle dia. mm	Packs of	Model No.
PH 1	-	80	4.5	105	25	1 pc(s).	<b>4052.131</b>
PH 2	-	100	6	115	27	1 pc(s).	<b>4052.132</b>

### For plus/minus

Blade tip	Blade (width x thickness)	Blade length mm	Blade dia. mm	Handle length mm	Handle dia. mm	Packs of	Model No.
Z 1	-	80	4.5	105	25	1 pc(s).	<b>4052.141</b>
Z 2	-	100	6	115	27	1 pc(s).	<b>4052.142</b>



# Screwdriver



## Screwdriver set

### insulated

Multi-part screwdriver set. With a long, slender handle and high-performance tips with non-transfer insulation.

### Benefits:

- Minimal force required, thanks to ergonomically styled handle
- Handle head with anti-roll protection and clear screw labelling
- Black coated blade tip to preserve precision and accuracy of fit
- Handle 30% and insulation up to 50% slimmer than comparable tools

### Material:

- Blade: Chrome-molybdenum-vanadium alloy
- Handle core: Hard plastic
- Handle body: Elastic, highly flexible plastic

### Colour:

- Handle: Anthracite and Rittal pink

### Supply includes:

- Set with 5 screwdrivers

### Standards:

- IEC 60 900

### Approvals:

- VDE
- Tested safety GS

Blade tip	Packs of	Model No.
SL 3 x 0.5 mm SL 4 x 0.8 mm SL 5.5 x 1 mm PH 1 PH 2	1 pc(s).	<b>4052.210</b>
SL 3 x 0.5 mm SL 4 x 0.8 mm SL 5.5 x 1 mm PZ 1 PZ 2	1 pc(s).	<b>4052.211</b>
SL 3 x 0.5 mm SL 4 x 0.8 mm PH 1 PH 2 Z 2	1 pc(s).	<b>4052.212</b>

## Screwdriver

### uninsulated

Ergonomic screwdriver which adapts perfectly to the hand, thereby minimising the force required.

### Benefits:

- Handle head with anti-roll protection and clear screw labelling
- Black coated blade tip to preserve precision and accuracy of fit
- Optimum interconnection of hand and handle supports higher torques and longer, fatigue-free working

### Material:

- Blade: Chrome-molybdenum-vanadium alloy
- Handle core: Hard plastic
- Handle body: Elastic, highly flexible plastic

### Colour:

- Handle: Anthracite and Rittal pink

### Approvals:

- Tested safety GS



### For slot-head screws

Blade tip	Blade (width x thickness) mm	Blade length mm	Blade dia. mm	Handle length mm	Handle dia. mm	Packs of	Model No.
SL	2.5 x 0.4	75	2.5	86	25	1 pc(s).	<b>4052.001</b>
SL	3.5 x 0.6	100	3.5	86	25	1 pc(s).	<b>4052.003</b>
SL	4 x 0.8	100	4	94	30	1 pc(s).	<b>4052.004</b>
SL	5.5 x 1	150	5	101	33	1 pc(s).	<b>4052.007</b>
SL	6.5 x 1.2	150	6	106	36	1 pc(s).	<b>4052.011</b>
SL	8 x 1.2	175	7	112	39	1 pc(s).	<b>4052.014</b>
SL	5.5 x 1	25	5	60	21	1 pc(s).	<b>4052.018</b>

### For pozidrive screws

Blade tip	Blade (width x thickness)	Blade length mm	Blade dia. mm	Handle length mm	Handle dia. mm	Packs of	Model No.
PZ 1	–	80	4.5	94	30	1 pc(s).	<b>4052.021</b>
PZ 2	–	100	6	106	36	1 pc(s).	<b>4052.022</b>

### For Phillips-head screws

Blade tip	Blade (width x thickness)	Blade length mm	Blade dia. mm	Handle length mm	Handle dia. mm	Packs of	Model No.
PH 1	–	80	4.5	94	30	1 pc(s).	<b>4052.031</b>
PH 2	–	100	6	106	36	1 pc(s).	<b>4052.032</b>
PH 2	–	25	6	60	21	1 pc(s).	<b>4052.038</b>

### For multi-tooth screws

Blade tip	Blade (width x thickness)	Blade length mm	Blade dia. mm	Handle length mm	Handle dia. mm	Packs of	Model No.
TX 10	–	100	3.5	86	25	1 pc(s).	<b>4052.053</b>
TX 15	–	100	4	94	30	1 pc(s).	<b>4052.054</b>
TX 20	–	100	5	101	33	1 pc(s).	<b>4052.055</b>
TX 25	–	100	5	106	36	1 pc(s).	<b>4052.056</b>
TX 30	–	115	6	112	39	1 pc(s).	<b>4052.058</b>

# Screwdriver



## Screwdriver set

### uninsulated

Multi-part screwdriver set.

#### Benefits:

- Minimal force required, thanks to ergonomically styled handle
- Handle head with anti-roll protection and clear screw labelling
- Black coated blade tip to preserve precision and accuracy of fit

#### Material:

- Blade: Chrome-molybdenum-vanadium alloy
- Handle core: Hard plastic
- Handle body: Elastic, highly flexible plastic

#### Colour:

- Handle: Anthracite and Rittal pink

#### Approvals:

- Tested safety GS

Blade tip	Product-specific scope of supply	Packs of	Model No.
SL 3.5 x 0.6 mm SL 6.5 x 1.2 mm PZ 1 PZ 2 PH 1 PH 2	6-part set	1 pc(s).	<b>4052.200</b>
PH 1 PH 2 TX 15 TX 20 TX 25 TX 30	6-part set	1 pc(s).	<b>4052.201</b>
TX 10 TX 15 TX 20 TX 25 TX 30	5-part set	1 pc(s).	<b>4052.202</b>



## Interchangeable screwdriver set

### uninsulated

13-piece tool set with comfortable, foldable, lockable handle.

#### Technical specifications:

- PH 1 - SL 4 x 0.8 mm
- PH 2 - PH 3
- PZ 1 - SL 5 x 0.8 mm
- PZ 2 - SL 6 x 1 mm
- PZ 3 - SL 7 x 1.2 mm
- TX 6 - TX 7
- TX 8 - TX 9
- TX 10 - TX 15
- TX 20 - TX 25
- TX 30 - TX 40
- Hex socket 3 mm - hex socket 4 mm
- Hex socket 5 mm - hex socket 6 mm

#### Material:

- Blade: Chrome-molybdenum-vanadium alloy
- Handle core: Hard plastic
- Handle body: Elastic, highly flexible plastic

#### Colour:

- Handle: Anthracite and Rittal pink

#### Supply includes:

- Combined blade holder:  
Screwdriver and T handle
- 12 blades each with 2 tips
- Storage box



Blade length mm	Handle length mm	Handle dia. mm	Packs of	Model No.
160	105	39	1 pc(s).	<b>4053.450</b>



# Hex wrench

## Hex wrench set

### for Allen screws

Hex wrench with optimum, narrow-tolerance hexagonal profiles and precise ballhead geometry. The extra-long design achieves a greater leverage effect.

#### Benefits:

- Up to 30% more corrosion resistance
- Optimum hardness and elasticity
- Intensive leverage effect
- Special geometry in the critical zone

#### Technical specifications:

- For hex socket: 1.27 - 1.5 - 2.0 - 2.5 - 3.0 - 3.5 - 4.0 - 4.5 - 5.0 - 5.5 - 6.0 - 7.0 - 8.0 - 9.0 - 10.0 mm

#### Supply includes:

- 15 hex wrenches
- Storage box

Packs of	Model No.
1 pc(s).	4052.480



# Bits and bit holders



## Industrial bit for cordless screwdrivers

### with long shaft

Precisely manufactured screwdriver with a long shaft for industrial use.

#### Benefits:

- Maximum hardness and torque values

#### Technical specifications:

- Tool adaptation E 6.3 (1/4")

#### Material:

- High-quality special tool steel

#### For slot-head screws

Blade tip	Blade (width x thickness) mm	Length mm	Blade dia. mm	Packs of	Model No.
SL	3.5 x 0.6	73	6.3	3 pc(s).	<b>4053.002</b>
SL	4 x 0.8	73	6.3	3 pc(s).	<b>4053.003</b>

#### For pozidrive screws

Blade tip	Blade (width x thickness)	Length mm	Blade dia. mm	Packs of	Model No.
PZ 1	–	73	6.3	3 pc(s).	<b>4053.011</b>
PZ 2	–	73	6.3	3 pc(s).	<b>4053.012</b>

#### For Phillips-head screws

Blade tip	Blade (width x thickness)	Length mm	Blade dia. mm	Packs of	Model No.
PH 1	–	73	6.3	3 pc(s).	<b>4053.021</b>
PH 2	–	73	6.3	3 pc(s).	<b>4053.022</b>

#### For plus/minus

Blade tip	Blade (width x thickness)	Length mm	Blade dia. mm	Packs of	Model No.
Z 1	–	73	6.3	3 pc(s).	<b>4053.031</b>
Z 2	–	73	6.3	3 pc(s).	<b>4053.032</b>

#### For multi-tooth screws

Blade tip	Blade (width x thickness)	Length mm	Blade dia. mm	Packs of	Model No.
TX 10	–	73	6.3	3 pc(s).	<b>4053.041</b>
TX 15	–	73	6.3	3 pc(s).	<b>4053.042</b>
TX 20	–	73	6.3	3 pc(s).	<b>4053.043</b>
TX 25	–	73	6.3	3 pc(s).	<b>4053.044</b>
TX 27	–	73	6.3	3 pc(s).	<b>4053.045</b>
TX 30	–	73	6.3	3 pc(s).	<b>4053.046</b>
TX 40	–	73	6.3	3 pc(s).	<b>4053.047</b>

# Bits and bit holders

## Industrial bit set for cordless screwdriver

### with long shaft

Precisely manufactured screwdriver with a long shaft for industrial use.

