BENZING

Measuring and testing equipment

Run-out testers

TÜV International Certification
TÜV THÜRINGEN
CERT
ISO 9001
15 100 21396
TIC

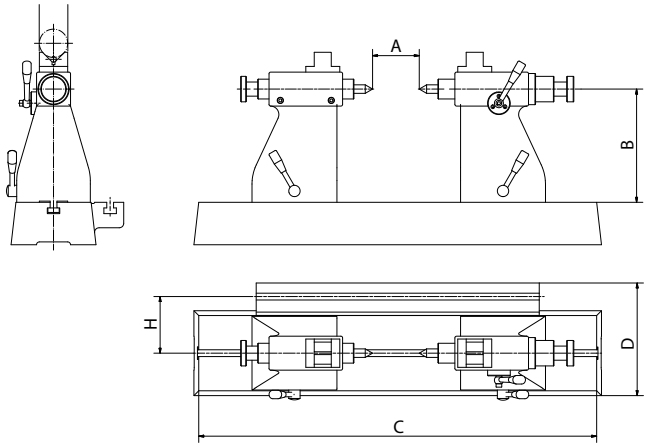
Run-out testers
Height of centres 50 mm
height of centres 75 mm

Benzing run-out testers consist of a base plate, a pair of tailstocks with centres (60°) on the T-slot guide, and a dial gauge stand on the T-slot clamp.

The centre of the right tailstock can be pulled back using a lever. This permits easy insertion and removal of the test specimen. The centre returns to its position by spring force.

The standard centres of the tailstocks can be replaced by hollow centres, V-block inserts or carbide centres.

RP 50-200



RP 75-200P

Model			RP 50-200	RP 50-350	RP 75-200 P	RP 75-350 P
maximum centre distance	A	mm	200	350	200	350
Height of centres	B	mm	50	50	75	75
Dimensions of base plate	CxD	mm	350 x 110	500 x 110	350 x 110	500 x 110
Flatness of base plate			DIN 876/1	DIN 876/1	DIN 876/1	DIN 876/1
Degree of accuracy			1	1	1	1
T-slot width		mm	10H7	10H7	10H7	10H7
Contact area in V-block		mm			5 - 20	5 - 20
Dial gauge holder		mm	8H7	8H7	8H7	8H7
Travel distance of movable centre		mm	8	8	8	8
Distance between guide slot and clamping slot	H	mm	58	58	58	58
Height with stand		mm	260	260	260	260
Weight		kg	approx. 8	approx. 11	approx. 9	approx. 12

Dial gauges are not included.

Accessories for run-out testers with height of centres 50 mm height of centres 75 mm

V-block inserts PE 004-52
For checking non-centred parts and long parts for installation.
V-block inserts are put into the tailstocks instead of centres.

Centring points – hollow centres 004-56
with centring hole DIN 332-A1, 6 x 3.8

Centring points 004-57
60° carbide tipped
Shank of centring points: dia. 16 mm

We will be glad to manufacture centring points according to your specifications.

Tailstock pairs

RST 50

RST 75 P with V-block support

Model		RST 50	RST 75 P
Height of centres	mm	50	75
Width of T-slot block	mm	10h6	10h6
Contact area in V-block	mm		5 - 20
Work-holding surface LxB	mm	70 x 55	70 x 55
Travel distance of movable centre	mm	8	8
Degree of accuracy		1	1
Weight/pair	kg	approx. 2.5	approx. 3.5

Vertically adjustable Roller blocks or V-blocks

To compensate for different diameters of the test specimen, a gauge block with thickness h can be placed under the vertically adjustable support on the left. The thickness h of the gauge block is calculated as follows:

h = h1 – h2

V-blocks:

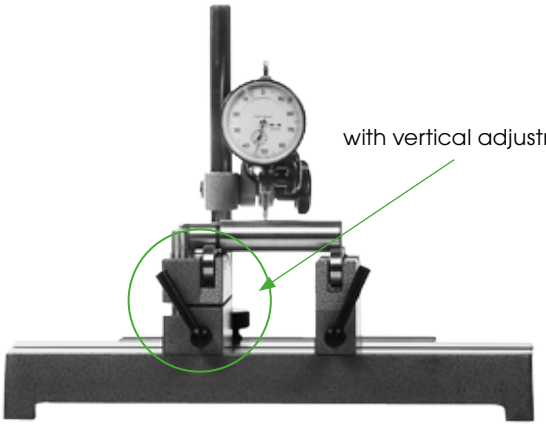
h1 = d1 / 1.4142

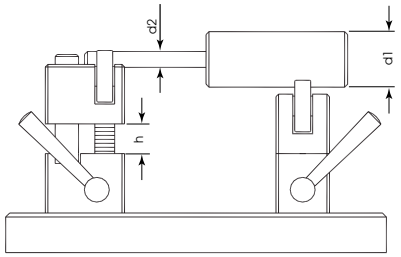
h2 = d2 / 1.4142

Roller blocks

$$h1 = \sqrt{(13 + \frac{d1}{2})^2 - 175.5625}$$

$$h2 = \sqrt{(13 + \frac{d2}{2})^2 - 175.5625}$$

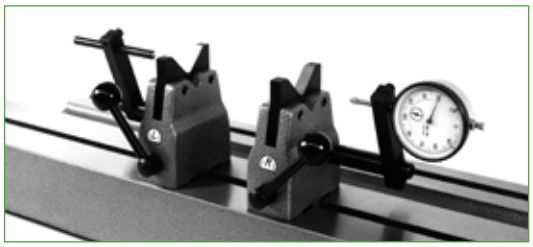




V-blocks and Roller blocks are always supplied in pairs.

		V-blocks	Roller blocks	Roller blocks
Model		**PB 004-53**	**AB 004-54**	**AB 004-64**
Vertically adjustable				•
Contact area in V-block	mm	d = 5 - 25	d = 2 - 40	d = 2 - 32
V-block angle		90 °		
V-block width	mm	10		
Wheel width	mm		8	8
Height of centres at d = 10 mm	mm		65	66
Height of centres at d = 20 mm	mm	65		
Minimum spacing L	mm			16
Width of T-slot block	mm	10h6	10h6	10h6
Weight	kg/pair	approx. 1.0	approx. 1.0	approx. 1.8

End stop and dial gauge holder for V-blocks and roller blocks



End stop		**AS 004-53**
Diameter	mm	8
Dial gauge holder		**MU 004-53**
Mounting hole	mm	8H7

The end stop can be used to hold the test specimen in an axial position.

Pressure wheel AR 004-51

Pressure wheel for holding and turning the test specimen with constant force in V-blocks or Roller blocks. The pressure wheel is mounted in the T-slot clamp.

Dial gauges are not included.

Accessories for run-out testers with height of centres 50 mm height of centres 75 mm

Additional dial gauge stands can be used to set up further measuring points on run-out testers. The dial gauge stands have a universal swivel head. They are available with or without fine adjustment.

Model		MS 004-55	MS 004-55 S
Height	mm	220	200
Column dia.	mm	16	18
Measuring range	mm	150	150
Dial gauge holder	mm	8H7	8H7
Fine adjustment		•	
Weight	kg	approx. 0.9	approx. 0.9

MS 004-55

MS 004-55 S

Model		THL-50
Height of centres fixed	mm	50
Dial gauge holder	mm	8H7
for T-slot	mm	10H7

The probe holder allows the dial gauge to be locked in a horizontal position and adapted to the test specimen by means of an extension.

Probe holder

Run-out testers
Height of centres 100 mm
Height of centres 150 mm

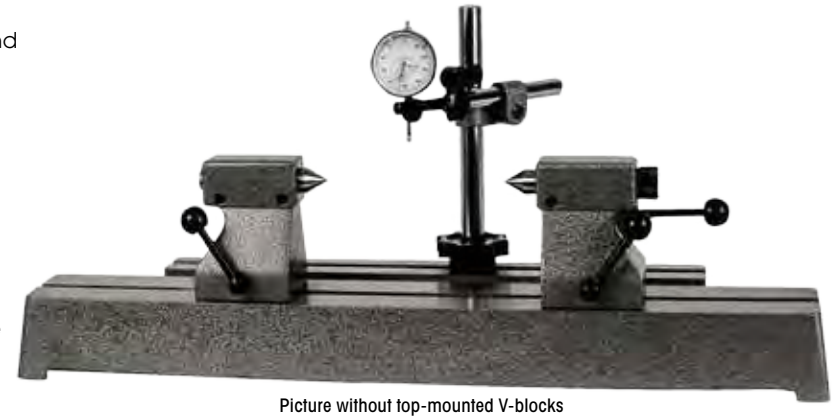
Benzing run-out testers consist of a base plate, a pair of tailstocks with centres (60°) on the T-slot guide, and a dial gauge stand on the T-slot clamp.

The centre of the right tailstock can be pulled back using a lever. This permits easy insertion and removal of the test specimen. The centre returns to its position by spring force.

