

Workpiece Measurement

Infrared Transmission

shark360 Technology

Wear-Free Measuring System

Single & Mass Production

Axes Compensation

Operating instructions

English

Type

TC50 | **TC**51 | **TC**52
TC53-10 | **TC**53-30 | **TC**54-10

BLUM
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Original operating instructions

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1. Introduction

Please read and observe the notes included in these instructions.
Subject to technical change without any notice.

1.1 Keys

CAUTION!

signifies a danger, which may cause injuries, if it is not avoided.

NOTICE

signifies measures to avoid material damages.


Advice for secondary literature


Additional advice


Don’t use compressed air for this step.

The CE-label confirms, that the product as described complies with the product-specific European regulations.

GN Green RD Red BU Blue OG Orange VT Violet WH White

GN LED shines GN LED flashes

BTH Blum tool holder

LF Low Force

M_d tightening torque

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2. Safety

⚠ CAUTION!

Damage of the measuring system due to operating error is possible.

- Handle the measuring system like a precision tool.
- Keep the measuring system clean.
- Mount the measuring system in assigned tool holders only.
- Limit the measuring block over travel by programming, see chapter 5..
- Read and observe all notes of the machine tool manufacturer. Do not disable safety interlockings.

NOTICE

Damage of the measuring system by a short circuit is possible

Aggressive liquids may destroy seals.

- Do not operate the measuring system in a working environment with aggressive coolants! Coolants must not contain aggressive contents, that can damage plastics or rubber parts (e.g.: acetone, alcohol, ethanol, methanol, cleaning benzine, solvents, ...).
- Coolants may not exceed a ph-level of 9.5.
- Please contact us if you have any questions! We also have solutions for special applications.

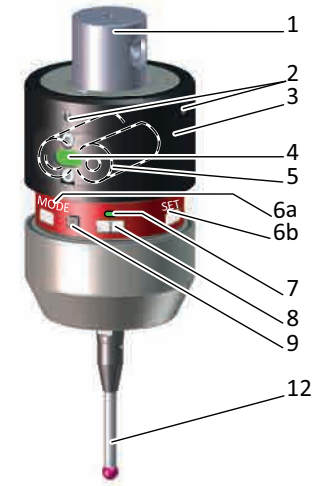
3. System overview

3.1 Overview TC series

TC50	TC51	TC52	TC53-10/TC76	TC53-30/TC76	TC54-10	
●	●	●	●	●	●	Workpiece Measurement
					●	Tool Measurement
●	●	●	●	●	●	Infrared Transmission
			●	●	●	shark360 Technology
●		●				Multidirectional
			●	●		Modular System
●	●	●	●	●	●	Wear-free Measuring Mechanism
●	●	●	●	●	●	Single & Mass Production
	●		●	●	●	Pulling Measurement
●	●	●	●	●	●	Axes Compensation
●		●				Contour Measurement
					●	Tool Length Measurement
					●	Tool Radius Measurement
					●	Tool Breakage Detection

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3.2 Description





(1) Tool holder BTH
(2) Centring screws
(3) Battery compartment
(4) Colour coding
(5) Battery
(6a) Hall sensor MODE
(6b) Hall sensor SET
(7) LED Status (3 x 120° = 360°)
(8) Transmitter diode
TC50/51/53-30: 6x60° = 360° (12x)
TC52/53-10/54-10: 6x60° = 360°
(9) Receiver diode
3x120° = 360°
(12) Stylus

3.3 Display elements

Colour	LED (7)
	Standby
GN GN GN GN	Stylus initial position
RD RD RD RD	Stylus deflected
GN BU GN BU	Stylus initial position - battery low
RD BU RD BU	Stylus deflected - battery low
RD	Battery empty

