

Reliable Connections

Riveting | Joining | Roller Forming



Then & Today

Our history

- 1835:** M. Bräcker starts family business (textile components)
- 1968:** Bräcker launches radial riveting machine
- 1979:** Incorporation of Bräcker USA
- 1982:** Market introduction of PWS
- 1983:** Incorporation of BalTec Maschinenbau AG, MBO from Bräcker
- 1987:** Incorporation of BalTec UK (Ltd.)
- 1990:** Takeover by Mr Fritz Bösch (from 1997 on part of Feintool)
- 1998:** Market introduction of first Process Controller (STF-1)
- 2000:** Discontinued production of PWS
- 2002:** Incorporation of BalTec France
- 2010:** Market introduction of HPP-25, 4th generation of Process Control
- 2011:** Spin-off from Feintool to Swiss investor group
- 2013:** Incorporation of BalTec do Brasil
- 2014:** Incorporation of BalTec Machinery (Shanghai) Ltd., P.R. China
- 2016:** 40'000 machines delivered since 1968
- 2017:** Introducing BalTec ELECTRIC
- 2018:** Incorporation of BalTec Mexico
- 2021:** Incorporation of BalTec Itala S.r.l.
- 2023:** Introducing ELECTRIC EA30

1835

1968

1979

1982

1983

1987

1990

1998



We Are BalTec

Our core competence

The core competence of the BalTec Group, headquartered in Pfäffikon, Switzerland, is in designing and manufacturing machines for radial riveting, orbital riveting, roller forming or for joining technologies.

Our products are used wherever high-quality connections and joints are required in industries such as automotive, hardware industry, aerospace, and general industry. This also includes precision applications found in industries such as medical devices, watches and specialty instruments.

We offer a wide range of solutions and develop processes for joining applications with demand for high quality, thanks to our extensive experience with a variety of joining technologies.





Worldwide Presence

Direct operations & representatives

BalTec is represented worldwide with its own companies and plant locations – Switzerland, USA, Germany, France, United Kingdom, Brazil, China, Spain, Italy, and Mexico – and 40 distribution partners. Due to our diversified worldwide sales and support distribution network, we can offer local professional service to you.





Our worldwide competence and technology centers

To find the perfect solution for your particular application, we conduct feasibility studies on material, joining process, required force, forming tool design, and much more.

Together with you, we develop the best process regarding technical and economic requirements. Take advantage of this wealth of experience BalTec technicians and engineers gathered over several decades!

- Switzerland
- Germany
- USA
- UK
- France
- Brazil
- China
- Netherlands
- Sweden
- Italy
- Czech Republic
- Poland
- Japan
- Thailand
- India
- S. Korea

Application Examples

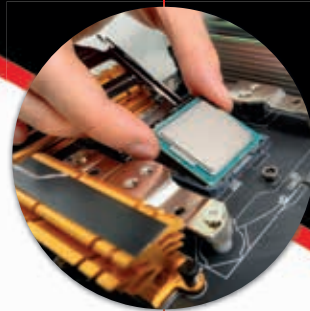
Automotive



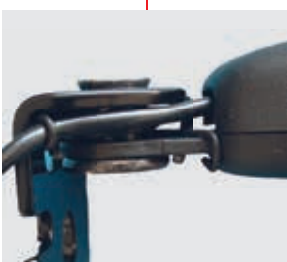
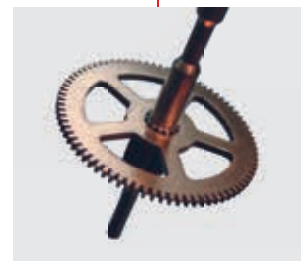
Hardware industry



Electrical & Electronics



Fine mechanics & Watches



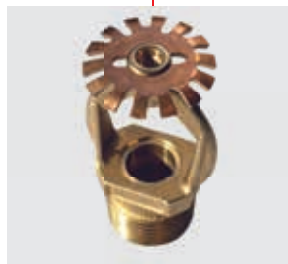
Simply Perfectly Joined

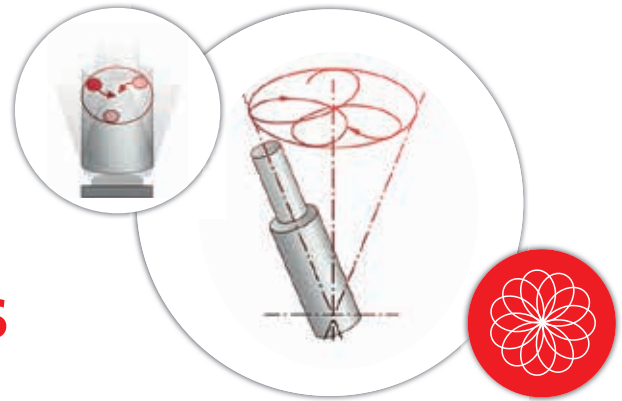
Medical device industry

Consumable goods & Leisure

Home & Gardening

General industry





Forming Processes

Radial, Orbital, Roller forming

Processes

The application determines the process. However, in most cases where high-quality joints are a requirement, the radial riveting technology is the appropriate procedure due to the low cycle time, the little force needed and the high-quality results obtained.

