



ENVIRONMENT LINE

CHEMICAL OXYGEN
DEMAND (COD)

BIOCHEMICAL OXYGEN
DEMAND (BOD)

REFRIGERATED
THERMOSTATS

COOLED
INCUBATORS

NITROGEN
DETERMINATION

FLOCCULATORS

OVERHEAD
MIXER

TRACE METALS
DETERMINATION

TURBIDIMETER

RADIATION
DETECTOR

CHEMICAL OXYGEN DEMAND (COD)

ECO SERIES

WHAT IS COD?

The pollution caused by organic and inorganic substances in water can be evaluated using a parameter called COD. COD stands for Chemical Oxygen Demand and refers to the oxygen used during the oxidation of substances dissolved and suspended in water. By determining the COD it is possible to determine the quantity of chemically oxidizable substances with energy oxidants such as potassium dichromate present in a strongly acidic solution. The acid environment is created by the addition of concentrated sulfuric acid. Both inorganic compounds and organic substances can be oxidized. This method can also be used to determine the quantity of organic substances such as cellulose, that may not be detected by the equivalent biological method (BOD, Biochemical Oxygen Demand).

THERMOREACTION OF A SAMPLE

Digestion is an extremely important step in many chemical reactions. The aim is to convert low-solubility compounds or substances present in the form of aggregates into soluble compounds in order to degrade organic substances into inorganic molecules, or to eliminate interfering substances and solubilize metallic ions. Digestion takes place by adding decomposition reagents to the sample which is then heated.

VELP Scientifica **ECO** thermoreactors are suitable for COD analysis and for sample preparation in order to determine both metallic and non-metallic elements in organic and inorganic materials such as minerals, alloys, animal feeds, soils, sediments and organic tissues. A typical COD analysis will take 2 hours at 150 °C, however the VELP ECO Series can perform **COD analysis in only 30 minutes** thanks to the higher temperature of 160 °C. The aluminum heating block offers **optimum thermal conditions** and a **high level of homogeneity** at all temperatures.

The ECO- series thermoreactors are also suitable for determining total organic carbon (TOC), total chromium, total nitrogen and total phosphate and ensure **excellent accuracy** and **repeatability**.

GLP Good Laboratory Practice

EPA • ISO • APHA • AWWA • WEF

ECO 6

The **ECO 6** is designed to process 6 samples (200 ml test tubes, Ø 42 mm) simultaneously. Electronic temperature control ensures temperature regulation from ambient to **200 °C** and the analysis time can be set from **1 to 199 minutes** or **continuous**. An LED display shows the temperature and time remaining. Dedicated adapters are available for different sizes and quantities of test tubes making the ECO 6 an **extremely flexible** and versatile instrument: 6 Ø 42 mm test tubes; 6 Ø 22 mm test tubes or 18 Ø 16 mm test tubes.

INSTRUMENT	POWER SUPPLY	CODE No
ECO 6	230 V / 50-60 Hz	F10100120
ECO 6	115 V / 50-60 Hz	F10110120



ECO 16

The **ECO 16** can be used to process 14 Ø 16 mm test tubes plus 2 Ø 22 mm test tubes simultaneously. Electronic temperature control ensures temperature regulation from ambient to **160 °C** and the analysis time can be set from **1 to 199 minutes** or **continuous**. An LED display shows the temperature and time remaining. An acoustic signal indicates the end of analysis and the instrument switches off automatically. For **increased safety** and **reliability** a safety shield is available.

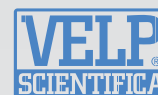
INSTRUMENT	POWER SUPPLY	CODE No
ECO 16	230 V / 50-60 Hz	F10100126
ECO 16	115 V / 50-60 Hz	F10110126

OPTIONAL ACCESSORIES FOR SLUDGE ANALYSIS CODE No

Test tube for sample decomposition Ø 22 mm, NS 19/26 cone with glass cap	CA0091666
Condenser 200 mm type KS with 3 meters polyethylene tube	CA0091667
Absorption attachment for condenser NS 29/32	1000002



ECO 8 AND ECO 25



The **ECO 8** can process 8 samples in Ø 16 mm test tubes plus 1 sample in a Ø 22 mm test tube simultaneously, the **ECO 25** 25 samples in Ø 16 mm test tubes. Both instruments come complete with a test tube cover for **increased safety** and **reliability**. Five **different temperatures** (70, 100, 120, 150 and 160 °C) and four **analysis times** (30, 60, 90 minutes or in continuous) can be set. An acoustic signal indicates the end of analysis and the instrument switches off automatically.