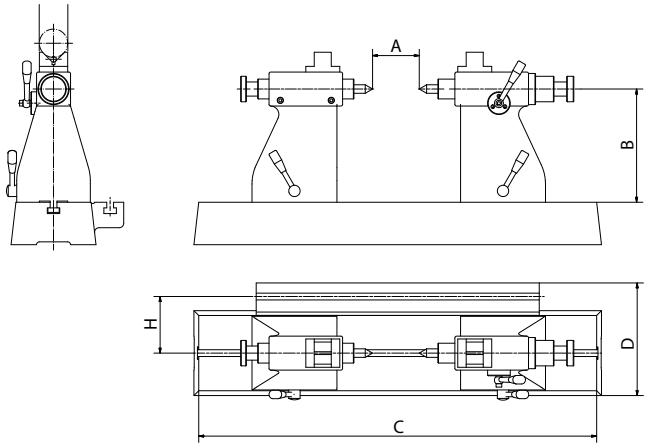
The standard centres of the tailstocks can be replaced by hollow centres, V-block inserts or carbide centres.

The tailstocks of these models are also available with V-blocks mounted on the top (P version).

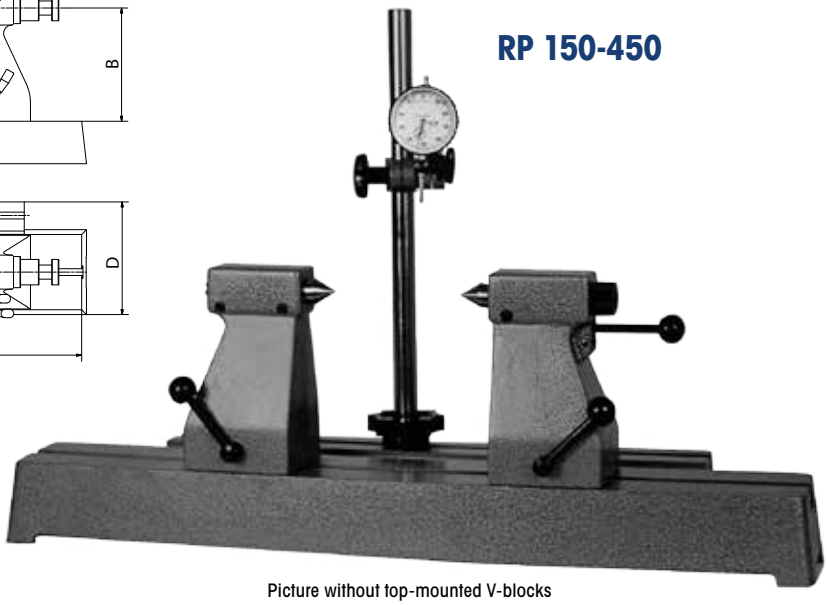
RP 100-450



Picture without top-mounted V-blocks



RP 150-450



Picture without top-mounted V-blocks

Model			RP 100-450	RP 100-450 P*	RP 150-450	RP 150-450 P*
maximum centre distance	A	mm	450	450	450	450
Height of centres	B	mm	100	100	150	150
Dimensions of base plate	CxD	mm	700 x 180	700 x 180	700 x 180	700 x 180
Flatness of base plate			DIN 876/1	DIN 876/1	DIN 876/1	DIN 876/1
Degree of accuracy			1	1	1	1
T-slot width		mm	12H7	12H7	12H7	12H7
Contact area in V-block		mm		8 - 32		8 - 32
Dial gauge holder		mm	8H7	8H7	8H7	8H7
Travel distance of movable centre		mm	8	8	8	8
Distance between guide slot and clamping slot		mm	100	100	100	100
Height with stand		mm	320	320	520	520
Weight		kg	35	35	38	38

*P = with V-block

Dial gauges are not included.

Accessories for run-out testers with height of centres 100 mm height of centres 150 mm

V-block inserts PE 002-102
For checking non-centred parts and long parts for installation. V-block inserts are put into the tailstocks instead of centres.

Model		PE 002-102
Contact area in V-block	mm	d = 8 - 45
V-block angle		90 °
Height of centres at d = 10 mm	mm	130
Weight	kg/pair	approx. 1.0

Centring points – hollow centres

002-106
with centring hole DIN 332-A1, 6 x 3.8

Centring points 002-107
60° carbide tipped
Shank of centring points: dia. 22 mm

Live centring points 002-106 M
60°, dia. max = 15 mm
Centre distances reduced by 90 mm

We will be glad to manufacture centring points according to your specifications.