Tab. 3-1

3.4 Dimensions

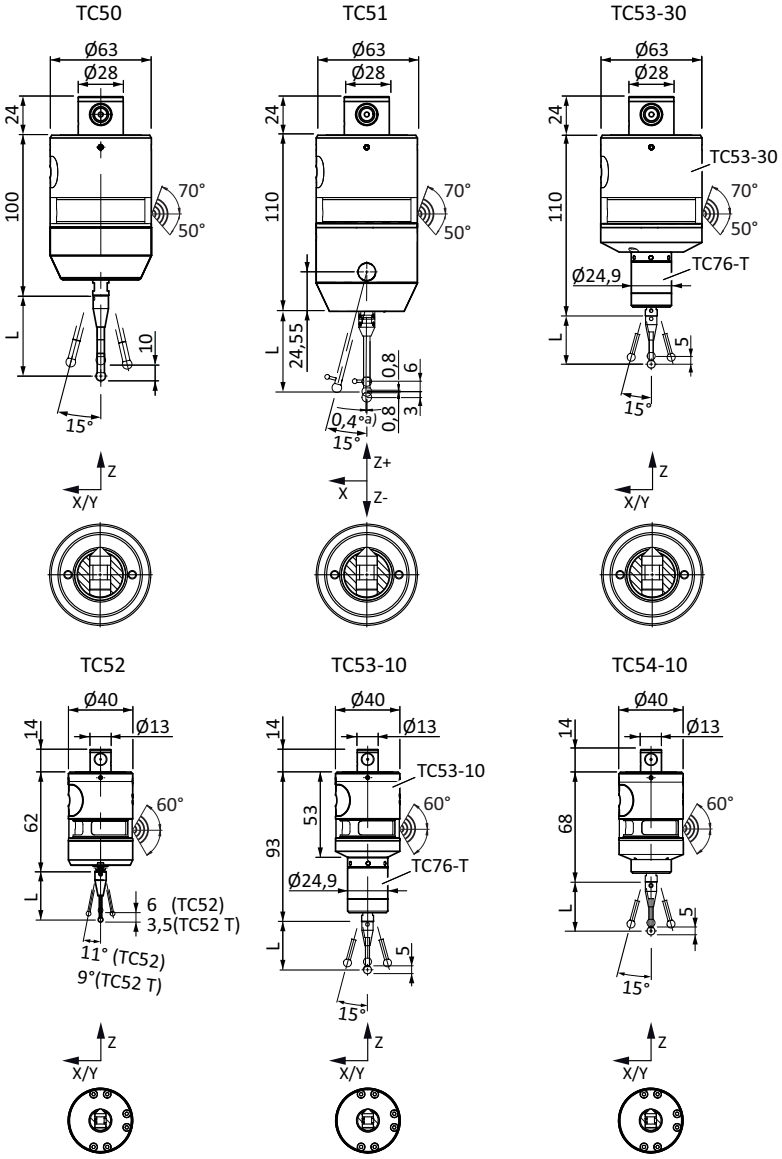


Fig. 3-1

[a] Trigger point TC51: see data sheet

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3.5 Technical data

	TC50	TC51	TC53-30/ TC76-T
Approach direction	± X, ± Y, -Z	XY[a], -Z, +Z	± X, ± Y, ±Z[b]
Measuring force • direction X/Y:	see Tab. 3-5 ... Tab. 3-7		
Measuring force • direction Z:	7.0 N	4.0 N	5.9 N 2.0 N
Max. deflection • direction X/Y (see Tab. 3-4):	± 15°	15° [a]	± 15°
• direction Z:	10 mm	-Z: 6 mm +Z: 3 mm	5 mm
Max. acceleration	50 m/s^2	100 m/s^2	50 m/s^2[c]
Repeatability[d]	0.3 µm 2σ	0.3 µm 2σ	0.4 µm 2σ
Max. probing speed	3 m/min	5 m/min	2 m/min
Mass	925 g	920 g	710 g (TC53-30)
Protection class	IP68		
Signal transmission	Infrared		
Transmitter range	-50° ... +70° in Z, 360° in X/Y		
Battery (2 pieces)	Saft Lithium LS14500 (AA, 3.6 V) 2600 mAh		
Tool holder HSK-SK-BT	BTH 50		
Storage temperature	-20 °C ... +70 °C		
Operating temperature	+5 °C ... +50 °C		

[a] via spindle indexing

[b] see chapter 4.5

[c] with accessories (e.g. extension, angle): max. acceleration 10 m/s^2

[d] Stylus L=50 mm

Tab. 3-2

	TC52	TC53-10 TC76-T	TC54-10
Approach direction	± X, ± Y, -Z	± X, ± Y, ±Z[a]	± X, ± Y, ±Z[a]
Measuring force • direction X/Y:	see Tab. 3-5 ... Tab. 3-7		
Measuring force • direction Z:	5,7 N 1.6 N 10 N (TC52 T)	5,9 N 2.0 N	5,9 N 2.0 N 10.6 N (TC54-10)
Max. deflection • direction X/Y (see Tab. 3-4):	± 11° ± 9° (TC52 T)	15°	± 15°
• direction Z:	6 mm 3.5 mm (TC52 T)	5 mm	5 mm
Max. acceleration	50 m/s^2 200 m/s^2 (TC52 T)	50 m/s^2 [b]	50 m/s^2 200 m/s^2 (TC54-10 T)
Repeatability[c]	0.3 µm 2σ (Standard) Z: 0.2 µm 2σ (LF) XY: 0.3 µm 2σ (LF)	0.4 µm 2σ	0.4 µm 2σ
Max. probing speed	2 m/min	2 m/min	2 m/min
Mass	250 g	225 g (TC53-10)	230 g
Protection class	IP68		
Signal transmission	Infrared		
Transmitter range	±60° in Z, 360° in X/Y		
Battery (2 pieces)	Saft Lithium LS14250 (½ AA, 3.6 V) 1200 mAh		
Tool holder HSK-SK-BT	BTH 25		
Storage temperature	-20 °C ... +70 °C		
Operating temperature	+5 °C ... +50 °C		

[a] see chapter 4.5

[b] with accessories (e.g. extension, angle): max. acceleration 10 m/s^2

[c] Stylus L=30 mm

Tab. 3-3

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Stylus length [mm]	Max. deflection X/Y [mm]				
	TC50	TC51	TC52 TC52 LF	TC52 T	TC53-10/TC76 TC53-30/TC76 TC54-10 TC54-10 T
30	14	14	7	6	12
50	19	19	11	9	17
75	26	26	16	13	24
100	32	32	20	17	30
150	44	45			
200	57	58			

Tab. 3-4 Max. deflection X/Y

Stylus length [mm]	Measuring force X/Y [N]			
	TC50	TC51	TC52	TC53-10/TC76 TC53-30/TC76 TC54-10
30	2.0	1.5	2.3	1.3
50	2.0	1.5	1.5	0.9
75	2.0	1.5	1.1	0.7
100	1.4	1.2	0.8	0.5
150	1.0	0.9		
200	0.8	0.7		

Tab. 3-5 Measuring force X/Y

Stylus length [mm]	Measuring force X/Y - T [N]	
	TC52 T	TC53-10/TC76-TT TC53-30/TC76-TT TC54-10 T
30	4.1	2.3
50	2.7	1.6
75	1.9	1.15
100	1.5	0.9

Tab. 3-6 Measuring force X/Y - T (robust design for lathes applications)

Stylus length [mm]	Measuring force X/Y - LF [N]	
	TC52 LF	TC53-10/TC76-LF TC53-30/TC76-LF TC54-10 LF
30	0.65	0.4
50	0.44	0.3
75	0.31	0.2
100	0.24	0.17

Tab. 3-7 Measuring force X/Y - LF (Low Force)

3.6 Complete system



Fig. 3-2

IC56 / IC57:

- Switch ON/OFF via IR flash
- Signal transmission for TC series
- Touch probe TC and tool setting probe IR can alternatively be programmed to TC or DUO.