#### Benefits:

- Robust viewing box
- Secure storage

#### Technical specifications:

- Tool adaptation E 6.3 (1/4")

#### Material:

- High-quality special tool steel

#### Supply includes:

- Set with 6 bits
- Viewing box

Blade tip	Length mm	Packs of	Model No.
SL 3.5 x 0.6 mm SL 4 x 0.8 mm SL 5.5 x 1 mm PH 1 PH 2 PZ 2	73	1 pc(s).	4053.400
TX 10 TX 15 TX 20 TX 25 TX 30 TX 40	73	1 pc(s).	4053.410



## Bit set

### with bit holder

7-piece bit set with a practical assortment of quality bits with a short shaft and magnetic holder.

#### Benefits:

- One-handed operation
- Function as auxiliary screwdriver

#### Technical specifications:

- Tool adaptation C 6.3 (1/4")

#### Supply includes:

- Set with 6 bits
- Bit holder

Blade tip	Length mm	Packs of	Model No.
TX 25 TX 30 TX 40 PH 1 PH 2 PH 3	25	1 pc(s).	4053.420



## Bit holder

### with handle, magnetic

Ergonomic, adaptable bit holder with handle.

#### Benefits:

- Extra-strong magnet for optimum retention force
- Precise concentricity
- Handle for anti-roll protection

#### Technical specifications:

- Tool adaptation C 6.3 (1/4")
- Tool adaptation E 6.3 (1/4")

#### Material:

- Handle core: Hard plastic
- Handle body: Elastic, highly flexible plastic

#### Colour:

- Handle: Anthracite and Rittal pink



Blade length mm	Blade dia. mm	Handle length mm	Handle dia. mm	Packs of	Model No.
100	6.3	101	33	1 pc(s).	4053.300

# Bits and bit holders



## Bit holder

### **magnetic**

Magnetic holder with hex drive to hold bits securely.

### **Benefits:**

- Extra-strong magnet for optimum retention force
- Precise concentricity

### **Technical specifications:**

- Tool adaptation E 6.3 (1/4")

### **Material:**

- High-quality special tool steel

Blade length mm	Blade dia. mm	Packs of	Model No.
47	6.3	1 pc(s).	<b>4053.310</b>

# Crimping pliers

## Crimping pliers

### for wire end ferrules

For use with wire end ferrules with no insulating collar to DIN 46228 Part 1 and wire end ferrules with insulating collar to DIN 46228 Part 4.

#### Benefits:

- Minimal effort required with large conductor cross-sections
- Uniformly high quality compression
- Marked die stations for precise machining of the relevant cross-sections
- Releasable ratchet

#### Material:

- High-quality special tool steel

#### Surface finish:

- Matt, plated

#### Colour:

- Handle: Anthracite and Rittal pink

#### Accessories:

- Wire end ferrules, see page 40

For cross-section mm <sup>2</sup>	AWG	Direction of cable entry	Compression	Length mm	Design	Packs of	Model No.
0.25 - 6	24 - 10	Side	Trapezoid crimp	198	Angled	1 pc(s).	<b>4054.000</b>
0.5 - 6	22 - 10	Front	Square crimp	198	Angled	1 pc(s).	<b>4054.001</b>
10 - 25	8 - 4	Side	WM crimp	256	Straight	1 pc(s).	<b>4054.004</b>
35 - 50	2 - 1	Side	WM crimp	256	Straight	1 pc(s).	<b>4054.008</b>

## Crimping pliers

### for crimp tab terminals

For use with non-insulated crimp tab terminals.

#### Benefits:

- Releasable ratchet
- Marked die stations for precise machining of the relevant cross-sections

#### Material:

- High-quality special tool steel

#### Surface finish:

- Matt, plated

#### Colour:

- Handle: Anthracite and Rittal pink

For cross-section mm <sup>2</sup>	AWG	Compression	Length mm	Design	Packs of	Model No.
0.1 - 1.5	26 - 16	B-crimp	198	Angled	1 pc(s).	<b>4054.080</b>
0.5 - 6	22 - 10	B-crimp	256	Straight	1 pc(s).	<b>4054.081</b>



# Crimping pliers



## Crimping pliers

### for ring terminals

For use with non-insulated ring terminals.

#### Benefits:

- Releasable ratchet
- Optimised lever transmission means that only minimal actuator forces are required, even with large cross-sections

#### Material:

- High-quality special tool steel

#### Surface finish:

- Matt, plated

#### Colour:

- Handle: Anthracite and Rittal pink

For cross-section mm <sup>2</sup>	AWG	Compression	Length mm	Design	Packs of	Model No.
0.5 - 2.5	20 - 14	Indent crimp	198	Angled	1 pc(s).	<b>4054.020</b>
0.35 - 6	22 - 10	Indent crimp	198	Angled	1 pc(s).	<b>4054.021</b>
4 - 10	12 - 8	Double-indent crimp	256	Straight	1 pc(s).	<b>4054.023</b>
10 - 25	8 - 4	Indent crimp	256	Straight	1 pc(s).	<b>4054.024</b>

# Crimping pliers

## Crimping pliers

### for ring terminals

For use with insulated ring terminals and connectors.

#### Benefits:

- Clear allocation of cross-sections, thanks to colour coding on the dies
- Releasable ratchet
- Releases as soon as the required pressure is reached, to prevent underpressing

#### Material:

- High-quality special tool steel

#### Surface finish:

- Matt, plated

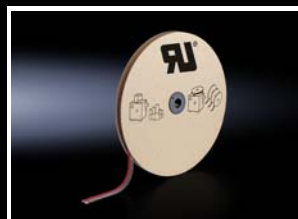
#### Colour:

- Handle: Anthracite and Rittal pink

For cross-section mm <sup>2</sup>	AWG	Compression	Length mm	Design	Packs of	Model No.
0.75 - 2.5	22 - 14	Oval crimp	198	Angled	1 pc(s).	<b>4054.140</b>
0.75 - 6	22 - 10	Oval crimp	256	Straight	1 pc(s).	<b>4054.141</b>



# Wire end ferrules



## Wire end ferrules

According to DIN colour code

With plastic collar.

### Technical specifications:

- Heat-resistant to 105°C

### Material:

- E-Cu, galvanic tin-plated
- Plastic collar: Polypropylene

### Note:

- UL-certified in conjunction with the relevant tools, such as crimping machines.

### Standards:

- AEH DIN 46228

### Approvals:

- UL
- UR
- CSA

### For crimping machines

For cross-section mm <sup>2</sup>	AWG	Length mm	Colour	Delivery form	Packs of	Model No.
0.5	20	8	White	Loose	500 pc(s).	<b>4050.730</b>
0.75	18	8	Grey	Loose	500 pc(s).	<b>4050.731</b>
1	18	8	Red	Loose	500 pc(s).	<b>4050.732</b>
1.5	16	8	Black	Loose	500 pc(s).	<b>4050.733</b>

### For crimping machines

For cross-section mm <sup>2</sup>	AWG	Length mm	Colour	Delivery form	Packs of	Model No.
0.5	20	8	White	Taped	5000 pc(s).	<b>4050.746</b>
0.75	18	8	Grey	Taped	5000 pc(s).	<b>4050.747</b>
1	18	8	Red	Taped	5000 pc(s).	<b>4050.748</b>
1.5	16	8	Black	Taped	5000 pc(s).	<b>4050.749</b>
2.5	14	8	Blue	Taped	3000 pc(s).	<b>4050.750</b>

### For manual wire processing (AWG cables) and crimping machines 0.5 - 1.5 mm<sup>2</sup>

For cross-section mm <sup>2</sup>	AWG	Length mm	Colour	Delivery form	Packs of	Model No.
0.5	20	8	White	Loose	500 pc(s).	<b>4050.742</b>
0.75	18	8	Grey	Loose	500 pc(s).	<b>4050.743</b>
1	18	8	Red	Loose	500 pc(s).	<b>4050.744</b>
1.5	16	8	Black	Loose	500 pc(s).	<b>4050.745</b>

### For manual wire processing

For cross-section mm <sup>2</sup>	AWG	Length mm	Colour	Delivery form	Packs of	Model No.
0.5	20	10	White	Loose (10 packs of 100)	1000 pc(s).	<b>4051.638</b>
0.5	20	12	White	Loose (10 packs of 100)	1000 pc(s).	<b>4050.737</b>
0.75	18	10	Grey	Loose (10 packs of 100)	1000 pc(s).	<b>4051.641</b>
0.75	18	12	Grey	Loose (10 packs of 100)	1000 pc(s).	<b>4050.738</b>
1	18	10	Red	Loose (10 packs of 100)	1000 pc(s).	<b>4051.644</b>
1	18	12	Red	Loose (10 packs of 100)	1000 pc(s).	<b>4050.739</b>
1.5	16	10	Black	Loose (10 packs of 100)	1000 pc(s).	<b>4051.647</b>
1.5	16	12	Black	Loose (10 packs of 100)	1000 pc(s).	<b>4050.740</b>
2.5	14	10	Blue	Loose (10 packs of 100)	1000 pc(s).	<b>4051.525</b>
2.5	14	12	Blue	Loose (10 packs of 100)	1000 pc(s).	<b>4050.741</b>
4	12	12	Grey	Loose	500 pc(s).	<b>4050.783</b>
6	10	12	Yellow	Loose	100 pc(s).	<b>4050.736</b>



# Wire end ferrules

## Wire end ferrules

### According to Rittal colour code

With plastic collar.