INSTRUMENT	POWER SUPPLY	CODE No
ECO 8	230-115 V / 50-60 Hz	F101A0127
ECO 25	230-115 V / 50-60 Hz	F101A0125

ECO 8 only

OPTIONAL ACCESSORIES FOR SLUDGE ANALYSIS CODE No

Test tube for sample decomposition Ø 22 mm, NS 19/26 cone with glass cap	CA0091666
Condenser 200 mm type KS with 3 meters polyethylene tube	CA0091667
Absorption attachment for condenser NS 29/32	1000002



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GENERAL FEATURES AND PERFORMANCE

	ECO 6	ECO 8	ECO 16	ECO 25
NUMBER OF POSITIONS	6 (Ø 42 mm) as standard, 6 (Ø 22 mm) or 18 (Ø 16 mm)	8 (Ø 16 mm) + 1 (Ø 22 mm)	14 (Ø 16 mm) + 2 (Ø 22 mm)	25 (Ø 16 mm)
TEMPERATURE REGULATION °C	from ambient to 200	70, 100, 120, 150 and 160	from ambient to 160	70, 100, 120, 150 and 160
TIME SETTINGS min.	0÷199 or continuous	30, 60, 120 or continuous	0÷199 or continuous	30, 60, 120 or continuous
STABILITY AND HOMOGENEITY OF HEATING BLOCK TEMPERATURE °C	± 0.5	± 0.5	± 0.5	± 0.5
SIGNALS: TEMPERATURE REACHED	visual	acoustic and visual	visual	acoustic and visual
ANALYSIS TIME	visual	visual	visual	visual
END OF CYCLE	acoustic and visual	acoustic and visual	acoustic and visual	acoustic and visual
DAMAGED PROBE	acoustic and visual	acoustic and visual	acoustic and visual	acoustic and visual
OVERTEMPERATURE	acoustic and visual	acoustic and visual	acoustic and visual	acoustic and visual
DIMENSIONS (WxHxD) mm (in)	198x132x319 (7.8x5.2x12.6)	135x95x230 (5.3x3.7x9.1)	168x110x269 (6.6x4.3x10.6)	155x95x275 (6.1x3.7x10.8)
WEIGHT Kg (lb)	5.6 (12.3)	2 (4.4)	3.6 (7.9)	3.8 (8.4)
POWER SUPPLY	115 or 230 V	230-115 V	115 or 230 V	230-115 V
POWER	700 W	140 W	550 W	400 W

OPERATING ACCESSORIES

CODE No

ECO 6 COD test tubes Ø 42x200 mm, 200 ml with cone NS 29/32, 3 pcs/box	A0000145
ECO 6 Sample rack for 6 test tubes Ø 42 mm	A00001043
ECO 6 Air refrigerator with ground cone	A00001041
ECO 6 Antisplash bell	A00001045
ECO 6 PTFE sheath for 29/32 cones	A00001042

OPTIONAL ACCESSORIES

CODE No

ECO 6 Anticorrosal reducer Ø 42 mm with 3 holes Ø16 mm	A00001044
ECO 6 Anticorrosal reducer Ø 42 mm with 1 hole Ø22 mm	A00001046
ECO 8/ECO 16/ECO 25 Set of 20 test tubes with Ø 16 mm	CM0091680
ECO 8/ECO 16/ECO 25 Holder for 12 round glass cells	CA0091636
ECO 16 Safety shield	A00001051
ECO 25 Test tube extractor	A00001039

BIOCHEMICAL OXYGEN DEMAND (BOD)

WHAT IS BOD?

BOD (Biochemical Oxygen Demand) is a chemical procedure for determining the amount of dissolved oxygen consumed by aerobic biological microorganisms in water.

The analysis is carried out on a given water sample at certain temperature over a specific period.

The results are most commonly expressed in milligrams of oxygen consumed per liter of sample at a constant temperature of 20 °C over a 5 day incubation period (BOD_5), or during complete oxidation obtained after a maximum period of 30 days ($BOD_{ultimate}$).

BOD determination is widely used as an indication of the organic quality of water and the degree of organic pollution of water.

BOD ANALYSIS

In conformity with International safety regulations for safeguarding workers and the environment, VELP Scientifica has developed an innovative ecological (mercury-free) system for BOD determination using a microprocessor and manometric technology.

Different solutions are available to suit different needs.

BOD CONTROL TESTS

Water quality analysis calls for systematic research using instruments of guaranteed accuracy and precision.

VELP offers two accessories to test the accuracy of BOD instruments:

- **BOD Sensor Check** (Code No A00000135); performs a quick test to check if the BOD Sensor is operating properly.
- **Control Test Tablets** (Code No A00000136); check both the correct functioning of the system and the calibration of the pressure sensor through a 5-day test.

GLP Good Laboratory Practice

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BMS 6

The **BMS 6** for BOD determination uses the traditional manometric technique for concentrations of up to 1000 mg/l (ppm); higher concentrations must be diluted before analysis.

The instrument houses 6 bottles each with manometer and 4 scales for concentrations of up to 90, 250, 600 and 999 ppm BOD.

The 500ml bottle can take sample quantities of from 100 to 400 ml.

The 6-position magnetic stirrer incorporated in the base of the instrument ensures **continuous stirring** of the samples.

