

# Ultra Turrax Ika : T10 basic - T18 Digital - T25 Digital - T50 Digital - T65 basic - T65 Digital

## Nieuwe Ultra Turrax dispergeersystemen IKA !

Proven and precise technology for 60 years

ULTRA-TURRAX® - the epitome of first-rate dispersing devices enable the best possible results whether used for homogenization, emulsification or suspensions. The IKA® range of dispersers are used for volumes ranging from 0.5 to 50,000 ml (H<sub>2</sub>O) and come equipped with a digital display. These dispersers offer a wide speed range up to 30,000 rpm that enables users to work at high circumferential speeds even with small rotor diameters. The high-performance drive ensures immense speed stability. Due to their broad spectrum of dispersing tools, IKA dispersers are highly effective for a variety of uses.

The unique and patented ULTRA-TURRAX Tube Drive system is the world's first disperser system with disposable and sealed sample tubes. Multiple tube styles are available for mixing, homogenizing and grinding for a variety of applications.

The magic LAB® is a unique and multi-functional small-scale laboratory machine. It is designed for mixing, dispersing, wet milling and for the incorporation of powders into liquids. The magic LAB® is most frequently used for the development of new products or for optimizing existing process techniques. It is an ideal machine for continuous, circulating and batch processing with interchangeable modules.



**IKA+**

Scale-up principle  
 IKA® dispersers have a high degree of flexibility and scalability. Therefore, ensuring reliable scale-up by offering the possibility to work with the same method from formulation development to production.

1:50

T 10 basic	0.5 – 100 ml 5000 mPas	T 65 basic	2 – 50 l 5000 mPas
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2 Year warranty



Protection class according to DIN EN 60529: IP 42

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# T-series | Innovative solutions for dispersion technology



T-series range of dispersers are designed for mixing and dispersing of products with a wide range of viscosities. This series of dispersers enables the best possible results for any application with improved product quality and better stability.

**Digital Display** for precise monitoring of set and actual speeds

Wide selection of dispersing tools to suit your application

**Rotating knob** for adjusting the speed

**Motor protection** against overload

**Quick-connect coupling** to exchange dispersing tools easily

### IKA+

**Trial devices**  
You may request demo units in order to experience our high-quality disperser offerings first hand.



# Special features | Accessories



- ① Plate stands
    - R 1825 560 mm
    - R 1826 800 mm
    - R 1827 1000 mm
- With slip resistant foil.

Ident. No.		
3160000	R 1825	560 mm
3160100	R 1826	800 mm
3160200	R 1827	1000 mm



Ident. No. 2657700

- ③ Dispersing element S 25 N – 18 G



Ident. No. 0593400



# Technical data | T-series ULTRA-TURRAX® Dispensers



T 10 basic

Technical data	
Motor rating input / output	125 / 75 W
Volume range (H <sub>2</sub> O)	0.5 – 100 ml
Viscosity max.	5000 mPas
Speed range	8000 – 30,000 rpm
Speed display	scale
Speed control	stepless
Noise without element	65 dB(A)
Extension arm diameter	8 mm
Extension arm length	130 mm
Process type	batch
Dimensions (W x D x H)	56 x 66 x 178 mm
Weight	0.5 kg
Perm. ambient temperature	5 – 40 °C
Permissible relative moisture	80 %
Protect. class DIN EN 60529	IP 30
Interface	no
Voltage	230 V
Frequency	50/60 Hz

Ident. No. 3737000



reddot design award  
winner 2012



T 18 digital

Motor rating input / output	500 / 300 W
Volume range (H <sub>2</sub> O)	1 – 1500 ml
Viscosity max.	5000 mPas
Speed range	500 – 25,000 rpm
Speed display	LED
Speed control	stepless
Noise without element	75 dB(A)
Extension arm diameter	13 mm
Extension arm length	160 mm
Process type	batch
Dimensions (W x D x H)	87 x 106 x 271 mm
Weight	2.5 kg
Perm. ambient temperature	5 – 40 °C
Permissible relative moisture	80 %
Protect. class DIN EN 60529	IP 20
Interface	no
Voltage	200 – 240 V
Frequency	50/60 Hz