Installation instructions IC56
Installation instructions IF59

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4. Mounting and commissioning

NOTICE

Damages caused by improper installation/dismounting

- ▶ Use original replacement parts only as well as the provided special tools.
- ▶ Pay attention to the correct orientation of the interlocking disk (inscription pointing to the stylus).
- ▶ Consider the maximum tightening torque.

4.1 Insert / change battery

TC50, TC51, TC53-30

Recommended battery Type:

Type	Saft Lithium LS14500 (AA, 3.6 V)
mAh	2600
Contin. operation	approx. 254 h
5% Use	approx. 207 days
Standby	approx. 2 years
Order number	170407

Tab. 4-1

Further recommendations:

Type AA 3.6 V	**mAh**
Xeno XL-060F	2400
Vitzrocell SB-AA11	2500
Tadiran SL-360	2400

Tab. 4-2

TC52, TC53-10, TC54-10

Recommended battery Type:

Type	Saft Lithium LS14250 (½ AA, 3.6 V)
mAh	1200
Contin. operation	approx. 169 h
5% Use	approx. 138 days
Standby	approx. 2 years
Order number	170406

Tab. 4-3

Further recommendations:

Type ½ AA, 3.6 V	mAh
Tadiran TL-4902	1200
Xeno XL-050F	1200
OmniCell ER-14250	1200
Vitzrocell SB-AA02	1200

Tab. 4-4

Dispose batteries according to legal regulations.

NOTICE

Damage to the measuring system by faulty operation possible.

- Check the correct position of the gasket inside the battery compartment.
- Keep the battery compartment absolutely clean and dry.
- Slightly grease sealing face of the lid before inserting it.

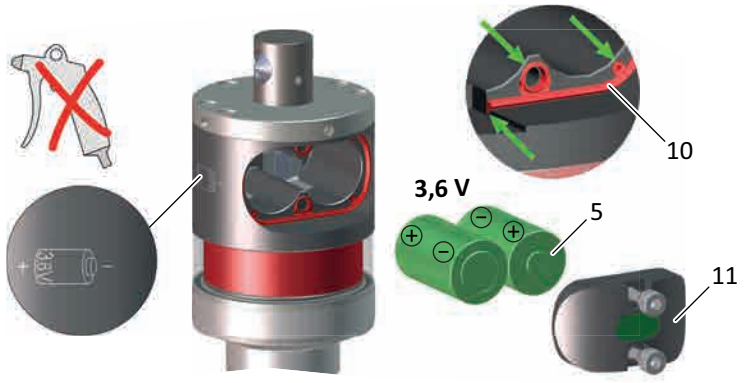


Fig. 4-1

(5) Battery
(10) Gasket
(11) Battery compartment lid

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1. Clean the measuring system carefully.
2. Untighten the screws at the battery compartment lid.
3. Pull back both screws and remove the battery compartment lid.
4. Remove the batteries.
5. Clean and dry the battery compartment carefully with absorbent paper.
6. Put in new batteries. Please consider the polarity of the batteries.
7. Please control if the gasket is inserted professionally:

⇨ *small, evenly space between sealing lip and wall*

8. Put in the battery compartment lid precisely and mount it (M_d = 0.7 Nm). Thereby, please check the O-rings and grease it, if necessary.
9. Basic adjustments are displayed automatically, see chapter 4.6.

4.2 Mounting of the tool holder

NOTICE

Destruction of the measuring system by rotation possible.

- The measuring system should not be twisted when mounting the tool holder.
- The clamping screw (A) must be aligned with the centring screws.

NOTICE

Damage to the spindle by coolant possible.

- Please use the coolant pipe for HSK tool holders for machine tools with internal coolant supply.

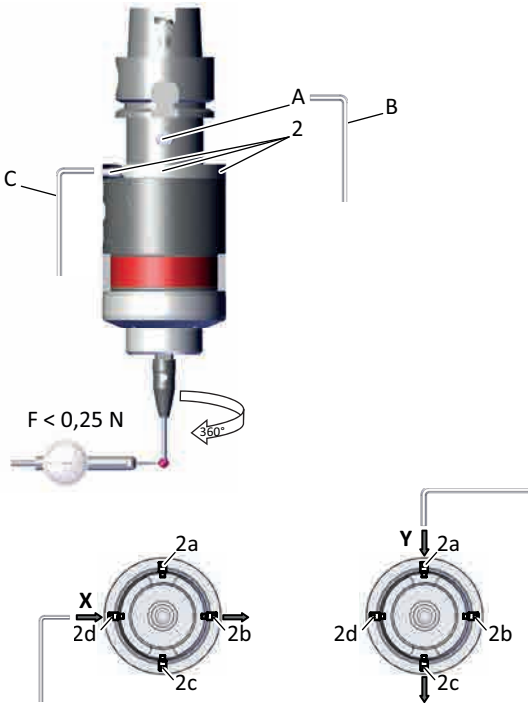


Fig. 4-2

(2) Centring screws
(A) Clamping screw
(B) Allen key
BTH 50: 6.0 mm, M_d < 20 Nm
BTH 25: 3.0 mm, M_d < 4 Nm
(C) Allen key
BTH 50: 2.0 mm, M_d < 2 Nm
BTH 25: 1.5 mm, M_d < 2 Nm

 © by Blum-Novotest

1. Insert the measuring system into the tool holder (system BTH).
2. Tighten the clamping screw just slightly.

☞ Adjustment of the run-out at TC51 with optical presetter!

3. Insert the probe into the spindle (TC50, TC52, TC53-10, TC53-30, TC54-10 only).
4. Set the dial gauge on the stylus.
5. Rotate the probe by 360°.
6. Adjust the concentricity (4 hexagon socket screws 2 mm):

   e.g. X-direction:

   Release the centring screws (2a) and (2c) just slightly.