INSTRUMENT	POWER SUPPLY	CODE No
BMS 6	230 V / 50 Hz	F10220131
BMS 6	230 V / 60 Hz	F10230131
BMS 6	115 V / 60 Hz	F10240131



BOD SENSOR AND BOD SENSOR SYSTEM



The **BOD Sensor Set** is a ready-to-use solution consisting of a BOD Sensor, a dark glass bottle, an alkali holder to absorb the carbon dioxide and a stirring bar.

This simple configuration was designed to meet the demands of those laboratories that carry out **individual BOD analysis only**.

The BOD Sensor Set is designed for use with the VELP MST stirrer (Code No F203A0160).

It can also come as a package in the **BOD Sensor System 6 or 10** configuration, including a 6- or 10-position stirring station with BOD Sensors, dark glass bottles, alkali holders for absorbing the carbon dioxide and stirring bars.

The **6-position Stirring Station** is extremely **simple to handle** and the VELP stirring quality is guaranteed. The **space saving footprint** means that up to 5 stirring stations for a total of 30 samples can be placed in a VELP incubator (FOC 225E or FOC 225I) simultaneously.

Measurement is available on 4 different scales - 90, 250, 600 and 999 ppm BOD. Higher values can be measured by diluting the sample.

INSTRUMENT	POWER SUPPLY	CODE No
BOD Sensor	-	F102B0133
BOD Sensor Set	-	F102B0134
BOD Sensor System 6	230 V / 50 Hz	S10220136
BOD Sensor System 6	230 V / 60 Hz	S10230136
BOD Sensor System 6	115 V / 60 Hz	S10240136
BOD Sensor System 10	230 V / 50 Hz	S10220137
BOD Sensor System 10	230 V / 60 Hz	S10230137
BOD Sensor System 10	115 V / 60 Hz	S10240137



The **BOD Sensor** is the **mercury-free** and **reliable** solution for BOD determination.

Easy to handle, quick and easy to read. A microprocessor-controlled pressure transducer transfers the BOD value directly to the display: results are displayed **directly in mg/l** with **no need for further calculation** and are stored automatically in the BOD Sensor. Manufactured with premium materials, it automatically stores 5 BOD measurements at 24-hour intervals meaning that analysis can continue over the weekend.

The **BOD value** can also be obtained directly from the **display at any time**, even after five days.



BOD EVO SENSOR SYSTEM 6

The **BOD EVO Sensor** is the **unique** and **revolutionary wireless sensor**, able to transfer data to the dedicated software **BODSoft™**.

Mercury-free and intuitive, BOD EVO Sensor ensures an **outstanding reliability** as there is **no need to open the door of the incubator** thus eliminating the risk of internal temperature variations.

BOD EVO Sensor has an **extremely compact** profile and is **easy to handle**.

The sensor measures the BOD value **directly in mg/l** with no need of further calculation and the results are immediately sent to the PC. Real time monitoring on the sensor display is still possible.

Manufactured using the most modern and advanced construction techniques, the BOD EVO Sensor fits directly on the bottle containing the sample.

Measurement is available on 4 different scales - 90, 250, 600 and 999 ppm BOD. Higher values can be measured by diluting the sample.

It comes as a package in the **BOD EVO Sensor System 6** configuration, including the 6-position stirring station with BOD EVO Sensors, dark glass bottles, alkali holders for absorbing carbon dioxide and stirring bars.

The **Stirring Station** is extremely **simple to handle** and the VELP stirring quality is guaranteed. The **space saving footprint** means that up to 5 stirring stations for a total of 30 samples can be placed in a VELP incubator (FOC 225E or FOC 225I) simultaneously.

INSTRUMENT

POWER SUPPLY

CODE No

BOD EVO Sensor System 6	230 V / 50 Hz	S10220156
BOD EVO Sensor System 6	230 V / 60 Hz	S10230156
BOD EVO Sensor System 6	115 V / 60 Hz	S10240156
BOD EVO Sensor System 6*	230 V / 50 Hz	S10220146
BOD EVO Sensor System 6*	230 V / 60 Hz	S10230146
BOD EVO Sensor System 6*	115 V / 60 Hz	S10240146

* including Wireless Databox™, BODSoft™ and cable



BOD EVO transfers the BOD value to the **Wireless Databox™** automatically.

The results are shown through the user friendly **BODSoft™**.

An innovative solution to simplify BOD investigations!



Wireless DataBox™

The **exclusive wireless data transmission** from the BOD EVO Sensor to the **Wireless DataBox™** can be set at selected intervals ranging from 30 minutes to 24 hours in the case of BOD₅ (5-day test); for longer analyses the sampling time period range goes from 2 to 24 hours. The BOD EVO Sensor automatically stores the most recent values.

Data transmission is ensured even when the Wireless DataBox™ is not connected to the PC. The Wireless DataBox™ can store unlimited results for up to 80 samples.



