











-  Workpiece measurement
-  Radio transmission
-  Multidirectional
-  Wear-free measuring mechanism
-  Modular system
-  Batch- & mass production
-  Contour measurement
-  Axes compensation

Operating instructions

English

Type

P03.6000-010 | P03.6300-010

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-  Installation instructions interface **IF59-A2** (P03.5900-000.011)
-  Programming instructions Blum measuring cycles (P03.8000-031.305L/360L)

Zeichenerklärung:

CAUTION



Important advice for appliance protection



Advice to secondary literature



Additional advice



LED shines



LED flashes



Green



Red



Blue



Orange



Violet

Abbreviations:

BTH Blum Tool Holder

M_d Tightening Torque

LF: Low Force

1. Safety Rules

Important advice for appliance protection:

- Handle probe like a precision tool.
 - Keep the probe clean.
 - Mount the probe in assigned tool holders only.
 - Battery: Please insert before operating!
 - Protect the probe by using programmed maximum travel.
 - Ensure that adequate safety regulations as well as safety interlockings are kept.
 - Damaged styli are not reusable.
-

CAUTION



2. System Overview

2.1 Description

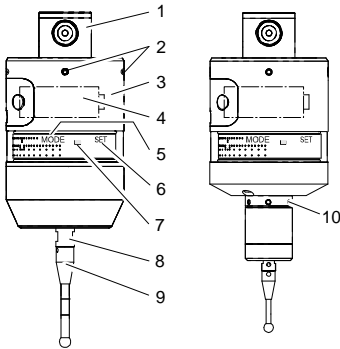


Fig. 2.1

- (1) Shaft for tool holder BTH
- (2) Centering screws
- (3) Battery cover
- (4) Battery
- (5) Hall sensor MODE
- (6) Hall sensor SET
- (7) LED Status 3 pcs.
- (8) Measuring mechanism
- (9) Stylus
- (10) Pin hole

2.2 Display Elements

Colour	LED Status (7)
	Standby
	Stylus initial position
	Stylus deflected
	Stylus initial position - battery low
	Stylus deflected - battery low
	Battery low

Fig. 2.2

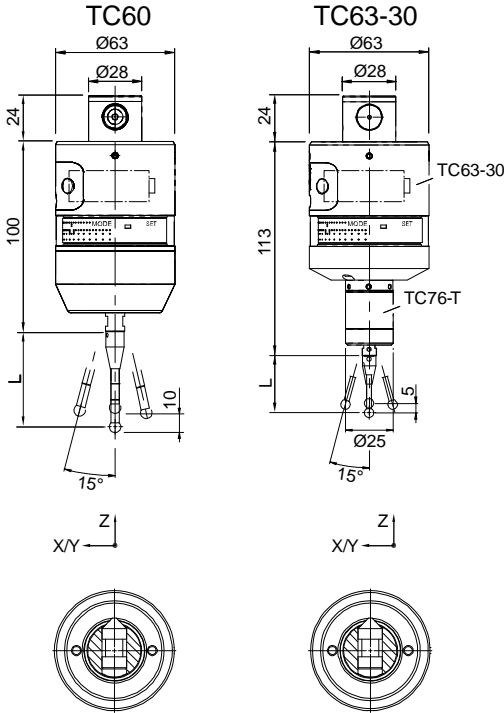
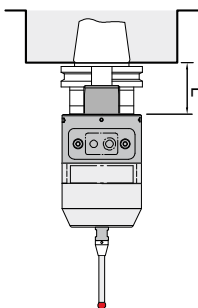


Fig. 2.3

Stylus length (mm)	Max. deflection X/Y (mm)	
	TC60	TC63-30/ TC76
30	14	12
50	19	17
75	26	24
100	32	30
150	44	
200	57	