### Technical specifications:

- Heat-resistant to 105°C

### Material:

- E-Cu, galvanic tin-plated
- Plastic collar: Polypropylene

### Note:

- UL-certified in conjunction with the relevant tools, such as crimping machines.

### Approvals:

- UL
- UR
- CSA



### For crimping machines

For cross-section mm <sup>2</sup>	AWG	Length mm	Colour	Delivery form	Packs of	Model No.
0.5	20	8	orange	Taped	5000 pc(s).	<b>4051.597</b>
0.75	18	8	White	Taped	5000 pc(s).	<b>4051.599</b>
1	18	8	Yellow	Taped	5000 pc(s).	<b>4051.601</b>
1.5	16	8	Red	Taped	5000 pc(s).	<b>4051.603</b>
2.5	14	8	Blue	Taped	3000 pc(s).	<b>4051.750</b>

### For manual wire processing and crimping machines 0.5 - 2.5 mm<sup>2</sup>

For cross-section mm <sup>2</sup>	AWG	Length mm	Colour	Delivery form	Packs of	Model No.
0.14	26	8	Grey	Loose	500 pc(s).	<b>4050.752</b>
0.25	24	8	Light blue	Loose	500 pc(s).	<b>4050.754</b>
0.34	22	8	Turquoise	Loose	500 pc(s).	<b>4050.757</b>
0.5	20	8	orange	Loose	500 pc(s).	<b>4050.760</b>
0.5	20	10	orange	Loose	500 pc(s).	<b>4050.761</b>
0.75	18	8	White	Loose	500 pc(s).	<b>4050.764</b>
0.75	18	10	White	Loose	500 pc(s).	<b>4050.766</b>
1	18	8	Yellow	Loose	500 pc(s).	<b>4050.769</b>
1	18	10	Yellow	Loose	500 pc(s).	<b>4050.770</b>
1.5	16	8	Red	Loose	500 pc(s).	<b>4050.773</b>
1.5	16	10	Red	Loose	500 pc(s).	<b>4050.774</b>
2.5	14	8	Blue	Loose	500 pc(s).	<b>4050.734</b>
2.5	14	10	Blue	Loose	500 pc(s).	<b>4050.779</b>
4	12	8	Grey	Loose	500 pc(s).	<b>4050.782</b>
4	12	10	Grey	Loose	500 pc(s).	<b>4050.735</b>
6	10	12	Black	Loose	100 pc(s).	<b>4050.785</b>

# Insulation stripping tools



## Wire stripper

For stripping cables and conductors. Self-adjusting, with ergonomically styled handle, replaceable insulation stripping blade.

### Benefits:

- Flexible end stop for the insulation stripping length
- Practical integrated wire cutter
- Automatic adjustment mechanism for a wide range of insulations and conductor diameters
- Dies compatible with all types of pliers, may be replaced in a few actions
- Two-component handle with anti-slip soft zone

### Colour:

- Handle: Anthracite and Rittal pink



### Accessories:

- Spare blade, see page 43

For cross-section mm <sup>2</sup>	AWG	Length mm	Note	Packs of	Model No.
0.02 - 10	34 - 8	191	-	1 pc(s).	<b>4054.300</b>
0.1 - 4	28 - 12	191	Also suitable for rubber and silicone insulation	1 pc(s).	<b>4054.310</b>
4 - 16	12 - 5	191	-	1 pc(s).	<b>4054.305</b>



## Stripping tool

**for cables Ø 2.5 - 11 mm**

For stripping installation cables and wires.

### Colour:

- Handle: Anthracite and Rittal pink

For cable diameters mm	Length mm	Packs of	Model No.
2.5 - 11	90.5	1 pc(s).	<b>4054.400</b>



### Accessories:

- Spare blade, see page 43



## Stripping tool

**for cables Ø 8 - 13 mm**

For stripping single- and multi-wire signal, pilot and fibreglass cables.

### Colour:

- Handle: Anthracite and Rittal pink

For cable diameters mm	Length mm	Packs of	Model No.
8 - 13	125	1 pc(s).	<b>4054.405</b>

# Insulation stripping tools

## Stripping tool

### for cables Ø 4.5 - 40 mm

For stripping cables. Vertically hinged blade for creating round, longitudinal and spiral cuts.

#### Colour:

– Handle: Anthracite and Rittal pink

For cable diameters mm	Length mm	Packs of	Model No.
4.5 - 40	167	1 pc(s).	<b>4054.410</b>



#### Accessories:

– Spare blade, see page 43



## Spare blade

### for wire strippers

Interchangeable blade cassettes for cables with different cross-sections. Also suitable for special insulations.

To fit Model No.	For cross-section mm <sup>2</sup>	Colour	Packs of	Model No.
4054.300	0.02 - 10	Black	1 pc(s).	<b>4054.500</b>
4054.310	0.1 - 4	Blue	1 pc(s).	<b>4054.510</b>
4054.305	4 - 16	Red	1 pc(s).	<b>4054.505</b>



## Spare blade

### for stripping tools

Practical, easily replaceable blades for stripping wires and cables.

To fit Model No.	For cable diameters mm	Packs of	Model No.
4054.400	2.5 - 11	1 pc(s).	<b>4054.520</b>
4054.410	4.5 - 40	1 pc(s).	<b>4054.530</b>



# Cutting tools



## Side cutter

For copper and aluminium conductors.

### Benefits:

- Guarantees long-term stable cutting performance and a clean cut
- Ergonomically styled handles for fatigue-free, non-slip working

### Material:

- High-quality special tool steel

### Surface finish:

- Matt, plated

### Colour:

- Handle: Anthracite and Rittal pink

For cable diameters mm	Length mm	Design	Packs of	Model No.
0.2 - 11	160	Straight	1 pc(s).	<b>4054.600</b>



## Electronic side cutter

With pointed head, 21° angled blades and small chamfer.

### Benefits:

- Even, smooth-running opening with opening spring
- Ergonomically styled handles
- Box-joint for permanent stability and optimum force progression

### Material:

- High-quality special tool steel

### Surface finish:

- Polished, oiled

### Colour:

- Handle: Anthracite and Rittal pink

Length mm	Packs of	Model No.
115	1 pc(s).	<b>4054.750</b>



## Cable cutter

For copper and aluminium conductors.

### Benefits:

- Ergonomically styled handles for fatigue-free, non-slip working

### Material:

- High-quality special tool steel

### Colour:

- Handle: Anthracite and Rittal pink



For cross-section mm <sup>2</sup>	For cable diameters mm	Length mm	Design	Packs of	Model No.
0.5 - 35	12	160	Straight	1 pc(s).	<b>4054.650</b>
0.5 - 50	18	180	Angled	1 pc(s).	<b>4054.660</b>

## Electrician's scissors

For cutting copper, aluminium, Kevlar and plastic.

### Benefits:

- High cutting performance thanks to micro-serration in the cutting zone
- Ergonomically styled handles
- Two-component handle with anti-slip soft zone
- Adjustable screw joint

### Material:

- High-quality special tool steel

### Surface finish:

- Brushed

### Colour:

- Handle: Anthracite and Rittal pink

For cable diameters mm	Length mm	Packs of	Model No.
0.1 - 3.7	160	1 pc(s).	<b>4054.700</b>



# Pliers



## Combination pliers

Length mm	Packs of	Model No.
180	1 pc(s).	4054.800

With serrated gripping surface and integral ring spanner M8 to M10.

### Benefits:

- Ergonomically styled handles for fatigue-free, non-slip working
- Favourable transmission ratios for good holding and cutting performance
- Minimal force required

### Material:

- High-quality special tool steel

### Surface finish:

- Matt, plated

### Colour:

- Handle: Anthracite and Rittal pink



## Needle-nose pliers

Length mm	Packs of	Model No.
200	1 pc(s).	4054.850

With serrated gripping surface.

### Benefits:

- Ergonomically styled handles for fatigue-free, non-slip working

### Material:

- High-quality special tool steel

### Surface finish:

- Matt, plated

### Colour:

- Handle: Anthracite and Rittal pink



## Electronic needle-nose pliers

Length mm	Packs of	Model No.
120	1 pc(s).	4054.860

With smooth gripping surface.

### Benefits:

- Ergonomically styled handles for fatigue-free, non-slip working
- Even, smooth-running opening with opening spring

### Material:

- High-quality special tool steel

### Surface finish:

- Matt, plated

### Colour:

- Handle: Anthracite and Rittal pink

## Slip-joint pliers

For width across flats 10 - 36 mm.

### Benefits:

- Ergonomically styled handles for fatigue-free, non-slip working
- Smooth cheeks avoid the usual damage caused by wrenches and pipe wrenches on screws/nuts
- QuickSnap ratcheting for fast adjustment to the workpiece with no push-button
- Robust box-joint

### Material:

- High-quality special tool steel

### Surface finish:

- Matt, plated

### Colour:

- Handle: Anthracite and Rittal pink

Length mm	Packs of	Model No.
260	1 pc(s).	4054.900



# Hole punching tools

## Hydraulic punches



### Manual hydraulic punch

For punching round, square and rectangular cut-outs.