Ident. No. 3720000



T 25 digital

Motor rating input / output	800 / 500 W
Volume range (H <sub>2</sub> O)	1 – 2000 ml
Viscosity max.	5000 mPas
Speed range	500 – 25,000 rpm
Speed display	LED
Speed control	stepless
Noise without element	75 dB(A)
Extension arm diameter	13 mm
Extension arm length	160 mm
Process type	batch
Dimensions (W x D x H)	87 x 106 x 271 mm
Weight	2.5 kg
Perm. ambient temperature	5 – 40 °C
Permissible relative moisture	80 %
Protect. class DIN EN 60529	IP 20
Interface	no
Voltage	200 – 240 V
Frequency	50/60 Hz

Ident. No. 3725000



T 50 digital

Technical data	
Motor rating input / output	1100 / 700 W
Volume range (H <sub>2</sub> O)	0.25 – 30 l
Viscosity max.	5000 mPas
Speed range	500 – 10,000 rpm
Speed display	LED
Speed control	stepless
Noise without element	72 dB(A)
Extension arm diameter	16 mm
Extension arm length	220 mm
Process type	batch
Dimensions (W x D x H)	115 x 139 x 355 mm
Weight	5.76 kg
Perm. ambient temperature	5 – 40 °C
Permissible relative moisture	80 %
Protect. class DIN EN 60529	IP 20
Interface	no
Voltage	200 – 240 V
Frequency	50/60 Hz

Ident. No. 3787000



Available  
Q1/2013

T 65 basic

Motor rating input / output	1800 / 1500 W
Volume range (H <sub>2</sub> O)	2 – 50 l
Viscosity max.	5000 mPas
Speed range	7200 rpm (fixed)
Speed display	LED
Speed control	fixed
Noise without element	75 dB(A)
Extension arm diameter	flange
Extension arm length	flange
Process type	batch
Dimensions (W x D x H)	185 x 400 x 450 mm
Weight	26 kg
Perm. ambient temperature	5 – 40 °C
Permissible relative moisture	80 %
Protect. class DIN EN 60529	IP 54
Interface	no
Voltage	3 x 400 V
Frequency	50 Hz

Ident. No. 4023500



Available  
Q1/2013

T 65 digital

Motor rating input / output	2600 / 2200 W
Volume range (H <sub>2</sub> O)	2 – 50 l
Viscosity max.	5000 mPas
Speed range	1000 – 9500 rpm
Speed display	LED
Speed control	stepless
Noise without element	75 dB(A)
Extension arm diameter	flange
Extension arm length	flange
Process type	batch
Dimensions (W x D x H)	300 x 400 x 390 mm
Weight	29 kg
Perm. ambient temperature	5 – 40 °C
Permissible relative moisture	80 %
Protect. class DIN EN 60529	IP 54
Interface	no
Voltage	3 x 400 V
Frequency	50/60 Hz

Ident. No. 4234500

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# IKA® Original | Dispersing tools

A wide variety of rotor-stator configurations and seals are required to process different mediums. In order to make the device adaptable to the user's specific needs, it is sometimes necessary to use two dispersing tools to achieve from coarse to fine particle size reduction. The quick-connect coupling facilitates the exchange of dispersing tools.

## IKA®+ Special accessories!

- > Bronze bearings to serve in a variety of applications
- > FDA-variant KV shafts are only available through special order

For dispersing instrument	Dispersing element Shaft / Agitator shaft	With seal or bearing type*	Generator or element**	With outer diameter (mm)	Degree of fineness achieved***
T 10 basic	S 10	N	—	5 / 8 / 10	G
T 18 digital	S 18	N	—	10 / 19	G
T 25 digital	S 25	N / KV / NK	—	8 / 10 / 18 / 19 / 25	G / F
T 50 digital	S / R 50	N	G / W	45 / 65 / 80	G / M / F
T 65 basic	S 65	KG – HH	G	65	G / M / F
T 65 digital	S 65	KG – HH	G	65	G / M / F

