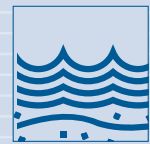


WATER DISCHARGE MEASUREMENTS



You will return to the contents of P2 WATER by clicking the pictogram

P2.25

Water discharge measurements are important for the determination of a hydrologic balance in a certain area.

For the determination of the current velocity in water ways, measuring discharges from drainage systems and/or the registration of water movement in open irrigation channels, various kinds of measuring equipment have been developed.

An efficient and accurate hydrological research dictates strict requirements for the equipment to be used. Both current velocity meters, the flumes and the self-recording drain discharge recorder meet these requirements.

13.12 Current meter with synthetic propeller

The instrument is used for the accurate determination of the current velocity in water ways, channels, rivers and the sea. The meter can also be applied in polluted water currents.

The measurements are executed with the propeller mounted on the rod(s) or connected to a cable. The current velocity meter has a measuring range of 0.025 to 10 m/sec.

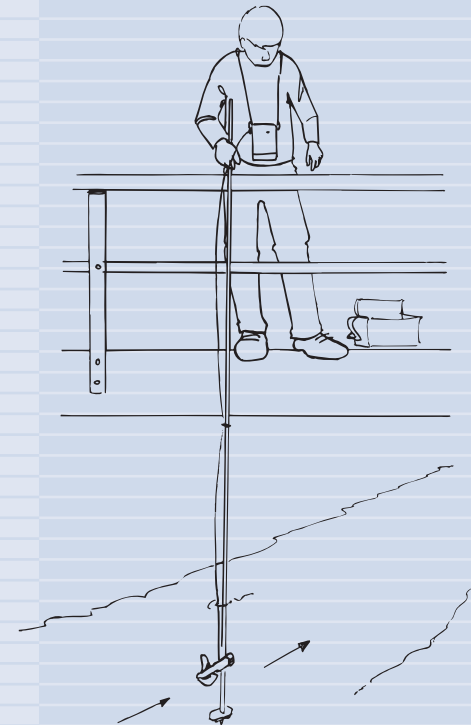
The complete set contains: a streamlined current velocity meter with a synthetic propeller, a digital counter, extension rods with graduation, cable, accessories and case.

The meter with the extension rods is usually applied for measurements in shallow creeks or rivers with low current velocities.