**Benefits:**

- Extend tool life with a built-in overpressure valve

**Punching capacity:**

- Round punch up to Ø 82 mm
- Square punch up to 68 x 68 mm
- Rectangular punch up to 46 x 86 mm
- Punching force 75 kN

**Material:**

- Aluminium

**Supply includes:**

- Manual hydraulic punch
- Hydraulic screw Ø 19 mm
- Hydraulic screw Ø 9,5 / 19 mm
- HSS pilot drill Ø 11 mm
- Spacer sleeve set (3-part)
- Plastic case

Design	Packs of	Model No.
Straight	1 pc(s).	<b>4055.000</b>
With 90° angled and 360° rotating cylinder head	1 pc(s).	<b>4055.010</b>
Flexible, with hydraulic hose and separate cylinder	1 pc(s).	<b>4055.020</b>

### Electric hydraulic punch

For punching round and square cut-outs.

**Benefits:**

- Extend tool life with a built-in overpressure valve
- High-performance drive motor with ergonomically styled handle
- Slide in the battery packs from two sides to balance the weight

**Punching capacity:**

- Round punch up to Ø 82 mm
- Square punch up to 68 x 68 mm
- Punching force 75 kN

**Material:**

- Aluminium

**Supply includes:**

- Electric hydraulic punch with 2 NiMH batteries, 18 V
- Charging device 18 - 28 V
- Hydraulic screw Ø 9,5 / 19 mm
- Hydraulic screw Ø 19 mm
- Spacer sleeve set (3-part)
- HSS pilot drill Ø 11 mm
- Plastic case

Packs of	Model No.
1 pc(s).	<b>4055.040</b>



# Hole punching tools

## Hydraulic punches

### Manual hydraulic punch set, M16 - M63

Manual hydraulic punch in a practical set with hole punches for sheet steel. Maximum machinable material thickness 2 or 3 mm.

#### Benefits:

- Extend tool life with a built-in overpressure valve

#### Supply includes:

- Manual hydraulic punch, straight
- 7 splitter hole punches, triple splitting
- Hydraulic screw Ø 19 mm
- Hydraulic screw Ø 9.5 / 19 mm
- HSS pilot drill Ø 10 mm
- Spacer sleeve set (3-part)
- Plastic case

For threads	Ø punch mm	Packs of	Model No.
M16	16.2	1 pc(s).	4055.070
M20	20.4		
M25	25.4		
M32	32.5		
M40	40.5		
M50	50.5		
M63	63.5		



### Manual hydraulic punch set, M16 - M40

Manual hydraulic punch in a practical set with hole punches for sheet steel. Maximum machinable material thickness 2 or 3 mm.

#### Design:

- With 90° angled and 360° rotating cylinder head

#### Benefits:

- Extend tool life with a built-in overpressure valve

#### Supply includes:

- Manual hydraulic punch
- 5 splitter hole punches, triple splitting
- Hydraulic screw Ø 19 mm
- Hydraulic screw Ø 9.5 / 19 mm
- HSS pilot drill Ø 10 mm
- Spacer sleeve set (3-part)
- Plastic case

For threads	Ø punch mm	Packs of	Model No.
M16	16.2	1 pc(s).	4055.080
M20	20.4		
M25	25.4		
M32	32.5		
M40	40.5		



### Manual hydraulic punch set, PG 9 - PG 48

Manual hydraulic punch in a practical set with hole punches for sheet steel. Maximum machinable material thickness 2 or 3 mm.

#### Design:

- With 90° angled and 360° rotating cylinder head

#### Benefits:

- Extend tool life with a built-in overpressure valve

#### Supply includes:

- Manual hydraulic punch
- 9 splitter hole punches, triple splitting
- Hydraulic screw Ø 19 mm
- Hydraulic screw Ø 9.5 / 19 mm
- HSS pilot drill Ø 10 mm
- Spacer sleeve set (3-part)
- Plastic case

For PG	Ø punch mm	Packs of	Model No.
9	15.2	1 pc(s).	4055.085
11	18.6		
13	20.4		
16	22.5		
21	28.3		
29	37		
36	47		
42	54		
48	60		



# Hole punching tools

## Hole punches



### Hole punch, round

#### for sheet steel

For punching round cut-outs. The hole punch is operated with a wrench or hydraulic punch.

#### Design:

- With 3 cutting points

#### Supply includes:

- Die
- Stamp
- Tension screw without ball bearing

#### Note:

- When operating with wrenches, tension screws with ball bearings should be used.



#### Accessories:

- Tension screws, see page 60
- Hydraulic tension screw, see page 60

For threads	For PG	Ø punch mm	Tension screw (Ø x L) mm	Tension screw with ball bearing Model No.	Hydraulic tension screw Ø mm	Hydraulic tension screw Model No.	Maximum machinable material thickness, sheet steel mm	Packs of	Model No.
M12	7	12.7	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.212</b>
-	9	15.2	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.215</b>
M16	-	16.2	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.216</b>
-	11	18.6	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.218</b>
M20	13	20.4	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.220</b>
-	16	22.5	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.222</b>
M25	-	25.4	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.225</b>
-	21	28.3	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.228</b>
-	-	30.5	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.230</b>
M32	-	32.5	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.232</b>
-	-	34.6	19 x 55	4055.633	19	4055.663	3	1 pc(s).	<b>4055.234</b>
-	29	37	19 x 55	4055.633	19	4055.663	3	1 pc(s).	<b>4055.237</b>
M40	-	40.5	19 x 55	4055.633	19	4055.663	3	1 pc(s).	<b>4055.240</b>
-	-	43.2	19 x 55	4055.633	19	4055.663	3	1 pc(s).	<b>4055.243</b>
-	36	47	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.247</b>
-	-	49.6	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.249</b>
M50	-	50.5	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.250</b>
-	42	54	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.254</b>
-	48	60	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.260</b>
-	-	61.5	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.261</b>
M63	-	63.5	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.263</b>

# Hole punching tools

## Hole punches

### Hole punch set, metric

#### for sheet steel

For punching round cut-outs. The hole punch is operated with a wrench or hydraulic punch.

#### Design:

- With 3 cutting points

#### Supply includes:

- 5 dies
- 5 stamps
- Plastic case

#### Note:

- When operating with wrenches, tension screws with ball bearings should be used.



#### Accessories:

- Tension screws, see page 60
- Hydraulic tension screw, see page 60

For threads	Ø punch mm	Tension screw with ball bearing Model No.	Hydraulic tension screw Model No.	Maximum machinable material thickness, sheet steel mm	Packs of	Model No.
M16	16.2	4055.631	4055.661	2	1 pc(s).	4055.480
M20	20.4	4055.631	4055.661	2		
M25	25.4	4055.631	4055.661	2		
M32	32.5	4055.631	4055.661	2		
M40	40.5	4055.633	4055.663	3		

### Hole punch set, PG

#### for sheet steel

For punching round cut-outs. The hole punch is operated with a wrench or hydraulic punch.

#### Design:

- With 3 cutting points

#### Supply includes:

- 5 dies
- 5 stamps
- 2 tension screws with ball bearing Ø 9.5 x 50 mm
- HSS pilot drill Ø 11 mm
- 1 tube of lubricant paste
- Plastic case

#### Note:

- When operating with wrenches, tension screws with ball bearings should be used.



#### Accessories:

- Hydraulic tension screw, see page 60

For PG	Ø punch mm	Hydraulic tension screw Model No.	Maximum machinable material thickness, sheet steel mm	Packs of	Model No.
9	15.2	4055.661	2	1 pc(s).	4055.481
11	18.6				
13	20.4				
16	22.5				
21	28.3				



# Hole punching tools

## Hole punches



### Splitter hole punch, round

#### for sheet steel, with triple splitting

For punching round cut-outs. The hole punch is operated with a wrench or hydraulic punch.

#### Design:

- With triple splitting

#### Supply includes:

- Die
- Stamp

#### Note:

- When operating with wrenches, tension screws with ball bearings should be used.



#### Accessories:

- Tension screws, see page 60
- Hydraulic tension screw, see page 60

For threads	For PG	Ø punch mm	Tension screw (Ø x L) mm	Tension screw with ball bearing Model No.	Hydraulic tension screw Ø mm	Hydraulic tension screw Model No.	Maximum machinable material thickness, sheet steel mm	Packs of	Model No.
M12	–	12.5	6 x 40	4055.630	6/19	4055.660	1.5	1 pc(s).	<b>4055.512</b>
–	9	15.2	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.515</b>
M16	–	16.2	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.516</b>
–	11	18.6	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.518</b>
M20	13	20.4	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.520</b>
–	16	22.5	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.522</b>
M25	–	25.4	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.525</b>
–	21	28.3	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.528</b>
–	–	30.5	9.5 x 50	4055.631	9.5/19	4055.661	2	1 pc(s).	<b>4055.530</b>
M32	–	32.5	19 x 55	4055.633	19	4055.663	3	1 pc(s).	<b>4055.532</b>
–	–	34.6	19 x 55	4055.633	19	4055.663	3	1 pc(s).	<b>4055.534</b>
–	29	37	19 x 55	4055.633	19	4055.663	3	1 pc(s).	<b>4055.537</b>
M40	–	40.5	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.540</b>
–	–	43.2	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.543</b>
–	36	47	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.547</b>
–	–	49.6	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.549</b>
M50	–	50.5	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.550</b>
–	42	54	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.554</b>
–	48	60	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.560</b>
–	–	61.5	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.561</b>
M63	–	63.5	19 x 75	4055.634	19	4055.663	3	1 pc(s).	<b>4055.563</b>

### Splitter hole punch set, M16 to M40

#### for sheet steel, with triple splitting

For punching round cut-outs. The hole punch is operated with a wrench or hydraulic punch.