   Adjust the concentricity by alternate release and tightening of the centring screws (2a) and (2c).

   Y-direction:

   Release the centring screws (2b) and (2d) just slightly.

   Adjust the concentricity by alternate release and tightening of the centring screws (2a) and (2c).

   Concentricity deviation:
   TC50, TC52, TC53-10, TC53-30, TC54-10: < 10 µm
   TC51: < 100 µm

⇨ *All centring screws are tightened.*

7. Tighten the clamping screw.

   The concentricity adjustment is now fixed.
8. Check the concentricity.
9. Carry out a calibration cycle.

4.3 Mounting of the TC76-T

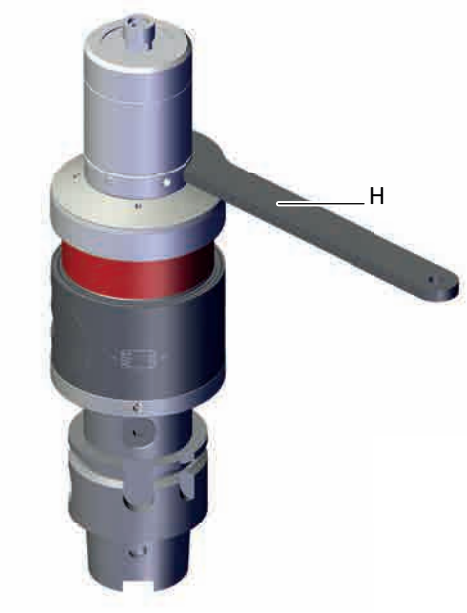


Fig. 4-3

(H) Hook wrench
M_d = 10 Nm

Mounting of the extension / angle: see referring data sheet

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4.4 Mounting / changing of the stylus

TC50, TC51, TC52:

NOTICE

Damage to the measuring system by improper mounting possible.

- The measuring element may not be deflected during mounting.
- When mounting please always use the provided tools.

TC53-10, TC53-30, TC54-10:

NOTICE

Damage to the measuring system by improper mounting possible.

- The measuring element may not be deflected during mounting.
- When mounting please always use the interlocking disk.
- The interlocking disk must fit backlash free.
- Please ensure the correct orientation of the interlocking disk (inscription facing upwards).
- Remove the interlocking disk before measurement.
- Damaged parts are not reusable!

Calibrate the measuring system after mounting by the calibration cycle.

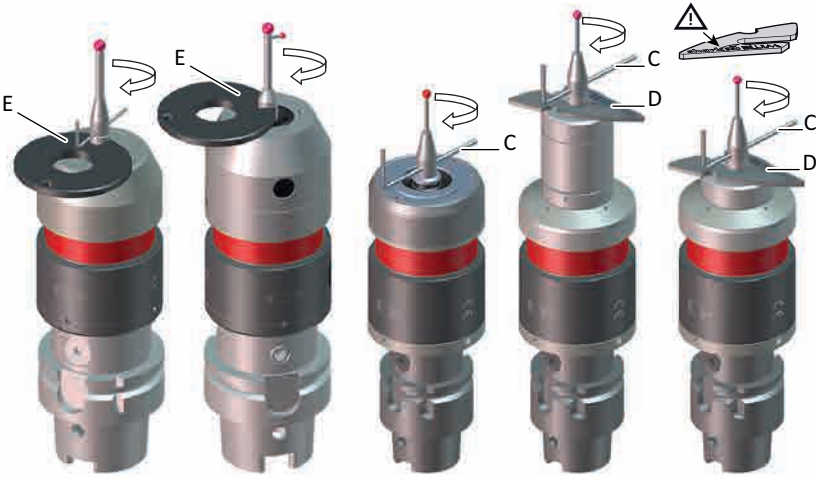


Fig. 4-4 TC50 | TC51 | TC52 | TC53-10 | TC54-10

(C) Allen key 1.5 mm
M_d = 1 Nm

(D) Interlocking disk

(E) Mounting tool

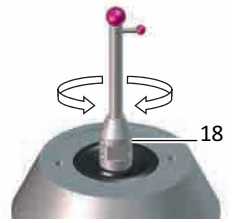


Fig. 4-5 TC51

(18) DIN EN ISO 4026 M3 x 3 (DIN 913)
M_d ~ 0.5 Nm

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4.5 Cranked styli

NOTICE

Damage of the measuring system due to misuse is possible.

▶ Pay attention to the area of operation and the maximum overtravel.

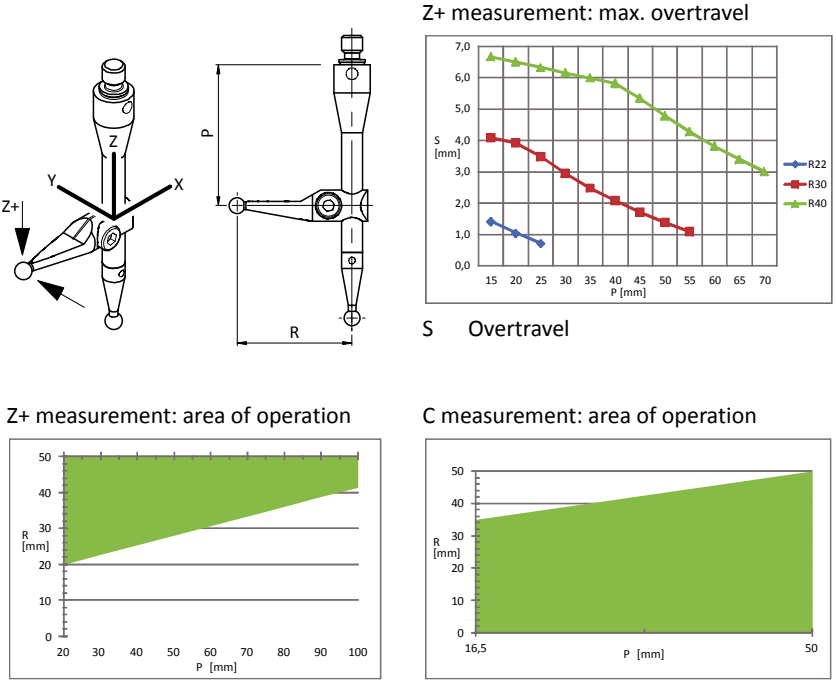


Fig. 4-6

4.6 Display of the basic adjustments

The measuring system can be configurated for different applications. After the batteries have been inserted, the display of the basic adjustments is started. The magnetic pin is not required.