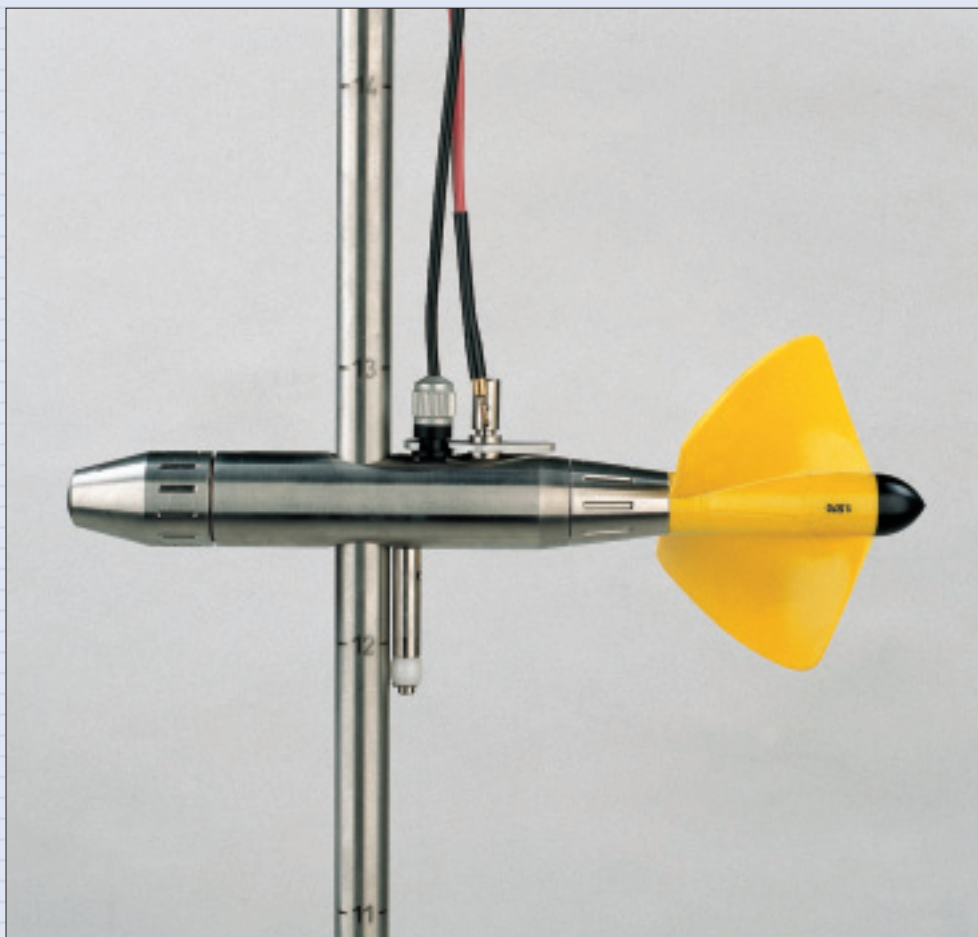
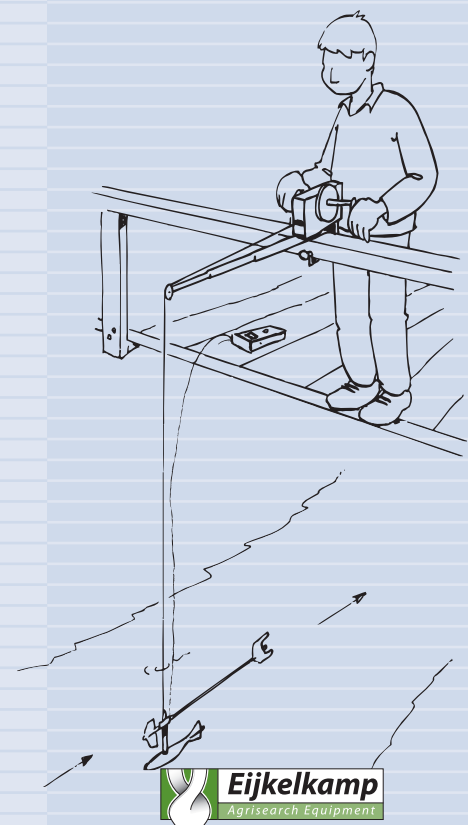
The synthetic propeller is fiberglass reinforced. The digital counter, fitted with a carrier belt, registers up to 10 pulses per seconds.

In large water ways with higher water levels and current velocities the current velocity meter can be connected to a cable with single drum winch (optional), which can be mounted either to the railing of a bridge or a boat.

Measuring the current velocity with the meter mounted to the rods.



Lowering the current velocity meter using a winch and an arm fastened to the railing of the bridge.

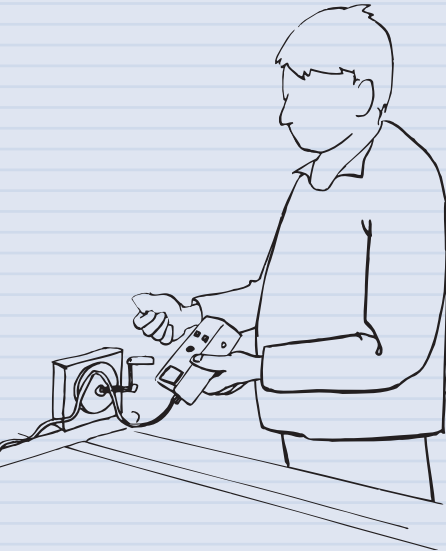


Current meter with propellor

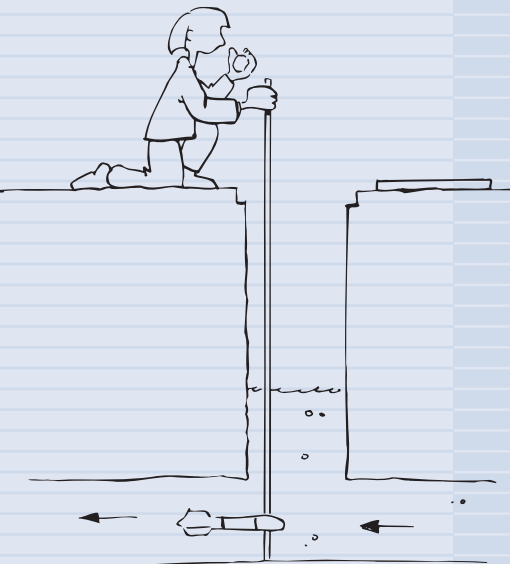


P2.25

Reading the digital counter.



