



# TOOL DYNAMIC BALANCING TECHNOLOGY



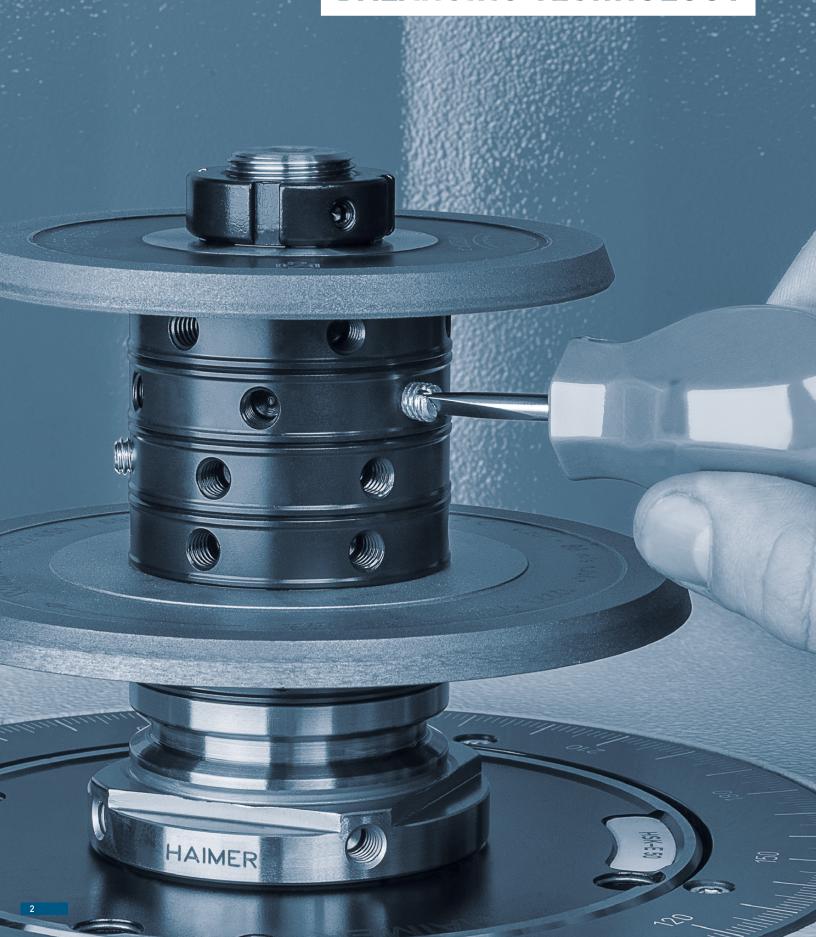








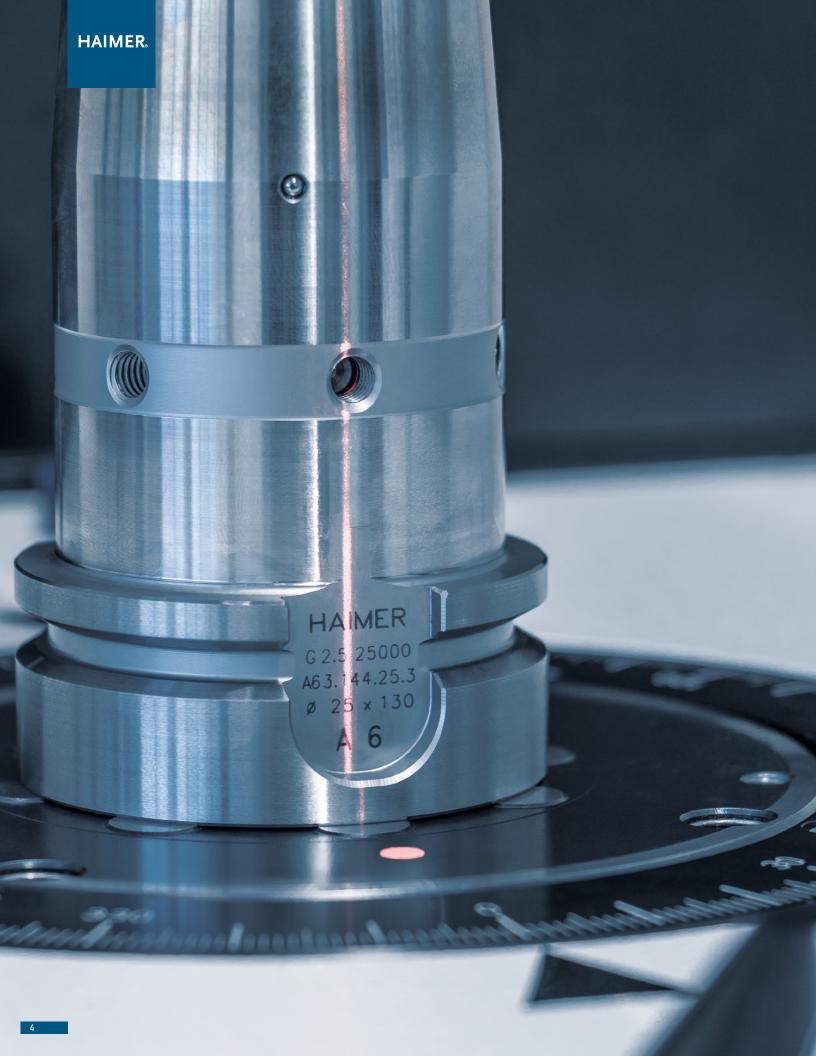
# BALANCING TECHNOLOGY





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### TOP 10 REASONS TO USE HAIMER BALANCING TECHNOLOGY

1

#### Faster speed and higher productivity

Vibration is often the reason higher speeds and feeds are not achieved. Balanced assemblies permit  $10-15\,\%$  faster spindle speeds and higher productivity without degradation of sound or tool life.

6

#### Improved accuracy

At higher speeds, unbalance can actually induce runout during rotation where none was measured statically. Without balance, this resulted in slower speeds, less productivity and lower accuracy.

2

#### Longer tool life

On average, balanced tools (tools, inserts and grinding wheels) last 20% longer when the entire tooling assembly is balanced. Depending on the amount of unbalance, the tool life increase can be significantly greater.

7

#### Fewer tool changes

When tool life increases 20-100%, tool changing time is reduced. This means less time is needed for tool changes in the tool room and less set up times of the machine.

3

#### Repeatable tool performance

The elimination of vibration drastically reduces problems like chatter and tool chipping, thereby stabilizing tool performance and making lights out machining possible.

8

#### **Accurate process**

A solid concrete base construction, centrifugal force sensors for measuring, patented spindle that clamps the tools identical to the machine tool, and a simple/reliable machine calibration process.

4

#### Longer spindle life

Unbalance in a tool assembly creates excessive centrifugal forces that can damage spindle bearings. Such damage reduces spindle life and can lead to costly unplanned downtime.

9

#### Ease of use

Simple software and clear compensation options (removing, adding or displacing weight) make the balancing process fast and simple for all users.

5

#### Better surface finishes

Unbalance creates excessive vibration that can be translated to the finished part in the form of chatter and poorer finishes. To achieve the best finish, balance the full assembly.

10

#### Industry 4.0 success

Industry 4.0 is all about using gathered data to automate changes on the fly that optimize the machining process. Without balance, the optimal machining logic will ultimately require a reduction of speeds until the problem is resolved, thereby reducing productivity.



# **Tool Dynamic TD 1002**

## For minimalists





### TOOL DYNAMIC TD 1002 MODULAR BALANCING SYSTEM

#### Balancing machine for balancing tools, tool holders and grinding wheels in 1 or 2 planes (optional).

- Force measuring table top machine
- Ideal for smaller shops
- For small batch lots, single application, standard chucks and grinding wheel packages
- Adapter with automatic clamping system

#### **Features**

- Menu-based handling via integrated user interface and display
- Safety hood with automatic door lock
- Special high precision spindle bearings

#### Characteristics



#### Vibration optimized base

Adapted table for optimized base



#### User interface

Integrated user interface for easy handling of the machine



#### Optical indexing help

Indication of the exact spindle angle position on display



#### Laser marking

Indicates the position of unbalance and correction with a laser



#### Radial drilling

Balancing by drilling radially



#### Software for compensation with balancing rings

Balancing by rings or other movable weights



#### Index balancing

Compensation of measuring errors by index balancing (2 measuring runs, indexing angle 180°)



#### Balancing with spindle compensation

Quick and precise measurement of repetition parts (single measuring run)



#### Balancing in 1 plane

Measuring and correction of unbalance in 1 plane (static)



#### Deutsch/English/Français/Italiano/Español

Languages for user interface



#### Accessories and special equipment

Please check the table on pages 22-25

Technical Details			
Tool Dynamic TD 1002			
Dimensions (W×H×D) [mm/inch]	$500 \times 680 \times 820 / 20 \times 27 \times 32$	Power usage [kW]	0.4
Weight [kg/lbs]	200 / 441	Compressed air [bar/psi]	6/87
Spindle speed [rpm]	400-1,100	max. tool length [mm/inch]	360 / 14.2
Measuring accuracy [gmm]	< 1	max. tool diameter [mm/inch]	340 / 13.4
Power requirements [V/Hz]	230/50-60 (comes with 110 V transformer)	max. tool weight [kg/lbs]	15 / 33
		Order No.	TD105-H06-US*

<sup>\*</sup> This order number matches the machine configuration as above. If you'd like to request a different configuration, please contact your HAIMER representative for the right order number.



# **Tool Dynamic TD Economic**For beginners



# TOOL DYNAMIC TO ECONOMIC MODULAR BALANCING SYSTEM

Your introduction into the modular balancing system Tool Dynamic TD. The Tool Dynamic TD Economic measures and corrects the unbalance in one plane (static). Therefore the TD Economic is perfect for balancing short tool holders and tools because of the couple unbalance being very low. Easy handling with integrated keyboard and screen.

#### Characteristics



#### Base made of polymer concrete

Highest measuring accuracy due to heavy base



#### User interface

Integrated user interface for easy handling of the machine



#### Optical indexing help

Indication of the exact spindle angle position on display



#### Laser marking

Indicates the position of unbalance and correction with a laser



#### Radial drilling

Balancing by drilling radially



#### Software for compensation with balancing rings

Balancing by rings or other movable weights



#### Index balancing

Compensation of measuring errors by index balancing (2 measuring runs, indexing angle 180°)



#### Balancing with spindle compensation

Quick and precise measurement of repetition parts (single measuring run)



#### Balancing in 1 plane

Measuring and correction of unbalance in 1 plane (static)



#### Deutsch/English/Français/Italiano/Español

Languages for user interface



#### Accessories and special equipment

Please check the table on pages 22-25

Technical Details			
Tool Dynamic TD Economic			
Dimensions (W×H×D) [mm/inch]	$500 \times 1,500 \times 820 / 20 \times 59 \times 32$	Compressed air [bar/psi]	6 / 87
Weight [kg/lbs]	450 / 990	max. tool length [mm/inch]	400 / 15.7
Spindle speed [rpm]	300-1,100	optional [mm/inch]	700 / 27.6
Measuring accuracy [gmm]	< 0.5	max. tool diameter [mm/inch]	380 / 14.96
Power requirements [V/Hz]	230/50-60 (comes with 110 V transformer)	optional [mm/inch]	425 / 16.73
Power usage [kW]	0.4	max. tool weight [kg/lbs]	30 / 66
		Order No.	TD101-H01-US*

<sup>\*</sup> This order number matches the machine configuration as above. If you'd like to request a different configuration, please contact your HAIMER representative for the right order number.



# **Tool Dynamic TD Economic Plus**

## For advanced users





### TOOL DYNAMIC TO ECONOMIC PLUS **MODULAR BALANCING SYSTEM**

The TD Economic Plus is perfect for measuring unbalance in two planes (dynamic). Long tools must be balanced in two planes to correct the couple or dynamic unbalance. Accessories can be clearly arranged in the built-in drawers. Work quickly and error free with laser marking, optical indexing help and automatic indexing of the spindle. The "fixed components" allow you to balance with screws on rotors with threaded bores.

#### The following characteristics are identical to Tool Dynamic TD Economic:

#### Characteristics



#### Base made of polymer concrete

Highest measuring accuracy due to heavy base



#### User interface

Integrated user interface for easy handling of the machine



#### Optical indexing help

Indication of the exact spindle angle position on display



#### Laser marking

Indicates the position of unbalance and correction with a laser



#### Radial drilling

Balancing by drilling radially



#### Software for compensation with balancing rings

Balancing by rings or other movable weights



#### Index balancing

Compensation of measuring errors by index balancing (2 measuring runs, indexing angle 180°)



#### Balancing with spindle compensation

Quick and precise measurement of repetition parts (single measuring run)



#### Balancing in 1 plane

Measuring and correction of unbalance in 1 plane (static)



#### Deutsch/English/Français/Italiano/Español

Languages for user interface

#### The following characteristics are included standard for Tool Dynamic TD Economic Plus:

#### Characteristics



#### Balancing in 2 planes

Measuring and correction of unbalance in 2 planes (dynamic unbalance)

Enables balancing at predefined positions, e. g. with balancing screws



#### Rack for accessories

Storage rack with two integrated drawers for balancing adapters and further accessories



#### Accessories and special equipment

Please check the table on pages 22-25



#### **Automatic indexing**

Turns the spindle on the selected angle position and simplifies exact positioning of spindle



#### **Technical Details Tool Dynamic TD Economic Plus**

Dimensions (W $\times$ H $\times$ D) [mm/inch]

 $500 \times 1,500 \times 820 / 20 \times 59 \times 32$ 

450 / 990 Weight [kg/lbs] 300-1,100 Spindle speed [rpm] Measuring accuracy [gmm] < 0.5

Power requirements [V/Hz] 230/50-60 (comes with 110 V transformer)

Power usage [kW]

Compressed air [bar/psi] 6/87 400 / 15.7 max. tool length [mm/inch] 700 / 27.6 optional [mm/inch] max. tool diameter [mm/inch] 380 / 14.96 optional [mm/inch] 425 / 16.73 max. tool weight [kg/lbs] 30/66 TD102-H01-US\* Order No.