1. Remove the batteries.
2. Insert the batteries after 30 sec. Observe the polarity of the batteries. Insert the battery compartment lid.

   The LED status (7) starts to flash. The basic adjustments are displayed (display phase).
3. After completing the display the measuring system goes into standby.

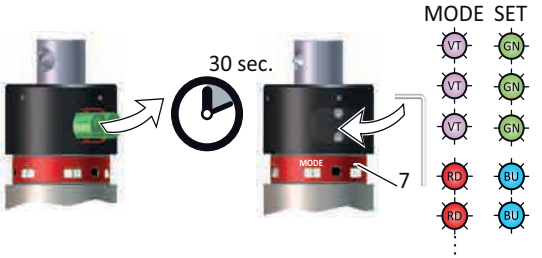


Fig. 4-7

(7) LED Status

If the LED Status (7) is flashing or shining red, please check the batteries, see chapter 7.

The basic adjustments can be specified on order.

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MODE		SET	
VT	**System**	RD	IC55
	(3 x MODE - SET)	GN	IC56[a] [b]
		OG	IC56-BLUM
		BU	Reserved
RD	**Transmission mode**	BU	TC[a]
	(3 x MODE - SET)	RD	Option R
		OG	DUO
		GN	Reserved
GN	**Switch-off**	RD	optical off (Flash)[a]
	(3 x MODE - SET)	GN	12 sec. timeout off
		BU	33 sec. timeout off
		OG	134 sec. timeout off
OG	**Transmission power**	BU	50 %
	(3 x MODE - SET)	GN	100 %[a]
		RD	200 %
BU	**Battery**	GN	O.K.
	(3 x MODE - SET)	RD	low

Standby

[a] Standard

[b] IC56/IC57 - IF59

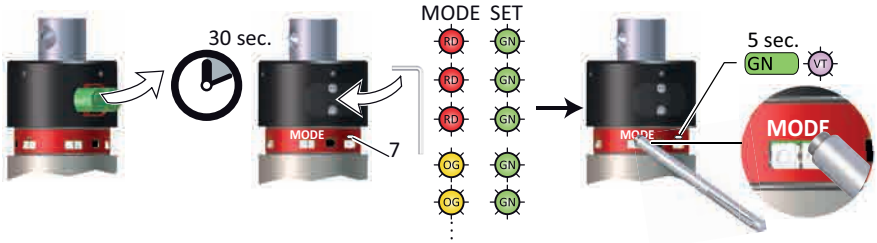
4.7 Programming of the basic adjustments

In this mode the basic adjustments can be changed.

The position of the elements on the transparent ring may differ, see chapter 3.2.

Magnetic pin

1. Remove the batteries.
2. Reinsert the batteries after 30 sec. Please pay attention to the polarity of the batteries. Insert the battery compartment lid.
   The LED Status (7) starts flashing. The basic adjustments are displayed (display phase).
3. Switch to the programming mode during the display phase:
   Hold the magnetic pin on MODE, until the LED status changes from green to violet.



4. Change adjustments (SET):
   Hold the magnetic pin on label SET.



5. Menu change (MODE):
   Hold the magnetic pin on label MODE. The LED Status flashes briefly, confirming the menu change.



(7) LED Status

6. After the last menu, the basic adjustments will be repeated (3 x MODE - SET). During the display phase, it can be changed back into the programming mode.

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MODE		SET		
VT	**System**	RD	IC55	
		GN	IC56[a]	
⇩		OG	IC56-BLUM[b]	
		BU	Reserved	
RD	**Transmission mode**	BU	TC	
		RD	Option R	
⇩		OG	DUO	
		GN	Reserved	
GN	**Switch-off**	RD	optical off (Flash)[c]	
		GN	12 sec. timeout off	
⇩		BU	33 sec. timeout off	
		OG	134 sec. timeout off	
OG	**Transmission power**	BU	50 %[d]	
		GN	100 %	
⇩		RD	200 %[e]	

Automatic display of the basic adjustments

⇩

Standby

[a] Setting for all measuring cycles with no automatic error analysis (OEM cycles)
Increased safety of data transmission due to redundancy

[b] Setting for Blum measuring cycles (automated repetition measurement due to error handling)
Condition: Signal Error connected to IF59 (X1)

[c] If the probe is not deflected for more than 5 minutes, it is additionally set to Standby. The "optical switch-off" switch-off method may not be set when the receiver is used in auto-flash mode.
See installation instructions IF59.

[d] – Reducing the transmission capacity extends the battery life.
- In case of short distance between probe and receiver
- In case of possible influence of other systems

[e] - Increasing the transmission capacity reduces the battery life.
- In case of larger distance between probe and receiver
- at heavy interfering IR surroundings

Not valid or reserved combinations will not be stored.

Check adjustments after programming and record them, see chapter 4.6.
Adapt colour code on the measuring system, see chapter 4.8.

4.8 System coding

The colour code is the connection between the programmed measuring system and the machine.