Measuring the current velocity in a sewage outfall.



WATER DISCHARGE MEASUREMENTS

Advantages

- Exclusive application of anticorrosive materials.
- Low starting speed.
- Almost frictionless contact transmission increases the precision of the instrument.
- Simple control and maintenance.
- Rod and wire operation possible.
- Very complete set.

13.13 Mini current meter with aluminium propeller

The mini current meter with aluminium propeller is used in small ditches, with low water levels. Measuring range 0.03 to 2.5 m/sec. The instrument is included in a complete set.

13.14 Mechanical current meter with propeller

This small, lightweight mechanical current velocity meter has a measuring range of approximately 0.1 m/sec. to 7.9 m/sec. The meter is used for current velocity measurements in rivers, channels,

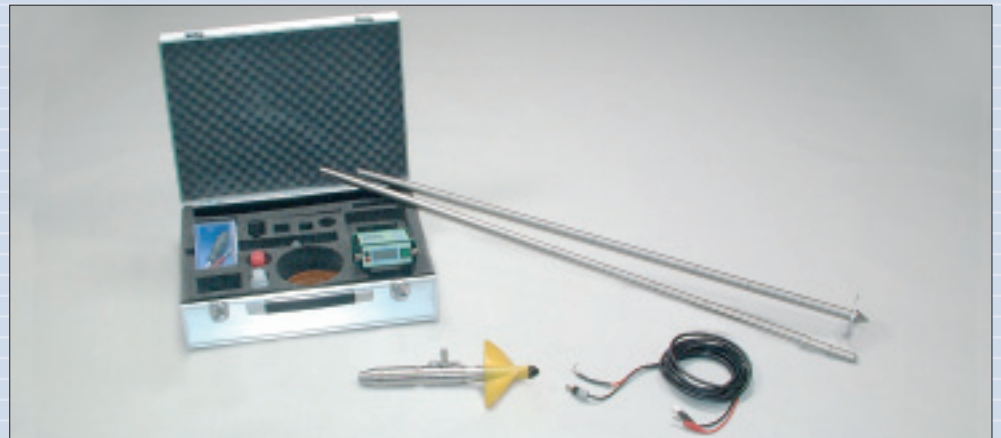
sewage systems, pipes, etc. Suspended from a wire the meter can be applied at great depth. The meter is balanced in such a way that it will remain in a horizontal position even if the meter for instance is pulled at speed by a line. The propeller is linked directly to a six digit counter that registers and visualizes every single rotation of the propeller, similar to the mileage counter in a car.

The counter is placed within the instrument. After retrieval it is possible to read the overall number of rotations of the propeller on the counter through a clear synthetic window.

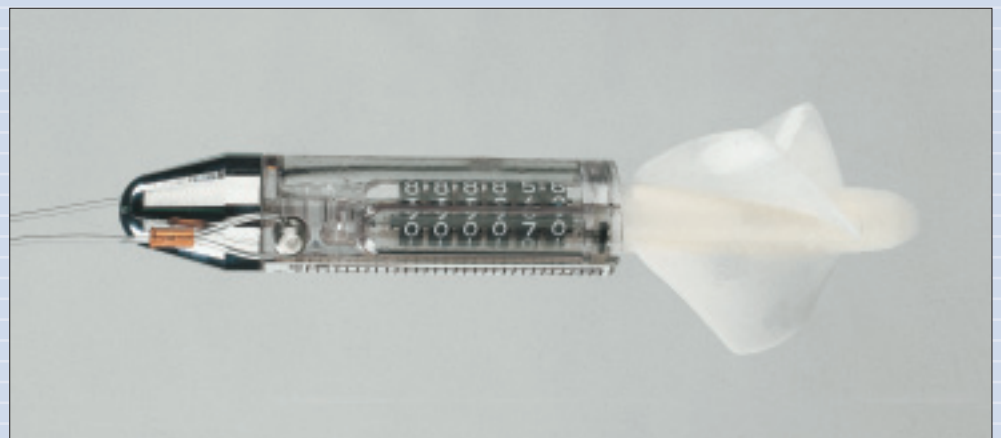
The meter can be mounted to a wire as well as to a telescopic rod (with an extended length of 2.4 meter).