<sup>\*</sup> This order number matches the machine configuration as above. If you'd like to request a different configuration, please contact your HAIMER representative for the right order number.



# **Tool Dynamic TD Comfort**

## For ambitious users



# TOOL DYNAMIC TD COMFORT MODULAR BALANCING SYSTEM

If you want to use the Tool Dynamic frequently and keep the balancing time as short as possible, the TD Comfort is the right choice. It is equipped with a PC, keyboard, mouse and monitor. The big screen enables you to input tool data faster with all the comfort of a graphical user interface – you just balance faster! In addition, the software in this machine offers unbalance correction through milling, which is a very common method to correct the imbalance.

#### The following characteristics are identical to Tool Dynamic TD Economic Plus:

#### Characteristics



#### Base made of polymer concrete

Highest measuring accuracy due to heavy base



#### User interface

Integrated user interface for easy handling of the machine



#### Optical indexing help

Indication of the exact spindle angle position on display



#### Laser marking

Indicates the position of unbalance and correction with a laser



#### Radial drilling

Balancing by drilling radially



#### Software for compensation with balancing rings

Balancing by rings or other movable weights



#### Index balancing

Compensation of measuring errors by index balancing (2 measuring runs, indexing angle 180°)



#### Balancing with spindle compensation

Quick and precise measurement of repetition parts (single measuring run)



#### Balancing in 1 plane

Measuring and correction of unbalance in 1 plane (static)



#### Balancing in 2 planes

Measuring and correction of unbalance in 2 planes (dynamic unbalance)



#### **Fixed components**

Enables balancing at predefined positions, e. g. with balancing screws



#### **Automatic indexing**

Turns the spindle on the selected angle position and simplifies exact positioning of spindle



#### Rack for accessories

Storage rack with two integrated drawers for balancing adapters and further accessories



#### Deutsch/English/Français/Italiano/Español

Languages for user interface

#### The following characteristics are included standard for Tool Dynamic TD Comfort:

#### Characteristics



#### Print lahe

Print balancing results on label



#### Milling program

Milling program allows correction of unbalance via milling



#### Balancing software TDC 4.0

New software with user-friendly graphical interface and touchscreen control



#### Screen holder

Comfortable tray to place PC screen, keyboard and mouse



#### TFT screen

Comfortable usage via keyboard for integrated PC (includes TFT screen, keyboard and mouse)



#### Accessories and special equipment

Please check the table on pages 22-25

#### **Technical Details**

#### **Tool Dynamic TD Comfort**

Dimensions (W×H×D) [mm/inch]  $1,100\times1,500\times820~/~43\times59\times32$ 

 Weight [kg/lbs]
 452 / 996

 Spindle speed [rpm]
 300-1,100

 Measuring accuracy [gmm]
 < 0.5</td>

Power requirements [V/Hz] 230/50-60 (comes with 110 V transformer)

Power usage [kW] 0.4

 Compressed air [bar/psi]
 6 / 87

 max. tool length [mm/inch]
 400 / 15.7

 optional [mm/inch]
 700 / 27.6

 max. tool diameter [mm/inch]
 380 / 14.96

 optional [mm/inch]
 425 / 16.73

 max. tool weight [kg/lbs]
 30 / 66

 Order No.
 80.224.00.09.3.US\*

<sup>\*</sup> This order number matches the machine configuration as above. If you'd like to request a different configuration, please contact your HAIMER representative for the right order number.



# **Tool Dynamic TD Comfort Plus**For perfectionists





### TOOL DYNAMIC TD COMFORT PLUS MODULAR BALANCING SYSTEM

The Tool Dynamic TD Comfort Plus offers maximum usability and comfort. By using the TD Comfort Plus, you will never lose sight of your goal during the balancing process. Would you like to balance your tools efficiently, quickly and without being an expert? Then choose Tool Dynamic TD Comfort Plus - optimized touchscreen usage, integrated PC, comfortable storage for your balancing accessories and maximum equipment to make balancing fast, convenient and easy.

#### The following characteristics are identical to Tool Dynamic TD Comfort:

#### Characteristics



#### Base made of polymer concrete

Highest measuring accuracy due to heavy base



#### User interface

Integrated user interface for easy handling of the machine



#### Optical indexing help

Indication of the exact spindle angle position on display



#### Laser marking

Indicates the position of unbalance and correction with a laser



#### Print label

Print balancing results on label



#### Radial drilling

Balancing by drilling radially



#### Software for compensation with balancing rings

Balancing by rings or other movable weights



#### Index balancing

Compensation of measuring errors by index balancing (2 measuring runs, indexing angle 180°)



#### Balancing with spindle compensation

Quick and precise measurement of repetition parts (single measuring run)



#### Balancing in 1 plane

Measuring and correction of unbalance in 1 plane (static)



#### Balancing in 2 planes

Measuring and correction of unbalance in 2 planes (dynamic unbalance)



#### **Fixed components**

Enables balancing at predefined positions, e. g. with balancing screws



#### **Automatic indexing**

Turns the spindle on the selected angle position and simplifies exact positioning of spindle



#### Rack for accessories

Storage rack with two integrated drawers for balancing adapters and further accessories



#### Milling program

Milling program allows correction of unbalance via milling



#### Balancing software TDC 4.0

New software with user-friendly graphical interface and touchscreen control



#### Deutsch/English/Français/Italiano/Español

Languages for user interface



#### The following characteristics are included standard for Tool Dynamic TD Comfort Plus:

#### Characteristics



#### Control terminal incl. touchscreen

Control terminal for storage of touchscreen, keyboard, mouse, printer, and further accessories (only together with Balancing Software TD 4.0)



#### Accessories and special equipment

Please check the table on pages 22-25

Technical Details
Tool Dynamic TD Comfort Plus

Dimensions  $(W \times H \times D)$  [mm/inch]  $1,100 \times 1,500 \times 820 / 43 \times 59 \times 32$ Weight [kg/lbs] 534 / 1,177 Spindle speed [rpm] 300-1,100 Measuring accuracy [gmm] < 0.5

Power requirements [V/Hz] 230/50-60 (comes with 110 V transformer)

Power usage [kW] 0.4

Order No.	TD103-H01-US*
max. tool weight [kg/lbs]	30 / 66
optional [mm/inch]	425 / 16.73
max. tool diameter [mm/inch]	380 / 14.96
optional [mm/inch]	700 / 27.6
max. tool length [mm/inch]	400 / 15.7
Compressed air [bar/psi]	6/87

<sup>\*</sup> This order number matches the machine configuration as above. If you'd like to request a different configuration, please contact your HAIMER representative for the right order number.



# **Tool Dynamic TD Comfort i4.0**

# i4.0 balancing machine for the highest demands



# TOOL DYNAMIC TD COMFORT i4.0 MODULAR BALANCING SYSTEM

The new Tool Dynamic TD Comfort i4.0 offers a maximum of usability and comfort. Highlights include the possibility of digital data transfer to the machine, network compatibilities (i4.0 ready) and an optimized 27" multi-touchscreen. The Tool Dynamic TD Comfort i4.0 is optional extendable with Balluff RFID and TRM connection. The TD Comfort Plus i4.0 allows for sending tool data to the machine tool control. Individual customized adaptations are available.

#### The following characteristics are identical to Tool Dynamic TD Economic Plus:

#### Characteristics



#### Base made of polymer concrete

Highest measuring accuracy due to heavy base



#### User interface

Integrated user interface for easy handling of the machine



#### Optical indexing help

Indication of the exact spindle angle position on display



#### Laser marking

Indicates the position of unbalance and correction with a laser



#### Radial drilling

Balancing by drilling radially



#### Software for compensation with balancing rings

Balancing by rings or other movable weights



#### Index balancing

Compensation of measuring errors by index balancing (2 measuring runs, indexing angle 180°)



#### Balancing with spindle compensation

Quick and precise measurement of repetition parts (single measuring run)



#### Balancing in 1 plane

Measuring and correction of unbalance in 1 plane (static)



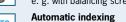
#### Balancing in 2 planes

Measuring and correction of unbalance in 2 planes (dynamic unbalance)



#### **Fixed components**

Enables balancing at predefined positions, e. g. with balancing screws





Turns the spindle on the selected angle position and simplifies exact positioning of spindle



#### Rack for accessories

Storage rack with two integrated drawers for balancing adapters and further accessories



#### Deutsch/English/Français/Italiano/Español

Languages for user interface

#### The following characteristics are included standard for Tool Dynamic TD Comfort i4.0:

#### Characteristics



#### Print label

Print balancing results on label



#### i4.0 ready

Digital data transfer to machine via LAN or USB, optional data transfer with Balluff chip and TRM connectivity



#### Milling program

Milling program allows correction of unbalance via milling



#### Balancing software TDC 4.0

New software with user-friendly graphical interface and touchscreen control



#### Screen holder

Comfortable tray to place PC screen, keyboard and mouse



#### Software via 27" multi-touchscreen

Software via 27" multi-touchscreen or mouse and keyboard for maximum usability



#### Windows 10

Software based on operation system Windows 10



#### Accessories and special equipment

Please check the table on pages 22–25

#### **Technical Details**

 Tool Dynamic TD Comfort i4.0

 Dimensions (W×H×D) [mm/inch]
 1,100×1,500×820 / 43×59×32

 Weight [kg/lbs]
 460 / 1,014

 Spindle speed [rpm]
 300-1,100

Measuring accuracy [gmm] < 0.5Power requirements [V/Hz] 230/50-60 (comes with 110 V transformer)

Power usage [kW] 0.4

 Compressed air [bar/psi]
 6 / 87

 max. tool length [mm/inch]
 400 / 15.7

 optional [mm/inch]
 700 / 27.6

 max. tool diameter [mm/inch]
 380 / 14.96

 optional [mm/inch]
 400 / 15.7

 max. tool weight [kg/lbs]
 30 / 66

 Order No.
 TD400-H02-US\*

<sup>\*</sup> This order number matches the machine configuration as above. If you'd like to request a different configuration, please contact your HAIMER representative for the right order number.



# Tool Dynamic TD Comfort Plus i4.0

Industry 4.0 balancing machine for maximum process reliability in production



# TOOL DYNAMIC TD COMFORT PLUS i4.0 MODULAR BALANCING SYSTEM

The new Tool Dynamic TD Comfort Plus i4.0 offers a maximum of usability and comfort. Highlights include the possibility of digital data transfer to the machine, network compatibilities (i4.0 ready) and an optimized 27" multi-touchscreen usage via separate control terminal. The Tool Dynamic TD Comfort Plus i4.0 is optional extendable with Balluff RFID and TRM connection. The TD Comfort Plus i4.0 allows for sending tool data to the machine tool control. Individual customized adaptations are available.

#### The following characteristics are identical to Tool Dynamic TD Comfort Plus:

#### Characteristics



#### Base made of polymer concrete

Highest measuring accuracy due to heavy base



#### User interface

Integrated user interface for easy handling of the machine



#### Optical indexing help

Indication of the exact spindle angle position on display



#### Laser marking

Indicates the position of unbalance and correction with a laser  $% \left\{ 1,2,...,n\right\}$ 



#### Print label

Print balancing results on label



#### **Radial drilling**

Balancing by drilling radially



#### Software for compensation with balancing rings

Balancing by rings or other movable weights



#### Index balancing

Compensation of measuring errors by index balancing (2 measuring runs, indexing angle 180°)



#### Balancing with spindle compensation

Quick and precise measurement of repetition parts (single measuring run)



#### Balancing in 1 plane

Measuring and correction of unbalance in 1 plane (static)



#### Balancing in 2 planes

Measuring and correction of unbalance in 2 planes (dynamic unbalance)



#### **Fixed components**

Enables balancing at predefined positions,

e. g. with balancing screws



#### **Automatic indexing**

Turns the spindle on the selected angle position and simplifies exact positioning of spindle



#### Rack for accessories

Storage rack with two integrated drawers for balancing adapters and further accessories



#### Milling program

Milling program allows correction of unbalance via milling



#### Balancing software TDC 4.0

New software with user-friendly graphical interface and touchscreen control



#### Deutsch/English/Français/Italiano/Español

Languages for user interface

#### The following characteristics are included standard for Tool Dynamic TD Comfort Plus i4.0:

#### Characteristics



#### Control terminal i4.0 incl. touchscreen

Control terminal for storage of touchscreen, keyboard, mouse, printer, and further accessories (only together with Balancing Software TD 4.0)



#### iA O roads

Digital data transfer to machine via LAN or USB, optional data transfer with Balluff chip and TRM connectivity



#### Software via 27" multi-touchscreen

New software with user-friendly graphical interface and touchscreen control



#### Windows 10

Software based on operation system Windows 10



#### Accessories and special equipment

Please check the table on pages 22-25

#### Technical Details

#### Tool Dynamic TD Comfort i4.0

Dimensions (W×H×D) [mm/inch]  $1,100\times1,500\times820/43\times59\times32$  Weight [kg/lbs] 544/1,199

Spindle speed [rpm] 300-1,100

Measuring accuracy [gmm] < 0.5

Power requirements [V/Hz] 230/50-60 (comes with 110 V transformer)

Power usage [kW] 0.4

max. tool length [mm/inch]
optional [mm/inch]
max. tool diameter [mm/inch]
optional [mm/inch]
max. tool weight [kg/lbs]

Compressed air [bar/psi]

6 / 87 400 / 15.7 700 / 27.6 380 / 14.96 425 / 16.73 30 / 66

Order No. TD403.H01.A01.US\*

### INDEXING GRIPPER FOR TD COMFORT / COMFORT PLUS i4.0

With the **indexing gripper**, it is possible to carry out an index measuring run automatically without the operator having to open the hood and turn the tool holder 180° by hand.