\*N = PTFE bearing

KV = Ball bearing with vacuum-tight sliding-ring seal with silicon carbide seal rings

NK = PTFE bearing with additional ball bearing without seal

KG – HH = Ball bearing with sliding-ring seals of hard metal allow with FFPM seals rings

\*\*G = Proved configuration

W = Special element

\*\*\*G = Coarse

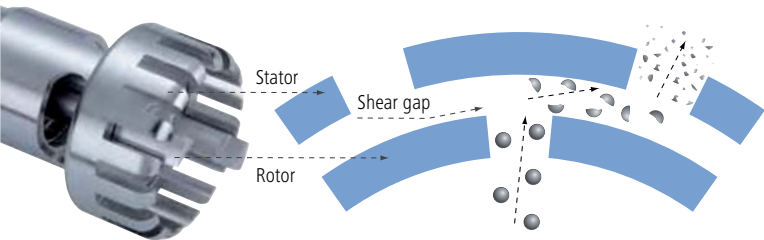
M = Medium

F = Fine

# Find the right dispersing tool to suit your application



	Volume Range Liter					Vacuum operation	Circumferential speed (m/s)	Ultimate fineness, suspensions (µm)	Ultimate fineness, emulsions (µm)
	10 ml	50 ml	100 ml	500 ml	2 l				
A	S 10 N – 5 G	■				No	6.0	5 – 25	1 – 10
	S 10 N – 8 G	■	■			No	9.6	5 – 25	1 – 10
	S 10 N – 10 G	■	■	■		No	11.9	5 – 25	1 – 10
	S 10 D – 7 G – KS – 65	■	■			No	7.5	10 – 50	5 – 20
	S 10 D – 7 G – KS – 110	■	■			No	7.5	10 – 50	5 – 20
B	S 18 N – 10 G	■	■	■		No	9.8	10 – 50	1 – 10
	S 18 N – 19 G	■	■	■	■	No	16.6	10 – 50	1 – 10
	S 18 D – 10 G – KS	■	■			No	8.8	10 – 50	5 – 20
	S 18 D – 14 G – KS	■	■	■		No	12.4	10 – 50	5 – 20
	S 25 N – 8 G	■	■			No	8	10 – 50	1 – 10
C	S 25 N – 10 G	■	■	■		No	9.8	10 – 50	1 – 10
	S 25 N – 18 G	■	■	■	■	No	16.6	10 – 50	1 – 10
	S 25 KV – 18 G	■	■	■	■	Yes	16.6	10 – 50	1 – 10
	S 25 NK – 19 G	■	■	■	■	No	16.6	10 – 50	1 – 10
	S 25 N – 25 G	■	■	■	■	No	22.3	15 – 50	1 – 10
D	S 25 KV – 25 G	■	■	■	■	Yes	22.3	15 – 50	1 – 10
	S 25 N – 25 F	■	■	■	■	No	23.6	5 – 25	1 – 5
	S 25 KV – 25 F	■	■	■	■	Yes	23.6	5 – 25	1 – 5
	S 25 D – 10 G – KS	■	■			No	8.8	10 – 50	5 – 20
	S 25 D – 14 G – KS	■	■	■		No	12.4	10 – 50	5 – 20
E	S 50 N – G 45 G				■	No	18.8	40 – 100	10 – 30
	S 50 N – G 45 F				■	No	20.9	10 – 30	1 – 10
E	S 65 KG – HH – G 65 G				■	Yes	21.9 (28.8: T 65 digital)	25 – 75	5 – 25
	S 65 KG – HH – G 65 M				■	Yes	21.9 (28.8: T 65 digital)	25 – 50	5 – 15
	S 65 KG – HH – G 65 F				■	Yes	21.9 (28.8: T 65 digital)	5 – 20	1 – 10



IKA® dispersing technology works by using the rotor-stator principle. The system consists of a rotor within a stationary stator. Due to the high circumferential speed, the medium to be processed is drawn axially into the dispersion head and then forced radially through the slots in the rotor-stator arrangement. The high speed and minimal gap between the rotor and stator produces extremely strong shear forces which results in better dispersion.