Tab. 2.1

2.3 Tool Holder



Type	L	Order number
System BTH 50(TC60/63-30)		
HSK-A 40	57	P03.8000-035.140A
HSK-A 50	63	P03.8000-035.150A
HSK-A 63	50	P03.8000-035.163A
HSK-A 80	55	P03.8000-035.180A
HSK-A 100	60	P03.8000-035.100A
HSK-E 40	57	P03.8000-035.140E
HSK-E 50	63	P03.8000-035.150E
HSK-E 63	50	P03.8000-035.163E
SK 30	60	P03.8000-035.230
SK 40	50	P03.8000-035.240
SK 50	24	P03.8000-035.250
MAS-BT 30	50	P03.8000-035.330
MAS-BT 40	50	P03.8000-035.340
MAS-BT 50	40	P03.8000-035.350

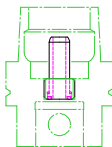
Tab. 2.2

CAUTION



Coolant

Pls. use coolant pipe for tool holder HSK for machining centers with internal coolant supply.



Type	System BTH 50
HSK 25	P03.8000-035.125K
HSK 32	P03.8000-035.132K
HSK 40	P03.8000-035.140K
HSK 50	P03.8000-035.150K
HSK 63	P03.8000-035.163K
HSK 80	P03.8000-035.180K
HSK 100	P03.8000-035.100K

Tab. 2.3

2.4 Technical Data

	TC60	TC63-30 / TC76-T
Approach direction	$\pm X, \pm Y, -Z$	$\pm X, \pm Y, \pm Z^a$
Measuring force XY-direction	2 N**	1,3 N***
Measuring force Z-direction	7 N	5,9 N
Max. deflection XY	$\pm 15^\circ$	$\pm 15^\circ$
Max. deflection Z	10 mm	5 mm
Trigger point XY	----	----
Trigger point Z	----	----
Max. acceleration	50 m/s ²	50 m/s ² ****
Repeatability**	1 μm 2 σ	1 μm 2 σ
Max. probing speed	3 m/min	2 m/min
Weight	970 g	680 g (TC63-30)
Protection class	IP 68	
Signal transmission	Funk	
Frequency band	2,4000 – 2,4835 GHz	
Transmission power	0 dBm	
Operating range	15 m	
Battery life	Ultralife Lithium 6LR61 (9V)	
Tool holder HSK–SK-BT	BTH 50	
Storage temperature	-20 °C ... +70 °C	
Operating temperature	+5 °C ... +50 °C	

** Stylus L=50 mm

*** Stylus L=30 mm

**** with accessories (e.g. extension, angle): max. acceleration 10 m/s²

^{a)} see chap.3.5

LF: Low Force

Tab. 2.4

2.5 Complete System

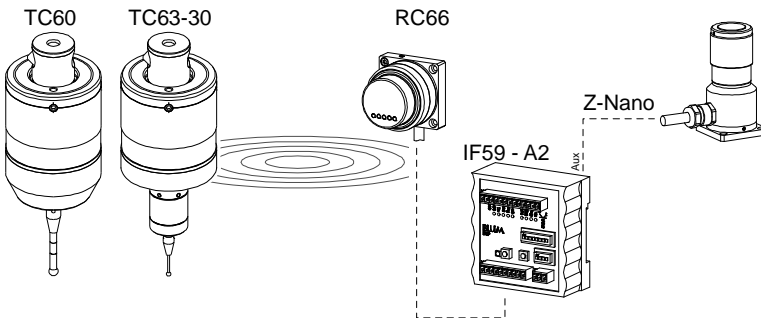


Fig. 2.4

RC66:

- ⇒ switch ON/OFF via radio signal
- ⇒ signal transmission for **TC** series

 Installation instructions **RC66** (P03.6600-000.011)

 Installation instructions **IF59-A2** (P03.5900-000.011)

3. Mounting and Commissioning

3.1 Batterie einsetzen / wechseln

Empfohlener Batterietyp:

Type	Ultralife Lithium U9VL-J
mAh	1200
Contin. operation	ca. xxx h
5% Use	ca. xxx Tage
Standby	ca. xxx Tage
Order number	980702003



Dispose batteries acc. to legal requirements.

CAUTION



Risk of short-circuit

Be careful to correct position of gasket.
Keep battery space clean and dry.