Tailstock pairs

Model		RST 100	RST 100 P*	RST 150	RST 150 P*
Height of centres	mm	100	100	150	150
Width of T-slot block	mm	12h6	12h6	12h6	12h6
Contact area in V-block	mm		8 - 32		8 - 32
Work-holding surface LxW	mm	90 x 80	95 x 85	90 x 80	95 x 85
Travel distance of movable centre	mm	8	8	8	8
Degree of accuracy		1	1	1	1
Weight/pair	kg	approx. 9	approx. 9	approx. 12	approx. 12

*P = with V-block

Tailstocks with sleeve movement either by hand wheel or pneumatic cylinder
In the models with a pneumatic cylinder the forward and return speed of the sleeve can be set using speed regulation valves, which are fitted as standard.

RST 100 H
RST 150 H

RST 100 RP
RST 150 RP

Model		RST 100 RH	RST 100 RP	RST 150 RH	RST 150 RP
Height of centres	mm	100	100	150	150
Width of T-slot block	mm	12h6	12h6	12h6	12h6
Work-holding surface LxW	mm	90 x 80	95 x 85	90 x 80	95 x 85
Travel distance of movable centre	mm	20	20	20	20
Degree of accuracy		1	1	1	1
Hand wheel		•		•	
Pneumatic cylinder			•		•
Weight/pair	kg	approx. 9	approx. 9	approx. 12	approx. 12

Subject to technical modifications

Vertically adjustable Roller blocks or V-blocks

To compensate for different diameters of the test specimen, a gauge block with thickness h can be placed under the vertically adjustable support on the left. The thickness h is calculated as follows:
h = h1 – h2

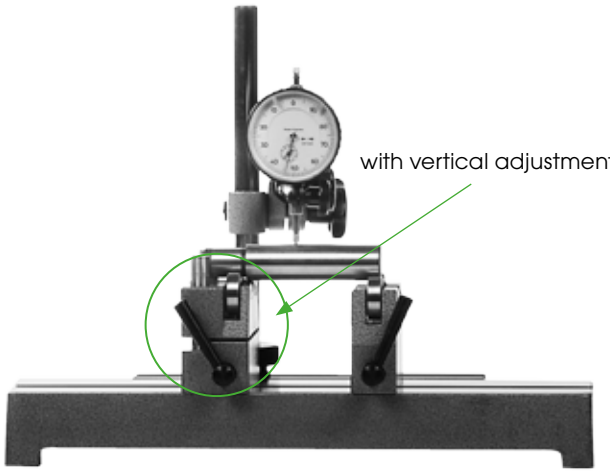
V-blocks:

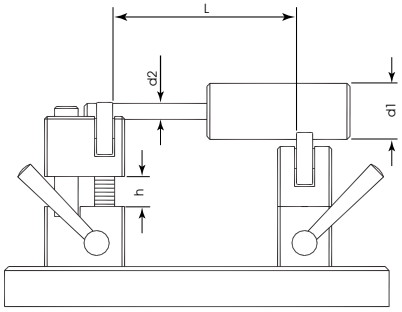
h1 = d1 / 1.4142
h2 = d2 / 1.4142

Roller blocks

$$h1 = \sqrt{(17.5 + \frac{d1}{2})^2 - 175.5625}$$

$$h2 = \sqrt{(17.5 + \frac{d2}{2})^2 - 175.5625}$$

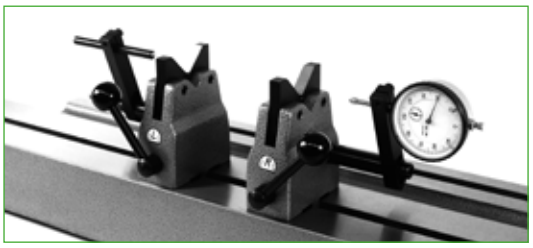




V-blocks and Roller blocks are always supplied in pairs.

		V-blocks	Roller blocks	Roller blocks
Model		**PB 002-103**	**AB 002-104**	**AB 002-114**
Vertically adjustable				•
Contact area in V-block	mm	dia. = 8 - 50	dia. = 2 - 60	dia. = 2 - 65
V-block angle		90 °		
V-block width	mm	10		
Wheel width	mm		8	8
Height of centres at d = 10 mm	mm	93	91.5	99
Minimum spacing L	mm	30	32	22
Width of T-slot block	mm	12h6	12h6	12h6
Weight	kg/pair	approx. 4.0	approx. 4.0	approx. 5.7