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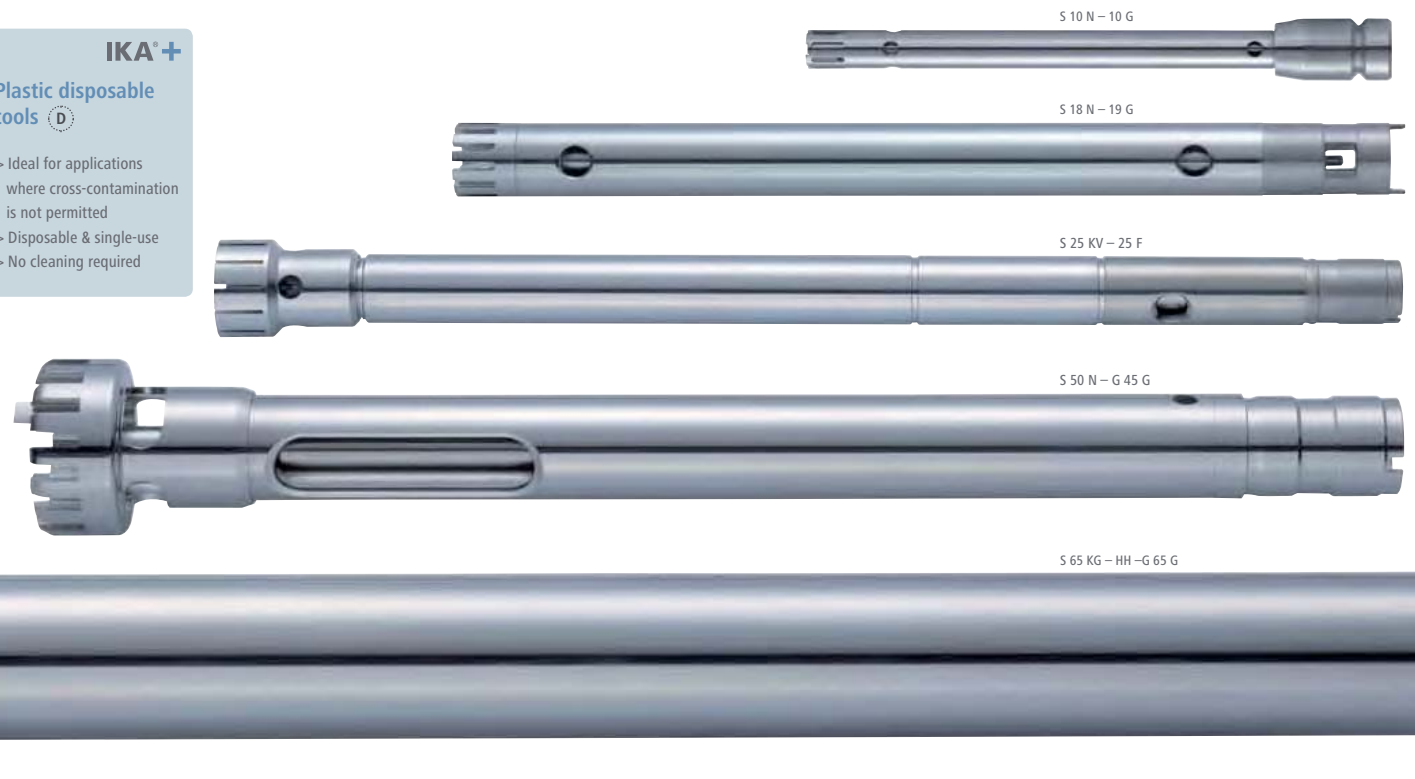
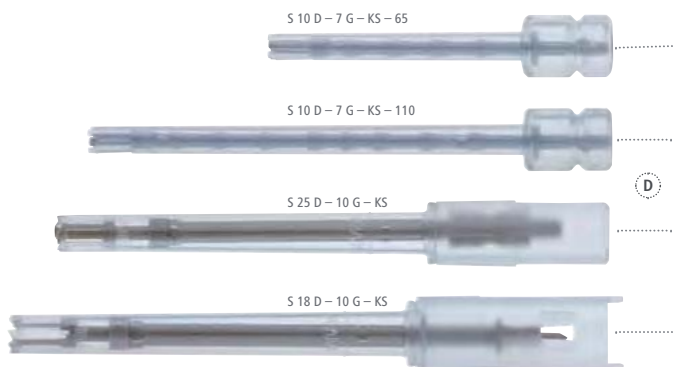