1. Clean probe carefully and remove battery cover
2. Exchange battery - take care of polarity!
3. Install battery cover straight (check O-Ring and grease if necessary)
4. Automatic display of the basic adjustments (chap. 3.6)

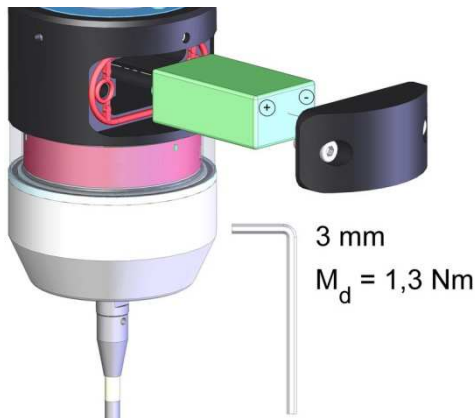


Fig. 3.1

3.2 Mounting of the Tool Holder

1. Insert probe into tool holder (System BTH 50)
2. Tighten screw slightly only
3. Mount stylus (see chap. 3.4)
4. Insert probe into spindle
5. Turn probe by 360°
6. Observe display of run-out – stylus is not allowed to be deflected.
7. Adjust concentricity by crosswise loosening and tightening of the opposite center screws (4 internal hexagon screws 2 mm) - $M_d < 2 \text{ Nm}$

Run-Out: $< 10 \mu\text{m}$

8. Tighten holding screw ($M_d = 12 \text{ Nm}$)
9. Carry out calibration cycle

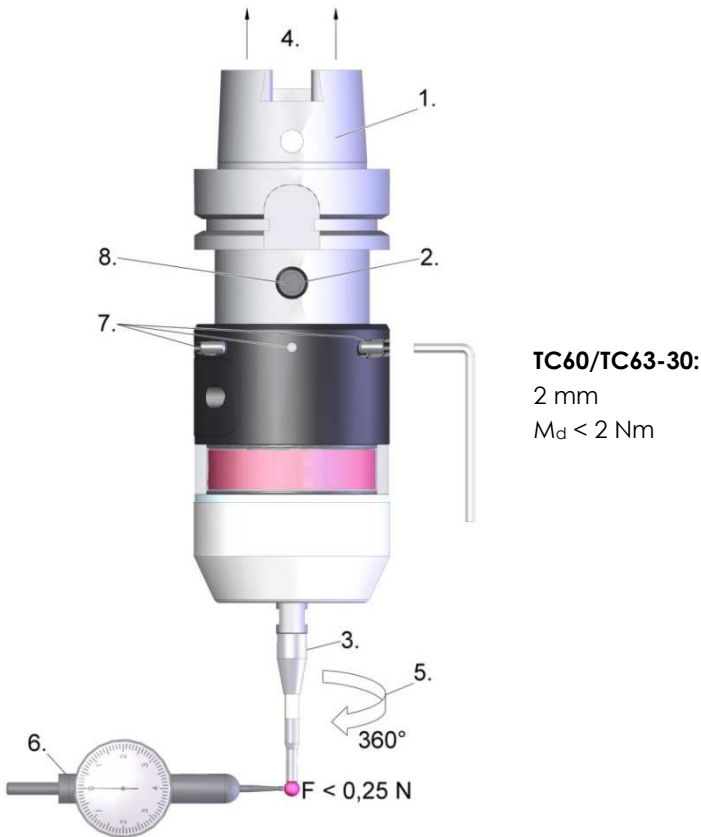
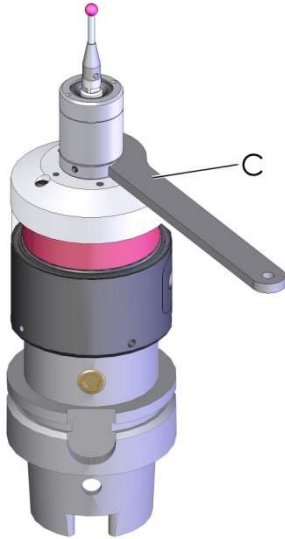


Fig. 3.2

3.3 Mounting of the TC76-T



$M_d = 10 \text{ Nm}$

Fig. 3.3

(C) hook wrench (scope of delivery)



Mounting of the extension / angle: see referring data sheet

3.4 Mounting of the Stylus

CAUTION



Damage of the measuring mechanism

- **TC60:** When mounting the stylus into the probe, it is absolutely necessary to lock the probe with the mounting tool B to avoid torsion of the measuring mechanism.
- **TC63-30 / TC76:** When mounting the stylus into the probe, it is absolutely necessary to use the interlocking disk (A) (backlash-free). Pls. take care of the orientation of the interlocking disk (A) (top side = top)
- Calibrate probe after mounting of stylus!
- Damaged styli are not reusable!

