

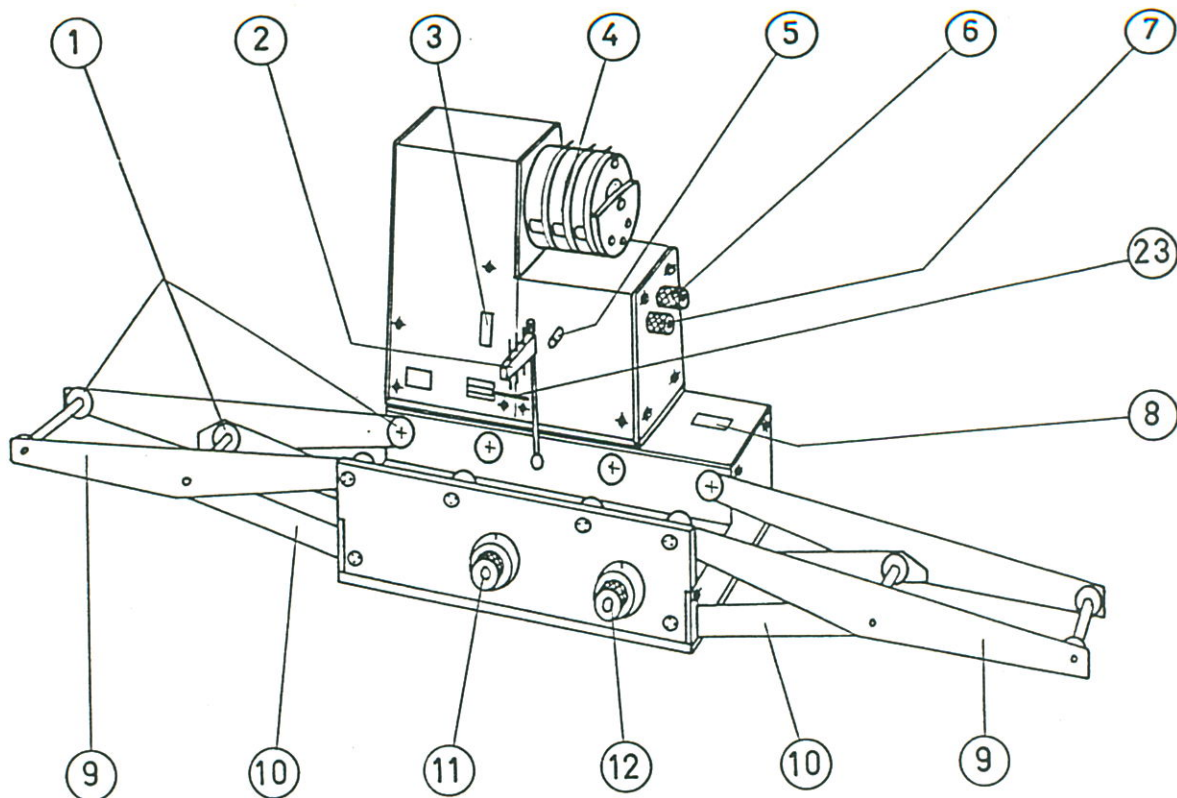
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## INSTRUCTION

### SAMPLE COLLECTOR

#### TYPE 240/3

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- 1 - WHEEL
- 2 - DISTRIBUTION ARM
- 3 - SIGHT GLASS (FLOW)
- 4 - PUMPMODUL
- 5 - STOP
- 6 - HANDLE
- 7 - GEAR SELECTOR (FLOW)
- 8 - SIGHT GLASS (VOLUMEN)
- 9 - EXTENSION ARM
- 10 - SUPPORT ARM
- 11 - GENERATRIX HANDLE
- 12 - GEAR SELECTOR (VOLUMEN)
- 23 - SWITCH

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*For the best possible utilisation of the type 240/3 SAMPLE COLLECTOR, it is important that the following instructions for use be read carefully.*

*The actual instructions for use are followed by guidance in the rectification of minor operational disturbances.*

*If the SAMPLE COLLECTOR cannot be made to function in a satisfactory manner after the guidance has been followed, kindly contact us or our agent.*