BODSoft™



The **BODSoft™** is **extremely intuitive** and **easy to use** right from the start.

1...BEFORE AND DURING THE ANALYSIS

All the most important info is **clearly displayed** during analysis, including the status of the sensor battery. An **unlimited database** shows all the completed and active analyses, with a **real time graph**.

2...AFTER THE ANALYSIS

At the end of the analysis, **customized test reports** can be created along with **results comparison**. Results are stored into databases and can be exported in .xls, .txt and .csv format to PC or LIMS.



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GENERAL FEATURES AND PERFORMANCE

	Traditional with mercury	Innovative, mercury-free manometric with pressure sensor				
	BMS 6	BOD Sensor Set	BOD Sensor System 6 and 10		BOD EVO Sensor System 6	
REAL TIME DATA READING mg/l (ppm)	On board	On display	On display		On display	
PC DATA READING mg/l (ppm)					•	
DATA STORAGE		Every 24 hours	Every 24 hours		Every 30 min / 1/2/4/6/8/12/24 hours	
BOD ₅	-	-	-		Every 2 / 4 / 6 / 8 / 12 / 24 hours	
BOD _{ultimate}	-	-	-		90, 250, 600, 999	
SCALES	ppm BOD	90, 250, 600, 999	90, 250, 600, 999		90, 250, 600, 999	
SUPPLIED WITH	SENSOR	1	6	10	6 EVO	
	DARK GLASS BOTTLE	6	6	10	6	
	ALKALI HOLDER	6	6	10	6	
	STIRRING BAR	6	6	10	6	
	STIRRING STATION	6-place	6-place	10-place	6-place	
DIMENSIONS (WxHxD) mm	350x360x210	75x230x75	270x300x175	432x300x165	270x300x175	
	(n)	(13.8x14.2x8.3)	(3.0x9.3x3.0)	(10.6x11.8x7.3)	(17.0x11.8x6.5)	(10.6x11.8x7.3)
WEIGHT Kg (lb)	7 (15.4)	0.4 (0.9)	2.3 (5.1)	3 (6.6)	2.3 (5.1)	
POWER SUPPLY	115 or 230 V	-	115 or 230 V	115 or 230 V	115 or 230 V	
POWER	2 W	2x3 V batteries	2 W	2 W	2 W	

OPTIONAL ACCESSORIES

CODE No

BOD Sensor Check	A0000135 *
Control Test Tablets, 8 pcs/box	A0000136

* for BOD Sensor Set, BOD Sensor Systems 6 and 10 and BOD EVO Sensor System 6

OPTIONAL ACCESSORIES

CODE No

Multi-socket extension cable	A0000221
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REFRIGERATED THERMOSTATS

IncubationSoft™

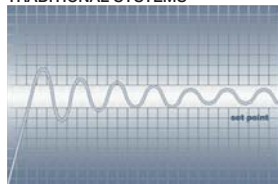


WHAT IS THE DIFFERENCE BETWEEN A VELP REFRIGERATED THERMOSTAT AND A VELP INCUBATOR?

The refrigerated thermostat can be used to keep any product at a constant temperature and to incubate samples for BOD determination.

For those applications where the monitoring of the sample is extremely important, VELP has developed a line of incubators that offer the possibility of visually examining the contents without interfering with the thermal cycle in progress.

TRADITIONAL SYSTEMS



Extended temperature oscillations before reaching the set value

INNOVATIVE AUTO-TUNING SYSTEM



Rapid alignment of the temperature with the set value with minimum oscillations

With the innovative VELP Incubator software IncubationSoft™ the user can interface all the refrigerated thermostats ("E" series) and all the incubators ("I" series) with a PC, using the RS232 serial connection.

In this way the user can:

- Control the refrigerated thermostat (set point, minimum and maximum temperature alarm thresholds);
- Instantly view the trend of the internal temperature on a graph;
- Automatically record the temperature trend on a spreadsheet;
- Set working ramps with different temperatures and times;
- View and record any alarms;
- Store test data in conformity with GLP.

CFCFree

Thanks to the **Auto-Tuning thermoregulation system**, VELP Scientifica refrigerated thermostats and incubators ensure **optimum thermal homogeneity** and **stability** at any temperature. The internal temperature is constantly controlled by the software, which continuously compares the detected and set values and aligns them with a **precise and rapid alignment system** developed by VELP.

GLP Good Laboratory Practice

FTC 90, FTC 90E AND FOC 225E

The **FTC 90** is a small refrigerated thermostat specially designed for incubating BOD samples, at a constant temperature of 20 °C. Forced air circulation ensures a **uniform temperature inside the incubation chamber**.

The **FTC 90E** and **FOC 225E** with the **innovative Auto-Tuning thermoregulation system** and forced air circulation offer **excellent stability and homogeneity of the internal temperature**. The temperature can be set from 3 to 50 °C, the reading on the display refers to the real internal temperature.