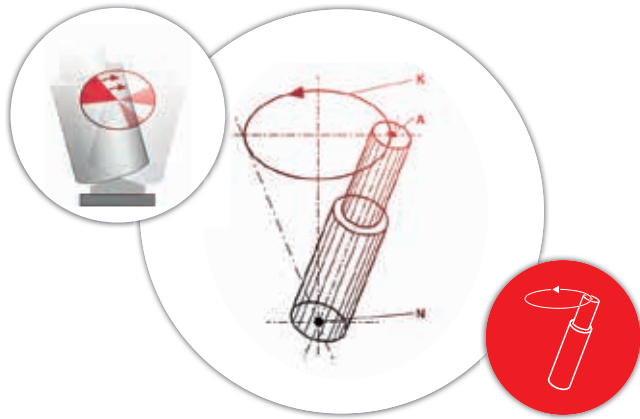
Selection criteria are:

- Material (solid or tubular)
- Material form (round or unshapely)
- Cycle points per workpiece (one point or several points per workpiece)
- Diameter (for tubular material)
- Material hardness
- Wall thickness
- Desired result of deformation (pure forming or marking)
- Further criteria

Radial

The forming tool describes a rosette path that results in a flowing and gentle deformation of material with the least possible force applied to the workpiece. The rivet gets deformed in three directions. Radially outwards, radially inwards, and overlapping also tangential.

- Excellent surface structure of the closing heads
- Forming tool does not rotate – minimal friction between the tool and the workpiece
- Low stress on the components. Allows the processing of products that contain e.g., Bakelite, ceramic or other brittle materials
- Simple workpiece holding thanks to minimal lateral forces. Clamping of the workpiece not usually required
- Long lifetime of machines and tools
- Optimal cost-effectiveness over the entire lifetime (TCO)



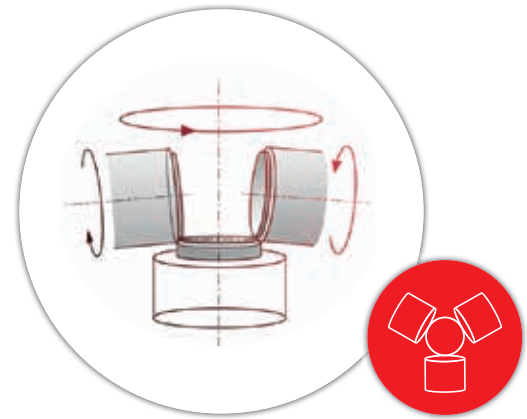
Orbital

The center axis of the riveting peen operates in a rotating path. The peen tip, which contacts the rivet, signifies the pivot point, whereby the peen follows a circular motion. This motion creates a pie-like contact area on the rivet. The deformation flows around the rivet head.

- Suitable for forming pieces with larger diameters and annular forms
- In some cases, the forming time may be shorter
- Requires good workpiece holding, which absorbs lateral forces

Tangential

Tangential is a form of orbital riveting. The forming tool follows a circular motion in both processes. The main advantage of tangential forming is that the tool either does not rotate at all or at least rotates less, resulting in minimal friction between the tool and the workpiece.



Roller forming

Process:

The forming is achieved by profile rollers mounted on a rotating spindle, which roll on the formable part.

- Allows forming of tight angles
- Minimal axial force – minimal compression of the workpiece
- Minimal deformation of the workpiece
- Specially suitable for large diameters or thin wall applications
- Roller forming head is manufactured specific to the application

Articulated roller forming

BalTec offers two types of roller forming: axial roller forming, in which the roller infeed runs along the same axis as the workpiece, and radially adjustable roller forming, in which the roller infeed runs at right angles to the workpiece axis. Forming is achieved using profile rollers, which roll as part of the roller forming head onto the workpiece to be formed. With radially adjustable roller burnishing, which is possible with the EA30 model, a profile can also be rolled or crimped.

Product Families

ELECTRIC, CLASSIC-HPP, CLASSIC



ELECTRIC



CLASSIC-HPP

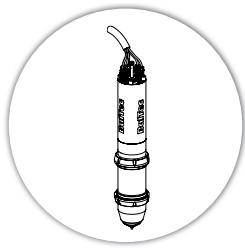


CLASSIC

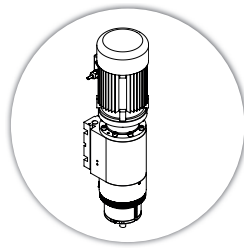
Process	Radial Orbital Roller forming	Radial Orbital Roller forming	Radial Orbital
Process monitoring	YES	YES	NO
Rivet-/form-starting detection	Integrated in the stroke movement, flexible and dynamically definable	Integrated in the stroke movement, dynamic	NO
Process control	Motion profiles can be totally customized. One process cycle can consist of an unlimited number of profile segments	6 control parameters 40 pre-installed programs	Time controlled
Control parameter	S = Stroke F = Force T = Time E = Position of spindle / stroke vl = Feed rate vr = Rotation speed B = Basic reference (with NHE) H = Rivet height (with NHE) Z = Stroke pre position	S = Stroke F = Force T = Time E = Position of spindle (stroke) B = Basic reference (with NHE-U) H = Rivet height (with NHE-H)	T = Time
Minimal content of delivery	Unit with control box and Software (Windows)	Unit with control box and integrated touch screen (HMI)	
CE conformity	Yes, as working station with light barrier or stroke door	Yes, as bench top working station with two-hand control	
Communication protocols	IP/Ethernet & UDP protocol OPC UA on request	IP/Ethernet & UDP protocol	NO

