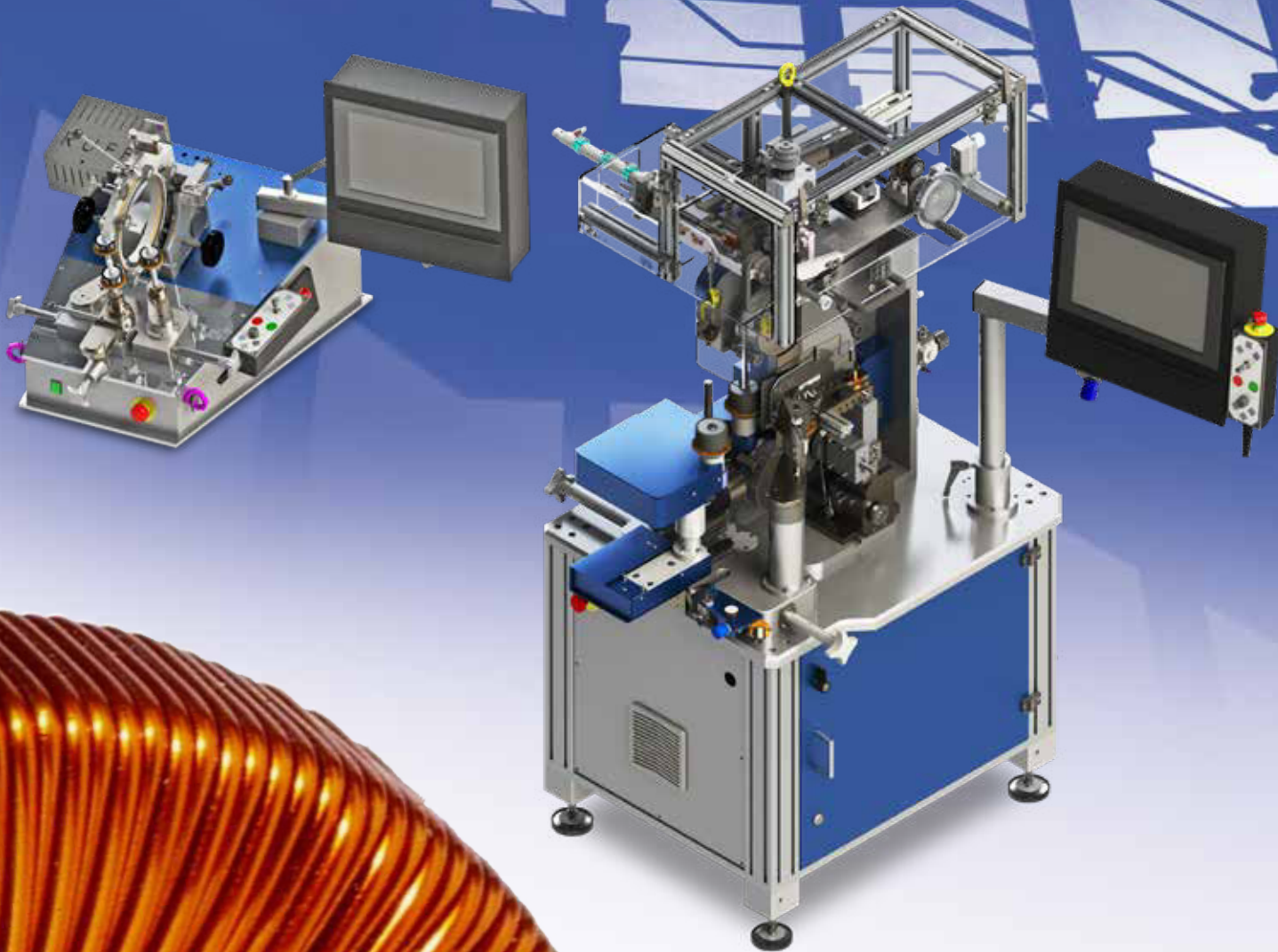












































Toroidal winding machines



RUFF
The RUFF Group
since 1948

| | | | | | | |
|--|--|--|---|--|---|--|
| <p>kleine Spulen mit Feindraht small coils with fine wire</p> <p>bare core size mm turns x Ø wire size mm wound coil size mm machine base roller table winding head + magazine</p> |  <p>6,7 x 6,7 x 4,8 37 x 0,20 7,3 x 1,9 x 5,3 MINI RW 111-MINI (F.B.) RW 60-MINI + 1,6</p> |  <p>7 x 3,2 x 3 150 x 0,08 bifilar 7,4 x 2,3 x 3,6 MINI RW 111-MINI (R.B.) RW 60-MINI + 1,6</p> |  <p>6,2 x 4,4 x 5,3 150 x 0,08 trifilar 7,4 x 2,3 x 3,6 MINI RW 111-MINI (R.B.) RW 45-MINI + 1,8</p> |  <p>6,6 x 3 x 2,9 1 layer x 0,112 bifilar 7,2 x 2,5 x 3,5 MINI RW 111-MINI (R.B.) RW 75-MINI + 1,8</p> |  <p>8 x 3,75 x 3,7 30 x 0,35 9,1 x 2,7 x 4,5 MINI RW 111-MINI (F.B.) RW 75-MINI + 2,0</p> |  <p>10,5 x 4 x 4,8 200 x 0,125 bifilar 11,2 x 3,1 x 5,5 MINI RW 111-MINI (R.B.) RW 75-MINI + 2,0</p> |
| <p>kleine Spulen mit Feindraht small coils with fine wire</p> <p>bare core size mm turns x Ø wire size mm wound coil size mm machine base roller table winding head + magazine</p> |  <p>9,5 x 4,8 x 3,2 61 x 0,18 x 37 x 0,3 1 0,8 x 2,9 x 4,6 MINI RW 111-MINI (F.B.) RW 100-MINI + 2,0</p> |  <p>13,5 x 7,8 x 2,8 580 x 0,1 14,5 x 5,5 x 4 MINI RW 111-MINI (S.S.) RW 100-MINI + 4,5</p> |  <p>16 x 4 x 8 1 layer x 0,1 16,5 x 2,9 x 9 RWE RW 111 (I.S.) RW 10 + 2,0</p> |  <p>16 x 8,5 x 6 800 x 0,3 18 x 5 x 8,9 RWE RW 111 (F.B.) RW 100-C + 2,5</p> |  <p>12 x 6 x 4,5 30 x 0,4 13 x 4,3 x 5,5 RWE RW 111 (F.B.) RW 100-C + 2,0</p> |  <p>15,5 x 9 x 5,5 17 x 0,5 bifilar 16 x 7 x 7 RWE RW 111-V RW 100 + 3,0</p> |
| <p>kleine Drossel und Filter mit dickem Draht small chokes and filters with heavy wire</p> <p>bare core size mm turns x Ø wire size mm wound coil size mm machine base roller table winding head + magazine</p> |  <p>13 x 7,7 x 8,5 23 x 0,8 16,8 x 4,2 x 10,5 RWE RW 111-V RW 100 + 3,0</p> |  <p>24 x 13 x 7 20 x 1,6 28,5 x 8,5 x 11,5 RWE RW 112 RW 200-V + 4,7</p> |  <p>20,5 x 12,5 x 6,5 35 x 1,15 24 x 6 x 11,5 RWE RW 112 RW 200-V + 4,2</p> |  <p>38,5 x 19,8 x 8,2 2 layer x 0,8 40,5 x 17 x 11 RWE RW 222-L RW 1 + 1/11</p> |  <p>40 x 24 x 15 11 x 1,32 trifilar 44 x 20 x 18 RWE RW 222-L RW 2 + 2/13</p> |  <p>33 x 17,5 x 11,5 100 x 1,0 39 x 9 x 18 RWE RW 112 RW 200-V + 6,3</p> |
| <p>kleine Drossel und Filter mit dickem Draht small chokes and filters with heavy wire</p> <p>bare core size mm turns x Ø wire size mm wound coil size mm machine base roller table winding head + magazine</p> |  <p>47 x 24 x 18,4 130 x 1,2 bank wound 55 x 9 x 28 RWE RW 222-VSO RW 300-V + 8,2</p> |  <p>38,2 x 25 x 16,4 3 sectors each 11 x 1,8 47 x 17 x 21 RWE RW 112 RW 200-VS + 7,4</p> |  <p>4 x 2,0 x 1,6 36 x 0,1 bifilar MINI RW 35 RW 111</p> |  <p>47 x 24 x 18,4 95 x 1,8 58 x 10 x 29 RWE RW 222-VSO RW 300-V + 8,2</p> |  <p>53 x 28 x 18 each sec. with 3 layers with bank wound x1,8 60 x 16 x 27 RWE RW 222-VSO RW 300-V + 9</p> |  <p>51 x 30 x 23,5 32 x 2,5 58 x 24 x 30,5 RWE RW 332-SO RW 3-V + 3/25</p> |
| <p>stromkompensierte Drossel balancing chokes</p> <p>bare core size mm turns x Ø wire size mm wound coil size mm machine base roller table winding head + magazine</p> |  <p>15,5 x 8 x 6 each sector 20 x 0,3 16,1 x 7,2 x 6,5 RWE RW 111-V (F.B.) RW 100-C + 2,5</p> |  <p>13,5 x 6 x 5,5 each sector 12 x 0,5 15 x 5 x 7 RWE RW 111-V (F.B.) RW 100-C + 2,5</p> |  <p>19 x 9 x 10 each sector 20 x 0,4 20 x 8 x 12 RWE RW 111-V RW 100-C + 4,0</p> |  <p>25 x 14 x 8 each sector 20 x 0,8 28 x 10 x 11 RWE RW 112 RW 200-V + 4,7</p> |  <p>26 x 14 x 10 each sector 9 x 1,4 30 x 10,5 x 14 RWE RW 112 RW 200-V + 5,1</p> |  <p>34,5 x 15 x 15 each sector 68 x 0,9 39 x 8,5 x 21 RWE RW 112 RW 200 + 5,0</p> |
| <p>kleine Sonderspulen small coils special</p> <p>bare core size mm turns x Ø wire size mm wound coil size mm machine base roller table winding head + magazine</p> |  <p>13 x 7,5 x 5 7 x 0,355 litz wire 15,3 x 6 x 6,6 RWE RW 111-V RW 100 + 3,0</p> |  <p>22,6 x 6,5 x 12 55 x 0,16 RWE RW 111-V (R.B.) RW 100-C + 2,0</p> |  <p>16,5 x 7 x 21,5 1 sector x 0,25 RWE RW 111-V (F.B.) RW 100-C + 2,5</p> |  <p>17 x 7 x 18,5 each sector 19 x 0,3 18 x 6 x 19,5 RWE RW 111-V (F.B.) RW 100-C + 2,5</p> |  <p>18 x 16 x 2,8 1 layer x 0,25 precision wound 18,8 x 14,6 x 3,5 RWE RW 222-L RW 0 + 10,0</p> |  <p>22 x 15,8 x 4 each sec. 1 layer prec. wound x 0,125 22,5 x 14,9 x 4,4 RWE Segment holder RW 0 + 10,0</p> |
| <p>Netztrafos power transformers</p> <p>bare core size mm turns x Ø wire size mm wound coil size mm machine base roller table winding head + magazine</p> |  <p>175 x 55 x 15,5 primary 3 layers x 0,9 180 x 48 x 21 RWE RW 222-VSO RW 30 + 30/1 6</p> |  <p>120 x 65 x 68 secondary 3 layers x 1,32 126 x 55 x 74 RWE RW 332 RW 4 + 4/50</p> |  <p>47 x 30 x 50 primary progressive/ wound x 0,335 50 x 24,5 x 55 RWE RW 222-VL RW 25+14</p> |  <p>81 x 44 x 26 primary 1500 x 0,315 83 x 40 x 30 RWE RW 222-VL RW 25+14</p> |  <p>84 x 39 x 31 secondary 90 x 1,32 87 x 36 x 33 RWE RW 222-VL RW 300 + 10/K</p> |  <p>sample of power transformer View or primary winding interlayer taping with copper foil and secondary winding</p> |

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| | | | |
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Alle anderen Länder werden direkt von RUFF betreut.
All other countries will be served directly by RUFF.

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THE RUFF GROUP

Introduction to our company

Something very clever can emerge from small and innovative companies as various enterprises have proved. RUFF is also an example of such a company. Founded more than 70 years ago in a small barn building near

Munich, we have specialized in the production of high quality coil winding machines and have established ourselves as one of the world leaders in this field. We have sold over 15000 machines in more than 100 countries. These are

highly valued by our customers which recognize these machines as being of high quality, durable and the standard in the coil winding industry. RUFF has become a synonym for hi-tech coil winding equipment.

1. Our market position and modern manufacturing facilities

- advanced technical know how and decades of coil winding experience
- in house production of all mechanical parts in a 6000 m² manufacturing plant equipped with modern CNC production machines

2. Our intelligent concepts

- use of existing established stock room components, such as sophisticated PLC's, drive systems and self developed software programmes
- same-component-policy with standard components across the whole range of all RUFF coil winding machines
- modular design system, which allows for retrofitting on current and future machines
- compact sturdy design and construction

3. Our customer and market support system

- worldwide sales, service and support staff
- worldwide spare part service within 48 hours
- worldwide sales representation in more than 50 countries

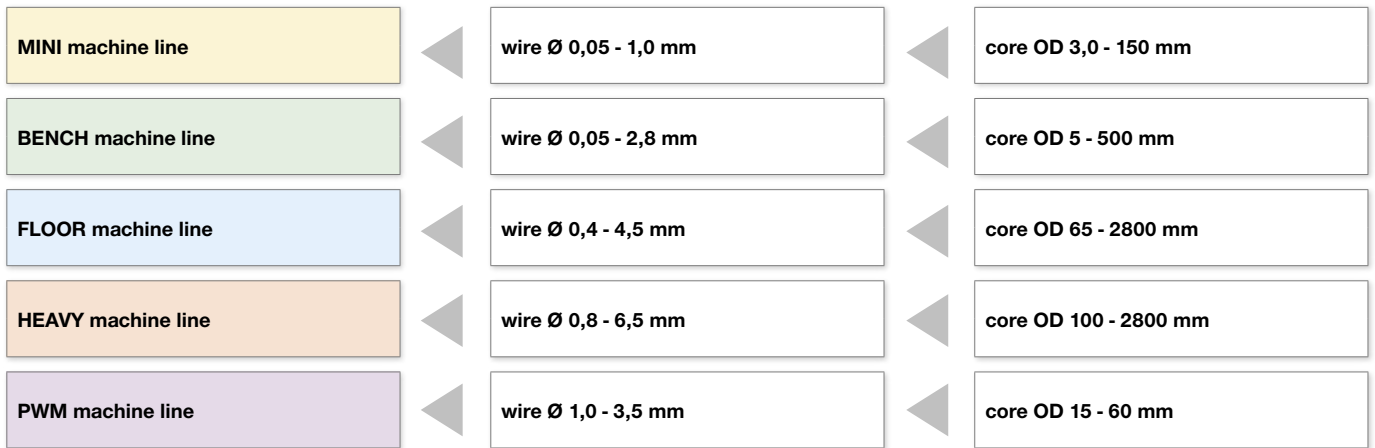
Again, these and other reasons allow us to be at the front with innovative developments and enable us to provide our customers with the most pioneering and future-orientated technology. Convince yourself!



How to find your ideal machine

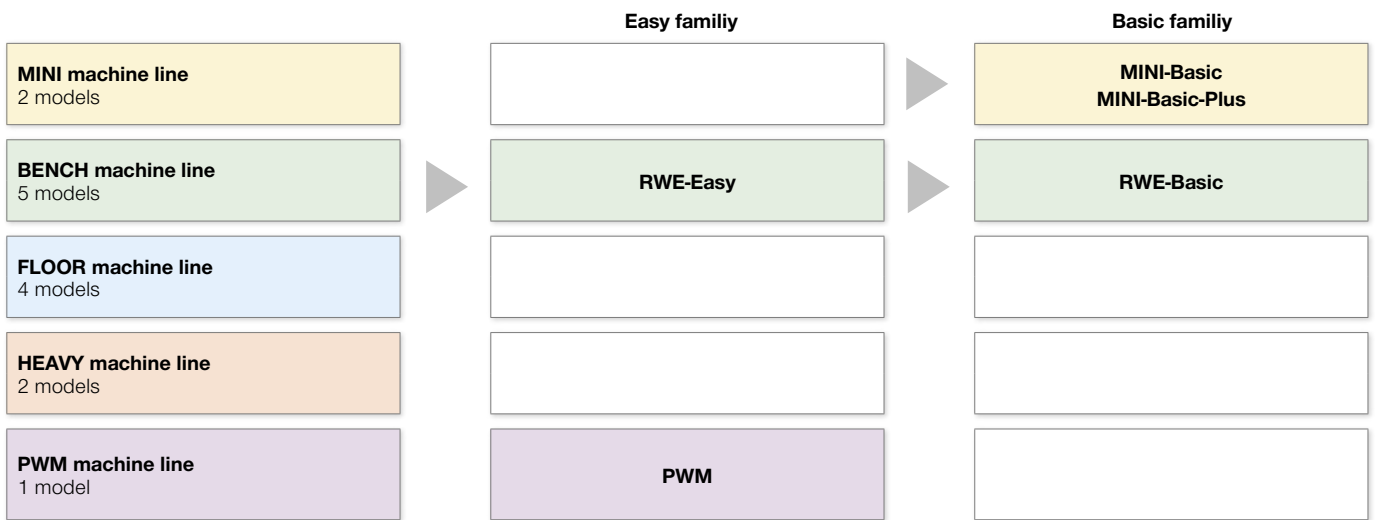
Step 1

Select the suitable machine line: RUFF offers four different machine lines and each machine line is extremely flexible with its own head and table changing system. Following graphic enables you to select the suitable machine line for your application. Please check wire range and core OD range.

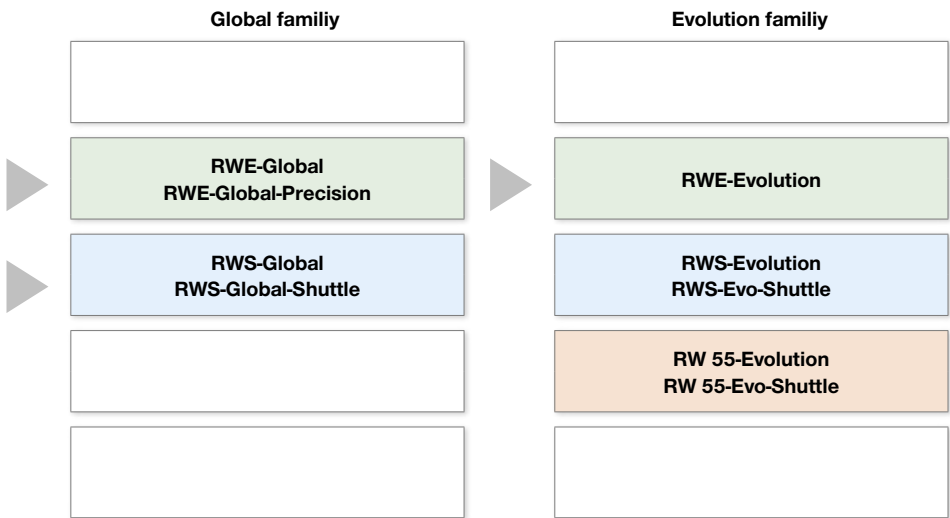
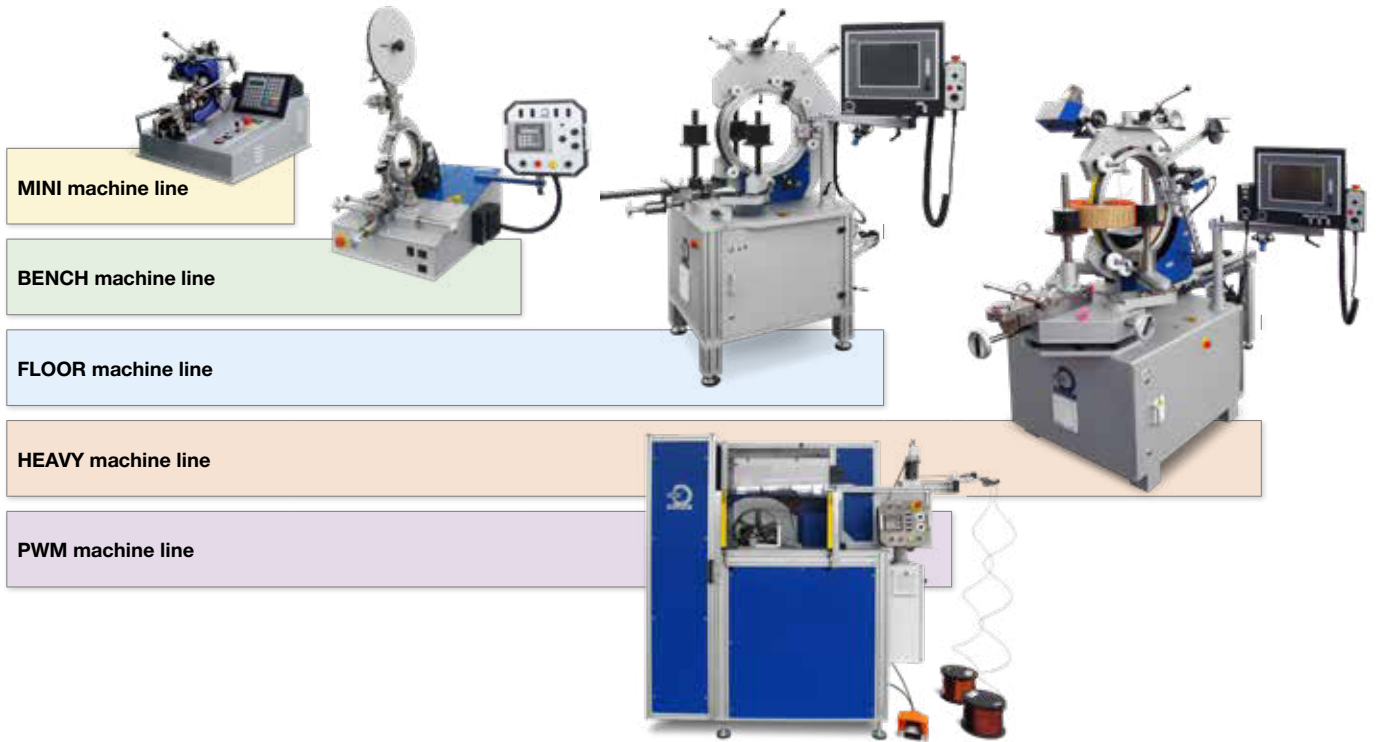


Step 2

Select the suitable machine model: RUFF offers different machine families. Following overview of models enable you to select your machine. Please check the characteristics:



| | | |
|-----------------------------|--|--|
| drive system | roller tables with stepper motor winding heads with servo motor (PWM with three-phase motor) | roller tables with stepper motor winding heads with servo motor |
| display / controller | LCD display, with 2 text lines | LCD display, with 4 text lines |
| programming | simple programming, user friendly controller | simple programming, user friendly controller |
| applications | all standard winding jobs | all standard winding jobs |



| | |
|---|--|
| roller tables with servo motor winding heads with motor and inverter | roller tables with servo motor winding heads with servo motor |
| 5.7" monochrom touch screen | touch screen 15,6" touchpanel with USB-connection, ethernet interface, PS/2 interface, RJ45, serial interface language, unitext (all characters e.g. Cyrillic etc.) |
| simple programming, user friendly con- troller with touch screen monitor | programming for sophisticated winding applications with industry-PC controller; clear text touch screen with graphical dis- play and automatically winding program calculation |
| all standard winding jobs | all standard jobs and special resp. hi tech winding applications |

MINI machine line

Several winding heads and roller tables enable to apply the correct machine solution for your specific winding application.

Model MINI-Basic and MINI-Basic-Plus

Mini machine for small cores

The MINI-BASIC and MINI-Basic-Plus is a very good value machine with an user friendly controller. The machine is designed for mass production of small toroidal cores. It is easy to set up the machine and it has the approved RUFF modular system with several different winding heads and tables. Typical winding

jobs for this machines are: SMD-coils, small coils, small filters and transformers. The difference of the MINI-Basic and MINI-Basic-Plus is the programming, because the MINI-Basic-Plus is able to calculate the winding program.