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## **GENERAL**

*SAMPLE COLLECTOR TYPE 240/3 consists of a special 3 channel roller pump placed on the top of the distribution and collecting unit which is operated from the the roller pump.*

## **PUMP UNIT**

*The pump is a standard rollerpump type 103 which is modified for sampling and to operate the collecting unit.*

*Each channel in the 3-channel pump module (4) is provided with a special device to prevent loss of sample when the distribution arm (2) shifts back to the next set of tubes.*

*The pump has 10 different reproducible speeds. These speeds corresponds to the following flow rates in ml/sec/channel, when a tube with an inside diameter of 3.0 mm is used:*

**1.0 - 0.75 - 0.5 - 0.375 - 0.25 - 0.2 - 0.15 - 0.1 - 0.075 - 0.05**

*These flow rates can be changed very easily by rotating the knob (7). The actual flow is indicated in the sight glass (3).*

## **SAMPLE COLLECTING UNIT**

*The sample collector can with the gear selector (12) be adjusted to deliver 6 different sample volumes in the sample tubes. Standard delivery includes one rack for 150 tubes (placed in 3 rows).*

*The rack (13) runs through the apparatus and pass the distribution arm (2) with a constant speed. (see diagram page 10).*

*The three-double distribution arm (2) follows the sample tubes during the filling and is drawn back to the next set of tubes controlled from the pump.*

*When using a tube with an inside diameter of 3.0 mm, the sample collector can be adjusted to deliver the following sample volumes in each tube.*

**0.5 - 1.0 - 2.0 - 3.0 - 4.0 - 5.0 ml**

*These volumes can be changed very easily by rotating the gear selector (12). Actual volume is indicated in the sight glass (8).*

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**TECHNICAL DATA**

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**Speed:**

*Mechanical gear selector.  
Repeat accuracy 100%.  
Speed stability better than 0,5 % for variations in  
mains supply, load and temperature.*

**Temperature:** 0 - 40°C

**Mains supply:** 115 V AC +/- 10 % 60 Hz.

**Power consumption:** 100 W max.

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**DIMENSIONS**

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**Extended for use :** L 1050 x B 280 x H 390 mm  
**Without extension:** L 380 x B 280 x H 470 mm

**Rack for 150 tubes:** L 900 x B 77 x H 85 (without tubes)

**Centre distance between holes:** 18 mm

**Standard diameter of holes:** Ø 15 mm

**Max. possible diameter:** Ø 17 mm

**Weight:** approx 23 kgs

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**TUBE**

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**It is recommended to use siliconetube.**

**Hardness:** 60 SHORE.

**Inner diameter:** ID 3,0 mm.

**Wall thickness:** 0,8 - 1,0 mm.

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### **0.0.0 INSTALLATION**

- .1.1 Upon receipt of the pump, check for possible transport damage and ensure that the corresponds with the mains voltage at the place of connection.*
- .1 The pump must be connected to the mains supply earth connection in an approved manner.*
- .2 The ambient temperature must be within the range stated in the specifications (0 - 40°C). If the pump is required to be used at ambient temperatures outside this range, kindly contact us or our agents.*
- .3 Ensure that there is ample free space around the cabinet. The openings in the backplate and the bottom must not be covered.*
- .4 Fold out the extension arms (9) and ensure that the supporting arms (10) are correctly positioned in the elongated openings in the side plates, and that they are engaged with the round stays behind the plates. (see page 11+12).*
- .5 Ensure that there is at least 90 cm free clearance for the sample rack on the left side of the collector.*
- .6 On the right there must be at least 100 cm free clearance measured from the middle of the apparatus. This is very important, the reason being that a possible blocking of the sample rack can result in the destruction of the basic setting of the apparatus.*

### **1.0.0 TUBES**

- 1.0 The pump tubing must be of good elastic quality. We recommend the use of a silicone rubber tube with a wall thickness of 1.0 mm and a hardness of approx 60 SHORE.*
- .1 Calibrated pump tubes specially produced for roller pumps can be used with advantage.*