The FTC 90E and FOC 225E can be connected to a PC using the serial port RS232 in order to use the **IncubationSoft™**.

INSTRUMENT	POWER SUPPLY	CODE No
FTC 90	230 V / 50 Hz	F10300140
FTC 90E	230 V / 50 Hz	F10310143
FOC 225E	230 V / 50-60 Hz	F10300141



COOLED INCUBATORS

FTC 90I AND FOC 225I



The **FTC 90I** and **FOC 225I** are **extremely efficient** incubators with a **transparent internal door** for visual examination of the contents. The internal chamber is condensation-free and boasts **excellent temperature stability**. Incubators can be used to keep any sample at a constant, precisely regulated temperature.

Continuous ventilation and the **Auto-Tuning thermoregulation system** ensure temperature uniformity throughout the chamber. The temperature can be set from 3 to 50 °C, the reading on the display refers to the real internal temperature.

The FOC 225I is equipped with two internal sockets controlled by an external switch, the FTC 90I has one internal socket.

The FTC 90I and FOC 225I can be connected to a PC using the serial port RS232 in order to use the dedicated software **IncubationSoft™**.

INSTRUMENT	POWER SUPPLY	CODE No
FTC 90I	230 V / 50 Hz	F10400143
FOC 225I	230 V / 50-60 Hz	F10400141

GLP Good Laboratory Practice



① GENERAL FEATURES AND PERFORMANCE	Refrigerated Thermostats			Incubators	
	FTC 90	FTC 90E	FOC 225E	FTC 90I	FOC225I
TRANSPARENT DOOR				•	•
TOTAL VOLUME L	90	90	225	90	225
USABLE INTERNAL VOLUME L	64	64	196	64	196
TEMPERATURE SETTINGS °C	20, constant	from 3 to 50	from 3 to 50	from 3 to 50	from 3 to 50
TEMPERATURE STABILITY AND HOMOGENEITY °C	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5
ELECTRONIC THERMOREGULATION SYSTEM	Traditional	Auto-Tuning	Auto-Tuning	Auto-Tuning	Auto-Tuning
NUMBER OF SHELVES SUPPLIED	1	1	4	1	4
MAXIMUM NUMBER OF SHELVES	1	1	6	1	6
INTERNAL SOCKET	1	1	2	1	2
DIMENSIONS (WxHxD) mm (in)	550x590x600 (21.6x23.2x23.6)	550x590x600 (21.6x23.2x23.6)	540x1300x560 (21.3x51.2x22.0)	550x590x600 (21.6x23.2x23.6)	540x1300x560 (21.3x51.2x22.0)
WEIGHT Kg (lb)	24.5 (53.9)	29 (63.8)	40 (88.0)	30 (66.0)	40 (88.0)
POWER SUPPLY	230 V	230 V	230 V	230 V	230 V
POWER	150 W	250 W	350 W	250 W	350 W

SUPPLIED WITH

CODE No

FTC 90, FTC 90E and FTC 90I shelf	10001076 *
FOC 225E and FOC 225I shelf	10004223 **

* 1 piece included ** 4 pieces included

OPTIONAL ACCESSORIES

CODE No

FOC 225E and FOC 225I shelf	10004223
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OPTIONAL ACCESSORIES

CODE No

IncubationSoft™	A00000020 *
Connecting cable for RS232 interface	A00000005 *
IQ/OQ Manual	A00000076

* for FTC 90E, FOC 225E, FTC 90I, FOC 225I

NITROGEN DETERMINATION

DK SERIES DIGESTION UNITS

DK Series digesters perform Kjeldahl analysis using traditional methods (with no automation). The digester consists of an aluminium heating block that needs to be combined with operating accessories in order to be functional: a support system, a sample rack (with heat shields), a suction cap and test tubes.

The heating block offers **excellent thermal homogeneity** and temperature is controlled by a dedicated microprocessor. A graphic display shows up to 20 work programs with 4 temperature ramps for each program, completely user-programmable.



DKL SERIES AUTOMATIC DIGESTION UNITS

The fully **automated DKL Series** digester system consists of an aluminium heating block offering **excellent temperature homogeneity, precision and accuracy**; an auto lift and an auto suction cap are supplied as a complete package including test tubes, sample rack and drip tray.

The DKL Series incorporates VELP's revolutionary **TEMS™ technology** for **unprecedented savings** in terms of **Time, Energy** - as much as 35%, **Money and Space**.

High-tech but simple to use, a microprocessor controls the block temperature whilst an electronic auto-calibration system ensures **excellent reliability** and **repeatability** of analysis.

A practical interface with LCD graphic display allows access to all the data including the multi-language library and the 54 programs available, 24 of which are user-programmable. DKL digestion units are **extremely compact** with a narrow footprint for optimum use of space on the lab bench. Data can be printed or stored in a PC.