#### Design:

- With triple splitting

#### Supply includes:

- 5 dies
- 5 stamps
- Plastic case

#### Note:

- When operating with wrenches, tension screws with ball bearings should be used.



#### Accessories:

- Tension screws, see page 60
- Hydraulic tension screw, see page 60

For threads	Ø punch mm	Tension screw with ball bearing Model No.	Hydraulic tension screw Model No.	Maximum machinable material thickness, sheet steel mm	Packs of	Model No.
M16	16.2	4055.631	4055.661	2	1 pc(s).	4055.580
M20	20.4	4055.631	4055.661	2		
M25	25.4	4055.631	4055.661	2		
M32	32.5	4055.633	4055.663	3		
M40	40.5	4055.634	4055.663	3		

### Splitter hole punch set, M12 to M40

#### for sheet steel, with triple splitting

For punching round cut-outs. The hole punch is operated with a wrench or hydraulic punch.

#### Design:

- With triple splitting

#### Supply includes:

- 6 dies
- 6 stamps
- Tension screw with ball bearing Ø 6 x 40 mm
- Tension screw with ball bearing Ø 9.5 x 50 mm
- Tension screw with ball bearing Ø 19 x 55 mm
- HSS pilot drill Ø 10 mm
- 1 can of lubricant paste
- Plastic case

#### Note:

- When operating with wrenches, tension screws with ball bearings should be used.



#### Accessories:

- Hydraulic tension screw, see page 60

For threads	Ø punch mm	Hydraulic tension screw Model No.	Maximum machinable material thickness, sheet steel mm	Packs of	Model No.
M12	12.5	4055.660	1.5	1 pc(s).	4055.581
M16	16.2	4055.661	2		
M20	20.4	4055.661	2		
M25	25.4	4055.661	2		
M32	32.5	4055.663	3		
M40	40.5	4055.663	3		



# Hole punching tools

## Hole punches



### Splitter hole punch set, PG 9 to PG 21

#### for sheet steel, with triple splitting

For punching round cut-outs. The hole punch is operated with a wrench or hydraulic punch.

#### Design:

- With triple splitting

#### Supply includes:

- 6 dies
- 6 stamps
- 2 tension screws with ball bearing Ø 9.5 x 50 mm
- HSS pilot drill Ø 10 mm
- 1 tube of lubricant paste
- Plastic case

#### Note:

- When operating with wrenches, tension screws with ball bearings should be used.



#### Accessories:

- Hydraulic tension screw, see page 60

For PG	Ø punch mm	Hydraulic tension screw Model No.	Maximum machinable material thickness, sheet steel mm	Packs of	Model No.
9 11 13 16 21	15.2 18.6 20.4 22.5 28.3 30.5	4055.661	2	1 pc(s).	<b>4055.582</b>

# Hole punching tools

## Hole punches

### Splitter hole punch, round

#### for stainless steel, round, with triple splitting

For punching round cut-outs. The hole punch is operated with a wrench or hydraulic punch.

#### Design:

- With triple splitting

#### Supply includes:

- Die
- Stamp

#### Note:

- When operating with wrenches, tension screws with ball bearings should be used.



#### Also required:

- Tension screws, see page 60
- Hydraulic tension screw, see page 60
- Hydraulic tension screw, see page 61



For threads	For PG	Ø punch mm	Tension screw (Ø x L) mm	Tension screw with ball bearing Model No.	Hydraulic tension screw Ø mm	Hydraulic tension screw Model No.	Maximum machinable material thickness, stainless steel mm	Packs of	Model No.
-	9	15.2	11.1 x 60	4055.632	11.1/19	4055.665	2	1 pc(s).	<b>4055.115</b>
M16	-	16.2	11.1 x 60	4055.632	11.1/19	4055.665	2	1 pc(s).	<b>4055.116</b>
-	11	18.6	11.1 x 60	4055.632	11.1/19	4055.665	2	1 pc(s).	<b>4055.118</b>
M20	13	20.4	11.1 x 60	4055.632	11.1/19	4055.665	2	1 pc(s).	<b>4055.120</b>
-	16	22.5	11.1 x 60	4055.632	11.1/19	4055.665	2	1 pc(s).	<b>4055.122</b>
M25	-	25.4	11.1 x 60	4055.632	11.1/19	4055.665	2	1 pc(s).	<b>4055.125</b>
-	21	28.3	19 x 55	4055.633	19	4055.663	2.5	1 pc(s).	<b>4055.128</b>
-	-	30.5	19 x 55	4055.633	19	4055.663	2.5	1 pc(s).	<b>4055.130</b>
M32	-	32.5	19 x 55	4055.633	19	4055.663	2.5	1 pc(s).	<b>4055.132</b>
-	-	34.6	19 x 55	4055.633	19	4055.663	2.5	1 pc(s).	<b>4055.134</b>
-	29	37	19 x 55	4055.633	19	4055.663	2.5	1 pc(s).	<b>4055.137</b>
M40	-	40.5	19 x 75	4055.634	19	4055.663	2.5	1 pc(s).	<b>4055.140</b>
-	-	43.2	19 x 75	4055.634	19	4055.663	2.5	1 pc(s).	<b>4055.143</b>
-	36	47	19 x 75	4055.634	19	4055.663	2.5	1 pc(s).	<b>4055.147</b>
-	-	49.6	19 x 75	4055.634	19	4055.663	2.5	1 pc(s).	<b>4055.149</b>
M50	-	50.5	19 x 75	4055.634	19	4055.663	2.5	1 pc(s).	<b>4055.150</b>
-	42	54	19 x 75	4055.634	19	4055.663	2.5	1 pc(s).	<b>4055.154</b>
-	48	60	19 x 75	4055.634	19	4055.663	2.5	1 pc(s).	<b>4055.160</b>
-	-	61.5	19 x 75	4055.634	19	4055.663	2.5	1 pc(s).	<b>4055.161</b>
M63	-	63.5	19 x 75	4055.634	19	4055.663	2.5	1 pc(s).	<b>4055.163</b>

# Hole punching tools

## Hole punches



### Splitter hole punch set, metric

#### for stainless steel, round, with triple splitting

For punching round cut-outs. The hole punch is operated with a wrench or hydraulic punch.

#### Design:

- With triple splitting

#### Supply includes:

- 5 dies
- 5 stamps
- Plastic case

#### Note:

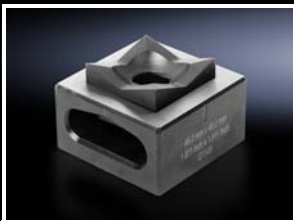
- When operating with wrenches, tension screws with ball bearings should be used.



#### Also required:

- Tension screws, see page 60
- Hydraulic tension screw, see page 60
- Hydraulic tension screw, see page 61

For threads	Ø punch mm	Tension screw with ball bearing Model No.	Hydraulic tension screw Model No.	Maximum machinable material thickness, stainless steel mm	Packs of	Model No.
M16	16.2	4055.632	4055.665	2	1 pc(s).	4055.180
M20	20.4	4055.632	4055.665	2		
M25	25.4	4055.632	4055.665	2		
M32	32.5	4055.633	4055.663	2.5		
M40	40.5	4055.634	4055.663	2.5		



### Hole punch, square

#### for sheet steel

For punching square cut-outs. The hole punch is operated with a hydraulic punch.

#### Benefits:

- With side ejector for the waste
- No jamming of the die

#### Supply includes:

- Die
- Stamp
- Tension bolts
- Lock nut
- Plastic case



#### Assembly

- For hole punch 4055.392, a special tension bolt and a spacer sleeve are additionally required.

□ punch mm	Maximum machinable material thickness, sheet steel mm	Product-specific scope of supply	Operation, manual	Operation, hydraulic	Packs of	Model No.
22.2 x 22.2	2	Pressure nut with ball bearing Adaptor for hydraulics	■	■	1 pc(s).	4055.322
45.5 x 45.5	3	-	-	■	1 pc(s).	4055.345
46 x 46	3	-	-	■	1 pc(s).	4055.346
50.8 x 50.8	3	-	-	■	1 pc(s).	4055.350
68 x 68	3	-	-	■	1 pc(s).	4055.368
92 x 92	3	-	-	■	1 pc(s).	4055.392



# Hole punching tools

## Hole punches

### Spacer sleeve

#### for hole punch, square

For punching cut-outs from size 92 x 92 mm.

To fit Model No.	Packs of	Model No.
4055.392	1 pc(s).	<b>4055.667</b>

**!** Also required:

- Special tension bolt, see page 57



### Special tension bolt

#### for hole punch, square

For punching cut-outs from size 92 x 92 mm.

To fit Model No.	Packs of	Model No.
4055.392	1 pc(s).	<b>4055.666</b>

**!** Also required:

- Spacer sleeve, see page 57



# Hole punching tools

## Hole punches



### Hole punch, rectangular

#### for sheet steel

For punching rectangular cut-outs. The hole punch is operated with a wrench or hydraulic punch.

#### Benefits:

- With side ejector for the waste
- No jamming of the die

#### Supply includes:

- Die
- Stamp
- Tension bolts
- Lock nut
- Plastic case

□ punch mm	Maximum machinable material thickness, sheet steel mm	Product-specific scope of supply	Operation, manual	Operation, hydraulic	Packs of	Model No.
22 x 30	2	Pressure nut with ball bearing Adaptor for hydraulics	■	■	1 pc(s).	<b>4055.400</b>
22 x 42	2	Pressure nut with ball bearing Adaptor for hydraulics	■	■	1 pc(s).	<b>4055.401</b>
45 x 92	2	-	-	■	1 pc(s).	<b>4055.402</b>
46 x 92	2	-	-	■	1 pc(s).	<b>4055.403</b>



### Hole punch, special contour

4055.440

#### for sheet steel

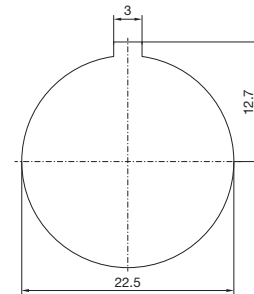
For punching cut-outs with a special contour. The hole punch is operated with a wrench or hydraulic punch.