Capability ranges

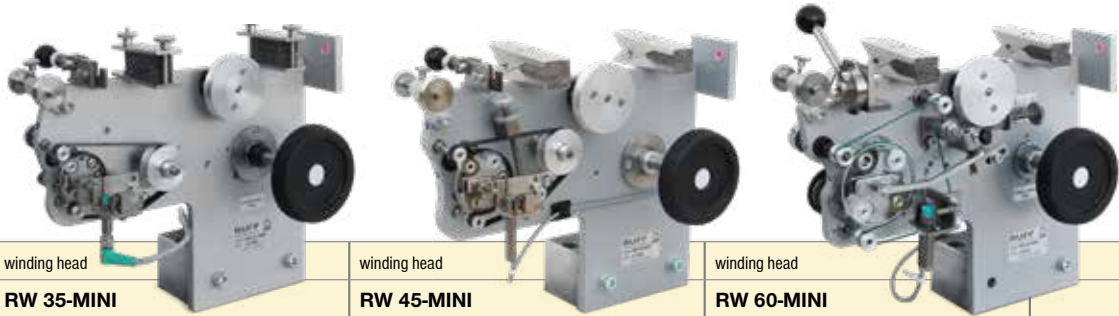
| | |
|-------------------------|--|
| wire Ø | 0,05 – 1 mm |
| finished core OD | 3 - 150 mm |
| finished core ID | up from 1 mm |
| finished core H | max. 25 mm |
| controller | N.C. SIAX 110L - LCD Display |
| motor | roller tables with servo motor winding heads with servo motor |
| machine size | approx. 400 x 500 mm |
| machine wight | approx. 40 kg |
| supply voltages | 1 Ph 230 V, 16 A |



Miniatur heads for the MINI models

The miniature winding heads are designed for winding fine wires onto very small cores. The heads works with the professional and problem free RUFF belt winding system. Very precision hi tech magazines enable you to wind down to the smallest final core ID. The

required wire tension for your specific application can be controlled with a very practical wire tension calibration device. The winding heads are designed for instant change over from flat belt to round belt system and features a large range of flat and round belts.



| winding head data | winding head RW 35-MINI | | | | winding head RW 45-MINI | | | | winding head RW 60-MINI | | | | side slider | |
|--------------------------|---------------------------|-----------|---------------------------|-----------|---------------------------|-----------|---------------------------|-----------|---------------------------|----------|---------------------------|----------|------------------------------------|----------|
| | round belt | | flat belt | | round belt | | flat belt | | round belt | | flat belt | | mm | inch/AWG |
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,06-0,10 | 38-42½ | 0,11-0,2 | 32-37 | 0,06-0,10 | 38-42½ | 0,11-2,5 | 30-37 | 0,06-0,11 | 34½-42½ | 0,12-0,6 | 22½-37 | 0,05-0,2 | 32-44 |
| magazine diameter | 35 | 1,4 | 35 | 1,4 | 45 | 1,8 | 45 | 1,8 | 60 | 2,4 | 60 | 2,4 | 60 | 2,4 |
| finished core OD | 3,0-6,0 | 0,2-0,236 | 3,0-6,0 | 0,2-0,236 | 5-10 | 0,2-0,393 | 5-10 | 0,2-0,393 | 5-11 | 0,2-0,43 | 5-11 | 0,2-0,43 | 25-60 | 0,1-2,4 |
| finished core ID | 1,3 | 0,05 | 1,0 | 0,04 | 1,4 | 0,06 | 1,4 | 0,06 | 1,6 | 0,062 | 1,6 | 0,062 | 11 | 0,43 |
| finished core height | 5 | 0,20 | 5 | 0,20 | 8 | 0,30 | 8 | 0,30 | 10 | 0,39 | 10 | 0,39 | 10 | 0,39 |
| max. winding speed rpm* | 1550* | | 1550* | | 1580* | | 1580* | | 1700* | | 1700* | | 1800* | |
| compatible roller tables | RW 111-MINI, RW 111-XMINI | | RW 111-MINI, RW 111-XMINI | | RW 111-MINI, RW 111-XMINI | | RW 111-MINI, RW 111-XMINI | | RW 111-MINI, RW 111-XMINI | | RW 111-MINI, RW 111-XMINI | | RW 111-MINI-D60 special on request | |

* depending on winding application

Magazine data base with wire length in meters: for wire length in feet, multiply by factor 3,28

| magazine type | final hole | | 0,05 | 0,06 | 0,071 | 0,08 | 0,09 | 0,1 | 0,112 | 0,125 | 0,132 | 0,15 | 0,18 | 0,2 | 0,25 | 0,3 | 0,355 | 0,4 | 0,5 | 0,6 | mm |
|------------------------------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-----|-----|-----|-----|
| | mm | inch | 44 | 42½ | 41 | 40 | 39 | 38 | 37 | 36 | 35½ | 34½ | 33 | 32 | 30 | 28½ | 27 | 26 | 24 | 22½ | AWG |
| 35-MINI round and flat belt | | | | | | | | | | | | | | | | | | | | | |
| 0,8 | 1,0 | 0,039 | 2,4 | 1,68 | 1,2 | 0,96 | 0,72 | 0,56 | 0,48 | 0,4 | | | | | | | | | | | |
| 0,9 | 1,2 | 0,047 | 3,0 | 2,1 | 1,5 | 1,2 | 0,9 | 0,7 | 0,6 | 0,5 | 0,4 | | | | | | | | | | |
| 1,0 | 1,4 | 0,055 | 3,6 | 2,5 | 1,7 | 1,4 | 1,1 | 0,9 | 0,7 | 0,6 | 0,5 | 0,4 | | | | | | | | | |
| 1,1 | 1,5 | 0,059 | 5,6 | 3,9 | 2,7 | 2,2 | 1,7 | 1,4 | 1,1 | 0,9 | 0,8 | 0,6 | 0,4 | 0,3 | | | | | | | |
| 45-MINI round and flat belt | | | | | | | | | | | | | | | | | | | | | |
| 1,0 | 1,4 | 0,055 | 3,8 | 2,7 | 2,0 | 1,6 | 1,3 | 1,0 | 0,8 | 0,7 | 0,6 | 0,5 | | | | | | | | | |
| 1,1 | 1,5 | 0,059 | 5,2 | 3,6 | 3,6 | 2,1 | 1,7 | 1,4 | 1,1 | 0,9 | 0,8 | 0,6 | 0,4 | | | | | | | | |
| 1,2 | 1,6 | 0,062 | 6,3 | 4,4 | 4,4 | 2,6 | 2,0 | 1,6 | 1,3 | 1,1 | 1,0 | 0,8 | 0,5 | 0,4 | | | | | | | |
| 1,3 | 1,7 | 0,066 | 8,0 | 5,6 | 5,6 | 3,3 | 2,6 | 2,1 | 1,7 | 1,4 | 1,2 | 1,0 | 0,7 | 0,5 | 0,4 | | | | | | |
| 1,4 | 1,8 | 0,070 | 11,3 | 7,8 | 7,8 | 4,6 | 3,7 | 3,0 | 2,4 | 2,0 | 1,8 | 1,4 | 1,0 | 0,8 | 0,5 | | | | | | |
| 1,5 | 1,9 | 0,074 | 13,5 | 9,3 | 9,3 | 5,5 | 4,4 | 3,5 | 2,9 | 2,3 | 2,1 | 1,7 | 1,2 | 0,9 | 0,6 | | | | | | |
| 1,6 | 2,0 | 0,078 | 15,6 | 10,8 | 10,8 | 6,4 | 5,1 | 4,1 | 3,3 | 2,7 | 2,4 | 1,9 | 1,3 | 1,1 | 0,7 | | | | | | |
| 1,7 | 2,1 | 0,082 | 20,3 | 14,1 | 14,1 | 8,3 | 6,6 | 5,3 | 4,3 | 3,5 | 3,2 | 2,5 | 1,8 | 1,4 | 0,9 | | | | | | |
| 1,8 | 2,2 | 0,086 | 25,4 | 17,7 | 17,7 | 10,4 | 8,3 | 6,7 | 5,4 | 4,4 | 4,0 | 3,1 | 2,2 | 1,7 | 1,1 | | | | | | |
| 60-MINI round and flat belt | | | | | | | | | | | | | | | | | | | | | |
| 1,2 | 1,6 | 0,06 | 6,9 | 4,8 | 3,3 | 2,7 | 2,1 | 1,7 | 1,4 | 1,1 | 0,9 | 0,7 | | | | | | | | | |
| 1,3 | 1,7 | 0,063 | 8,2 | 5,8 | 4,0 | 3,2 | 2,6 | 2,1 | 1,7 | 1,4 | 1,2 | 1 | | | | | | | | | |
| 1,4 | 1,8 | 0,07 | 9,6 | 6,3 | 4,4 | 3,6 | 2,7 | 2,3 | 1,8 | 1,5 | 1,3 | 1,1 | | | | | | | | | |
| 1,5 | 1,9 | 0,071 | 13,7 | 9,6 | 6,8 | 5,4 | 4,3 | 3,6 | 2,9 | 2,3 | 2,1 | 1,6 | 1,2 | 0,9 | | | | | | | |
| 1,6 | 2 | 0,075 | 15,4 | 11,2 | 7,9 | 6,3 | 5,0 | 4,1 | 3,4 | 2,7 | 2,4 | 1,8 | 1,3 | 1,1 | | | | | | | |
| 1,7 | 2,1 | 0,079 | 18,9 | 13,2 | 9,3 | 7,5 | 5,9 | 4,9 | 4,0 | 3,2 | 2,9 | 2,3 | 1,6 | 1,3 | 0,8 | | | | | | |
| 1,8 | 2,2 | 0,083 | 24,7 | 19,2 | 13,5 | 10,9 | 8,7 | 7,2 | 5,8 | 4,7 | 4,2 | 3,3 | 2,4 | 1,9 | 1,2 | 0,9 | | | | | |
| 1,9 | 2,3 | 0,086 | 28,8 | 20,2 | 14,3 | 11,5 | 9,1 | 7,5 | 6,1 | 4,9 | 4,4 | 3,5 | 2,5 | 2,0 | 1,3 | 0,98 | 0,71 | | | | |
| 2,0 | 2,4 | 0,095 | 35,7 | 25,8 | 18,2 | 14,7 | 11,7 | 9,6 | 7,8 | 6,3 | 5,7 | 4,5 | 3,2 | 2,6 | 1,7 | 1,2 | 0,9 | 0,7 | | | |
| 2,5 | 2,9 | 0,111 | 66 | 50,5 | 35,7 | 28,8 | 22,8 | 18,9 | 15,3 | 12,4 | 11,2 | 8,8 | 6,3 | 5,2 | 3,4 | 2,4 | 1,7 | 1,3 | 0,9 | 0,6 | |
| 2,8 | 3,2 | 0,126 | 98 | 75 | 52 | 42 | 33 | 28 | 22 | 17 | 15 | 12 | 9 | 7,5 | 5 | 3,5 | 2,3 | 2 | 1,3 | 0,9 | |
| 60-MINI side slider | | | | | | | | | | | | | | | | | | | | | |
| 6-S | 11 | 0,433 | 386,0 | 268,1 | 197,0 | 157,3 | 126,1 | 101,5 | 82,2 | 67,0 | 60,1 | 47,5 | 33,4 | 26,3 | | | | | | | |
| 8-S | 12 | 0,472 | 752,2 | 522,4 | 383,8 | 306,5 | 245,6 | 197,8 | 160,2 | 130,6 | 117,2 | 92,6 | 65,0 | 51,2 | | | | | | | |
| 11-S | 12,5 | 0,492 | 165,5 | 809,4 | 594,6 | 474,8 | 380,6 | 306,5 | 248,3 | 202,3 | 181,6 | 143,5 | 100,8 | 79,3 | | | | | | | |
| 15-S | 17 | 0,669 | 843,5 | 669,2 | 961,0 | 566,0 | 255,0 | 010,8 | 818,7 | 667,2 | 598,9 | 473,1 | 332,4 | 261,5 | | | | | | | |

Belt data base: list of different round belt lengths for the magazines

| round belt type | belt length for RW 35-MINI | belt length for RW 45-MINI | belt length for RW 60-MINI |
|---------------------------------------|-------------------------------|-------------------------------|-------------------------------|
| round short belt (e.g. thicker wires) | 280 mm | 325 mm | 365 mm |
| round standard belt | 300 mm | 350 mm | 400 mm |
| round long belt (e.g. thinner wires) | 315 mm | 365 mm | 430 mm |

Belt data base: list of flat and round belts for the magazines

| winding head type | RW 35-MINI | | | | RW 45-MINI | | | | | | | | | | RW 60-MINI | | | | | | | | | | inch | |
|-------------------------|---------------|-----|-----|-----|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------|--------|
| magazine type | 0,8 | 0,9 | 1,0 | 1,1 | 1,0 | 1,1 | 1,2 | 1,3 | 1,4 | 1,5 | 1,6 | 1,7 | 1,8 | 1,2 | 1,3 | 1,4 | 1,5 | 1,6 | 1,7 | 1,8 | 1,9 | 2,0 | 2,5 | 2,8 | | |
| flat belts | width 8 mm | | | | | | | | | | | | | | | | | | | | | | | | | 0,315 |
| | length 346 mm | x | x | x | x | | | | | | | | | | | | | | | | | | | | | 13,622 |
| | width 8 mm | | | | | | | | | | | | | | | | | | | | | | | | | 0,315 |
| | length 372 mm | | | | | x | x | x | x | x | x | x | x | | | | | | | | | | | | | 14,646 |
| | width 9,5 mm | | | | | | | | | | | | | | | | | | | | | | | | | 0,374 |
| | length 480 mm | | | | | | | | | | | | | | x | x | x | x | x | x | x | x | x | x | x | 18,897 |
| round belts diameter | Ø 1,0 mm | | | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | | | | | | 0,03937 | |
| | Ø 1,5 mm | | | | | | | | | x | x | x | x | x | | | | x | x | x | x | x | x | x | 0,05905 | |
| | Ø 2,0 mm | | | | | | | | | x | x | x | x | x | | | | x | x | x | x | x | x | x | 0,07874 | |
| | Ø 2,5 mm | | | | | | | | | | | | | | | | | | | | | | x | x | 0,09842 | |

Multisystem winding heads for the MINI models

The multisystem winding heads are designed for winding wire sizes from 0,05 to 1,0 mm onto small and medium cores. Each head incorporates three different proven winding systems: round belt system, flat belt system and side slider system. This enables you

to select the correct winding system for your specific winding application and offers you maximum flexibility at a minimum of cost. Typical applications are EMI filters and primary winding of small power transformers.



| winding head data | winding head RW 75-MINI | | | | | | winding head RW 100-MINI | | | | | | winding head RW 200-MINI | | | | | |
|--------------------------|--|--------------|-----------|--------------|-------------|--------------|---|--------------|-----------|--------------|-------------|--------------|--|--------------|-----------|--------------|-------------|--------------|
| | round belt | | flat belt | | side slider | | round belt | | flat belt | | side slider | | round belt | | flat belt | | side slider | |
| | mm | inch/ AWG | mm | inch/ AWG | mm | inch/ AWG | mm | inch/ AWG | mm | inch/ AWG | mm | inch/ AWG | mm | inch/ AWG | mm | inch/ AWG | mm | inch/ AWG |
| wire range | 0,06-0,15 | 34½-42½ | 0,15-0,71 | 21-34½ | 0,05-0,25 | 30-44 | 0,07-0,15 | 34½-41 | 0,15-0,71 | 21-34½ | 0,05-0,355 | 27-44 | 0,125-0,25 | 30-36 | 0,25-1,0 | 18-36 | 0,08-0,71 | 21-40 |
| magazine diameter | 75 | 3,0 | 75 | 3,0 | 75 | 3,0 | 92 | 3,7 | 92 | 3,7 | 99 | 3,9 | 145 | 5,7 | 145 | 5,7 | 150 | 5,9 |
| finished core OD | 5-25 | 0,2-1 | 5-25 | 0,2-1 | 5-25 | 0,2-1 | 5-35 | 0,2-1,38 | 5-35 | 0,2-1,38 | 8-70 | 0,3-2,75 | 16-110 | 0,63-2,01 | 16-110 | 0,63-2,01 | 16-110 | 0,63-2,01 |
| finished core ID | 1,7 | 0,067 | 1,7 | 0,067 | 4,5 | 0,177 | 2,2 | 0,087 | 2,4 | 0,094 | 5,0 | 0,196 | 5,0 | 0,196 | 5,0 | 0,196 | 7,0 | 0,276 |
| finished core height | 13 | 0,51 | 13 | 0,51 | 13 | 0,51 | 20 | 0,79 | 20 | 0,79 | 20 | 0,79 | 25 | 0,98 | 25 | 0,98 | 25 | 0,98 |
| max. winding speed rpm* | 1800* | | 1800* | | 1800* | | 1800* | | 1800* | | 2380* | | 980* | | 980* | | 1570* | |
| compatible roller tables | RW 111-MINI, RW 111-VMINI RW 111-XMINI, RW 111-VXMINI | | | | | | RW 111-MINI, RW 111-VMINI, RW 111-XMINI RW 111-VXMINI, RW 111-VM-D70 | | | | | | RW 111-MINI, RW 111-VMINI, RW 111-XMINI RW 111-VXMINI, RW 115-MINI, RW 111-VM-D70 | | | | | |

* depending on winding application

Magazine data base with wire length in meters: for wire length in feet, multiply by factor 3,28

| magazine type | final hole | | 0,05 | 0,06 | 0,071 | 0,08 | 0,09 | 0,1 | 0,112 | 0,125 | 0,132 | 0,15 | 0,18 | 0,2 | 0,25 | 0,3 | 0,355 | 0,4 | 0,5 | 0,6 | 0,71 | 0,8 | 0,9 | 1,0 | mm | | |
|--------------------------------|------------|-------|------|------|-------|------|------|------|-------|-------|-------|------|------|------|------|------|-------|-----|-----|-----|------|------|-----|-----|-----|--|--|
| | mm | inch | 44 | 42½ | 41 | 40 | 39 | 38 | 37 | 36 | 35 ½ | 34½ | 33 | 32 | 30 | 28½ | 27 | 26 | 24 | 22½ | 21 | 20 | 19 | 18 | AWG | | |
| round and flat 75-MINI | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,4 | 1,8 | 0,070 | 12,1 | 8,5 | 6,0 | 4,8 | 3,8 | 3,1 | 2,6 | 2,1 | 1,9 | 1,4 | | | | | | | | | | | | | | | |
| 1,5 | 1,9 | 0,074 | 17,4 | 12,2 | 8,6 | 6,9 | 5,5 | 4,5 | 3,7 | 3,0 | 2,7 | 2,1 | 1,5 | | | | | | | | | | | | | | |
| 1,6 | 2,0 | 0,078 | 19,6 | 13,8 | 9,7 | 7,8 | 6,2 | 5,1 | 4,2 | 3,4 | 3,0 | 2,4 | 1,7 | 1,4 | | | | | | | | | | | | | |
| 1,7 | 2,1 | 0,082 | 24,0 | 16,8 | 11,9 | 9,6 | 7,6 | 6,3 | 5,1 | 4,1 | 3,7 | 2,9 | 2,1 | 1,7 | 1,1 | | | | | | | | | | | | |
| 1,8 | 2,2 | 0,086 | 31,5 | 22,1 | 15,6 | 12,6 | 10,0 | 8,2 | 6,7 | 5,4 | 4,9 | 3,8 | 2,7 | 2,2 | 1,5 | 1,0 | | | | | | | | | | | |
| 1,9 | 2,3 | 0,090 | 36,8 | 25,8 | 18,2 | 14,7 | 11,7 | 9,6 | 7,8 | 6,3 | 5,7 | 4,5 | 3,2 | 2,6 | 1,7 | 1,2 | 0,9 | | | | | | | | | | |
| 2,0 | 2,5 | 0,098 | 45,6 | 32,0 | 22,6 | 18,2 | 14,4 | 11,9 | 9,7 | 7,9 | 7,1 | 5,6 | 4,0 | 3,3 | 2,1 | 1,5 | 1,1 | 0,8 | | | | | | | | | |
| 2,5 | 3,0 | 0,118 | 95,5 | 67,0 | 47,4 | 38,2 | 30,3 | 25,0 | 20,4 | 16,5 | 14,9 | 11,7 | 8,4 | 6,9 | 4,5 | 3,2 | 2,3 | 1,8 | 1,2 | 0,8 | | | | | | | |
| 3,0 | 3,5 | 0,137 | 147 | 103 | 73,0 | 58,9 | 46,7 | 38,6 | 31,5 | 25,4 | 22,9 | 18,0 | 12,9 | 10,6 | 7,0 | 5,0 | 3,6 | 2,8 | 1,8 | 1,3 | 0,9 | | | | | | |
| round and flat 100-MINI | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,8 | 2,2 | 0,087 | | | 27 | 21 | 17 | 14 | 11 | 9 | 8 | 6 | | | | | | | | | | | | | | | |
| 2,0 | 2,5 | 0,098 | | | 42 | 34 | 25 | 19 | 18 | 14 | 13 | 10 | 7,2 | 6 | 4 | 2,9 | | | | | | | | | | | |
| 2,25 | 2,75 | 0,108 | | | 44 | 35 | 26 | 20 | 19 | 15 | 14 | 9,4 | 6,8 | 5,7 | 3,6 | 2,7 | 2,0 | 1,5 | | | | | | | | | |
| 2,5 | 3,0 | 0,118 | | | 70 | 57 | 45 | 37 | 30 | 24 | 22 | 17 | 12 | 10 | 6,8 | 4,8 | 3,5 | 2,6 | | | | | | | | | |
| 3,0 | 3,5 | 0,138 | | | 80 | 63 | 52 | 42 | 34 | 31 | 24 | 17 | 14,5 | 9,5 | 6,8 | 4,9 | 3,94 | 2,5 | | | | | | | | | |
| 3,5 | 4,5 | 0,177 | | | 120 | 95 | 77 | 63 | 51 | 46 | 36 | 25 | 21 | 14 | 10 | 7,2 | 6 | 4 | 2,6 | 1,3 | | | | | | | |
| 4,0 | 5,0 | 0,197 | | | 156 | 123 | 102 | 83 | 67 | 60 | 47 | 40 | 28 | 18 | 13 | 10,5 | 8 | 5 | 3,5 | 2,5 | | | | | | | |
| 4,5 | 5,5 | 0,217 | | | 185 | 148 | 122 | 99 | 80 | 72 | 57 | 41 | 37 | 22 | 18 | 11 | 10 | 7 | 5 | 3 | | | | | | | |
| 5,0 | 6,0 | 0,236 | | | 243 | 193 | 159 | 130 | 105 | 95 | 74 | 62 | 46 | 29 | 22 | 16,5 | 13 | 9 | 6 | 4,5 | | | | | | | |
| side slider 100-MINI | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4,5-SG | 5,0 | 0,2 | 166 | 116 | 82 | 66 | 52 | 43 | 35 | 28 | 25 | 20 | 14 | 12 | 7,9 | 5,6 | | | | | | | | | | | |
| 5-SG | 5,5 | 0,216 | 211 | 148 | 104 | 84 | 67 | 55 | 45 | 36 | 32 | 25 | 18 | 15 | 10 | 7 | | | | | | | | | | | |
| 6-SG | 7,0 | 0,276 | 260 | 185 | 130 | 110 | 84 | 80 | 56 | 45 | 41 | 35 | 23 | 22 | 15 | 10 | | | | | | | | | | | |
| 7-SG | 8,0 | 0,315 | 368 | 258 | 182 | 150 | 117 | 100 | 78 | 63 | 57 | 48 | 32 | 28 | 18 | 13 | | | | | | | | | | | |
| 8-SG | 9,0 | 0,355 | 500 | 350 | 248 | 200 | 158 | 130 | 107 | 86 | 77 | 63 | 44 | 37 | 24 | 17 | 14,5 | | | | | | | | | | |
| 9-SG | 10,0 | 0,394 | 700 | 490 | 207 | 280 | 221 | 182 | 150 | 120 | 107 | 88 | 61 | 51 | 33 | 23,8 | 21,5 | | | | | | | | | | |
| 10-SG | 11,0 | 0,433 | 1120 | 784 | 331 | 448 | 354 | 291 | 239 | 192 | 172 | 141 | 98 | 82 | 54 | 38 | 32,5 | | | | | | | | | | |
| 11-SG | 12,0 | 0,473 | 1512 | 1058 | 447 | 604 | 478 | 393 | 323 | 260 | 232 | 190 | 133 | 111 | 72 | 51 | 42 | | | | | | | | | | |
| 12-SG | 13,0 | 0,512 | 2192 | 1534 | 648 | 878 | 693 | 570 | 469 | 377 | 337 | 276 | 192 | 162 | 105 | 75 | 62 | | | | | | | | | | |
| round and flat 200-MINI | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200/3 | 5,0 | 0,197 | | | | | | | | 59 | 53 | 42 | 30 | 24,5 | 16 | 11 | 8,5 | 6,5 | | | | | | | | | |
| 3,5 | 5,5 | 0,217 | | | | | | | | 75 | 68 | 53 | 38 | 32 | 20 | 15 | 10,5 | 8,5 | 5,5 | | | | | | | | |
| 4,0 | 6,0 | 0,236 | | | | | | | | 103 | 93 | 74 | 52 | 43 | 28 | 20 | 16 | 12 | 8 | | | | | | | | |
| 4,5 | 6,5 | 0,256 | | | | | | | | 140 | 125 | 99 | 71 | 58 | 36 | 30 | 19 | 17 | 11 | 8 | | | | | | | |
| 5,0 | 7,0 | 0,276 | | | | | | | | 170 | 153 | 120 | 86 | 72 | 46 | 36 | 24 | 21 | 14 | 10 | 7 | 5 | 4 | | | | |
| 5,5 | 7,5 | 0,295 | | | | | | | | 246 | 222 | 174 | 125 | 103 | 67 | 47 | 35 | 27 | 18 | 12 | 9 | 7 | 6 | 5 | | | |
| 6,0 | 8,0 | 0,315 | | | | | | | | 290 | 262 | 206 | 148 | 122 | 80 | 58 | 41 | 33 | 22 | 15 | 11 | 9 | 7 | 6 | | | |
| 6,5 | 8,5 | 0,335 | | | | | | | | 379 | 341 | 268 | 195 | 168 | 104 | 75 | 53 | 42 | 28 | 19 | 14 | 11,9 | 9 | 8 | | | |
| 7,0 | 9,0 | 0,355 | | | | | | | | 462 | 415 | 327 | 234 | 193 | 127 | 87 | 65 | 60 | 33 | 23 | 17 | 13 | 11 | 9 | | | |
| 7,5 (K) | 10,5 | 0,413 | | | | | | | | 574 | 517 | 401 | 261 | 241 | 158 | 115 | 81 | 66 | 43 | 30 | 22 | 17,5 | 14 | 11 | | | |
| 8 | 11,0 | 0,433 | | | | | | | | 712 | 640 | 504 | 362 | 298 | 196 | 140 | 100 | 81 | 53 | 37 | 27 | 21 | 17 | 14 | | | |
| side slider 200-MINI | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6,0 | 7,0 | 0,276 | | | | 115 | 94 | 77 | 63 | 51 | 46 | 36 | 26 | 21 | 14 | 10 | | | | | | | | | | | |
| 8,0 | 10,0 | 0,394 | | | | 280 | 236 | 190 | 159 | 129 | 116 | 85 | 65 | 50 | 34 | 24 | 18 | 14 | 7 | | | | | | | | |
| 10,0 | 12,0 | 0,472 | | | | 440 | 357 | 300 | 240 | 194 | 175 | 140 | 98 | 80 | 54 | 38 | 27 | 22 | 15 | 10 | 7 | | | | | | |
| 12,0 | 14,0 | 0,551 | | | | 650 | 517 | 430 | 348 | 281 | 253 | 200 | 143 | 120 | 80 | 56 | 40 | 33 | 22 | 15 | 11 | | | | | | |
| 14,0 | 16,0 | 0,623 | | | | 1300 | 1029 | 860 | 693 | 560 | 505 | 400 | 285 | 240 | 160 | 110 | 79 | 65 | 43 | 30 | 23 | | | | | | |
| 16,0 | 22,0 | 0,866 | | | | 1950 | 1553 | 1300 | 1047 | 846 | 762 | 600 | 430 | 360 | 240 | 167 | 120 | 98 | 65 | 46 | 35 | | | | | | |
| 20-S | 25,0 | 0,984 | | | | 3650 | 2895 | 2430 | 1950 | 1578 | 1421 | 1140 | 802 | 670 | 450 | 313 | 224 | 183 | 122 | 85 | 65 | | | | | | |

Belt data base: list of different round belt lengths for the magazines

| round belt type | belt length for RW 75-MINI | belt length for RW 100-MINI | belt length for RW 200-MINI |
|--|----------------------------|-----------------------------|-----------------------------|
| round short belt (e.g. thicker wires) | 435 mm | 540 mm | 700 mm |
| round standard belt | 470 mm | 570 mm | 750 mm |
| round long belt (e.g. thinner wires) | 490 mm | 600 mm | 780 mm |

Slider data base: list of slider for the magazines

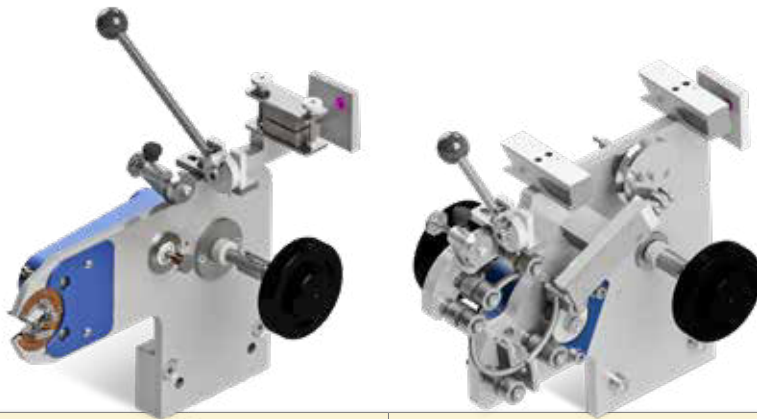
| winding head type | RW 60-MINI | RW 100-MINI | RW 200-MINI | | |
|-----------------------------|------------|-------------|-------------|------------|---------------|
| | | | 20/6-20/8-1 | 20/8-20/10 | 20/12-20/40-S |
| superfinished slider 1-tail | - | 0,05-0,10 | - | - | - |
| 1-tail slider | 0,05-0,1 | 0,08-0,15 | 0,08-0,15 | 0,08-0,20 | 0,08-0,20 |
| 2-tail slider | 0,1-0,2 | 0,15-0,25 | 0,15-0,25 | 0,20-0,35 | 0,20-0,40 |
| 3-tail slider | - | - | - | 0,35-0,60 | 0,40-0,70 |