Advantages

- Small and lightweight.
- Corrosion proof.
- Can be applied at great depth.
- Balanced for dynamic stability.



Current meter with synthetic propeller, complete set



Mechanical current meter

WATER DISCHARGE MEASUREMENTS

13.17 RBC flumes

RBC flumes are used to measure the quantity of water that, for instance, flows through an irrigation channel. By comparison to known flumes, such as the WSC- and the Parshall flume, the RBC flume is the most accurate.

The RBC flume has been specially designed for use in smaller water ways or earthen channels (irrigation channels, in- outlets, furrow, ditches, etc.).

The RBC flume is a simple and reliable instrument for the measurement of the quantity of irrigation water that flows towards a field.

The standard program contains flumes with various measuring ranges, varying from 0.1-8.7 l/sec to 2.0-145 l/sec. On special order larger measuring ranges are possible as well.

In order to obtain correct measurements it is essential that the flume is placed in such a way that the water can flow from the flume without obstruction.

After the flume has been placed in a horizontal position the measuring can begin by reading the

measure of water surge near the threshold. The measure of water surge can be read in the stilling well at the end of the flume. Using standard formulas the flow through quantity (the discharge) is calculated.

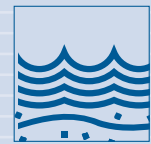
Instead of reading the stilling well it is possible to install a pressure transducer connected to a datalogger.

Advantages

- Due to the small weight and the limited dimensions the flumes can be easily used and transported. This is particularly advantageous in the event of multiple temporary measurements.
- The measuring range of the large flume can be substantial (also in shallow water).
- Easy to install.
- User friendly.
- Measuring results can be read easily.
- Information regarding discharge velocity available fast.

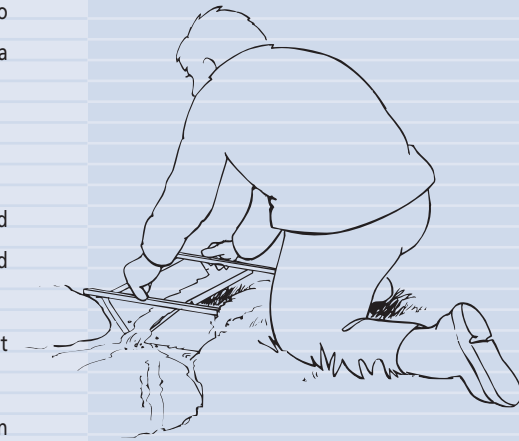


Small RBC flume for manual read-out



P2.25

A small flume is placed in an irrigation channel.

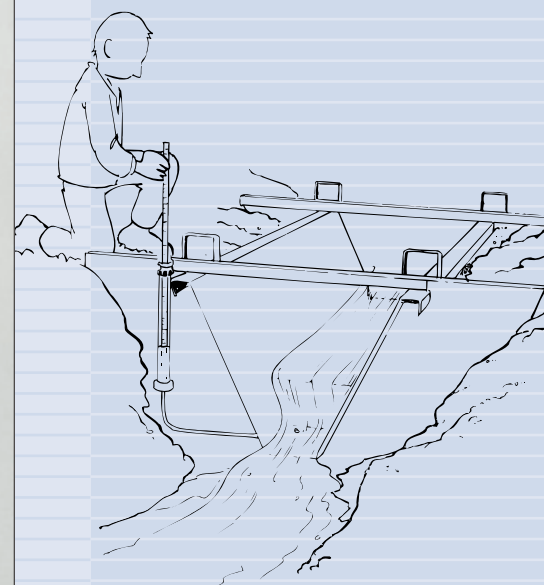


BENEFITS

13.17 Flumes

- Mobile: Light stainless steel construction
- Four standard sizes to cope all research needs
- Easy installation, only a water level needed
- Push in stream bed, wait to stabilize and read
- Can be combined with sensitive datalogger

Measuring the water level in the stilling well manually.

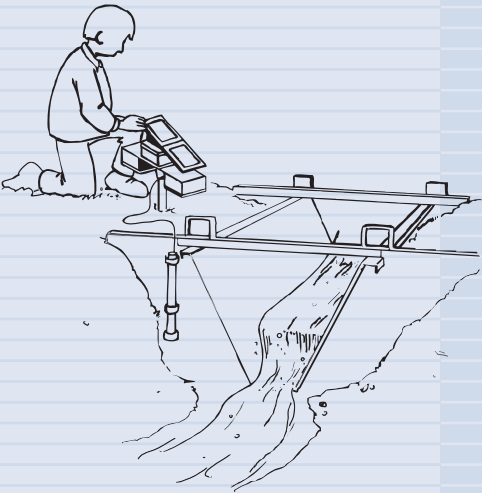


www.eijkelkamp.com



P2.25

Measuring the water level in the stilling well of a big flume with an accurate pressure transducer connected to a datalogger.