INSTRUMENT	POWER SUPPLY	CODE No
DK 6	230 V / 50-60 Hz	F30100182
DK 6	115 V / 50-60 Hz	F30110182
DK 6/48	230 V / 50-60 Hz	F30100188
DK 6/48	115 V / 50-60 Hz	F30110188
DK 8	230 V / 50-60 Hz	F30100020
DK 8	115 V / 50-60 Hz	F30110020
DK 20	230 V / 50-60 Hz	F30100181
DK 20/26	230 V / 50-60 Hz	F30100185
DK 20/26	115 V / 50-60 Hz	F30110185
DK 42/26	230 V / 50-60 Hz	F30100186

INSTRUMENT	POWER SUPPLY	CODE No
DKL 8 *	230 V / 50-60 Hz	S30100200
DKL 8 *	115 V / 50-60 Hz	S30110200
DKL 12 *	230 V / 50-60 Hz	S30100190
DKL 12 *	115 V / 50-60 Hz	S30110190
DKL 20 *	230 V / 50-60 Hz	S30100210
DKL 42/26 *	230 V / 50-60 Hz	S30100180

* DKL Series comes including lift, suction cap, sample rack and test tubes

GLP Good Laboratory Practice
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NITROGEN DETERMINATION

UDK SERIES



UDK DISTILLATION UNITS

VELP Scientifica **UDK** distillation units are the ideal solution for performing analyses concerning different applications such as determining ammoniacal nitrogen, protein nitrogen, (Kjeldahl or direct alkaline distillation), nitric nitrogen (after reduction), phenols, volatile fatty acids, cyanides, alcohol content and Devarda alloy.

VELP Scientifica offers a **wide choice** with its 4-model series for performing efficient and reliable steam distillations, according to the different needs of the users. All the units support the **most advanced technology**, consisting in a **unique patented steam generator** and an **outstanding efficient patent pending titanium condenser** that are wisely combined with a **technopolymer splash head**.

Designed with a strong and chemical-resistant structure made of technopolymer, UDK Series has been designed to last in time and to perform reliable analysis for many years.

Different **safety features** have been assembled on the units:

- safety lever avoids contact with soiled surfaces
- protective door with sensor shields test tube and prevents spills; completely closed
- service door + automatic electrical shutdown for extraordinary maintenance
- cooling water flow-rate detector activates low flow-rate warning signal
- test tube sensor ensures the presence of the test tube
- drip tray collects any drops

UDK Series supports different sizes of test tubes, from straight tubes (100, 250, 300, 400 ml and 1liter) to Kjeldahl flasks (500 ml).

UDK models have different levels of automation.

The **UDK Series** incorporates **TEMS™ technology** for major savings in **Time, Energy, Money and Space**, pursuing VELP's contribution to environmental protection.

GLP Good Laboratory Practice
EPA • DIN • ASTM • TAPPI



INSTRUMENT	POWER SUPPLY	CODE No
UDK 129	230 V / 50-60 Hz	F30200120
UDK 129	115 V / 50-60 Hz	F30210120
UDK 139	230 V / 50-60 Hz	F30200130
UDK 149	230 V / 50-60 Hz	F30200140
UDK 159	230 V / 50-60 Hz	F30200150



STEAM GENERATOR **PATENTED**

- Safe Working Conditions
- Non-Pressurized
- Extremely Reliable
- Using Deionized Water

TECHNOPOLYMER SPLASH HEAD

- Long-Life
- High Chemical Resistance
- No Risk of Breakage
- Maintenance-free and Easy to Replace

TITANIUM CONDENSER **PATENT PENDING**

- Efficient Thermal Exchange
- Limited Water Consumption
- No Nitrogen Loss, Precise Results
- Minimal Maintenance

TECHNOPOLYMER HOUSING

- High Durability
- Long-Life
- Space Saving
- Safety Lever, Protective Door and Service Door

FLOCCULATORS

JLT 4 AND JLT 6

FLOCCULATORS

VELP Scientifica has developed a complete line of instruments to support the lab technician working in the environmental sector and for the separation of pollutants in waste-water treatment plants in particular.

JAR TEST

The choice and dosage of the chemical coagulant to be adopted for removing suspended solids from waste-water are established based on an evaluation of the results obtained from the Jar Test.

Multiple stirrers with reproducible stirring speeds ensure repeatable and reliable results.

LEACHING TEST

This is a test on solid wastes to be sent to the dump that uses diluted acetic acid or carbon dioxide-saturated water to detect the presence of toxic heavy metals.

The **JLT 4** and **JLT 6** are multiple stirrers with **reproducible stirring speeds** allowing standard conditions to be met during analysis, a basic requirement in order to obtain **reliable and repeatable results**.

The highly **versatile** stainless steel stirring shafts offer height adjustment and are fitted with a self-locking device with clutch.

The sample can be **backlit** for **easier reading**.

The instrument has an **ergonomic design** and the control panel is sloped to facilitate **parameter settings** and readings. The rotation speed can be set from 10 to 300 rpm, with 1 rpm intervals, the time remaining can be set in hours or minutes.