Belt data base: list of tooth, flat and round belts for the magazines

| winding head type | | RW 75-MINI | | | | | | | | | RW 100-MINI | | | | | | | | | RW 200-MINI | | | | | | | | | | |
|-----------------------------|---------------|------------|-----|-----|-----|-----|-----|-----|-----|-----|-------------|-----|------|-----|-----|-----|-----|-----|-----|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| magazine type | | 1,4 | 1,5 | 1,6 | 1,7 | 1,8 | 1,9 | 2,0 | 2,5 | 3,0 | 1,8 | 2,0 | 2,25 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 6,5 | 7,0 | 7,5 | 8,0 |
| tooth belts for thick wires | 210XL 037 | x | x | x | x | x | x | x | x | x | | | | | | | | | | | | | | | | | | | | |
| | 250XL 037 | | | | | | | | | | | | | x | x | x | x | x | x | | | | | | | | | | | |
| | 344XL 075 | | | | | | | | | | | | | | | | | | | x | x | x | x | x | x | x | x | x | x | x |
| flat belt | width 9,5 mm | x | x | x | x | x | x | | | | | | | | | | | | | | | | | | | | | | | |
| | length 513 mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| round belts standard | Ø 1,5 mm | | x | x | x | x | x | x | x | | x | x | x | | | | | | | | | | | | | | | | | |
| | Ø 2,0 mm | | | | | x | x | x | x | | x | x | x | x | x | | | | | x | | | | | | | | | | |
| | Ø 2,5 mm | | | | | | | | x | | | | | x | x | x | x | | | x | x | | | | | | | | | |

Gear rack winding head for the MINI models



| winding head data | RW 00-MINI | | RW 090-MINI | |
|--------------------------|-------------------|--------------------|-------------------|---------------|
| | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,1 - 0,3 | 28 - 38 | 0,1 - 0,5 | 24 - 38 |
| magazine diameter | 9,5 x 5,5 x 3,4 | 0,37 x 0,22 x 0,13 | 90 | 3,543 |
| gear rack diameter | 32 | 1,25 | 90 | 3,54 |
| finished core OD | 14 - 30 | 0,55 - 1,18 | 10 - 30 | 0,393 - 1,181 |
| finished core ID | 11 | 0,43 | 8 | 0,315 |
| finished core height | 8 | 0,31 | 22 | 0,866 |
| max. winding speed rpm* | 200* | | 200* | |
| compatible roller tables | RW 111M, RW 111XM | | RW 111M, RW 111XM | |

* depending on winding application

Magazines

| magazine type | final hole | | 0,1 | 0,112 | 0,125 | 0,132 | 0,15 | 0,18 | 0,2 | 0,25 | 0,3 | 0,355 | 0,4 | 0,5 | mm |
|------------------------|------------|-------|-------|-------|-------|-------|------|------|------|------|------|-------|------|-----|-----|
| | mm | inch | 38 | 37 | 36 | 35½ | 34½ | 33 | 32 | 30 | 28 ½ | 27 | 26 | 24 | AWG |
| round and flat 75-MINI | | | | | | | | | | | | | | | |
| 090/6,0 | 8 | 0,314 | 73,6 | 59,6 | 48,6 | 43,6 | 34,5 | 24,2 | 19,0 | 12,5 | 8,9 | 6,5 | 5,2 | 3,4 | |
| 090/9,5 | 11,5 | 0,452 | 194,8 | 157,8 | 128,6 | 115,4 | 91,2 | 64,1 | 50,4 | 33,1 | 23,6 | 17,1 | 13,7 | 8,9 | |

Roller tables for the MINI models

RUFF supplies a choice of 5 different interchangeable roller tables. They are connected to the machine base and held with two fixing bolts which allow them to be changed in two minutes. The transport rollers are sitting on drive shafts which are connected directly to the drive motor. A large range of parallel and tapered transport rollers are available to suit individual core sizes. The roller tables

RW 111 and RW 111-V are constructed with a XY-coil moving slide unit which enables the operator to move the coil during the winding cycle. The roller tables RW 111 and RW 111-V with the specification „X“ are low cost models without coil moving slides and are suitable for such coils which do not need to be moved during the winding cycle.

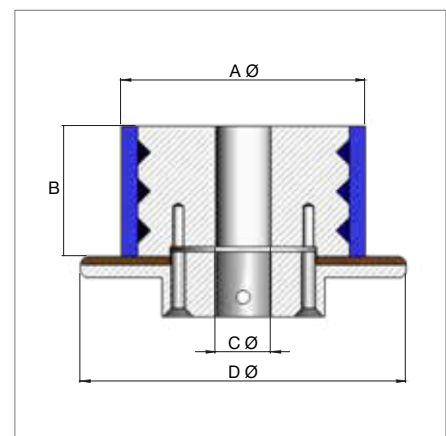
Possible combination of winding heads and roller tables



| winding head type | core OD with RW 111-MINI RW111-XMINI | core OD with RW 111M-D60 | core OD with RW 111-VMINI RW111-VXMINI | core OD with RW 111VM-D70 | core OD with RW 115-MINI |
|-------------------|---|--------------------------|---|---------------------------|--------------------------|
| RW 35-MINI | 3 - 6 mm | - | - | - | - |
| RW 45-MINI | 5 - 10 mm | - | - | - | - |
| RW 60-MINI | 5 - 12 mm | 25 - 60 mm | - | - | - |
| RW 75-MINI | 5 - 30 mm | - | 16 - 40 mm | - | - |
| RW 100-MINI | 5 - 30 mm | - | 16 - 40 mm | 30 - 70 mm | - |
| RW 200-MINI | 5 - 30 mm | - | 16 - 51 mm | 30 - 70 mm | 47 - 150 mm |
| RW 00-MINI | - | - | - | - | - |
| RW 090-MINI | - | - | - | - | - |
| RW 200B-MINI | - | - | 16 - 51 mm | 30 - 70 mm | 47 - 150 mm |

Standard core transport rollers

| roller table type | qty per set | A | B | C | D | smallest core OD mm | suitable winding head | typical use |
|-------------------|-------------|----|----|----|-----|---------------------|-----------------------|----------------------------|
| | | mm | mm | mm | mm | | | |
| RW 111-MINI | 2 pcs. | 6 | 4 | 3 | 7,5 | 3,5 | 35-MINI to 200-MINI | extremely small cores flat |
| | 1 pcs. | 6 | 4 | 3 | 6 | | | |
| RW 111-MINI | 3 pcs. | 8 | 5 | 3 | 11 | 8 | 35-MINI to 200-MINI | small cores |
| RW 111-MINI | 3 pcs. | 8 | 10 | 3 | 12 | 12 | 45-MINI to 200-MINI | small cores high |
| RW 111-MINI | 3 pcs. | 9 | 20 | 3 | 18 | 15 | 75-MINI to 200-MINI | small cores very high |
| RW 111-VMINI | 3 pcs. | 17 | 10 | 6 | 18 | 10,5 | 75-MINI to 200-MINI | special rollers |
| RW 111-VMINI | 3 pcs. | 17 | 10 | 6 | 20 | 13 | 75-MINI to 200-MINI | medium cores flat |
| RW 111-VMINI | 3 pcs. | 17 | 15 | 6 | 23 | 15 | 75-MINI to 200-MINI | medium cores high |
| RW 111-VMINI | 3 pcs. | 23 | 15 | 6 | 28 | 18 | 75-MINI to 200-MINI | large cores |
| RW 115-MINI | 3 pcs. | 35 | 12 | 8 | 41 | 50 | 200-MINI | large cores |



The variants highlighted in colour are installed as standard, if no change is desired.

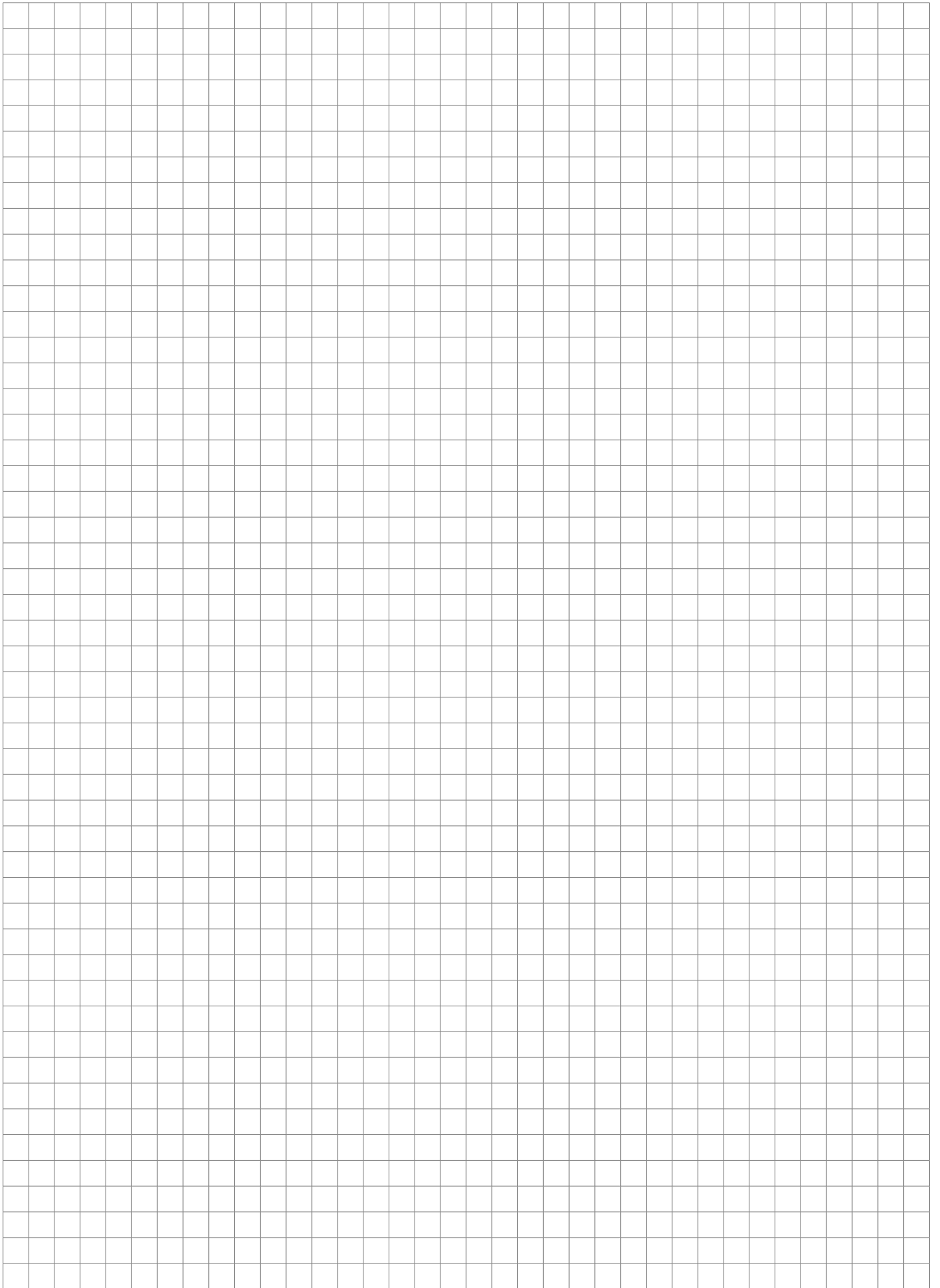
High-Speed taping head for the MINI models



| taping head data | RW 200B-MINI | |
|--|--|-----------------------|
| | mm | inch/AWG |
| tape width | 4 - 10 | 0,157 - 0,394 |
| build up factor | + 9 | + 0,354 |
| magazine diameter | 154 | 5,9 |
| finished core OD | 16 - 150 | 0,63 - 5,9 |
| finished core ID | 14 with 5 mm tape | 0,512 with 0,157 tape |
| finished core height | 50 | 1,97 |
| max. taping speed rpm* | 350* | |
| compatible roller tables | RW 111-VMINI, RW 111-VXMINI, RW 115-MINI | |
| compatible m/c bases | MINI-Basic, MINI-Basic Plus | |
| f.i.d calculation for all taping heads: tapewidth + build up factor = f.i.d required | | |

* depending on winding application

Your personal notes



BENCH machine line

The RWE models are the world wide most used machines. From a simple model up to a high end PLC-controlled machine with a high resolution touchscreen display. The approved RUFF modular system covers several winding heads and roller tables for almost all winding requirements. The machine has a strong design and with the wedge-shape of the machine enables an ergonomically operation for the worker.

BENCH machine line RWE

Models RWE-Easy, RWE-Basic, RWE-Global, RWE-Evolution

Capability ranges

| | | | |
|-------------------------|------------------|------------------------|---------------------------|
| wire Ø monofilar | 0,05 - 2,8 mm | tape size | 4 - 25 mm |
| wire Ø bifilar | up to 2 x 1,8 mm | supply voltages | 230 V / AC / 50 Hz / 16 A |
| finished core OD | 5 - 500 mm | machine size | 1100 x 700 mm |
| final hole | up from 1,5 mm | machine weight | approx. 95 kg |
| finished core H | up to 170 mm | | |

Modell RWE-Easy

The RWE-Easy is for simple applications and is developed for the mass production. The userfriendly programming of the machine allows a short programming and quick start of the machine. The machine has a similar design to our former very successful

model – RWE-Compact, but with a PLC for all the standard functions of a modern machine.

| | |
|---------------------|---|
| controller | SPS M91 - LCD display with 2 text lines |
| winding head | three phase motor |
| roller table | servo motor |



Model RWE-Basic

The RWE-BASIC is a simple machine. It is developed for the mass production of simple winding jobs. This machine is perfect for winding jobs, which allows some tolerances in the pitch. The RWE-BASIC is build with high quality components and enables to produce high quality coils. The controller with

numeric controll is easy to understand and simple to create winding programs.

| | |
|---------------------|--|
| controller | N.C. SIAX 110L - LCD display with 4 text lines |
| winding head | three phase motor |
| roller table | servo motor |



Model RWE-Global / -Precision

The RWE-Global is for standard winding applications. The new NC controller with touch screen panel is user friendly and it is very easy to understand. Just a few inputs are needed for create a winding program. All standard winding methods are available e.g.: Tape-/ Wire winding, Index, Reverse winding. Several winding sequences can be written in one winding program. So for example different pitch and index etc. More than 200 programs can be saved on this control. All languages in Latin characters are avail-

able on this controller. The RWE-Global-Precision is equipped with a precision gear box for core movement, wich is needed e. g. for variac winding.

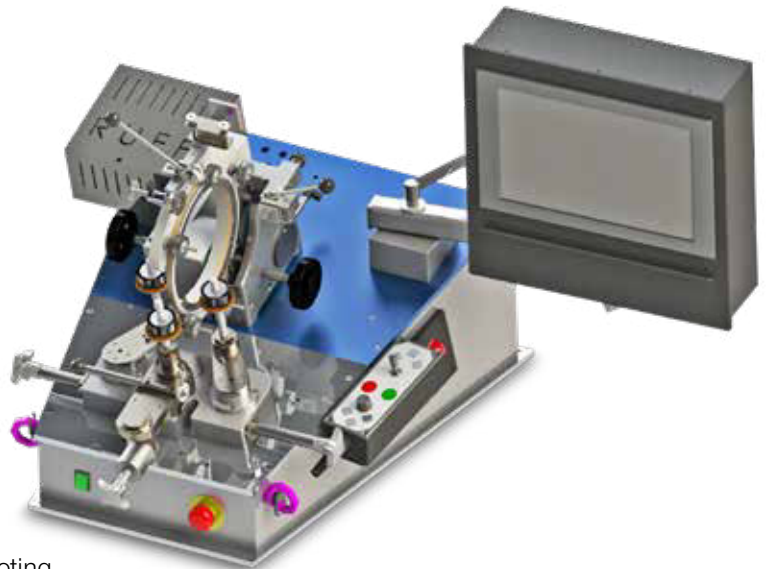


| | |
|---------------------|--|
| controller | 5.7" monochrom touchpanel with 2 function buttons (start/stop) |
| language | all Latin characters |
| winding head | three phase motor with inverter |
| roller table | servo motor |

Model RWE-Evolution

The RWE-Evolution is the high end bench top toroidal winding machine base from RUFF. The new controller with innovative programming is user friendly and through the high resolution touch screen display it is simple to understand. Programs are saved in CSV-Format. Therefore, programs can be made externally by Excel. The Windows system allows own data management saved onto USB-Stick, or onto the CF-Card in a seperate file on the machine. A central program management on an external PC (Server) is possible via Ethernet connection. Easy file structure can be created and every program can be reported with a text description. The machine can also be remote controlled by Ftp-connection. Teleservice by our technicians via internet connection (Ftp-connection) for trou-

ble shooting in the logic program. Update of PLC- and visual display software via USB-Stick, datas can be sent via E-mail.

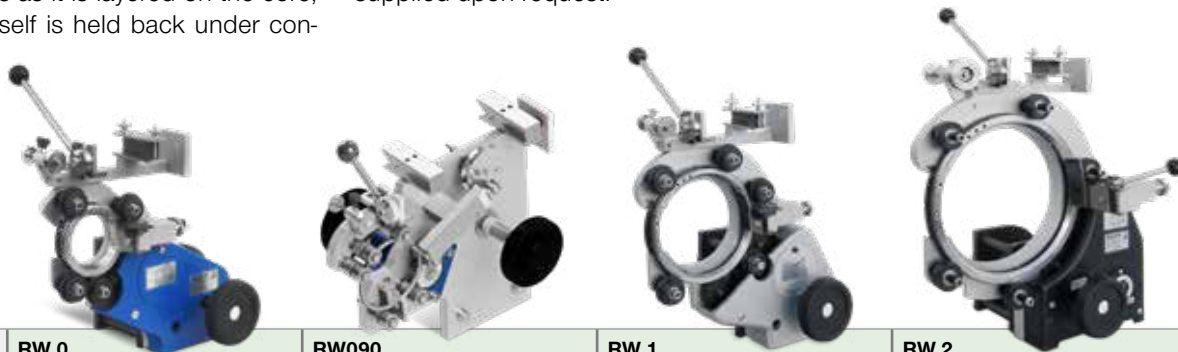


| | |
|-----------------------|---|
| controller | 15,6" touchpanel |
| memory | Compact Flash 512 MB |
| system | Windows CE 5.0 |
| language | Unitext (all characters) |
| interface | USB-conntention, ethernet-interface 1x10/100 Mbit, RJ45, PS/2-interface, serial interface |
| PCI modul card | MC-CAN Dual Can Controller, hand control unit with 3 additional function buttons |
| winding head | servo motor |
| roller table | servo motor |

Gear rack winding heads for the BENCH models

The gear rack winding heads are designed for precision layer winding with low built up factors. Typical applications are the production of variacs, potentiometers and transformer secondary windings. All the winding heads work with a robust gear rack and drive gear system, this allows the winding head to generate a large amount of torque which makes it suitable for large wire size. The wire is dereeled from the winding magazine via two guide rollers as it is layered on the core, the magazine itself is held back under con-

stant tension via the breaking system which is adjustable to suit each wire size. All gear rack winding heads can utilise two designs of magazines the „KN“ type has a quick opening facility and the „SN“ type which has a completely removeable section for taller cores. A range of narrow racks and multifilar wire guides can be supplied for reduced core I.D's and strip winding. Customized components for special applications can be supplied upon request.



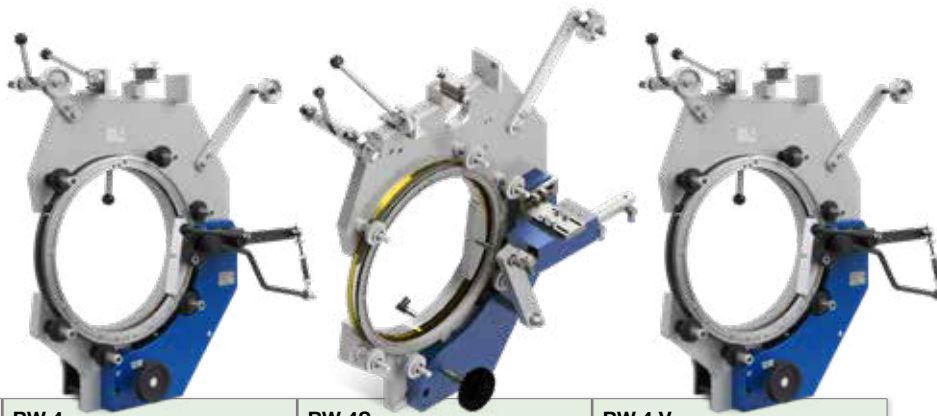
| winding head data | RW 0 | | RW090 | | RW 1 | | RW 2 | |
|--------------------------|------------------------|----------|------------------------|---------------|--|----------|--|----------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,1-0,6 | 23-28 | 0,1 - 0,5 | 24 - 38 | 0,2-1,0 | 18-32 | 0,2-1,4 | 15½-32 |
| magazine diameter | 72 | 2,83 | 90 | 3,543 | 130 | 5,11 | 210 | 8,26 |
| finished core OD | 25-150 | 1,0-6,0 | 10 - 30 | 0,393 - 1,181 | 25-150 | 1,0-6,0 | 25-350 | 1,0-14,0 |
| finished core ID | 11 | 0,433 | 8 | 0,315 | 13 | 0,51 | 17 | 0,70 |
| finished height | 22 | 0,87 | 22 | 0,866 | 50 | 1,96 | 80 | 3,15 |
| max. winding speed rpm* | 305* | | 200* | | 230* | | 230* | |
| compatible roller tables | RW 222-L, RW 222-P | | RW 111 | | RW 222-L, RW 222-VL, RW 222-P, RW 222-VP | | RW 222-L, RW 222-VL, RW 222-P, RW 222-VP, RW 332-L, RW 332-P | |
| compatible m/c bases | all RWE machine series | | all RWE machine series | | all RWE machine series | | all RWE machine series | |

* depending on winding application



| winding head data | RW 3 | | RW 3S - 2 mm to FID of RW 3 | | RW 34 | |
|--------------------------|--|-------------|--|----------|------------------------|----------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,4-2,5 | 10-26 | 0,4-1,4 | 15½-26 | 0,2-0,3 | 28-32 |
| magazine diameter | 220 | 8,65 | 220 | 8,66 | 220 | 8,66 |
| finished core OD | 25-350 | 1,0-14 | 25-350 | 1,0-14 | 35-70 | 1,3-2,7 |
| finished core ID | 25 | 1,0 | 23 | 0,9 | 12 | 0,47 |
| finished height | 100 (120) | 3,93 (4,72) | 100 | 3,93 | 18 | 0,7 |
| max. winding speed rpm* | 150* | | 150* | | 150* | |
| compatible roller tables | RW 222-L, RW 222-VL, RW 222-P, RW 222-VP, RW 332-L, RW 332-P | | RW 222-L, RW 222-VL, RW 222-P, RW 222-VP, RW 332-L, RW 332-P | | RW 112 | |
| compatible m/c bases | all RWE machine series | | all RWE machine series | | all RWE machine series | |

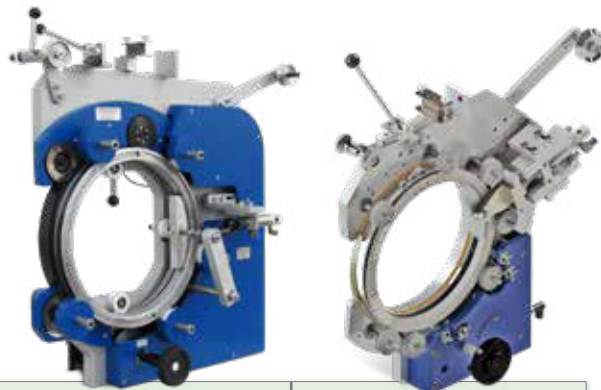
* depending on winding application



| winding head data | RW 4 | | RW 4S - 4 mm to FID of RW 4 | | RW 4-V +4 mm to FID of RW 4 | |
|--------------------------|------------------------|------------|--------------------------------|----------|--------------------------------|----------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,4-2,36 | 11-26 | 0,4-1,4 | 15-26 | 0,4-2,8 | 9½-26 |
| magazine diameter | 340 | 13,39 | 340 | 13,33 | 340 | 13,39 |
| finished core OD | 60-500 | 2,4-20 | 60-500 | 2,4-20 | 60-500 | 2,4-20 |
| finished core ID | 25 | 1,0 | 23 | 0,9 | 29 | 1,14 |
| finished height | 150 (170) | 5,9 (6,69) | 150 | 5,9 | 150 | 5,9 |
| max. winding speed rpm* | 85* | | 85* | | 85* | |
| compatible roller tables | RW 332-L, RW 332-P | | RW 332-L, RW 332-P | | RW 332-L, RW 332-P | |
| compatible m/c bases | all RWE machine series | | all RWE machine series | | all RWE machine series | |

* depending on winding application

Optional all heads are also available with mechanical brake system.



| winding head data | RW 4-RZ | | RW 3,5 | |
|--------------------------|------------------------|------------|------------------------|----------|
| | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,4-2,0 | 12-26 | 0,4-2,5 | 10-26 |
| magazine diameter | 340 | 13,39 | 280 | 11,02 |
| finished core OD | 60-500 | 2,4-20 | 40-500 | 1,6-20 |
| finished core ID | 32 | 1,25 | 25 | 1,0 |
| finished height | 150 (170) | 5,9 (6,69) | 100 | 3,9 |
| max. winding speed rpm* | 320* | | 135* | |
| compatible roller tables | RW 332-L, RW 332-P | | RW 222VL, RW 332-L | |
| compatible m/c bases | all RWE machine series | | all RWE machine series | |

* depending on winding application

Optional all heads are also available with mechanical brake system.