# IKA® Original | Dispersing tools

**IKA+**

**Plastic dispersible tools** D

- > Ideal for applications where cross-contamination is not permitted
- > Disposable & single-use
- > No cleaning required



	T 10 basic				
Dispersing element	S 10 N - 5 G	S 10 N - 8 G	S 10 N - 10 G	S 10 D - 7 G - KS - 65	S 10 D - 7 G - KS - 110
Ident. No.	3304000	3305500	3370100	3433225	3433325
Working range	0.5 - 10 ml	1 - 50 ml	1 - 100 ml	1 - 20 ml	1 - 40 ml
Stator diameter	5 mm	8 mm	10 mm	7 mm	7 mm
Rotor diameter	3.8 mm	6.1 mm	7.6 mm	4.8 mm	4.8 mm
Gap between rotor and stator	0.1 mm	0.25 mm	0.2 mm	0.3 mm	0.3 mm
Min. / max. immersion depth	20 / 75 mm	20 / 95 mm	20 / 100 mm	20 / 50 mm	20 / 90 mm
Shaft length	92 mm	115 mm	115 mm	65 mm	110 mm
Materials in contact with medium	PTFE, AISI 316L	PTFE, AISI 316L	PTFE, AISI 316L	Polycarbonate (PC) Polysulfon (PSU)	Polycarbonate (PC) Polysulfon (PSU)
pH range	2 - 13	2 - 13	2 - 13	-	-
Suitable for solvents	yes	yes	yes	-	-
Max. temperature	180 °C	180 °C	180 °C	100 °C	100 °C
Sterilization methods	all methods	all methods	all methods	yes, autoclavable	yes, autoclavable

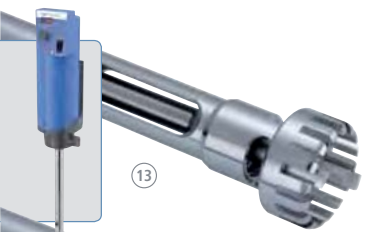
1    
 2    
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 4 D    
 5 D

	T 18 digital			
Dispersing element	S 18 N - 10 G	S 18 N - 19 G	S 18 D - 10 G - KS	S 18 D - 14 G - KS
Ident. No.	L004639	L004640	3452400	3452300
Working range	1 - 100 ml	10 - 1500 ml	10 - 100 ml	10 - 500 ml
Stator diameter	10 mm	19 mm	10 mm	14 mm
Rotor diameter	7.5 mm	12.7 mm	6.75 mm	9.5 mm
Gap between rotor and stator	0.35 mm	0.4 mm	0.25 mm	0.35 mm
Min. / max. immersion depth	25 / 70 mm	35 / 170 mm	15 / 85 mm	15 / 85 mm
Shaft length	108 mm	204 mm	150 mm	150 mm
Materials in contact with medium	PTFE, AISI 316L	PTFE, AISI 316L	Polycarbonate (PC) Polyetheretherketon (PEEK)	Polycarbonate (PC) Polyetheretherketon (PEEK)
pH range	2 - 13	2 - 13	-	-
Suitable for solvents	yes	yes	-	-
Max. temperature	180 °C	180 °C	100 °C	100 °C
Sterilization methods	all methods	all methods	yes, autoclavable	yes, autoclavable