End stop and dial gauge holder for V-blocks and roller blocks

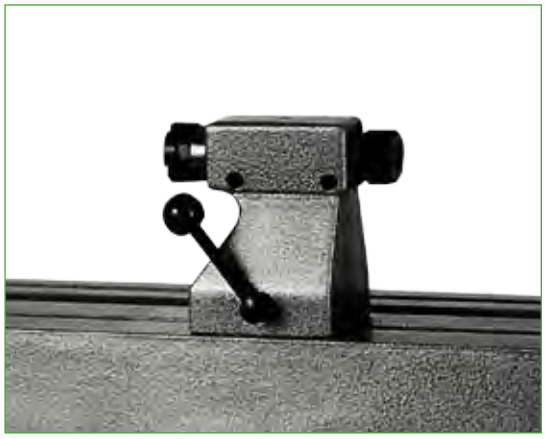


End stop		**AS 002-103**
Diameter	mm	8
Dial gauge holder		**MU 002-103**
Mounting hole	mm	8H7

The end stop can be used to hold the test specimen in an axial position.

Dial gauges are not included.

Accessories for run-out testers with height of centres 100 mm height of centres 150 mm



The tailstock with rotating collet attachment is used in place of the left tailstock with fixed centre.

Type F 14 and F 20 collets can be used, depending on the model. Collets are not included.

The tolerance of the collet must be added to the stated run-out accuracy of the tailstock. See the table on page 3 for details.

Model		RST 100 D	RST 100D-16
Height of centres	mm	100	100
Width of T-slot block	mm	12h6	12h6
Work-holding surface LxW	mm	90 x 80	95 x 85
Collet type	mm	F14	F20
for collet range	mm	1 - 10	1 - 16
Run-out accuracy without collet	mm	0.005	0.005
Weight	kg	approx. 4	approx. 4

Dial gauge stand

Additional dial gauge stands can be used to set up further measuring points on run-out testers. The dial gauge stands have a universal swivel head and a fine adjustment.

Model		MS 002-105
Height	mm	230
Column dia.	mm	22
Measuring range	mm	200
Dial gauge holder	mm	8H7
Fine adjustment		•
Weight	kg	approx. 1.5

Run-out testers with a granite base plate
Height of centres 200 mm

The work-holding table of the run-out tester is made of dark granite that is free of defects. Flatness as per DIN 876/1. A matte chrome-plated T-slot is recessed into the granite. The granite base plate is mounted on three vertically adjustable feet with ball bearing inserts.

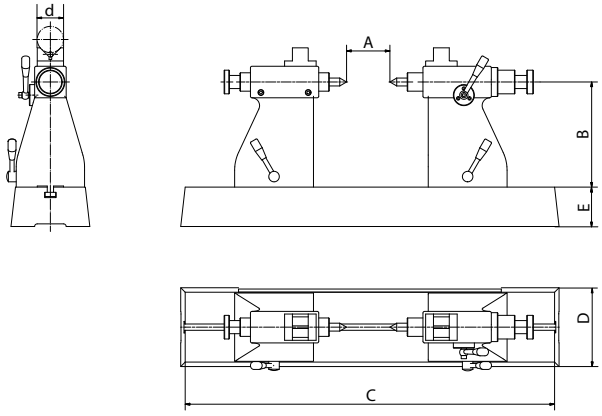
Tailstocks are made of high-quality cast iron mounted on bearings. The contact surfaces are precision-ground. The centre of the right tailstock can be pulled back with a lever. This permits easy insertion and removal of the test specimen. The centre returns to its position by spring force.

The standard centres of the tailstocks can be replaced by hollow centres, top-mounted V-blocks or carbide centres.

Dial gauge stands are mounted on the T-slot guide.

RP 200-650P

The picture shows the run-out tester with tailstock pair RST 200 P.
The basic version RP 200-650 comes without top-mounted V-blocks.



Model			RP 200-650	RP 200-650P
maximum centre distance	A	mm	650	650
Height of centres	B	mm	200*	200*
Dimensions of granite base plate	CxDxE	mm	1100 x 180 x 140*	1100 x 180 x 140*
Flatness of base plate			DIN 876/1*	DIN 876/1
Degree of accuracy			1	1
T-slot width		mm	14H7	14H7
Straightness of T-slot guide		µm/m	10	10
Work-holding surface of tailstock		mm	130 x 150	130 x 150
Sleeve holder			MK 2	MK 2
Contact area in V-block		mm		d = 10 - 50
Dial gauge holder		mm	8H7	8H7
Travel distance of movable centre		mm	20	20
Height with stand		mm	650	650
Weight		kg	approx. 115	approx. 116

* Other dimensions and accuracies can be supplied at short notice.

Dial gauges are not included.

Accessories for run-out testers with height of centres 200 mm

Tailstock pair RST 200P
Top-mounted V-blocks allow testing of non-centred or long parts.