Magazine data base with wire length in meters: for wire length in feet, multiply by factor 3,28

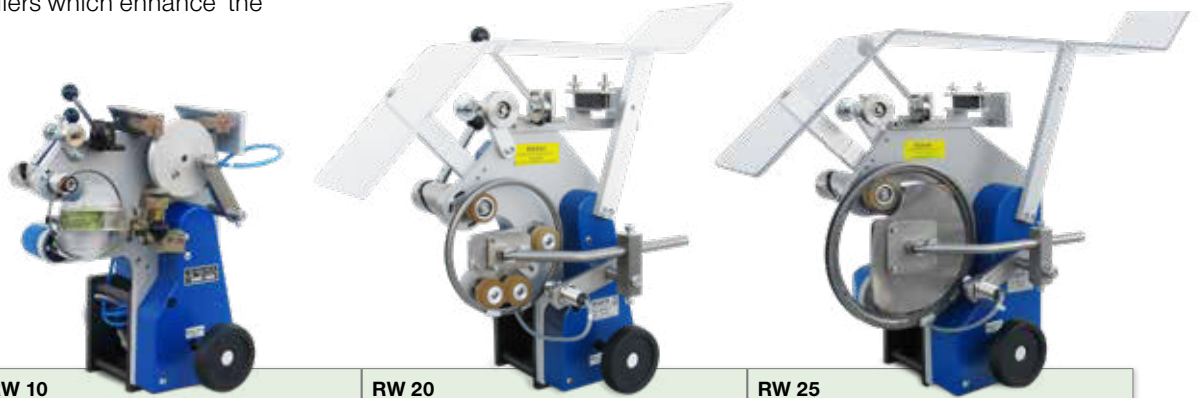
| magazine type | final hole diameter | | final hole d. max. height | | 0,4 | 0,5 | 0,6 | 0,71 | 0,8 | 0,9 | 1,0 | 1,12 | 1,25 | 1,32 | 1,4 | 1,5 | 1,6 | 1,7 | 1,8 | 1,9 | 2,0 | 2,12 | 2,24 | 2,36 | 2,5 | 2,65 | 2,8 | mm | | |
|------------------------------------|---------------------|-------|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|--|
| | mm | inch | mm | inch | 26 | 24 | 22½ | 21 | 20 | 19 | 18 | 17 | 16½ | 16 | 15½ | 15 | 14½ | 14 | 13½ | 13 | 12½ | 12 | 11½ | 11 | 10½ | 10 | 9½ | AWG | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RW 4, RW 4S, RW 4-V, RW4-RZ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4/20KN | 25 | 0,984 | 40 | 1,575 | 144 | 94 | 66 | 48 | 38 | 30 | 25 | 20 | 16 | 14 | 13 | 11 | 10 | 9 | 8 | 7 | 6 | 6 | | | | | | | | |
| 4/30KN | 28 | 1,102 | 45 | 1,772 | 261 | 170 | 119 | 87 | 69 | 55 | 45 | 36 | 29 | 26 | 23 | 20 | 18 | 16 | 14 | 13 | 12 | 10 | | | | | | | | |
| 4/35KN | 30 | 1,181 | 50 | 1,969 | 278 | 181 | 127 | 92 | 73 | 58 | 48 | 38 | 31 | 28 | 25 | 22 | 19 | 17 | 15 | 14 | 12 | 11 | | | | | | | | |
| 4/35SN | 30 | 1,181 | 50 | 0,000 | 285 | 186 | 130 | 95 | 75 | 60 | 49 | 39 | 32 | 29 | 25 | 22 | 20 | 17 | 16 | 14 | 13 | 11 | | | | | | | | |
| 4/40KN/SN | 35 | 1,378 | 60 | 2,362 | 419 | 272 | 191 | 139 | 110 | 88 | 72 | 58 | 47 | 42 | 37 | 33 | 29 | 26 | 23 | 21 | 19 | 17 | 15 | 13 | | | | | | |
| 4/45KN/SN | 40 | 1,575 | 61 | 2,362 | 621 | 404 | 284 | 206 | 164 | 130 | 106 | 85 | 69 | 62 | 55 | 48 | 43 | 38 | 34 | 31 | 28 | 25 | 22 | 20 | | | | | | |
| 4/50KN/SN | 45 | 1,772 | 62 | 2,441 | 826 | 537 | 377 | 274 | 218 | 173 | 141 | 114 | 92 | 83 | 74 | 65 | 57 | 51 | 45 | 41 | 37 | 33 | 30 | 27 | | | | | | |
| 4/60KN/SN | 55 | 2,165 | 68 | 2,677 | 1022 | 665 | 467 | 339 | 269 | 214 | 175 | 140 | 114 | 102 | 91 | 80 | 70 | 63 | 56 | 50 | 45 | 41 | 37 | 33 | 30 | 26 | 24 | 24 | 24 | |
| 4/65KN/SN | 60 | 2,362 | 73 | 2,874 | 1275 | 829 | 583 | 423 | 336 | 266 | 218 | 175 | 142 | 127 | 114 | 100 | 88 | 78 | 70 | 63 | 57 | 51 | 46 | 41 | 37 | 33 | 29 | 29 | 29 | |
| 4/70KN/SN | 65 | 2,559 | 78 | 3,071 | 1445 | 940 | 660 | 480 | 381 | 302 | 248 | 199 | 161 | 145 | 129 | 113 | 100 | 89 | 79 | 71 | 64 | 58 | 52 | 47 | 42 | 37 | 33 | 33 | 33 | |
| 4/75KN/SN | 70 | 2,756 | 85 | 0,000 | 1749 | 1137 | 799 | 581 | 461 | 365 | 300 | 240 | 195 | 175 | 156 | 137 | 121 | 107 | 96 | 86 | 78 | 70 | 63 | 56 | 51 | 45 | 40 | 40 | 40 | |
| 4/80KN/SN | 75 | 2,953 | 90 | 3,543 | 2057 | 1338 | 940 | 683 | 542 | 430 | 352 | 283 | 229 | 206 | 184 | 161 | 142 | 126 | 113 | 102 | 92 | 82 | 74 | 66 | 59 | 53 | 47 | 47 | 47 | |
| 4/90 KN/SN | 85 | 3,346 | 98 | 3,858 | 2448 | 1592 | 1119 | 813 | 645 | 512 | 419 | 337 | 273 | 245 | 218 | 191 | 169 | 150 | 134 | 121 | 109 | 98 | 87 | 79 | 71 | 63 | 56 | 56 | 56 | |
| 4/93 KN | 88 | 3,465 | 105 | 0,000 | 2812 | 1829 | 1285 | 934 | 741 | 588 | 482 | 387 | 313 | 281 | 251 | 220 | 194 | 172 | 154 | 139 | 125 | 112 | 101 | 91 | 81 | 72 | 65 | 65 | 65 | |
| 4/100 KN/SN | 100 | 3,937 | 130 | 5,118 | 3191 | 2075 | 1458 | 1059 | 841 | 667 | 547 | 439 | 355 | 319 | 285 | 249 | 220 | 196 | 175 | 158 | 142 | 127 | 114 | 103 | 92 | 82 | 74 | 74 | 74 | |
| 4/108 SN | 108 | 4,252 | 133 | 0,000 | 3846 | 2501 | 1758 | 1277 | 1014 | 804 | 659 | 529 | 428 | 385 | 343 | 300 | 265 | 236 | 211 | 190 | 171 | 153 | 137 | 124 | 111 | 99 | 89 | 89 | 89 | |
| 4/110 SN | 110 | 4,331 | 134 | 0,000 | 4008 | 2607 | 1832 | 1331 | 1057 | 838 | 687 | 551 | 446 | 401 | 358 | 313 | 276 | 246 | 220 | 198 | 178 | 160 | 143 | 129 | 116 | 103 | 92 | 92 | 92 | |
| 4/120KN/SN | 115 | 4,528 | 135 | 5,315 | 4439 | 2887 | 2029 | 1474 | 1170 | 928 | 760 | 610 | 494 | 444 | 396 | 347 | 306 | 272 | 244 | 219 | 198 | 177 | 159 | 143 | 128 | 114 | 102 | 102 | 102 | |
| RW 3,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3,5/50KN | 25 | 0,954 | | | 735,5 | 478,4 | 336,2 | 244,2 | 193,9 | 153,7 | 126,0 | 101,1 | 81,9 | 73,6 | 65,7 | 57,5 | 50,7 | 45,1 | 40,4 | 36,3 | 32,8 | 29,3 | 26,3 | 23,7 | 21,3 | | | | | |

Special magazines on request

High speed slider winding heads for the BENCH models

The high speed winding heads are designed for random layer winding. Typical applications are the production of transformer primary windings and windings where large amounts of turns are required in a short production time. All of the winding heads work with a side slider which dereeles the wire from the edge of the winding magazine. The magazine itself is driven by precision made friction rollers which enhance the

life of the magazine. As the wire comes off the magazine it is guided between two wire guide plates before being placed on to the core. All high speed winding heads feature the quick action magazine opening facility and a range of „S“ type magazines can be supplied for taller section cores. Customised components for special applications can be supplied upon request.



| winding head data | RW 10 | | RW 20 | | RW 25 | |
|--------------------------|---------------------------------|-----------|----------------------------|----------|-----------------------------|----------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,05-0,3 | 28½-44 | 0,08-0,7 | 21-40 | 0,08-1,0 | 18-40 |
| magazine diameter | 100 | 4 | 150 | 6 | 185 | 7,28 |
| finished core OD | 5-30 | 0,20-1,18 | 12-150 | 0,47-6,0 | 20-150 | 0,78-6,0 |
| finished core ID | 2,5 | 0,098 | 7 | 0,276 | 10 | 0,394 |
| finished height | 15 | 0,59 | 55 | 2,16 | 65 | 2,56 |
| max. winding speed rpm* | 1570 (with inside slider 1160)* | | 1410* | | 1580* | |
| compatible roller tables | RW 111 | | RW 111, RW 111-V, RW 222-L | | RW 112, RW 222-L, RW 222-VL | |
| compatible m/c bases | all RWE machine series | | all RWE machine series | | all RWE machine series | |

* depending on winding application



| winding head data | RW 30 | | RW 40 | | RW 40-V | |
|--------------------------|-------------------------------|----------|-------------------------------|----------|-------------------------------|----------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,1-1,0 | 18-38 | 0,1-1,0 | 18-38 | 0,3-1,12 | 17½-28½ |
| magazine diameter | 210 | 8,26 | 385 | 15,15 | 385 | 15,15 |
| finished core OD | 25-150 | 1,0-6,0 | 25-150 | 1,0-10,0 | 25-150 | 1,0-10,0 |
| finished core ID | 10 | 0,394 | 12 | 0,472 | 12 | 0,472 |
| finished height | 80 | 3,15 | 120 | 4,72 | 120 | 4,72 |
| max. winding speed rpm* | 1540* | | 470* | | 330* | |
| compatible roller tables | RW 222-L, RW 222-VL, RW 332-L | | RW 222-L, RW 222-VL, RW 332-L | | RW 222-L, RW 222-VL, RW 332-L | |
| compatible m/c bases | all RWE machine series | | all RWE machine series | | all RWE machine series | |

* depending on winding application

Magazine data base with wire length in meters: for wire length in feet, multiply by factor 3,28

| magazine type | final hole diameter | | 0,05 | 0,08 | 0,10 | 0,15 | 0,20 | 0,25 | 0,30 | 0,40 | 0,50 | 0,60 | 0,71 | 0,80 | 0,90 | 1,0 | 1,06 | 1,12 | mm |
|------------------------------|---------------------|-------|------|-------|-------|------|------|------|------|------|------|------|------|------|------|-----|------|------|-----|
| | mm | inch | 44 | 40 | 38 | 34 ½ | 32 | 30 | 28 ½ | 26 | 24 | 22 ½ | 21 | 20 | 19 | 18 | 17 ½ | 17 | AWG |
| RW 10 | | | | | | | | | | | | | | | | | | | |
| 10/2 (with inside slider) | 2,5 | 0,098 | 60 | 25 | | | | | | | | | | | | | | | |
| 2,5 | 3,0 | 0,118 | 100 | 40 | 28 | 13 | | | | | | | | | | | | | |
| 3 | 3,5 | 0,138 | 140 | 60 | 40 | 19 | 11 | 7 | | | | | | | | | | | |
| 3,5 | 4,0 | 0,157 | 190 | 80 | 50 | 25 | 15 | 10 | 7 | | | | | | | | | | |
| 4 | 4,5 | 0,177 | 280 | 120 | 75 | 35 | 22 | 14 | 10 | | | | | | | | | | |
| 10/4,5 SG (with side slider) | 5,5 | 0,236 | 166 | 66 | 43 | 20 | 12 | 7,9 | 5,6 | | | | | | | | | | |
| 5 SG | 6,0 | 0,276 | 211 | 84 | 55 | 25 | 15 | 10 | 7 | | | | | | | | | | |
| 6 SG | 7,5 | 0,295 | 260 | 110 | 80 | 35 | 22 | 15 | 10 | | | | | | | | | | |
| 7 SG | 8,0 | 0,315 | 368 | 150 | 100 | 48 | 28 | 18 | 13 | | | | | | | | | | |
| 8 SG | 9,0 | 0,354 | 500 | 200 | 130 | 63 | 37 | 24 | 17 | | | | | | | | | | |
| RW 20 | | | | | | | | | | | | | | | | | | | |
| 20/6 | 7 | 0,276 | | 115 | 77 | 36 | 21 | 14 | | | | | | | | | | | |
| 8 | 10 | 0,394 | | 280 | 190 | 85 | 50 | 34 | 24 | 14 | | | | | | | | | |
| 10 | 12 | 0,472 | | 440 | 300 | 140 | 80 | 54 | 38 | 22 | 15 | 10 | | | | | | | |
| 12 | 14 | 0,551 | | 650 | 430 | 200 | 120 | 80 | 56 | 33 | 22 | 15 | | | | | | | |
| 14 | 16 | 0,623 | | 1300 | 860 | 400 | 240 | 160 | 110 | 65 | 43 | 30 | 23 | | | | | | |
| 16 | 22 | 0,866 | | 1950 | 1300 | 600 | 360 | 240 | 167 | 98 | 65 | 46 | 35 | | | | | | |
| 20-S | 25 | 0,984 | | 3650 | 2430 | 1140 | 670 | 450 | 313 | 183 | 122 | 85 | 65 | | | | | | |
| 25-S | 30 | 1,181 | | 4250 | 2840 | 1330 | 780 | 520 | 364 | 213 | 142 | 100 | 75 | | | | | | |
| 30-S | 35 | 1,378 | | 6000 | 4000 | 1870 | 1100 | 730 | 514 | 300 | 200 | 140 | 107 | | | | | | |
| 40-S | 40 | 1,575 | | 8800 | 5900 | 2740 | 1600 | 1080 | 750 | 440 | 295 | 205 | 156 | | | | | | |
| RW 25 | | | | | | | | | | | | | | | | | | | |
| 25/8 | 10 | 0,394 | | 347 | 235 | 105 | 62 | 42 | 30 | 17 | | | | | | | | | |
| 10 | 12 | 0,472 | | 545 | 372 | 175 | 99 | 66 | 47 | 27 | 18 | 12 | | | | | | | |
| 12 | 14 | 0,551 | | 806 | 533 | 248 | 148 | 99 | 69 | 40 | 27 | 18 | 12 | 9 | | | | | |
| 14 | 16 | 0,623 | | 1612 | 1066 | 496 | 297 | 198 | 136 | 80 | 53 | 37 | 28 | 22 | | | | | |
| 16 | 20 | 0,787 | | 2418 | 1612 | 744 | 446 | 297 | 207 | 121 | 80 | 57 | 43 | 36 | 29 | | | | |
| 20-S | 25 | 0,984 | | 4526 | 3013 | 1413 | 830 | 558 | 388 | 226 | 151 | 105 | 80 | 55 | 46 | | | | |
| 25-S | 30 | 1,181 | | 5270 | 3512 | 1649 | 967 | 644 | 451 | 264 | 176 | 124 | 93 | 70 | 58 | | | | |
| 30-S | 35 | 1,378 | | 7440 | 4960 | 2318 | 1364 | 905 | 637 | 372 | 248 | 173 | 132 | 79 | 66 | | | | |
| 40-S | 40 | 1,575 | | 10900 | 7316 | 3397 | 1984 | 1339 | 930 | 545 | 365 | 254 | 193 | 96 | 82 | | | | |
| RW 30 | | | | | | | | | | | | | | | | | | | |
| 30/8 | 10 | 0,394 | | | 260 | 120 | 72 | 48 | 34 | 20 | | | | | | | | | |
| 10 | 12 | 0,472 | | | 410 | 190 | 113 | 75 | 53 | 30 | 20 | | | | | | | | |
| 12 | 14 | 0,551 | | | 600 | 280 | 165 | 110 | 77 | 45 | 30 | 21 | 14 | 11 | 8 | | | | |
| 14 | 16 | 0,623 | | | 1200 | 560 | 330 | 220 | 154 | 90 | 60 | 42 | 33 | 26 | 21 | | | | |
| 16 (-S) | 20 | 0,787 | | | 1900 | 890 | 520 | 350 | 245 | 140 | 95 | 66 | 53 | 42 | 33 | 27 | | | |
| 20 (-S) | 25 | 0,984 | | | 3150 | 1470 | 865 | 578 | 405 | 235 | 158 | 110 | 84 | 63 | 53 | 45 | | | |
| 25 (-S) | 30 | 1,181 | | | 3895 | 2875 | 1110 | 726 | 521 | 300 | 200 | 140 | 100 | 80 | 66 | 54 | | | |
| 30-S | 35 | 1,378 | | | 4530 | 2120 | 1245 | 830 | 580 | 340 | 225 | 158 | 121 | 90 | 75 | 63 | | | |
| 40-S | 40 | 1,575 | | | 5650 | 2640 | 1550 | 1035 | 725 | 425 | 280 | 198 | 150 | 110 | 94 | 80 | | | |
| 50-S | 50 | 1,969 | | | 8190 | 3940 | 2332 | 1527 | 1096 | 631 | 416 | 294 | 213 | 169 | 138 | 114 | | | |
| RW 40, RW 40-V | | | | | | | | | | | | | | | | | | | |
| 40/10 | 12 | 0,472 | | | 740 | 360 | 210 | 140 | 100 | 60 | 40 | | | | | | | | |
| 12 | 14 | 0,551 | | | 1150 | 560 | 330 | 210 | 155 | 90 | 60 | | | | | | | | |
| 14 | 16 | 0,623 | | | 2310 | 1100 | 650 | 430 | 310 | 180 | 117 | 83 | | | | | | | |
| 16 (-S) | 20 | 0,787 | | | 3680 | 1770 | 1050 | 690 | 490 | 280 | 187 | 132 | 97 | 76 | 62 | 52 | | | |
| 20 (-S) | 25 | 0,984 | | | 5660 | 2720 | 1610 | 1060 | 760 | 435 | 290 | 204 | 150 | 117 | 96 | 80 | | | |
| 25 (-S) | 30 | 1,181 | | | 7060 | 3400 | 2010 | 1320 | 950 | 545 | 360 | 255 | 187 | 146 | 120 | 100 | | | |
| 30-S | 35 | 1,378 | | | 8700 | 4070 | 2400 | 1580 | 1130 | 650 | 420 | 300 | 210 | 170 | 130 | 111 | | | |
| 40-S | 40 | 1,575 | | | 11000 | 5100 | 3000 | 2000 | 1400 | 830 | 540 | 380 | 270 | 210 | 170 | 140 | | | |
| 55-S | 50 | 1,969 | | | | | | | 2475 | 1430 | 930 | 650 | 475 | 377 | 299 | 245 | | | |
| 60-S | 55 | 2,17 | | | | | | | 3171 | 1833 | 1192 | 838 | 608 | 483 | 383 | 314 | | | |
| 70-S (RW 40-V only) | 65 | 2,56 | | | | | | | 4258 | 2460 | 1600 | 1123 | 815 | 648 | 514 | 420 | 375 | 337 | |
| 100-S (RW 40-V only) | 75 | 2,95 | | | | | | | 6837 | 3951 | 2569 | 1805 | 1311 | 1041 | 824 | 676 | 602 | 542 | |

Slider data base: list of slider for the magazines

| winding head type | RW 10 | | | | RW 20 | | | RW 25 / RW 30 | | | | RW40 | | |
|-------------------|-------------|-------------|-----------|------------|-----------|------------|-------------|---|----------------------------|----------------------------|------------|-------------|-------------|--|
| | 10/2-10/3,5 | 10/4-10/4,5 | 10/5-10/6 | 10/7-10/10 | 20/6 | 20/8-20/10 | 20/12-20/40 | 25/8-25/10 25/12-1-25/14-1 30/8-30/10 | 25/12-25/16 30/12-30/16 | 25/20-25/40 30/20-30/60 | 40/8-40/10 | 40/12-40/16 | 40/12-40/60 | |
| inside slider | 0,08 - 0,28 | - | - | - | - | - | - | - | - | - | - | - | - | |
| 1-tail slider | - | 0,05-0,10 | 0,08-0,15 | 0,08-0,15 | 0,08-0,15 | 0,08-0,20 | 0,08-0,20 | 0,10-0,20 | 0,10-0,20 | 0,10-0,25 | 0,10-0,20 | 0,10-0,20 | 0,10-0,25 | |
| 2-tail slider | - | - | 0,15-0,25 | 0,15-0,25 | 0,15-0,25 | 0,20-0,35 | 0,20-0,40 | 0,20-0,30 | 0,20-0,35 | 0,25-0,45 | 0,20-0,30 | 0,20-0,35 | 0,25-0,50 | |
| 3-tail slider | - | - | - | 0,25-0,35 | - | 0,35-0,60 | 0,40-0,70 | 0,30-0,40 | 0,35-0,50 | 0,45-0,90 | 0,30-0,40 | 0,35-0,50 | 0,50-0,90 | |
| 4-tail slider | - | - | - | - | - | - | - | - | - | 0,80-1,0 | - | - | 0,80-1,0 | |

Flat belt winding heads for the BENCH models

The flat belt winding heads are designed for winding heavy wires into small internal diameters without the use of gear racks or side sliders. Typical applications are the production of chokes, filters and small transformer secondary windings. All of the winding heads work with a flat toothed belt which drives the magazine. The winding tension is varied by applying pressure on the smooth edge of the magazine where the wire is dereeled from. All of the belt winding heads feature a range

of robust split magazines together with the magazine quick opening device. For balancing type chokes there is a wire guide finger which aids in the production of equal start, finish windings. For the winding head type RW 300, „S“ type and „K“ type magazines can be supplied for taller section cores and transformer secondary windings. Customised components for special applications can be supplied upon request.



| winding head data | RW 100 | | RW 200 | |
|--------------------------|------------------------|----------|----------------------------|----------|
| | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,2-0,9 | 21-32 | 0,3-1,0 | 18-28½ |
| magazine diameter | 97 | 3,8 | 145 | 5,7 |
| finished core OD | 5-35 | 0,2-1,58 | 16-150 | 0,63-6,0 |
| finished core ID | 3 | 0,12 | 5 | 0,197 |
| finished core height | 15 | 0,59 | 25 | 0,98 |
| max. winding speed rpm* | 1400* | | 960* | |
| compatible roller tables | RW 111, RW111-V | | RW 111-V, RW 112, RW 222-L | |
| compatible m/c bases | all RWE machine series | | all RWE machine series | |

* depending on winding application



| winding head data | RW 200-V | | RW 300 | |
|--------------------------|--|----------|--|----------|
| | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,4-1,6 | 14-25 | 0,3-1,8 | 14-26 |
| magazine diameter | 145 | 5,7 | 210 | 8,27 |
| finished core OD | 16-150 | 0,63-6,0 | 35-150 | 1,38-6,0 |
| finished core ID | 6 | 0,236 | 8 | 0,315 |
| finished core height | 25 | 0,98 | 60 | 2,36 |
| max. winding speed rpm* | 950 (Ø 0,4-1,0 mm)*, 380 (Ø 1,1-1,6 mm)* | | 490 (Ø 0,3-1,0 mm)*, 180 (Ø 1,1-1,8 mm)* | |
| compatible roller tables | RW 111-V, RW 112, RW 222-L, RW 222-P | | RW 222-L, RW 222-VL, RW 222-P, RW 222-VP, RW 332-L, RW 332-P | |
| compatible m/c bases | all RWE machine series | | all RWE machine series | |