- Available for all TD Comfort i4.0 and TD Comfort Plus i4.0 machines
- Automatic index measuring run of the tool holder
- Adapter management for all common interfaces
- Saves time and ensures correct measurement
- Process reliability with 180° index measuring
- Complete and correct index measuring without manual intervention
- Easy changeover to another taper size without having to teach the positions again





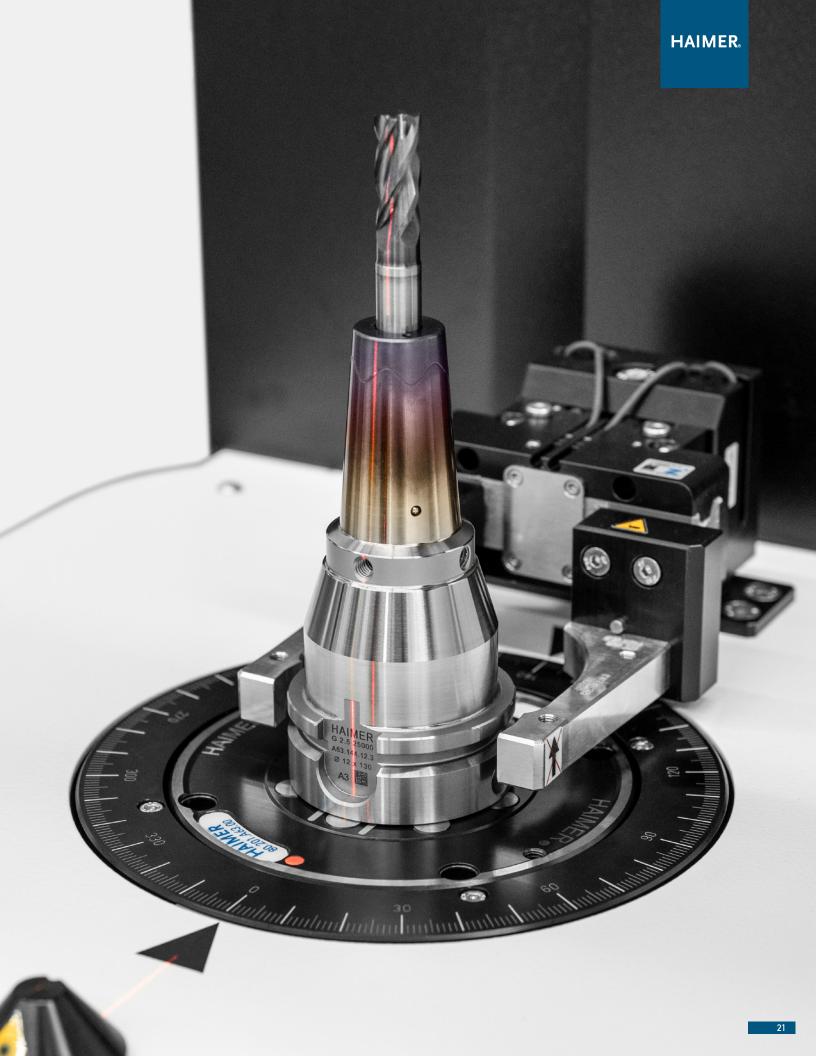
#### **INSERTING THE SUITABLE BALANCING ADAPTER**

A balancing adapter is suitable for automatic index measurement if the contact surface of the adapter is flush with the spindle. The tool holder can rotated in the adapter, and has suitable grippers available.

Balancing machine with automatic indexing gripper	Order No.
TD Comfort i4.0 normal hood	TD400-H01-A01-US
TD Comfort i4.0 high hood	TD400-H02-A01-US
TD Comfort i4.0 hood type 4	TD400-H03-A01-US
TD Comfort Plus i4.0 normal hood	TD403-H01-A01-US
TD Comfort Plus i4.0 high hood	TD403-H02-A01-US
TD Comfort Plus i4.0 hood type 4	TD403-H03-A01-US



Set of grippers	Order No.
HSK 25	80.262.25
HSK 32	80.262.32
HSK 40	80.262.40
HSK 50/SK30	80.262.50
HSK 63/BT40	80.262.63
HSK 80	80.262.80
HSK 100/BT50	80.262.100
BT30	80.262.BT30
SK40/CAT 40	80.262.SK40
SK50	80.262.SK50



### **OPTIONAL CONFIGURATIONS**

Symbol	Order No.	Article name	Description	TD 1002	Tool Dyna	mic TD	Comfort	Comfort	Comfort	Comfort	TD 800
					Economic	Plus	Comilort	Plus	i4.0	Plus i4.0	
	_	Vibration optimized base	Adapted table for optimized base	•	_	_	_	_	_	_	_
	_	Base made of polymer concrete	Highest measuring accuracy due to heavy base	_	•	•	•	•	•	•	•
	_	User interface	Integrated user interface for easy handling of the machine	•	•	•	•	•	•	•	•
-5 +5	_	Optical indexing help	Indication of the exact spindle angle position on display	•	•	•	•	•	•	•	•
	_	Laser marking	Indicates the position of unbalance and correction with a laser	•	•	•	•	•	•	•	•
	_	Print label	Print balancing results on label	_	_	_	•	•	•	•	•
<b></b>	_	Radial drilling	Correction of unbalance by drilling radially	•	•	•	•	•	•	•	•
	_	Software for compensa- tion with balancing rings	Correction of unbalance by rings or other movable weights	•	•	•	•	•	•	•	•
180°	_	Index balancing	Compensation of measuring errors by index balancing (2 measuring runs, indexing angle 180°)	•	•	•	•	•	•	•	•
X	_	Balancing with spindle compensation	Quick and precise measu- rement of repetition parts (single measuring run)	•	•	•	•	•	•	•	•
<b></b>	_	Balancing in 1 plane	Measuring and compensation of unbalance in 1 plane (static)	•	•	•	•	•	•	•	•
	80.252.01	Balancing in 2 planes	Measuring and correction of unbalance in 2 planes (dynamic unbalance)	0	0	•	•	•	•	•	•
	80.202.00	Fixed components	Enables balancing at predefined positions, e.g. with balancing screws	0	0	•	•	•	•	•	•
AUTO -5 +5	80.217.00	Automatic indexing	Turns the spindle on the selected angle position and simplifies exact positioning of spindle	0	0	•	•	•	•	•	•

Symbol	Order No.	Article name	Description	TD 1002	Tool Dyna Economic	Economic	Comfort	Comfort	Comfort	Comfort	TD 800
						Plus		Plus	i4.0	Plus i4.0	
	80.227.00	Rack for accessories	Storage rack with two integrated drawers for balancing adapters and further accessories	_	0	•	•	•	•	•	•
	80.212.00	Milling program	Correction of unbalance via milling	0	0	0	•	•	•	•	•
	80.245.06	Balancing software TDC 4.0	New software with user-friendly graphical interface and touchscreen control	_	0	0	•	•	•	•	•
	80.228.03.3	Screen holder	Comfortable tray to place PC-screen, keyboard and mouse	_	0	0	•	_	•	_	_
4	80.228.02.01.3	Printer desk	Optional desk for printer (requires screen holder)	_	0	0	0	_	0	_	_
4	80.228.02.02.3	PC holder	Optional holder for external PC (requires screen holder)	_	0	0	0	_	•	_	_
14	80.228.02.04.3	Support arm for tool scale	Optional desk for tool scale (requires screen holder)	_	0	0	0	_	0	_	_
	80.233.00.4	Control terminal incl. touchscreen	Terminal for storage of touchscreen, keyboard, mouse, printer, and further accessories	_	0	0	0	•	0	_	•
	80.233.09	Control terminal i4.0 incl. touchscreen	Control terminal with 27" touchscreen and integra- ded PC (Windows based)	_	0	0	0	0	0	•	0
	80.233.01.3	Support arm for label printer	Optional desk for label printer (requires Tool Control i4.0)	_	_	_	_	0	_	0	0
	80.233.02.3	Desk for tool scale	Optional desk for tool scale or tools (requires Tool Control i4.0)	_	_	-	_	0	_	0	0
	80.229.03.1	Touchscreen 19"	TFT monitor with touch- screen (Upgrade for TD Comfort	_	_	-	0	_	_	_	_
	999000-0009	Touchscreen 27"	TFT monitor with touch- screen for TD Comfort i4.0	_	_	-	_	_	•	_	_
	80.229.02	TFT screen 19"	Comfortable usage via keyboard for integrated PC	_	0	0	•	_	_	_	_
	80.229.04	Touchscreen 19"	TFT monitor with touch- screen for TD Economic and TD Economic Plus	_	0	0	_	_	_	_	_

### **OPTIONAL CONFIGURATIONS**

Symbol	Order No.	Article name	Description	TD 1002	Tool Dyna Economic	Economic	Comfort	Comfort	Comfort	Comfort	TD 800
						Plus		Plus	i4.0	Plus i4.0	
	80.209.00	Specific weight function	Enables specification of the specific weight of the rotor to be balanced, if different from steel	0	0	0	0	0	0	0	_
<u>a</u> !	80.213.01	Drilling axial	Correction of unbalance by axial drilling, e.g. for grinding wheels	0	0	0	0	0	0	0	0
	80.218.00	Index balancing with free indexing angle	Index balancing of rotors which can not be indexed 180° (e.g. PSC 63 chucks)	0	0	0	0	0	0	0	0
	80.214.00	Software for printout of report	Printout of a detailed measuring protocol (balancing certificate)	0	0	0	0	0	0	0	0
O	_	Deutsch/English/Français/ Italiano/Español	Languages for user interface for internal display	•	•	•	•	•	•	•	•
	80.245.12	User account administration	User administration with individual allocation of user rights	_	_	_	0	0	0	0	0
	80.245.09	Forbidden areas	Defined areas that are not allowed for the compensation of the unbalance	_	_	_	0	0	0	0	0
<u>~ ¥</u>	80.245.10	Alternative compensation positions	Calculation of alternative positions, when proposed position not possible	_	_	_	0	0	0	0	0
	80.245.11	Optimized measuring time	Shortened measuring run, if measuring accuracy is sufficient	_	_	_	0	0	0	0	0
<u>.</u>	80.245.14	Eccentric balancing	Correction of unbalance by eccentric material removal at peripheral surface	_	0	0	0	0	0	0	0
	80.232.01.3	Safety hood type 3	Safety hood for extra long tool holders with max. 700 mm length and max. 400 mm diam. (incl. second laser marking from top)	_	0	0	0	0	0	0	_
	80.232.02.3	Safety hood type 4	Safety hood for extra long tool holders with max. 700 mm length and max. 425 mm diam. (incl. second laser marking from top)	_	0	0	0	0	0	_	_
	_	Indexing gripper	Automatic index measuring 180°	_	_	_	_	_	_	_	_

Symbol	Order No.	Article name	Description	TD 1002	Tool Dyna Economic	mic TD   Economic   Plus	Comfort	Comfort Plus	Comfort i4.0	Comfort Plus i4.0	TD 800
	80.254.00.3	Runout measuring device	Easy and reliable check of grinding wheel's runout and axial runout	0	_	_	_	_	_	_	_
	80.203.00	Balancing screw set	Set consisting of 11×10 special screws for fine-balancing of tool holders with balancing threads m6 (p. 53)	0	0	0	0	0	0	0	o
	79.350.XX	Balancing rings	For fine-balancing of all tool holders with cylindrical outer diameter (see p. 52)	0	0	0	0	0	0	0	0
	80.207.01	Precision scale	For highly precise weighing of balancing weights	0	0	0	0	0	0	0	0
	80.207.12	Software scale integration	Automatic transfer of rotor weight from scale	_	_	_	0	0	0	0	0
	80.207.10	Tool scale	Measures the weight of the tool holder, optional direct transfer into the balancing software (see option 80.207.12)	0	0	0	0	0	0	0	0
	80.215.02	Laser printer for balancing reports	Laser printer with Ethernet port to print out a detailed balancing report (together with option 80.214.00)	0	0	0	0	0	0	0	0
<b>SAFER</b>	80.206.00	Set of calibration magnets	Calibration magnets for testing, training, and demonstration purposes	0	0	0	0	0	0	0	0
	91.101.2X.00	Training	The training is obligatory for future warranty claims	0	0	0	0	0	0	0	0
	80.230.00	Calibration tube	For the calibration and testing of every balancing machine with the help of a defined mass	0	0	0	0	0	0	0	0
	80.215.05	Label printer "Dymo"	Printout of a label with the measuring results (short report); USB interface	_	_	_	0	0	0	0	0
<u></u>	80.245.13	Export measuring results	Software to export measuring results	_	_	_	0	0	0	0	O



# **Tool Dynamic Control Terminal**For more operating comfort





### **TOOL DYNAMIC SOFTWARE TDC 4.0**

#### Intelligent balancing software

Balancing is now even easier and more user-friendly. The user interface is completely made up of graphics. Buttons with symbols replace the text fields in most locations. Selection can take place using function buttons by clicking the mouse or by touching the screen.

The proven simple design of the old interface has been kept. Anyone who is already familiar with the Tool Dynamic can work with the new software without any problems.

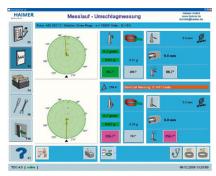
#### In addition, there is a series of other functions

User management makes it possible to assign different access rights. For example, one user can create new tool data and determine balance tolerances while another may only have access to be able to call up the existing data and carry out the balancing procedure.