RST 200P

Tailstock pair RST 200RH
The sleeve of the left tailstock is fixed, and the right sleeve is moved back and forth using the hand wheel.

RST 200RH

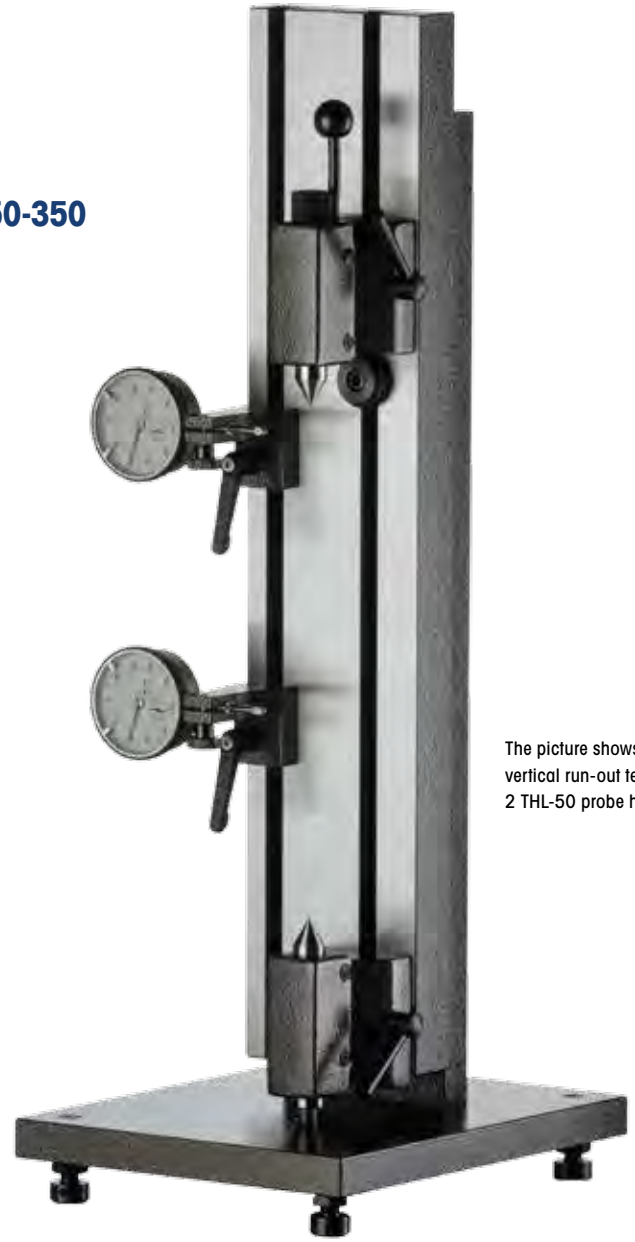
Tailstock pair RST 200RP
The right sleeve is moved back and forth using a double-acting pneumatic cylinder. The forward and return speed of the sleeve can be set using speed regulation valves, which are fitted as standard.

RST 200RP

Model		RST 200P	RST 200RH	RST 200RP
Height of centres	mm	200	200	200
Width of T-slot block	mm	14h6	14h6	14h6
Contact area in V-block	mm	10 - 50	10 - 50	10 - 50
Work-holding surface LxW	mm	130 x 150	130 x 150	130 x 150
Sleeve holder		MK 2	MK 2	MK 2
Travel distance of movable centre	mm	20	20	20
Contact area in V-block	mm	d = 10 - 50	d = 10 - 50	d = 10 - 50
Degree of accuracy		1	1	1
Standard		•		
Hand wheel			•	
Pneumatic				•
Weight/pair	kg	approx. 30	approx. 30	approx. 30

Vertical run-out testers
Height of centres 50 mm
Height of centres 75 mm

RPV 50-350



The picture shows the RPV 50-350 vertical run-out tester equipped with 2 THL-50 probe holders.

Model		RPV 50-350	RPV 75-350P
maximum centre distance	mm	350	350
Height of centres	mm	50	75
Dimensions of base plate	mm	530 x 105	530 x 105
Flatness of base plate		DIN 876/1	DIN 876/1
Degree of accuracy		1	1
T-slot width	mm	10H7	10H7
Contact area in V-block	mm		5 - 20
Dial gauge holder	mm	8H7	8H7
Travel distance of movable centre	mm	8	8
Distance between guide slot and clamping slot	mm	58	58
Total height	mm	580	580
Weight	kg	approx. 30.5	approx. 31.5

Dial gauges are not included.