For Every Application The Perfect Machine

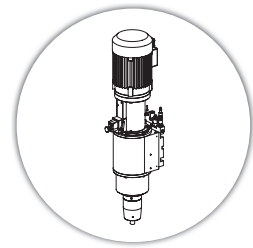
thanks to flexible and modular configurations



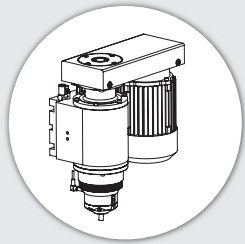
Ex U
ELECTRIC unit:
Power module inclusive
cables and threaded rings
for installation



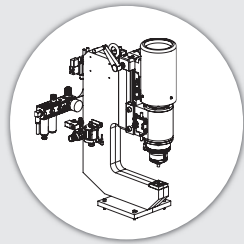
RNE
Radial riveting unit: ideal for
integration – in any desired
position – or as combination
with various machines



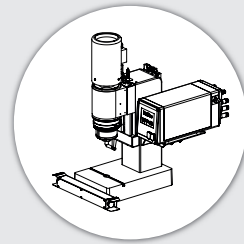
ENE
Orbital riveting unit: ideal for
integration – in any desired
position – or as combination
with various machines



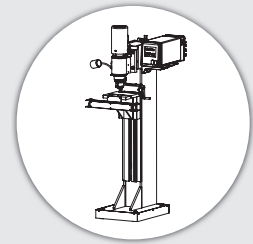
RNE lateral
Unit with lateral
mounted motor
to reduce height
of construction



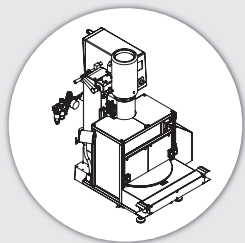
RNE M1
Unit with C frame and
height adjustment with
crank mechanism; ideal
for integration into
plants



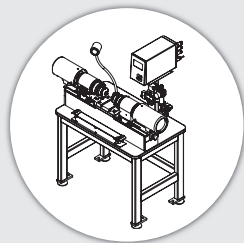
RN
Bench top riveting
machine: Unit with
column incl. crank
mechanism and
table



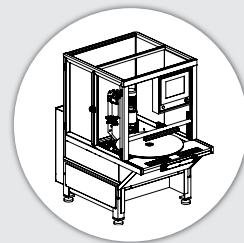
RNS
Pedestal riveting
machine: Riveting
machine with
adjustable working
table. Available with
safety enclosure



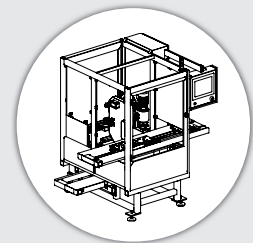
RNR
Working station:
Column and riser
plate, electrical rotary
indexing table with
6 or 4 stations,
safety enclosure



RND
Bench top model /
working station:
Two units assembled
on supporting table



RNC RT & TR
Work cells:
Coordinate riveting
machine with rotary
indexing table or for
belt transfer system



**Custom specific
work cells**
Complete systems
with workpiece
holders and control

Process Monitoring

Precision & Reliability

Whether in the automotive or electronics industry, the consumer goods industry, the hardware industry or medical technology – the control and monitoring of forming processes is the basis of every successful industrial production.