### **2.0.0 MOUNTING OF PUMP TUBES**

- .1 Remove the distribution arm by means of the fingerscrew (15). (See page 12).*
- .2 Loosen the screw (20), and remove the connection plate (19) from the pump.*
- .3 Cut the tubes to lengths of 35 cm and mount them between the dispensing stubs (16) on the distribution arm (2) and the inlet stubs (18) on the connection plate (19). (See page 12).*
- .4 The tube system is now ready for mounting on the pump, or sterilising.*
- .5 Mount connection plate and distribution arm.*
- .6 Lift up the handle (21) and take out the roller tracks.*
- .7 Place the tube down in position in the module (4), then press the roller track down in the module and lock it by means of the handle (21).*

***The correct roller pressure and retention is established automatically.***

### **3.0.0 SETTING THE SUCTION SPEED (FLOW) (SEE PAGE 11).**

- .1 The pump speed are adjusted by means of the adjusting gear selector (7) and the setting can be seen through the sight glass (3).*
- .2 A yellow mark is provided on the pump end-plate next to the gear selector (7).*
- .3 When the yellow mark on the gear selector is opposite the yellow mark on the end-plate, the gearbox is engaged. **(yellow / Yellow)**.*
- .4 When the red mark on the gear selector is standing at the yellow mark on the end-plate, the gearbox is disengaged and the pump wheels can be turned by means of the handle (6), but only in the counter-clockwise direction.*
- .5 The gear selector (7) can always be turned freely from the engaged **(yellow / yellow)** position to the neutral **(red / yellow)** position.*
- .6 When changing from the neutral to the engaged position, which must be carried out without the use of any great force, the gear selector (7) is turned in the required direction. If any resistance is felt before the yellow marks are standing opposite each other, the knob (6) must be turned slightly until the adjusting knob (7) can be turned freely into the fully engaged position.*

### **3.1.0 SELECTING THE SAMPLE VOLUME (SEE PAGE 11).**

- .1 The sample volume is adjusted by means of the gear selector (12) and is indicated in the sight glass (8).*
- .2 The knob (12) is provided with a red and an yellow mark, and the fixed ring on the front of the collector is provided with an yellow mark.*
- .3 As in the case with the pump, the **(yellow / yellow)** position is engaged and the **(yellow / red)** position is neutral.*
- .4 The gear selector (12) can always be turned from the engaged position (yellow / yellow) to the neutral position **(yellow / red)**.*
- .5 Assuming that the gearbox is engaged **(yellow / yellow)**.*
- .6 The gear selector (12) is turned a full turn in the desired direction.*
- .7 The distribution arm (2) is held against the stop (5) and the generatrix handle (11) turned slowly until distinct resistance is felt when the selector engages.*
- .8 The gear selector (12) can now be turned another full turn if required, in which case point 3.1.6 - 3.1.7 have to be repeated.*
- .9 The distribution arm (2) must always be held against the stop (5) when the generatrix handle (11) is turned forwards or backwards.*

### **3.2.0 PREPARATION FOR SAMPLING**

- .1 Mount the tube system. (See section 2.0.0)*
- .2 Set the suction speed. (See section 3.0.0)*



- .3 Set the sample volume. (See section 3.1.0)
- .4 Switch off the main switch (17) (control lamp off).
- .5 Place a drip tray on the centre set of wheels under the distribution arm (2).
- .6 Start the pump with the main switch (17). Let it run until the tubes are filled up to the dispensing stubs, then stop the pump and remove the drip tray.
- .7 Place the rack with sample tubes on the lead rollers at the left-hand side of the collector. Lift up the pawl foremost in the rack, slide the rack carefully forward to the feedwheel (14) and release the pawl.
- .8 Commence the collection by operating the main switch (17). Sample collection will stop automatically at the last tubes in the rack.
- .9 The collection of samples can be stopped automatically at any point along the rack by removing two successive tubes from the inner row. The collector must always be switched off at the main switch (17) and sample tubes placed in the empty holes before the collection of samples is continued.
- .10 After the collection of samples has been completed, the main switch (17) is switched off. Place gear selector (12) in neutral gear (**yellow / red**) and hereafter remove the sample rack to the right side.

#### **4.0.0 POSSIBLE FAILURES AND CAUSES**

- 1.0 Check the following points:
  - .1 Mains voltage according to type label on pump.
  - .2 Failures in electronics, motor or gearbox.
  - .3 Tube or foreign bodies jammed between pump wheel and pump section (dismantle roller track see section 5.2.0).