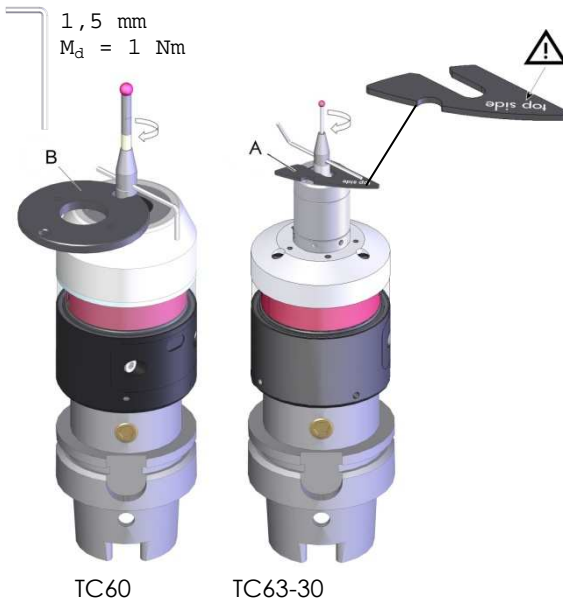


Fig. 3.4

- (A) interlocking disk (scope of delivery)
 (B) mounting tool (scope of delivery)



3.5 Cranked Styli (TC63-30/TC76)

CAUTION



Damage of the measuring mechanism

Pay attention to area of operation and max. overtravel

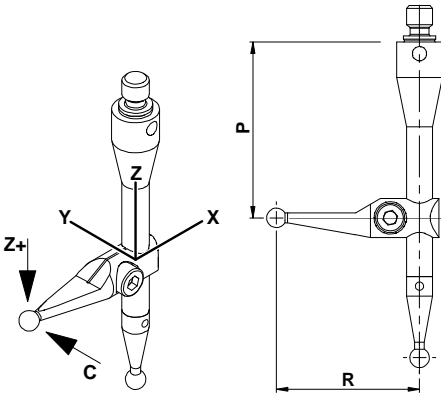


Fig. 3.5

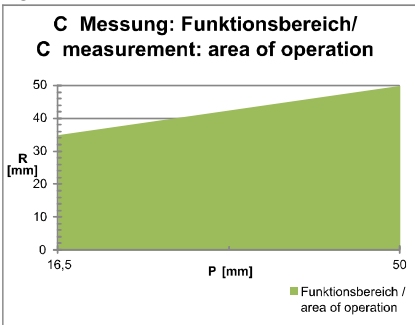


Fig. 3.6

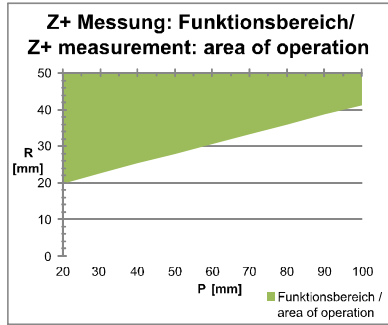


Fig. 3.7

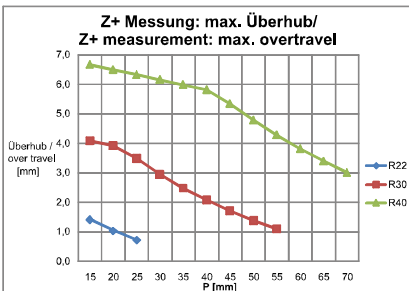


Fig. 3.8

3.6 Display Basic Adjustments

1. Remove battery



2. Insert battery



Wait 30
sec.