* depending on winding application

Magazine data base with wire length in meters: for wire length in feet, multiply by factor 3,28

| magazine type | final hole diameter | | 0,20 | 0,30 | 0,40 | 0,50 | 0,60 | 0,71 | 0,80 | 0,90 | 1,0 | 1,12 | 1,25 | 1,32 | 1,4 | 1,5 | 1,6 | 1,7 | 1,8 | mm |
|-------------------|---------------------|-------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|
| | mm | inch | 32 | 28½ | 26 | 24 | 22½ | 21 | 20 | 19 | 18 | 17 | 16½ | 16 | 15½ | 15 | 14½ | 14 | 13½ | AWG |
| RW 100 | | | | | | | | | | | | | | | | | | | | |
| 100/2 | 3 | 0,118 | 6 | 2,9 | | | | | | | | | | | | | | | | |
| 2.25 | 3 | 0,118 | 5,7 | 2,7 | 1,5 | | | | | | | | | | | | | | | |
| 2,5 | 3,5 | 0,138 | 10 | 4,6 | 2,5 | | | | | | | | | | | | | | | |
| 3 | 4 | 0,158 | 14 | 6,6 | 3,8 | 2,5 | | | | | | | | | | | | | | |
| 3,5 | 5 | 0,197 | 21 | 10 | 6 | 4 | 2,6 | 1,9 | | | | | | | | | | | | |
| 4 | 5,5 | 0,217 | 28 | 13 | 8 | 5 | 3,5 | 2,5 | 2,4 | 1,9 | | | | | | | | | | |
| 4,5 | 6 | 0,236 | 37 | 18 | 10 | 7 | 5 | 3 | 3,2 | 2,5 | | | | | | | | | | |
| 5 | 6,5 | 0,256 | 46 | 22 | 13 | 9 | 6 | 4,5 | 3,4 | 2,7 | | | | | | | | | | |
| 5,5 | 7,5 | 0,295 | 60 | 29 | 17 | 11 | 8 | 5,5 | 4,8 | 3,8 | | | | | | | | | | |
| 6 | 8 | 0,315 | 77 | 36 | 21 | 14 | 10 | 7 | 5,5 | 4 | | | | | | | | | | |
| RW 200 | | | | | | | | | | | | | | | | | | | | |
| 200/3 | 5 | 0,197 | | 11 | 6,5 | | | | | | | | | | | | | | | |
| 3,5 | 5,5 | 0,217 | | 15 | 8,5 | 5,5 | | | | | | | | | | | | | | |
| 4 | 6 | 0,236 | | 20 | 12 | 8 | | | | | | | | | | | | | | |
| 4,5 | 6,5 | 0,256 | | 30 | 17 | 11 | 8 | | | | | | | | | | | | | |
| 5 | 7 | 0,276 | | 36 | 21 | 14 | 10 | 7 | 5 | 4 | | | | | | | | | | |
| 5,5 | 7,5 | 0,295 | | 47 | 27 | 18 | 12 | 9 | 7 | 6 | 5 | | | | | | | | | |
| 6 | 8 | 0,315 | | 58 | 33 | 22 | 15 | 11 | 9 | 7 | 6 | | | | | | | | | |
| 6,5 | 8,5 | 0,335 | | 75 | 42 | 28 | 19 | 14 | 11,9 | 9 | 8 | | | | | | | | | |
| 7 | 9 | 0,355 | | 87 | 60 | 33 | 23 | 17 | 13 | 11 | 9 | | | | | | | | | |
| 7,5 (K) | 10,5 | 0,413 | | 115 | 66 | 43 | 30 | 22 | 17,5 | 14 | 11 | | | | | | | | | |
| 8 | 11 | 0,433 | | 140 | 81 | 53 | 37 | 27 | 21 | 17 | 14 | | | | | | | | | |
| RW 200-V | | | | | | | | | | | | | | | | | | | | |
| 200-V/4,2 | 6 | 0,236 | | | 8 | 5,3 | 3,7 | 2,7 | 2,1 | 1,7 | 1,4 | 1,1 | 0,9 | 0,8 | | | | | | |
| 4,7 | 7 | 0,276 | | | 11 | 7,2 | 5 | 3,7 | 2,9 | 2,3 | 1,9 | 1,5 | 1,4 | 1,2 | | | | | | |
| 5,1 | 7,5 | 0,295 | | | 14,6 | 9,5 | 6,7 | 4,8 | 3,8 | 3 | 2,5 | 2,1 | 1,8 | 1,6 | 1,4 | 1,3 | 1,1 | | | |
| 5,8 | 8,5 | 0,335 | | | 19,5 | 12,7 | 8,9 | 6,5 | 5,1 | 4 | 3,35 | 2,7 | 2,15 | 1,95 | 1,5 | 1,7 | 1,4 | | | |
| 6,3 | 9 | 0,355 | | | 25 | 16,2 | 11,4 | 8,3 | 6,6 | 5,2 | 4,2 | 3,4 | 2,78 | 2,5 | 2,2 | 1,9 | 1,7 | | | |
| 6,6 | 9,5 | 0,374 | | | 32,8 | 21,3 | 15 | 10,9 | 8,6 | 6,8 | 5,6 | 4,5 | 3,65 | 3,28 | 2,9 | 2,5 | 2,2 | | | |
| 7,0 (K) | 10 | 0,394 | | | 39 | 25,6 | 18 | 13 | 10,4 | 8,2 | 6,7 | 5,4 | 4,38 | 3,9 | 3,5 | 3 | 2,7 | | | |
| 7,4 (K) | 11 | 0,433 | | | 48 | 31,5 | 22,1 | 16 | 12,7 | 10 | 8,3 | 6,6 | 5,4 | 4,8 | 4,3 | 3,7 | 3,3 | | | |
| 7,8 (K) | 11,5 | 0,453 | | | 65,5 | 42,6 | 29,9 | 21,7 | 17,2 | 13,6 | 11,2 | 9 | 7,3 | 6,5 | 5,8 | 5,1 | 4,5 | | | |
| 8,3 (K) | 12 | 0,473 | | | 73,1 | 47,5 | 33,4 | 24,2 | 19,2 | 15,2 | 12,5 | 10 | 8,1 | 7,3 | 6,5 | 5,7 | 5 | | | |
| 8,6 (K) | 12,5 | 0,493 | | | 91,8 | 59,7 | 41,9 | 30,5 | 24,2 | 19,2 | 15,7 | 12,6 | 10,2 | 9,1 | 8,2 | 7,1 | 6,3 | | | |
| RW 300 | | | | | | | | | | | | | | | | | | | | |
| 300/5 | 8 | 0,315 | | 42 | 24 | 16 | 11 | 8 | 6,3 | | | | | | | | | | | |
| 6 | 9 | 0,355 | | 62 | 36 | 23 | 16,5 | 12 | 9,5 | | | | | | | | | | | |
| 7 | 10 | 0,394 | | 82 | 47 | 31 | 22 | 16 | 12,7 | | | | | | | | | | | |
| 8 | 11 | 0,433 | | 92 | 54 | 36 | 25 | 18 | 15 | 12 | 10 | 8 | 6 | | | | | | | |
| 9 | 12 | 0,472 | | 149 | 86 | 56 | 40 | 29 | 23 | 19 | 15,5 | 13 | 10 | 8 | 7 | | | | | |
| 10 (S) (K) | 13 | 0,512 | | 213 | 123 | 81 | 57 | 42 | 33 | 27 | 22,5 | 19 | 16,5 | 13 | 10 | 8 | 6,5 | 5 | 4 | |
| 11 (S) (K) | 14 | 0,551 | | 293 | 170 | 111 | 79 | 57 | 45 | 37 | 31 | 25 | 23 | 19 | 16 | 12 | 9 | 7 | 5 | |
| 12 (S) (K) | 15 | 0,591 | | 381 | 219 | 145 | 102 | 74 | 59 | 48 | 40 | 33 | 30 | 25 | 21 | 16 | 12 | 9 | 6,5 | |
| 13-S (K) | 17 | 0,669 | | 430 | 127 | 162 | 113 | 82 | 65 | 52 | 42 | 34 | 31 | 26 | 22 | 17 | 13 | 10 | 13 | |
| 16-S (K) | 20 | 0,788 | | 480 | 277 | 180 | 127 | 92 | 73 | 58 | 47 | 38 | 34 | 27 | 24 | 21 | 19 | 17 | 15 | |
| 20-S (K) | 22 | 0,867 | | 580 | 335 | 218 | 153 | 111 | 88 | 70 | 57 | 46 | 37 | 33 | 29 | 26 | 23 | 20 | 18 | |
| 30-S | 24 | 0,945 | | 770 | 440 | 290 | 200 | 150 | 117 | 90 | 75 | 60 | 50 | 40 | 38 | 30 | 24 | 21 | 19 | |
| 40-S | 30 | 1,182 | | 881 | 509 | 331 | 232 | 169 | 134 | 106 | 87 | 70 | 56 | 50 | 45 | 39 | 35 | 31 | 27 | |

model 300/5 - 300/13 = split type, model 300/10K - 300/20K = hinge type (K), model 300/10S - 300/40S = segment type (S)

Miniatur and multisystem winding heads for BENCH models

The multisystem winding heads are designed for winding fine wires onto small cores. It incorporates three proven winding systems on one head, this gives you the best winding solution possible for each specific application, and offers you the maximum production capability with a minimum cost. Typical applica-

tions are the production of small pulse transformers, small primary windings and small chokes. The winding heads are designed for instant change over from one system to another and features a range of flat and round belts, side sliders and robust quick opening magazines.



| winding head data | round belt system RW 60-C | | flat belt system RW 60-C | | side slider system RW 60-SG | |
|--------------------------|-------------------------------------|----------|------------------------------------|----------|---------------------------------------|----------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,06 - 0,15 | 34½-42½ | 0,15-0,6 | 26-34½ | 0,05-0,2 | 32-44 |
| magazine diameter | 60 | 2,4 | 60 | 2,4 | 60 | 2,4 |
| finished core OD | 5-14 | 0,2-0,55 | 5-14 | 0,2-0,55 | 25-60 | 0,1-2,4 |
| finished core ID | 1,6 | 0,062 | 2,0 | 0,79 | 11 | 0,43 |
| finished core height | 10 | 0,39 | 10 | 0,39 | 10 | 0,39 |
| max. winding speed rpm* | 1850* | | 1850* | | 1800* | |
| compatible roller tables | RW 111 | | RW 111 | | RW 111-MINI-D60 | |
| compatible m/c bases | Alle RWE-Baureihen | | Alle RWE-Baureihen | | special on request | |

* depending on winding application



| winding head data | round belt system RW 100-C | | flat belt system RW 100-C | | side slider system RW 100-C | |
|--------------------------|--------------------------------------|----------|-------------------------------------|----------|---------------------------------------|----------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,07-0,5 | 25-41 | 0,15-0,71 | 21-34½ | 0,05-0,355 | 27-44 |
| magazine diameter | 97 | 3,8 | 97 | 3,8 | 99 | 3,9 |
| finished core OD | 5-35 | 0,2-1,3 | 5-35 | 0,2-1,3 | 8-35 | 0,3-1,3 |
| finished core ID | 2,5 | 0,098 | 3,0 | 0,118 | 7 | 0,276 |
| finished core height | 15 | 0,59 | 15 | 0,59 | 15 | 0,59 |
| max. winding speed rpm* | 1470* | | 1470* | | 2010* | |
| compatible roller tables | RW 111, RW 111-V | | RW 111, RW 111-V | | RW 111, RW 111-V | |
| compatible m/c bases | Alle RWE-Baureihen | | Alle RWE-Baureihen | | Alle RWE-Baureihen | |

* depending on winding application

Magazine data base with wire length in meters: for wire length in feet, multiply by factor 3,28

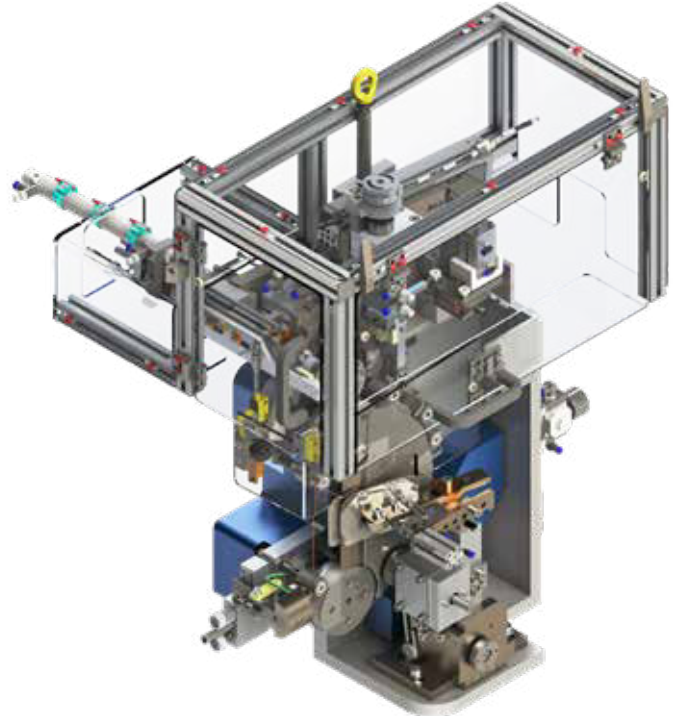
| magazine type | final hole diameter | | 0,05 | 0,06 | 0,071 | 0,08 | 0,09 | 0,1 | 0,112 | 0,125 | 0,132 | 0,15 | 0,18 | 0,20 | 0,25 | 0,3 | 0,355 | 0,4 | 0,5 | 0,6 | 0,71 | mm |
|----------------------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|-------|------|-----|-----|------|-----|
| | mm | inch | 44 | 42½ | 41 | 40 | 39 | 38 | 37 | 36 | 35½ | 34½ | 33 | 32 | 30 | 28½ | 27 | 26 | 24 | 22½ | 21 | AWG |
| RW 60-C | | | | | | | | | | | | | | | | | | | | | | |
| round and flat belt 60-C/1,2 | 1,6 | 0,062 | | 4,8 | 3,3 | 2,7 | 2,1 | 1,7 | 1,4 | 1,1 | 0,9 | 0,7 | | | | | | | | | | |
| 1,4 | 1,8 | 0,070 | | 6,3 | 4,4 | 3,6 | 2,7 | 2,3 | 1,8 | 1,5 | 1,3 | 1 | | | | | | | | | | |
| 1,6 | 2,0 | 0,078 | | 11,2 | 7,9 | 6,3 | 5 | 4,1 | 3,4 | 2,7 | 2,4 | 1,8 | 1,3 | 1,1 | | | | | | | | |
| 1,8 | 2,2 | 0,086 | | 19,2 | 13,5 | 10,9 | 8,7 | 7,2 | 5,8 | 4,7 | 4,2 | 3,3 | 2,4 | 1,9 | 1,2 | 0,9 | | | | | | |
| 2 | 2,4 | 0,094 | | 25,8 | 18,2 | 14,7 | 11,7 | 9,6 | 7,8 | 6,3 | 5,7 | 4,5 | 3,2 | 2,6 | 1,7 | 1,2 | 0,9 | 0,7 | | | | |
| 2,5 | 2,89 | 0,114 | | 50,5 | 35,7 | 28,8 | 22,8 | 18,9 | 15,3 | 12,4 | 11,2 | 8,8 | 6,3 | 5,2 | 3,4 | 2,4 | 1,7 | 1,3 | 0,9 | 0,6 | | |
| 2,8 | 3,2 | 0,125 | | 75 | 52 | 42 | 33 | 28 | 22 | 17 | 15 | 12 | 9 | 7,5 | 5 | 3,5 | 2,3 | 2,0 | 1,3 | 0,9 | | |
| RW 60-SG | | | | | | | | | | | | | | | | | | | | | | |
| 6S | 11 | 0,435 | 386,0 | 268,1 | 197,0 | 157,3 | 126,1 | 101,5 | 82,2 | 67,0 | 60,1 | 47,5 | 33,4 | 26,3 | | | | | | | | |
| 8S | 12 | 0,472 | 752,2 | 522,4 | 383,8 | 306,5 | 245,6 | 197,8 | 160,2 | 130,6 | 117,2 | 92,6 | 65,0 | 51,2 | | | | | | | | |
| 11S | 12,5 | 0,492 | 165,5 | 809,4 | 94,6 | 474,8 | 380,6 | 306,5 | 48,3 | 02,3 | 181,6 | 43,5 | 00,8 | 79,3 | | | | | | | | |
| 15S | 17 | 0,669 | 843,5 | 669,2 | 961,0 | 566,0 | 255,0 | 010,8 | 18,7 | 667,2 | 98,9 | 73,1 | 32,4 | 61,5 | | | | | | | | |
| RW 100-C | | | | | | | | | | | | | | | | | | | | | | |
| round and flat belt 100-C/1,8 | 2,2 | 0,087 | | | 27 | 21 | 17 | 14 | 11 | 9 | 8 | 6 | | | | | | | | | | |
| 2 | 2,5 | 0,098 | | | 42 | 34 | 25 | 19 | 18 | 14 | 13 | 10 | 7,2 | 6 | 4 | 2,9 | | | | | | |
| 2,25 | 2,75 | 0,108 | | | 44 | 35 | 26 | 20 | 19 | 15 | 14 | 9,4 | 6,8 | 5,7 | 3,6 | 2,7 | 2 | 1,5 | | | | |
| 2,5 | 3 | 0,118 | | | 70 | 57 | 45 | 37 | 30 | 24 | 22 | 17 | 12 | 10 | 6,8 | 4,8 | 3,5 | 2,6 | | | | |
| 3 | 3,5 | 0,138 | | | | 80 | 63 | 52 | 42 | 34 | 31 | 24 | 17 | 14,5 | 9,5 | 6,8 | 4,9 | 3,94 | 2,5 | | | |
| 3,5 | 4,5 | 0,177 | | | | 120 | 95 | 77 | 63 | 51 | 46 | 36 | 25 | 21 | 14 | 10 | 7,2 | 6 | 4 | 2,6 | 1,3 | |
| 4 | 5 | 0,197 | | | | 156 | 123 | 102 | 83 | 67 | 60 | 47 | 40 | 28 | 18 | 13 | 10,5 | 8 | 5 | 3,5 | 2,5 | |
| 4,5 | 5,5 | 0,217 | | | | 185 | 148 | 122 | 99 | 80 | 72 | 57 | 41 | 37 | 22 | 18 | 11 | 10 | 7 | 5 | 3 | |
| 5 | 6 | 0,236 | | | | 243 | 193 | 159 | 130 | 105 | 95 | 74 | 62 | 46 | 29 | 22 | 16,5 | 13 | 9 | 6 | 4,5 | |
| RW 100-C | | | | | | | | | | | | | | | | | | | | | | |
| side glider 100-C | | | | | | | | | | | | | | | | | | | | | | |
| 10/4,5-SG | 5 | 0,217 | 166 | 116 | 82 | 66 | 52 | 43 | 35 | 28 | 25 | 20 | 14 | 12 | 7,9 | 5,6 | | | | | | |
| 5-SG | 5,5 | 0,216 | 211 | 148 | 104 | 84 | 67 | 55 | 45 | 36 | 32 | 25 | 18 | 15 | 10 | 7 | | | | | | |
| 6-SG | 7 | 0,276 | 260 | 185 | 130 | 110 | 84 | 80 | 56 | 45 | 41 | 35 | 23 | 22 | 15 | 10 | | | | | | |
| 7-SG | 8 | 0,315 | 368 | 258 | 182 | 150 | 117 | 100 | 78 | 63 | 57 | 48 | 32 | 28 | 18 | 13 | | | | | | |
| 8-SG | 9 | 0,355 | 500 | 350 | 248 | 200 | 158 | 130 | 107 | 86 | 77 | 63 | 56 | 37 | 24 | 17 | 14,5 | | | | | |
| 9-SG | 10 | 0,394 | 700 | 490 | 320 | 280 | 221 | 182 | 150 | 120 | 107 | 88 | 80 | 51 | 33 | 23,8 | 21,5 | | | | | |
| 10-SG | 11 | 0,433 | 1120 | 784 | 531 | 448 | 354 | 291 | 239 | 192 | 172 | 141 | 122 | 82 | 54 | 38 | 32,5 | | | | | |
| 11-SG | 12 | 0,472 | 1512 | 1058 | 727 | 604 | 478 | 393 | 323 | 260 | 232 | 190 | 133 | 111 | 72 | 51 | 42 | | | | | |
| 12-SG | 13 | 0,512 | 2192 | 1534 | 1048 | 878 | 693 | 570 | 469 | 377 | 337 | 276 | 192 | 162 | 105 | 75 | 62 | | | | | |

PATENTED

Magazine less winding head

The winding head without magazine is designed for winding heavy wires down to very small core ID. This technology allows a smaller final core ID as with standard winding heads at the market with magazine. The wire is fixed on a special

roller system. During wind the loaded wire get consumed, which reduce the needed ID. Therefor the minimum FID can be approx. 4 time wire dia. Typical applications are production of chocks and filters as well transformer secondary windings.



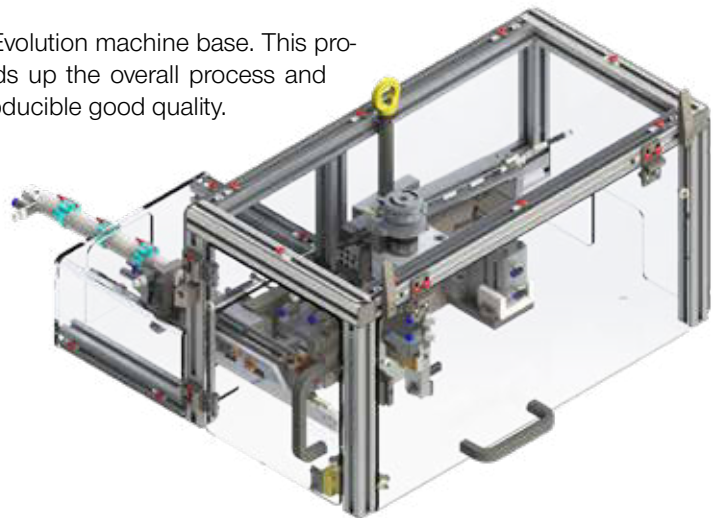
| winding head data | RW 03-ML | |
|----------------------------|--------------------------|----------|
| | mm | inch/AWG |
| wire range | 0,6 - 2,0 | 23 - 12 |
| length of one loading turn | 970 | 38 |
| finished core OD | 25 - 80 | 1 - 3,1 |
| finished core ID | 4 x wireØ | |
| finished core height | 70 | 2,76 |
| max. winding speed rpm | 220 | |
| compatible roller tables | RW 222-VPML | |
| compatible m/c bases | all RWE - machine series | |
| max. wire length in meter | 16 : wireØ x 0,97 m | |

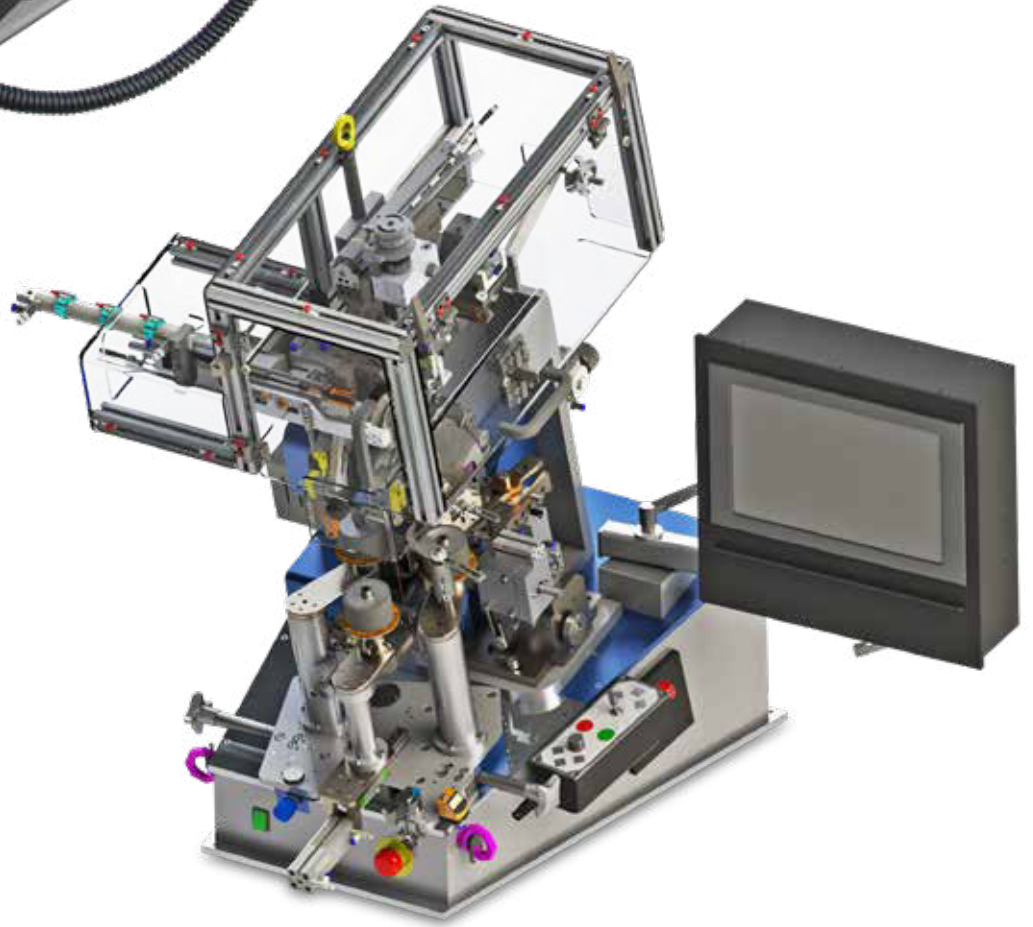
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Twisting Unit

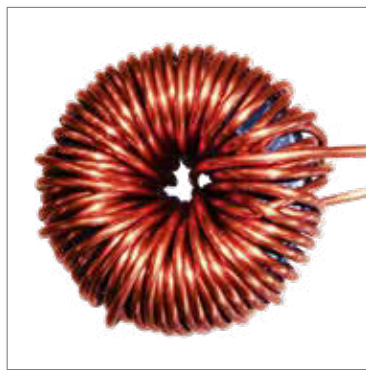
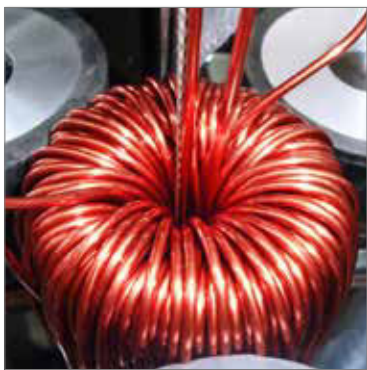
The twisting and caulking unit was developed to make the necessary connection of the wire for the magazine less winding technology. It connects the guide rope and the wire to the smallest possible diameter in the shortest possible time. The operator only has to place the loop of the rope over the cut and positioned wire. The twisting unit is connected to the con-

rol of the Evolution machine base. This process speeds up the overall process and has a reproducible good quality.





Sample applications



Gear rack taping heads for the BENCH models

These taping heads work with a gear system similar to the gear rack winding heads but vary in one major way. That is as the tape is loaded on to the tape magazine it is also taped on to the core. A flat leather belt round the outside of the tape magazine controls the

taping tension and is infinitely variable. The tape is automatically cut when the correct length of tape is loaded for the complete operation. Customised components for special applications can be supplied upon request.



| taping head data | RW 0/B | | RW 1/B | | RW 2/B | |
|--------------------------|------------------------|-------------|--|-------------|--|-------------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| tape width | 4-10 | 0,157-0,394 | 8-13 | 0,315-0,512 | 9-20 | 0,354-0,787 |
| build up factor | +11 | +0,433 | +13 | +0,512 | +17 | +0,669 |
| magazine diameter | 86 | 3,386 | 139 | 5,472 | 221 | 8,7 |
| finished core OD | 25-150 | 1-6 | 25-150 | 1-6 | 25-350 | 1-14 |
| finished core ID | 15 | 0,59 | 21 | 0,83 | 26 | 1,0 |
| finished core height | 22 | 1,38 | 45 | 1,97 | 80 | 3,15 |
| max. taping speed rpm | 305 | | 230 | | 230 | |
| compatible roller tables | RW 222-L, RW 222-P | | RW 222-L, RW 222-VL, RW 222-P, RW 222-VP | | RW 222-L, RW 222-VL, RW 332-L, RW 222-P, RW 222-VP, RW 332-P | |
| compatible m/c bases | all RWE machine series | | all RWE machine series | | all RWE machine series | |



| taping head data | RW 3/B | | RW 4/B | |
|--------------------------|--|-------------|------------------------|-------------|
| | mm | inch/AWG | mm | inch/AWG |
| tape width | 9-25 | 0,354-0,984 | 9-25 | 0,354-0,984 |
| build up factor | +20 | +0,787 | +21 | +0,827 |
| magazine diameter | 241 | 9,488 | 347 | 13,39 |
| finished core OD | 40-350 | 1,5-14 | 60-350 | 2,4-14 |
| finished core ID | 29 | 1,14 | 30 | 1,181 |
| finished core height | 100 | 3,94 | 150 | 5,9 |
| max. taping speed rpm | 150 | | 85 | |
| compatible roller tables | RW 222-L, RW 222-VL, RW 332-L, RW 222-P, RW 222-VP, RW 332-P | | RW 332-L, RW 332-P | |
| compatible m/c bases | all RWE machine series | | all RWE machine series | |

High speed taping heads for the BENCH models

These taping heads work with a special belt drive system which enable them to work without the use of gear racks: this allows the belt taping heads to tape into smaller internal diameters at a higher speed. They all incorpo-

rates the RUFF quick action opening, closing system which reduces handling time. The taping operation is fully automatic and controlled from a foot switch.



| taping head data | RW 200/B | | RW 210/B | | RW 300/B | |
|---|--|-----------------------|--|-----------------------|---|-----------------------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| tape width | 4 - 10 | 0,157 - 0,394 | 4 - 10 | 0,157 - 0,394 | 6 - 18 | 0,237 - 0,708 |
| build up factor | +9 | +0,354 | +5 | +0,197 | +11 | +0,433 |
| magazine diameter | 154 | 5,9 | 154 | 5,9 | 215 | 8,46 |
| finished core OD | 16 - 150 | 0,63 - 5,9 | 16 - 150 | 0,63 - 5,9 | 25 - 254 | 1 - 10 |
| finished core ID | 14 with 5 mm tape | 0,512 with 0,157 tape | 14 with 5 mm tape | 0,512 with 0,157 tape | 19 with 8 mm tape | 0,748 with 0,315 tape |
| finished core height | 50 | 1,97 | 50 | 1,97 | 80 | 3,15 |
| max. taping speed rpm | 350 | | 350 | | 275 | |
| compatible roller tables | RW 111-V, RW 112 RW 222-L, RW 222-P | | RW 111-V, RW 112 RW 222-L, RW 222-P | | RW 222-L, RW 222-P, RW 222-VL, RW 222-VP, RW 332-L, RW 332-P | |
| compatible m/c bases | all RWE machine series | | all RWE machine series | | all RWE machine series | |
| f.i.d calculation for all taping heads: tape width + build up factor = f.i.d required | | | | | | |

Roller tables for the BENCH models

RUFF supplies a choice of seven different interchangeable roller tables. Their main purpose is to transport the core when winding or taping operations are carried out. They are connected to the machine base and held with two or four fixing bolts which allow them to be changed in some minutes. Three rub-

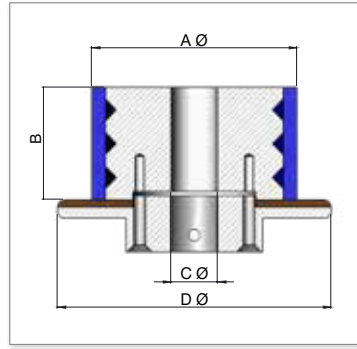
ber rollers are infinitely adjustable to clamp any size of core within their range. A large of parallel and tapered rollers are available to suit individual winding requirements and special extension and designs can be supplied upon request.

