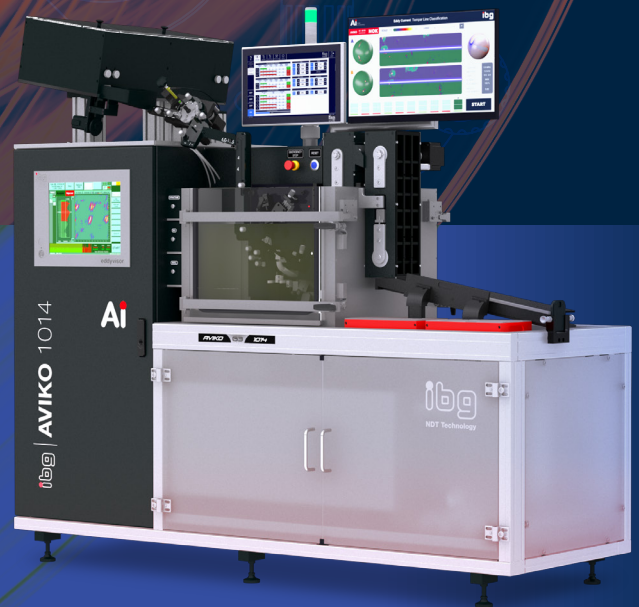


AVIKO Ball Scanners  
Roller Sorters  
Special Systems



[ibgndt.com](http://ibgndt.com)

**ibg**  
NDT Technology

# Sorting Solutions



● ibg Group ● Partners

Sorting Solutions, founded in 2004, is built on more than 50-years of AVIKO Ball Scanner history. Our primary focus is the production of various machines for NDT quality control such as crack detection, temperline and grinder burn detection, high precision diameter sorting and various other properties of balls and rollers. Sorting Solutions currently cooperates with more than 50 companies worldwide who are engaged in the production of bearing balls and rollers including other industries such as aerospace, industrial and medical.

Our machines and probes are specially adapted for various materials, whether it be steel, ceramic, glass or plastic.

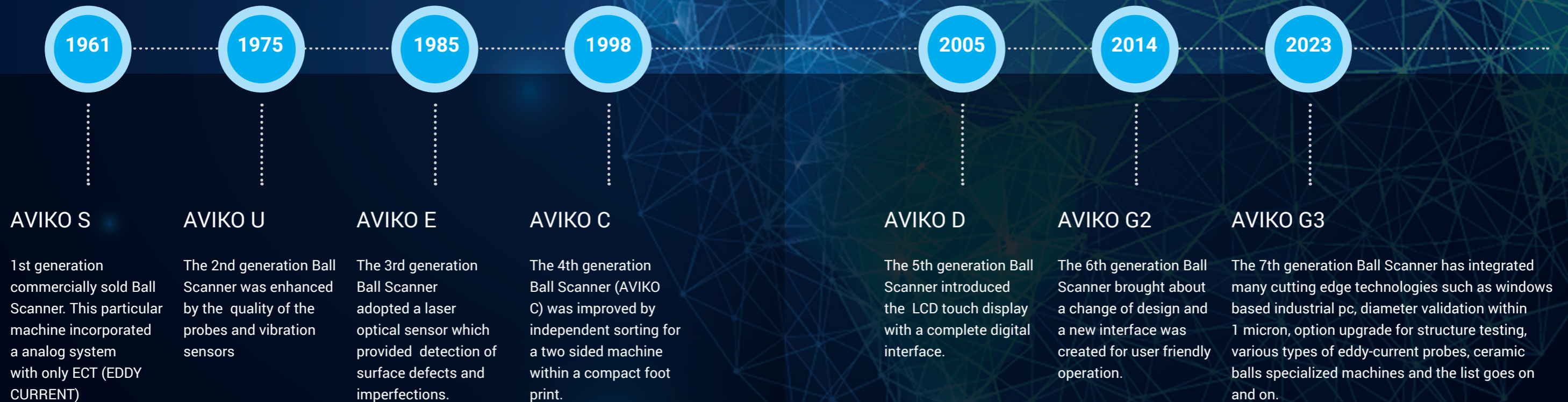
In addition to our standard products, we also provide special systems according to customer requirement.

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# AVIKO MACHINES TIMELINE

The extensive history of the AVIKO ball scanner originated in 1961 at the former company Somet. At that time, the first AVIKO ball scanner was developed, which was designed for surface and subsurface inspection of steel balls only. The development continued over many years with improved laser optics and vibration controls. As of 2004 Sorting Solutions was originated and carried the Aviko brand until 2018 at which the ibg Group purchased Sorting Solutions and created a new platform for advancement in the technology sector. This latest action has advanced our group to brand new levels putting us above the rest!



# Product information

The AVIKO ball scanner is designed for nondestructive high-speed inspection of balls (up to 34 000 pcs/hr.), where the surface and sub surface quality is evaluated using various types of probes. The types of probes that selected are dependent on the type of material of the ball. Additional possibilities are to add accessories for the AVIKO Ball Scanning machine, such as elevators, conservation units, demagnetizers, and packaging machines. A complete line that automates the entire process can be achieved such as demagnetizer, AVIKO Ball Scanner, High precision diameter sorter

and ball packaging running all inline. Thanks to the automation and removal of the human error factor, the scanning of the balls with the AVIKO ball scanner increases the quality, speed and productivity of the entire production process-this is our guarantee! All machines have the ability to be connected to a management evaluation software (Precision Software) for more detailed statistics. We can guarantee 100% surface control thanks to our spinning technology, which is able to inspect the entire surface of the ball. AVIKO ball scanners are divided into several categories, as described below.

## AVIKO Ceramic / Plastic

AVIKO Ball Scanner - Ceramics is a specially designed machine for non-destructive quality scanning of ceramic balls. With our enhanced laser optics, vibration sensors and eddy current probes we bring all of this data into the processing of the eddyvisor working hand in hand with our industry leading Ai evaluation.



## AVIKO Steel balls

AVIKO Ball Scanner - Steel is a machine specially designed for non-destructive quality scanning of steel balls. The machine is equipped with three primary sensors: 1. The eddy-currents probe designed for subsurface monitoring of ball (cracks, subsurface defects). 2. The optical probe designed to scan for surface defects (Stains, missing material and different polish or reflection) 3. The vibration sensor is designed to eliminate shape defects as well as missing material. All probes scan the ball at one time within the monitoring point. Once the scan is completed, the balls are sorted either into a good channel or rejected into channels based on eddy current or the optical probe.



## AVIKO Control Roller

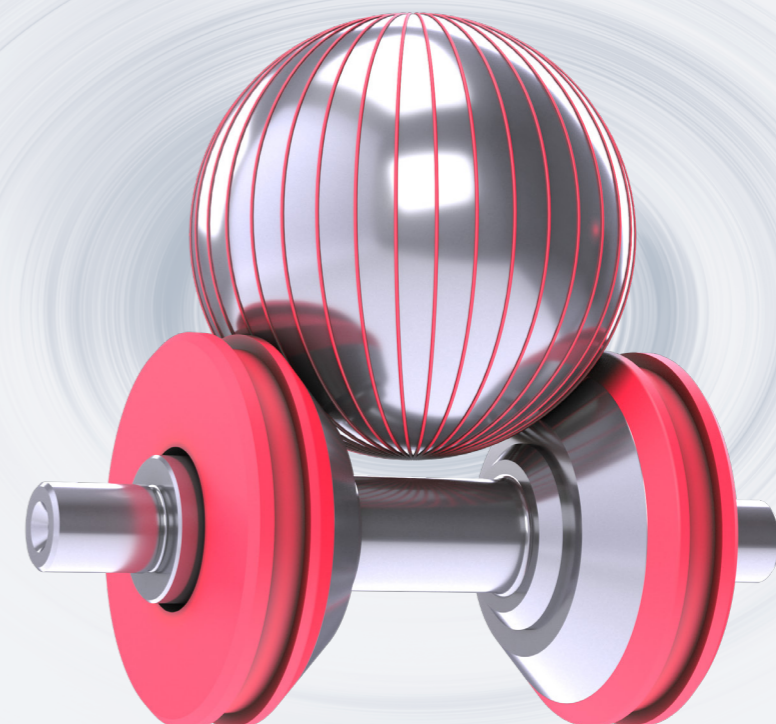
Control roller for AVIKO Ball Scanners are the proven method for the fastest control for balls ranging from 2 to 100 mm. The balls are spun by means of a specially grinded control roller based on the meridian system of rotation and for larger balls, cylindrical rollers are provided with the same meridian system technology. Due to this innovation all of the points of the balls are scanned by the probes. The surface speed during the scanning process is set to 3 m/s, which guarantees maximum speed while maintaining high inspection accuracy. We offer control rollers for AVIKO Ball Scanners in both standard and aerospace options as well as custom settings, which differ in the width of the meridian.

### Control Roller Standard

Standard control roller guarantees the highest inspection speed (up to 34 000 pcs/h). For more information and ordering information for control rollers please refer to our control roller product catalog.

### Control Roller Aerospace

Aerospace control roller is designed primarily for ball scanning for the aerospace industry, where precision monitoring comes first. This control roller can also be used for a high quality standard production. The width of the meridian is smaller compared to standard rollers, which increases both the sensitivity of the probe and the repeatability of defects.

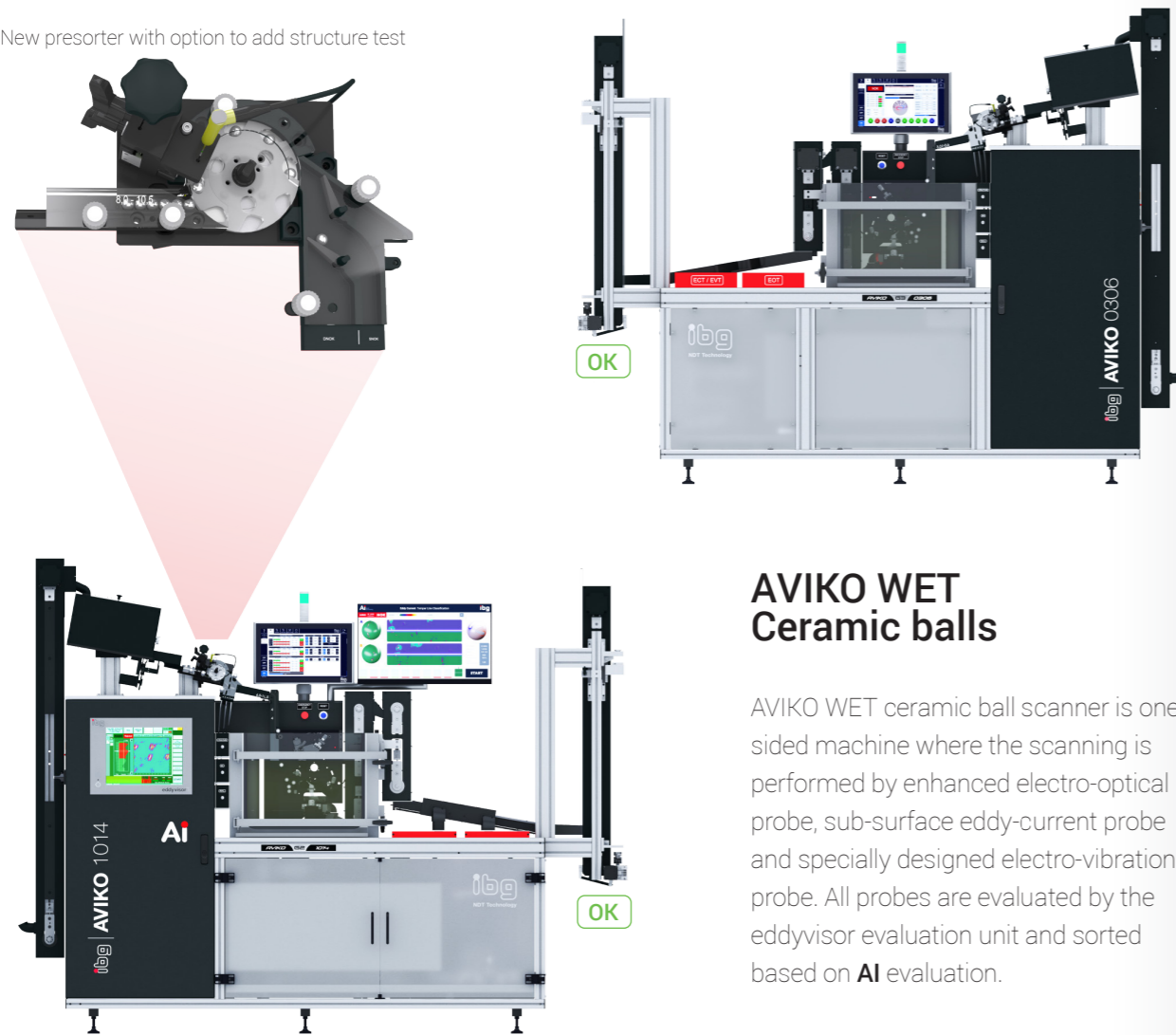


# Product information

## AVIKO G3 Wet

AVIKO WET ball scanner is exciting new development which we are introducing as of 2023. Due to the popularity of wet scanning, Ibg designed a wet ball scanner where the scanning takes place within an oil based solution. Noise-vibration reduction within the wet environment ensures a more precise and reliable inspection. Oil within the tank is monitored by the oil management system. One of many exciting features is that the balls do not have to be dried prior to scanning and in turn pseudo rejects due to stains or dirt are significantly reduced. Optionally the machine can be upgraded for structure sorting, ask for more details.