3. Automatic display of the basic adjustments:

First colour: **MODE**

Second colour: **SET**

MODE



Transmission mode

(3x MODE – SET)



Switch-on time

(3x MODE – SET)



Battery capacity

(3x MODE – SET)

SET



Normal*



Robust



Fast



Fast



Normal*



Slow



O.K.



low



Battery low

* Standard



3.7 Programming of the Basic Adjustments

In this mode the basic adjustments can be set.

1. Remove Battery

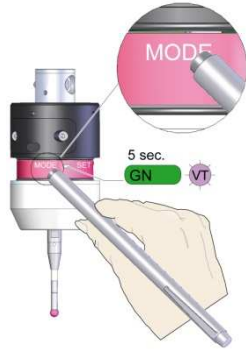


wait 30 sec.

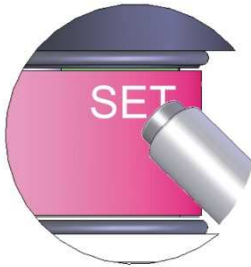
2. Insert Battery (Polarity!)



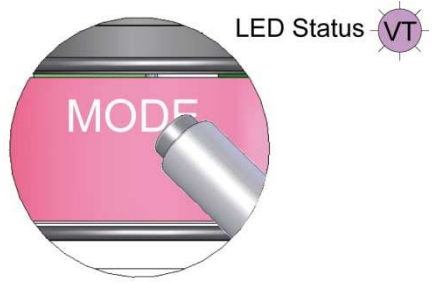
3. Activate programming mode during display phase (MODE):



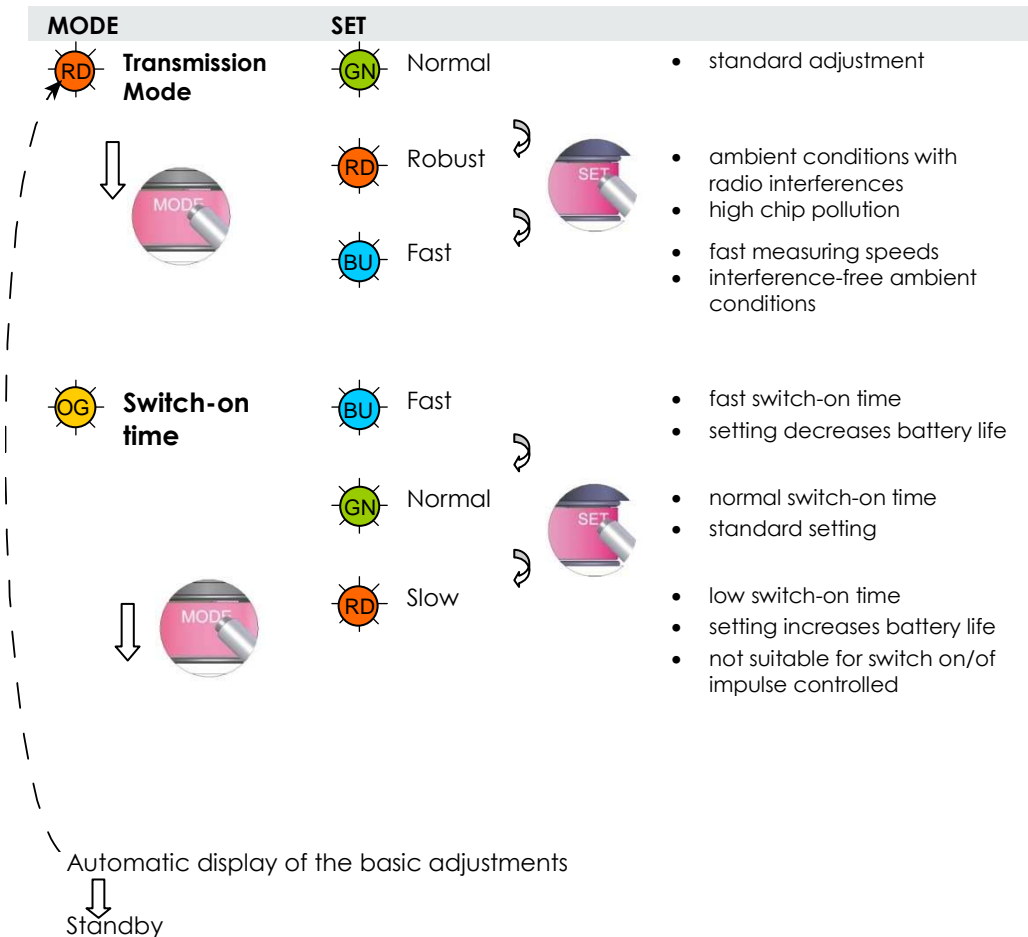
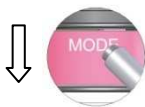
4. Change adjustments (SET)
hold magnetic pin on inscription SET