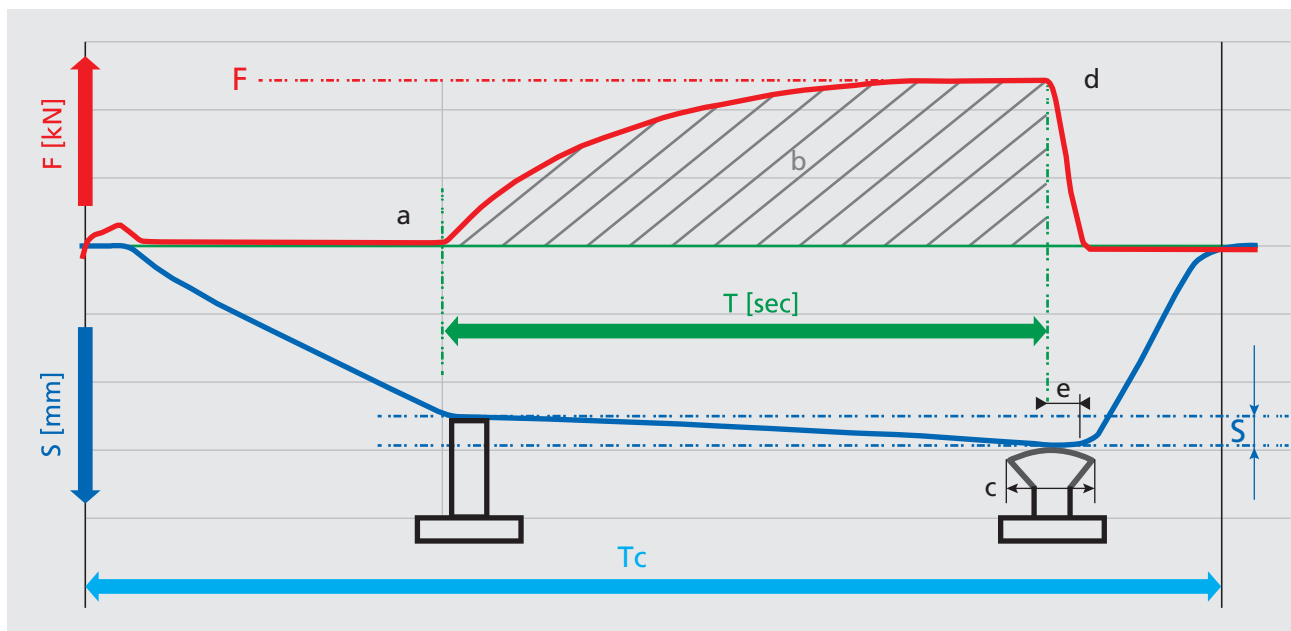
For over 20 years, BalTec has been offering the patented process control, which was especially developed for radial riveting and is now used in all joining processes of BalTec.

The basis of the process control is the monitoring of the force-stroke curves over the time track using state-of-the-art sensor technology.

Your benefit – the competitive advantage:

- Compliance and verification of predefined quality characteristics
- Proof of quality through complete documentation of the process
- Reduction of rejects and rework costs
- Reduced process times thanks to dynamic workpiece recognition (NA)
- Important for proof of process capability and product liability

Process diagram (STF = Stroke | Time | Force)



Legend

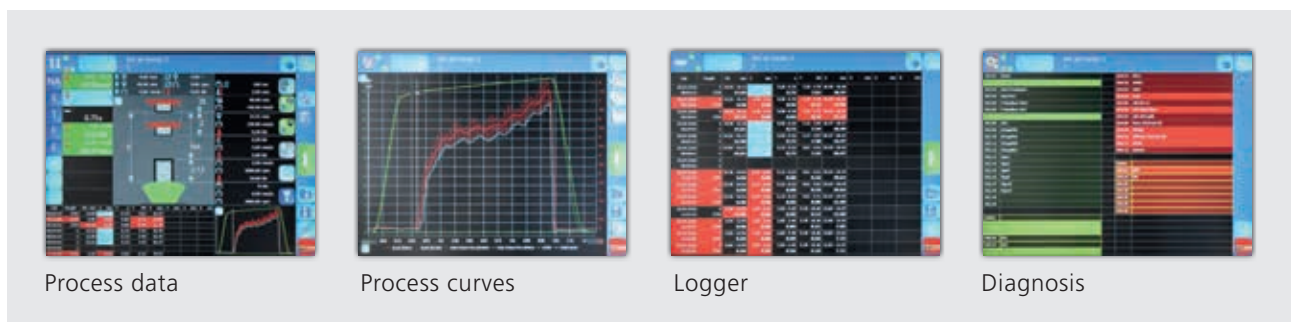
- | | | |
|-----------------|--|---------------------------|
| T: Forming time | a: Rivet contact point (NA) | d: End of forming process |
| Tc: Total cycle | b: Forming of workpiece | e: Response time lag |
| S: Stroke | c: Achieved dimensions within specifications | |
| F: Force | | |

Process Control HPPi (ELECTRIC)

The HPPi software was developed specifically for the ELECTRIC product line. This Windows-compliant software serves as an HMI (Human Machine Interface) portal for the safe, efficient, and productive use of the ELECTRIC machine. The package is EMC-secured and meets the highest safety standards in mechanical engineering.



Predefined motion profiles allow flexible programming and parameterization of application-specific profiles for forming and riveting processes to achieve high machine capabilities (CpM) with the world's most unique rivet start detection. The visualization and graphical presentation convince with a clear and organized structure and support process data management. With open communication channels to and from a higher-level control system, it meets the latest standards in the context of Industry 4.0.