New presorter with option to add structure test



### AVIKO WET Ceramic balls

AVIKO WET ceramic ball scanner is one sided machine where the scanning is performed by enhanced electro-optical probe, sub-surface eddy-current probe and specially designed electro-vibration probe. All probes are evaluated by the eddyvisor evaluation unit and sorted based on **AI** evaluation.

#### AVIKO WET TYPES

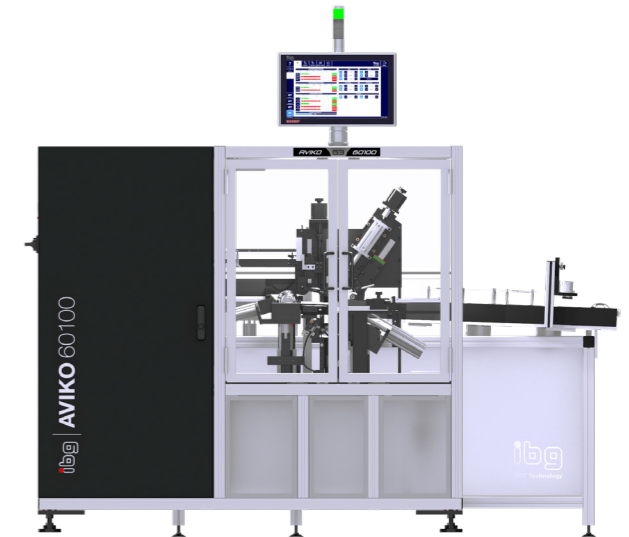
| AVIKO WET TYPES                | RANGE (mm) |        |
|--------------------------------|------------|--------|
| AVIKO 0610 WET STEEL (CERAMIC) | 5,556      | 10,319 |
| AVIKO 1014 WET STEEL (CERAMIC) | 9,525      | 14,600 |
| AVIKO 1419 WET STEEL (CERAMIC) | 13,494     | 19,050 |
| AVIKO 1830 WET STEEL (CERAMIC) | 18,000     | 30,163 |

## AVIKO G3 Dry

AVIKO ball scanner Dry is a exciting new generation development which we are introducing as of 2023. Ball scanners are equipped with new PC/PLC touchscreen and whole HMI is improved. This upgrade brings us new possibilities like improved software statistics, protocols, sorting history, video manuals, direct connection to machine monitoring software Precision Viewer and many more. Mechanical settings of the machines is a lot easier thanks to automatic levers adjustment.

### AVIKO G3 STANDARD

Aviko standard machines are designed in following ranges 30 - 60 mm, 40 - 80 mm, 60 - 100 mm. These machines are integrated with probes for crack detection, laser probe for surface defect detection and vibration probe for ovality detection. The core principle of ball rotation for 100% surface scanning is based on our control cylinders. More information can be found on the product data sheet for this ball scanner.



### AVIKO G3 ADVANCED

AVIKO G3 ADVANCED is a cutting edge scanner for balls ranging from 30 to 100 mm. Opposed to our standard AVIKO G3 STANDARD, this version is equipped with ibg eddy-current probes, eddyvisor C crack-test unit and optional **AI** evaluation application. Within the monitoring point the balls are scanned by four probes at one time (two eddy-current probes to capture surface and subsurface defects "temperline, grinderburns", opto-electrical probe to capture various surface defects and electro-vibration probe to capture large shape defects).



#### AVIKO TYPES

| AVIKO TYPES                     | RANGE (mm) |     |
|---------------------------------|------------|-----|
| AVIKO 3060 STANDARD (ADVANCED)  | 30         | 60  |
| AVIKO 4080 STANDARD (ADVANCED)  | 40         | 80  |
| AVIKO 60100 STANDARD (ADVANCED) | 60         | 100 |

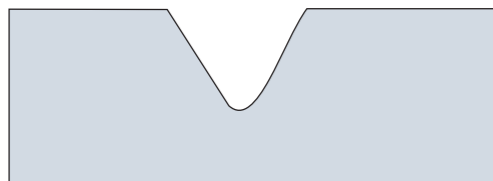
# Other Services

- As part of the many services we provide, we offer annual certification and yearly maintenance for all machines we develop. Our certified technicians will calibrate and maintain the machine and issue calibration certification.
- Commercial testing and sorting reports based on our technologies.
- Employee training is highly advised for new clients. Upon completion of the training, the operator will receive a certificate of completion. In case of interest, it is possible to order additional training for more employees or continued education.

## Master Defects

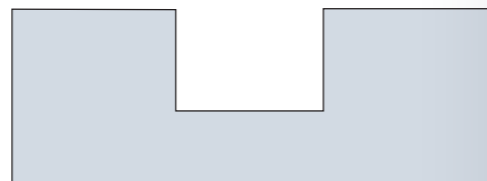
We offer master defects for various materials such as :conductive steel, ceramic and plastic balls. We provide defects using Laser or EDM technology (Electrical discharge machining - for steel materials only). Advantages of the laser defects are that they are reminiscent of natural defects and provides a stronger signal for eddy currents, which in the end guarantees stable repeatability. The pictures below illustrate the difference in the profile and tolerances of the individual defects.

### Laser defect profile (V-Notch)



| LENGTH  | TOLERANCE |
|---------|-----------|
| 1500 µm | ± 50 µm   |
| 750 µm  | ± 10 µm   |
| WIDTH   | TOLERANCE |
| 50 µm   | ± 10 µm   |
| DEPTH   | TOLERANCE |
| 50 µm   | ± 10 µm   |

### EDM defect profile (Square Notch)

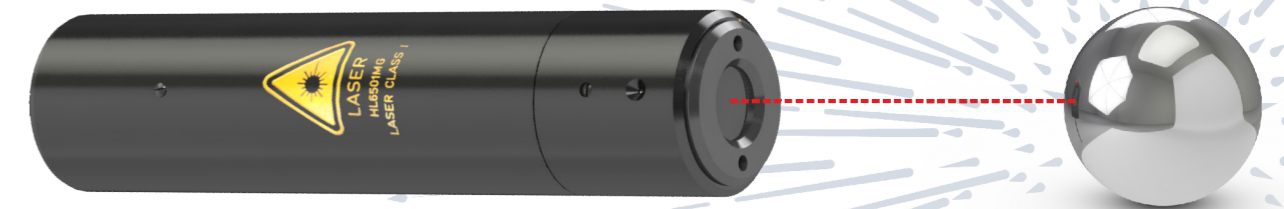


| LENGTH  | TOLERANCE |
|---------|-----------|
| 1500 µm | ± 100 µm  |
| 750 µm  | ± 50 µm   |
| WIDTH   | TOLERANCE |
| 50 µm   | ± 10 µm   |
| DEPTH   | TOLERANCE |
| 50 µm   | ± 10 µm   |

# Probes

## Electro-Optical Probe

The electro-optical probe is designed to evaluate the surface quality. The probe is developed on the principle of the reflection of the laser beam from the surface of the ball with the ability to detect crack or spot defects. Balls must be of clean and dried for dry AVIKO scanning and only cleaned for wet AVIKO scanning prior to scanning. The frequency of the probe is 100,000 samples per second. The received signal is split into many frequencies by Fourier transform, where different type of defects appear in different frequencies. The probes are supplied with master balls with each AVIKO ball scanner in order to verify the functionality of the probe and the machine settings.

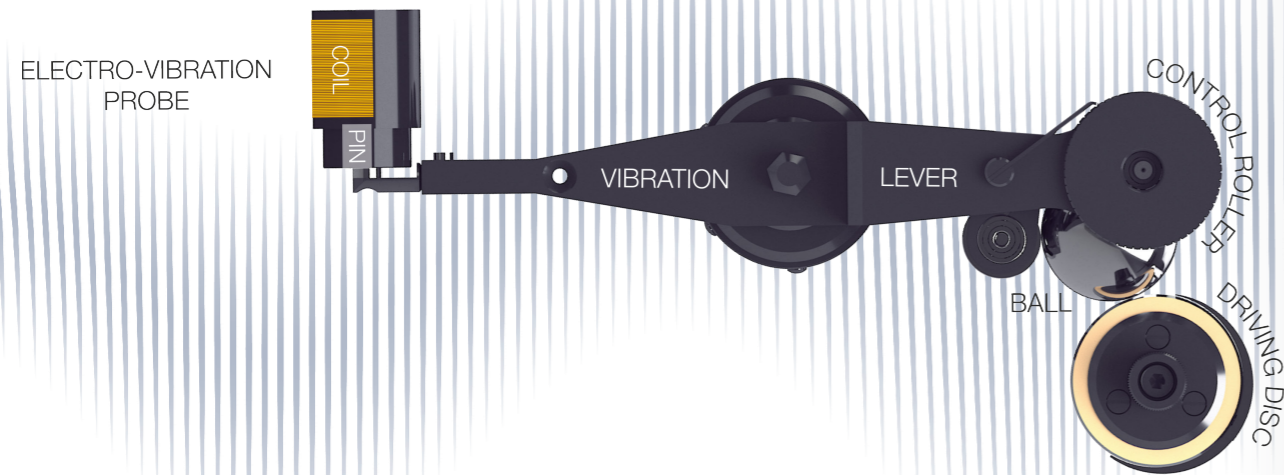


| TECHNICAL SPECIFICATIONS |                                | SCANNED AREA |                 |               |               |
|--------------------------|--------------------------------|--------------|-----------------|---------------|---------------|
| Frequency                | 100 kHz                        | AVIKO        | DIAMETER (mm)   | X (mm)        | Y (mm)        |
| Wave length              | 670±20 (nm)                    |              |                 |               |               |
| Output power             | >1mW                           | 0306         | 3.000 – 6.350   | 0.420 – 0.889 | 0.060 – 0.127 |
| Resolution               | 1% of the reflected light drop | 0610         | 5.556 – 10.319  | 0.661 – 1.228 | 0.066 – 0.123 |
| Scanned area             | See paragraph below            | 1014         | 10.000 – 14.000 | 1.190         | 0.119         |
|                          |                                | 1419         | 14.000 – 19.000 | 1.228         | 0.123         |
|                          |                                | 1830         | 18.000 – 30.000 | 1.228         | 0.123         |

# Probes

## Probe Electro-Vibration

Large shape defects and missing material can interfere with the rotation of the sphere in the meridian pattern. For this reason, all AVIKO ball scanners have Electro-vibration probes installed. The probe is calibrated to eliminate defects in ovality greater than 70 µm. The sensitivity of the probe can be amplified within the software of the machine.

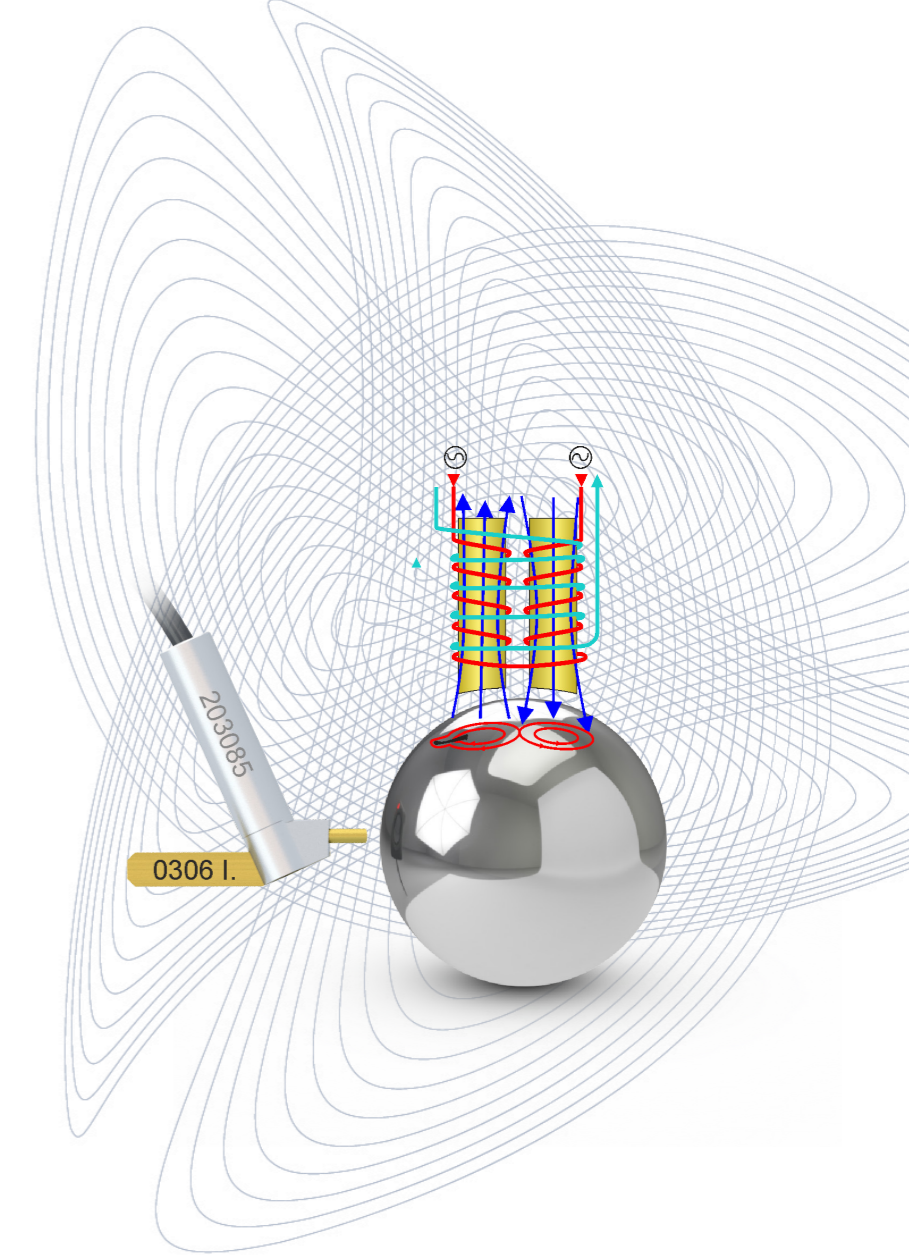


### TECHNICAL SPECIFICATIONS

|            |                              |
|------------|------------------------------|
| Type       | Contactless                  |
| Gain       | (-) 24 dB ... (+) 24 dB      |
| Resistance | 2                            |
| Precision  | 70 µm (ovality irregularity) |

## Probe Eddy Current

The eddy current probe is designed to eliminate balls with cracks, polished defects, impurities in the material and subsurface defects. Each AVIKO ball scanner is equipped with an oscilloscope to verify the signal of the ball. For ease of use the setup of the probe distance allows you to see the current distance without using a gauge. The constant distance of the probe from the surface of the ball has a fundamental effect on the signal strength, for this reason it is possible to activate distance monitoring with adjustable tolerances. For specific defects, you may adjust the phase selection so that a particular defect shows the maximum signal-noise ratio. The evaluation unit has two independent channels in order to set a different gain and phase selection. This creates the option to eliminate two different types of defects at the same time.