The data can be processed on a PC.



WATER DISCHARGE MEASUREMENTS

Automatic measurement

Instead of reading the stilling well it is possible to install a pressure transducer connected to a datalogger. This allows for automatic measuring (or activation), storage and reading.

In case of an automated flume, the sill-referenced water level is recorded using a very accurate pressure sensor connected to a datalogger.

Advantages

Advantages of automatic registration over a manual determination of the flow rate are:

- Maximum and minimum values are recorded in relation to time, from which the response rate of the discharge can be deduced.
- Average discharge rates as well as the cumulative discharge are accurately determined by continuous recording.

- Automatically recording flow rates is less time consuming and is very convenient in remote areas.
- High flow rates during rain periods can selectively be recorded.

The software enables you to configure and to read out the data directly. The data can be used in spread-sheet programs.

The user friendly, PC-software has the following functions:

- Program the datalogger clock.
- Read data stored in the datalogger.
- Set interval time and logging parameters.
- Show current data of the sensor.
- Automatic data storage in 2 different data formats.
- Selection of language.
- Password protected functions



Small RBC flume with pressure transducer, logger and solar panel



Art.no.	Description	Qty. in set	Art.no.	Description	Qty. in set
P2.25	Water discharge measurements				
	For water discharge measurements we supply the following instruments: - current meters with propeller in two designs (with large synthetic propeller and with small aluminium propeller) - RBC flumes				
13.12	Current meter with synthetic propeller, Ø 125 mm (pitch 300 mm), measuring range 0.025 to 10 m/s. Complete set with digital counter (Z6 basic version), extension rods (2 m) with dm-graduation, 4 m cable and case. Incl. oil and tools				
	Accessories for 13.12 Current meter:				
13.12.01	Extension rod, stainless steel, Ø 20 mm, length 100 cm, with 10 cm graduation		13.13.05	500 mm), for measuring range 0.05 to 5.0 m/sec. Propeller for mini current meter, aluminium, Ø 50 mm (pitch 100 mm), for measuring range 0.025 to 1.0 m/sec.	
13.12.03	Propeller, synthetic, Ø 125 mm, pitch 300 mm, measuring range 0.025 –10 m/s, with standard calibration		13.14	Mechanical current meter with propeller, measuring range 0.1 to 7.9 m/sec, with line attachment, in case	
13.12.05	Propeller, synthetic, Ø 80 mm, pitch 300 mm, measuring range 0.025 - 10 m/s, with standard calibration			Accessories for 13.14 Current meter:	
	Accessories to use the current meter 13.12 on a cable:		13.14.04	Telescopic wading rod for current meter, total (extended) length 240 cm	
13.12.10	Single drum winch for wire operated current meter, max. load 50 kg, max. cable length 80 m, with mechanical depth counter in m/cm and zero reset, safety winch-crank, incl. 25 m cable, in case.		13.17	RBC flumes	
13.12.11	Jib with pulley for single drum winch for wire operated current meter, in case		13.17.02	RBC flume, stainless steel, flow range 0.1-8.7 l/s, with stilling well for installation of a pressure sensor.	
13.12.12	Sinker for wire operated current meter, weight 5 kg, with standard calibration, incl. suspension strap		13.17.04	RBC flume, stainless steel, flow range 0.9-49 l/s, with stilling well for installation of a pressure sensor	
13.12.15 S	tabilizer tail piece, 1 m long with steering device for sinker 5 kg		13.17.06	RBC flume, stainless steel, flow range 1.6-86 l/s, with stilling well for installation of a pressure sensor	
13.13	Mini current meter with aluminium propeller, Ø 50 mm (pitch 250 mm), measuring range 0.03 to 2.5 m/sec. Complete set with digital counter (Z6 basic version), extension rods (1.5 m) with dm-graduation, 4 m cable and case. Incl. oil and tools		13.17.08	RBC flume, stainless steel, flow range 2-145 l/s, with stilling well for installation of a pressure sensor	
	Accessories for 13.13 Current meter:			Note: To read out the RBC-flumes automatically, read-out units are supplied that can be connected directly to the flume: - read-out unit with solar panel (13.17.10) - read-out unit with battery (13.17.11)	
13.13.03	Propeller for mini current meter, aluminium, Ø 50 mm (pitch		13.17.10	Read-out unit for RBC flume, set consisting of: - Solar Hog 2 Watt - air pressure reference box - Datahog 2, 1-channel, 0-2V - mast for Datahog/Solar Hog - level sensor, 0-50 mBar, 0-20 mA, 5 m mounted vented cable	
			**16.99.51	Solar energy system for meteo station, 2 W	1
			**16.98.27	Air pressure reference box for compensation of air pressure when connecting water level sensors 16.98.25/26 and 16.99.25 level sensor for evaporation pan (16.89.08) and level sensor RBC-flume 13.17.10/11. Incl. 1 m cable	1
			**16.99.01	Datalogger model Datahog with 1 input channel. Measuring	1