Process data

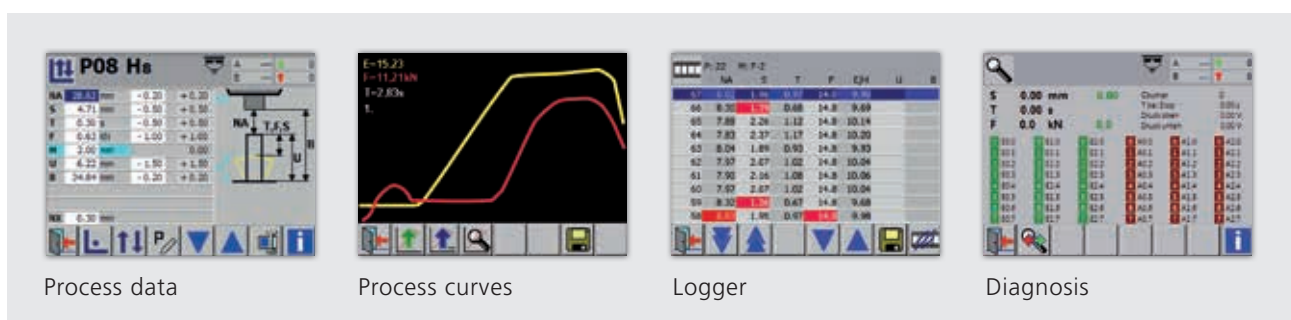
Process curves

Logger

Diagnosis

Process Control HPP-25 (CLASSIC-HPP)

The central and unique function of the Process Control HPP-25 is the patented and fastest detection of the workpiece. The beginning of the forming process is registered without loss of speed and without previous scanning. The HPP-25 can be used for all pneumatic and hydraulic machines equipped with position and force sensors. The simple operation with six different control sizes and more than 40 predefined modes allows a direct, fast, and flexible adaptation to new production needs. Visualization of process data and force/stroke process curves are included in the standard scope of delivery. Optionally, a PC tool (Windows) is available. Communication to and from a higher-level control system takes place via predefined digital I/O. An IP/Ethernet interface is available as a standard for the transmission of process data via UDP. As an alternative to the UDP protocol, an interface to Siemens PLC (S7-300 | S7-400 | S7-1200 | S7-1500) is optionally available.



Process data

Process curves

Logger

Diagnosis

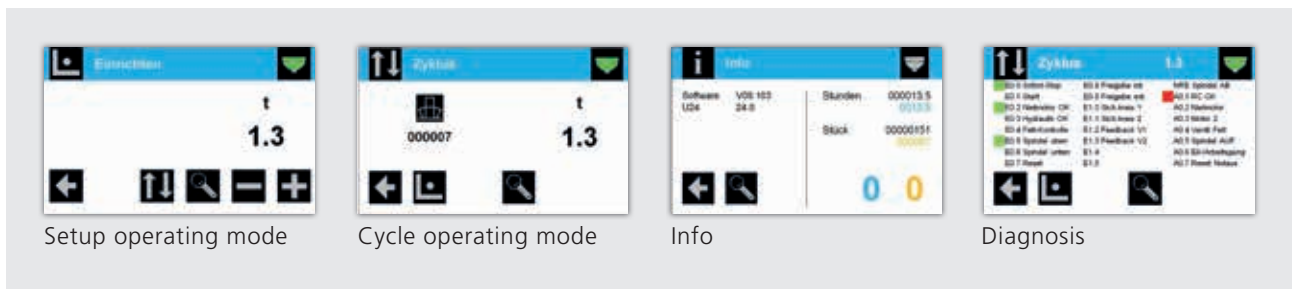
Control & Accessories

Time-Based Control RC-30 (CLASSIC)

The forming process is controlled by time setting. The control is modular and can be used with pneumatic and hydraulic riveting machines, rivet base detection devices, and sliding tables.



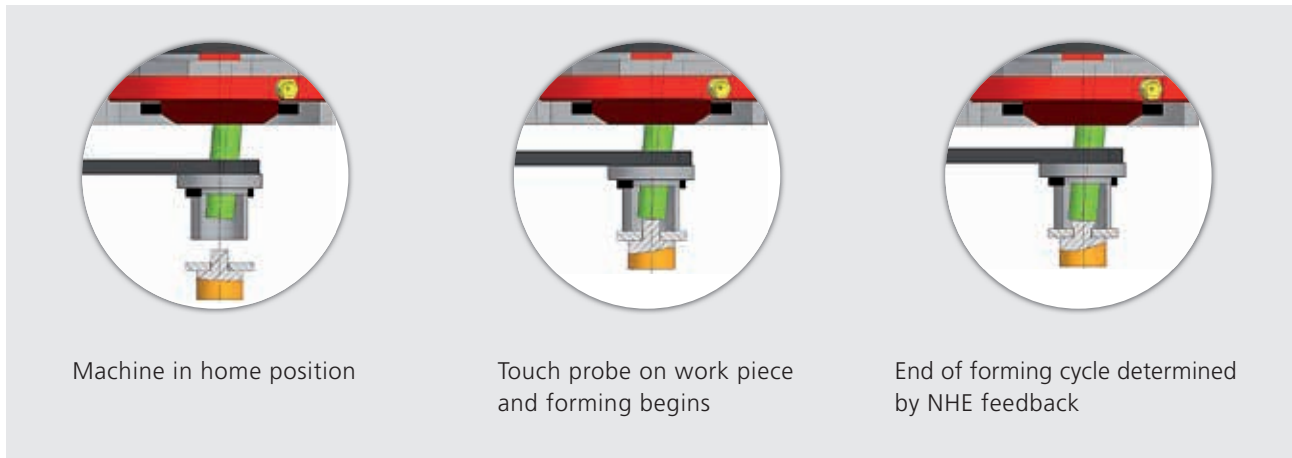
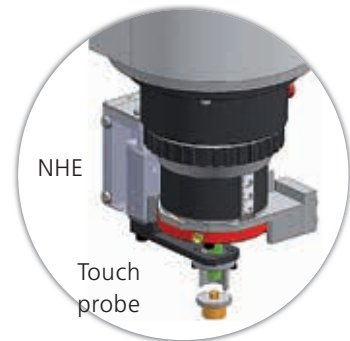
-  Setup operating mode
-  Cycle operating mode
-  Info
-  Setup
-  Diagnosis



Rivet base detection device NHE

Depending on the equipment, the NHE checks before riveting the presence of the components, the position, and the rivet protrusion. Processing components out of tolerance or missing components shall be prevented.

