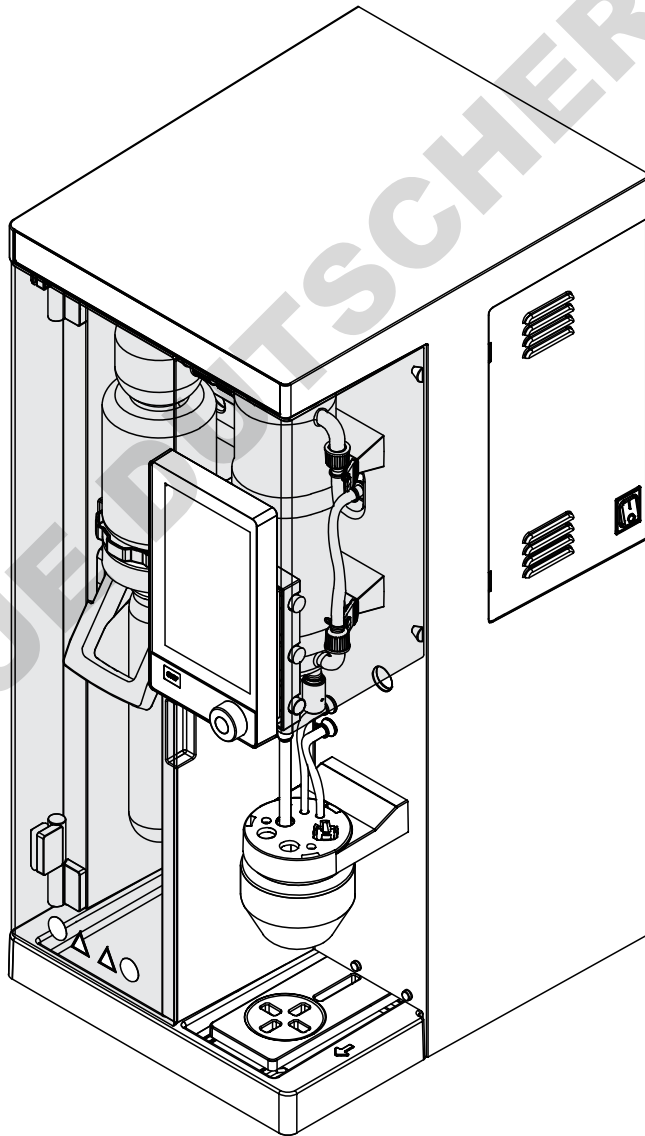




K-365 Kjel Line

Technical data sheet



Kjel Line

Due to its modular concept the Kjel systems can be adapted to various needs. The different instrument configurations allow to meet different application requirements.

A) Three instrument performance levels

- EasyKjel: Entry level unit
- BasicKjel: Intermediate unit
- MultiKjel: Advanced unit

B) Splash protectors

Devarda splash protector (glass only):

- designed to protect the condenser from splashes caused by the Devarda alloy reaction and the steam distillation

Kjeldahl splash protector:

- designed to protect the condenser from splashes caused by the steam distillation

Advantage of the plastic splash protector:

- increased durability to sodium hydroxide and extended lifetime

Advantage of the glass splash protector:

- visual monitoring of the distillation process makes method development more convenient

C) Application versatility

All Kjel systems are designed to distill analytes of the Kjeldahl method:

- Protein
- Total Kjeldahl Nitrogen (TKN)
Non-Protein Nitrogen (NPN)
Total Volatile Basic Nitrogen (TVBN)
Ammonia
Nitrate/nitrite
Casein

D) External titrator

Various titrators can be connected to the MultiKjel systems:

- Metrohm (Eco Titrator and TitrinoPlus 848/877)
- SI Analytics (TitroLine 5000, TitroLine 7000 and Titronic 300)
- Mettler Toledo (G10S, G20S, T5, T7 and T9)

All other titrator models can be used via a semi automated integration.