UK, AU and USA adapter plugs are available on request.

INSTRUMENT	POWER SUPPLY	CODE No
JLT 4	100±240 V / 50-60 Hz	F105A0108
JLT 6	100±240 V / 50-60 Hz	F105A0109



FP4

The **FP4** is the **portable flocculator** that can be connected to a battery or a car cigarette lighter.

The anti-skid base ensures **stability** whilst the highly versatile stainless steel stirring shafts offer height adjustment and are fitted with a self-locking device with clutch.

The FP4 is particularly suitable for carrying out on-site Jar Tests.

UK, AU and USA adapter plugs are available on request.

INSTRUMENT	POWER SUPPLY	CODE No
FP4	100±240 V / 50-60Hz	F105A0117



FC4S AND FC6S



The **FC4S** and **FC6S** are **highly resistant** to chemical and mechanical aggression and corrosion.

The highly versatile stainless steel stirring shafts offer height adjustment and are fitted with a self-locking device with clutch.

The sample can be **backlit** for **easier reading**.

Motion is transmitted by four (in the case of the FC4S) or six (in the case of the FC6S) direct current gear motors in order to ensure **optimum performance** and **reproducibility** even at low speeds.

With 9 different speed settings for each position the instrument is **totally flexible**; the stirring speed can be set using the selectors on the front panel (10-15-30-45-60-90-120-150-200 rpm).

On demand version can reach 300 rpm.

UK, AU and USA adapter plugs are available on request.

INSTRUMENT	POWER SUPPLY	CODE No
FC4S	100÷240 V / 50-60 Hz	F105A0111
FC6S	100÷240 V / 50-60 Hz	F105A0112



GENERAL FEATURES AND PERFORMANCE

	JLT 4	JLT 6	FC4S	FC6S	FP4
NUMBER OF POSITIONS	4	6	4	6	4 (portable)
INDEPENDENT POSITIONS			•	•	
SPEED SETTINGS rpm	from 10 to 300	from 10 to 300	10-15-30-45-60-90-120-150-200	10-15-30-45-60-90-120-150-200	20-40-50-100-200
TIME SETTINGS	0÷999 min 0÷99 hours continuous	0÷999 min 0÷99 hours continuous	- - continuous	- - continuous	0÷30 min - continuous
LIGHT	disconnectable backlight	disconnectable backlight	disconnectable backlight	disconnectable backlight	disconnectable central light
DIMENSIONS (WxHxD) mm (in)	645x347x260 (25.4x13.7x10.2)	935x347x260 (36.8x13.7x10.2)	645x347x260 (25.4x13.7x10.2)	935x347x260 (36.8x13.7x10.2)	250x320x250 (9.8x12.6x9.8)
WEIGHT Kg (lb)	13 (28.6)	17 (37.4)	12.5 (27.5)	18 (39.6)	4.8 (10.6)
POWER SUPPLY	100÷240 V	100÷240 V	100÷240 V	100÷240 V	100÷240 V
POWER	11 W	19 W	18 W	23 W	6 W

JLT 4, JLT 6, FP4, FC4S, FC6S ACCESSORIES

INTERCHANGEABLE PLUGS	CODE No
JLT 4/JLT 6/FC4S/FC6S US plug	10003722
JLT 4/JLT 6/FC4S/FC6S UK plug	10003723
JLT 4/JLT 6/FC4S/FC6S Australian plug	10003724
FP4 US plug	10003083
FP4 UK plug	10003084
FP4 US Australian plug	10003085

OPTIONAL ACCESSORIES	CODE No
Plastic beaker, 1000 ml	A00001000
Glass beaker, 1000 ml	A00001001
Transparent plastic Imhoff cone	A00001002 *
Graduated glass Imhoff cone	A00001003 *
Stand for 2 Imhoff cones	A00001004 *
FP4 Carrying case	A00001005

* only for JLT 4, JLT 6, FC4S and FC6S

OVERHEAD MIXER

ROTAX 6.8

The **ROTAX 6.8** is purpose-designed and developed to evaluate the solubility in water of pollutants present in sludge, sediments and solid waste. The ROTAX 6.8 is suitable for waste treatment plants, wastewater treatment plants and laboratories involved in environmental analyses.

An **easy to use** instrument with a **digital display** and speed settings ranging from 0 to 30 rpm. **Precise** and **extremely safe**, the ROTAX 6.8 offers **excellent performance**.