6    
 7    
 8 D    
 9 D

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**T 25 digital**

Dispersing element	S 25 N – 8 G	S 25 N – 10 G	S 25 N – 18 G	S 25 KV – 18 G	S 25 NK – 19 G
Ident. No.	1024200	0594000	0593400	2348000	2494700
Working range	1 – 50 ml	1 – 100 ml	10 – 1500 ml	10 – 1500 ml	25 – 1500 ml
Stator diameter	8 mm	10 mm	18 mm	18 mm	19 mm
Rotor diameter	6.1 mm	7.5 mm	12.7 mm	12.7 mm	12.7 mm
Gap between rotor and stator	0.25 mm	0.35 mm	0.3 mm	0.3 mm	0.3 mm
Min. / max. immersion depth	27 / 85 mm	22 / 85 mm	40 / 165 mm	40 / 225	40 / 165 mm
Shaft length	108 mm	105 mm	194 mm	270 mm	194 mm
Materials in contact with medium	PTFE, AISI 316L	PTFE, AISI 316L	PTFE, AISI 316L	FFPM / SIC, AISI 316L	PTFE, AISI 316L
pH range	2 – 13	2 – 13	2 – 13	2 – 13	2 – 13
Suitable for solvents	yes	yes	yes	yes	yes
Max. temperature	180 °C	180 °C	180 °C	220 °C	120 °C
Sterilization methods	all methods	all methods	all methods	wet chemical	wet chemical
Min. vacuum	–	–	–	1 mbar	–
Max. pressure	–	–	–	6 bar	–

10

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12

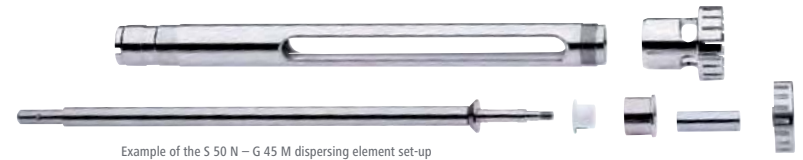
**T 50 digital**

Dispersing element	S 50 N – G 45 G	S 50 N – G 45 M	S 50 N – G 45 F
Ident. No.	8003000	8003300	8003900
Working range	0.5 – 20 l	0.5 – 15 l	0.25 – 10 l
Stator diameter	45 mm	45 mm	45 mm
Rotor diameter	36 mm	40.5 mm	40 mm
Gap between rotor and stator	0.5 mm	0.25 mm	0.5 mm
Min. / max. immersion depth	70 / 250 mm	70 / 250 mm	70 / 250 mm
Shaft length	300 mm	290 mm	290 mm
Materials in contact with medium	PTFE, AISI 316L	PTFE, AISI 316L	PTFE, AISI 316L
pH range	2 – 13	2 – 13	2 – 13
Suitable for solvents	yes	yes	yes
Max. temperature	180 °C	180 °C	180 °C
Sterilization methods	all methods	all methods	all methods

13

14

15



Example of the S 50 N – G 45 M dispersing element set-up

**T 25 digital**

S 25 N – 25 G	S 25 KV – 25 G	S 25 N – 25 F	S 25 KV – 25 F	S 25 D – 10 G – KS	S 25 D – 14 G – KS
1713300	2466900	1713800	2404000	3452200	3452100
50 – 2000 ml	50 – 2000 ml	100 – 2000 ml	100 – 2000 ml	10 – 100 ml	10 – 500 ml
25 mm	25 mm	25 mm	25 mm	10 mm	14 mm
17 mm	17 mm	18 mm	18 mm	6.75 mm	9.5 mm
0.5 mm	0.5 mm	0.5 mm	0.5 mm	0.25 mm	0.35 mm
40 / 165 mm	40 / 225 mm	40 / 165 mm	40 / 225 mm	15 / 85 mm	15 / 85 mm
194 mm	270 mm	194 mm	270 mm	150 mm	150 mm
PTFE, AISI 316L	FFPM / SIC, AISI 316L	PTFE, AISI 316L	FFPM / SIC, AISI 316L	Polycarbonate (PC) Polyetheretherketon (PEEK)	Polycarbonate (PC) Polyetheretherketon (PEEK)
2 – 13	2 – 13	2 – 13	2 – 13	–	–
yes	yes	yes	yes	–	–
180 °C	220 °C	180 °C	220 °C	100 °C	100 °C
all methods	wet chemical	all methods	wet chemical	yes, autoclavable	yes, autoclavable
–	1 mbar	–	1 mbar	–	–
–	6 bar	–	6 bar	–	–