For customer-specific codes the white label can be marked.

NOTICE

Risk of collision due to lack of labelling possible.

- In order to avoid mistakes the measuring system and the machine must be coded.
- Please always use the transparent label to protect!

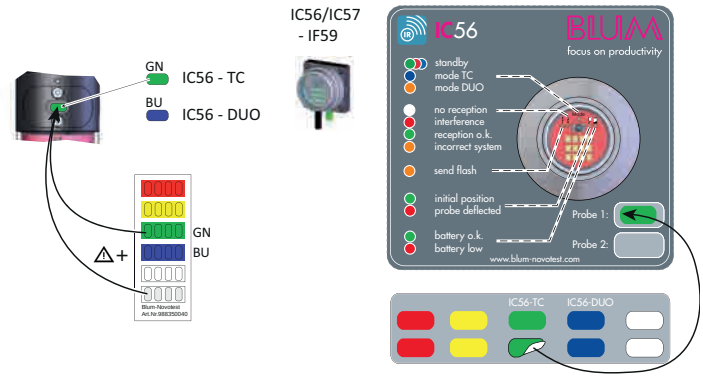


Fig. 4-8

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4.9 Switch-on probe (via receiver)

- Optical by e.g. M-Code
- Optical by autoflash mode
  Every second the receiver sends a signal (Flash), no control signal is needed.



Installation instructions IC56
Installation instructions IF59

5. Notes concerning measuring sequence

NOTICE

Measuring error is possible.

▶ Start measuring block only when interference-free transmission with receiver is guaranteed.
(signal level $\overline{\text{Error}}$ = High)



Installation instructions IC56
Installation instructions IF59

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6. Maintenance

- Keep the transparent ring clean.
- Check the bellows on damages and clean it regularly and carefully with a brush.

6.1 Cleaning of the transparent ring

NOTICE

Damage of the measuring system by a short circuit is possible

Aggressive liquids may destroy seals and damage transparent windows.

▶ Do not clean the measuring system by using aggressive detergents!
Detergents may not contain aggressive components, that can damage plastics or rubber parts (e.g.: acetone, alcohol, ethanol, methanol, cleaning benzine, solvents, ...).

▶ Detergents must have a ph-level of 5 ... 9.

▶ Please do not use any detergents containing abrasive substances (e.g.: cleansing milk or scouring powder)!

▶ Strictly do always use a soft, clean cloth to clean.

▶ Please contact us if you have any questions! We also have solutions for special applications.

6.2 Exchange of the external bellows

NOTICE

Pollution and damage to the measuring mechanism

▶ Only exchange the external bellows.

▶ The inner bellows may not be detached from its position.

▶ In case of damage to the inner bellows, please resend the probe for repair.

NOTICE

Pollution and damage to the measuring mechanism

The bellows of the following devices is allowed to be exchanged by Blum-Novotest only:

TC52, TC52 LF, TC52 T, TC54-10 LF, TC76 LF

▶ In case of damage to the bellows, please return the measuring system for repair.

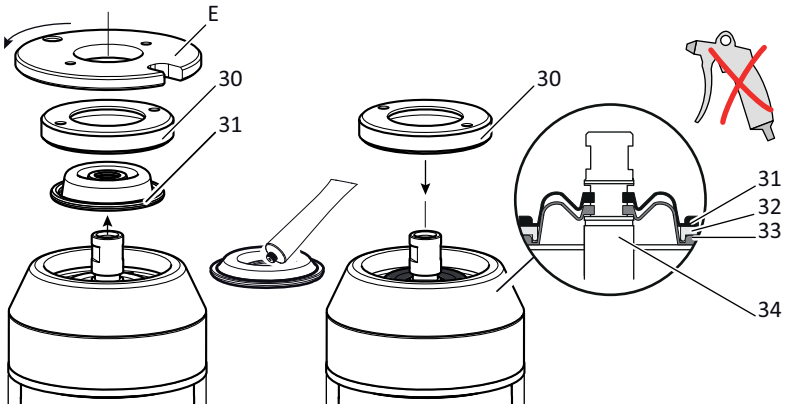


Fig. 6-1

(30) Front ring
(31) External bellows
(32) Centring ring
(33) Internal bellows
(34) Measuring mechanism
(E) Mounting tool

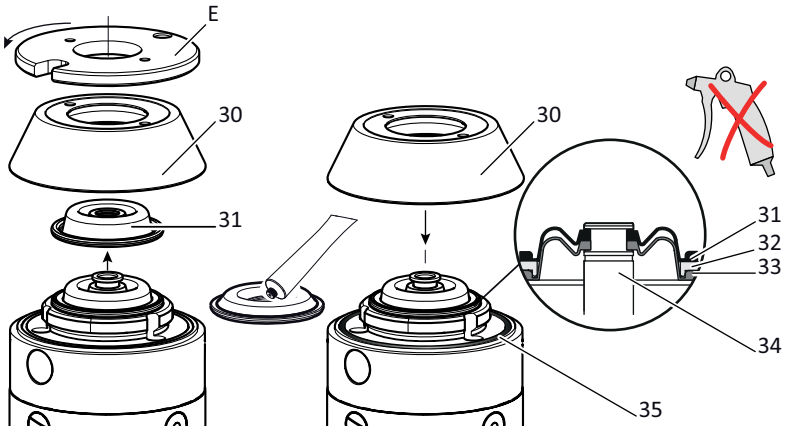


Fig. 6-2

(30) Front ring
(31) External bellows
(32) Centring ring
(33) Internal bellows
(34) Measuring mechanism
(35) O-ring
(E) Mounting tool