5. Menu change (MODE)
hold magnetic pin on inscription MODE



Activate programming sequence:




3.8 Probe Pairing

 Installation instructions IF59-A2 (P03.5900-000.011)

3.9 Switch-on Probe (via radio receiver)

Optical by e.g. M-Code

 Installation instructions RC66 (P03.6600-000.011)

 Installation instructions IF59-A2 (P03.5900-000.011)

4. Maintenance



- The probe needs minimum maintenance only
- Keep the glass ring clean
- Check bellows for damages



4.1 Cleaning of the transparent ring



Please do always use mild detergents (e.g. neutral soap solution or diluted washing-up liquid) for cleaning of the transparent ring. Please do always use a soft, clean cloth to clean.

CAUTION



Damage of the transparent ring

Please, do not use any detergents containing acetone, alcohol, cleaning benzine or solvent! They can damage the transparent ring.

Please, do not use any detergents containing abrasive substances (e.g. scouring powder or cleansing milk. They can damage the transparent ring!

4.2 Exchange of External Bellows

CAUTION

It is not allowed to exchange the internal bellows!
In case that it should be damaged, please send probe for repair.

Damage of the measuring system

The measuring system is not allowed to be twisted!

**TC76-LF (low force):**

The bellows is allowed to be exchanged by Blum-Novotest only!

1. Clean probe and remove stylus if necessary (chap.3.4), while using the interlocking disk (A) resp. mounting tool (B).
2. Remove front ring (16) with mounting tool (B).
3. Remove external bellows carefully (13), without twisting the measuring mechanism (10).
4. Grease new bellows (13) at the contact surface to the groove slightly (grease: ISOFLEX TOPAS NB 52 or STABURAGS NBU30).
5. Install new bellows (13), without twisting the measuring mechanism. The bellows must click to the groove on the measuring system. Please take care of plane supporting surface of the bellows.
6. Install front ring (mounting tool (B)).
7. Mount stylus while using the interlocking disk (A) resp. mounting tool (B).
8. Carry out calibration cycle.