## Principle

Eddy current probes are differential with two active cores. It is possible to change the frequency directly in the machine software, which affects the depth of penetration into the material and the density of eddy currents. Standard ET probes are optimized for a medium transmission frequency of 400 kHz.

### TECHNICAL SPECIFICATIONS

|                     |          |
|---------------------|----------|
| Trace width (0203)  | 0,6 mm   |
| Trace width (0306)  | 1,2 mm   |
| Trace width (>0610) | 2,0 mm   |
| Phase Selection     | 0 - 360° |

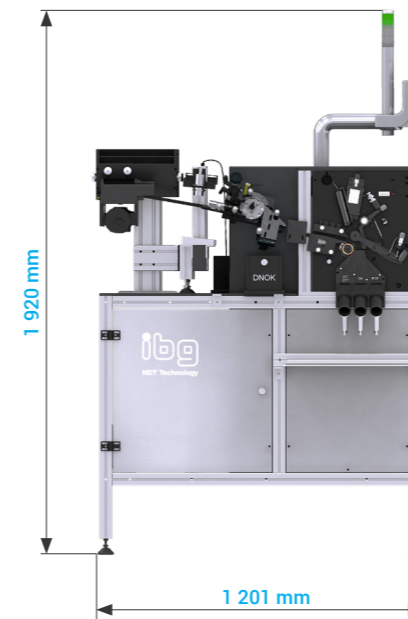
## 4-Core Eddy Current probe

For AVIKO BALL SCANNERS designed for balls larger than 10 mm, it is possible to use an advanced 4-core probe, which can be used to detect defects such as grinder burns/temper lines in addition to cracks.

# Products

## AVIKO G3 COMPACT 0203 / 0306 / 0610 / 1014 / 1419 / 1830

Aviko standard machines range from 2mm to 30mm. These machines incorporated probes for crack detection, laser sensor for surface defect detection and vibration sensor for ovality detection. The core principle of ball rotation for 100% surface scanning is based on control rollers.



### Structure

AVIKO G3 COMPACT has an option to be upgraded with an additional test for the micro-structure. The micro-structure test is capable to sort out the balls with different material as well as different hardness. Due to the eddy-current technology used, only ferromagnetic steels can be sorted out with this test. An eddyvisor S unit and eddy current probe are used for testing.



### Scan Speed

| Machine               | Min. Ball Ø |        | Max. Ball Ø |        | Min. Ø Scan Speed |                    | Max. Ø Scan Speed |                    |
|-----------------------|-------------|--------|-------------|--------|-------------------|--------------------|-------------------|--------------------|
|                       | [mm]        | [inch] | [mm]        | [inch] | Standard [pcs/hr] | Aerospace [pcs/hr] | Standard [pcs/hr] | Aerospace [pcs/hr] |
| AVIKO 0203 G3 COMPACT | 1.984       | 5/64   | 3.175       | 1/8    | 34 100            | 32 100             | 30 500            | 28 100             |
| AVIKO 0306 G3 COMPACT | 2.778       | 7/64   | 6.350       | 1/4    | 32 800            | 30 500             | 24 500            | 21 600             |
| AVIKO 0610 G3 COMPACT | 5.556       | 7/32   | 10.319      | 13/32  | 26 200            | 19 000             | 17 600            | 11 900             |
| AVIKO 1014 G3 COMPACT | 9.525       | 3/8    | 14.286      | -      | 18 800            | 16 700             | 11 600            | 9 300              |
| AVIKO 1419 G3 COMPACT | 13.494      | 17/32  | 19.050      | 3/4    | 12 800            | 10 600             | 7 900             | 6 700              |
| AVIKO 1830 G3 COMPACT | 18.000      | -      | 30.163      | 1-3/16 | 7 700             | 6 600              | 3 500             | 2 800              |

\* Scan speed is calculated for both sides working in unison. (Same diameter)

|                           | AVIKO 0203 COMPACT                                   | AVIKO 0306 - 1419 COMPACT | AVIKO 1830 COMPACT |
|---------------------------|--|---------------------------|--------------------|
| <b>Dimensions (LxWxH)</b> | 1000 x 1201 x 1920                                   |                           |                    |
| Weight                    | 170 (kg)   | 170 (kg)                  | 200 (kg)           |
| Sorting groups            | 3 (OK, EOT probe rejection; EVT/ECT probe rejection) |                           |                    |
| Input Power (230V)        | 230V, 50Hz/60Hz (Type E plug)                        |                           |                    |
| Input Power (110V)        | 110V, 50Hz/60Hz (Type B plug)                        |                           |                    |

|                          | SCAN AREA width | MAX. DEFECT size                |
|--------------------------|-----------------|---------------------------------|
| Electric optical probe   | 1.2 mm          | Spot defect Ø 600 µm            |
| Electric vibration probe | -               | Deep flat 700 µm                |
| Eddy current probes      | 2 mm            | Crack defect 750 x 50 x 50 (µm) |

Illustration represents  
AVIKO 1830 G3 COMPACT

### ORDER INFORMATION

| MODEL                 | SORTING DIAMETER (mm) | ORDER NUMBER |
|-----------------------|-----------------------|--------------|
| AVIKO 0203 G3 COMPACT | 1.984 - 3.175         | K 097 400    |
| AVIKO 0306 G3 COMPACT | 2.778 - 6.350         | K 097 450    |
| AVIKO 0610 G3 COMPACT | 5.556 - 10.319        | K 097 500    |
| AVIKO 1014 G3 COMPACT | 9.500 - 14.286        | K 097 550    |
| AVIKO 1419 G3 COMPACT | 13.494 - 19.050       | K 097 700    |
| AVIKO 1830 G3 COMPACT | 18.000 - 30.163       | K 097 750    |



# Products

## AVIKO G3 STANDARD 3060 / 4080 / 60100

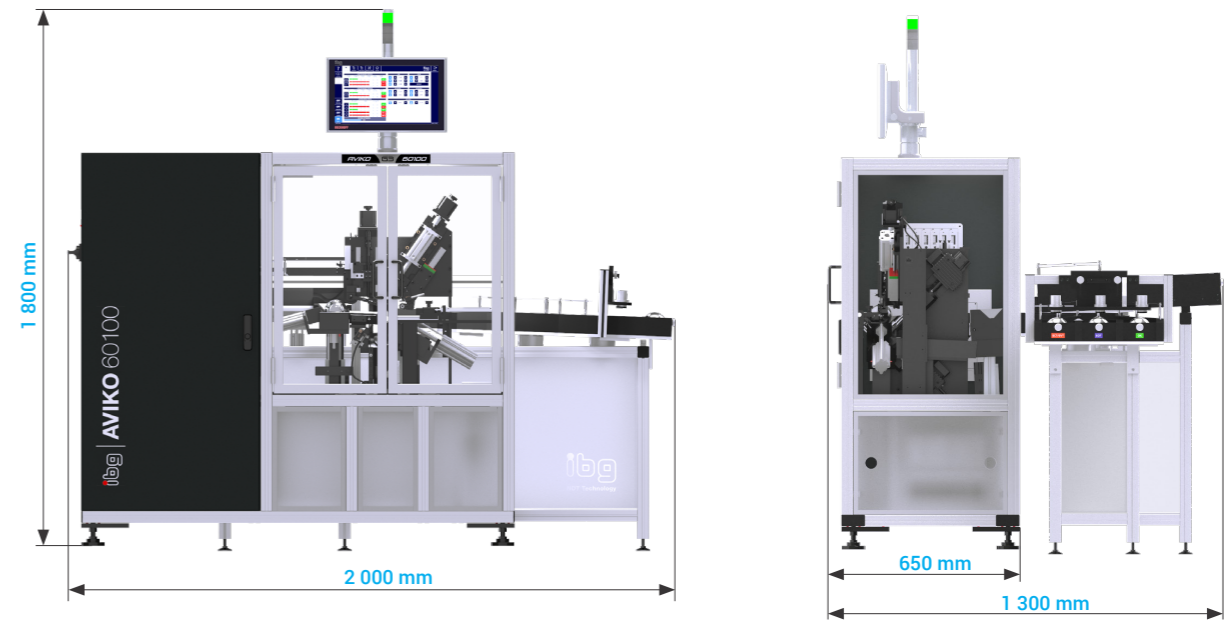
Aviko standard machines are designed in following ranges 30 - 60 mm, 40 - 80 mm, 60 - 100 mm. These machines incorporated probes for crack detection, laser sensor for surface defect detection and vibration sensor for ovality detection. The core principle of ball rotation for 100% surface scanning is based on control cylinders. Loader and outlet holder are included with this machine.



Illustration represents  
AVIKO 60100 G3 STANDARD

### ORDER INFORMATION

| MODEL                                    | SORTING DIAMETER (mm) | ORDER NUMBER |
|--|-----------------------|--------------|
| AVIKO 3060 G3 STANDARD - ELECTRIC        | 30 - 60               | K 096 600E   |
| AVIKO 4080 G3 STANDARD - ELECTRIC        | 40 - 80               | K 096 700E   |
| AVIKO 60100 G3 STANDARD - ELECTRIC       | 60 - 100              | K 096 800E   |
| AVIKO 3060 G3 STANDARD - COMPRESSED AIR  | 30 - 60               | K 096 000    |
| AVIKO 4080 G3 STANDARD - COMPRESSED AIR  | 40 - 80               | K 096 200    |
| AVIKO 60100 G3 STANDARD - COMPRESSED AIR | 60 - 100              | K 096 400    |



### Compressed air Standard

All primary movement elements are driven by compressed air.

### Electric Option

All primary movement elements are driven by electric motors.

### Scan Speed

| AVIKO 3060  |                     | AVIKO 4080  |                     | AVIKO 60100 |                     |
|-------------|---------------------|-------------|---------------------|-------------|---------------------|
| BALL Ø [mm] | SCAN SPEED [pcs/hr] | BALL Ø [mm] | SCAN SPEED [pcs/hr] | BALL Ø [mm] | SCAN SPEED [pcs/hr] |
| 30          | 237                 | 40          | 188                 | 60          | 117                 |
| 40          | 188                 | 50          | 148                 | 70          | 94                  |
| 50          | 148                 | 60          | 117                 | 80          | 86                  |
| 60          | 117                 | 70          | 94                  | 90          | 72                  |
|             |                     | 80          | 86                  | 100         | 61                  |

\* Scan speed is calculated for meridian width 0.9 mm

### AVIKO G3 3060 / 4080 / 60100

|                    |  |
|--------------------|--|
| Dimensions (LxWxH) | 1 300 x 2 000 x 1 800 (mm)                           |
| Weight             | 355 kg   |
| Sorting groups     | 3 (OK, EOT probe rejection; EVT/ECT probe rejection) |
| Input Power (230V) | 230V, 50Hz/60Hz (Type E plug)                        |
| Input Power (110V) | 110V, 50Hz/60Hz (Type B plug)                        |

|                          | SCAN AREA width | MAX. DEFECT size                |
|--------------------------|-----------------|---------------------------------|
| Electric optical probe   | 1.2 mm          | Spot defect Ø 600 µm            |
| Electric vibration probe | -               | Deep flat 700 µm                |
| Eddy current probes      | 2 mm            | Crack defect 750 x 50 x 50 (µm) |

# Products

## AVIKO G3 ADVANCED 3060 / 4080 / 60100

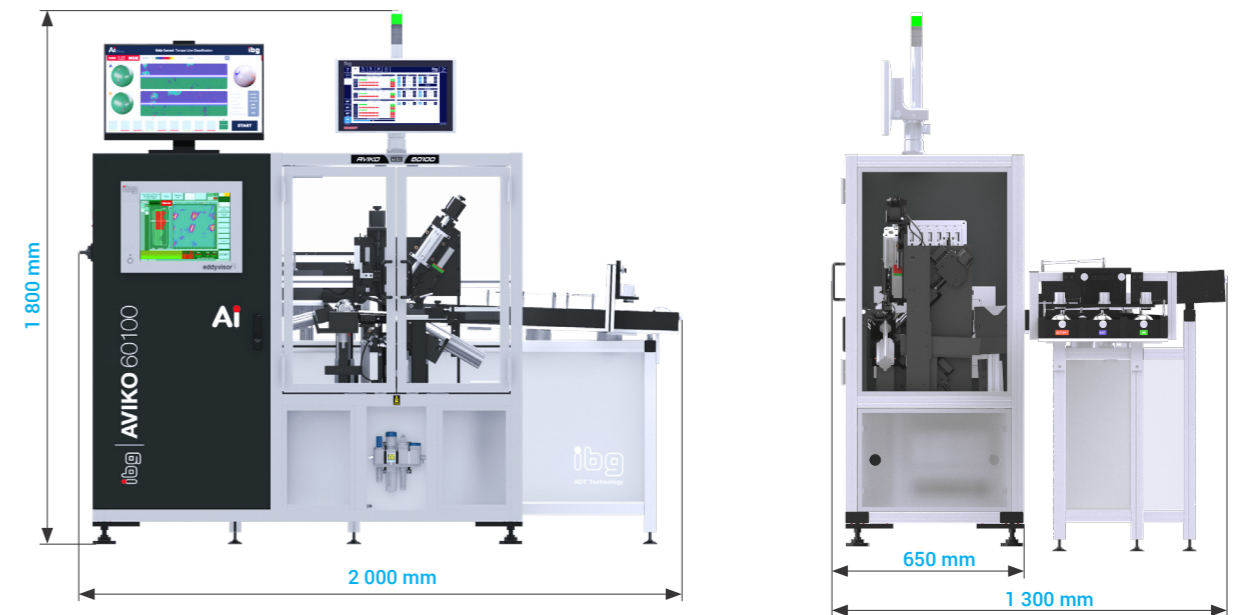
AVIKO G3 ADVANCED is a cutting edge scanner for balls ranging from 30 to 100 mm. Opposed to our standard AVIKO G3 STANDARD, this version is equipped with eddy-current probes, eddyvisor C crack-test unit and optional AI evaluation application. Loader and outlet holder is included with this machine.