Combination possibilities between roller tables and winding heads

| | coil OD | head | 0, 0/B | 1, 1/B | 2,2/B | 3,3/B 3S | 34 | 3,5 | 4, 4V, 4S, 4RZ, 4/B | 10 090 | 20 | 25 | 30 | 40, 40V | 60C | 100, 100C | 200, 200V, 200/B, 210/B | 300, 300V, 300/B |
|--|---|------|---------|---------|---------|-------------|---------------|----------|------------------------|---------------|---------------|---------------|---------|----------|-----------|-----------|----------------------------|---------------------|
|  | 0,20-1,18 RW 111 5-30 | inch | | | | | | | | 0,20- 1,18 | 0,47- 1,18 | | | | 0,20-1,18 | 0,20-1,18 | | |
| | | mm | | | | | | | | 5-30 | 12-30 | | | | 5-30 | 5-30 | | |
|  | 0,40-1,58 RW 111-V 10-50 | inch | | | | | | | | | 0,63-20 | | | | | 0,43-20 | 0,63-20 | |
| | | mm | | | | | | | | | 16-50 | | | | | 11-50 | 16-50 | |
|  | 0,71-2,75 RW 112 18-70 | inch | | | | | 0,71- 2,75 | | | | | 0,71- 2,75 | | | | | 0,71-2,75 | |
| | | mm | | | | | 18-70 | | | | | 18-70 | | | | | 18-70 | |
|  | 1,0-6,0 RW 222-L RW 222-LP 25-150 | inch | 1,0-6,0 | 1,0-6,0 | 1,0-6,0 | 1,0-6,0 | | | | | 1,0-6,0 | 1,0-6,0 | 1,0-6,0 | 1,0-6,0 | | | 1,0-6,0 | 1,38-6,0 |
| | | mm | 25-150 | 25-150 | 25-150 | 25-150 | | | | | | 25-150 | 25-150 | 25-150 | 25-150 | | | 25-150 |
|  | 1,57-6,0 RW 222-VL RW 222-VLP 40-150 | inch | | 1,5-6,0 | 1,5-6,0 | 1,5-6,0 | | 1,5-6,0 | | | | 1,5-6,0 | 1,5-6,0 | 1,5-6,0 | | | | 1,5-6,0 |
| | | mm | | 40-150 | 40-150 | 40-150 | | 40-150 | | | | 40-150 | 40-150 | 40-150 | 40-150 | | | |
|  | 2,4-10,0 RW 332-L RW 332-LP 60-254 | inch | | | 2,4-10 | 2,4-10 | | 2,4-10 | 2,4-10 | | | | | 2,4-10 | | | | |
| | | mm | | | 60-254 | 60-254 | | 60-254 | 60-254 | | | | | 60-254 | | | | |
|  | 3,15-14 RW 332-L2 RW 332-L2P 60-420 | inch | | | | 2,4-16,5 | | 2,4-16,5 | 2,4-16,5 | | | | | 2,4-16,5 | | | | |
| | | mm | | | | 60-420 | | 60-420 | 60-420 | | | | | 60-420 | | | | |

Standard core transport rollers for roller tables for BENCH machines

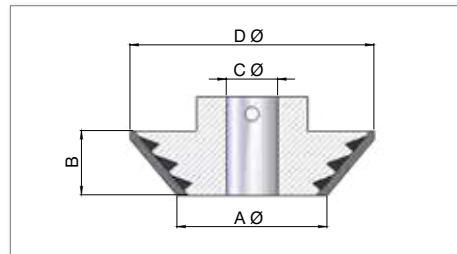
| roller table type | A Ø mm | B Ø mm | C Ø mm | D Ø mm |
|-------------------|--------|--------|--------|-----------|
| RW 111 | 6 | 4 | 3 | 9 |
| RW 111 | 8 | 5 | 3 | 11 |
| RW 111 | 8 | 10 | 3 | 13 |
| RW 111 | 9 | 20 | 3 | 18 |
| RW 111-V | 17 | 10 | 6 | 18 |
| RW 111-V | 17 | 15 | 6 | 23 |
| RW 111-V | 23 | 15 | 6 | 28 |
| RW 112 | 35 | 20 | 8 | 43 |
| RW 112 | 35 | 12 | 8 | 41 |
| RW 222-L/-P | 45 | 20 | 12 | 55 |
| RW 222-L/-P | 45 | 40 | 12 | 55 |
| RW 222-L/-P | 75 | 20 | 12 | 85 |
| RW 222-L/-P | 75 | 40 | 12 | 85 |
| RW 222-L/-P | 90 | 20 | 12 | 100 |
| RW 222-VL/-P | 65 | 40 | 17 | 80 |
| RW 222-VL/-P | 65 | 60 | 17 | 80 |
| RW 222-VL/-P | 75 | 40 | 17 | 85 |
| RW 222-VL/-P | 75 | 40 | 17 | 100 |
| RW 222-VL/-P | 90 | 20 | 17 | 100 |
| RW 222-VL/-P | 90 | 40 | 17 | 100 |
| RW 332-L | 75 | 40 | 22 | 100 |
| RW 332-L | 90 | 40 | 22 | 100 |
| RW 332-L | 120 | 50 | 22 | 160 (200) |
| RW 332-L | 140 | 50 | 22 | 160 (200) |



The variants highlighted in colour are installed as standard, if no change is desired.

Tapered core transport rollers for roller tables for BENCH machines

| Rundwickeltischtype | A Ø mm | B Ø mm | C Ø mm | D Ø mm |
|---------------------|--------|--------|--------|--------|
| RW 222-L/-P | 35 | 15 | 12 | 55 |
| RW 222-VL/-P | 60 | 11 | 17 | 75 |
| RW 222-VL/-P | 70 | 13 | 17 | 85 |
| RW 222-VL/-P | 55 | 25 | 17 | 105 |
| RW 332-L | 70 | 13 | 22 | 85 |
| RW 332-L | 55 | 25 | 22 | 105 |



FLOOR machine line

The RWS models are the floor machine line, which are in two versions available. This machines also have the RUFF modular system with several winding heads and roller tables for the largest flexibility. The sturdy construction with highest precision in production and best quality of material guaranties reliability and very long lifetime of the machines.

FLOOR machine line RWS

Models RWS-GLOBAL, RWS-EVOLUTION, RWS-GLOBAL-SHUTTLE, RWS-EVO-SHUTTLE, RWS-TAPE, RWS-Evolution-Tape

Capability ranges

| | | | |
|-------------------------|----------------|-----------------------|------------------------|
| wire Ø monofilar | 0.4 - 4.5 mm | tape size | 9 - 25 mm |
| wire Ø bifilar | bis 2 x 2.8 mm | machine size | approx. 1100 x 700 mm |
| finished core OD | 65 - 2800 mm | | Shuttle: 2000 x 700 mm |
| finished core ID | up from 25 mm | machine weight | approx. 200 kg |
| finished core H | up to 380 mm | | |
| compressed air | 6 bar | | |

Model RWS-Global

The RWS-Global is for standard winding applications. The new NC controller with touch screen is user friendly and it is very easy to understand. Just a few inputs are needed for create a winding program. All standard winding methods are available e.g.: Tape-/Wire winding, Index, Reverse winding. Several winding sequences can be written in one winding program. So for example different pitch and index etc. More than 200 programs

can be saved on this control. All languages in Latin characters are available on this controller.

| | |
|-----------------------|---------------------------------|
| controller | 5.7" monochrom touchpanel |
| language | all Latin characters |
| winding head | three phase motor with inverter |
| roller table | servo motor |
| supply voltage | 1 PH / 230 V / 16 A |



Model RWS-Evolution

The RWS-Evolution is the high end floor toroidal winding machine base from RUFF. The new controller with innovative programming is user friendly and through the high resolution touch screen display it is simple to understand. Programs are saved in CSV-Format. Therefore, programs can be made external by Excel. The Windows system allows own data management saved onto USB-Stick, or onto the CF-Card in a separate file on the machine. A central program management at an external PC (Server) is possible via Ethernet connection. Easy file structure can be created and every program can be reported with a text description. The machine can also be remote controlled by Ftp- connection.

| | |
|-----------------------|---|
| controller | 15,6" touchpanel |
| memory | Compact Flash 512 MB |
| system | Windows CE 5.0 |
| language | Unitext (all characters) |
| interface | USB-connection, ethernet-interface, 1x10/100 Mbit, RJ45, PS/2-interface, serial interface |
| PCI modul card | MC-CAN Dual Can Controller, hand control unit with 3 additional function buttons and joystick |
| supply voltage | 3 PH / 400 V / 16 A |
| winding head | servo motor |
| roller table | servo motor |

Teleservice by our technicians via internet connection (Ftp- connection) for trouble shooting in the logic program. Update of PLC- and visual display software via USB-Stick, datas can be sent via E-mail.



Models RWS-Global-Shuttle / RWS-Evo-Shuttle

The machine bases in Shuttle-Version have a slide system for the winding heads. It enables to move the winding heads out of the winding area for a comfortable load and unload the machine with toroidal cores (e.g. with a

crane). This system brings especially for very large or very heavy cores crucial advantages.

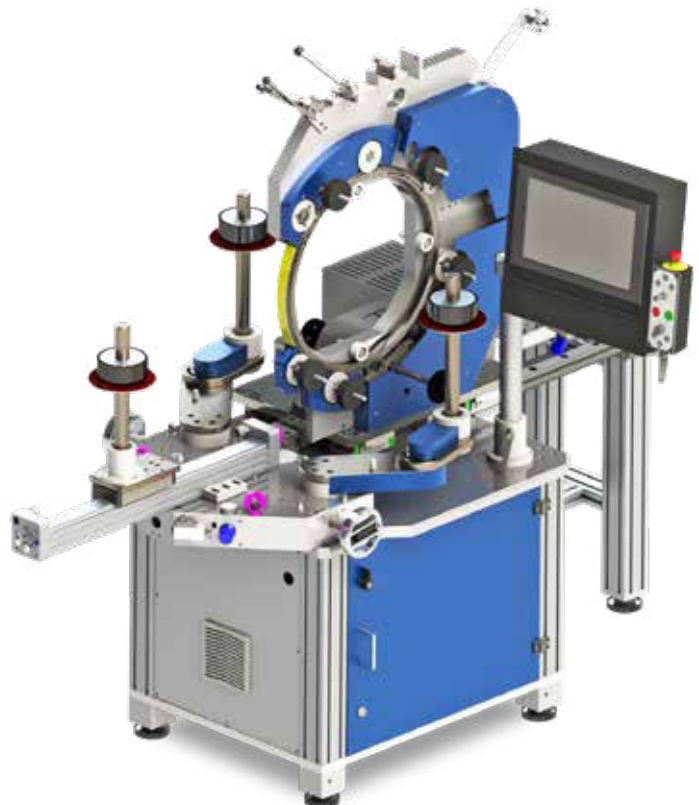
RWS-Global-Shuttle

| | |
|-----------------------|---------------------------------|
| controller | 5.7" monochrom touchpanel |
| language | all Latin characters |
| winding head | three phase motor with inverter |
| roller table | servo motor |
| supply voltage | 1 PH / 230 V / 16 A |

or

RWS-Evo-Shuttle

| | |
|-----------------------|---|
| controller | 15,6" touchpanel |
| memory | Compact Flash 512 MB |
| system | Windows CE 5.0 |
| language | Unitext (all characters) |
| interface | USB-connection, ethernet-interface, 1x10/100 Mbit, RJ45, PS/2-interface, serial interface |
| PCI modul card | MC-CAN Dual Can Controller, hand control unit with 3 additional function buttons and joystick |
| supply voltage | 3 PH / 400 V / 16 A |
| winding head | servo motor |
| roller table | servo motor |



Stand alone tapping station to be combined with toroidal winding machines for double head applications - Model RWS-Tape

RUFF has designed a low cost standardised tapping station in order to replace the oneway special and expensive double head machine. It is a flexible tapping system that can be placed next to existing toroidal winding machines and therefore enables simultaneous winding and tapping of transformers in the most economical method. The head is mounted on a ground plate which sits on sliding rails and enables to slide the head easily into the core. It incorporates the RUFF mod-

ular system and can be equipped with interchangeable heads. One or more working stations can be combined with a winding machine.



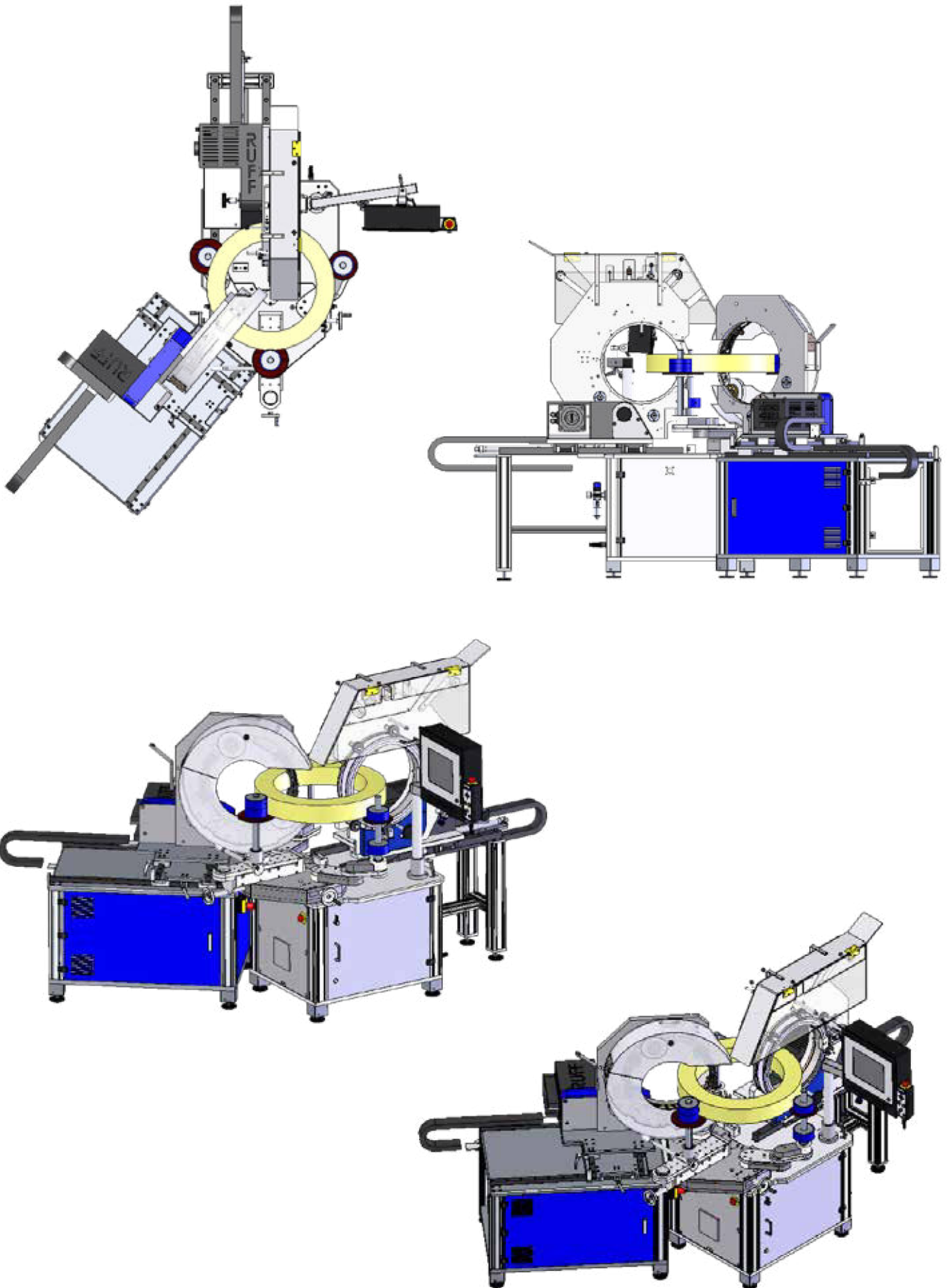
- Min. core ID with magazine system** 200 mm
- Min. core ID with tape roller system** 330 mm

RWS-Evolution-Tape

- controller** controlled by RWS-Evolution /RWS-Evo-Shuttle
- taping speed** up to 140 rpm (stepless adjustable)
- core drive** not required as the core drive is given from toroidal winding machines which is placed next to
- winding head drive** 3,6 kW Servomotor
- supply voltages** 3 PH / 400 V / 16 A
- machine size** 1100 x 700 mm
- machine weight** 150 kg net, 270 kg gross



Simultaneous taping and winding operation



Gear rack winding heads for the FLOOR models

The gear rack winding heads are designed for precision layer winding with low build up factors. Typical applications are the production of variacs, potentiometers and heavy transformer windings. All the winding heads work with a robust gear rack and drive train gear system, this allows the winding head to generate a large amount of torque which makes it suitable for large wire size. The wire is dereeled from the winding magazine via two guide rollers as it is layered on the core, the magazine

itself is held back under constant tension via the braking system which is adjustable to suit each wire size. All gear rack winding heads can utilise two designs of magazines: the „KN“ type has a quick opening facility and the „SN“ type which has a completely removeable section for taller cores. A range of narrow racks and multifilar wire guides can be supplied for reduced core ID's and strip winding. Customised components for special applications can be supplied upon request.



| winding head data | RW 33 | | RW 44-1 | | RW 44-1V | | RW 45 | |
|--------------------------|-----------------------|----------|------------------------|----------|------------------------|----------|---|----------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,4-2,5 | 10-26 | 0,4-3,0 | 8½-26 | 0,4-3,55 | 7-26 | 0,5-2,65 | 9½-24 |
| magazine diameter | 220 | 8,66 | 340 | 13,39 | 340 | 13,39 | 490 | 19,29 |
| finished core OD | 65-350 | 2,55-14 | 90-500 | 3,54-20 | 100-500 | 4-20 | 90-1000 | 3,54-39 |
| finished core ID | 25 | 10-26 | 35 | 1,38 | 50 | 1,97 | 40 | 1,57 |
| finished core height | 100 | 3,94 | 170 | 6,7 | 170 | 6,7 | 250 | 9,84 |
| max. winding speed rpm* | 140* | | 140* | | 100* | | 100* | |
| compatible roller tables | RW 333-L | | RW 333-L RW 333-VL | | RW 333-L RW 333-VL | | RW 333-VL, All versions of RW 333-V RW 444, RW 444-P | |
| compatible m/c bases | all RWS machine serie | | all RWS machine series | | all RWS machine series | | all RWS machine series | |

* depending on winding application



| winding head data | RW 45-V | | RW 45-380 | | RW 45-EH + 30 mm to FID of RW 45 | |
|--------------------------|---|----------|---|----------|---|----------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,4-3,55 | 7-26 | 0,5-2,65 | 9½-24 | 0,4-4,5 | 5½-24 |
| magazine diameter | 490 | 19,29 | 490 | 19,29 | 490 | 19,29 |
| finished core OD | 100-1000 | 4-39 | 90-1000 | 3,54-39 | 100-1000 | 4-39 |
| finished core ID | 50 | 1,97 | 40 | 1,57 | 100 | 1,97 |
| finished core height | 250 | 9,84 | 380 | 14,96 | 250 | 9,84 |
| max. winding speed rpm* | 80* | | 100* | | 80* | |
| compatible roller tables | RW 333-VL, All versions of RW 333-V RW 444, RW 444-P, RW 444-PSR | | RW 333-VL, All versions of RW 333-V RW 444, RW 444-P, RW 444-PSR | | RW 333-VL, All versions of RW 333-V RW 444, RW 444-P, RW 444-PSR | |
| compatible m/c bases | all RWS machine series | | all RWS machine series | | all RWS machine series | |

* depending on winding application

High speed slider winding head for the FLOOR models

The high speed winding head RW 50 is designed for winding of big toroidal cores with large number of turns in a short production time. The magazine is driven by special friction roller, which enable to reach high magazine rotation speed. The required wire

tension is by side slider. Customized components for special applications, special side slider and tailor made magazine can be supplied upon request. Typical applications are the production of HV windings.



| winding head data | RW 50 | |
|--------------------------|---|-----------|
| | mm | inch/AWG |
| wire range | 0,4 - 1,32 | 16 - 26 |
| magazine diameter | 490 | 19,29 |
| finished core OD | 90 - 1000 | 3,54 - 39 |
| finished core ID | 40 | 1,57 |
| finished core height | 250 | 9,84 |
| max. winding speed rpm* | 460* | |
| compatible roller tables | RW 333-VL, all versions of RW 333-V RW 444, RW 444-P | |
| compatible m/c bases | all RWS machine series | |

* depending on winding application



PATENTED

Magazine less winding head for the FLOOR models

The winding head without magazine is designed for winding heavy wires down to very small core ID. This technology allows a smaller final core ID as with standard winding heads at the market with magazine. The wire is fixed on a

special roller system. During wind the loaded wire get consumed, which reduce the needed ID. Therefore the minimum FID can be approx. 4 time wire dia. Typical applications are production of chocks and filters as well transformer secondary windings.



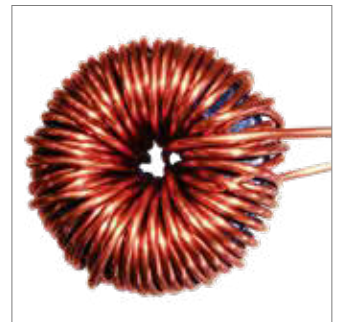
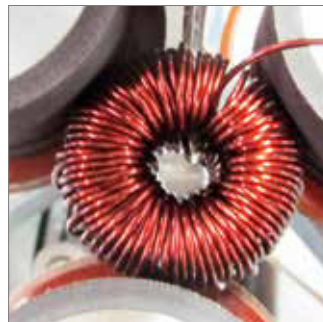
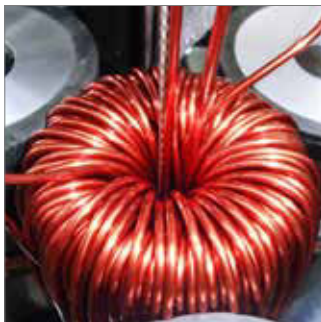
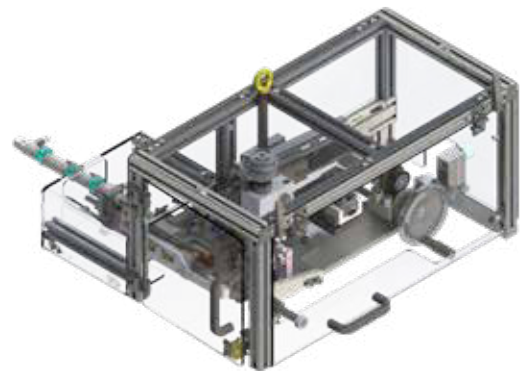
| winding head data | RW 05ML | |
|----------------------------|---------------------|-------------|
| | mm | inch/AWG |
| wire range | 1 - 2,5 | 18,5 - 10 |
| length of one loading turn | 1200 | 47,24 |
| finished core OD | 32 - 200 | 1,25 - 7,87 |
| finished core ID | 4x wire Ø | |
| finished core height | 110 | 4,33 |
| max. winding speed rpm* | 120 rpm* | |
| compatible roller tables | RW 333-PML | |
| compatible m/c bases | RWS-Evolution | |
| max. wire length in meter | 36 : wire Ø x 1,2 m | |

* depending on winding application

Twisting and Caulking Unit

The twisting and caulking unit was developed to make the necessary connection of the wire for the magazine less winding technology. It connects the guide rope and the wire to the smallest possible diameter in the shortest possible time. The operator only has to place the loop of the rope over the cut and

positioned wire. The twisting and caulking unit is connected to the control of the Evolution machine base. This process speeds up the overall process and has a reproducible good quality.



Gear rack taping heads for the FLOOR models

These taping heads work with a gear rack system similar to the gear rack winding heads but vary in one major way. The tape is loaded on the tape magazine and it is also taped on the core at the same time. A flat leather belt round the outside of the tape

magazine controls the taping tension and is infinitely variable. The tape is automatically cut when the correct length of tape is loaded as in the complete operation. Customised components for special applications can be supplied upon request.