#### Benefits:

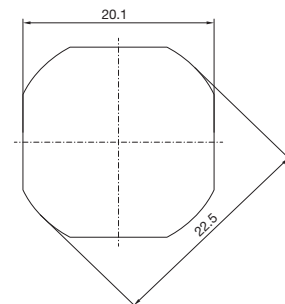
- With side ejector for the waste
- No jamming of the die

#### Supply includes:

- Die
- Stamp
- Tension bolts
- Lock nut
- Pressure nut with ball bearing
- Adaptor for hydraulics
- Plastic case



4055.441



Design	∅ punch mm	Maximum machinable material thickness, sheet steel mm	Packs of	Model No.
With 3 mm lug	22.5	2	1 pc(s).	<b>4055.440</b>
Flattened to 20.1 mm on 4 sides	22.5	2	1 pc(s).	<b>4055.441</b>

# Hole punching tools

## Hole punches

### Hole punch, heavy connectors

#### for sheet steel

For punching rectangular cut-outs for connectors.  
The hole punch is operated with a hydraulic punch.

#### Benefits:

- With side ejector for the waste
- No jamming of the die
- When the die and stamp are compressed, the mounting holes for connectors are marked on the metal sheet between them.

#### Supply includes:

- Die
- Stamp
- Tension bolts
- Lock nut

□ punch mm	No. of poles	Maximum machinable material thickness, sheet steel mm	Packs of	Model No.
36 x 52	6-pole	2	1 pc(s).	<b>4055.460</b>
36 x 65	10-pole	2	1 pc(s).	<b>4055.461</b>
36 x 86	16-pole	2	1 pc(s).	<b>4055.463</b>
36 x 112	24-pole	2	1 pc(s).	<b>4055.465</b>

### Hole punch, sub-D

#### for sheet steel and stainless steel

For punching rectangular cut-outs for connectors.  
The hole punch is operated with a wrench or hydraulic punch.

#### Benefits:

- With side ejector for the waste
- No jamming of the die
- Anti-twist axles for stamps and dies are used as tension bolts.

#### Supply includes:

- Die
- Stamp
- Tension bolts
- Lock nut
- Pressure nut with ball bearing
- Adaptor for hydraulics
- Plastic case

□ punch mm	No. of poles	Maximum machinable material thickness, sheet steel mm	Maximum machinable material thickness, stainless steel mm	Packs of	Model No.
19.8 x 11.3	9-pole	2	1.5	1 pc(s).	<b>4055.470</b>
28.2 x 11.3	15-pole	2	1.5	1 pc(s).	<b>4055.471</b>
41.9 x 11.3	25-pole	1.75	1.25	1 pc(s).	<b>4055.472</b>
58.4 x 11.3	37-pole	1.75	1.25	1 pc(s).	<b>4055.473</b>
55.7 x 13.9	50-pole	1.65	1	1 pc(s).	<b>4055.474</b>



# Hole punching tools

## Hole punches



### Tension screws

Accessories for hole punches. Required as a connecting part between the die and stamp.

**Note:**

- For operation with wrench

Tension screw (Ø x L) mm	Packs of	Model No.
9.5 x 40	1 pc(s).	<b>4055.600</b>
9.5 x 50	1 pc(s).	<b>4055.601</b>
19 x 55	1 pc(s).	<b>4055.602</b>
19 x 75	1 pc(s).	<b>4055.603</b>



### Tension screws

**with ball bearing**

Accessories for hole punches. Required as a connecting part between the die and stamp.

**Note:**

- For operation with wrench

Tension screw (Ø x L) mm	Packs of	Model No.
6 x 40	1 pc(s).	<b>4055.630</b>
9.5 x 50	1 pc(s).	<b>4055.631</b>
11.1 x 60	1 pc(s).	<b>4055.632</b>
19 x 55	1 pc(s).	<b>4055.633</b>
19 x 75	1 pc(s).	<b>4055.634</b>



### Hydraulic tension screw

Accessories for hole punches. Required as a connecting part between the die and stamp.

**Note:**

- For operation via hydraulic punch

Hydraulic tension screw Ø mm	Product-specific scope of supply	Packs of	Model No.
6/19	Adaptor for hydraulics	1 pc(s).	<b>4055.660</b>
9.5/19	Adaptor for hydraulics	1 pc(s).	<b>4055.661</b>
11.1/19	Adaptor for hydraulics	1 pc(s).	<b>4055.662</b>
19	–	1 pc(s).	<b>4055.663</b>



# Hole punching tools

## Hole punches

### Hydraulic tension screws for higher loads

Accessories for hole punches. Required as a connecting part between the die and stamp.

**Benefits:**

- Hydraulic tension screw made from high-alloy tool steel for higher loads

**Note:**

- For operation via hydraulic punch

Hydraulic tension screw Ø mm	Packs of	Model No.
9.5/19	1 pc(s).	<b>4055.664</b>
11.1/19	1 pc(s).	<b>4055.665</b>



### Notching pliers

Punches slots quickly and easily. Saves the time-consuming process of filing the grooves for anti-twist protection of push buttons, switches and instruments. Slots in sizes 3.2 mm and 4.8 mm can be created.

**Benefits:**

- Long service life
- Stamp and die made from hardened tool steel
- Easy punching with large leverage

**Material:**

- Handles: Plastic-coated

Maximum machinable material thickness, sheet steel mm	Packs of	Model No.
2	1 pc(s).	<b>4055.690</b>



# Consumables

## for Perforex



### Standard milling cutter

Ø mm	Packs of	Model No.
6	10 pc(s).	<b>4050.818</b>

Steel/stainless steel milling cutter for Perforex machining centres BC.

**Design:**

- Three-knife trimmer
- HSS Co8
- TiAlN coating

**Machinable material:**

- Sheet steel
- Stainless steel

**Standards:**

- DIN 844



### End mill

Ø mm	Packs of	Model No.
6	5 pc(s).	<b>4050.819</b>
4	5 pc(s).	<b>4050.820</b>

Aluminium/plastic milling cutter for Perforex machining centres BC.

**Design:**

- AIRline SH
- Two-knife trimmer, right-hand cutting

**Benefits:**

- High level of wear resistance
- High cutting edge stability

**Material:**

- LW630

**Machinable material:**

- Aluminium
- Plastic

**Standards:**

- DIN 6527 A/B



### Performance milling tool

Ø mm	Packs of	Model No.
6	5 pc(s).	<b>4050.891</b>

Spare milling cutter for Perforex machining centres BC.

**Design:**

- Four-knife trimmer
- HSS Co8
- TiAlN coating

**Benefits:**

- Faster feed rates of up to 1.5 m/min

**Machinable material:**

- Sheet steel
- Stainless steel

**Standards:**

- DIN 844

### Circular thread milling cutter

For threads	Packs of	Model No.
M16 - M64	1 pc(s).	<b>4050.887</b>

Milling cutter for cutting metric threads for Perforex machining centres BC.

**Technical specifications:**

- Ø 12 x SL20 x 85
- Pitch 1.5 x 60° ISO

**Machinable material:**

- Steel
- Stainless steel
- Cast aluminium
- Plastic
- Copper

**Standards:**

- DIN 13-1 metric ISO thread



### Steel and stainless steel milling cutter

Ø mm	Packs of	Model No.
4	5 pc(s).	<b>4050.885</b>
6	5 pc(s).	<b>4050.886</b>

Roughing cutter especially for machining steel and stainless steel in powder-coated metal version for Perforex machining centres BC.

**Design:**

- Four-knife trimmer
- HSS E-PM

**Material:**

- Powder metal edition (PM)

**Machinable material:**

- Steel
- Stainless steel



### Twist drill

Ø mm	Packs of	Model No.
2.6	10 pc(s).	<b>4050.801</b>
3.3	10 pc(s).	<b>4050.802</b>
4.2	10 pc(s).	<b>4050.803</b>
5	10 pc(s).	<b>4050.804</b>
6	10 pc(s).	<b>4050.805</b>
6.8	10 pc(s).	<b>4050.806</b>
8.5	10 pc(s).	<b>4050.807</b>
10.5	5 pc(s).	<b>4050.809</b>

Machine twist drill for Perforex machining centres BC.

**Design:**

- HSS
- TiN coating

**Machinable material:**

- Steel
- Stainless steel
- Aluminium
- Plastic
- Copper



# Consumables

## for Perforex



### Machine thread tap

Machine thread tapper for Perforex machining centres BC and laser centres LC.

**Design:**

- HSSE-V3
- Vaporised
- For through-hole thread
- Form B with spiral point
- High-performance steel with vanadium portion

**Machinable material:**

- Steel
- Stainless steel
- Aluminium
- Plastic

Thread	Packs of	Model No.
M3	3 pc(s).	<b>4050.811</b>
M4	3 pc(s).	<b>4050.812</b>
M5	3 pc(s).	<b>4050.813</b>
M6	3 pc(s).	<b>4050.814</b>
M8	3 pc(s).	<b>4050.815</b>
M10	3 pc(s).	<b>4050.816</b>



### Support pegs

Spare support pegs for Perforex machining centres BC.