Accessories for vertical run-out testers with height of centres 50 mm height of centres 75 mm

Tailstock pairs

RST 50

RST 75P with V-block support

Model		RST 50	RST 75P
Height of centres	mm	50	75
Width of T-slot block	mm	10h6	10h6
Contact area in V-block	mm		5 - 20
Work-holding surface LxW	mm	70 x 55	70 x 55
Travel distance of movable centre	mm	8	8
Degree of accuracy		1	1
Weight/pair	kg	approx. 2.5	approx. 3.5

Centring points – hollow centres 004-56
with centring hole DIN 332-A1, 6 x 3.8

Centring points 004-57
60° carbide tipped
Shank of centring points: dia. 16 mm

We will be glad to manufacture centring points according to your specifications.

Probe holder

Model		THL-50
Height of centres fixed	mm	50
Dial gauge holder	mm	8H7
for T-slot	mm	10H7

The probe holder allows the dial gauge to be locked in a horizontal position.

Run-out tester with rotating collet
Run-out tester with collet attachment

RP 001-75D-10

The **MFH** measuring probe holder can be inserted into the dial gauge holder of the RP 001-75D-10 run-out tester for measuring interior diameters.

RP 006

RP 006 run-out tester with F10 collet attachment and sliding 8H7 dial gauge holder.

The collet attachment does not rotate.

Model		RP 001-75D-10	RP 006
Height of centres	mm	75	
Dimensions of base plate	mm	200 x 110	
Flatness of base plate		DIN 876/1	
Degree of accuracy		1	
T-slot width	mm	10H7	
Dial gauge holder	mm	8H7	8H7
Collet type		F 14	F 10
for collet range	mm	0.5 - 10	0.5 - 7
Run-out accuracy without collet	µm	5	
Weight	kg	5.6	1.8

The tolerance of the collet must be added to the stated run-out accuracy of the tailstock.
See the table on page 3 for details.

Dial gauges are not included.

Straightening fixture for hand lever presses

Run-out testing and straightening.

BENZING hand lever presses are ideal for reworking your parts.
Ask for our press brochure or download it at www.horst-benzing.de.

Ideal for parts up to 10 mm dia. Please note that the required straightening force also depends on the length of the workpiece.

Manual toggle press with fixture for straightening

Measuring probe TRT 200

Straightening punch RSt-H

Straightening blocks RB 1/200 equipped with straightening plates RP 1-W

Straightening blocks and straightening plates are supplied only in pairs.

Straightening table RT 1/200

Pair of straightening plates RP 1-W

Model			RT 1/200	RB 1/200	RP 1-W	RSt-H
Dimensions	AxB	mm	400 x 80	55 x 25		
Height		mm	60	60		
Size of straightening block		mm		35 x 30 x 10	35 x 30 x 10	
T-slot		mm	10	10		
Spigot		mm				10h8
Weight		kg	approx. 7.5	approx. 1		

Model		TRT 200
Dial gauge holder	mm	8H7
Measuring range	mm	5
Weight	kg	approx. 0.5

Subject to technical modifications

Taper measuring instrument Height of centres 50 mm height of centres 75 mm

The taper measuring instrument KMG 1 consists of a movable slide mounted without play on precision ball guides and an inclinable sine bar. The slide can be locked in any position on the x axis.

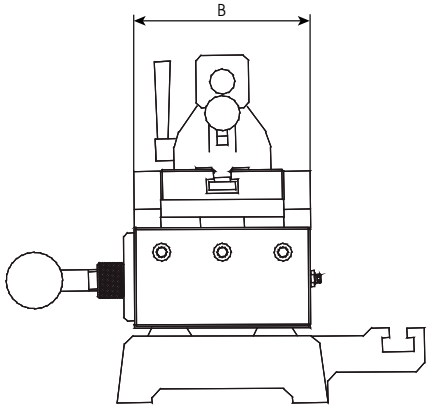
Measurements with the KMG 1 are based on the sine bar principle. The setting height S for the sine table is calculated as follows:

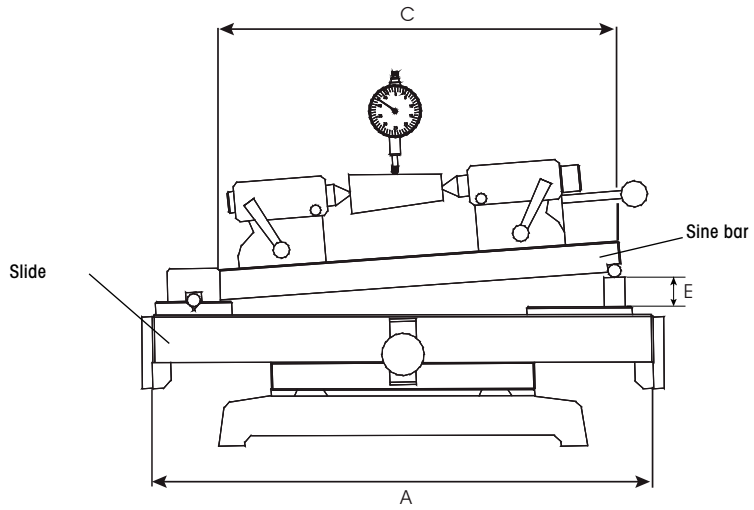
Setting height S = 320 mm x sin α
A gauge block is placed on the sine table of the device to set the calculated setting height S.

The dial gauge should have a flat probe so that it is able to find the highest point of the cone being measured.

Tailstocks are not included and must be ordered separately.

Taper measuring instrument with Tailstock pair RST 50





Model			KMG 1
maximum centre distance with RST 50		mm	200
with RST 75		mm	200
Table dimensions	AxB	mm	400 x 100
Height of table		mm	85
Table travel		mm	150
Sine table dimensions	CxD	mm	330 x 70
Flatness of sine table			DIN 876/1
Degree of accuracy			1
T-slot width		mm	10H7
Dial gauge holder		mm	8H7
Height with stand		mm	260
Weight		kg	approx. 24

Dial gauges are not included.

Accessories for taper measuring device with height of centres 50 mm height of centres 75 mm

Centring points – hollow centres 004-56
with centring hole DIN 332-A1, 6 x 3.8

Centring points 004-57
60° carbide tipped
Shank of centring points: dia. 16 mm

We will be glad to manufacture centring points according to your specifications.

Tailstock pairs

RST 50

RST 75 P

Model		RST 50	RST 75 P
Height of centres	mm	50	75
Width of T-slot block	mm	10h6	10h6
Contact area in V-block	mm		5 - 20
Work-holding surface LxW	mm	70 x 55	70 x 55
Travel distance of movable centre	mm	8	8
Degree of accuracy		1	1
Weight/pair	kg	approx. 2.5	approx. 3.5

Tolerances

Flatness of measuring table plates – work-holding tables.
All of the measuring table plates listed are lapped. Plates designated as "ground" are precision-ground.

Model	Measuring table dimensions mm	Material	Precision as per DIN 876	Tolerance µm
MT 25	dia. 25	Steel	0	4.08
MT 50	dia. 50	Steel	0	4.4
MT 50 K	dia. 50.	Ceramic	Factory standard	2.0
MT 100	60 x 70	Steel	0	4.27
MT 100 ground	60 x 70	Steel	Factory standard	7.0
MT 100 bK	65 x 75	Ceramic	Factory standard	2.0
MT 100 K	65 x 75	Ceramic	Factory standard	2.0
MT 120-3	38 x 80	Steel	0	4.14
MT 130	98 x 115	Steel	0	4.46
MT 130 bK	100 x 115	Ceramic	0	2.0
MT 130 K	100 x 115	Ceramic	0	2.0
MT 150 U-1	dia. 115	Steel	0	4.46
MT 150 U-2	98 x 115	Steel	0	4.46
MT 150 U-2K	100 x 115	Ceramic	0	2.0
MT 150 U-3	40 x 100	Steel	0	4.32
MT 160	170 x 215	Steel	0	4.86
MT 160 ground	170 x 215	Steel	Factory standard	16.0
MT 170	150 x 200	Granite	00	5.04
MT 171	150 x 200	Granite	00	5.04
MT 172	150 x 200	Granite	00	5.04
MT 180	98 x 180	Steel	0	4.74
MT 180 ground	98 x 180	Steel	Factory standard	10.0
MT 300	300 x 500	Granite	00	5.4
RP 50-200	AT 200	Cast iron	1	12.0
RP 50-350	AT 350	Cast iron	1	13.5
RP 75-200	AT 200	Cast iron	1	12.0
RP 75-350	AT 350	Cast iron	1	13.5
RP 100	AT 700	Cast iron	1	17.5
RP 150	AT 700	Cast iron	1	17.5
RP 200	AT 1100	Granite	1	21.0

Run-out accuracy tolerances of collets.
The run-out accuracy is measured using a measuring pin at a distance L from the collet.

Holes from	to	L	Standard collet µm	Ultra-precision collet µm
0.5	1.0	3	10	5
1.1	1.6	6	10	5
1.7	3.0	10	15	8
3.1	6.0	16	15	8
6.1	10.0	25	15	8
10.1	16.0	40	20	10