 © by Blum-Novotest

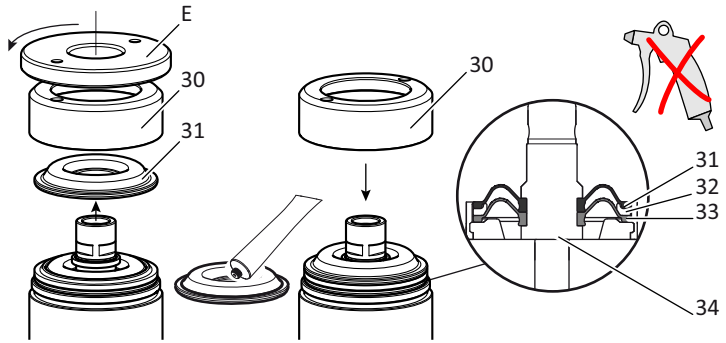


Fig. 6-3

(30) Front ring
(31) External bellows
(32) Centring ring
(33) Internal bellows
(34) Measuring mechanism
(E) Mounting tool

1. Clean the measuring system. Remove the stylus (see chapter 4.4). Therby, use the interlocking disk or the mounting tool.
2. Unscrew the front ring by using the mounting tool.
3. Carefully remove the outer bellows without twisting the measuring mechanism.
4. Grease slightly the new bellows at the contact surface to the groove.
5. Carefully mount the new bellows without twisting the measuring mechanism. Please take care of plane supporting surface of the bellows. The bellows must click to the groove on the measuring mechanism.

   TC51: Make sure the O-ring is in its correct position.
6. Mount the front ring by using the mounting tool.
7. Mount the stylus respectively the probe contact and the chip protection (see chapter 4.4). Therby, use the interlocking disk or the mounting tool.

7. Troubleshooting

Keys

Error	= Error message
	= Error description
	= Check the following points
	= Remedy / Workaround

Error	LED Status red
	LED Status shines red.
	Check batteries.
	Insert new batteries.

Error	LED Status undefined
	Undefined flashing or flickering of LED Status.
	Check batteries.
	Insert new batteries.

Error	LED Status after battery change
	LED Status changes from green to violet while inserting the batteries without actuating the measuring system. Or: LED Status flashes red. Control sends signal "deflected" without actuating the measuring system.
	No pressure compensation after transport by airfreight

 © by Blum-Novotest

Error	LED Status after battery change
	Provide pressure compensation: 1) Untighten the screws at the battery compartment lid. 2) Pull back both screws and remove the battery compartment lid. 3) Loosen the setscrew (at least with 2 revolutions). 4) Deflect stylus several times in Z-direction. Wait for approx.1 minute. 5) Then tighten the setscrew again. 6) Put in the battery compartment lid precisely and mount it (M_d = 0.7 Nm). Thereby, please check the O-rings and grease it, if necessary.



Fig. 7-1

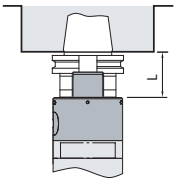
(40) Setscrew

Error	LED Status flashes green-blue resp. green-orange
	Probe system: LED Status flashes green-blue resp. green-orange. IR receiver: LED Receive IR off. Probe does not respond to M-Code (switch-on).
	Check wiring and switch-on command on the IF59: (IF59 X1: Pin 3, Pin 4, Pin 5) Check programming of the probe (Mode TC - Mode DUO)

8. Order numbers

Use original parts and accessories by Blum-Novotest only.

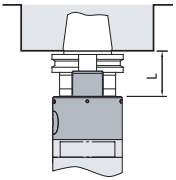
Tool holder BTH 50



Type	L[mm]	Order number
HSK-A 40	57	144376
HSK-A 50	63	144380
HSK-A 63	50	144383
HSK-A 80	55	144391
HSK-A 100	60	144372
HSK-E 40	57	144377
HSK-E 50	63	144381
HSK-E 63	50	144385
HSK-F 40	57	144378
HSK-F 63	70	144386
SK 30	56	144396
SK 40	46	144397
SK45	24	144399
SK 50	24	144400
BT 30	46	144406
BT 40	50	144407
BT 50	40	144408
VDI30	41	144411
VDI40	45	144414
VDI50	40	144417
Polygonal shaft C5		144446
Polygonal shaft C6		144449
Polygonal shaft C8		144452

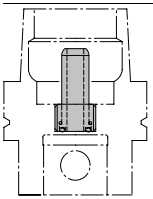
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Tool holder BTH 25

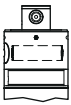


Type	L[mm]	Order number
HSK-A 25	32.5	144470
HSK-A 32	35	144472
HSK-A 40	35	144475
HSK-A 50	42	144477
HSK-A 63	42	144479
HSK-A 100	60	144469
HSK-E 25	32.5	144471
HSK-E 32	35	144473
HSK-E 40	35	144476
HSK-E 50	42	144478
HSK-E 63	42	144480
HSK-F 63	50	144481
SK 30	20	144482
SK 40	24	144483
SK 50	40	144484
MAS-BT 30	24	144485
MAS-BT 40	28	144486
MAS-BT 50	40	144488
VDI20	16	144494
VDI25	16	144496
VDI30	16	144498
VDI40	20	144500
VDI50	20	144502
Polygonal shaft C4		144576
Polygonal shaft C5		144579
Polygonal shaft C6		144582

Coolant pipe for tool holder HSK-A / HSK-E



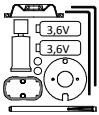
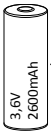
Type	Order number
HSK 25	144374
HSK 32	144375
HSK 40	144379
HSK 50	144382
HSK 63	144387
HSK 80	144395
HSK 100	144373

Touch probe TC50	141745	
Touch probe TC51	142076	
Touch probe TC52	142174	
Basic device TC53-10	142444	
Basic system TC53-30	142462	
Touch probe TC54-10	142480	

Spare and wear parts

Spare and wear parts are not subject to warranty.