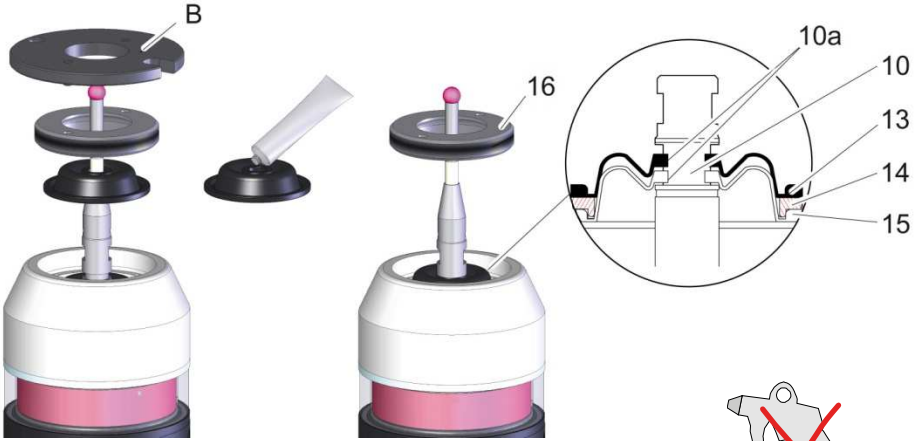


Fig. 4.1 TC60

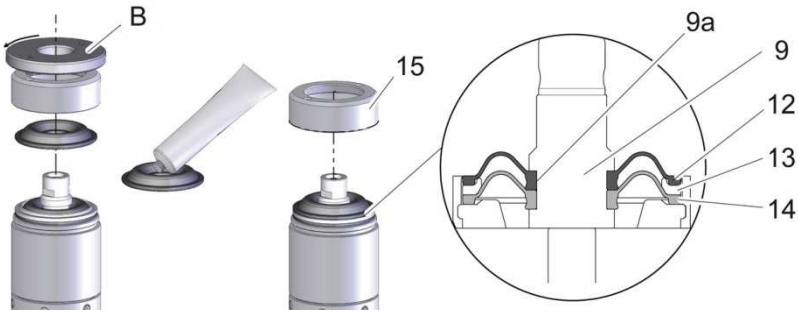
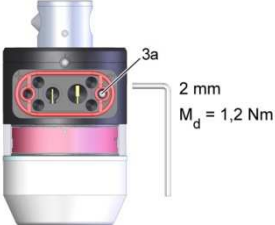



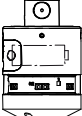






Fig. 4.2 TC63-30 / TC76

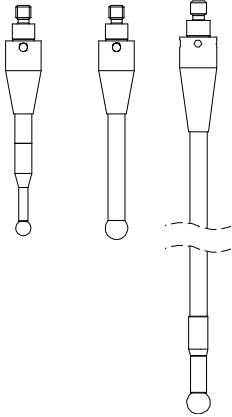
- | | |
|--------------------------|-----------------------|
| (10) Measuring mechanism | (14) Centering ring |
| (10a) Groove | (15) Internal bellows |
| (13) External bellows | (16) Front ring |

5. Trouble Shooting

Error	Possible cause	Countermeasures
LED Status flashes resp. LED light unsteady	Battery is low	Check batteries and exchange them if possible
LED Status shines red	Battery is weak	Exchange batteries
LED Status changes from green to violet while inserting the batteries without deflecting the stylus resp. LED Status flashes red Control sends signal „deflected“ without deflecting the stylus	No pressure compensation after transport by airfreight	Provide pressure compensation: 1. Remove cover from battery box 2. Loosen thread pin (3a), approx. 2 revolutions 3. Deflect stylus shortly in Z-direction, wait for approx. 1 minute 4. Then tighten thread pin again 5. Fit battery box cover precisely and mount it
		
No activation of the probe is possible	Battery is empty	Insert new batteries
	Probe is outside of the transmission range	Check transmission range between RC66 and TC60 Check adjustment of transmission power (TC60 and IF59-A2)
	No pairing of the probe on IF59-A2	Check pairing
LED Status flashes white	Probe is outside of the transmission range	Check transmission range between receiver and probe
	Radio error signals in transmission range	Find and clear radio error signals

6. Order Numbers

Werkzeugaufnahme BTH 50	See chap. 2	
Probe TC60 Basic system TC63-30	P03.6000-010-A1 P06.6300-030-A1	
Spare and wear parts Spare and wear parts are not subject to warranty.		
Bellows for TC60	P03.8000-020.002	
Bellows for TC76	P03.8000-020.010	
Battery for Probe TC60 / 63-30 Type Ultralife Lithium U9VL-J-9V 1200mAh	980702003	
Accessory set for TC60	P03.8000-020.001	
Accessory set for TC63-30	P03.8000-020.013	
Accessory set for TC76	P03.8000-020.012	

Styli for probe TC60**Ceramic**

Length	Ø	
50 mm	2 mm	P03.8000-010.050.02
	4 mm	P03.8000-010.050.04
	5 mm	P03.8000-010.050.05
	6 mm	P03.8000-010.050.06
75 mm	6 mm	P03.8000-010.075.06
100mm	2 mm	P03.8000-010.100.02
	3 mm	P03.8000-010.100.03
	4 mm	P03.8000-010.100.04
	5 mm	P03.8000-010.100.05
	6 mm	P03.8000-010.100.06
150 mm	4 mm	P03.8000-010.150.04
	6 mm	P03.8000-010.150.06
200 mm	6 mm	P03.8000-010.200.06
250 mm	6 mm	P03.8000-010.250.06
300 mm	6 mm	P03.8000-010.300.06