INSTRUMENT	POWER SUPPLY	CODE No
ROTAX 6.8	230 V / 50-60 Hz	F10600118
ROTAX 6.8	115 V / 50-60 Hz	F10610118

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OPTIONAL ACCESSORIES

CODE No

Polyethylene bottle, 2-liter capacity	A00001021
Polyethylene bottle, 1-liter capacity	A00001022
Adapter for 8 bottles (1-liter capacity), 2 pcs/box	A00001023
Glass bottle with round glass cap, 2-liter capacity	A00001024

① GENERAL FEATURES AND PERFORMANCE

SAMPLE CAPACITY	6 samples in 2-liter bottles 8 samples in 1-liter bottles *
SPEED OF ROTATION	up to 30 rpm
BOTTLE INFO	2-liter bottle max. diameter: 135 mm height: from 220 to 285 mm 1-liter bottle max. diameter: 110 mm height: from 200 to 275 mm
DIMENSIONS (WxHxD)	665x520x470 mm (26.2x20.5x18.5 in)
WEIGHT	30 kg (66.0 lb)
POWER SUPPLY	115 or 230 V
POWER	100 W

* adapter required

TRACE METALS DETERMINATION

TMD 6

The environmental risk represented by trace metals is due to their toxicity but also to the possible bioconcentration that can reach human beings through the food chain. Monitoring the presence of trace metals in sludge from water treatment plants requires a host of analytical procedures starting from the solubilization of metallic compounds.

The **TMD 6** is designed for the hot digestion of sludge coming from water treatment plants, soil, compost, waste-water or vegetable materials, using "aqua regia" (royal water). Thanks to the use of **water-jacketed condensers** there is no loss of mercury, cadmium, lead, chromium, copper, zinc, etc. during hot mineralization.

The TMD 6 combines with the DK 6 to perform sample digestion.

INSTRUMENT	POWER SUPPLY	CODE No
TMD	-	F107C0146

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DIN



SUPPLIED WITH

CODE No

Test tube Ø 42x300 mm, 250 ml, spherical joint	10000000
Allihn condenser	10000001
Absorption attachment for condenser	10000002

① GENERAL FEATURES AND PERFORMANCE

DIMENSIONS (WxHxD)	225x810x126 mm (8.9x31.9x5.0 in)
WEIGHT	5 kg (11.0 lb)

TURBIDIMETER

TB1

Turbidity is one of the most commonly used parameters for determining the quality of water. The turbidity value is an important factor in various fields of application such as drinking water, disinfection processes, industrial processes and water treatment plants. VELP Scientifica has developed a **portable and impermeable** solution.

The portable turbidimeter **TB1** measures the turbidity of aqueous samples simply and accurately results are given directly in Nephelometric Turbidity Units (NTU).

High quality, intuitive and simple to calibrate, the TB1 offers **premium results** in a matter of seconds.

The TB1 is supplied with 4 calibration standards (800, 100, 20 and 0.02 NTU), NIST traceable, 3 vials, cloth, silicone oil, batteries and carrying case.

RADIATION DETECTOR

RADIATION DETECTOR

The **Radiation Detector** is standard industrial model of a **Geiger-Müller** tube with a thin mica output window.

It is factory-calibrated using a pulse generator and is the standard $\pm 15\%$ of the full scale relative to Cesium-137.

It offers **reliable results** in milliroentgens/hour and events/minute (cpm) in three different periods. The unit is protected by an **anti-saturation circuit** up to a value equivalent to 100 times the maximum reading in the greatest interval. The radiation detected is indicated by the graduated scale, a blinking LED and an acoustic signal.

INSTRUMENT	POWER SUPPLY	CODE No
TB1	-	R109B12150

INSTRUMENT	POWER SUPPLY	CODE No
RADIATION DETECTOR -	-	R10800340

GLP Good Laboratory Practice
ISO



SUPPLIED WITH	CODE No
Calibration set (800, 100, 20 and 0.02 NTU)	CE0012020
Sample vials, 3 pcs/box	CE0012030
Silicone oil, 10 ml	CE0012050

① GENERAL FEATURES AND PERFORMANCE

MEASUREMENT RANGE	from 0 to 1000 NTU
ACCURACY	$\pm 2\%$ from 0 to 500 NTU, ± 0.5 from 501 to 1000 NTU
REPEATABILITY	± 0.01 NTU or $\pm 1\%$ in reading
LIGHT SOURCE	Infrared emitting diode (850 nm wavelength)
PROTECTION RATING	IP67
DIMENSIONS (WxHxD)	68x50x155 mm (2.7x2.0x6.1 in)
WEIGHT	0.2 kg (0.4 lb)
POWER SUPPLY	4x1.5 V alkaline battery

① GENERAL FEATURES AND PERFORMANCE

MEASUREMENT RANGE	0.5 - 5.0 - 50 mR/h 500 - 5000 - 50000 CPM 5 - 50 - 500 μ Sv/h
SENSITIVITY	α: detected down to 2.5 MeV, with typical detection efficiency greater than 80% at 3.5 MeV β: detected at 150 keV with 75% typical detection efficiency Y AND X RAYS: detected down to 10 keV through the end window and to 40 keV through the case
DIMENSIONS (WxHxD)	75x145x38 mm (2.9x5.7x1.5 in)
WEIGHT	0.25 kg (0.6 lb)
POWER SUPPLY	9 V alkaline battery, 2000-hour lifetime