Scope of delivery

All configurations are supplied ready to use.

	EasyKjel	BasicKjel	Multikjel
Instrument	1	1	1
Splash protector	1*	1*	1*
Titration set	-	-	*
External titrator	-	-	*
Recirculating chiller	*	*	*
Power cable	1	1	1
Sample tube (300 mL)	1	1	1
Tanks (10 L)	2	1	2
Cap Set, 10 L tank	2	1	2
Tank (20 L)	-	1	1
Cap Set, 20 L tank	-	1	1
Suction tube tank	1	3	4
Tank labels	1	2	3
Hose for chemical feed (2 m)	2	3	4
Hose for cooling water feed (1.5 m)	1	1	1
Hose for cooling water drain (3 m)	1	1	1
Hose for peristaltic pump (2.5 m)	-	*	2
Pair of glass tongs	1	1	1
Hose for instrument drain	1	*	-
Hose clips reagent pumps	2	3	4
Hose clip peristaltic pumps	-	*	2

* According to order code

Order code EasyKjel

Choose the configuration according to your needs:



Configuration

- 0 Base Unit with I-300
- 3 Base Unit with I-300 Pro

Splash Protector

- 1 Glass with Dosing Inlet
- 2 Plastic with Dosing Inlet
- 3 Devarda

Recirculation Chiller

- 0 None
- 1 F-314 230V

Order code BasicKjel

Choose the configuration according to your needs:



Configuration

- 0 Base Unit
- 1 Base Unit with Sample Tube Aspiration
- 2 Base Unit with Sample Tube Aspiration and I-300 Pro
- 3 Base Unit with I-300 Pro

Splash Protector

- 1 Glass with Dosing Inlet
- 2 Plastic with Dosing Inlet
- 3 Devarda

Recirculation Chiller

- 0 None
- 1 F-314 230V

Order code MultiKjel

Choose the configuration according to your needs:



Configuration

- 0 Base Unit
- 1 Base Unit with Titration Setup and Receiver Waste Aspiration
- 2 Base Unit with Titration Setup, Receiver Waste Aspiration and Metrohm Eco Titrator

Splash Protector

- 1 Glass with Dosing Inlet
- 2 Plastic with Dosing Inlet
- 3 Devarda

Recirculation Chiller

- 0 None
- 1 F-314 230V

Technical data

K-365 Kjel Line

	EasyKjel	BasicKjel	MultiKjel
Dimensions (W x D x H)	320 x 400 x 730 mm	320 x 400 x 730 mm	320 x 400 x 730 mm
Weight	23 kg	23 kg	23 kg
Connection voltage	220 - 240 ± 10 % VAC	220 - 240 ± 10 % VAC	220 - 240 ± 10 % VAC
Power consumption	2100 W	2100 W	2100 W
Frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
IP Code	IP20	IP20	IP20
Pollution degree	2	2	2
Overvoltage category	II	II	II
Tap water pressure	1 - 10 bar	1 - 10 bar	1 - 10 bar
Tap water condition <small>(If the temperature is more than 25°C use a recirculating chiller)</small>	1- 25°C	1 - 25°C	1 - 25°C
Tap water consumption	~ 1.2 L/min	~ 1.2 L/min	~ 1.2 L/min
Approvals	CE, CSA	CE, CSA	CE, CSA

Analysis specifications

	EasyKjel	BasicKjel	Multikjel
Measuring range N	0.02 – 220 mg	0.02 – 220 mg	0.02 – 220 mg
Analysis time for 30 mg N <small>(With Metrohm Eco Titrator without titrator preparation)</small>	-	-	3.5 min
Analysis time for 200 mg N <small>(With Metrohm Eco Titrator without titrator preparation)</small>	-	-	5 min
Recovery <small>(From 1 - 220 mg N)</small>	N: >98% with digestion process N: >99.5% (direct distillation)	N: >98% with digestion process N: >99.5% (direct distillation)	N: >98% with digestion process N: >99.5% (direct distillation)
Measurement reproducibility <small>(Direct distillation of 1 mg N absolute and 300 sec. distillation)</small>	< 0.8 %	< 0.8 %	< 0.8 %