- User-friendly design
- Operation with touchscreen (optional)
- Allocation of balance tolerances by machine type
- Tool management with database
- Tool data management in folder structure
- Simple data exchange with other systems, e.g. tool data management

#### **Additional options**

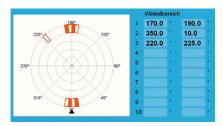
- Definition of forbidden areas where the compensation of the unbalance is not possible
- Calculation of alternative balancing positions
- User management with access rights
- Connection to external scales possible
- Optimized measuring run
- Export of measuring results



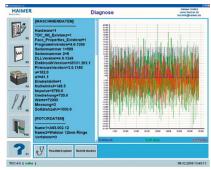
Clearly organized graphical user interface



Intuitive user guidance



Feature: forbidden areas



Advanced diagnostic modes



# **Tool Dynamic TD Preset Microset**

# For balancing and presetting in one step





# TOOL DYNAMIC TD PRESET MICROSET TOOL BALANCING AND PRESETTING

#### Two proven systems - a trendsetting innovation

The Tool Dynamic Preset Microset is a perfect combination of HAIMER's balancing and HAIMER Microset's presetting technology. The tool is clamped in the high precision balancing spindle fitted with HAIMER's proven adapter system. This saves time, money and increases accuracy because the tool does not have to be re-clamped.

- Breakthrough state-of-the-art technology: Tool Dynamic Comfort Plus and Microset UNO Premium
- Highest efficiency and time saving by combining two production stages
- Utmost accuracy due to high precision clamping in HAIMER's balancing adapters
- Requires little space
- Simple and logical operation with HAIMER TDC 4.0 and Microvision UNO with 27" multi-touchscreen
- Adapter for all interfaces
- Highest possible measuring convenience







#### Presetting

Measuring system with high resolution camera and digital photo processing

#### Software for professionals

Various options for measuring and balancing clearly arranged in menus with automatic switch between balancing and presetting software

Technical Details			
<b>Tool Dynamic TD Preset Microset</b>			
Dimensions (W×H×D) [mm/inch]	$2,000 \times 1,800 \times 850 / 79 \times 71 \times 33$	Compressed air [bar/psi]	6/87
Weight [kg/lbs]	823 / 1,814	max. tool length balancing [mm/inch]	700 / 27.6
Spindle speed [rpm]	300-1,100	max. tool length measuring and presetting [mm/inch]	400 / 15.7
Measuring accuracy [gmm]	< 0.5	max. tool diameter [mm/inch]	400 / 15.7
Power requirements [V/Hz]	230/50-60 (comes with 110 V transformer)	max. tool weight [kg/lbs]	30 / 66
Power usage [kW]	1.5	Order No.	TD104-H02-US*
Visual indicator [mm/inch]	0.001/0.00004		

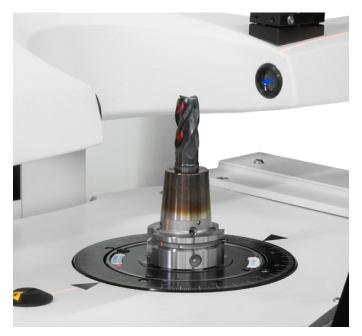
<sup>\*</sup> This order number matches the machine configuration as above. If you'd like to request a different configuration, please contact your HAIMER representative for the right order number.



### TOOL DYNAMIC TD PRESET MICROSET PRODUCT FEATURES

#### YOUR BENEFITS AT A GLANCE

- Simple operation through photorealistic input dialog
- Automatic software switch by positioning the measuring arm
- Non-contact measurement with a high-resolution camera and digital image processing, incl. measuring software "Microvision" with all important measuring functions of a modern and up-to-date presetting device
- Convenient operation, menu-driven via PC and 27" touchscreen
- Large hood for tool holders with max. 700 mm length. Balancing in 1 plane (static) and 2 planes (dynamic)
- Various measuring and balancing methods
- Optional grinding wheel edge finder: ideal for measuring grinding wheel packages and subsequently balancing for best grinding results
- RFID ready (Balluff etc.) to read and write balance grade and max. rotation
- Ready for barcode scanner
- HAIMER TRM (Tool Room Managment) ready
- Built-in drawer cabinet for storing accessories



Non-contact measurement with a high-resolution camera and digital image processing, incl. measuring software "Microvision"



Optional: Grinding wheel edge finder for grinding wheels Easy edge measurement for grinding wheels The measuring pin eliminates the blur on the surface and creates a clear point of intersection. (Order No. 80.243.01)

### TOOL DYNAMIC TO PRESET MICROSET FEATURES

#### Machine & tool control

- Robust, long-life cast iron construction
- Base made of polymer concrete
- Thermally optimized material combination for improved repeatability
- USB/LAN data output
- Windows 10
- Storage rack with two integrated drawers
- Storage drawers for balancing adapters and tool accessories in the Tool Control
- Software via 27" multi-touchscreen or mouse & keyboard for maximum usability
- Label printer (optional)

#### Tool presetting

- Technology package: incident light, edgefinder, release-by-touch
- Sigma function
- ± 2 μm repeatability
- Manual fine adjustment
- Memory for 1,000 zero points and tools
- Easy and intuitive Microvision measuring software
- Manual RFID system (optional)
- Bi-directional interface (optional)
- Post processor (optional)

#### Balancing

- Integrated user interface for easy handling of the machine
- Optical indexing help
- Laser marking
- Print label
- 2nd. laser (from above)
- Index balancing
- Radial drilling
- Balancing with spindle compensation
- Software for compensation with balancing rings
- Balancing in 1 and 2 planes
- Automatic indexing
- Rack for accessories
- Balancing software TDC 4.0
- Control terminal i4.0 incl. touchscreen



# **Tool Dynamic TD 800**

# For specialists



### TOOL DYNAMIC TD 800 SPECIAL BALANCING MACHINE

#### Your solution for big rotors up to diam. 800 mm

Based on the proven Tool Dynamic balancing technology, the Tool Dynamic TD 800 allows balancing big rotors of all kind. Bearing rings, grinding wheels and turbine wheels. With hand tailored clamping adapters so you can balance your rotors as easy and quick as possible.

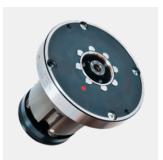


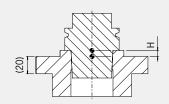
The safety hood is segmented and opens to the side. The rotor is accessible from above. Heavy parts can be handled by a crane.

Technical Details			
Tool Dynamic TD 800			
Dimensions (W×H×D) [mm/inch]	$2000 \times 1950 \times 1020 / 79 \times 77 \times 42$	Compressed air [bar/psi]	5-6/73-87
Weight [kg/lbs]	674 / 1,486	Air consumption [I/h]	30
Spindle speed [rpm]	100-1,100	max. tool length [mm/inch]	750 / 29.5
Measuring accuracy [gmm]	< 0.5	max. tool diameter [mm/inch]	800 / 31.5
Power requirements [V/Hz]	230/50-60 (comes with 110 V transformer)	max. tool weight [kg/lbs]	110 / 242
Power usage [kW]	1.0	Order No.	TD107-H04-US*

<sup>\*</sup> This order number matches the machine configuration as above. If you'd like to request a different configuration, please contact your HAIMER representative for the right order number.

### **BALANCING ADAPTER SK/BT/CAT/BBT\***





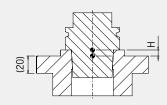
- µm precise clamping for highest measuring accuracy and repeatability
- Easy and quick changing due to compact design

**Note:** Adapters only to be used with original HAIMER Tool Dynamic balancing machines

Order No.	for taper size	for pull stud	Height H
80.201.330.01	SK30/BT30/BBT30*)	Thread M12	0 mm
80.201.330.01.IN	CAT30	Thread 1/2"-13	0 mm
80.201.330.02	SK30	DIN 69872; ISO 7388-3, Form AF/AD/AC	0 mm
80.201.330.02	BT30/BBT30*)	MAS 30°/45°/90°; ISO 7388-3, Form JD/JF	0 mm
80.201.330.04	SK30	ISO 7388-3, Form UF/UD/UC	0 mm
80.201.140.01	SK40	DIN 2080 Thread M16	0 mm
80.201.340.01	SK40/BT40/BBT40*)	Thread M16	0 mm
80.201.340.01.IN	CAT40	Thread 5/8"-11	0 mm
80.201.340.02	CAT40/SK40	DIN 69872; ISO 7388-3, Form AF/AD/AC	0 mm
80.201.340.02	BT40/BBT40*)	JIS B6339	0 mm
80.201.340.04	CAT40/SK40	ISO 7388-3, Form UF/UD/UC	0 mm
30.201.340.06	CAT40	Similar ISO 7388-3 Form JF/JD/MORI-SEIKI 90° (L3 = 0.99")	0 mm
80.201.340.06	BT40	MAS 30°/45°/90°; ISO 7388-3, Form JD/JF	0 mm
80.201.150.01	SK50	DIN 2080 Thread M24	0 mm
80.201.350.01	SK50/BT50/BBT50*)	Thread M24	0 mm
80.201.350.01.IN	CAT50	Thread 1"-8	0 mm
80.201.350.02	CAT50/SK50	DIN 69872; ISO 7388-3, Form AF/AD/AC	0 mm
80.201.350.02	BT50/BBT50*)	JIS B6339	0 mm
80.201.350.04	CAT50/SK50	ISO 7388-3, Form UF/UD/UC	0 mm
80.201.350.06	CAT50	Similar ISO 7388-3 Form JF/JD/MORI-SEIKI 90° (L3 = 1.39")	0 mm
80.201.350.06	BT50/BBT50*)	MAS 30°/45°/90°; ISO 7388-3, Form JD/JF	0 mm

### **BALANCING ADAPTER PSC POLYGON SHANK TAPER**





- µm precise clamping for highest measuring accuracy and repeatability
- Easy and quick changing due to compact design

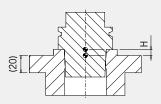
**Note:** Adapters only to be used with original HAIMER Tool Dynamic balancing machines

Balancing adapter PSC with automatic clamping system		
Order No.	for taper size	Height H
80.201.C3.00	PSC 32	7 mm
80.201.C4.00	PSC 40	7 mm
80.201.C5.00	PSC 50	7 mm
80.201.C6.00	PSC 63	7 mm
80.201.C8.00	PSC 80	7 mm
80.201.C10.00	PSC 100	7 mm

<sup>\*</sup> BBT: also suitable for BIG-Plus BBT and BIG-PLUS are registered trademarks/tradenames of Big Daishowa Co., Ltd. Further adapters available on request



### **BALANCING ADAPTER KM\***



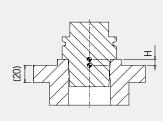
- µm precise clamping for highest measuring accuracy and repeatability
- Easy and quick changing due to compact design

Note: Adapters only to be used with original HAIMER Tool Dynamic balancing machines



Balancing adapter KM* with automatic clamping system		
Order No.	for taper size	Height H
80.201.KM32.01	KM32	7 mm
80.201.KM40.01	KM40	7 mm
80.201.KM50.01	KM50	7 mm
80.201.KM63.01	KM63	7 mm
80.201.KM80.01	KM80	7 mm
80.201.KM100.01	KM100	30 mm
80.201.KM125.00	KM125 (upon request)	

### **BALANCING ADAPTER KM4X\***



- µm precise clamping for highest measuring accuracy and repeatability
   Easy and quick changing due to compact design

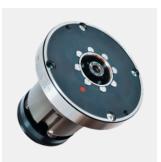
Note: Adapters only to be used with original HAIMER Tool Dynamic balancing machines

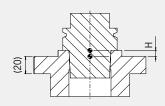


Balancing adapter KM4X* with automatic clamping system			
Order No.	for taper size	Height H	
80.201.KM63.4X	KM4X 63	7 mm	
80.201.KM100.4X	KM4X 100	30 mm	



### **BALANCING ADAPTER HSK**





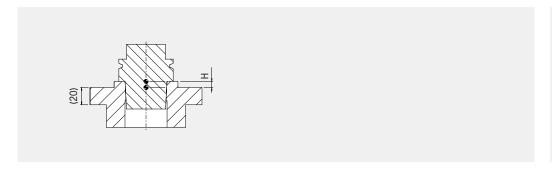
- µm precise clamping for highest measuring accuracy and repeatability
   Easy and quick changing due to compact design