Illustration represents  
AVIKO 60100 G3 ADVANCED

### ORDER INFORMATION

| MODEL                                    | SORTING DIAMETER (mm) | ORDER NUMBER |
|--|-----------------------|--------------|
| AVIKO 3060 G3 STANDARD - ELECTRIC        | 30 – 60               | K 096 600AE  |
| AVIKO 4080 G3 STANDARD - ELECTRIC        | 40 – 80               | K 096 700AE  |
| AVIKO 60100 G3 STANDARD - ELECTRIC       | 60 – 100              | K 096 800AE  |
| AVIKO 3060 G3 STANDARD - COMPRESSED AIR  | 30 – 60               | K 096 000A   |
| AVIKO 4080 G3 STANDARD - COMPRESSED AIR  | 40 – 80               | K 096 200A   |
| AVIKO 60100 G3 STANDARD - COMPRESSED AIR | 60 – 100              | K 096 400A   |



### Compressed air Standard

All primary movement elements are driven by compressed air.

### Electric Option

All primary movement elements are driven by electric motors.

### Scan Speed

| AVIKO 3060  |                     | AVIKO 4080  |                     | AVIKO 60100 |                     |
|-------------|---------------------|-------------|---------------------|-------------|---------------------|
| BALL Ø [mm] | SCAN SPEED [pcs/hr] | BALL Ø [mm] | SCAN SPEED [pcs/hr] | BALL Ø [mm] | SCAN SPEED [pcs/hr] |
| 30          | 237                 | 40          | 188                 | 60          | 117                 |
| 40          | 188                 | 50          | 148                 | 70          | 94                  |
| 50          | 148                 | 60          | 117                 | 80          | 86                  |
| 60          | 117                 | 70          | 94                  | 90          | 72                  |
|             |                     | 80          | 86                  | 100         | 61                  |

\* Scan speed is calculated for meridian width 0.9 mm

### AVIKO G3 3060 / 4080 / 60100

|                    |  |
|--------------------|--|
| Dimensions (LxWxH) | 1 300 x 2 000 x 1 800 (mm)                           |
| Weight             | 355 kg   |
| Sorting groups     | 3 (OK, EOT probe rejection; EVT/ECT probe rejection) |
| Input Power (230V) | 230V, 50Hz/60Hz (Type E plug)                        |
| Input Power (110V) | 110V, 50Hz/60Hz (Type B plug)                        |

|                          | SCAN AREA width | MAX. DEFECT size            |
|--------------------------|-----------------|-----------------------------|
| Electric optical probe   | 1.2 mm          | Spot defect Ø 600 µm        |
| Electric vibration probe | -               | Deep flat 700 µm            |
| Eddy current probes      | 2 mm            | Temperline and grinder burn |

# Products

## AVIKO G3 WET STEEL 0306 / 0610 / 1014 / 1419 / 1830

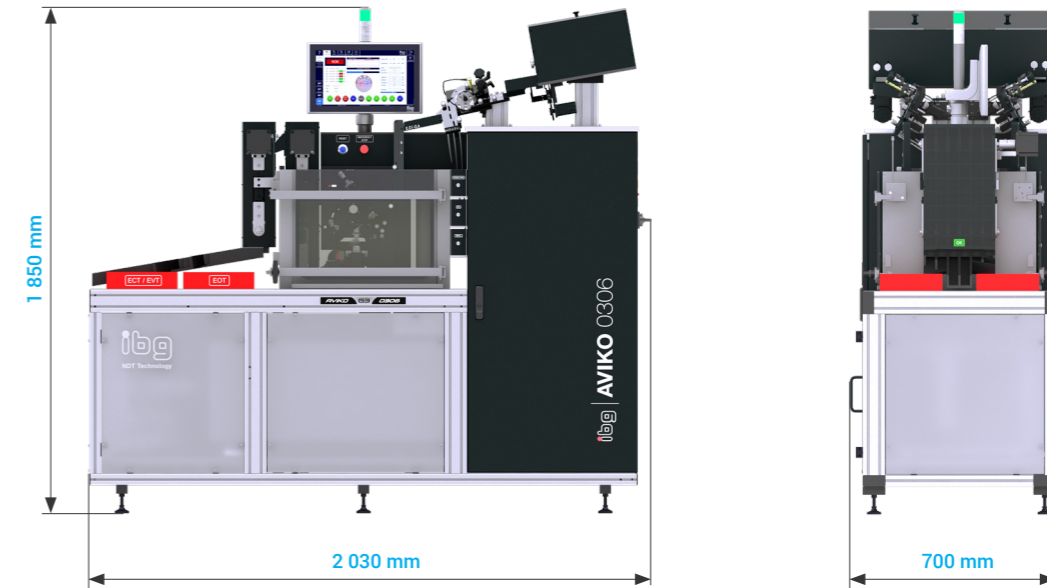
AVIKO WET ball scanner performs the scan within an oil-based solution. Noise-vibration reduction within the wet environment ensures a more precise and reliable inspection. One of many exciting features is that the balls do not have to be dried prior to scanning and in turn pseudo rejects due to stains or dirt are significantly reduced. Optionally the machine can be upgraded for structure sorting, ask for more details.



Illustration represents  
AVIKO 0306 G3 WET STEEL

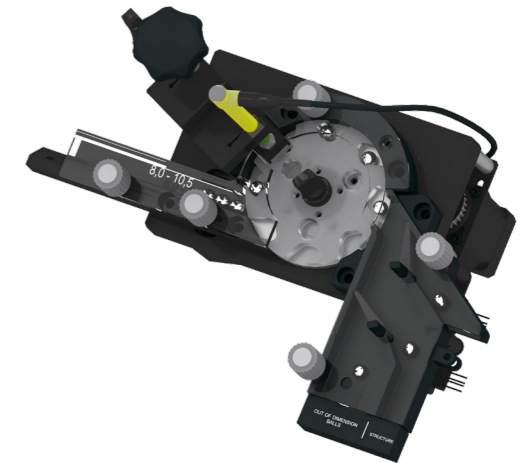
### ORDER INFORMATION

| MODEL                     | SORTING DIAMETER (mm) | ORDER NUMBER |
|---------------------------|-----------------------|--------------|
| AVIKO 0306 G3 WET - STEEL | 2.778 – 6.350         | K 092 000    |
| AVIKO 0610 G3 WET - STEEL | 5.556 – 10.319        | K 092 200    |
| AVIKO 1014 G3 WET - STEEL | 9.500 – 14.286        | K 092 400    |
| AVIKO 1419 G3 WET - STEEL | 13.494 – 19.050       | K 092 600    |
| AVIKO 1830 G3 WET - STEEL | 18.000 – 30.163       | K 092 800    |



## Diameter and Structure Test

As part of the upgrade of our new generation AVIKO G3 machines we have implemented a brand new diameter validation solution which is much more precise with ability to exclude the balls which are  $\pm 1 \mu\text{m}$  out of the selected ball diameter. Optionally diameter validation can be upgraded with a structure probe to reject the balls with different structure than calibrated. The balls are rejected prior to the monitoring point scanning which prevents additional wear and tear of the machine parts with NOK balls.



## Scan Speed

| Machine           | Min. Ball Ø |        | Max. Ball Ø |        | Min. Ø Scan Speed |                    | Max. Ø Scan Speed |                    |
|-------------------|-------------|--------|-------------|--------|-------------------|--------------------|-------------------|--------------------|
|                   | [mm]        | [inch] | [mm]        | [inch] | Standard [pcs/hr] | Aerospace [pcs/hr] | Standard [pcs/hr] | Aerospace [pcs/hr] |
| AVIKO 0306 G3 WET | 2.778       | 7/64   | 6.350       | 1/4    | 20 600            | 19 200             | 15 600            | 13 800             |
| AVIKO 0610 G3 WET | 5.556       | 7/32   | 10.319      | 13/32  | 20 100            | 13 900             | 13 100            | 8 500              |
| AVIKO 1014 G3 WET | 9.525       | 3/8    | 14.600      | -      | 14 200            | 12 300             | 8 400             | 6 600              |
| AVIKO 1419 G3 WET | 13.494      | 17/32  | 19.050      | 3/4    | 9 300             | 7 700              | 5 600             | 4 700              |
| AVIKO 1830 G3 WET | 18.000      | -      | 30.163      | 1-3/16 | 5 600             | 4 300              | 2 500             | 2 000              |

\* Scan speed is calculated for both sides working in unison. (same diameter)

### AVIKO G3 WET STEEL 0306 / 0610 / 1014 / 1419 / 1830

|                    |  |
|--------------------|--|
| Dimensions (LxWxH) | 2 030 × 700 × 1 850 (mm)                             |
| Weight             | 400 kg   |
| Sorting groups     | 3 (OK, EOT probe rejection; EVT/ECT probe rejection) |
| Input Power (230V) | 230V, 50Hz/60Hz (Type E plug)                        |
| Input Power (110V) | 110V, 50Hz/60Hz (Type B plug)                        |

|                          | SCAN AREA width | MAX. DEFECT size                             |
|--------------------------|-----------------|--|
| Electric optical probe   | 1.2 mm          | Spot defect Ø 600 $\mu\text{m}$              |
| Electric vibration probe | -               | Deep flat 700 $\mu\text{m}$                  |
| Eddy current probes      | 2 mm            | Crack defect 750 × 50 × 50 ( $\mu\text{m}$ ) |

# Products

## AVIKO G3 WET CERAMIC 0306 / 0610 / 1014 / 1419 / 1830

AVIKO WET ceramic ball scanner is one sided machine where the scanning is performed by enhanced electro-optical probe, sub-surface eddy-current probe and specially designed electro-vibration probe. All probes are evaluated by the eddyvisor evaluation unit and sorted based on AI evaluation.



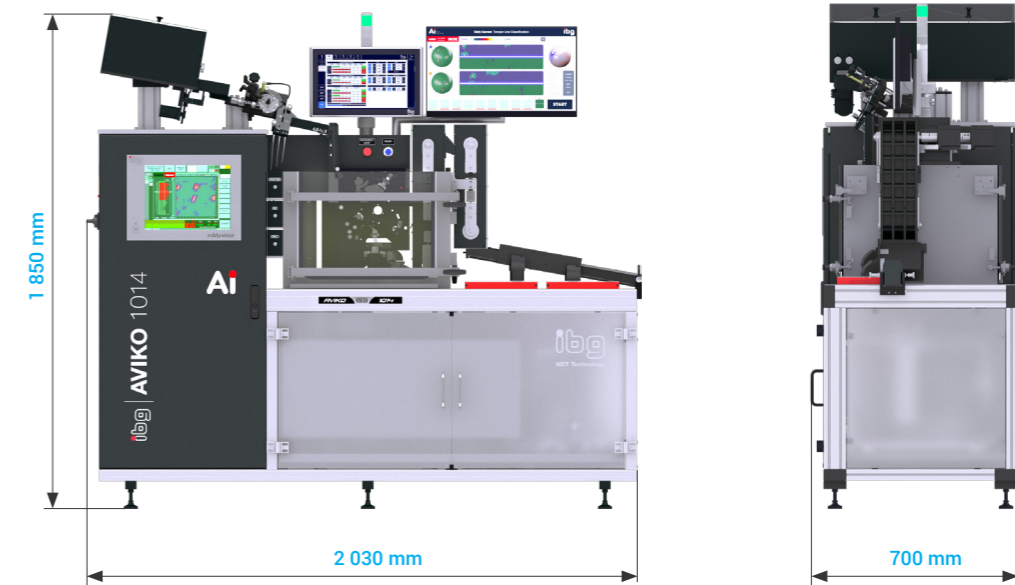
**NEW**

Availability as of 06 / 2023

Illustration represents  
AVIKO 1014 G3 WET CERAMIC

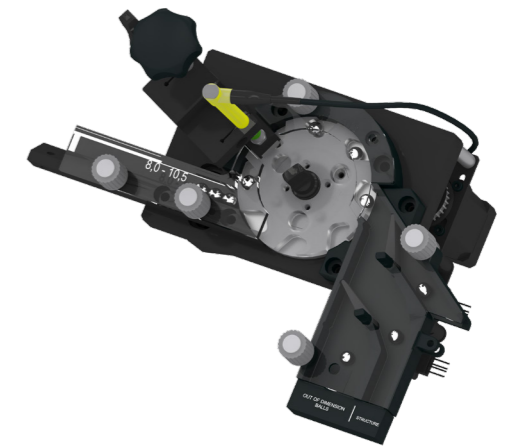
### ORDER INFORMATION

| MODEL                       | SORTING DIAMETER (mm) | ORDER NUMBER |
|-----------------------------|-----------------------|--------------|
| AVIKO 0610 G3 WET - CERAMIC | 5.556 - 10.319        | K 092 200C   |
| AVIKO 1014 G3 WET - CERAMIC | 9.500 - 14.286        | K 092 400C   |
| AVIKO 1419 G3 WET - CERAMIC | 13.494 - 19.050       | K 092 600C   |
| AVIKO 1830 G3 WET - CERAMIC | 18.000 - 30.163       | K 092 800C   |



## Diameter Test

As part of the upgrade of our new generation AVIKO G3 machines we have implemented a brand new diameter validation solution which is much more precise with ability to exclude the balls which are  $\pm 1 \mu\text{m}$  out of the selected ball diameter. The balls are rejected prior to the monitoring point scanning which prevents additional wear and tear of the machine parts with NOK balls.