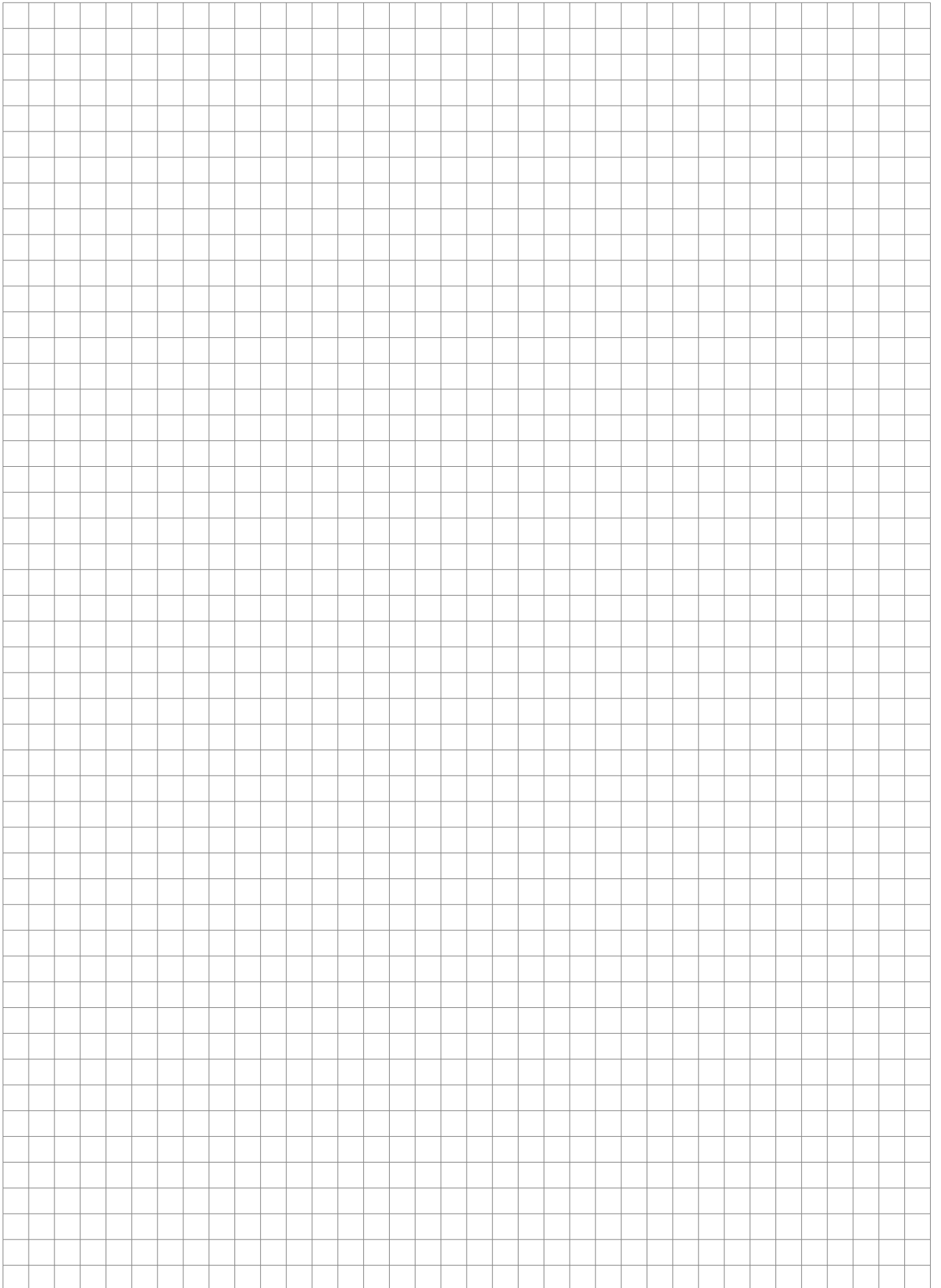
| winding head data | RW 33/B | | RW 44/1B | | RW 45/B | | RW 45-B-380 | |
|--------------------------|---|-------------|---|-------------|---|-------------|---|-------------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| tape range | 9-20 | 0,354-0,787 | 9-25 | 0,354-0,984 | 9-25 | 0,354-0,984 | 2-25 | 0,354-0,984 |
| build up factor | +20 | +0,787 | +25 | +0,984 | +25 | +0,984 | +25 | +0,984 |
| magazine diameter | 220 | 8,66 | 340 | 13,39 | 490 | 19,29 | 490 | 12,29 |
| finished core OD | 65-350 | 2,55-14 | 90-500 | 3,54-20 | 90-2800 | 3,54-110 | 90-2800 | 3,54-110 |
| finished core ID | 29 | 1,44 | 34 | 1,34 | 34 | 1,34 | 34 | 1,34 |
| finished core height | 100 | 3,94 | 170 | 6,69 | 250 | 9,842 | 380 | 14,96 |
| max. winding speed rpm* | 140* | | 140* | | 120* | | 120* | |
| compatible roller tables | RW 333-L RW 333-VL All versions of RW 333-V | | RW 333-L RW 333-VL All versions of RW 333-V | | RW 333-VL All versions of RW 333-V RW 444 RW 444-P RW 444-PSR | | RW 333-VL All versions of RW 333-V RW 444 RW 444-P RW 444-PSR | |
| compatible m/c bases | all RWS machine series | | all RWS machine series | | all RWS machine series | | all RWS machine series | |

* depending on winding application

| winding head data | RW 44 RZ/B | | RW 45-VRZ/B | | RW 45-VRZ/B-380 | |
|--------------------------|---|-------------|---|-------------|---|-------------|
| | mm | inch/AWG | mm | inch / AWG | mm | inch / AWG |
| tape range | 9-25 | 0,354-0,984 | 9-25 | 0,354-0,984 | 9-25 | 0,354-0,984 |
| build up factor | +33 | +1,29 | +33 | +1,29 | +33 | +1,29 |
| magazine diameter | 340 | 13,39 | 490 | 19,29 | 490 | 19,29 |
| finished core OD | 90-500 | 3,54-20 | 90-2800 | 3,54-110 | 90-2800 | 3,54-110 |
| finished core ID | 42 | 1,65 | 42 | 1,65 | 42 | 1,65 |
| finished core height | 170 | 6,69 | 250 | 9,842 | 250 | 9,842 |
| max. winding speed rpm* | 320* | | 270* | | 270* | |
| compatible roller tables | RW 333-VL All versions of RW 333-V RW 444 RW 444-P RW 444-PSR | | RW 333-VL All versions of RW 333-V RW 444 RW 444-P RW 444-PSR | | RW 333-VL All versions of RW 333-V RW 444 RW 444-P RW 444-PSR | |
| compatible m/c bases | all RWS machine series | | all RWS machine series | | all RWS machine series | |

* depending on winding application

Your personal notes



Combination possibilities between roller tables and winding heads

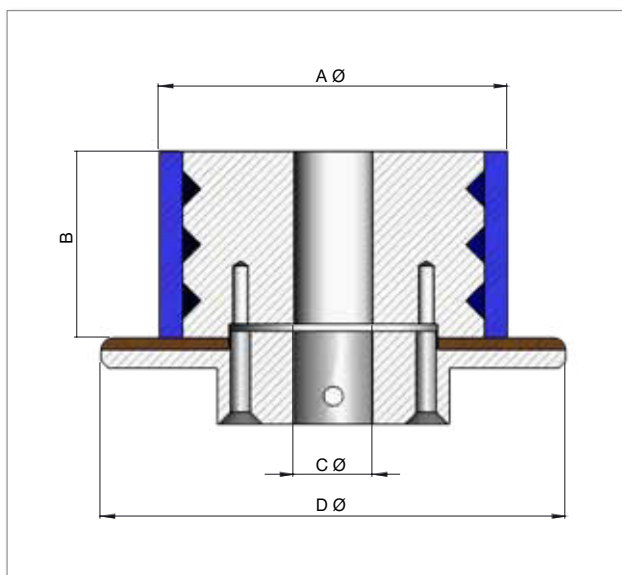
| finished core OD range | | RW 33 RW 33-B | RW 44-1, RW 44-1B, RW 44-RZB, RW 44-RZ | RW 44-1V | RW 45, RW 45-V, RW 45-B, RW 50 | RW 45-380 | RW 45-EH, RW 45-VRZ |
|---|------|---------------------|---|-----------|-----------------------------------|------------|------------------------|
| RW 333-L with rubber rollers Ø 75 | inch | 3,15-14,0 | 4,35-14,0 | 4,92-14,0 | - | - | - |
| | mm | 80-350 | 110-350 | 125-350 | - | - | - |
| RW 333-L with rubber rollers Ø 90 | inch | 2,55-14,0 65-350 | 4,0-13,0 | 4,53-13,0 | - | - | - |
| | mm | | 100-330 | 100-330 | - | - | - |
| RW 333-L with rubber rollers Ø 120 | inch | | 3,54-11,8 | 4,0-11,8 | - | - | - |
| | mm | | 90-300 | 100-300 | - | - | - |
| RW 333-VL with rubber rollers Ø 75 | inch | 4,0-14,0 | 5,12-14,0 | 5,12-14,0 | 5,12-14,0 | 5,12-14,0 | 5,12-14,0 |
| | mm | 100-350 | 130-350 | 130-350 | 130-350 | 130-350 | 130-350 |
| RW 333-VL with rubber rollers Ø 90 | inch | 3,35-13,0 | 4,72-13,0 | 5,51-14,0 | 4,72-13,0 | 4,72-13,0 | 4,72-13,0 |
| | mm | 85-330 | 120-330 | 140-330 | 120-330 | 120-330 | 120-330 |
| RW 333-VL with rubber rollers Ø 120 | inch | | | 4,92-14,0 | 3,54-14,0 | | |
| | mm | | | 125-350 | 90-350 | | |
| RW 333-VL-5 (with swivel arms) | inch | | 4,33-19,7 | 4,33-19,7 | 4,33-19,7 | 4,33-19,7 | |
| | mm | | 110-500 | 110-500 | 110-500 | 110-500 | |
| RW 333-VL-8 (with swivel arms) | inch | | | | 9,84-39,37 | 9,84-39,37 | 9,84-39,37 |
| | mm | | | | 250-1000 | 250-1000 | 250-1000 |
| RW 333-VL-13 (with extra horizontal rollers for heavy cores) | inch | | 4,0-19,7 | 4,0-19,7 | 4,0-19,7 | 4,0-19,7 | 4,0-19,7 |
| | mm | | 100-500 | 100-500 | 100-500 | 100-500 | 100-500 |
| RW 444 (with swivel arms) | inch | | | | 3,94-32 | 4,0-19,7 | 4,72-32 |
| | mm | | | | 100-800 | 100-800 | 120-800 |
| RW 444-P (with swivel arms) | inch | | | | 3,94-39,3 | 3,94-39,3 | 4,72-39,3 |
| | mm | | | | 100-1000 | 100-1000 | 120-1000 |

| min. Kerninnendurchmesser | | RW 33, RW 33/B | RW 44-1, RW 44-1B, RW 44-RZB, RW 44-RZ | RW 44-1V | RW 45, RW 45-V, RW 45-B, RW 50 | RW 45-380 | RW 45-EH RW 45-VRZ |
|---|------|----------------|---|----------|-----------------------------------|-----------|-----------------------|
| RW 444-PSR (with swivel arms) | inch | | | | 16,7 | 16,7 | 16,7 |
| | mm | | | | 500 | 500 | 500 |

Standard core transport rollers for roller tables for FLOOR machines

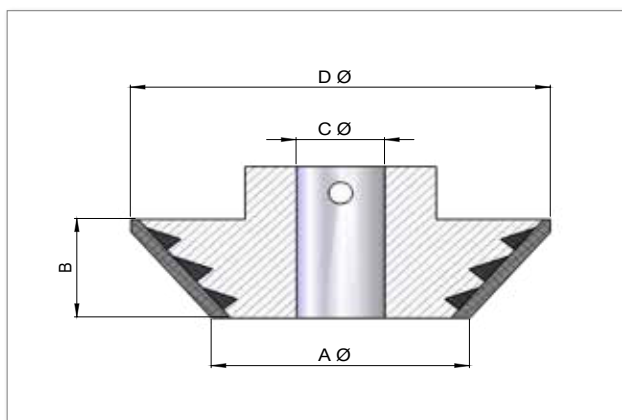
| roller table type | A Ø mm | B Ø mm | C Ø mm | D Ø mm |
|-----------------------|--------|--------|--------|--------|
| RW 333-L / -P | 75 | 40 | 22 | 100 |
| RW 333-L / -P | 90 | 40 | 22 | 100 |
| RW 333-L / -P | 120 | 50 | 22 | 160 |
| RW 333-L / -P | 140 | 50 | 22 | 160 |
| RW 333-VL | 120 | 50 | 30 | 160 |
| RW 333-VL | 140 | 50 | 30 | 160 |
| RW 333-VL | 120 | 50 | 30 | 200 |
| RW 333-VL | 140 | 50 | 30 | 200 |
| RW 444/-P/-PSR | 120 | 50 | 35 | 160 |
| RW 444/-P/-PSR | 140 | 50 | 35 | 160 |
| RW 444/-P/-PSR | 120 | 50 | 35 | 200 |
| RW 444/-P/-PSR | 140 | 50 | 35 | 200 |

The variants highlighted in colour are installed as standard, if no change is desired.



Tapered core transport rollers for roller tables for FLOOR machines

| roller table type | A Ø mm | B Ø mm | C Ø mm | D Ø mm |
|----------------------|--------|--------|--------|--------|
| RW333-L / -P | 55 | 25 | 22 | 105 |
| RW333-L / -P | 112 | 27 | 22 | 167 |
| RW 333-VL | 55 | 25 | 30 | 105 |
| RW 333-VL | 112 | 27 | 30 | 167 |
| RW444/-P/-PSR | 112 | 27 | 35 | 167 |



EXTRA HEAVY machine line

The RW 55 is the largest and heaviest toroidal winding machine. The modular system covers several winding heads and roller tables. These machines are designed for extra heavy applications, with strong wires and very heavy toroidal cores. The extra sturdy construction and the strong motors of the machine guarantees always a sufficient performance.

EXTRA HEAVY floor machine line RW 55

Models RW 55-Evolution, RW 55-Evo-Shuttle

Models RW 55-Evolution / RW 55-Evo-Shuttle

The machine bases are available in two versions: RW 55-Evolution with a fixed winding head and RW 55-Evo-Shuttle with a moveable winding head. The machine base in Shuttle-Version has a slide system for the winding heads. It enables to move the winding heads out of the winding area for a comfortable load and unload the machine with toroidal cores (e.g. with a crane). This system brings especially for very large or very heavy cores crucial advantages. Programs are saved in CSV-Format. Therefore programs can be made externally by Excel. The Windows system allows own data management saved onto USB-Stick, or onto the CF-Card in a separate file on the machine. A central program management on an external PC

(Server) is possible via Ethernet connection. Easy file structure can be created and every program can be reported with a text description. The machine can also be remote controlled by Ftp-connection. Teleservice by our technicians via internet connection (Ftp-connection) for trouble shooting in the logic program. Update of PLC- and visual display software via USB-Stick, datas can be sent via E-mail.



Capability ranges

| | | | |
|-------------------------|---|------------------------|-------------------------|
| wire Ø monofilar | 0.8 - 6.5 mm | compressed air | 6 bar |
| wire Ø bifilar | up to 2x4 mm | tape size | 9 - 30 mm |
| flat wire | up to 5x12 mm | supply voltages | 3 Ph / 400 V / 16 A |
| finished core OD | 100 - 2800 mm | machine size | approx. 1630 x 1800 mm |
| finished core ID | up from 60 mm | | Shuttle: 1630 x 2700 mm |
| finished core H | bis 300 mm | machine weight | approx. 600 kg |
| operating panel | 15,6" touchpanel | | |
| memory | Compact Flash 512 MB | | |
| system | Windows CE 5.0 | | |
| language | Unitext (all characters) | | |
| interface | USB-connection, ethernet-interface, 1x10/100 Mbit, RJ45 PS/2-interface, serial interface | | |
| PCI modul card | MC-CAN Dual Can Controller, hand control unit with 3 additional function buttons | | |
| winding head | servo motor | | |
| roller table | servo motor | | |

Heads for the EXTRA HEAVY floor models

The RW55 machine models can be supplied with one winding head and two taping heads. All of these heads work with a gear rack drive system. The winding head has a range of 6 standard interchangeable magazines with suitable wire guide rollers. Specially designed components for special applica-

tions such as multifilar or strip windings can be supplied upon request. The taping head works automatically from a foot switch for load and tape in one operation. The winding head can also be converted for direct tape dispensing if required.



| head data | RW 55 | | RW 55-RZ | | RW 1000, RW 1000 RZ | | RW 55-B | |
|--------------------------------|------------------------------------|-----------|------------------------------------|-----------|------------------------------------|-----------|------------------------------------|-----------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| wire range | 0,8 – 6,5 | 4½ – 20 | 0,8 – 3,55 | 7½ – 20 | 0,8 – 6 | 8½ – 20 | - | - |
| tape widths | - | - | - | - | - | - | 15-30 | |
| build up factor | - | - | - | - | - | - | + 35 | |
| magazine diameter | 650 | 25,59 | 650 | 25,59 | 1000 | 39,37 | 650 | 25,59 |
| finished core OD | up from 100 | up from 4 | up from 100 | up from 4 | up from 100 | up from 4 | up from 100 | up from 4 |
| finished core ID | 60 | 2,36 | 60 | 2,36 | 80 | 3,15 | 50 | 25,59 |
| finished core height | 300 | 11,8 | 300 | 11,8 | 500 | 11,8 | 300 | 11,8 |
| max. winding taping speed rpm* | 120* | | 200* | | 50 (80 RW 1000 RZ)* | | 120* | |
| compatible roller tables | RW 555-1 RW 555-1P RW 555-S0 | | RW 555-1 RW 555-1P RW 555-S0 | | RW 555-1 RW 555-1P RW 555-S0 | | RW 555-1 RW 555-1P RW 555-S0 | |
| compatible m/c base | RW 55 | | RW 55 | | RW 55 | | RW 55 | |

* depending on winding application

| head data | RW 55/BU | | RW 55-RZ/BU | | RW 900/BU | | RW 1000-RZ/BU | |
|--------------------------------|---|---------------|--|---------------|--|---------------|--|---------------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| wire range | - | - | - | - | - | - | - | - |
| tape widths | 20-50 | 0,79-1,97 | 20-50 | 0,79-1,97 | 20-50 | 0,79-1,97 | 20-50 | 0,79-1,97 |
| build up factor | - | - | - | - | - | - | - | - |
| magazine diameter | - | - | - | - | - | - | - | - |
| finished core OD | up from 500 | up from 19,68 | up from 500 | up from 19,68 | up from 500 | up from 19,68 | up from 500 | up from 19,68 |
| finished core ID | 400 | 15,75 | 400 | 15,75 | 400 | 15,75 | 400 | 15,75 |
| finished core height | 300 | 11,8 | 300 | 11,8 | 400 | 15,75 | 400 | 15,75 |
| max. winding taping speed rpm* | 120* | | 200* | | 70* | | 80* | |
| compatible roller tables | RW 555-1 RW 555-1P RW 555-S0 RW 555-1PSR | | RW 555-1 RW 555-1P RW 555-S0 RW 555-PSR | | RW 555-1 RW 555-1P RW 555-S0 RW 555-PSR | | RW 555-1 RW 555-1P RW 555-S0 RW 555-PSR | |
| compatible m/c base | RW 55 | | RW 55 | | RW 55 | | RW 55 | |


* depending on winding application

Magazine data base with wire length in meters: for wire length in feet, multiply by factor 3,28

| magazine type | smallest final hole | | 0,8 | 0,9 | 1,0 | 1,12 | 1,25 | 1,32 | 1,4 | 1,5 | 1,6 | 1,7 | 1,8 | 1,9 | 2,0 | 2,12 | 2,24 | mm | |
|---------------|---------------------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|--|
| | | | 20 | 19 | 18 | 17 | 16½ | 16 | 15½ | 15 | 14½ | 14 | 13½ | 13 | 12½ | 12 | 11½ | AWG | |
| | mm | inch/AWG | | | | | | | | | | | | | | | | | |
| 55/65SN | 60 | 2,36 | 257 | 204 | 167 | 134 | 109 | 97 | 87 | 76 | 67 | 60 | 53 | 48 | 43 | 39 | 35 | | |
| 55/70SN | 70 | 2,76 | 814 | 645 | 529 | 425 | 344 | 309 | 276 | 241 | 213 | 189 | 169 | 153 | 138 | 123 | 110 | | |
| 55/90SN | 90 | 3,54 | 1012 | 802 | 657 | 528 | 427 | 384 | 343 | 300 | 265 | 235 | 211 | 190 | 171 | 153 | 137 | | |
| 55/100SN | 100 | 3,94 | 1416 | 1123 | 920 | 739 | 598 | 537 | 479 | 420 | 370 | 329 | 295 | 265 | 239 | 214 | 192 | | |
| 55/120SN | 120 | 4,72 | 1999 | 1584 | 1299 | 1042 | 844 | 758 | 677 | 592 | 523 | 465 | 416 | 375 | 338 | 302 | 271 | | |
| 55/135SN | 135 | 5,31 | 4268 | 3383 | 2773 | 2226 | 1802 | 1619 | 1445 | 1265 | 1116 | 993 | 888 | 800 | 721 | 645 | 579 | | |
| 55/140SN | 140 | 5,51 | 5485 | 4347 | 3563 | 2860 | 2316 | 2080 | 1857 | 1625 | 1434 | 1276 | 1142 | 1028 | 926 | 829 | 744 | | |
| 55/150SN | 150 | 5,90 | | 5137 | 4211 | 3380 | 2737 | 2458 | 2194 | 1921 | 1695 | 1508 | 1349 | 1215 | 1095 | 979 | 879 | | |
| 55/200SN | 200 | 7,87 | | | 7406 | 5945 | 4814 | 4324 | 3859 | 3378 | 2981 | 2652 | 2373 | 2137 | 1925 | 1723 | 1545 | | |

| magazine type | smallest final hole | | 2,36 | 2,5 | 2,65 | 2,8 | 3,0 | 3,15 | 3,35 | 3,55 | 3,75 | 4 | 4,25 | 4,5 | 4,75 | 5 | mm | |
|---------------|---------------------|----------|------|------|------|-----|-----|------|------|------|------|-----|------|-----|------|-----|-----|--|
| | | | 11 | 10½ | 10 | 9½ | 9 | 8½ | 8 | 7½ | 7 | 6½ | 6 | 5½ | 5 | 4½ | AWG | |
| | mm | inch/AWG | | | | | | | | | | | | | | | | |
| 55/65SN | 60 | 2,36 | 31 | 28 | 25 | 22 | 20 | 18 | 16 | 14 | 13 | 11 | 10 | 9 | 8 | 7 | | |
| 55/70SN | 70 | 2,76 | 105 | 94 | 84 | 75 | 66 | 60 | 53 | 47 | 42 | 31 | 33 | 30 | 26 | 24 | | |
| 55/90SN | 90 | 3,54 | 132 | 118 | 105 | 94 | 82 | 75 | 66 | 59 | 53 | 47 | 42 | 37 | 33 | 30 | | |
| 55/100SN | 100 | 3,94 | 173 | 155 | 138 | 124 | 108 | 99 | 87 | 78 | 70 | 62 | 57 | 52 | 46 | 41 | | |
| 55/120SN | 120 | 4,72 | 244 | 219 | 195 | 175 | 153 | 139 | 123 | 110 | 99 | 87 | 79 | 71 | 63 | 57 | | |
| 55/135SN | 135 | 5,31 | 522 | 468 | 417 | 373 | 326 | 297 | 262 | 234 | 212 | 187 | 171 | 156 | 139 | 124 | | |
| 55/140SN | 140 | 5,51 | 670 | 601 | 536 | 479 | 418 | 382 | 337 | 301 | 272 | 240 | 219 | 201 | 179 | 159 | | |
| 55/150SN | 150 | 5,90 | 792 | 711 | 634 | 567 | 495 | 451 | 399 | 355 | 322 | 283 | 257 | 230 | 206 | 185 | | |
| 55/200SN | 200 | 7,87 | 1393 | 1250 | 1115 | 996 | 870 | 794 | 701 | 625 | 566 | 498 | 448 | 400 | 358 | 306 | | |

Roller tables for the EXTRA HEAVY floor models



| head finished core OD range | winding head RW 55 | | winding head RW 55/B | | winding head RW 55/BU | |
|-----------------------------|-----------------------|----------|-------------------------|----------|--------------------------|----------|
| | mm | inch/AWG | mm | inch/AWG | mm | inch/AWG |
| roller table RW 555-1 | 100-800 | 3,94-32 | 100-800 | 3,94-32 | 500-800 | 19,7-32 |
| roller table RW 555-1P | 100-800 | 3,94-32 | 100-800 | 3,94-32 | 500-800 | 19,7-32 |
| roller table RW 555-1PSR | - | - | - | - | ab 500 | ab 19,7 |
| roller table RW 555-S0 | 200-1500 | 7,87-59 | 200-1500 | 7,87-59 | 500-1500 | 19,7-59 |

Other clamping size on request

Other clamping size on request

PWMmaschine line

The brand new RUFF toroidal winding machine is an automated version of a hook winding machine. It is designed for strong wires up from 1 mm to 3,5 mm copper wire diameter. The max. wire length for winding is approx. 1,2 m wire (2 m possible, if winding will be started from the middle of the winding). The FID depends on the wire diameter with the needed hook and is approx. 4-6 time wire diameter. The machine has a small PLC with a 2-line LCD and can be programmed by a very user friendly and easy programming surface. Winding process: manual inserting of toroidal core, fixing of start wire, cut the wire, automatic winding cycle. Typical winding applications are chokes and filters.

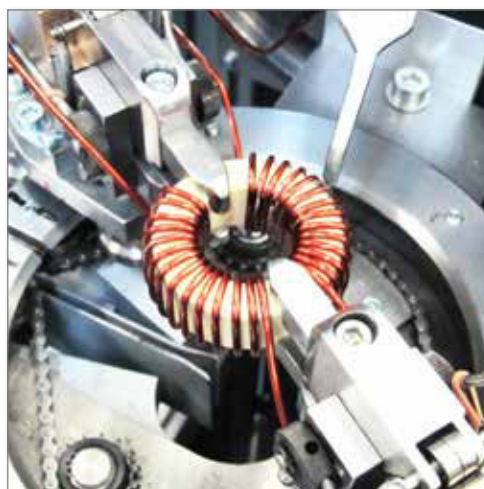
PWM - Pull Winding Machine

- operating panel:
 - PLC controller with LCD modul with 2 program lines
 - 2 push buttons for start / stop
 - push button for core movement
 - push button for manual mode
 - 2 potentiometer for speed preset of: wind, slow turns
- memory: Capacity of 32 programs
- language: English / German
- motor: motor for core drive motor for hook
- Machine includes one hook and one set of clamps for fixing toroidal core.