**Note:** Adapters only to be used with original HAIMER Tool Dynamic balancing machines

HSK interface	Adapter Order No.	Analogy	Description	Height H
ISK 25				
15K 25	90 201 525 00		Adoptor for HCV EQE with elemping eveters	0 mm
ISK 32	80.201.E25.00		Adapter for HSK-E25 with clamping system	0 mm
	00 201 422 00		Adopton for LICI/ A 22 with alamanian avatam	0
	80.201.A32.00 80.201.E25.00	B32 = E25	Adapter for HSK-A32 with clamping system	0 mm
		C32 = A32	Adapter for HSK-E25 with clamping system	0 mm 0 mm
; I	80.201.A32.00 80.201.E25.00	D32 = E25	Adapter for HSK-A32 with clamping system Adapter for HSK-E25 with clamping system	
	80.201.E25.00 80.201.E32.00	D32=E25		0 mm
	80.201.E32.00 80.201.E25.00	F20 F2F	Adapter for HSK-E32 with clamping system	0 mm
ISK 40	80.201.E25.00	F32 = E25	Adapter for HSK-E25 with clamping system	0 mm
3N 4U	90 201 840 00		Adoptor for HCK A40 with elemping queter	0 mm
	80.201.A40.00	D40 F22	Adapter for HSK-A40 with clamping system	0 mm
	80.201.E32.00	B40 = E32	Adapter for HSK-E32 with clamping system	0 mm
	80.201.A40.00	C40 = A40	Adapter for HSK-A40 with clamping system	0 mm
	80.201.E32.00	D40 = E32	Adapter for HSK-E32 with clamping system	0 mm
	80.201.E40.00	F40 F00	Adapter for HSK-E40 with clamping system	0 mm
OK 50	80.201.E32.00	F40 = E32	Adapter for HSK-E32 with clamping system	0 mm
SK 50			A	
	80.201.A50.00	DE0 540	Adapter for HSK-A50 with clamping system	0 mm
	80.201.E40.00	B50 = E40	Adapter for HSK-E40 with clamping system	0 mm
	80.201.A50.00	C50 = A50	Adapter for HSK-A50 with clamping system	0 mm
	80.201.E40.00	D50 = E40	Adapter for HSK-E40 with clamping system	0 mm
	80.201.E50.00		Adapter for HSK-E50 with clamping system	0 mm
	80.201.E40.00	F50 = E40	Adapter for HSK-E40 with clamping system	0 mm
ISK 63				
	80.201.A63.00		Adapter for HSK-A63 with clamping system	0 mm
	80.201.E50.00	B63 = E50	Adapter for HSK-E50 with clamping system	0 mm
	80.201.A63.00	C63 = A63	Adapter for HSK-A63 with clamping system	0 mm
)	80.201.E50.00	D63 = E50	Adapter for HSK-E50 with clamping system	0 mm
	80.201.E63.00		Adapter for HSK-E63 with clamping system	0 mm
	80.201.E50.00	F63 = E50	Adapter for HSK-E50 with clamping system	0 mm
/einig				
einig/	80.201.W63.00		Adapter for Weinig tool holder	0 mm
lakino				
akino	80.201.F63.00.M	Makino F63	Adapter for Makino F63 tool holder	0 mm
akino	80.201.F80.00.M	Makino F80	Adapter for Makino F80 tool holder	0 mm
SK 80				
	80.201.A80.00		Adapter for HSK-A80 with clamping system	0 mm
	80.201.E63.00	B80 = E63	Adapter for HSK-E63 with clamping system	0 mm
	80.201.A80.00	C80 = A80	Adapter for HSK-A80 with clamping system	0 mm
	80.201.E63.00	D80 = E63	Adapter for HSK-E63 with clamping system	0 mm
	80.201.E80.00		Adapter for HSK-E80 with clamping system	0 mm
	80.201.E63.00	F80 = E63	Adapter for HSK-E63 with clamping system	0 mm
SK 100				
	80.201.A10.00		Adapter for HSK-A100 with clamping system	0 mm
	80.201.E80.00	B100 = E80	Adapter for HSK-E80 with clamping system	0 mm
	80.201.A10.00	C100 = A100	Adapter for HSK-A100 with clamping system	0 mm
	80.201.E80.00	D100 = E80	Adapter for HSK-E80 with clamping system	0 mm
	80.201.E10.00		Adapter for HSK-E100 with clamping system	0 mm
	80.201.E80.00	F100=E80	Adapter for HSK-E80 with clamping system	0 mm
SK 125				



## **BALANCING ADAPTER HSK — INCREASED OFFSET**





- Increased offset for better accessibility
- µm precise clamping for highest measuring accuracy and repeatability
- Easy and quick changing due to compact design

#### Note

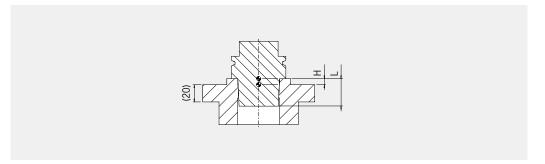
HSK balancing adapter with automatic clamping system – increased offset				
Order No.	for taper size	Height H		
80.201.E32.02	HSK-A/C/E 32; HSK-B/D/F 40	57 mm		
80.201.E40.02	HSK-A/C/E 40; HSK-B/D/F 50	57 mm		
80.201.E50.02	HSK-A/C/E 50; HSK-B/D/F 63	57 mm		
80.201.E63.02	HSK-A/C/E 63; HSK-B/D/F 80	57 mm		





## **BALANCING ADAPTER ROLLOMATIC**



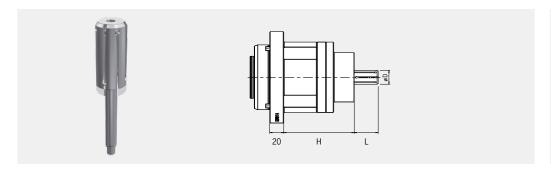


- Increased offset for better accessibility
- μm precise clamping for highest measuring accuracy and repeatability
- Easy and quick changing due to compact design

#### Note

Balancing adapter Rollomatic PerfectArbor with automatic clamping system					
Order No.	for taper size	Length L	Height H		
80.201.R025.00	RO25-20	20 mm	57 mm		
80.201.R025.01	RO25-25	25 mm	57 mm		

## HSM BALANCING ADAPTER (MANUAL) HSM 00 — HSM 01





#### Manual balancing adapter with cartridge mandrel for inner diameter with bore of Ø 15 up to Ø 100 mm

- Clamping range 0.3 / + 0.5 mm
- Precise center clamping for highest repeatability
- Fine balanced to < 1 gmm
- Can be used individually

#### Note:

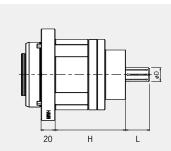
HSM balancing adapter with manual clamping system	Clamping set	Bore Ø D [mm]	Clamping length L [mm]	Height adapter H
Order No.	Order No.	- 0.3/+ 0.5 mm		
HSM 00, Clamping range 15-20 mm				
80.201.HSM00.00	80.201.HSZ00.15	Ø 15.0	34	100 mm
	80.201.HSZ00.15.5	Ø 15.5	34	100 mm
	80.201.HSZ00.16	Ø 16.0	34	100 mm
	80.201.HSZ00.16.5	Ø 16.5	34	100 mm
	80.201.HSZ00.17	Ø 17.0	34	100 mm
	80.201.HSZ00.17.5	Ø 17.5	34	100 mm
	80.201.HSZ00.18	Ø 18.0	34	100 mm
	80.201.HSZ00.18.5	Ø 18.5	34	100 mm
	80.201.HSZ00.19	Ø 19.0	34	100 mm
	80.201.HSZ00.19.5	Ø 19.5	34	100 mm
	80.201.HSZ00.20	Ø 20.0	34	100 mm
HSM 01, Clamping range 20-25 mm				
80.201.HSM01.00	80.201.HSZ01.20	Ø 20.0	39	100 mm
	80.201.HSZ01.20.5	Ø 20.5	39	100 mm
	80.201.HSZ01.21	Ø 21.0	39	100 mm
	80.201.HSZ01.21.5	Ø 21.5	39	100 mm
	80.201.HSZ01.22	Ø 22.0	39	100 mm
	80.201.HSZ01.22.5	Ø 22.5	39	100 mm
	80.201.HSZ01.23	Ø 23.0	39	100 mm
	80.201.HSZ01.23.5	Ø 23.5	39	100 mm
	80.201.HSZ01.24	Ø 24.0	39	100 mm
	80.201.HSZ01.24.5	Ø 24.5	39	100 mm
	80.201.HSZ01.25	Ø 25.0	39	100 mm





## HSM BALANCING ADAPTER (MANUAL) HSM 02 — HSM 04



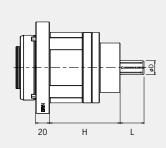




HSM balancing adapter with manual clamping system	Clamping set	Bore Ø D [mm]	Clamping length L [mm]	Height adapter H
Order No.	Order No.	- 0.3/+ 0.5 mm		
HSM 02, Clamping range 25-30 mm				
80.201.HSM02.00	80.201.HSZ02.25	Ø 25.0	45	100 mm
	80.201.HSZ02.25.5	Ø 25.5	45	100 mm
	80.201.HSZ02.26	Ø 26.0	45	100 mm
	80.201.HSZ02.26.5	Ø 26.5	45	100 mm
	80.201.HSZ02.27	Ø 27.0	45	100 mm
	80.201.HSZ02.27.5	Ø 27.5	45	100 mm
	80.201.HSZ02.28	Ø 28.0	45	100 mm
	80.201.HSZ02.28.5	Ø 28.5	45	100 mm
	80.201.HSZ02.29	Ø 29.0	45	100 mm
	80.201.HSZ02.29.5	Ø 29.5	45	100 mm
	80.201.HSZ02.30	Ø 30.0	45	100 mm
HSM 03, Clamping range 30-35 mm				
80.201.HSM03.00	80.201.HSZ03.30	Ø 30.0	49	100 mm
	80.201.HSZ03.30.5	Ø 30.5	49	100 mm
	80.201.HSZ03.31	Ø 31.0	49	100 mm
	80.201.HSZ03.31.5	Ø 31.5	49	100 mm
	80.201.HSZ03.32	Ø 32.0	49	100 mm
	80.201.HSZ03.32.5	Ø 32.5	49	100 mm
	80.201.HSZ03.33	Ø 33.0	49	100 mm
	80.201.HSZ03.33.5	Ø 33.5	49	100 mm
	80.201.HSZ03.34	Ø 34.0	49	100 mm
	80.201.HSZ03.34.5	Ø 34.5	49	100 mm
	80.201.HSZ03.35	Ø 35.0	49	100 mm
HSM 04, Clamping range 35-40 mm				
80.201.HSM04.00	80.201.HSZ04.35	Ø 35.0	59	100 mm
	80.201.HSZ04.35.5	Ø 35.5	59	100 mm
	80.201.HSZ04.36	Ø 36.0	59	100 mm
	80.201.HSZ04.36.5	Ø 36.5	59	100 mm
	80.201.HSZ04.37	Ø 37.0	59	100 mm
	80.201.HSZ04.37.5	Ø 37.5	59	100 mm
	80.201.HSZ04.38	Ø 38.0	59	100 mm
	80.201.HSZ04.38.5	Ø 38.5	59	100 mm
	80.201.HSZ04.39	Ø 39.0	59	100 mm
	80.201.HSZ04.39.5	Ø 39.5	59	100 mm
	80.201.HSZ04.40	Ø 40.0	59	100 mm

## HSM BALANCING ADAPTER (MANUAL) HSM 05 — HSM 07







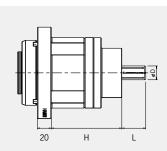
HSM balancing adapter with manual clamping system	Clamping set	Bore Ø D [mm]	Clamping length L [mm]	Height adapter H
Order No.	Order No.	- 0.3/+ 0.5 mm		
HSM 05, Clamping range 40-45 mm				
80.201.HSM05.00	80.201.HSZ05.40	Ø 40.0	59	100 mm
	80.201.HSZ05.40.5	Ø 40.5	59	100 mm
	80.201.HSZ05.41	Ø 41.0	59	100 mm
	80.201.HSZ05.41.5	Ø 41.5	59	100 mm
	80.201.HSZ05.42	Ø 42.0	59	100 mm
	80.201.HSZ05.42.5	Ø 42.5	59	100 mm
	80.201.HSZ05.43	Ø 43.0	59	100 mm
	80.201.HSZ05.43.5	Ø 43.5	59	100 mm
	80.201.HSZ05.44	Ø 44.0	59	100 mm
	80.201.HSZ05.44.5	Ø 44.5	59	100 mm
	80.201.HSZ05.45	Ø 45.0	59	100 mm
HSM 06, Clamping range 45-55 mm				
80.201.HSM06.00	80.201.HSZ06.45	Ø 45.0	79	100 mm
	80.201.HSZ06.46	Ø 46.0	79	100 mm
	80.201.HSZ06.47	Ø 47.0	79	100 mm
	80.201.HSZ06.48	Ø 48.0	79	100 mm
	80.201.HSZ06.49	Ø 49.0	79	100 mm
	80.201.HSZ06.50	Ø 50.0	79	100 mm
	80.201.HSZ06.51	Ø 51.0	79	100 mm
	80.201.HSZ06.52	Ø 52.0	79	100 mm
	80.201.HSZ06.53	Ø 53.0	79	100 mm
	80.201.HSZ06.54	Ø 54.0	79	100 mm
	80.201.HSZ06.55	Ø 55.0	79	100 mm
HSM 07, Clamping range 55-65 mm				
80.201.HSM07.00	80.201.HSZ07.55	Ø 55.0	89	100 mm
	80.201.HSZ07.56	Ø 56.0	89	100 mm
	80.201.HSZ07.57	Ø 57.0	89	100 mm
	80.201.HSZ07.58	Ø 58.0	89	100 mm
	80.201.HSZ07.59	Ø 59.0	89	100 mm
	80.201.HSZ07.60	Ø 60.0	89	100 mm
	80.201.HSZ07.61	Ø 61.0	89	100 mm
	80.201.HSZ07.62	Ø 62.0	89	100 mm
	80.201.HSZ07.63	Ø 63.0	89	100 mm
	80.201.HSZ07.64	Ø 64.0	89	100 mm
	80.201.HSZ07.65	Ø 65.0	89	100 mm