## Scan Speed

| Machine           | Min. Ball Ø |        | Max. Ball Ø |        | Min. Ø Scan Speed |                    | Max. Ø Scan Speed |                    |
|-------------------|-------------|--------|-------------|--------|-------------------|--------------------|-------------------|--------------------|
|                   | [mm]        | [inch] | [mm]        | [inch] | Standard [pcs/hr] | Aerospace [pcs/hr] | Standard [pcs/hr] | Aerospace [pcs/hr] |
| AVIKO 0610 G3 WET | 5.556       | 7/32   | 10.319      | 13/32  | 10 050            | 6 950              | 6 550             | 4 250              |
| AVIKO 1014 G3 WET | 9.525       | 3/8    | 14.600      | -      | 7 100             | 6 150              | 4 200             | 3 300              |
| AVIKO 1419 G3 WET | 13.494      | 17/32  | 19.050      | 3/4    | 4 650             | 3 850              | 2 800             | 2 350              |
| AVIKO 1830 G3 WET | 18.000      | -      | 30.163      | 1-3/16 | 2 800             | 2 150              | 1 250             | 1 000              |

### AVIKO G3 WET CERAMIC 0306 / 0610 / 1014 / 1419 / 1830

|                    |  |
|--------------------|--|
| Dimensions (LxWxH) | 2 030 × 700 × 1 850 (mm)                             |
| Weight             | 410 kg   |
| Sorting groups     | 3 (OK, EOT probe rejection; EVT/ECT probe rejection) |
| Input Power (230V) | 230V, 50Hz/60Hz (Type E plug)                        |
| Input Power (110V) | 110V, 50Hz/60Hz (Type B plug)                        |

|                          | SCAN AREA width | MAX. DEFECT size                |
|--------------------------|-----------------|---------------------------------|
| Electric optical probe   | 1.2 mm          | Spot defect Ø 600 $\mu\text{m}$ |
| Electric vibration probe | -               | Deep flat 300 $\mu\text{m}$     |
| Eddy current probes      | 2 mm            | Metal inclusions                |

# Products

## DIAMETER SORTER 0310 / 0820

Diameter sorter is machine used to sort balls by diameter of the ball, which is done by LVDT probe measurement with remarkable repeatability of  $\pm 0.15 \mu\text{m}$ . The balls are sorted to 8 groups where one of them is reserved for NOK balls. Optional upgrade to implement the micro-structure testing probe to reject balls with different structure than calibrated.



Illustration represents  
DIAMETER SORTER 0310

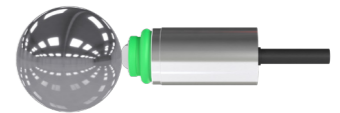
### ORDER INFORMATION

| MODEL                | SORTING DIAMETER (mm) | ORDER NUMBER | ORDER NUMBER (+ STRUCTURE) |
|----------------------|-----------------------|--------------|----------------------------|
| DIAMETER SORTER 0310 | 3.000 - 10.319        | K 083 700A   | K 083 700 C                |
| DIAMETER SORTER 0820 | 8.000 - 20.000        | K 083 800A   | K 083 800C                 |



### Diameter Test

The ball diameter is measured by a high-precision LVDT probe with accuracy of up to  $\pm 0.15$  micron.



### Structure Test

Diameter sorter may be upgraded with a additional test for the micro-structure. The micro-structure test is capable to sort out balls with different material as well as different hardness. Due to the eddy-current technology used, only ferromagnetic steels can be sorted out with this test. An eddyguard S unit and eddy current probe are used for testing.



### Scan Speed

| Machine              | Min. Ball $\varnothing$<br>[mm] | Max. Ball $\varnothing$<br>[mm] | Min. $\varnothing$ Scan Speed<br>[pcs/hr] | Max. $\varnothing$ Scan Speed<br>[pcs/hr] |
|----------------------|---------------------------------|---------------------------------|---|---|
| DIAMETER SORTER 0310 | 3.000                           | 10.000                          | 13 000                                    | 12 000                                    |
| DIAMETER SORTER 0820 | 8.000                           | 20.000                          | 4 000                                     | 3 000                                     |

### DIAMETER SORTER 0310 / 0820

|                    |                               |
|--------------------|-------------------------------|
| Dimensions (LxWxH) | 970 x 980 x 1 630 (mm)        |
| Weight             | 282 kg                        |
| Sorting groups     | 7 + NOK                       |
| Repeatability      | $\pm 0.15 \mu\text{m}$        |
| Input Power (230V) | 230V, 50Hz/60Hz (Type E plug) |
| Input Power (110V) | 110V, 50Hz/60Hz (Type B plug) |

# Products

## DIAMETER SORTER 1830 / 3060 / 4080 / 60100

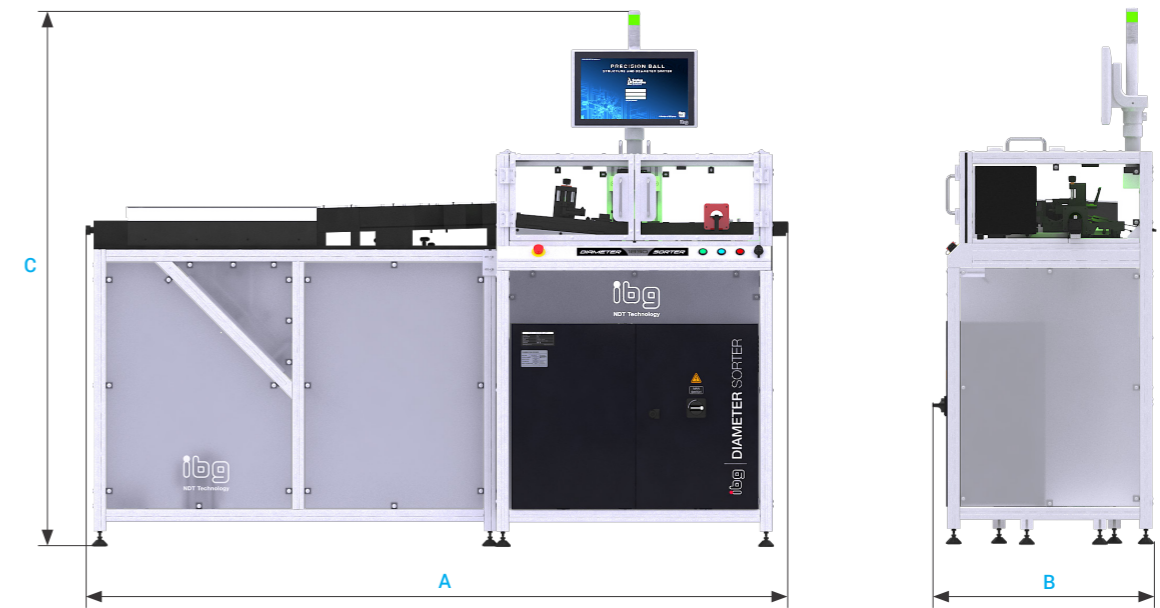
Diameter sorter is machine used to sort balls by diameter of the ball, which is done by LVDT probe measurement with remarkable repeatability of  $\pm 0.15 \mu\text{m}$ . The balls are sorted to 4 groups where one of them is reserved for NOK balls. Optional upgrade to implement the micro-structure testing coil to reject balls with different structure than calibrated.



Illustration represents  
DIAMETER SORTER 1830

### ORDER INFORMATION

| MODEL                 | SORTING DIAMETER (mm) | ORDER NUMBER | ORDER NUMBER (+ STRUCTURE) |
|-----------------------|-----------------------|--------------|----------------------------|
| DIAMETER SORTER 1830  | 18.000 - 10.319       | K 087 002A   | K 087 002C                 |
| DIAMETER SORTER 3060  | 30.000 - 20.000       | K 087 004    | K 087 003B                 |
| DIAMETER SORTER 4080  | 40.000 - 80.000       | K 087 003    | K 087 004B                 |
| DIAMETER SORTER 60100 | 60.000 - 100.000      | K 087 005    | K 087 005B                 |



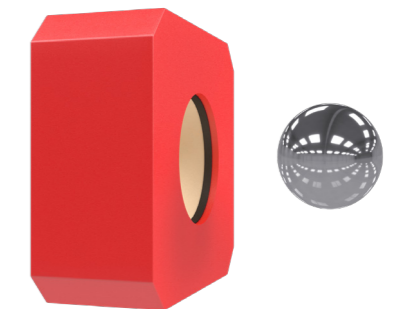
### Diameter Test

The ball diameter is measured by a high-precision LVDT probe with accuracy of up to  $\pm 0.15$  micron.



### Structure Test

Diameter sorter may be upgraded with a additional test for the micro-structure. The micro-structure test is capable to sort out balls with different material as well as different hardness. Due to the eddy-current technology used, only ferromagnetic steels can be sorted out with this test. An eddyguard S unit and eddy current coil are used for testing.



### Scan Speed

| Machine               | Min. Ball Ø<br>[mm] | Max. Ball Ø<br>[mm] | Min. Ø Scan Speed<br>[pcs/hr] | Max. Ø Scan Speed<br>[pcs/hr] |
|-----------------------|---------------------|---------------------|-------------------------------|-------------------------------|
| DIAMETER SORTER 1830  | 18.000              | 30.000              | 3 000                         | 2 800                         |
| DIAMETER SORTER 3060  | 30.000              | 60.000              | 2 800                         | 1 800                         |
| DIAMETER SORTER 4080  | 40.000              | 80.000              | 2 400                         | 1 300                         |
| DIAMETER SORTER 60100 | 60.000              | 100.000             | 1 800                         | 800                           |

#### DIAMETER SORTER 1830

|                    |                          |                      |                          |
|--------------------|--------------------------|----------------------|--------------------------|
| Dimensions (AxBxC) | 1 656 x 692 x 1 643 (mm) | DIAMETER SORTER 3060 | 2 312 x 692 x 1 643 (mm) |
| Weight             | 282 kg                   |                      | 295 kg                   |
| Sorting groups     | 7 + NOK                  |                      | 3 + NOK                  |
| Repeatability      | $\pm 0.15 \mu\text{m}$   |                      | $\pm 0.15 \mu\text{m}$   |

|                    |                               |
|--------------------|-------------------------------|
| Input Power (230V) | 230V, 50Hz/60Hz (Type E plug) |
| Input Power (110V) | 110V, 50Hz/60Hz (Type B plug) |

# Products

## DIAMETER & LENGTH SORTER 1865

DLSR 1865 is a automatic sorting machine for the measurement of the diameter and length of steel cylindrical and tapered rollers. The parts are transported to the measuring point by means of an input conveyor. At the measuring point, the part type surfaces are scanned using high precision two LVDT probes at the same time - first probe is designed to scan the length and second probe is designed to scan the diameter. Once the scan is completed the part types are sorted 16 groups. The machine is designed for dimensional inspection of cylindrical and tapered rollers in the nominal range from 20 to 65 mm in diameter and from 20 to 95 mm in length.