PARTS LIST

Art.no.	Description	Qty. in set	Art.no.	Description	Qty. in set
	interval between 10 s and 12 hours. Memory 11001 measurements/channel + date and time. Incl. RS232 cable. Power supply: alkaline batteries (excl. software)		**01.11.02.01	Padlock	1
**13.17.10.01	Base plate for datalogger, 1 air pressure reference box and solar hog or battery pack	1	**13.17.10.04	Level sensor to measure the water level in RBC flumes. Measuring range 0-500 mm, accuracy 0.25%, output signal 0-20 mA, power supply 8-28 V, cable length 5 m.	1
**13.17.10.04	Level sensor to measure the water level in RBC flumes. Measuring range 0-500 mm, accuracy 0.25%, output signal 0-20 mA, power supply 8-28 V, cable length 5 m.	1	**13.17.10.06	CD-rom with software for datalogger type Datahog 2 (for use with RBC flume). To configure the datalogger and to read out and process the measuring data with an IBM compatible PC. Software to be used with Windows 95/98 and NT.	1
**13.17.10.06	CD-rom with software for datalogger type Datahog 2 (for use with RBC flume). To configure the datalogger and to read out and process the measuring data with an IBM compatible PC. Software to be used with Windows 95/98 and NT.	1	**16.99.00.01	Option for Datahog, for power supply of sensors that need more power than acceptable for the standard channels (max. 5 mA/channel, max. 15 mA/logger). Option to be ordered together with the logger	1
**16.99.00.01	Option for Datahog, for power supply of sensors that need more power than acceptable for the standard channels (max. 5 mA/channel, max. 15 mA/logger). Option to be ordered together with the logger	1	**16.99.90.01	Basic set-up of measuring station with Datahog 2 data-logger with meteo mast: logger configuration, functional and life test, composition of logbook. Excl. connection of sensors	1
**16.99.90.01	Basic set-up of measuring station with Datahog 2 datalogger with meteo mast: logger configuration, functional and life test, composition of logbook. Excl. connection of sensors	1	**16.99.90.02	Connection of various types of sensors to the Datahog datalogger. Incl. testing and coding. Per type of sensor	1
**16.99.90.02	Connection of various types of sensors to the Datahog data-logger. Incl. testing and coding. Per type of sensor	1			
13.17.11	Read-out unit for RBC flume, set consisting of: - 12 V battery + charger - air pressure reference box - Datahog 2, 1-channel, 0-2V - mast for Datahog and battery - level sensor, 0-50 mBar, 0-20 mA, 5 m mounted vented cable				
**16.98.27	Air pressure reference box for compensation of air pressure when connecting water level sensors 16.98.25/26 and 16.99.25, level sensor for evaporation pan (16.89.08) and level sensor RBC-flume 13.17.10/11. Incl. 1 m cable	1			
**16.99.01	Datalogger model Datahog 2, with 1 input channel. Measuring interval between 10 s and 12 hours. Memory 11001 measurements/channel + date and time. Incl. RS232 cable. Power supply: alkaline batteries (excl. software)	1			
**13.17.10.01	Base plate for datalogger, 1 air pressure reference box and solar hog or battery pack	1			
**13.17.10.02	Battery for installation on base plate 13.17.10.01 for power supply read-out unit flumes	2			
**13.17.10.03	Battery charger for battery 13.17.10.02	1			