## HSM BALANCING ADAPTER (MANUAL) HSM 08 — HSM 09

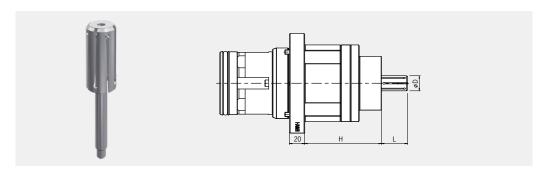






Order No.         - 0.3/+ 0.5 mm           HSM 08, Clamping range 65-82 mm         80.201.HSZ08.65         Ø 65.0         99         100 mm           80.201.HSZ08.66         Ø 66.0         99         100 mm           80.201.HSZ08.67         Ø 67.0         99         100 mm           80.201.HSZ08.68         Ø 68.0         99         100 mm           80.201.HSZ08.69         Ø 69.0         99         100 mm           80.201.HSZ08.70         Ø 70.0         99         100 mm           80.201.HSZ08.71         Ø 71.0         99         100 mm           80.201.HSZ08.72         Ø 72.0         99         100 mm           80.201.HSZ08.73         Ø 73.0         99         100 mm           80.201.HSZ08.74         Ø 74.0         99         100 mm           80.201.HSZ08.75         Ø 75.0         99         100 mm           80.201.HSZ08.75         Ø 76.0         99         100 mm           80.201.HSZ08.76         Ø 76.0         99         100 mm           80.201.HSZ08.79         Ø 79.0         99         100 mm           80.201.HSZ08.79         Ø 79.0         99         100 mm           80.201.HSZ08.80         Ø 80.0         99         100 mm <th>HSM balancing adapter with manual clamping system</th> <th>Clamping set</th> <th>Bore Ø D [mm]</th> <th>Clamping length L [mm]</th> <th>Height adapter H</th>	HSM balancing adapter with manual clamping system	Clamping set	Bore Ø D [mm]	Clamping length L [mm]	Height adapter H
March   Marc	Order No.				
80.201.HSX00.00  80.201.HSZ08.65  0 66.0  99  100 mm  80.201.HSZ08.65  0 66.0  99  100 mm  80.201.HSZ08.68  0 66.0  99  100 mm  80.201.HSZ08.68  0 68.0  99  100 mm  80.201.HSZ08.68  0 68.0  99  100 mm  80.201.HSZ08.70  0 67.0  99  100 mm  80.201.HSZ08.71  0 71.0  99  100 mm  80.201.HSZ08.71  0 72.0  99  100 mm  80.201.HSZ08.73  0 73.0  99  100 mm  80.201.HSZ08.73  0 73.0  99  100 mm  80.201.HSZ08.73  0 73.0  99  100 mm  80.201.HSZ08.73  0 75.0  99  100 mm  80.201.HSZ08.73  0 75.0  99  100 mm  80.201.HSZ08.75  0 75.0  99  100 mm  80.201.HSZ08.76  0 76.0  99  100 mm  80.201.HSZ08.80  0 80.0  121  100 mm  80.201.HSZ08.80  0 80.0  121  100 mm  80.201.HSZ09.83  0 80.0  121  100 mm  80.201.HSZ09.89  0 80.0  121  100 mm  80.201.HSZ09.99  0 90.0  121  100 mm	HSM 08. Clamping range 65–82 mm				
80.201.HSZ08.66	80.201.HSM02.00	80.201.HSZ08.65	Ø 65.0	99	100 mm
80.201.HSZ08.67					
80.201.HSZ08.68					
80.201.HSZ08.70    070.0    99    100 mm					
80.201.HSZ08.71		80.201.HSZ08.69	Ø 69.0	99	100 mm
80.201.HSZ08.72    0 72.0    99    100 mm		80.201.HSZ08.70	Ø 70.0	99	100 mm
80.201.HSZ08.73    0 73.0    99    100 mm		80.201.HSZ08.71	Ø 71.0	99	100 mm
80.201.HSZ08.74		80.201.HSZ08.72	Ø 72.0	99	100 mm
80.201.HSZ08.75		80.201.HSZ08.73	Ø 73.0	99	100 mm
80.201.HSZ08.76		80.201.HSZ08.74	Ø 74.0	99	100 mm
80.201.HSZ08.77    Ø 77.0    99    100 mm		80.201.HSZ08.75	Ø 75.0	99	100 mm
80.201.HSZ08.78    Ø 78.0    99    100 mm		80.201.HSZ08.76	Ø 76.0	99	100 mm
80.201.HSZ08.79    Ø 79.0    99    100 mm		80.201.HSZ08.77	Ø 77.0	99	100 mm
80.201.HSZ08.80		80.201.HSZ08.78	Ø 78.0	99	100 mm
80.201.HSZ08.81		80.201.HSZ08.79	Ø 79.0	99	100 mm
80.201.HSZ08.82		80.201.HSZ08.80	Ø 80.0	99	100 mm
Name		80.201.HSZ08.81	Ø 81.0	99	100 mm
80.201.HSM03.00       80.201.HSZ09.82       Ø 82.0       121       100 mm         80.201.HSZ09.83       Ø 83.0       121       100 mm         80.201.HSZ09.84       Ø 84.0       121       100 mm         80.201.HSZ09.85       Ø 85.0       121       100 mm         80.201.HSZ09.86       Ø 86.0       121       100 mm         80.201.HSZ09.87       Ø 87.0       121       100 mm         80.201.HSZ09.88       Ø 88.0       121       100 mm         80.201.HSZ09.89       Ø 89.0       121       100 mm         80.201.HSZ09.90       Ø 90.0       121       100 mm         80.201.HSZ09.91       Ø 91.0       121       100 mm         80.201.HSZ09.92       Ø 92.0       121       100 mm         80.201.HSZ09.93       Ø 93.0       121       100 mm         80.201.HSZ09.93       Ø 93.0       121       100 mm         80.201.HSZ09.93       Ø 95.0       121       100 mm         80.201.HSZ09.95       Ø 95.0       121       100 mm         80.201.HSZ09.99       Ø 96.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121		80.201.HSZ08.82	Ø 82.0	99	100 mm
80.201.HSZ09.83 Ø 83.0 121 100 mm 80.201.HSZ09.84 Ø 84.0 121 100 mm 80.201.HSZ09.85 Ø 85.0 121 100 mm 80.201.HSZ09.86 Ø 86.0 121 100 mm 80.201.HSZ09.87 Ø 87.0 121 100 mm 80.201.HSZ09.88 Ø 88.0 121 100 mm 80.201.HSZ09.89 Ø 89.0 121 100 mm 80.201.HSZ09.90 Ø 90.0 121 100 mm 80.201.HSZ09.91 Ø 91.0 121 100 mm 80.201.HSZ09.92 Ø 92.0 121 100 mm 80.201.HSZ09.92 Ø 99.0 121 100 mm 80.201.HSZ09.93 Ø 99.0 121 100 mm 80.201.HSZ09.94 Ø 94.0 121 100 mm 80.201.HSZ09.95 Ø 95.0 121 100 mm 80.201.HSZ09.95 Ø 95.0 121 100 mm 80.201.HSZ09.95 Ø 96.0 121 100 mm 80.201.HSZ09.95 Ø 96.0 121 100 mm 80.201.HSZ09.96 Ø 96.0 121 100 mm 80.201.HSZ09.97 Ø 97.0 121 100 mm 80.201.HSZ09.98 Ø 98.0 121 100 mm 80.201.HSZ09.99 Ø 99.0 121 100 mm 80.201.HSZ09.99 Ø 99.0 121 100 mm	HSM 09, Clamping range 82-101 mm				
80.201.HSZ09.84       Ø 84.0       121       100 mm         80.201.HSZ09.85       Ø 85.0       121       100 mm         80.201.HSZ09.86       Ø 86.0       121       100 mm         80.201.HSZ09.87       Ø 87.0       121       100 mm         80.201.HSZ09.88       Ø 88.0       121       100 mm         80.201.HSZ09.89       Ø 89.0       121       100 mm         80.201.HSZ09.90       Ø 90.0       121       100 mm         80.201.HSZ09.91       Ø 91.0       121       100 mm         80.201.HSZ09.92       Ø 92.0       121       100 mm         80.201.HSZ09.93       Ø 93.0       121       100 mm         80.201.HSZ09.93       Ø 93.0       121       100 mm         80.201.HSZ09.94       Ø 94.0       121       100 mm         80.201.HSZ09.95       Ø 95.0       121       100 mm         80.201.HSZ09.96       Ø 96.0       121       100 mm         80.201.HSZ09.97       Ø 97.0       121       100 mm         80.201.HSZ09.99       Ø 98.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm	80.201.HSM03.00	80.201.HSZ09.82	Ø 82.0	121	100 mm
80.201.HSZ09.85       Ø 85.0       121       100 mm         80.201.HSZ09.86       Ø 86.0       121       100 mm         80.201.HSZ09.87       Ø 87.0       121       100 mm         80.201.HSZ09.88       Ø 88.0       121       100 mm         80.201.HSZ09.89       Ø 89.0       121       100 mm         80.201.HSZ09.90       Ø 90.0       121       100 mm         80.201.HSZ09.91       Ø 91.0       121       100 mm         80.201.HSZ09.92       Ø 92.0       121       100 mm         80.201.HSZ09.93       Ø 93.0       121       100 mm         80.201.HSZ09.93       Ø 93.0       121       100 mm         80.201.HSZ09.94       Ø 94.0       121       100 mm         80.201.HSZ09.95       Ø 95.0       121       100 mm         80.201.HSZ09.96       Ø 96.0       121       100 mm         80.201.HSZ09.97       Ø 97.0       121       100 mm         80.201.HSZ09.99       Ø 98.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm		80.201.HSZ09.83	Ø 83.0	121	100 mm
80.201.HSZ09.86       Ø 86.0       121       100 mm         80.201.HSZ09.87       Ø 87.0       121       100 mm         80.201.HSZ09.88       Ø 88.0       121       100 mm         80.201.HSZ09.89       Ø 89.0       121       100 mm         80.201.HSZ09.90       Ø 90.0       121       100 mm         80.201.HSZ09.91       Ø 91.0       121       100 mm         80.201.HSZ09.92       Ø 92.0       121       100 mm         80.201.HSZ09.93       Ø 93.0       121       100 mm         80.201.HSZ09.94       Ø 94.0       121       100 mm         80.201.HSZ09.95       Ø 95.0       121       100 mm         80.201.HSZ09.96       Ø 96.0       121       100 mm         80.201.HSZ09.97       Ø 97.0       121       100 mm         80.201.HSZ09.98       Ø 98.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm		80.201.HSZ09.84	Ø 84.0	121	100 mm
80.201.HSZ09.87       Ø 87.0       121       100 mm         80.201.HSZ09.88       Ø 88.0       121       100 mm         80.201.HSZ09.89       Ø 89.0       121       100 mm         80.201.HSZ09.90       Ø 90.0       121       100 mm         80.201.HSZ09.91       Ø 91.0       121       100 mm         80.201.HSZ09.92       Ø 92.0       121       100 mm         80.201.HSZ09.93       Ø 93.0       121       100 mm         80.201.HSZ09.94       Ø 94.0       121       100 mm         80.201.HSZ09.95       Ø 95.0       121       100 mm         80.201.HSZ09.96       Ø 96.0       121       100 mm         80.201.HSZ09.97       Ø 97.0       121       100 mm         80.201.HSZ09.98       Ø 98.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm		80.201.HSZ09.85	Ø 85.0	121	100 mm
80.201.HSZ09.88       Ø 88.0       121       100 mm         80.201.HSZ09.89       Ø 89.0       121       100 mm         80.201.HSZ09.90       Ø 90.0       121       100 mm         80.201.HSZ09.91       Ø 91.0       121       100 mm         80.201.HSZ09.92       Ø 92.0       121       100 mm         80.201.HSZ09.93       Ø 93.0       121       100 mm         80.201.HSZ09.94       Ø 94.0       121       100 mm         80.201.HSZ09.95       Ø 95.0       121       100 mm         80.201.HSZ09.96       Ø 96.0       121       100 mm         80.201.HSZ09.97       Ø 97.0       121       100 mm         80.201.HSZ09.98       Ø 98.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm		80.201.HSZ09.86	Ø 86.0	121	100 mm
80.201.HSZ09.89       Ø 89.0       121       100 mm         80.201.HSZ09.90       Ø 90.0       121       100 mm         80.201.HSZ09.91       Ø 91.0       121       100 mm         80.201.HSZ09.92       Ø 92.0       121       100 mm         80.201.HSZ09.93       Ø 93.0       121       100 mm         80.201.HSZ09.94       Ø 94.0       121       100 mm         80.201.HSZ09.95       Ø 95.0       121       100 mm         80.201.HSZ09.96       Ø 96.0       121       100 mm         80.201.HSZ09.97       Ø 97.0       121       100 mm         80.201.HSZ09.98       Ø 98.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm		80.201.HSZ09.87	Ø 87.0	121	100 mm
80.201.HSZ09.90 Ø 90.0 121 100 mm 80.201.HSZ09.91 Ø 91.0 121 100 mm 80.201.HSZ09.92 Ø 92.0 121 100 mm 80.201.HSZ09.93 Ø 93.0 121 100 mm 80.201.HSZ09.94 Ø 94.0 121 100 mm 80.201.HSZ09.95 Ø 95.0 121 100 mm 80.201.HSZ09.96 Ø 96.0 121 100 mm 80.201.HSZ09.97 Ø 97.0 121 100 mm 80.201.HSZ09.98 Ø 98.0 121 100 mm 80.201.HSZ09.98 Ø 99.0 121 100 mm 80.201.HSZ09.99 Ø 99.0 121 100 mm 80.201.HSZ09.99 Ø 99.0 121 100 mm 80.201.HSZ09.99 Ø 99.0 121 100 mm		80.201.HSZ09.88	Ø 88.0	121	100 mm
80.201.HSZ09.91       Ø 91.0       121       100 mm         80.201.HSZ09.92       Ø 92.0       121       100 mm         80.201.HSZ09.93       Ø 93.0       121       100 mm         80.201.HSZ09.94       Ø 94.0       121       100 mm         80.201.HSZ09.95       Ø 95.0       121       100 mm         80.201.HSZ09.96       Ø 96.0       121       100 mm         80.201.HSZ09.97       Ø 97.0       121       100 mm         80.201.HSZ09.98       Ø 98.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm         80.201.HSZ09.100       Ø 100.0       121       100 mm		80.201.HSZ09.89	Ø 89.0	121	100 mm
80.201.HSZ09.92       Ø 92.0       121       100 mm         80.201.HSZ09.93       Ø 93.0       121       100 mm         80.201.HSZ09.94       Ø 94.0       121       100 mm         80.201.HSZ09.95       Ø 95.0       121       100 mm         80.201.HSZ09.96       Ø 96.0       121       100 mm         80.201.HSZ09.97       Ø 97.0       121       100 mm         80.201.HSZ09.98       Ø 98.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm         80.201.HSZ09.100       Ø 100.0       121       100 mm		80.201.HSZ09.90	Ø 90.0	121	100 mm
80.201.HSZ09.93       Ø 93.0       121       100 mm         80.201.HSZ09.94       Ø 94.0       121       100 mm         80.201.HSZ09.95       Ø 95.0       121       100 mm         80.201.HSZ09.96       Ø 96.0       121       100 mm         80.201.HSZ09.97       Ø 97.0       121       100 mm         80.201.HSZ09.98       Ø 98.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm         80.201.HSZ09.100       Ø 100.0       121       100 mm		80.201.HSZ09.91	Ø 91.0	121	100 mm
80.201.HSZ09.94       Ø 94.0       121       100 mm         80.201.HSZ09.95       Ø 95.0       121       100 mm         80.201.HSZ09.96       Ø 96.0       121       100 mm         80.201.HSZ09.97       Ø 97.0       121       100 mm         80.201.HSZ09.98       Ø 98.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm         80.201.HSZ09.100       Ø 100.0       121       100 mm		80.201.HSZ09.92	Ø 92.0	121	100 mm
80.201.HSZ09.95       Ø 95.0       121       100 mm         80.201.HSZ09.96       Ø 96.0       121       100 mm         80.201.HSZ09.97       Ø 97.0       121       100 mm         80.201.HSZ09.98       Ø 98.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm         80.201.HSZ09.100       Ø 100.0       121       100 mm		80.201.HSZ09.93	Ø 93.0	121	100 mm
80.201.HSZ09.96       Ø 96.0       121       100 mm         80.201.HSZ09.97       Ø 97.0       121       100 mm         80.201.HSZ09.98       Ø 98.0       121       100 mm         80.201.HSZ09.99       Ø 99.0       121       100 mm         80.201.HSZ09.100       Ø 100.0       121       100 mm		80.201.HSZ09.94	Ø 94.0	121	100 mm
80.201.HSZ09.97     Ø 97.0     121     100 mm       80.201.HSZ09.98     Ø 98.0     121     100 mm       80.201.HSZ09.99     Ø 99.0     121     100 mm       80.201.HSZ09.100     Ø 100.0     121     100 mm		80.201.HSZ09.95	Ø 95.0		100 mm
80.201.HSZ09.98     Ø 98.0     121     100 mm       80.201.HSZ09.99     Ø 99.0     121     100 mm       80.201.HSZ09.100     Ø 100.0     121     100 mm		80.201.HSZ09.96	Ø 96.0	121	100 mm
80.201.HSZ09.99     Ø 99.0     121     100 mm       80.201.HSZ09.100     Ø 100.0     121     100 mm		80.201.HSZ09.97	Ø 97.0	121	100 mm
<b>80.201.HSZ09.100</b> Ø 100.0 121 100 mm		80.201.HSZ09.98	Ø 98.0	121	100 mm
		80.201.HSZ09.99	Ø 99.0	121	100 mm
<b>80.201.HSZ09.101</b> Ø 101.0 121 100 mm		80.201.HSZ09.100	Ø 100.0	121	100 mm
		80.201.HSZ09.101	Ø 101.0	121	100 mm