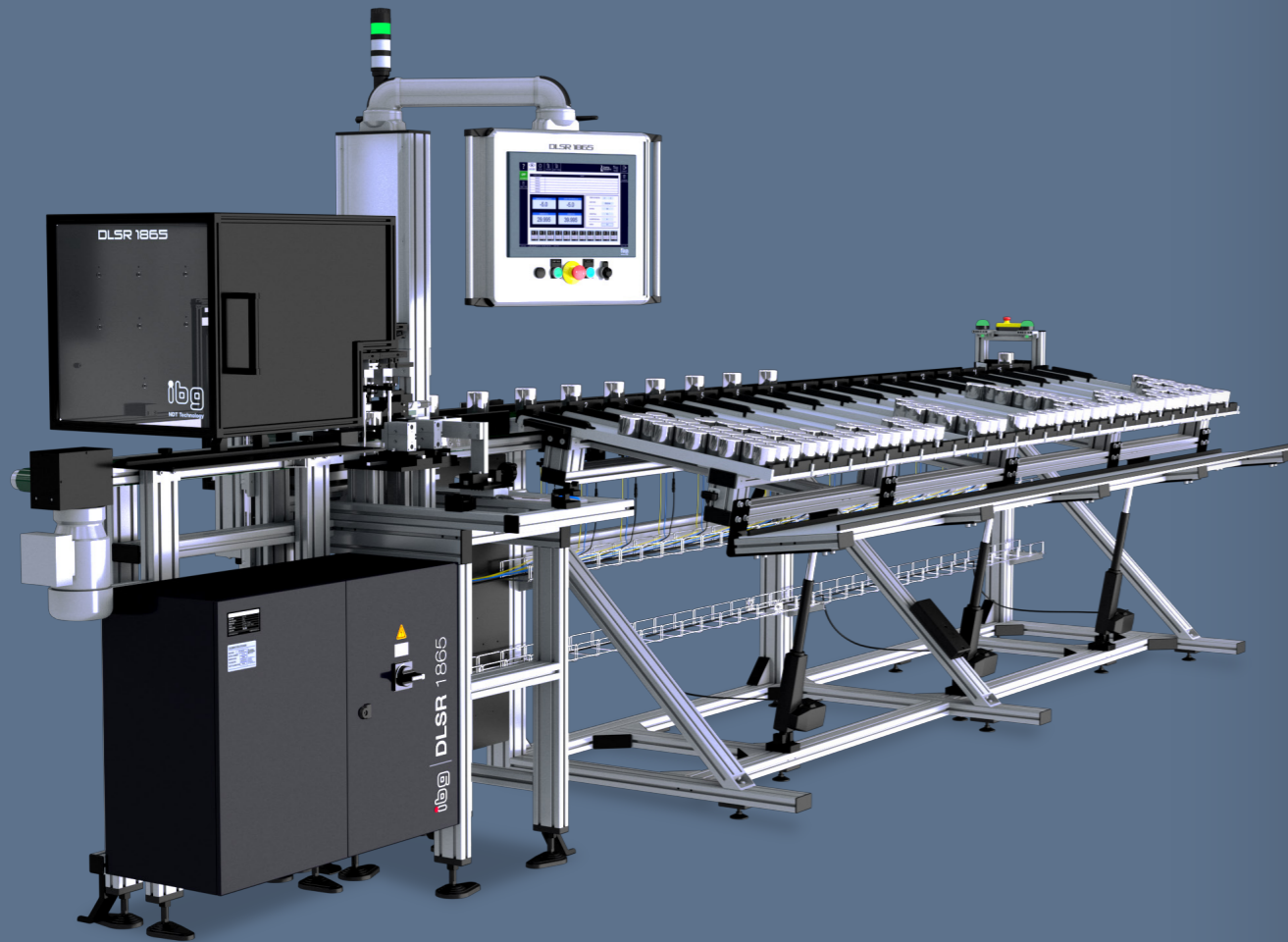
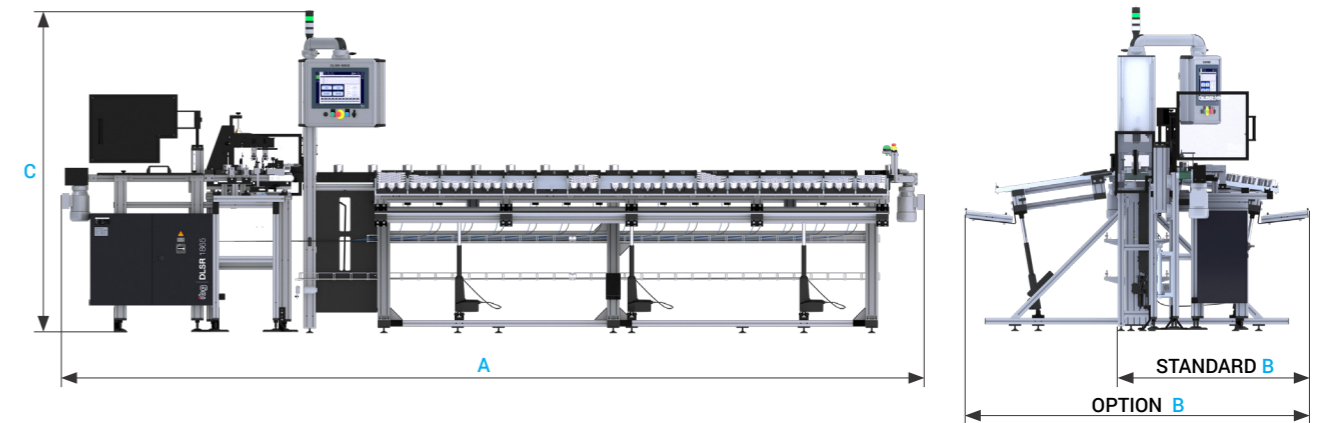


Illustration represents  
DIAMETER & LENGTH SORTER 1865

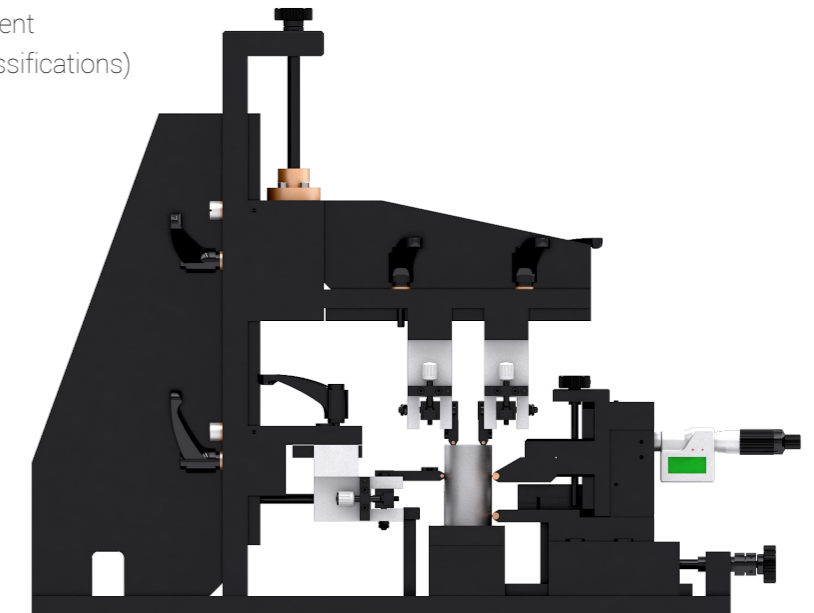
### ORDER INFORMATION

| MODEL                         | ROLLER DIAMETER (mm) | ROLLER LENGTH (mm) | ORDER NUMBER |
|-------------------------------|----------------------|--------------------|--------------|
| DLSR 1865 STANDARD            | 20.000 – 65.000      | 20.000 – 95.000    | K 088 000    |
| DLSR 1865 + CRACK TEST        | 20.000 – 65.000      | 20.000 – 95.000    | K 088 400    |
| DLSR 1865 + STRUCTURE TEST    | 20.000 – 65.000      | 20.000 – 95.000    | K 088 600    |
| DLSR 1865 + CRACK & STRUCTURE | 20.000 – 65.000      | 20.000 – 95.000    | K 088 800    |



### Options

- 2nd probe for length measurement
- Additional 16 outlet holders (classifications)
- Inlet Loader
- Crack and structure testing
- Laser marking



### Technical Specification

| DIAMETER & LENGTH SORTER 1865  |   |
|--------------------------------|---|
| Dimensions 16 groups (A×B×C)   | 5 620 × 1 300 × 2 100 (mm)                            |
| Dimensions 32 groups (A×B×C)   | 5 620 × 2 210 × 2 100 (mm)                            |
| Weight 32 groups               | 820 kg  |
| Repeatability                  | ± 0.15 μm   |
| LVDT probe linearity error     | 0.8% FS (full-scale) ± 250 μm range (at 20 °C ± 1 °C) |
| Compressed Air                 | 5-10 [BAR]; 72,5 - 145 [PSI]                          |
| Scan speed                     | 1 850 pcs/hr  |
| Tapered roller max. apex angle | 9°  |
| Input Power (230V)             | 230V, 50Hz/60Hz (Type E plug)                         |
| Input Power (110V)             | 110V, 50Hz/60Hz (Type B plug)                         |

\*Before ordering contact us to discuss the rollers specifications

# Products

## INLINE GAUGING EXCAVATOR

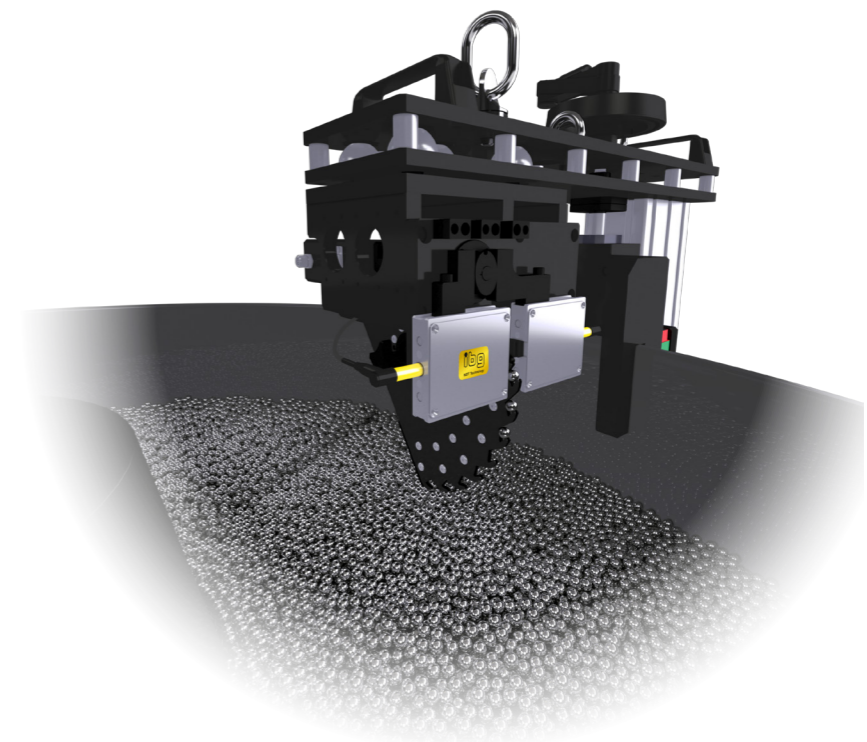
Inline Gauging Excavator is intended for Standard ball gauging during the ball grinding processes. The machine is capable to measure the balls in the range of 4.5 - 9.5 mm and can be used as standalone or be enhanced to communicate with the production machine PLC. We are offering the IGE in manual (Std) or fully automatic version (Advanced), where the excavator wheel position is automatically set with the ball level sensors.



Illustration represents  
INLINE GAUGING EXCAVATOR

### ORDER INFORMATION

| MODEL                             | BALL DIAMETER (mm) | ORDER NUMBER |
|-----------------------------------|--------------------|--------------|
| INLINE GAUGING EXCAVATOR STD      | 4.500 – 9.500      | K 102 000    |
| INLINE GAUGING EXCAVATOR ADVANCED | 4.500 – 9.500      | K 102 200    |



## Technical Specification

| INLINE GAUGING EXCAVATOR   |  |
|----------------------------|--|
| Dimensions (LxWxH)         | 650 x 960 x 1130 (mm)                                |
| Weight                     | 170 kg   |
| Repeatability              | ± 0.15 µm  |
| LVDT probe linearity error | 0.8% FS (full-scale) ± 250 µm range (at 20 °C ± 1°C) |
| Input Power (230V)         | 230V, 50Hz/60Hz (Type E plug)                        |
| Input Power (110V)         | 110V, 50Hz/60Hz (Type B plug)                        |



# Products

## EDDYDECTOR AIR SPINDLE 0340

The eddydetector Air Spindle is a universal laboratory testing device for all types of balls. The rotation of the ball is in one axis in order to accurately locate a defect. It is possible to change both the height of the ball and the distance of the sensor from the ball including angle. The ball is held in place by vacuum and the speed of the rotation of the ball can be easily adjusted within the touch-screen. The standard ibg probe and evaluation unit eddyliner C is included.