As a result, cost for most pre- or post-inspection stations of parts can be eliminated and saved, since the HPP-25 handles quality monitoring.



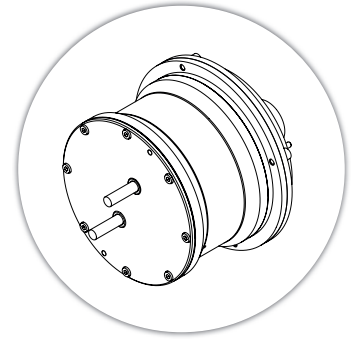
Multiple riveting head

The MRX multi-head riveting option can form multiple rivet points within a specific center-to-center dimensional range. The generated force by the machine is distributed proportionally between all riveting tools. Riveting at varying heights is possible based on specific applications. The lateral movement of the riveting tool is equal to the well-known rosette pattern of the BalTec radial riveting machines.

MRX: Minimum and maximum distances between rivet positions:

Type	min.	max. standard	max. special	Force/Pos.
1	8.0 mm	60 mm	70 mm	6.0 kN
2	15.5 mm	72 mm	85 mm	8.5 kN
3	15.5 mm	106 mm	120 mm	8.5 kN

Further details see technical data sheet.



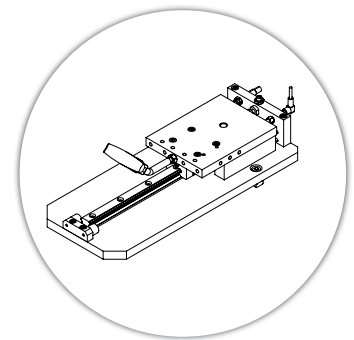
Roller forming head

The roller forming head is usually specified for each application through tests with customer parts. In this process, the geometry, size, number of forming rollers, axis position, and speed and drive machine are defined. A roller forming head can be designed with two to five forming rollers, depending on the application's requirements. Whether for simple or complex processes and for forming inwards or outwards. A downholder can be integrated to create a pre-tension before forming if required.



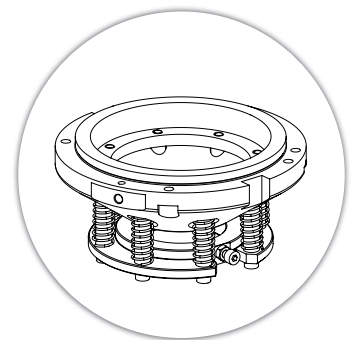
Sliding table

Thanks to a manual or pneumatic sliding table, workpieces can be placed outside of the riveting station, making work easier. As an option, both versions (manual and pneumatic) are also available with an initiator for monitoring the sliding table in the riveting position. An additional safety enclosure also allows automatic operation without two-hand operation.



Downholder

Used to place, compress or insert workpieces before riveting or forming. Available for every machine model. A large force range is possible, depending on the chosen spring pack. With spiral springs, a very compact but open design is possible. Disk springs offer very high forces, within a closed housing.





Our Services

Forming tools & Repair parts

- All BalTec forming tools and spare parts (pressure cup, form tool holder) are manufactured at the head office or in the BalTec USA branch to the same high standard
- Common parts such as bearing and seal kits, pneumatic control components, electric motors, and critical spindle components are available from stock
- BalTec forming tools are known for their long service lives
- Depending on the application, we also offer special tool coatings for longer service life or lower friction. Take advantage of our many years of experience





Repair / Service

- Repair of your machine in a BalTec technology center
- Repair of your machine in your production facility with minimal loss of production
- After repairing a machine in a technology center, the machine undergoes the same performance test as a new delivery
- After evaluation / before executing the repair, a binding offer will be issued
- Tele support or support via TeamViewer possible, depending on product
- Certificate of ability available on request



Training

- Individual training at your location or with us in one of our technology centers:
 - Basic knowledge of operation, setup, programming, definition of quality parameters
 - Recessed operation; NHE, Smooth Finish, auto compensation
 - Evaluation and interpretation of process data, process optimization
 - Setting up for new applications
 - Preventive maintenance and repair techniques and measures
- BalTec develops application-specific tool geometries inclusive marking tool