Capability ranges

| | | | |
|-------------------------|----------------|-----------------------|--------------------------|
| wire Ø | 1 - 3,5 mm | compressed air | 6 bar |
| max. wire length | 1,2 m | supply voltage | 230 V / AC / 50Hz / 16 A |
| finished core OD | 15 - 85 mm | machine size | 1850 x 750 mm |
| finished core ID | 4 - 6 x wire Ø | machine weight | approx. 400 kg |
| finished core H | 50 mm | | |

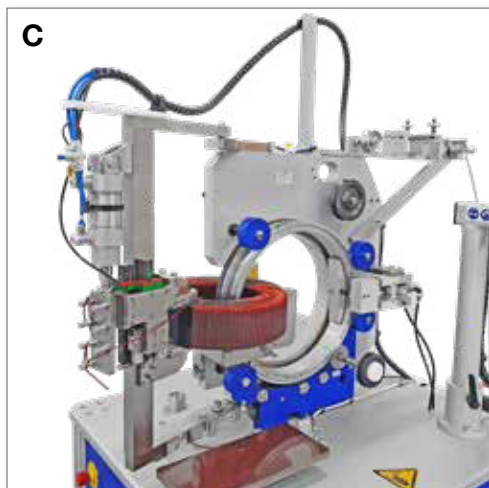
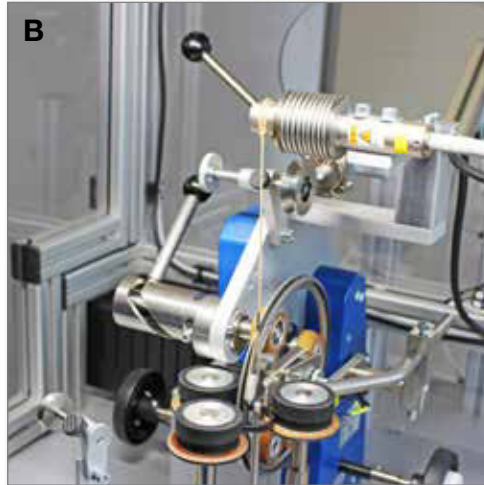
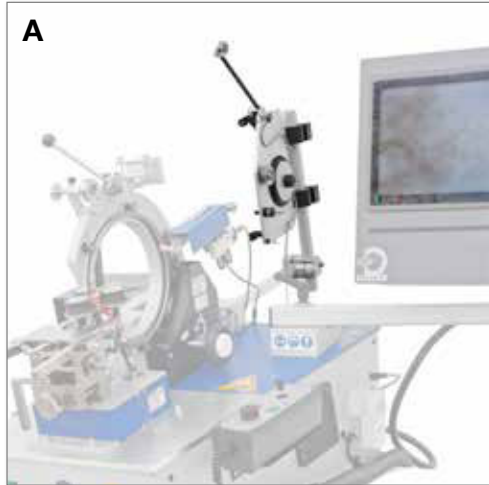


Accessories and special devices

A) Wire tensioner for magazine

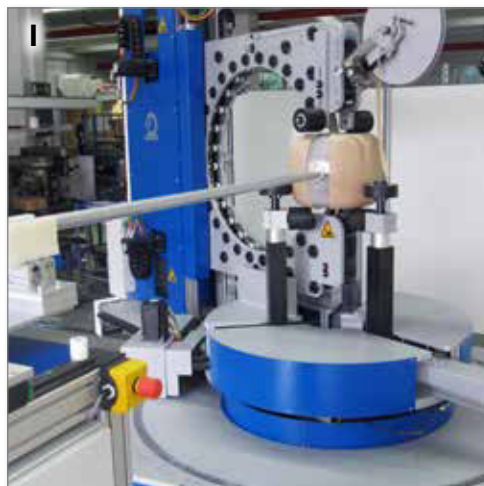
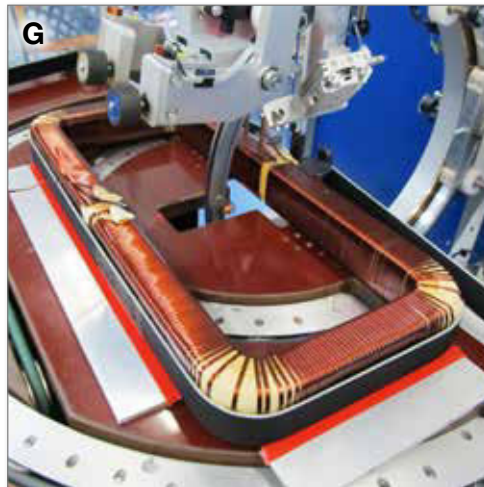
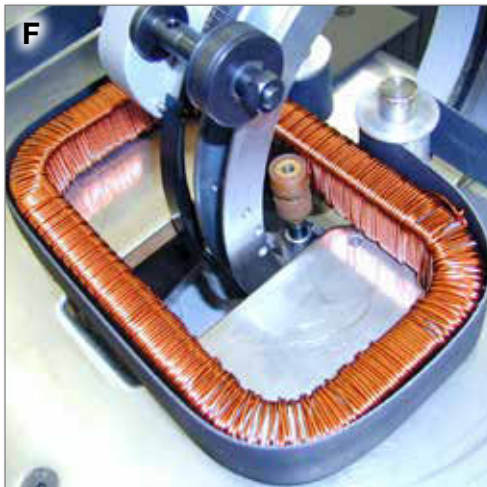
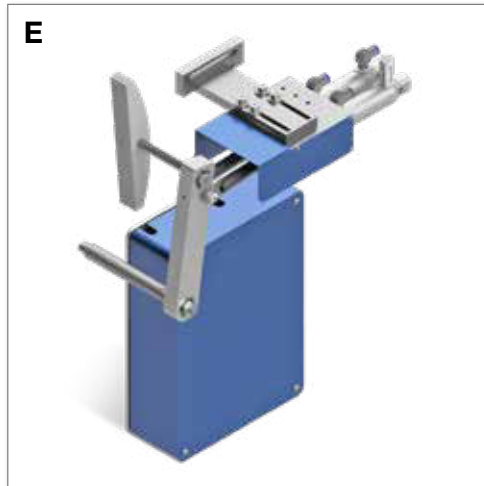
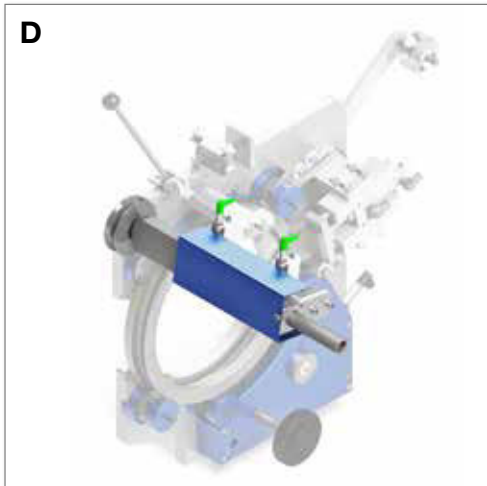
B) Loading cell for side slider

C) Variac accessories



Accessories and special devices

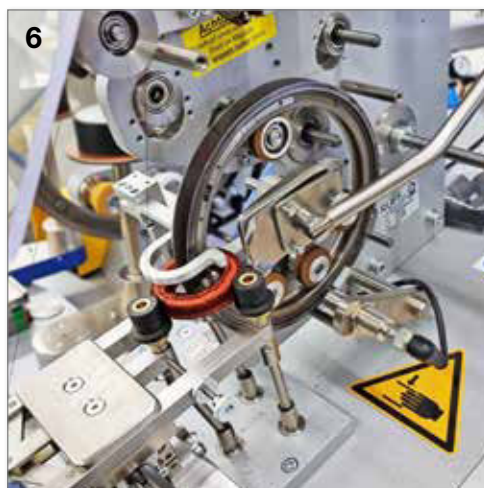
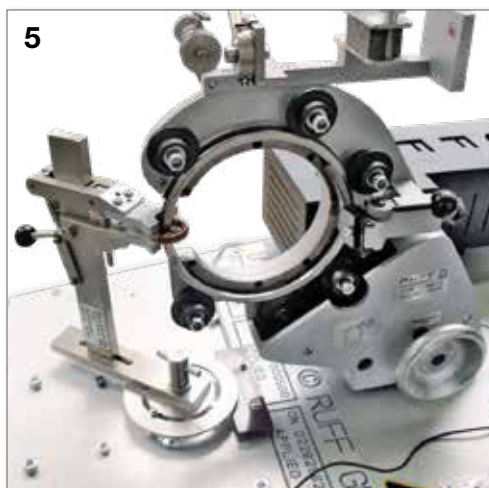
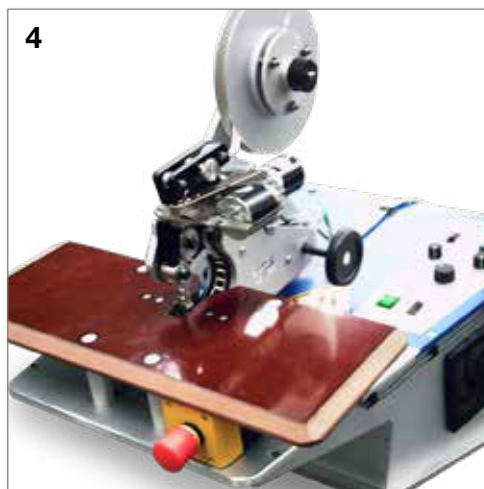
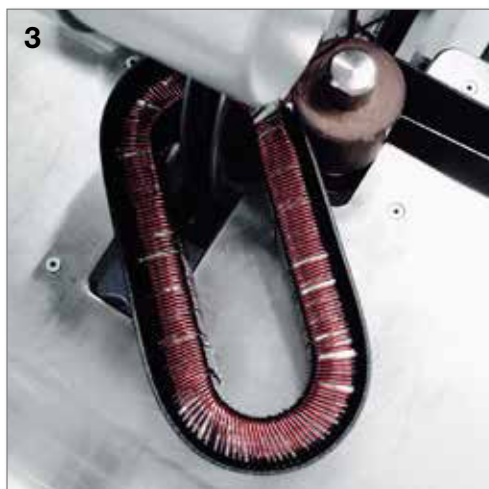
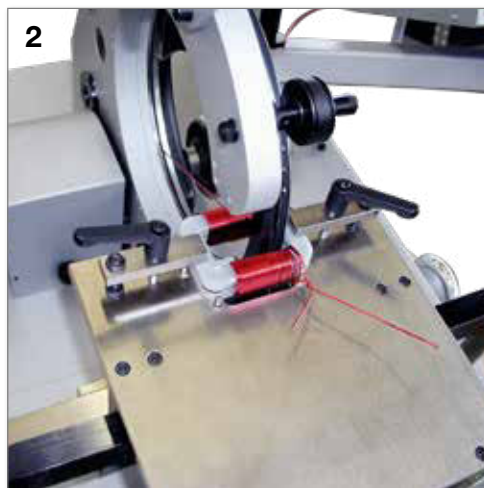
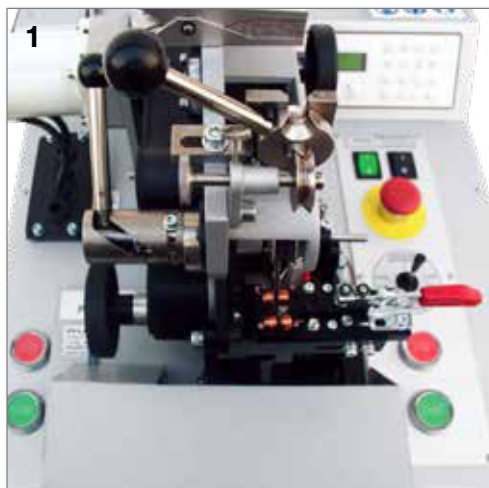
- D) Layering system for large magazines
- E) Tact break system
- F) SWT roller table
- G) REWT roller table for rectangular core
- H) Automated toroidal winding machine
- I) RWKCT special machine



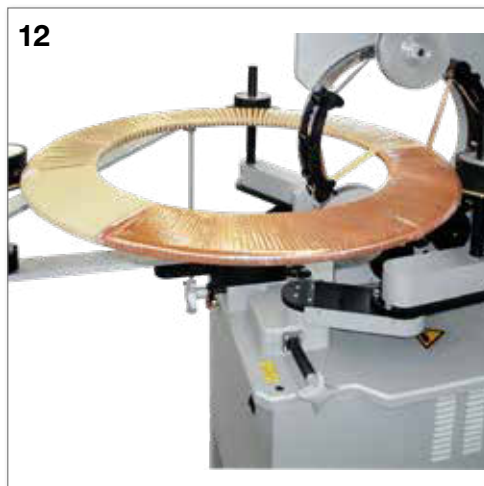
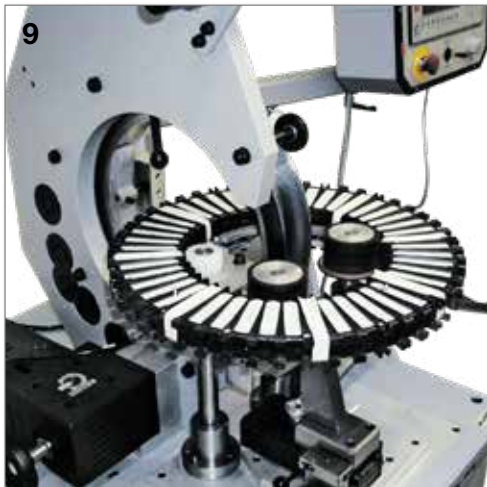
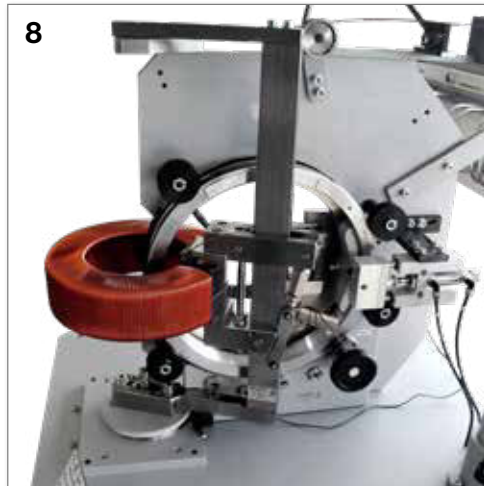
Accessories

and special devices

- 1) Parallel winding device for MINI machines
- 2) Parallel winding device for BENCH machines
- 3) Roller table for stadion- / oval cores
- 4) RWE-Simple-Tape-Ergo for taping of field coils
- 5) Segment holder for BENCH machines
- 6) wire deflector for reverse winding



- 7) Taping machine for U-shaped coils
- 8) Segment holder for FLOOR machines
- 9) Stator winding machine
- 10) Extra heavy stator winding machine
- 11) Taping machine for helical coils
- 12) Circulating tape dispenser system



Questionnaire for toroidal winding machines

Please fill in the following table carefully:

customer _____

product type _____

core dimensions
before winding OD: _____ ID: _____ H: _____

wire Ø _____

no. of turns _____

winding sector _____

core dimensions
after winding OD: _____ ID: _____ H: _____

The following points are for internal use only:

no. of layers _____

wire length _____

pitch value _____

wire layering method _____

winding speed _____

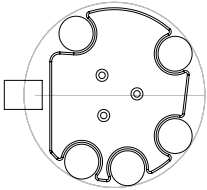
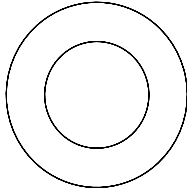
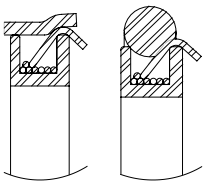
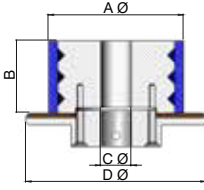









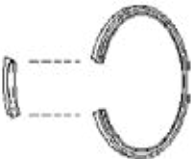

total winding time _____

machine base _____

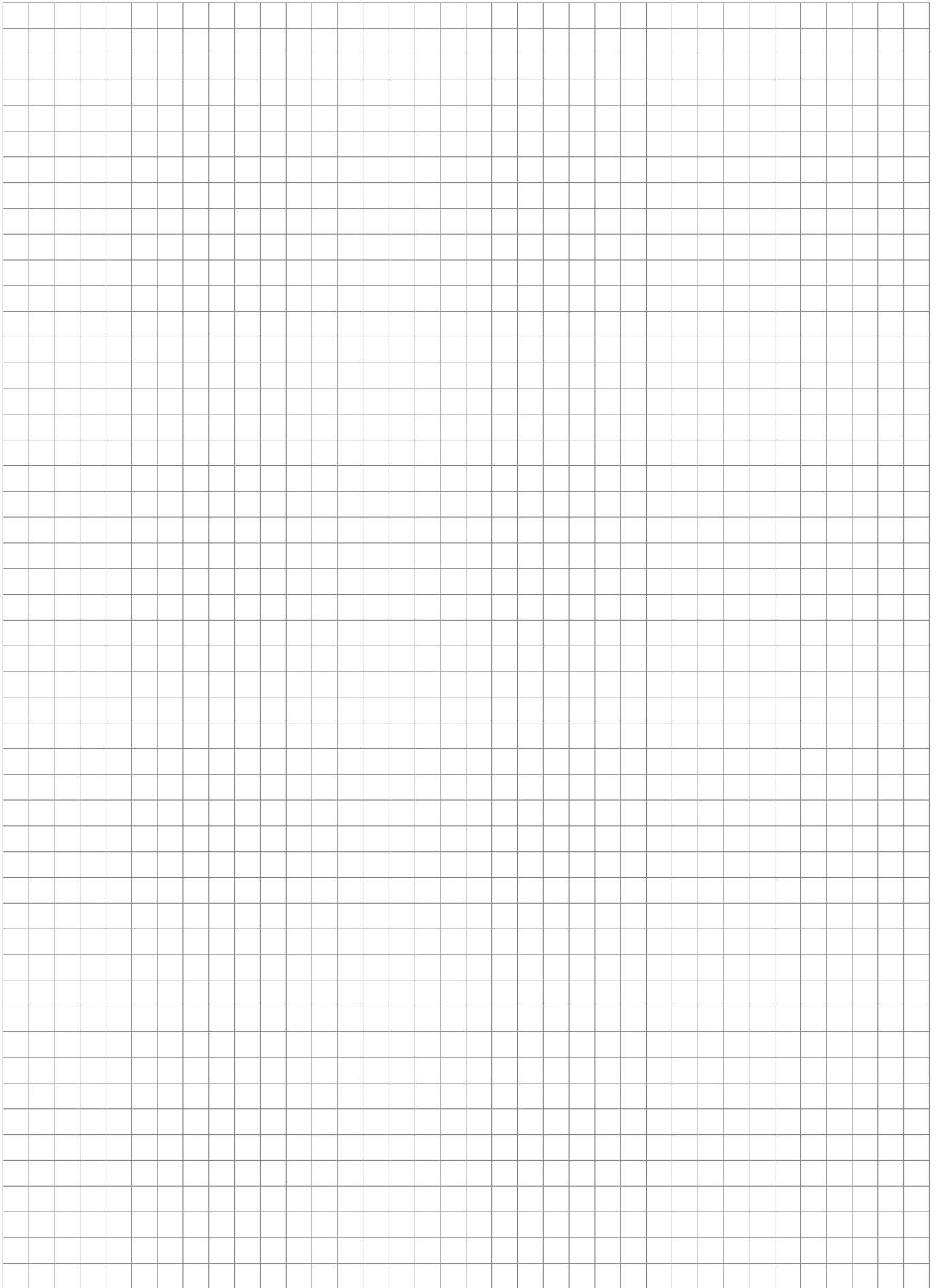
winding head _____

magazine _____

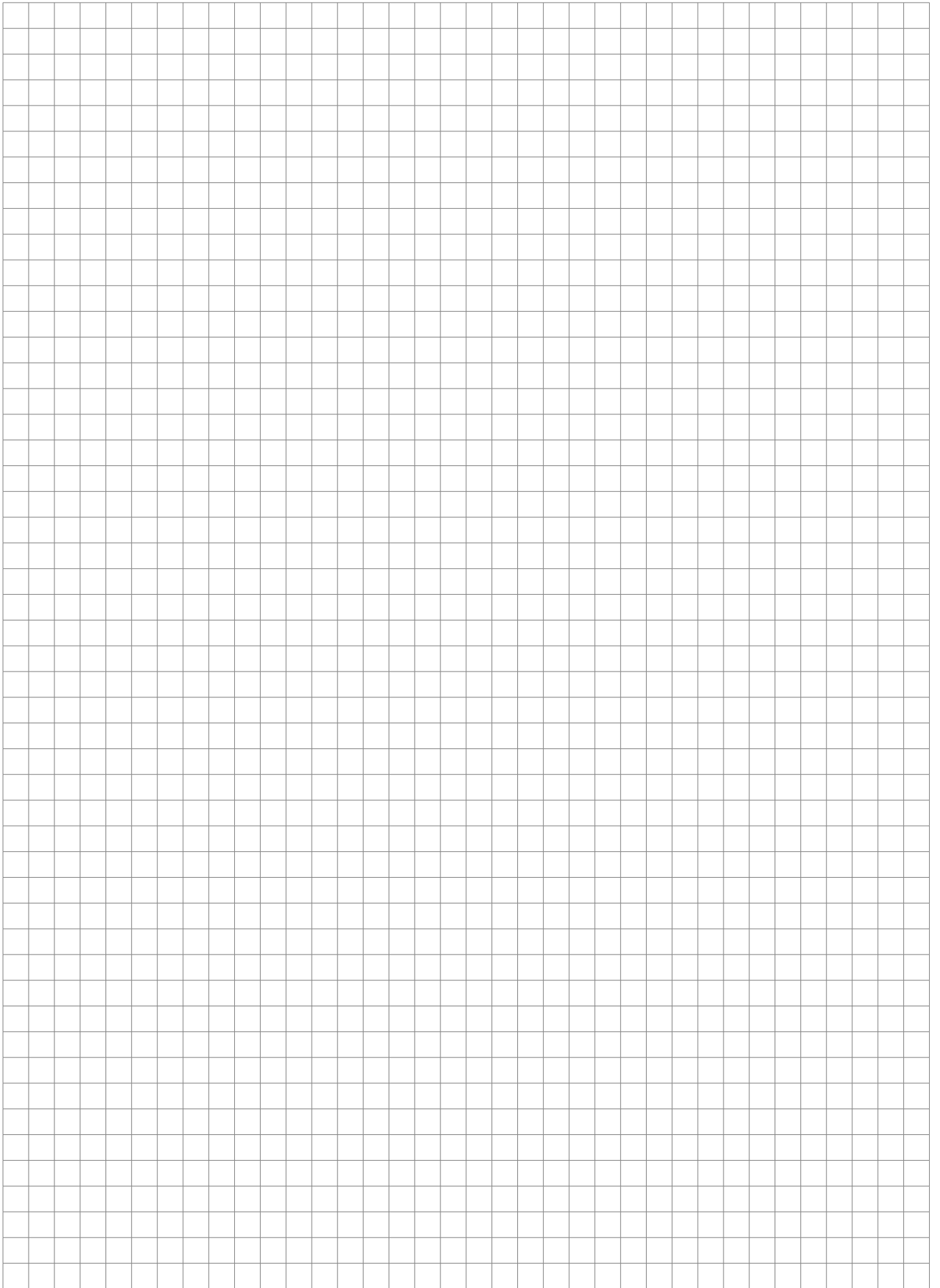
roller table _____








































| wire guide plate type | winding performance | | belt type | core transport rollers type | | |
|--|---|---|---|--|---|---|
|  |  | |  |  <p>A = B = C = D =</p> | | |
| slider type | guide pulley type | | guide roller with backplate | magazine types | | |
| 1 pc type  2 pc type  3 pc type  4 pc type  | standard V-groove | flat or U-groove |  wire guide hook  | KN / KN | SN / SN | Split type |
| |  |  | |  |  |  |

Your personal notes

A large grid of graph paper, consisting of 20 columns and 30 rows of small squares, intended for taking personal notes.

Your personal notes



| | | | | | | |
|---|---|---|--|---|---|---|
| <p>Netztrafos power transformers</p> <p>primary secondary taping machine base roller table application</p> |  <p>Winding head RW 20 Winding head RW 1 Taping head RW200/B RWE RW 222-L 20 VA</p> |  <p>Winding h. RW 25 Winding h. RW 300 Taping h. RW300/B RWE RW 222-VL 100 VA</p> |  <p>Winding h. RW 30 Winding h. RW 2 Taping h. RW300/B RWE RW 222-VL 200 VA</p> |  <p>Winding h. RW 30 Winding h. RW 3 Taping h. RW3/B RWE RW222-VL+RW332 500 VA</p> |  <p>Winding h. RW 30 Winding h. RW 3 Taping h. RW3/B RWE RW222-VL+RW332 1000 VA</p> |  <p>Winding h. RW 40 Winding h. RW 4 Taping h. RW4/B RWE RW 332 1500 VA</p> |
| <p>Strom- und Messwandler current and instrument transformers</p> <p>bare core size mm turns x Ø wire size mm wound coil size mm machine base roller table winding head + magazine</p> |  <p>48 x 35 x 18 600 x 0,40 51 x 32 x 18 RWE RW 222-L RW 20 + 20/16</p> |  <p>49 x 39 x 26 1 layer x 1,0 bifilar 52 x 35,5 x 28 RWS RW 222-VL RW 2 + 2/21</p> |  <p>120 x 60 x 38 30 x 2,8 bifilar 130 x 52 x 45 RWS RW 333-V RW 44-1 + 44/50</p> |  <p>120 x 50 x 50 1 sec.x1,7+ 1 sec.x2,8 128 x 45 x 57 RWS RW 333 RW 44-1 + 44/50 KN</p> |  <p>160 x 100 x 47 1 layer x 4,5 170 x 90 x 57 RWS RW 555-1 RW 55 + 55/70</p> |  <p>45 x 37 x 22 1 layer x 1,32 47,8 x 34 x 24,6 RWE RW 222-VL RW 2 + 2/21</p> |
| <p>Regeltrafos auto transformers</p> <p>bare core size mm turns x Ø wire size mm wound coil size mm machine base roller table winding head + magazine</p> |  <p>71 x 40 x 61 1 layer x 0,45 (325°) 72,3 x 37,5 x 62,3 RWE segment holder RW 2 + 2/18</p> |  <p>145 x 70 x 80 1 layer x 1,12 (320°) 147,5 x 64,5 x 83 RWE segment holder RW 3 + 3/60</p> |  <p>180 x 86 x 67 1 layer x 1,4 (340°) 184 x 80 x 75 RWS RW 333-V RW 33 + 33/80</p> |  <p>220 x 110 x 65 1 layer x 2,0 (320°) 225 x 105 x 69,5 RWS segment holder RW 44-1 + 44/10</p> |  <p>300 x 170 x 80 1 layer x 2,36 trif. + 305 x 160 x 85 RWS RW 333-V RW 44-1V + 44/100</p> |  <p>Final application sample RWS segment holder RW 44-1 + 44/50</p> |
| <p>Statoren stators</p> <p>application machine base roller table winding head</p> |  <p>coil with 4 sectors, each sector precision bank wound wire Ø 0,125 RWE RW 222-L RW 0</p> |  <p>coil with 4 sectors, each sector bank wound wire Ø 0,2 RWE segment holder RW 20</p> |  <p>coil with 36 sectors sector precision bank wound wire Ø 2,24 SWM - RW 55 special table special head</p> |  <p>coil with 12 sectors, each sector random bank wound wire Ø 0,4 RWE segment holder RW 0</p> |  <p>coil with 36 sectors, each sector random wound wire Ø 0,5 SWM-PC special table RW 1</p> |  <p>coil with 2 sectors, each sector precision bank wound wire Ø 1,2 RWE segment holder RW 2</p> |
| <p>Sonderspulen special coils</p> <p>application machine base roller table winding head</p> |  <p>core type 100x50x30 mm, 1 layer wound with litz wire Ø 30 x 0,6 mm RWE RW 332 RW 3</p> |  <p>coil with 180° body precision bank wound with wire Ø 0,6 mm RWE segment holder RW 1</p> |  <p>potentiometer resistance wire Ø 0,35 RWE segment holder RW 0</p> |  <p>special coil with balance winding RWE segment holder RW 20</p> |  <p>rogowski coil, 1 layer precision wound with wire size 0,2 RWE RW 222-L RW 0</p> |  <p>special current transformer, 2 sectors bank wound, wire size 1,4 RWE special segm. holder RW 2</p> |
| <p>Bandagen tapings</p> <p>core size mm machine base roller table taping head</p> |  <p>34 x 13,5 x 17 1 layer mylar 5 mm wide RWE RW 112 RW 200/B</p> |  <p>field coil 25 x 30 mm 1 layer 50% overlapped cotton tape 15 mm RWE coil support table FB 0</p> |  <p>110 x 50 x 30 mm 1 layer cotton tape 15 mm RWE RW 222-VL RW 300/B</p> |  <p>155 x 80 x 45 1 layer with CT paper Tape 20 mm wide RWE RW 332 RW 2/B</p> |  <p>150 x 65 x 75 2 layers with cotton tape 25 mm wide RWE RW 332 RW 33/B</p> |  <p>150 x 100 x 35 multilayer taping with CT paper Tape 16 mm wide RWE coil support table RW 2/B</p> |
| <p>ovale Spulen oval coils</p> <p>core size mm machine base roller table taping head</p> |  <p>Oval coil Multilayer wire Ø 0,7 mm RWE RW 222-V-SWT RW 30</p> |  <p>Oval coil Multilayer flat wire RWS RW 333-V-SWT RW 44-1</p> |  <p>Oval coil Multilayer precision winding RWE special table RW 3</p> | | | |

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CE-Produkt