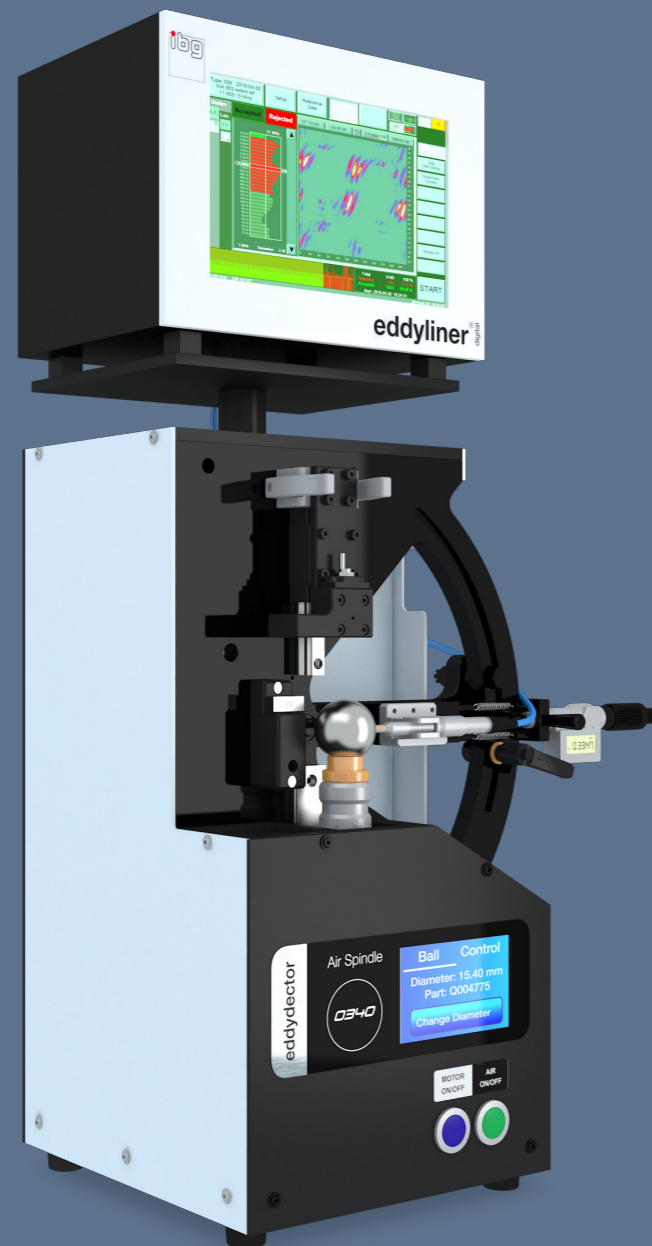
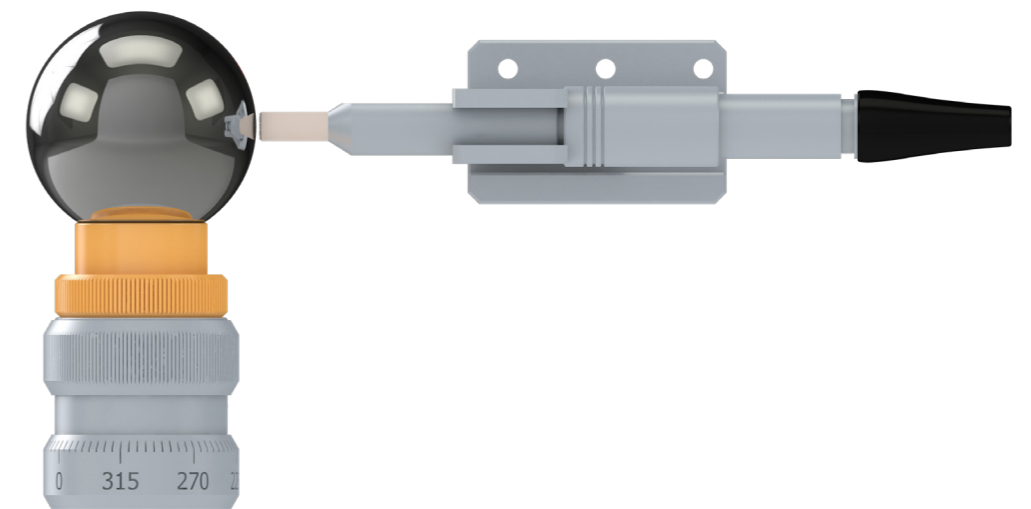
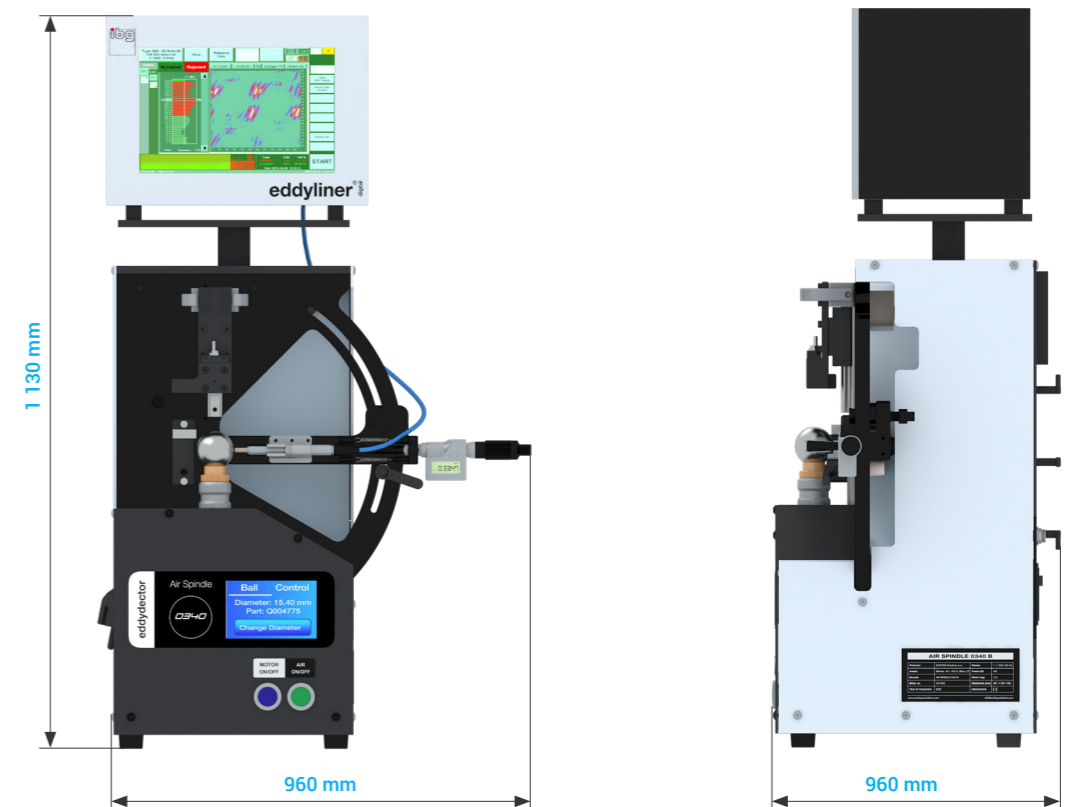


Illustration represents  
EDDYDECTOR AIR SPINDLE 0340

### ORDER INFORMATION

| MODEL                       | BALL DIAMETER (mm) | ORDER NUMBER |
|-----------------------------|--------------------|--------------|
| EDDYDECTOR AIR SPINDLE 0340 | 3.000 - 40.000     | K 004 530A   |



### Technical Specification

| EDDYDECTOR AIR SPINDLE 0340 |                      |
|-----------------------------|----------------------|
| Dimensions (LxWxH)          | 490 x 330 x 850 (mm) |
| Weight                      | 17.5 kg              |
| Ball diameter               | 3.000 - 40.000       |
| Spindle RPM                 | 1000 - 4000          |
| Surface speed Ø 40 mm       | 2094 - 8377 (mm/s)   |
| Surface speed Ø 3 mm        | 157 - 628 (mm/s)     |
| Lever angle                 | (-)20° - (+)55°      |

# Options

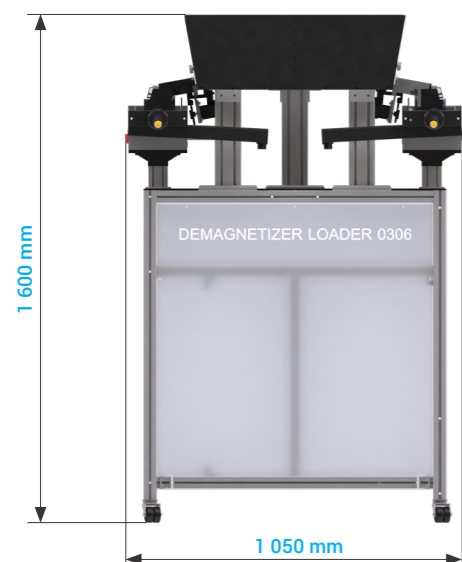
We offer wide range of options to accompany our products (Demagnetizer loaders, elevators, wear and tear testing systems, data collection software and many more) . All options can be ordered separately or as part of the machine. On request the options can be modified up to your specific needs. For more information contact us at [sorting-solutions.com](http://sorting-solutions.com)

## Demagnetizer loader

The demagnetizer is intended to demagnetize balls prior to entering the ball scanners. It is mandatory that balls are demagnetized prior to the scanning process for all ball scanners. The main eddy-current probe is responsible for the detection of cracks and sub-surface defects, which is strongly influenced by the magnetism. This could lead to the false results. The demagnetizer can be connected to the AVIKO ball scanners or used as a standalone unit.

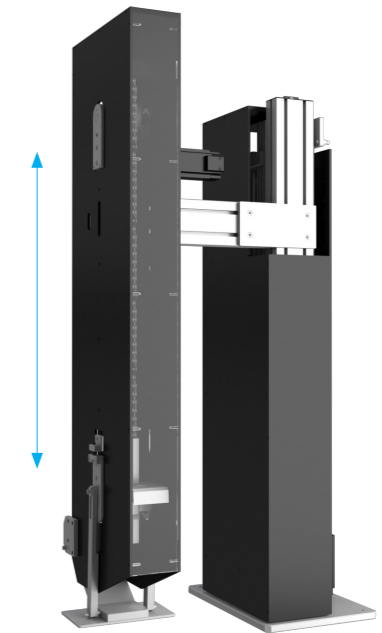


| TECHNICAL SPECIFICATIONS |  |
|--------------------------|--|
| Dimensions (L×W×H)       | 1 050 × 950 × 1 600 (mm)                             |
| Load                     | 250 kg   |
| Power                    | 230V, 50Hz/60Hz (E plug)<br>110V, 50Hz/60Hz (B plug) |
| Range                    | 2.778 - 6.350 mm                                     |
| Order Number (0306)      | K 076 200A   |



## Elevator Motorized

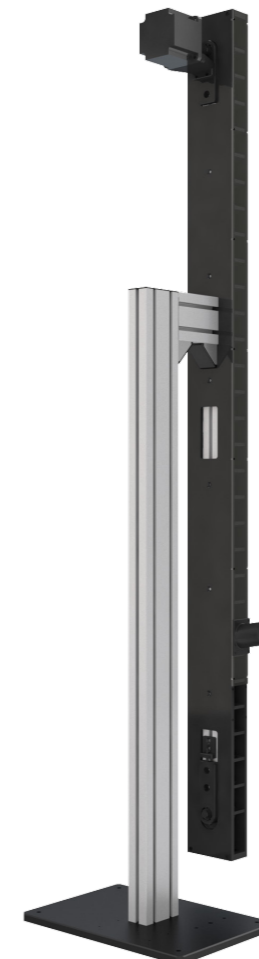
Elevator can be connected to a main ball distribution system and prepared for the next step in the overall process. The elevator can also be used at the outlet of the AVIKO ball scanner. The filling level of the balls in the box is detected by a sensor at the bottom of the elevator. After the sensor detects the top level, then the elevator moves by the set distance.



|                          | BALL DIAMETER (mm) | ORDER NUMBER |
|--------------------------|--------------------|--------------|
| Elevator Motorized 0320  | 3.000 - 20.000     | S 095 000    |
| Elevator Motorized 1830  | 18.000 - 30.000    | S 095 050    |
| Elevator Motorized 3060  | 30.000 - 60.000    | S 095 100    |
| Elevator Motorized 4080  | 40.000 - 80.000    | S 073 970    |
| Elevator Motorized 60100 | 60.000 - 100.000   | S 095 150    |

## Elevator Static

Ground stand stationary elevator has the ability to be connected to all AVIKO ball scanners. The elevator can be used as a input or output elevator. For transportation to the box we recommend the elevator with the motorized vertical movement.



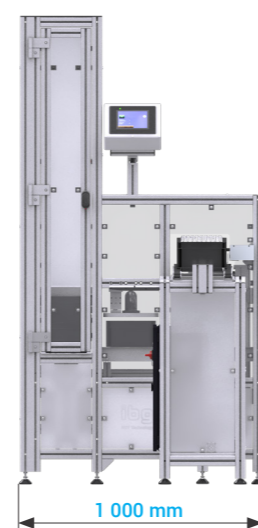
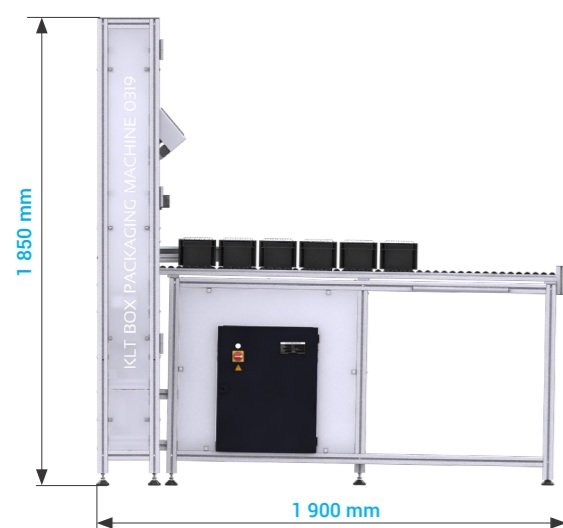
|                       | BALL DIAMETER (mm) | ORDER NUMBER |
|-----------------------|--------------------|--------------|
| Elevator Static 0320  | 3.000 - 20.000     | S 095 200    |
| Elevator Static 1830  | 18.000 - 30.000    | S 095 250    |
| Elevator Static 3060  | 30.000 - 60.000    | S 095 300    |
| Elevator Static 4080  | 40.000 - 80.000    | S 095 350    |
| Elevator Static 60100 | 60.000 - 100.000   | S 095 400    |

## Packaging Machine KLT Box 0319

The packaging machine is designed to pack balls at the same speed of the Aviko ball scanner in order to not slow down the process. Also the packaging machine is capable to operate as standalone unit with the possibility of a direct connection to any machine or straight to the end of production line. As a standard, the packaging machine has a built in anti-corrosive inhibitor/spray which can be activated per the needs of the operator. The machine is equipped with a ball counter and terminal to set the batch size. The loading tower and unloading belt size can be increased per client specifications. This particular design is used only with KLT boxes MF 2120 (198x149x120).



|                                | BALL DIAMETER (mm) | ORDER NUMBER |
|--------------------------------|--------------------|--------------|
| Packaging Machine KLT Box 0319 | 2.778 - 19.050     | S 081 500    |



## Packaging Machine Cardboard Box 1830 / 30100

We offer packaging machines for large balls in two variations 1830 and 30100, where the machine 1830 is designed for packaging balls with a diameter of 18 - 30 mm and the machine 30100 for packaging balls with a diameter of 30 - 100 mm. The balls are preserved by spray/inhibitor in the anti-corrosion unit, where the oil management system is located directly below the unit. The balls are transported non-contactly into the boxes by means of a robotic arm. Once the empty boxes are filled, the elevator will lower and send the boxes to the collection point, see picture below.



|                                       | BALL DIAMETER (mm) | ORDER NUMBER |
|---------------------------------------|--------------------|--------------|
| Packaging Machine Cardboard box 0330  | 3.000 - 30.163     | S 081 650    |
| Packaging Machine Cardboard Box 30100 | 30.000 - 100.000   | S 081 700    |

\* Order numbers are for inline ball scanner packaging

## Structure Testing Units

Digital eddy current test instruments for non-destructive testing of metal components, mass-produced parts and semi-finished products using Preventive Multi-Filter Technology (PMFT). A comparative test for material properties such as hardness, material, tensile strength, heat treatment or alloy. The new ibg family of digital structure test instruments distinguishes itself with the well-proven Multi-Frequency Technology and ibg's good-part-only-concept, furthermore the Simultaneous Harmonic Analysis iSHA and the optional temperature-adaptive structure test iTAS, both unique ibg innovations, offer enhanced opportunities for eddy current structure testing.