## HSA BALANCING ADAPTER (AUTOMATIC) HSA 00 — HSA 01





#### Automatic balancing adapter with cartridge mandrel for inner diameter with bore of Ø 15 up to Ø 100 mm

- Clamping range 0.3 / + 0.5 mm
- Precise center clamping for highest repeatability
- Fine balanced to < 1 gmm
- Can be used individually

#### Note:

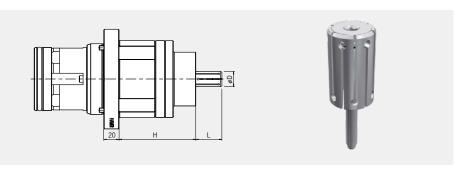
HSA balancing adapter with automatic clamping system	Clamping set	Bore Ø D [mm]	Clamping length L [mm]	Height adapter H
Order No.	Order No.	- 0.3/+ 0.5 mm		
HSM 00, Clamping range 15–20 mm				
80.201.HSA00.00	80.201.HSZ00.15	Ø 15.0	34	100 mm
	80.201.HSZ00.15.5	Ø 15.5	34	100 mm
	80.201.HSZ00.16	Ø 16.0	34	100 mm
	80.201.HSZ00.16.5	Ø 16.5	34	100 mm
	80.201.HSZ00.17	Ø 17.0	34	100 mm
	80.201.HSZ00.17.5	Ø 17.5	34	100 mm
	80.201.HSZ00.18	Ø 18.0	34	100 mm
	80.201.HSZ00.18.5	Ø 18.5	34	100 mm
	80.201.HSZ00.19	Ø 19.0	34	100 mm
	80.201.HSZ00.19.5	Ø 19.5	34	100 mm
	80.201.HSZ00.20	Ø 20.0	34	100 mm
HSM 01, Clamping range 20–25 mm				
80.201.HSA01.00	80.201.HSZ01.20	Ø 20.0	39	100 mm
	80.201.HSZ01.20.5	Ø 20.5	39	100 mm
	80.201.HSZ01.21	Ø 21.0	39	100 mm
	80.201.HSZ01.21.5	Ø 21.5	39	100 mm
	80.201.HSZ01.22	Ø 22.0	39	100 mm
	80.201.HSZ01.22.5	Ø 22.5	39	100 mm
	80.201.HSZ01.23	Ø 23.0	39	100 mm
	80.201.HSZ01.23.5	Ø 23.5	39	100 mm
	80.201.HSZ01.24	Ø 24.0	39	100 mm
	80.201.HSZ01.24.5	Ø 24.5	39	100 mm
	80.201.HSZ01.25	Ø 25.0	39	100 mm





## HSA BALANCING ADAPTER (AUTOMATIC) HSA 02 — HSA 04

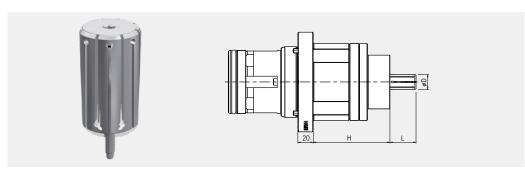




HSA balancing adapter with automatic clamping system	Clamping set	Bore Ø D [mm]	Clamping length L [mm]	Height adapter H
Order No.	Order No.	- 0.3/+ 0.5 mm		
HSM 02, Clamping range 25-30 mm				
80.201.HSA02.00	80.201.HSZ02.25	Ø 25.0	45	100 mm
	80.201.HSZ02.25.5	Ø 25.5	45	100 mm
	80.201.HSZ02.26	Ø 26.0	45	100 mm
	80.201.HSZ02.26.5	Ø 26.5	45	100 mm
	80.201.HSZ02.27	Ø 27.0	45	100 mm
	80.201.HSZ02.27.5	Ø 27.5	45	100 mm
	80.201.HSZ02.28	Ø 28.0	45	100 mm
	80.201.HSZ02.28.5	Ø 28.5	45	100 mm
	80.201.HSZ02.29	Ø 29.0	45	100 mm
	80.201.HSZ02.29.5	Ø 29.5	45	100 mm
	80.201.HSZ02.30	Ø 30.0	45	100 mm
HSM 03, Clamping range 30-35 mm				
80.201.HSA03.00	80.201.HSZ03.30	Ø 30.0	49	100 mm
	80.201.HSZ03.30.5	Ø 30.5	49	100 mm
	80.201.HSZ03.31	Ø 31.0	49	100 mm
	80.201.HSZ03.31.5	Ø 31.5	49	100 mm
	80.201.HSZ03.32	Ø 32.0	49	100 mm
	80.201.HSZ03.32.5	Ø 32.5	49	100 mm
	80.201.HSZ03.33	Ø 33.0	49	100 mm
	80.201.HSZ03.33.5	Ø 33.5	49	100 mm
	80.201.HSZ03.34	Ø 34.0	49	100 mm
	80.201.HSZ03.34.5	Ø 34.5	49	100 mm
	80.201.HSZ03.35	Ø 35.0	49	100 mm
HSM 04, Clamping range 35-40 mm				
80.201.HSA04.00	80.201.HSZ04.35	Ø 35.0	59	100 mm
	80.201.HSZ04.35.5	Ø 35.5	59	100 mm
	80.201.HSZ04.36	Ø 36.0	59	100 mm
	80.201.HSZ04.36.5	Ø 36.5	59	100 mm
	80.201.HSZ04.37	Ø 37.0	59	100 mm
	80.201.HSZ04.37.5	Ø 37.5	59	100 mm
	80.201.HSZ04.38	Ø 38.0	59	100 mm
	80.201.HSZ04.38.5	Ø 38.5	59	100 mm
	80.201.HSZ04.39	Ø 39.0	59	100 mm
	80.201.HSZ04.39.5	Ø 39.5	59	100 mm
	80.201.HSZ04.40	Ø 40.0	59	100 mm



## HSA BALANCING ADAPTER (AUTOMATIC) HSA 05 — HSA 06





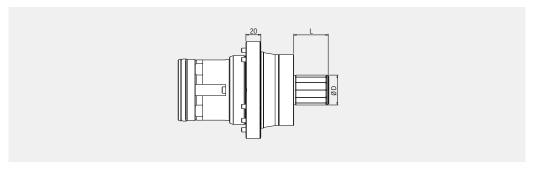
HSA balancing adapter with automatic clamping system	Clamping set	Bore Ø D [mm]	Clamping length L [mm]	Height adapter H
Order No.	Order No.	- 0.3/+ 0.5 mm		
HSM 05, Clamping range 40–45 mm				
80.201.HSA05.00	80.201.HSZ05.40	Ø 40.0	59	100 mm
	80.201.HSZ05.40.5	Ø 40.5	59	100 mm
	80.201.HSZ05.41	Ø 41.0	59	100 mm
	80.201.HSZ05.41.5	Ø 41.5	59	100 mm
	80.201.HSZ05.42	Ø 42.0	59	100 mm
	80.201.HSZ05.42.5	Ø 42.5	59	100 mm
	80.201.HSZ05.43	Ø 43.0	59	100 mm
	80.201.HSZ05.43.5	Ø 43.5	59	100 mm
	80.201.HSZ05.44	Ø 44.0	59	100 mm
	80.201.HSZ05.44.5	Ø 44.5	59	100 mm
	80.201.HSZ05.45	Ø 45.0	59	100 mm
HSM 06, Clamping range 45-55 mm				
80.201.HSA06.00	80.201.HSZ06.45	Ø 45.0	79	100 mm
	80.201.HSZ06.46	Ø 46.0	79	100 mm
	80.201.HSZ06.47	Ø 47.0	79	100 mm
	80.201.HSZ06.48	Ø 48.0	79	100 mm
	80.201.HSZ06.49	Ø 49.0	79	100 mm
	80.201.HSZ06.50	Ø 50.0	79	100 mm
	80.201.HSZ06.51	Ø 51.0	79	100 mm
	80.201.HSZ06.52	Ø 52.0	79	100 mm
	80.201.HSZ06.53	Ø 53.0	79	100 mm
	80.201.HSZ06.54	Ø 54.0	79	100 mm
	80.201.HSZ06.55	Ø 55.0	79	100 mm





## SDA BALANCING ADAPTER (AUTOMATIC) SDA 01 — SDA 02





#### Automatic balancing adapter with mandrel for inner diameter with bore of Ø 8 up to Ø 60 mm and 1" up to 2"

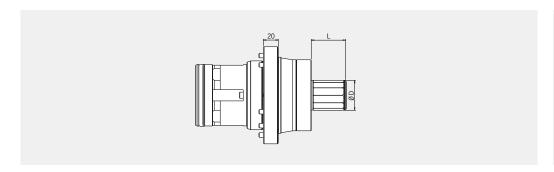
- Clamping range 0.03 / + 0.05 mm
- Precise center clamping for highest repeatability
- Fine balanced to < 1 gmm
- Can be used individually

#### Note:

SDA balancing adapter with automatic clamping system	Bore Ø D [mm]	Clamping length L [mm]
Order No.	- 0.3/+ 0.5 mm	
80.201.SDA08.00	Ø 8.0	2×D
80.201.SDA10.00	Ø 10.0	2×D
80.201.SDA12.00	Ø 12.0	2×D
80.201.SDA14.00	Ø 14.0	2×D
80.201.SDA16.00	Ø 16.0	2×D
80.201.SDA18.00	Ø 18.0	2×D
80.201.SDA20.00	Ø 20.0	1×D
80.201.SDA22.00	Ø 22.0	1×D
80.201.SDA25.00	Ø 25.0	1×D
80.201.SDA27.00	Ø 27.0	1×D
80.201.SDA30.00	Ø 30.0	1×D
80.201.SDA32.00	Ø 32.0	1×D
80.201.SDA35.00	Ø 35.0	1×D
80.201.SDA40.00	Ø 40.0	1×D
80.201.SDA45.00	Ø 45.0	1×D
80.201.SDA50.00	Ø 50.0	1×D
80.201.SDA55.00	Ø 55.0	1×D
80.201.SDA60.00	Ø 60.0	1×D
80.201.SDA1Z.00	Ø 1 " (25.40 mm)	1×D
80.201.SDA11/4Z.00	Ø 1 1/4" (31.75 mm)	1×D
80.201.SDA11/2Z.00	Ø 1 1/2" (38.10 mm)	1×D
80.201.SDA17/8Z.00	Ø 1 7/8" (47.625 mm)	1×D
80.201.SDA2Z.00	Ø 2" (50.8)	1×D



## **SDA BALANCING ADAPTER (AUTOMATIC)**





Automatic balancing adapter with mandrel for inner diameter with bore of  $\emptyset$  16 up to  $\emptyset$  60 mm and 3/4" up to 2". Suitable for face mills with optimized clamping length.