Accessory for probe Ø 63

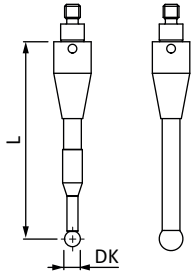
Accessory set for probe TC50, TC51	143725	
Accessory set for probe TC53-30	143726	
Battery for probe Ø63 / Bore gauge Saft Lithium LS14500 (AA 3,6 V) 2600 mAh, 2 pcs required	170407	
Bellows (5 pieces)	143724	

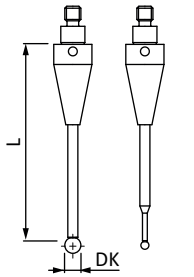
Accessory for probe Ø 25/40

Accessory set for Touch probe TC54-10, TC53-10, TC52	143735	
Accessory set for Touch probe TC76	143737	
Battery for probe Ø40 Saft Lithium LS14250 (½ AA) 3,6 V) 1200 mAh, 2 pcs required	170406	
Bellows (5 pieces)	143734	

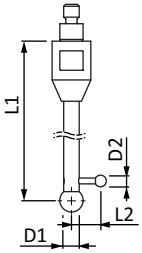
 © by Blum-Novotest

Styli for probe TC50 / TC51

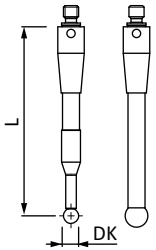
Ceramic	L [mm]	DK [mm]	
	50	1	143411
		2	143412
		3	143413
		4	143414
		5	143415
		6	143416
	75	1	143417
		2	143418
		3	143419
		4	143420
		5	143421
		6	143422
	100	1	143423
		2	143424
		3	143425
		4	143426
		5	143427
		6	143428
		8	143429
	150	4	143430
		6	143431
	200	6	143432
	250	6	143433
	300	6	143435

Carbide	L [mm]	DK [mm]	
	50	1	143522
		2	143523
		3	143524
		4	143525
		5	143526
		6	143527
	75	3	143528
		4	143529
		5	143530
		6	143531
	100	3	143532
		4	143533
		5	143534
		6	143535

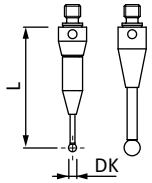
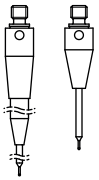
Styli for probe TC51

Stainless steel	L [mm]	D [mm]	
	L1 = 50 mm L2 = 7.5 mm	D1 = 6 mm D2 = 3 mm	143570

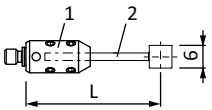
Styli for probe TC52 / TC54-10 / TC76

Ceramic	L [mm]	DK [mm]	
	50	1	143743
		2	143744
		3	143745
		4	143746
		5	143747
		6	143748
	75	1	143749
		2	143750
		3	143751
		4	143752
		5	143753
		6	143754
	100	1	143755
		2	143756
		3	143757
		4	143758
		5	143759
		6	143760

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Carbide	L [mm]	DK [mm]	
	20	0.5	143766
		1	143767
		2	143768
		3	143769
		4	143770
		5	143771
		6	143772
	30	0.5	143773
		0.8	143774
		1	143775
		2	143776
		3	143777
		4	143778
		5	143779
		6	143780
	50	0.5	143781
		1	143782
		2	143783
		3	143784
		4	143785
		5	143786
		6	143787
	75	1	143788
		2	143789
		3	143790
		4	143791
		5	143792
		6	143793
	100	1	143794
		2	143795
		3	143796
		4	143797
		5	143798
		6	143799

Styli for probe TC54-10 / TC76

Carbide	L [mm]		
	Adapter		144093
	Stylus		
	22	Q6	144122
	27	Q6	144116
	30	Q6	144115
	36	Q6	144117
	47	Q6	144114
	52	Q6	144119
	62	Q6	144118
	77	Q6	144120

(1) Adapter

(2) Stylus

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9. Shipping instructions / storage

NOTICE

- If you return the measuring system for repair, please enclose a detailed error description.
- The measuring system has to be returned in the original packing only.
- The packing is not allowed to deflect the measuring system.
- The measuring system should be packed shock and pollution protected.

Service order

Please complete this repair order answering all questions in detail and attach it to the system. It will be more cost effective for both parties if we have all the information and will ensure a prompt repair service.

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Kaufstr. 14, 88287 Gruenkraut - Germany
Tel. +49 751 6008-0, Fax. +49 751 6008-156

Company:	
Department:	
Contact:	
Address:	
Phone:	
Fax:	
Email:	
Measuring system type, serial No.:	
Machine type, manufacturer:	
Description of defect:	

10.EC Declaration of Incorporation

acc. to the EC Machine Regulations 2006/42/EC in the edition from 17 May.2006

We hereby confirm that the subsequently following components are defined for the installation into other machines and that they are in accordance with the following safety requirements of the EC regulations.

Commissioning is not allowed until it is ascertained that the machines, in which the components are installed, are in accordance with the EC regulations 2006/42/EC.

The relevant technical information is compiled acc. to annex VII part B and, where appropriate, we will send the information concerning the components to the different countries. The industrial property rights of Blum-Novotest GmbH will remain unaffected.

Component name	TC50 | TC51 | TC52 | TC53-10 | TC53-30 | TC54-10 | TC76 Probe for workpiece measurement
Safety requirements 2006/42/EC, Annex I	1.5.1
Applied standards:	
EC-Regulations:	2014/30/EU 2014/35/EU
Applied harmonized standards:	EN 61000-6 EN 60204-1 EN ISO 12100
Applied national standards:	DIN VDE 0100 DIN VDE 0113
Authorised representative for technical information:	Blum-Novotest GmbH Kaufstr. 14 88287 Gruenkraut, Germany

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11.Service

BLUM
focus on productivity

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