### eddyvisor S

The eddy current test instrument eddyvisor® S is designed for testing material mix, heat treatment (hardness, case depth, temper, etc.), sinter density and structure differences with possibility of 2 -32 channels.



### eddyliner S

Digital eddy current test instrument for one channel nondestructive testing of metal components, mass produced parts and semi-finished products according to the Preventive Multi-Frequency Technology (PMFT). Eddyliner is equipped with own HMI.

### eddyguard S

Digital eddy current test instrument for one channel nondestructive testing of metal components, mass produced parts and semi-finished products according to the Preventive Multi-Frequency Technology (PMFT). Eddyguard is intended to be built into the machine.



## Coils and Probes

Our wide range of standard accessories includes encircling coils, rectangular coils, inner diameter coils, flat coils and probes. Customized products for special test tasks are provided by our in-house design and manufacturing departments. ibg coils stand out due to highest test sensitivity and temperature stability.

## Crack & Grinder Burn Detection Units

Digital eddy current test instruments for non-destructive testing of metal components, mass-produced parts and semi-finished products for cracks, pores and grinder burn using Preventive Multi-Filter Technology (PMFT). The new ibg family of digital crack detection instruments offers first a simultaneous 100% inline detection of grinder burn and cracks in your production lines. Due to automatically generated 360° tolerance zones, testing up to 30 simultaneous band pass filters and ibg's good-part-only concept you will also detect defects which are missed by conventional instruments with a failure-oriented setup.

### eddyvisor C

Multi-channel digital eddy current test instrument for nondestructive testing of components, mass produced parts and semi-finished products for cracks, pores and grinder burn using Preventive Multi-Filter Technology.

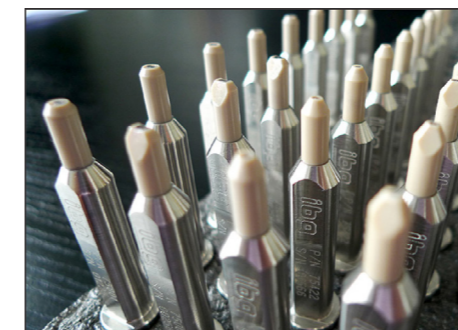


### eddyliner C

Digital eddy current test instrument for one channel nondestructive testing of metal components, including mass produced parts and semi-finished products for cracks, pores and grinder burn according to the Preventive Multi-Filter Technology (PMFT). Eddyliner is equipped with own HMI.

### eddyguard C

Digital eddy current test instrument for one channel nondestructive testing of metal components, including mass produced parts and semi-finished products for cracks, pores and grinder burn according to the Preventive Multi-Filter Technology (PMFT). Eddyguard is intended to be built into the machine.



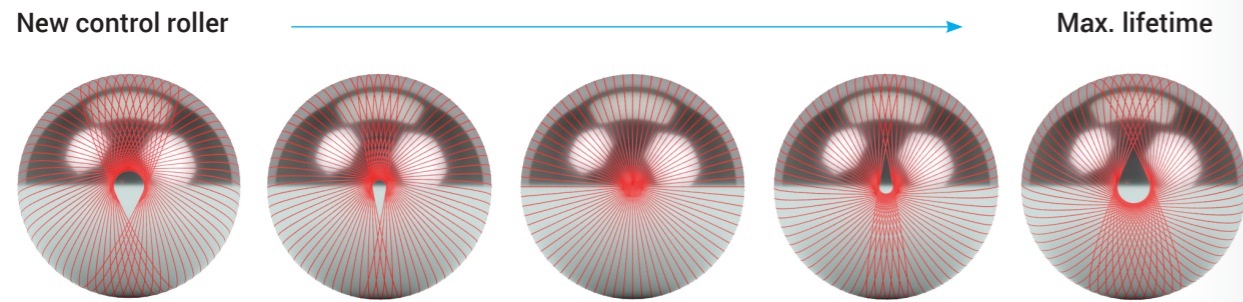
## Probes

Certain applications and test systems need probes which are specially designed for that test task, e.g. when testing rough surfaces, when testing teeth and spline areas as well as when testing inaccessible test locations like the inner diameter of hubs. We are pleased to help you with special probes tailor-made for your application and test system.

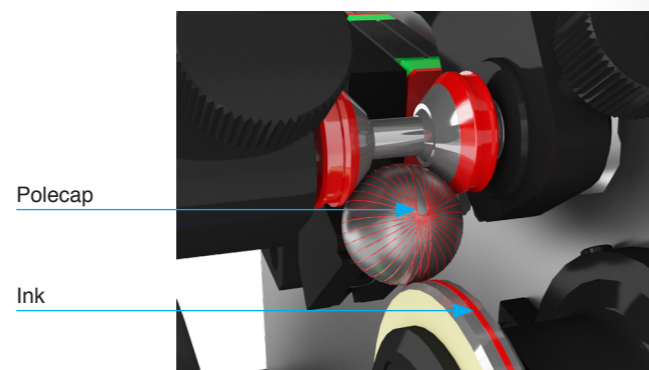
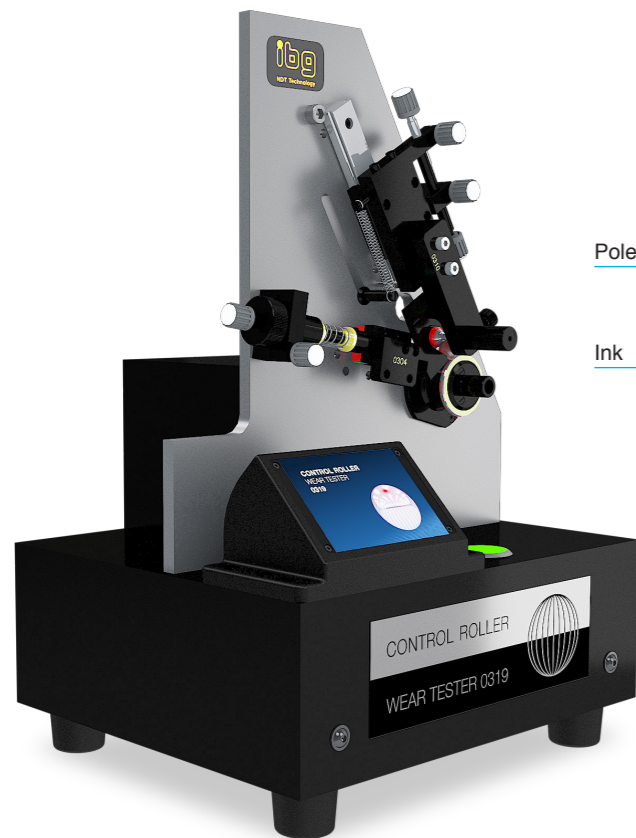
For more information visit [www.ibgndt.de](http://www.ibgndt.de)

## Control Roller Wear tester

Control roller wear tester is used to check the wear and tear of the control rollers. Ink is applied to the driving disc which is transferred to the ball with our meridian pattern. Illustration below denotes new control roller meridian pattern and meridian pattern at the end of the lifetime.



Control rollers are grinded to the maximum reverse acceptable pole cap, which increases the lifetime of the roller.



| AVIKO                    | ACCEPTABLE POLECAP Ø |
|--------------------------|----------------------|
| AVIKO 0203               | 0.2 mm               |
| AVIKO 0306               | 0.3 mm               |
| AVIKO 0610               | 0.5 mm               |
| AVIKO 1014 / 1419 / 1830 | 1.0 mm               |

|                                 | CONTROL ROLLER (mm) |          | ORDER NUMBER |
|---------------------------------|---------------------|----------|--------------|
| Control Roller Wear Tester 0203 | 1.984               | - 3.175  | K 083 450A   |
| Control Roller Wear Tester 0319 | 2.778               | - 19.050 | K 084 000A   |
| Control Roller Wear Tester 1830 | 18.000              | - 30.163 | K 084 150A   |
| Control Roller Wear Tester 3070 | 30.163              | - 70.000 | K 084 300A   |

## Precision Viewer

Precision data software provides all the necessary tools for correct decision making process which reduces the operational costs. AVIKO ball scanners can be connected to this new software via PC connected to the machine. Data can be collected from multiple machines at once. All collected data can be filtered by operator, batch, date and many more options. Statistics and live view for all the machines can be viewed within the master software.

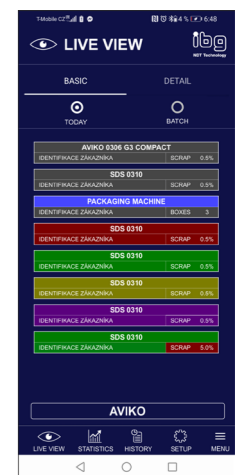
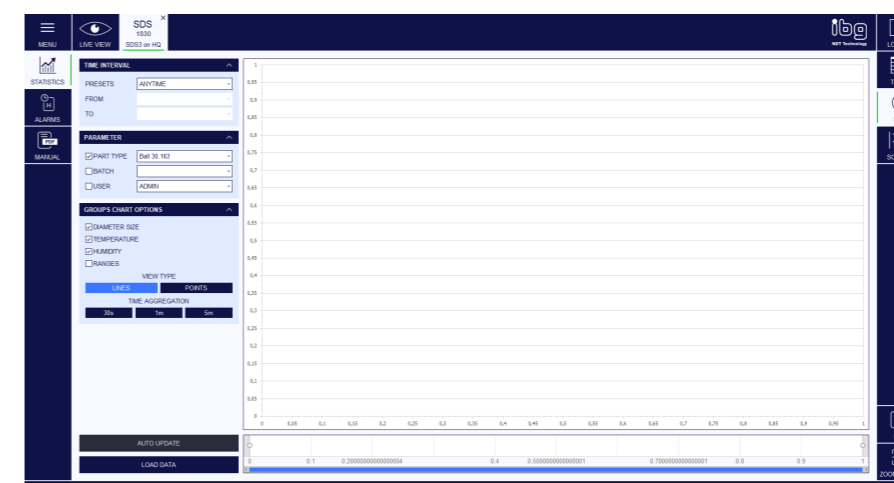
### Features

- Data evaluation (graphs and statistics)
- Live monitoring of sorting and status
- Error data log with description and solution
- Complete status and sorting history
- Reduced machine downtime

### Machines

- AVIKO ball scanners
- G2 - Built in communication
- G3 - Additional PC needed
- Diameter sorters
- Diameter & Structure sorters
- Packaging machines
- DLSR 1865

Precision Viewer can be viewed on mobile phones, tablets or computers. All machines must be connected to a local network or a new independent local network must be established. Application can be downloaded from official stores of IOS and Android systems.



# Special Systems

ibg Group offers special systems for the automation of the production process. We provide automation for small and complex processes or the production of special products designed to improve the quality of the production processes. Projects consist of coal packaging line, banknote punching machines, various camera inspections integrated into existing production lines etc. Our large production facilities and extensive team of designers are ready to meet your expectations. Below you can find examples we have designed. Contact information for special systems [info@sorting-solutions.com](mailto:info@sorting-solutions.com)

# Notes

## Backup Ring Quality Control

In 2021, we designed and developed a system designed to control the quality of safety rings. The rings are separated at fixed intervals by means of a vibrating hopper. After separation, they are transported by a conveyor belt for visual inspection using horizontal and vertical cameras. According to the evaluation, the rings are divided into 24 groups.



## Screw Station

Screw station is a complete system designed for defined screw driving. The machine allows you to set the exact tightening torque. Before and after tightening the screw, a visual inspection of the position of the part and the screw is performed by camera system. Once the screw is tightened, the process is evaluated and the operator sends the part for further operations.



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