16

17

18

D

19

D

**T 65 basic I digital**

Dispersing element	S 65 KG – HH – G 65 G	S 65 KG – HH – G 65 M	S 65 KG – HH – G 65 F
Ident. No.	8005500	8005700	8005900
Working range	2 – 50 l	2 – 40 l	2 – 30 l
Stator diameter	65 mm	65 mm	65 mm
Rotor diameter	58 mm	58 mm	58 mm
Gap between rotor and stator	0.5 mm	0.5 mm	0.5 mm
Min. / max. immersion depth	90 / 450 mm	80 / 450 mm	80 / 450 mm
Shaft length	520 mm	510 mm	500 mm
Materials in contact with medium	FFPM / SIC, AISI 316L	FFPM / SIC, AISI 316L	FFPM / SIC, AISI 316L
pH range	2 – 13	2 – 13	2 – 13
Suitable for solvents	yes	yes	yes
Max. temperature	180 °C	180 °C	180 °C
Sterilization methods	wet chemical	wet chemical	wet chemical
Min. vacuum	1 mbar	1 mbar	1 mbar
Max. pressure	6 bar	6 bar	6 bar

20

21

22



22

# IKA® Original | Special dispersing tools

**IKA+**

## Saw Tooth (ST) dispersing tools

- > ST tools are recommended for use with tissue and other fibrous materials
- > Saw tooth design creates a cutting and tearing action for shredding fibrous materials
- > Made of high quality stainless steel

1

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3

### T 10 basic

Dispersing element	S 10 N – 8 G – ST	S 10 N – 10 G – ST
Ident. No.	4446500	4446700
Working range	1 – 50 ml	1 – 100 ml
Stator diameter	8 mm	10 mm
Rotor diameter	6.1 mm	7.6 mm
Gap between rotor and stator	0.25 mm	0.2 mm
Min. / max. immersion depth	20 / 95 mm	20 / 100 mm
Shaft length	115 mm	115 mm
Materials in contact with medium	PTFE, AISI 316L	PTFE, AISI 316L

1

### T 25 digital

Dispersing element	S 25 N – 8 G – ST	S 25 N – 10 G – ST	S 25 N – 18 G – ST	S 25 N – 25 G – ST
Ident. No.	4446900	4447100	4447300	4447500
Working range	1 – 50 ml	1 – 100 ml	10 – 1500 ml	50 – 2000 ml
Stator diameter	8 mm	10 mm	18 mm	25 mm
Rotor diameter	6.1 mm	7.5 mm	12.7 mm	17 mm
Gap between rotor and stator	0.25 mm	0.35 mm	0.3 mm	0.5 mm
Min. / max. immersion depth	27 / 85 mm	22 / 85 mm	40 / 165 mm	40 / 165 mm
Shaft length	108 mm	105 mm	194 mm	194 mm
Materials in contact with medium	PTFE, AISI 316L	PTFE, AISI 316L	PTFE, AISI 316L	PTFE, AISI 316L

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4

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8

### T 50 digital

Dispersing element	R 50 "high speed" stirring shaft	Dispersing element	S 50 N – G 45 G – ST
Ident. No.	1689300	Ident. No.	8039500
Working range	0.25 – 30 l	Working range	0.5 – 20 l
Max. circumferential speed	15.7 – 23 m/s	Stator diameter	45 mm
Max. permissible rotor diameter	50 mm	Rotor diameter	36 mm
Material	Stainless steel (AISI 316L)	Gap between rotor and stator	0.5 mm
	<b>* Included with delivery: R 1402 Dissolver Ident. No. 1243300</b>	Min. / max. immersion depth	70 / 250 mm
		Shaft length	300 mm
		Materials in contact with medium	PTFE, AISI 316L