Instrument specifications

	EasyKjel	BasicKjel	Multikjel
Distillation capacity (100%)	~ 40 mL/min	~ 40 mL/min	~ 40 mL/min
Distillation capacity (10%)	~ 12.5 mL/min	~ 12.5 mL/min	~ 12.5 mL/min
Adjustable distillation power	10 - 100%	10 - 100%	10 - 100%
MaxAccuracy Mode <small>(Compensation of power grid fluctuations)</small>	Yes	Yes	Yes
Distillate reproducibility (RSD) <small>(At 300 seconds distillation time)</small>	<1%	<1%	<1%
AutoDist Mode <small>(Automatic detection of the condensation start)</small>	No	Yes	Yes
NaOH pump	Yes	Yes	Yes
H ₂ O pump	No	Yes	Yes
Acid pump	No	No	No
Boric acid pump	No	No	Yes
Sample disposal	No	Optional	Yes
Receiver disposal	No	No	Optional
Safety sensors	Yes	Yes	Yes
Titration vessel	No	No	Optional
Titrator connection	No	No	Optional
IQ/OQ	No	Yes	No

Interface specifications

	Interface EasyDist, BasicDist	Interface pro BasicDist (option), MultiDist
Display	LCD color, 4.3 in	LCD color, 7.0 in
Control elements	Buttons / control knob	Touch-screen / control knob
Max. number of methods	8	96
Max. number of determinations	36	512
Max. number of determinations per series	16	32
Max. number of templates	4	16
Max. number of users	4	32
Max. number of determination results	40	256
Language	en, de, fr, it, es, pt, ja, zh, ru, pl, ko, id	en, de, fr, it, es, pt, ja, zh, ru, pl, ko, id

Connections

	EasyKjel	BasicKjel	Multikjel
LAN port	-	-	1
BUCHI standard communication ports (COM)	2	2	3
Stirrer port	-	-	1
Level detection sensor port	1	1	1
H ₂ O tank level sensor port	1	1	1
H ₃ BO ₃ tank level sensor port	-	-	1
Acid tank level sensor port	-	-	-
NaOH tank level sensor port	1	1	1
Waste tank level sensor port	-	option	2
Dispenser port (RS-232)	-	-	1
Titration port (RS-232)	-	-	1
USB port	-	option	1

Ambient conditions

For indoor use only.

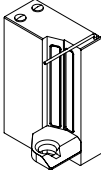
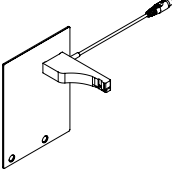
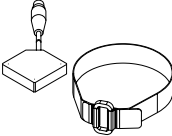

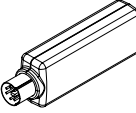
Max. altitude above sea level	2000 m
Ambient and storage temperature	5–40 °C
Maximum relative humidity	80% for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 40 °C



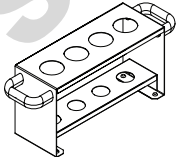
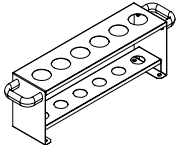
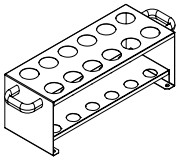
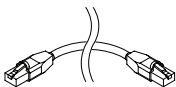
Materials

Component	Materials of construction
Housing	Polyurethane
Housing electric	Stainless steel
Steam generator housing	Stainless steel
Housing stirrer	Glass fiber reinforced polypropylene
Rear cover	Polyvinyl chloride
Glass parts	Borosilicate 3.3
Plastic splash protector	Glass fiber reinforced polypropylene
Protective cover	PMMA
Sealing	CSM
NaOH hose	EPDM
Three-way valve	PP / PE