Models

ELECTRIC, CLASSIC-HPP, CLASSIC

Model	Process	Shank ¹ diameter mm	VS ⁹ mm/Sec.	VR ⁹ min ⁻¹	F ⁹ kN	S mm	G Unit ² kg
ER 03 / ET ⁰ 03	Radial	2.0	0.05-140	0-3000	3.0	0-100	28.0
ER 15 / ET ⁰ 15	Radial	10.0	0.05-140	0-3000	15.0	0-100	28.0
ER 30 / ET ⁰ 30	Radial	15.0	0.05-180	0-2000	30.0	0-200	120.0
ER 50 / ET ⁰ 50	Radial	20.0	0.05-120	0-2000	50.0	0-200	120.0
EO 03	Orbital	2.0	0.05-140	0-3000	3.0	0-100	28.0
EO 15	Orbital	10.0	0.05-140	0-3000	15.0	0-100	28.0
EO 30	Orbital	15.0	0.05-180	0-2000	30.0	0-200	120.0
EB 03	Roller forming	–	0.05-140	0-1000	3.0	0-100	28.0
EB 15	Roller forming	–	0.05-140	0-1000	15.0	0-100	28.0
EB 30	Roller forming	–	0.05-180	0-800	30.0	0-200	120.0

Model	Process	Shank ¹ diameter mm	HPP-25	RC-30	F kN	S mm	G Unit kg	G Machine ³ kg
RNE RN 081	Radial ^{0/5}	4.0	–	X	2.4	2-25	20.0	41.0
RNE RN 151	Radial ^{0/5}	2.0	X	X	1.5	5-30	30.0	80.0
RNE RN 181	Radial ^{0/5}	6.0	X	X	6.6	5-30	30.0	80.0
RNE RN 181R	Radial ^{0/5}	4.0	X	X	3.6	5-30	30.0	80.0
RNE RN 231	Radial ^{0/5}	8.5	X	X	12.0	5-40 ⁸	35.0	85.0
RNE RN 231R	Radial ^{0/5}	6.0	X	X	6.2	5-40	35.0	85.0
RNE RN 281	Radial ^{0/5}	12.0	X	X	17.0	5-40 ⁸	60.0	155.0
RNE RN 281R	Radial ^{0/5}	7.5	X	X	9.5	5-40	60.0	155.0
RNE RN 331	Radial ^{0/5}	16.0	X	X	33.0	5-50 ⁸	110.0	240.0
RNE RN 381	Radial ^{0/6}	20.0	X	X	40.0	5-50 ⁸	80.0	200.0
RNE 431	Radial ^{0/6}	24.0	X	X	60.0	5-50	80.0	–
RNE 481 RNS 481 ⁷	Radial ^{0/6}	30.0	X	X	100.0	5-90	180.0	1030.0
ENE EN 20	Orbital ⁵	13.0	X	X	20.0	5-40	110.0	220.0
ENE EN 20R	Orbital ⁵	7.5	X	X	9.5	5-40	110.0	220.0
ENE EN 35	Orbital ⁵	18.0	X	X	35.0	5-50	120.0	270.0
RLE RL 01 ⁴	Roller forming ⁵	–	X	–	1.5	5-30	30.0	–
RLE RL 06 ⁴	Roller forming ⁵	–	X	–	6.0	5-30	30.0	–
RLE RL 12 ⁴	Roller forming ⁵	–	X	–	12.0	5-40	35.0	–
RLE RL 20 ⁴	Roller forming ⁵	–	X	–	20.0	5-40	110.0	–
RLE RL 35 ⁴	Roller forming ⁵	–	X	–	35.0	5-50	120.0	–
RLE RL 40 ⁴	Roller forming ⁶	–	X	–	40.0	5-50	80.0	–

S = Stroke

F = Max. forming force

VR = Rotational speed

VS = Linear speed

G = Weight without forming tool

⁰ Tangential

¹ Steel 370 N/mm²

² Weight without adapter

³ Weight without control

⁴ Weight without roller forming head

⁵ Pneumatic

⁶ Hydraulic

⁷ Only available as RNS

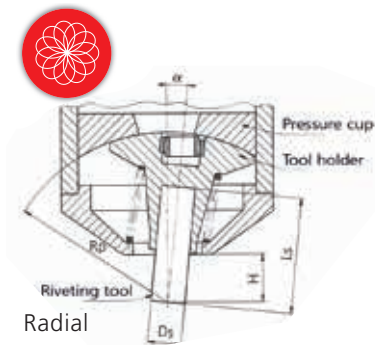
⁸ Longstroke available on request

⁹ Restrictions reserved

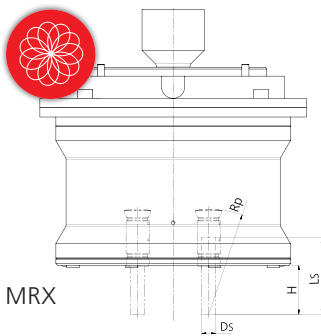
Machine sizes determined by specific application | Further versions (see page 11) on request
Subject to technical changes

Forming Tools

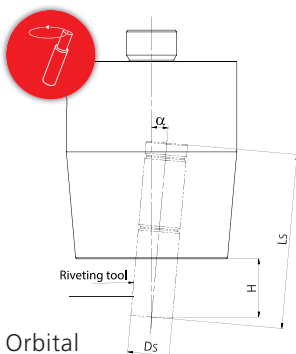
High quality spare parts and forming tools are made in-house – standard and customer specific applications