To fit Model No.	For	Length mm	Design	Packs of	Model No.
4050.101	BC 1001 HS BC 1001 S BC 2001 L	33	Internal thread	10 pc(s).	<b>4050.849</b>
4050.101	BC 1001 HS	54	plug-type	10 pc(s).	<b>4050.847</b>
4050.107/ 4050.108	BC 1007 HS BC 1008 HS	57	Internal thread	10 pc(s).	<b>4050.843</b>
-	BC 1001 S BC 2001 L	66	plug-type	10 pc(s).	<b>4050.848</b>
4050.107/ 4050.108	BC 1007 HS BC 1008 HS	69	plug-type	10 pc(s).	<b>4050.846</b>
4050.845	BC 1007 HS BC 1008 HS BC 2007 HS BC 2014 HS	73	plug-type	10 pc(s).	<b>4050.844</b>
4050.107/ 4050.108/ 4050.207/ 4050.230	BC 1007 HS BC 1008 HS BC 2007 HS BC 2014 HS	73	adjustable	1 pc(s).	<b>4050.845</b>
4050.107/ 4050.108	BC 1007 HS BC 1008 HS	78	Internal thread	10 pc(s).	<b>4050.842</b>
4050.107/ 4050.108	BC 1007 HS BC 1008 HS	90	plug-type	10 pc(s).	<b>4050.841</b>



### Minimal quantity lubrication oil

Minimal quantity lubrication oil for tool lubrication in the Perforex machining centres BC and Perforex laser centres LC.

Oil type	Contents l	Packs of	Model No.
MK 150	3	1 pc(s).	<b>4050.861</b>



# Consumables

## for Perforex

### Special oil

Contents l	Packs of	Model No.
1	1 pc(s).	<b>4050.862</b>

Special oil for gear lubrication in Perforex machining centres BC.

**Standards:**

– DIN 51524-2 VG 32



### Lubricant

Oil type	Contents kg	Packs of	Model No.
KP2K-NLG12	5	1 pc(s).	<b>4050.863</b>

Lubricant for greasing the slideways in Perforex machining centres BC.

**Standards:**

– DIN 51818



### Filter bag

Packs of	Model No.
5 pc(s).	<b>4050.860</b>

Vacuum cleaner bags for swarf extraction while machining on Perforex BC machining centres.



### Primer/paint

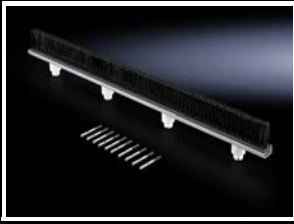
	Contents ml	Colour	Packs of	Model No.
Touch-up pen	12	RAL 9003 Signal white	1 pc(s).	<b>4050.090</b>
Paint pen	12	RAL 7016 Anthracite grey	1 pc(s).	<b>4050.091</b>
Touch-up pen	12	Rittal pink	1 pc(s).	<b>4050.092</b>

For touching up and repairing powder-coated and wet-painted surfaces, air-drying.



# Accessories

## for Perforex



### Performance package

For optimised workpiece machining on the Perforex machining centre BC.

**Benefits:**

- Reduced vibration
- Faster feed rates of up to 1.5 m/min
- Lower noise emissions
- Extended tool life
- Optimised handling with workpiece clamping

**Supply includes:**

- Brush strips
- Performance milling tool Ø 6 mm

To fit Model No.	No. of milling cutters	No. of brush strips	Packs of	Model No.
4050.101	10	12	1 pc(s).	<b>4050.041</b>
4050.107	10	22	1 pc(s).	<b>4050.042</b>
4050.108	10	24	1 pc(s).	<b>4050.044</b>
4050.230	10	51	1 pc(s).	<b>4050.045</b>



### Tool mounting aid

For replacing and calibrating tools such as drill bits, milling cutters and thread tappers in Perforex machining centres BC.

**Benefits:**

- Easy to use
- High level of measurement accuracy

**Supply includes:**

- Assembly aid including C-wrench

Packs of	Model No.
1 pc(s).	<b>4050.030</b>



### Webcam

For simple, fast support with remote maintenance of the Perforex machining centres BC and Perforex laser centres LC.

**Supply includes:**

- Power supply

Packs of	Model No.
1 pc(s).	<b>4050.072</b>



# Accessories

## for Perforex

### Deburring blade

Universal deburrer, for deburring holes and edges in the Perforex machining centre BC.

**Design:**

- Curved and rotating blade
- HSS B30

**Benefits:**

- Automatically assumes the optimum position
- Easy to use
- Effortless deburring
- Adjustable length

**Supply includes:**

- Handle and steel holder
- Including steel blade

Blade length mm	Blade dia. mm	Handle length mm	Handle dia. mm	Packs of	Model No.
47	3	110	25	1 pc(s).	<b>4050.720</b>



**Accessories:**

- Steel blade, see page 67



### Steel blade

Spare blade for deburrer. Rotating 360° blades for deburring.

**Design:**

- HSS B30

To fit Model No.	Packs of	Model No.
4050.720	10 pc(s).	<b>4050.721</b>



### Swivel stops

For multi-workpiece machining (multiple zero points) on Perforex machining centres BC.

Packs of	Model No.
2 pc(s).	<b>4050.066</b>



### Air-jet cone

Accessory nozzle for minimal quantity lubrication in Perforex machining centres BC.

**Material:**

- Aluminium

Packs of	Model No.
1 pc(s).	<b>4050.888</b>



# Accessories

## for Perforex



### Suction hose

Metal hose for extracting milling swarf in the Perforex machining centre BC.

**Benefits:**

- Particularly resistant
- Heat-resistant

**Material:**

- Aluminium

Length m	Packs of	Model No.
13	1 pc(s).	<b>4050.889</b>



### Collet, drills

Elastic clamping jaws to accommodate the drill bits for the Perforex machining centre BC.

**Design:**

- ER 25

To fit Ø mm	Packs of	Model No.
3 - 2	1 pc(s).	<b>4050.822</b>
4 - 3	1 pc(s).	<b>4050.823</b>
5 - 4	1 pc(s).	<b>4050.824</b>
6 - 5	1 pc(s).	<b>4050.825</b>
7 - 6	1 pc(s).	<b>4050.826</b>
8 - 7	1 pc(s).	<b>4050.827</b>
9 - 8	1 pc(s).	<b>4050.828</b>
10 - 9	1 pc(s).	<b>4050.829</b>
11 - 10	1 pc(s).	<b>4050.830</b>
12 - 11	1 pc(s).	<b>4050.831</b>
13 - 12	1 pc(s).	<b>4050.839</b>



### Collet, taps

The elastic clamping jaws accommodate the thread tappers for the Perforex machining centre BC.

**Design:**

- ER 25

For threads	Packs of	Model No.
M3	1 pc(s).	<b>4050.832</b>
M4	1 pc(s).	<b>4050.833</b>
M5	1 pc(s).	<b>4050.834</b>
M6	1 pc(s).	<b>4050.835</b>
M8	1 pc(s).	<b>4050.836</b>
M10	1 pc(s).	<b>4050.837</b>
M12	1 pc(s).	<b>4050.838</b>



### Tool holder

To accommodate milling cutters, drill bits and other tools for the machining of enclosures and enclosure panels on Perforex machining centres BC.

**Design:**

- SK30 ER25

**Standards:**

- DIN 69871

Packs of	Model No.
1 pc(s).	<b>4050.821</b>

# Accessories

## for Perforex

### Magnetic rod

Magnetic swarf wand with scraper ring to support and clean Perforex machining centres BC by removing magnetic swarf.

Packs of	Model No.
1 pc(s).	<b>4050.067</b>



### Circular thread milling tool set

For cutting metric threads of all sizes. Additional tool for Perforex machining centres BC.

**Machinable material:**

- Sheet steel
- Stainless steel
- Aluminium

**Supply includes:**

- Circular thread milling cutter
- Collet
- Tool holder

Ø mm	Packs of	Model No.
10	1 pc(s).	<b>4050.050</b>



### Aluminium/plastic milling tool set

Milling tool set for machining with Perforex machining centres BC.

**Machinable material:**

- Aluminium
- Plastic

**Supply includes:**

- Tool holder
- Collet
- End mill 6 mm

Packs of	Model No.
1 pc(s).	<b>4050.051</b>



### Milling cutter extension with collet

Extension for standard 6 mm milling cutters with FRX 16 mm clamping jaw.

To fit Model No.	Length mm	Packs of	Model No.
4050.101/ 4050.107/ 4050.108/ 4050.230	16	1 pc(s).	<b>4050.056</b>



# Accessories

## for Perforex



### Clamping frame

Enables parallel cube machining of enclosures on the Perforex machining centre BC.

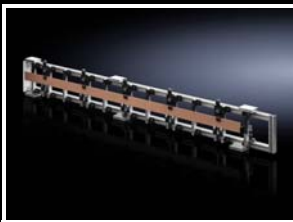
**Design:**

- Pneumatic clamping device

**Note:**

- Use of the clamping frame (Model No. 4050.080) in the machining centre BC (Model No. 4050.230) is only possible with the two-door variant.