Spare parts and accessories


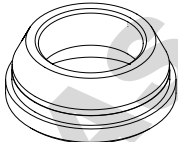
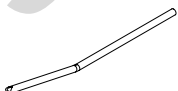
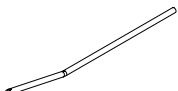
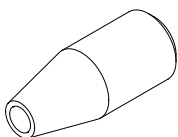
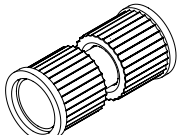
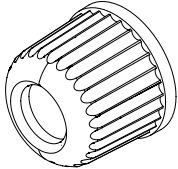

Accessories

	Order no.	Image
Reaction detection sensor	11072666	
OnLevel sensor	11070270	
Tank level sensor kit	11072294	
Eco Titrator	11072748	
StatusLight cpl., incl. communication cable Indicates the status of the instrument (instrument is ready to use, has an error or is in operation).	11068959	
BUCHI Bluetooth® Dongle, connects instrument to smart-phone via Bluetooth®	11067770	

	Order no.	Image
Adapter for 3rd party sample tubes	11072398	
Sealing sample tube 3rd party adapter	11072180	
Sample tube holder (4x 500 mL tubes)	016951	
Sample tube holder (6 x 300 mL tubes)	043039	
Sample tube holder (12 x 300 mL tubes)	043041	
Communication cable RJ45, 2 m Connection between vacuum controller/interface and recirculating chiller, vacuum controller/interface and vacuum pump or steam distillation unit and Eco titrator.	044989	
Dispenser unit Titronic 300	11062956	

Splash protector spare parts

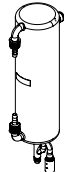
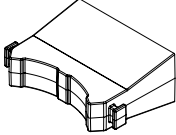
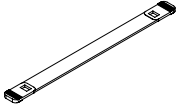
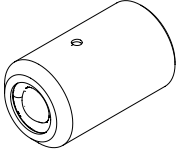
	Order no.	Image
Glass splash protector	11071013	
Plastic splash protector	11070670	

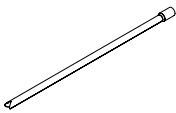

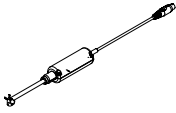
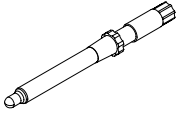
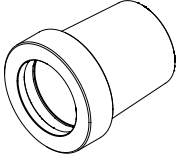
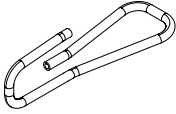
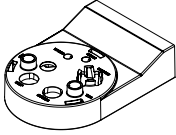
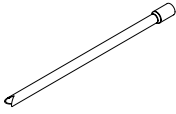
	Order no.	Image
Devarda splash protector	11071014	
Sealing sample tube to splash protector	043068	
Steam inlet tubing to sample tube	043424	
Steam inlet tubing to sample tube (750 mL)	043119	
Connecting piece	019002	
Bridge splash protector to condenser	11070620	
Cap nut GL14	033577	
Hose barbs. set. 4 pcs, straight, GL14, FPM seal Content: Hose barbs, cap nuts, seals.	040296	
Seals, set. 10 pcs, for hose barbs GL14, FPM, green	040040	

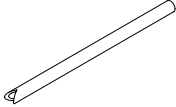
Tank spare parts

	Order no.	Image
Cap Set, 10 L tank	11072173	
Canister 10L thin walled	043410	
Cap Set, 20 L tank	11072174	
Canister 20L	043408	
Tank labels	043434	

Condenser spare parts

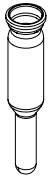
	Order no.	Image
Condenser with check valve	11072183	
Clamp for condenser	11066868	
Rubber band	11070669	
Check valve	11071740	