Radial



MRX

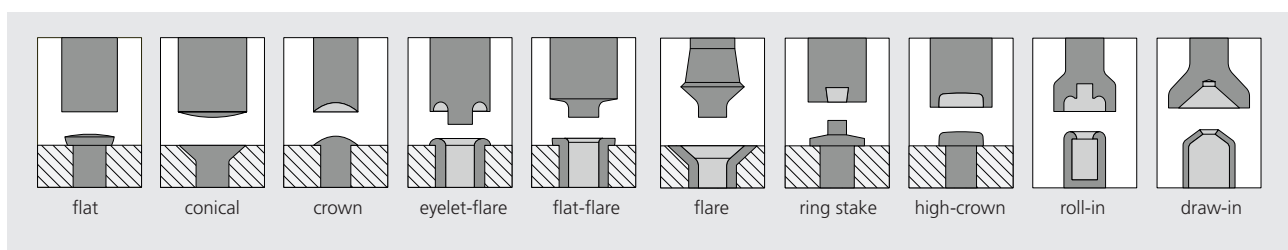


Orbital

Model	Process	Radius mm Rp	Tool length mm Ls	Free height mm H	Shank diameter mm Ds	Angle of inclination α	
RN/RNE 081, 151, 181/R, 231/R	Radial	65	39	18.0	10	6° 02'	
		80	54	33.0	10	4° 47'	
		100	74	53.0	10	3° 44'	
		120	94	73.0	10	3° 04'	
ER/ET 03,15		132	106	85.0	10	2° 46'	
RN/RNE 281/R, 331, 381, 431	Radial	100	68	28.0	20	5° 37'	
		116	84	44.0	20	4° 47'	
		132	100	60.0	20	4° 10'	
		148	116	76.0	20	3° 41'	
		170	138	98.0	20	3° 10'	
		191	159	119.0	20	2° 49'	
ER/ET 30, 50		240	208	168.0	20	2° 13'	
		RN/RNE 481	148	100	45.0	30	6° 15'
		196	148	93.0	30	4° 38'	
		240	192	137.0	30	3° 45'	
MRX 1	Radial	290	242	187.0	30	3° 04'	
		40	40	18.0	5	4° 17'	
		MRX 2, 3	59	43	27.5	8	5° 23'
		78	62	36.5	8	4° 11'	
		88	72	41.5	8	3° 65'	
		106	76	50.5	8	3° 03'	
		EN/ENE 20/R, 35	–	84	28.0	20	5°
		EO 30	–	116	60.0	20	3°
EO 03, 15	Orbital	–	54	28.0	10	5°	
		–	54	28.0	10	3°	

For further forming tool lengths (Ls) / angle (a) please contact us | The tool length (Ls) and the radius of the holder (Rp) result from your desired free height (H) | Roller forming tools are produced customer specific | Subject to technical changes

10 typical tool profiles



Who we are

With its headquarter in Pfäffikon (Zurich), Switzerland, the core competence of BalTec group is in manufacturing machinery for joining technology, focusing on the radial riveting process, orbital riveting, roller forming, and joining. As early as 1968, BalTec (still known as Bräcker) had already produced radial riveting technology, a process well-known in various industries. Today we are the global leader in riveting and cold-forming technology. BalTec has direct operations in 7 countries with approximately 70 direct employees, and over 40 sales partners represent BalTec around the globe.

What we offer

We firmly believe that the high level of quality and customer satisfaction provided by BalTec can only be achieved by a strong local presence. Our technology and service centers provide worldwide support to machine builders and process development and testing for end users while defining the most suitable process. BalTec employees or our trained representatives close to your location provide this competent and personal support.

Where do we aim to go

Our position as technology leader defines our focus for the future. We continuously strive to improve this position and our offerings to provide optimal and sustainable solutions to our customers in conjunction with joining technologies. We have created a new benchmark in process monitoring with process control and process data management systems with integrated and intuitive machine control. A capability that allows the customer to achieve a clear cost advantage.

We are BalTec

Our strongest asset? Beyond any doubt, it is our committed and motivated employees, of which many have gained a wealth of experience over many years. Together, we pursue a single goal with absolute dedication: customer satisfaction. Please arrange an appointment and take advantage of our experience.

Headquarters:

BalTec AG
8330 Pfäffikon (ZH), Switzerland
Tel. +41 44 953 13 33
baltec@baltec.com
www.baltec.com

The BalTec group:**Switzerland / Germany**

BalTec AG

United Kingdom

BalTec (UK) Ltd.
Reading, Berkshire, England

France

BalTec France
Rambouillet, France

USA / Canada / Mexico

BalTec Corporation
Canonsburg, PA, USA

Brazil

BalTec do Brasil
Jundiaí, Brazil

China

BalTec Machinery (Shanghai) Ltd.
Shanghai, P.R. China

Italy

BalTec Italia S.r.l.
Schio (VI), Italy

**SWISS MADE**