To fit Model No.	Dimensions of clampable cubic parts min. (W x H x D) mm	Dimensions of clampable cubic parts max. (W x H x D) mm	Number of terminal boxes for parallel machining (max.)	Packs of	Model No.
4050.101	85 x 70 x 70	200 x 300 x 300	3	1 pc(s).	<b>4050.060</b>
4050.107/ 4050.108/ 4050.230	90 x 70 x 70	200 x 300 x 300	4	1 pc(s).	<b>4050.061</b>
4050.107/ 4050.108/ 4050.230	90 x 90 x 90	380 x 440 x 600	3	1 pc(s).	<b>4050.062</b>
4050.108/ 4050.230	80 x 100 x 80	510 x 510 x 600	3	1 pc(s).	<b>4050.080</b>
4050.108/ 4050.230	150 x 150 x 80	400 x 400 x 400	4	1 pc(s).	<b>4050.081</b>



### Busbar clamber

Busbar clamber for the Perforex machining centre BC, for simple machining of copper bars.



To fit Model No.	Machinable length with 5 mm thickness mm	Machinable length with 10 mm thickness mm	Machinable height (max.) mm	Simultaneous clamping of 3 copper bars	Packs of	Model No.
4050.107/ 4050.108	150 - 300	150 - 1000	30 - 120	■	1 pc(s).	<b>4050.063</b>
4050.101	100 - 2200	100 - 2200	10 - 100	–	1 pc(s).	<b>4050.064</b>
4050.107/ 4050.108	100 - 2200	100 - 2200	10 - 100	–	1 pc(s).	<b>4050.065</b>
4050.101	150 - 300	150 - 1000	30 - 120	■	1 pc(s).	<b>4050.082</b>



# Machine options

## for Perforex

### Enclosure machining

Machine equipped with door and pneumatic clamping device. The corresponding support surface enables the machining of cubes up to a maximum depth of 1400 mm. For additional machining of undismantable enclosures on Perforex machining centres BC.

**Design:**

- Machining surface with door
- Pneumatic clamping device
- Additional support surface
- Mechanical depth adjuster

**Benefits:**

- Depth-variable
- Use of the existing machine surface for the additional machining of cubes

**Note:**

- Not suitable for retrofitting

To fit Model No.	Dimensions of clampable cubic parts (W x H x D) mm	Maximum machinable area for cubic parts (W x H) mm	Packs of	Model No.
4050.101	1200 x 1400 x 1400	750 x 1400	1 pc(s).	<b>4050.010</b>

### Motorised depth adjuster

Upgrade your cube machining with an electrically powered depth adjuster for frequently changing enclosure sizes. For user-friendly operation of the Perforex machining centres BC.

**Design:**

- Motorised depth adjuster including membrane clamping system

**Benefits:**

- Motorised depth adjustment of the end stop with enclosure machining
- Ergonomic handling
- Efficient operation

**Note:**

- Not suitable for retrofitting

To fit Model No.	Length mm	Packs of	Model No.
4050.107	1600	1 pc(s).	<b>4050.020</b>

### Clamping height extension

Upgrade kit to extend the clamping height for Perforex machining centres BC.

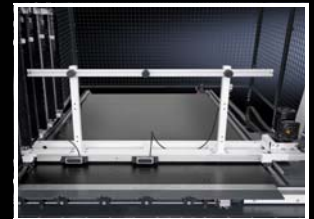
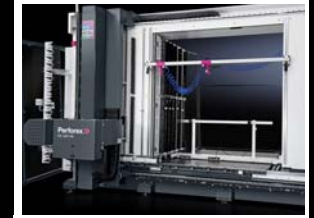
**Supply includes:**

- 3 clamping elements
- Assembly parts

**Note:**

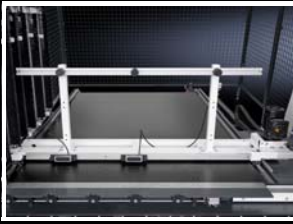
- May be retrofitted

To fit Model No.	Height mm	Packs of	Model No.
4050.108	1700	1 pc(s).	<b>4050.035</b>



# Machine options

## for Perforex



### Depth adjuster extension

Machine equipped with a support surface of 2000 mm instead of the standard 1600 mm support surface in Perforex machining centres BC.

**Design:**

- Motorised depth adjuster
- Membrane clamping system

**Note:**

- Not suitable for retrofitting

To fit Model No.	Length mm	Packs of	Model No.
4050.107	2000	1 pc(s).	<b>4050.022</b>



### Comfort clamping

Clamping system for user-friendly clamping of enclosure panels from a size of 1700 mm on the Perforex machining centre BC.

**Supply includes:**

- 3 clamping elements
- Assembly parts

**Note:**

- May be retrofitted

To fit Model No.	Clampable height for enclosure panels (max.) mm	Packs of	Model No.
4050.230	2200	1 pc(s).	<b>4050.235</b>



### Roof-mounting for Perforex laser centre LC

Roof-mounting of the machine housing for Perforex laser centres LC. Mandatory for all machine installation locations that can be viewed from above.

To fit Model No.	Machine dimensions (W x H x D) mm	Packs of	Model No.
4050.315/ 4050.330	3900 x 1100 x 5400	1 pc(s).	<b>4050.317</b>



### Thread tapping option

Thread tapping option for the Perforex laser centre LC.

**Design:**

- Movable tool magazine with 6 magazine slots
- Tool holder
- Additional drive unit

**Benefits:**

- Machining of projects with tapped holes supported
- Fast, automatic changeover from laser function to thread-tapping function by accommodating an additional machine head

**Machinable material:**

- Steel
- Stainless steel
- Aluminium

**Supply includes:**

- Thread tapper
- Including clamping units for M3 – M10

To fit Model No.	Machinable height (max.) mm	Material thickness (max.) mm	Packs of	Model No.
4050.315/ 4050.330	600	5	1 pc(s).	<b>4050.318</b>



# Accessories

## for assembly frame

### Assembly frame extension

To widen assembly frames 150 MN, 200 EN, 300 ENH to a maximum width of 1900 mm.

To fit Model No.	Product-specific scope of supply	Packs of	Model No.
4050.150/ 4050.200/ 4050.300	Assembly parts Assembly frame extension	1 pc(s).	<b>4050.210</b>



### Enclosure set

#### for assembly frame

For secure attachment of an enclosure such as AE to assembly frame 150 MN, 200 EN, 300 ENH.

To fit Model No.	Packs of	Model No.
4050.150/ 4050.200/ 4050.300	1 pc(s).	<b>4050.211</b>



### Wire routing

#### for assembly frame

For user-friendly handling of wires on assembly frame 150 MN, 200 EN, 300 ENH.

To fit Model No.	Packs of	Model No.
4050.150/ 4050.200/ 4050.300	1 pc(s).	<b>4050.212</b>



### Clamping unit

#### for assembly frame

For secure attachment of a mounting plate onto assembly frame 150 MN, 200 EN, 300 ENH.

To fit Model No.	For	Design	Product-specific scope of supply	Packs of	Model No.
4050.150/ 4050.200/ 4050.300	Mounting plate TS/SE	Top	1 clamping unit pack, top	1 pc(s).	<b>4050.213</b>
4050.150/ 4050.200/ 4050.300	Mounting plate TS/SE	Bottom	1 clamping unit pack, bottom	1 pc(s).	<b>4050.214</b>



# Accessories

## for assembly frame



### Wire reel holder

#### for assembly frame

For adapting wire reels or drums on assembly frame 150 MN, 200 EN, 300 ENH.

To fit Model No.	Packs of	Model No.
4050.150/ 4050.200/ 4050.300	1 pc(s).	<b>4050.216</b>



### Spare battery

#### for assembly frame

Battery to fit electrical tilt/height adjuster for assembly frame 200 EN, 300 ENH.

To fit Model No.	Packs of	Model No.
4050.200/ 4050.300	1 pc(s).	<b>4050.217</b>

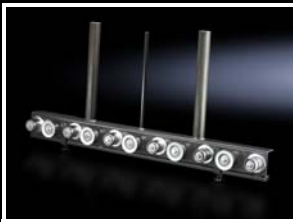


### Screw adaptor

#### for spindle hoist

For operating the assembly frame spindle drive using a cordless screwdriver. To fit assembly frame 150 MN.

To fit Model No.	Packs of	Model No.
4050.150	1 pc(s).	<b>4050.218</b>



### Roller conveyor

#### for assembly frame

For inserting the mounting plate sideways into the enclosure. To fit assembly frame 300 ENH.

To fit Model No.	Packs of	Model No.
4050.300	1 pc(s).	<b>4050.220</b>



### Set of brackets

#### for assembly frame

For secure attachment of a mounting plate onto assembly frame 150 MN, 200 EN, 300 ENH.

#### Supply includes:

- 4 cover caps
- 12 handles
- 2 holders
- 16 washers
- 12 sliding blocks

To fit Model No.	For	Packs of	Model No.
4050.150/ 4050.200/ 4050.300	Mounting plate AE	1 pc(s).	<b>4050.221</b>

# Accessories

## for assembly frame

### Voltage supply for assembly frame

Charging station power pack for assembly frame 200 EN and 300 ENH.

To fit Model No.	Suitable for rated operating voltage	Packs of	Model No.
4050.200/ 4050.300	110 V	1 pc(s).	<b>4050.219</b>



### Connection adaptor for voltage supply

Adaptor connector for the power supply to assembly frames 200 EN and 300 ENH.

To fit Model No.	Packs of	Model No.
4050.200/ 4050.300	1 pc(s).	<b>4050.222</b>

#### Design:

– USA, Canada, Central and South America, Japan



# Rittal – The System.

Faster – better – everywhere.

- Enclosures
- Power Distribution
- Climate Control
- IT Infrastructure
- Software & Services

You can find the contact details of all Rittal companies throughout the world here.



[www.rittal.com/contact](http://www.rittal.com/contact)

XWWW00058ENT711



FRIEDHELM LOH GROUP