	Order no.	Image
Dist. Outlet PTFE L=300	11071940	
Titration spare parts		
	Order no.	Image
Receiving vessel	043390	
Stirrer cpl.	11070246	
pH electrode (refillable electrolyte)	11065834	
pH Electrode	11056842	
Clamp cone pH-electrode	11069793	
Hose Tygon Ø 8.0 x 4.8	043364	
Receiving support	11071003	
Dist. Outlet PTFE L=212	11071941	

	Order no.	Image
Aspiration tubing receiving vessel	11072589	

H ₃ BO ₃ tubing receiving vessel	11072637	
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Sample tubes

	Order no.	Image
Sample tubes micro (100 mL) 4 pcs.	11057442	

Sample tubes 300 mL 20 pcs.	11059690	
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Sample tubes 300 mL For sample volumes up to 200 mL or 5 g in weight 4 pcs.	037377	
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Sample tubes graduated 300 mL 4 pcs.	043049	
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Sample tube 500 mL	026128	
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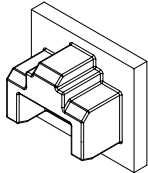
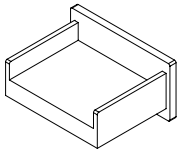
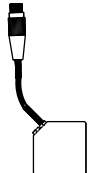
Sample tubes 500 mL 4 pcs.	043982	
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	Order no.	Image
Sample tube 750 mL including suction tube	11058999	

Cable and tubing

	Order no.
Hose peristaltic pump out (2.5 m)	11071630
Hose clips peristaltic pump hose	043586
Hose to NaOH/ H ₂ O/H ₃ BO ₃ pumps or drain (2 m)	11072687
Hose clip to NaOH/H ₂ O/ H ₃ BO ₃ pumps or drain	043841
Suction to tube tank (0.58 m)	043407
Tap water hose cpl.	037780
Cable to Metrohm Mettler (T-series) titrator	043617
To connect the Metrohm Titrimo plus, a Metrohm remote box is needed, see also quick guide.	
Set of sealings tap water hose	040043
Cable to SI-Analytics TitroLine Easy and TitroLine 5000 titrator	043618
Tubing to peristaltic pump	11070015

Other spare parts

	Order no.	Image
Cap RJ-45 cap	11055949	
USB cover	11069375	
Level sensor capacitive	11065245	
Tank level sensor (Velcro point)	11070517	
Tank level sensor (Velcro strap)	11070516	
Silicone hose D6/9 L=3 m	048355	

	Order no.	Image
Collecting pan	11066465	

Pair of glass tongs	002004	
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Consumables

	Order no.
2% boric acid pH 4.65 +/- 0.15 with Sher indicator, 5 L	11064972
4% boric acid pH 4.65 +/- 0.15 with Sher indicator, 5 L	11064973
4% boric acid pH 4.65 +/- 0.15 with bromocresol green / methly red mixed indicator, 5 L	11064976
Sher indicator 100 mL	003512
Ammonium phosphate monobasic, 25 g	045527

Maintenance kit

	Order no.
Customer Kit for Kjel Line	11073024

Upgrade kits

	Order no.
Upgrade Basic base unit with aspiration pump	11CSN12157
Upgrade Basic base unit and aspiration pump with I-300 Pro	11CSN12158
Upgrade Basic base unit with aspiration pump and I-300 Pro	11CSN12159
Upgrade Multi base unit with titration vessel	11CSN12160
Upgrade MultiKjel to MultiDist	11CSN12161

Documentation

	Order no.
IQ/OQ set BasicKjel & MultiKjel en	11073604
Rep. OQ BasicKjel & MultiKjel en	11073605
Kjeldahl Knowledge Base (EN)	11595478
Comprehensive guide covering all aspects of the theoretical and practical know-how.	
Kjeldahl Practice Guide (EN)	11592548
Provides theoretical background information, useful hints and calculation tables for daily routine work	
Kjeldahl Practice Guide (DE)	11592547
Kjeldahl Practice Guide (CN)	11592549