- Clamping range 0.03 / + 0.05 mm
- Precise center clamping for highest repeatability
- Fine balanced to < 1 gmm
- Can be used individually

#### Note:

SDA balancing adapter with automatic clamping system	Bore Ø D [mm]	Clamping length L [mm]
Order No.	- 0.3/+ 0.5 mm	
80.201.SDA16.02	Ø 16.0	16.00
80.201.SDA22.02	Ø 22.0	18.00
80.201.SDA27.02	Ø 27.0	20.00
80.201.SDA32.02	Ø 32.0	23.00
80.201.SDA40.02	Ø 40.0	26.00
80.201.SDA50.02	Ø 50.0	29.00
80.201.SDA60.02	Ø 60.0	39.00
80.201.SDA3/4Z.02	Ø 3/4" (19.05 mm)	17.05
80.201.SDA1Z.02	Ø 1 " (25.40 mm)	17.05
80.201.SDA11/4Z.02	Ø 1 1/4" (31.75 mm)	17.05
80.201.SDA11/2Z.02	Ø 1 1/2" (38.10 mm)	23.40
80.201.SDA17/8Z.02	Ø 1 7/8" (47.625 mm)	23.40
80.201.SDA2Z.02	Ø 2 " (50.8)	23.40





# SAB BALANCING ADAPTER (AUTOMATIC) SAB 01



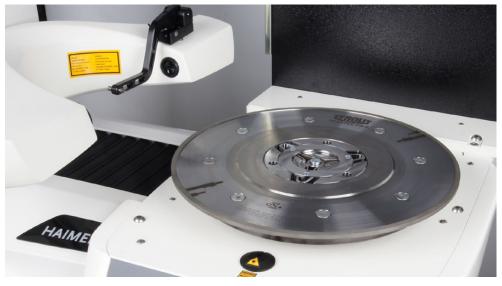


#### Automatic balancing adapter with spring washer for inner diameter with bore of Ø 120 up to Ø 250 mm

- Clamping range 0.15 / + 0.8 mm
- Precise center clamping for highest repeatability
- Fine balanced to < 1 gmm
- Can be used individually

#### Note:

SAB balancing adapter with automatic clamping system	Spring washer	Bore Ø D [mm]
SAB 01, Clamping range 120-250 mm	Order No.	
80.201.SAB	80.201.SAB01.120	Ø 120
	80.201.SAB01.127	Ø 127
	80.201.SAB01.150	Ø 150
	80.201.SAB01.175	Ø 175
	80.201.SAB01.203	Ø 203
	80.201.SAB01.250	Ø 250



Application example

# SAS BALANCING ADAPTER (AUTOMATIC) SAS 01





#### Automatic balancing adapter with spring washer for outside diameter of Ø 120 up to Ø 250 mm

- Clamping range 0.15 / + 0.8 mm
- Precise center clamping for highest repeatability
- Fine balanced to < 1 gmm
- Can be used individually

#### Note:

SAS balancing adapter with automatic clamping system	Spring washer	Spindle Ø D [mm]
SAS 01, Clamping range 120-250 mm	Order No.	
80.201.SAS	80.201.SAS01.120	Ø 120
	80.201.SAS01.127	Ø 127
	80.201.SAS01.150	Ø 150
	80.201.SAS01.175	Ø 175
	80.201.SAS01.203	Ø 203
	80.201.SAS01.250	Ø 250



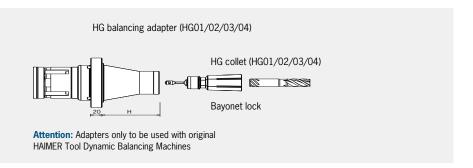


Application example



## **HG BALANCING ADAPTER**





#### Balancing adapter for tools with a cylindrical shank

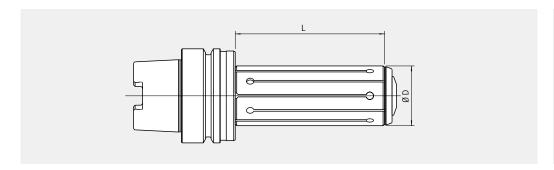
- For efficient and automatic clamping of tools with a cylindrical shank
- For cylindrical shanks up to tolerance h8
- Available with shank diameter up to 40 mm upon request

Balancing adapter with interchangeable high precision collets (system HG) and automatic clamping. From now on, you can clamp your shank tools directly in the balancing adapter without any accessories.

HG adapter	Collet	Clamping range D	Height H
Order No.	Order No.		
HG01	HG01	Ø 2-9.25 mm	
80.201.HG01.00	80.201.HG01.02	2 mm	80 mm
	80.201.HG01.02.5	2.5 mm	80 mm
	80.201.HG01.03	3 mm	80 mm
	80.201.HG01.03.5	3.5 mm	80 mm
	80.201.HG01.04	4 mm	80 mm
	80.201.HG01.04.5	4.5 mm	80 mm
	80.201.HG01.05	5 mm	80 mm
	80.201.HG01.05.5	5.5 mm	80 mm
	80.201.HG01.05.6	5.6 mm	80 mm
	80.201.HG01.06	6 mm	80 mm
	80.201.HG01.06.3	6.3 mm	80 mm
	80.201.HG01.07	7 mm	80 mm
	80.201.HG01.07.1	7.1 mm	80 mm
	80.201.HG01.08	8 mm	80 mm
	80.201.HG01.09	9 mm	80 mm
	80.201.HG01.09.25	9.25 mm	80 mm
HG02	HG02	Ø 10–14 mm	
80.201.HG02.00	80.201.HG02.10	10 mm	80 mm
	80.201.HG02.11	11 mm	80 mm
	80.201.HG02.12	12 mm	80 mm
	80.201.HG02.12,5	12.5 mm	80 mm
	80.201.HG02.13	13 mm	80 mm
	80.201.HG02.14	14 mm	80 mm
HG03	HG03	Ø 15–20 mm	
80.201.HG03.00	80.201.HG03.15	15 mm	80 mm
	80.201.HG03.16	16 mm	80 mm
	80.201.HG03.18	18 mm	80 mm
	80.201.HG03.20	20 mm	80 mm
HG04	HG04	Ø 20–32 mm	
80.201.HG04.00	80.201.HG04.20	20 mm	100 mm
	80.201.HG04.22	22 mm	100 mm
	80.201.HG04.25	25 mm	100 mm
	80.201.HG04.27	27 mm	100 mm
	80.201.HG04.28	28 mm	100 mm
		28 mm 30 mm 32 mm	100 mm 100 mm 100 mm



## **BALANCING ARBORS**





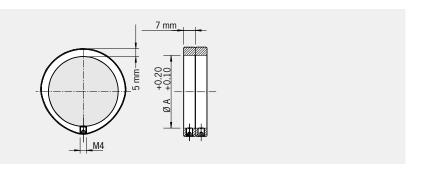
- To balance tools with cylindrical bore
- Precise center clamping for highest repeatability
   Fine balanced to < 1 gmm</li>
- Can be used individually

Balancing arbor	Collet	Clamping range Ø D	L			
Order No.	Order No.					
DG07, Clamping range 25-34.5 mm						
80.250.A63.070	80.250.07.25	Ø 25-25.5 mm	100 mm			
	80.250.07.26	Ø 26–26.5 mm	100 mm			
	80.250.07.28	Ø 28–28.5 mm	100 mm			
	80.250.07.30	Ø 30-30.5 mm	100 mm			
	80.250.07.32	Ø 32–32.5 mm	100 mm			
	80.250.07.34	Ø 34–34.5 mm	100 mm			
DG07, Clamping range 35-44.5 mm						
80.250.A63.080	80.250.08.35	Ø 35-35.5 mm	100 mm			
	80.250.08.36	Ø 36-36.5 mm	100 mm			
	80.250.08.38	Ø 38-38.5 mm	100 mm			
	80.250.08.40	Ø 40-40.5 mm	100 mm			
	80.250.08.42	Ø 42-42.5 mm	100 mm			
	80.250.08.44	Ø 44–44.5 mm	100 mm			
DG09, Clamping range 45-54.5 mm						
80.250.A63.090	80.250.09.45	Ø 45-45.5 mm	125 mm			
	80.250.09.48	Ø 48-48.5 mm	125 mm			
	80.250.09.50	Ø 50-50.5 mm	125 mm			
	80.250.09.52	Ø 52-52.5 mm	125 mm			
	80.250.09.54	Ø 54-54.5 mm	125 mm			
DG10, Clamping range 55-64.5 mm						
80.250.A63.100	80.250.10.55	Ø 55-55.5 mm	135 mm			
	80.250.10.58	Ø 58-58.5 mm	135 mm			
	80.250.10.60	Ø 60-60.5 mm	135 mm			
	80.250.10.62	Ø 62-62.5 mm	135 mm			
	80.250.10.65	Ø 65-65.5 mm	135 mm			



## **BALANCING RINGS**





For fine-balancing of all tool holders with cylindrical outer diameter (diam. A).

The balancing index rings have a defined unbalance in themselves. They are turned in such a position that the unbalance of the tool holder will be compensated. There are always 2 rings needed per balancing plane.

- Balancing quickly and precisely
- No damage of tool holder
- Can be repeated as often as necessary
- Simply fixed by clamping screw
- Suitable for tool holders of all brands
- The balancing machine determines the position of the rings
- Included in delivery: 2 balancing rings with clamping screws without hex wrench

	Ø A [mm]	Unbalance 1)	rpm [1/min]	
Order No. 79.350.15	15	14 gmm	max. 55,000	
79.350.16	16	14 gmm	max. 55,000 max. 55,000 max. 55,000	
79.350.17	17	16 gmm		
79.350.18	18	17 gmm		
79.350.19	19	19 gmm	max. 55,000	
79.350.20	20	21 gmm	max. 55,000	
79.350.22	22	23 gmm	max. 55,000 max. 55,000 max. 55,000	
79.350.23	23	25 gmm		
79.350.24	24	27 gmm		
79.350.25	25	28 gmm	max. 55,000	
79.350.26	26	32 gmm	max. 50,000 max. 50,000	
79.350.27	27	32.5 gmm		
79.350.28	28	34 gmm	max. 50,000	
79.350.30	30	37 gmm	max. 45,000	
79.350.32	32	43 gmm	max. 45,000	
79.350.34	34	46 gmm	max. 40,000	
79.350.35	35	48 gmm	max. 40,000	
79.350.36	36	51 gmm	max. 40,000	
79.350.38	38	56 gmm	max. 35,000	
79.350.40	40	60 gmm	max. 35,000	
79.350.42	42	65 gmm	max. 35,000	
79.350.43	43	69 gmm	max. 35,000	
79.350.44	44	72 gmm max	max. 35,000	
79.350.46	46	80 gmm	max. 35,000	
79.350.48	48	85 gmm max.	max. 30,000	
79.350.50	50	90 gmm	max. 30,000	
79.350.52	52	100 gmm	max. 30,000	
79.350.53	53	100 gmm	max. 30,000	
79.350.54	54	103 gmm	max. 30,000	

		Ø A [mm]	Unbalance 1)	rpm [1/min]	
Order No.	79.350.55	55	105 gmm	max. 30,000	
	79.350.56	56	110 gmm	max. 30,000	
	79.350.58	58	120 gmm	max. 30,000	
	79.350.60	60	128 gmm	max. 25,000	
	79.350.62	62	132 gmm	max. 25,000	
	79.350.63	63	135 gmm	max. 25,000	
	79.350.64	64	147 gmm	max. 25,000	
	79.350.65	65	147 gmm	max. 25,000	
	79.350.66	66	145 gmm	max. 25,000	
	79.350.68	68	161 gmm	max. 25,000	
	79.350.70	70	165 gmm	max. 25,000	
	79.350.72	72	170 gmm	max. 25,000	
	79.350.74	74	184 gmm	max. 25,000	
	79.350.76	76	186 gmm	max. 20,000	
	79.350.78	78	206 gmm	max. 20,000	
	79.350.80	80	215 gmm	max. 20,000	
	79.350.82	82	213 gmm	max. 20,000	
	79.350.84	84	229 gmm	max. 20,000	
	79.350.86	86	249 gmm	max. 20,000	
	79.350.87	87	256 gmm	max. 20,000	
	79.350.88	88	251 gmm	max. 20,000	
	79.350.89	89	260 gmm	max. 20,000	
	79.350.90	90	265 gmm	max. 20,000	
	79.350.92	92	275 gmm	max. 20,000	
	79.350.94	94	286 gmm	max. 20,000	
	79.350.96	96	300 gmm	max. 20,000	
	79.350.98	98	305 gmm	max. 20,000	
	79.350.100	100	320 gmm	max. 15,000	
	79.350.125	125	500 gmm	max. 15,000	



## **SET OF BALANCING SCREWS**







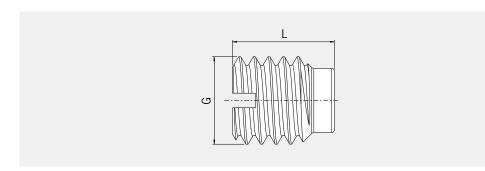
For fine-balancing of all tool holders with balancing threads M6 (e. g. shrink fit chucks from HAIMER).

The screws have different weights in a fine graduation. They are screwed into the balancing threads of the tool holder so that their weight compensates the unbalance of the tool holder.

- Set consisting of screws of 11 different sizes and weights
- Screws are screwed to the ground of the thread and tightened. No additional fixing of screws necessary.
- Balance quickly and precisely
- No damage of tool holders
- Can be repeated as often as necessary
- Suitable for tool holders of all brands
- The balancing machine calculates the necessary weight of the screws (e. g. HAIMER Tool Dynamic)
- Included in delivery: case with 11 × 10 balancing screws, screw driver

Set of balancing screws Order No. 80.203.00

### **HEAVY METAL BALANCING SCREWS**





Heavy metal balancing screws (thread M6) for manual balancing of tool holders.

Length L [mm]	07	07	08	08	10	10	14
Size G [mm]	M6×7	M6×7	M6×8	M6×8	M6×10	M6×10	M6×14
		(5 pcs.)		(5 pcs.)		(5 pcs.)	
Mass	ca. 2.3 g	ca. 2.3 g	ca. 2.7 g	ca. 2.7 g	ca. 3.5 g	ca. 3.5 g	ca. 9 g
Order No.	.7.0	.7.0.SET	.8.0	.8.0.SET	.10.0	.10.0.SET	.14.0

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