Carbide

Length	Ø	
50 mm	3 mm	P03.8000-012.050.03
	4 mm	P03.8000-012.050.04
	5 mm	P03.8000-012.050.05
	6 mm	P03.8000-012.050.06
100 mm	4 mm	P03.8000-012.100.04
	5 mm	P03.8000-012.100.05
	6 mm	P03.8000-012.100.06

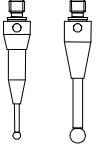
Styli for probe TC76

Ceramic



Length	Ø	
50mm	2 mm	P03.8000-020.050.02
	4 mm	P03.8000-020.050.04
	5 mm	P03.8000-020.050.05
75 mm	5 mm	P03.8000-020.075.05
100 mm	5 mm	P03.8000-020.100.05

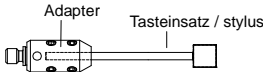
Carbide



Length	Ø	
30 mm	2 mm	P03.8000-022.030.02
	3 mm	P03.8000-022.030.03
	4 mm	P03.8000-022.030.04
	5 mm	P03.8000-022.030.05
50mm	3 mm	P03.8000-022.050.03
	4 mm	P03.8000-022.050.04
	5 mm	P03.8000-022.050.05
	6 mm	P03.8000-022.050.06
75 mm	5 mm	P03.8000-022.075.05
100 mm	5 mm	P03.8000-022.100.05

Styli for probe TC76

Adapter



P03.8000-025.300

Länge □

Stylus	27 mm	Q6	P03.8000-025.342
	30 mm	Q6	P03.8000-025.341
	36 mm	Q6	P03.8000-025.343
	47 mm	Q6	P03.8000-025.340
	52 mm	Q6	P03.8000-025.345
	62 mm	Q6	P03.8000-025.344
	77 mm	Q6	P03.8000-025.346

7. Shipping Instructions / Storage



- If the probe should be stored for a longer period, please remove the battery from the battery box.
- If you return the probe for repair, please enclose a detailed error description and the probe certificate.
- The probe is to be returned in the original packing only.
- The packing is not allowed to deflect the probe, neither in X/Y- nor in Z-direction.
- Tool holder and battery are to be removed before packing.
- The probe should be packed shock and pollution protected.


8. Radio Approval

Area: **Radio Approval:**

Regulations:

Europe:  0681

EN 300 328 V1.4.1,
EN 301 489-17 V1.2.1,
EN 60950-1:2001

Japan:  R 202WW10568411

“This device has been granted a designation number by Ministry of Internal Affairs and Communications under „Ordinance concerning Technical Regulations Conformity Certification etc. of Specified Radio Equipment (特定無線設備の技術基準適合証明等に関する規則)“ Article 2-1-19.

USA: FCC ID: ZCQRCA

FCC Part 15

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Canada: IC:9570A-RCA

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment complies with IC Canada RF radiation exposure limits set forth for an uncontrolled environment as per RSS-102 Issue 4.

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:	P03.6000 / P06.3300 Probe for workpiece measurement
Safety requirements 2006/42/EG, Annex I	1.5.1
Applied standards: EC-Regulations:	2004/108/EG 2006/95/EG 1999/5/EG
Applied harmonized standards:	EN61000-6 EN60204-1 EN ISO 12100 EN 300 328 EN 301 489-17 EN 60950-1:2001
Applied national standards:	DIN VDE 0100 DIN VDE 0113
Authorised representative for technical information:	Blum-Novotest GmbH Kaufstr. 14 88287 Gruenkrut, Germany

.....

Service Order

Please fill out completely this repair order and attach it to the system. This will save you and us costs due to time-consuming inquiries and ensures a quick repair.

Blum-Novotest GmbH

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

Company:	
Department:	
Contact:	
Address:	
Phone:	
Fax:	
Email:	
Probe Type, Serial No.:	
Machine Type, Manufacturer:	
Description of Defect:	



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