4

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### T 50 digital

Dispersing element	S 50 N – W 65 SK Cutting head	S 50 N – W 80 SMK Jet mixer head
Ident. No.	8005100	8006300
Working range	1 – 10 l	1 – 50 l
Generator diameter	65 mm	80 mm
Min. / max. immersion depth	80 / 350 mm	140 / 350 mm
Available seals	S 50 N	S 50 N

6

7

### Silentstream

The flow breaker is used to prevent vortexing and to minimize air induction into the medium.

Ident. No. 3754000

Fits the following dispersing elements:

S 25 N-18 G	S 25 KV-18 G
S 25 N-25 G	S 25 KV-25 G
S 25 N-25 F	S 25 KV-25 F
S 25 NK-19 G	S 18 N-19 G

8

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### labworldsoft

IKA® laboratory software labworldsoft is an advanced software for all your laboratory needs. With the help of this software, you can network up to 64 laboratory devices via one PC. All test parameters can be documented ensuring complete automation of your laboratory experiments. Measurements and processes may be run independently. Long waits and processing times are reduced, which increases productivity.



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### IKA® Application Support

Our Application Center spans 400 sqm and offers modern facilities for presenting and testing lab devices and processes. This brings us even closer to our customers and improves our service. Here, prospective buyers and customers can test out processes that involve stirring, shaking, dispersing, grinding, heating, analyzing and distilling. In addition, it also further extends the opportunity to test your own devices and to develop new models.



What does "continuous operation" mean for dispersers? Are 4 hours OK?  
4 hours equates to continuous operation! A further particle size reduction with rotor-stator systems does not happen after more than 15 mins. Only heat (due to friction) is transferred into the medium. For the drive itself, continuous operation is not a problem.

Due to the technical data, the ambient temperature of a disperser is 5 – 40 °C. What can be done, if the sample requires higher temperatures?  
The prescribed ambient temperature of 5 – 40 °C is only valid for the drive. Of course, it is possible to work in mediums with higher temperatures, e.g. a dispersing element with "N" (PTFE) bearing can be used in mediums up to 180 °C.

Is it possible to disperse an abrasive material such as sand, glass or similar material?  
In general, it is possible to disperse abrasive material, but a frequent change of the bearing is necessary. In addition, the shaft and spindle can wear off very quickly under these conditions.

Is it possible to disperse frozen samples?  
Yes, in general this is possible if the sample is treated in some liquid. However, it is not possible to work with liquid nitrogen.

The teflon seal (PTFE) of my dispersing element is ripped. Can a new one be ordered?  
Those PTFE parts are slotted and it is not a defect. They are used as a bearing. However, a new seal may be ordered from the spare parts list.

How often can we use disposable dispersing elements for the T 10 basic, T 18 basic and T 25 digital?  
The disposable dispersing tools are designed for single use only.

Does IKA® offer high pressure dispersers?  
Yes, it is possible to work under a pressure of up to 6 bar with dispersing tools having "KV" in their product description. IKA® also offers High Pressure Homogenizer system.

How does one avoid foam generation during dispersing?  
To avoid this scenario, a ULTRA-TURRAX disperser with "KV" tools are recommended. These tools are closed systems, which avoid the generation of foam.

The ULTRA-TURRAX dispersing elements should not run dry. Does that mean that the bottom bore hole has to be in the medium?  
Yes, the circulation hole should be in the medium on all accounts. This is the only way to guarantee the optimum cooling effect on the bearing.

Which is the right dispersing tool to crush vegetables and fruits? How should one clean this properly (sterile)?  
The new Saw Tooth (ST) dispersing tools and a T 50 digital with cutting head S 50 N - W 65 SK would be suitable for this application. This tool can be cleaned. e.g. with acetone or every commonly used sterilization method.