#### **4.1.0 VARYING AND UNSTABLE FLOW WHEN TUBES OF THE SAME DIMENSIONS ARE USED IN ALL CHANNELS**

- .1 Incorrect quality of tubes (see section 1.0.0).
- .2 Oval tube cross-section (worn tube).
- .3 Failure at pump wheel.
- .4 Pressure rollers are out of adjustment.
- .5 Pressure rollers and guide rollers are jammed lubricate with thin oil.
- .6 Pressure roller jammed - cannot be moved forwards by the spring pressure because of impurities. (see: section 5.2.4).

#### **4.3.0 THE TUBE "WANDERS" THROUGH THE PUMP**

- .1 *Incorrect quality of tube. (see: section 1.0.0).*
- .2 *Dirt (fluid) between tube and tube holder 105.01.03.*
- .3 *The tube holder is jammed because of impurities.*

#### **4.4.0 TUBE RUPTURE**

- .1 *If a tube rupture results in escape of liquid, the pump channels must be dismantled and cleaned. (see: section 5.2.0)*
- .2 *If a tube rupture results in liquid penetrating pump wheels, tube holders etc., one must immediately limit any damage by thoroughly rinsing with clean water before dismantling.*

**IMPORTANT! ISOLATE MAINS SUPPLY BEFORE RINSING WITH WATER.**

#### **4.5.0 LIQUID DO NOT HIT THE SAMPLE TUBES**

- .1 *Gearbox or feederwheel out of adjustment.*
- .2 *It is most probable that the feederwheel's overload device has been influenced, possibly if the sample frame has been obstructed in its forwards movement. This error is rectified by engaging the gear selector for suction speed as well as the gear selector for sample volume, and thereafter turning the generatrix handle (11) clockwise until a slight click is felt. This method sets the feeder wheel to zero in relation to the pump.*
- .3 *If the error still arises after proceeding as per section 4.5.2, the sample collector must be returned to us or our agents for adjustment.*

#### **5.0.0 MAINTENANCE**

- .1 *The bearings in the pump, the motor and the gearbox are one-shot lubricated.*
- .2 *The tube holders 105.01.03 must be able to move freely forwards and backwards, and must therefore be inspected at regular intervals.*
- .3 *Without the tube mounted, the springs 105.01.04 must be able to press the tube holders 105.01.03 into position and flush with the outer diameter of the module.*
- .4 *If the tube holder 105.01.03 gets jammed or it moves sluggishly, the pump channels must be separated and cleaned. (See section 5.2.0 - 5.3.4)*

#### **5.2.0 DISMANTLING THE PUMP MODULES**

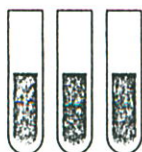
- .1 *The pump modules (H) are dismantled by removing the cap nuts (M) by means of the key (O).*
- .2 *Remove the front bearing plate (L) and the pump wheel shaft (X) from the module.*
- .3 *Carefully press out the guide bushes 105.04.01. This completes the separation of the modules. **The use of metal tools must be avoided.***



- .4 Dry off the pump wheels and check for damage.*
- .5 Check that pressure rollers and guide rollers rotate very easily.*
- .6 Check that when the pressure roller system is pressed inwards, the spring is very easily able to press it back again.*
- .7 Lubricate all moving parts of the pump wheel with thin oil.*
- .8 Check and clean the remaining parts of the pump module.*
- .9 All parts (with the exception of pump wheels) can be washed off with lukewarm soapy water.*

### **5.3.0 ASSEMBLY OF THE PUMP MODULE (see page 11)**

- .1 When assembling the pump module, the central guide bush 105.04.01 and the spring 105.01.04 should not be fitted.*
- .2 When the module has been built up, press the central guide bush into place while at the same time inserting the springs in their respective grooves.*
- .3 Screw the stay bolts (V) without cap nuts (M) into the frontplate of the pump.*
- .4 Place the pump module (H) on the stay bolts (V) and ensure that the guide bushes enter the holes in the frontplate, while at the same time the pins in the pump wheel enter the holes in the driving plate (S). If the roller tracks pinch, tighten the lowermost cap nut slightly more than the uppermost cap nuts. Test the tube holder 105.01.03 according to point: 5.1.2 - 5.1.3.*

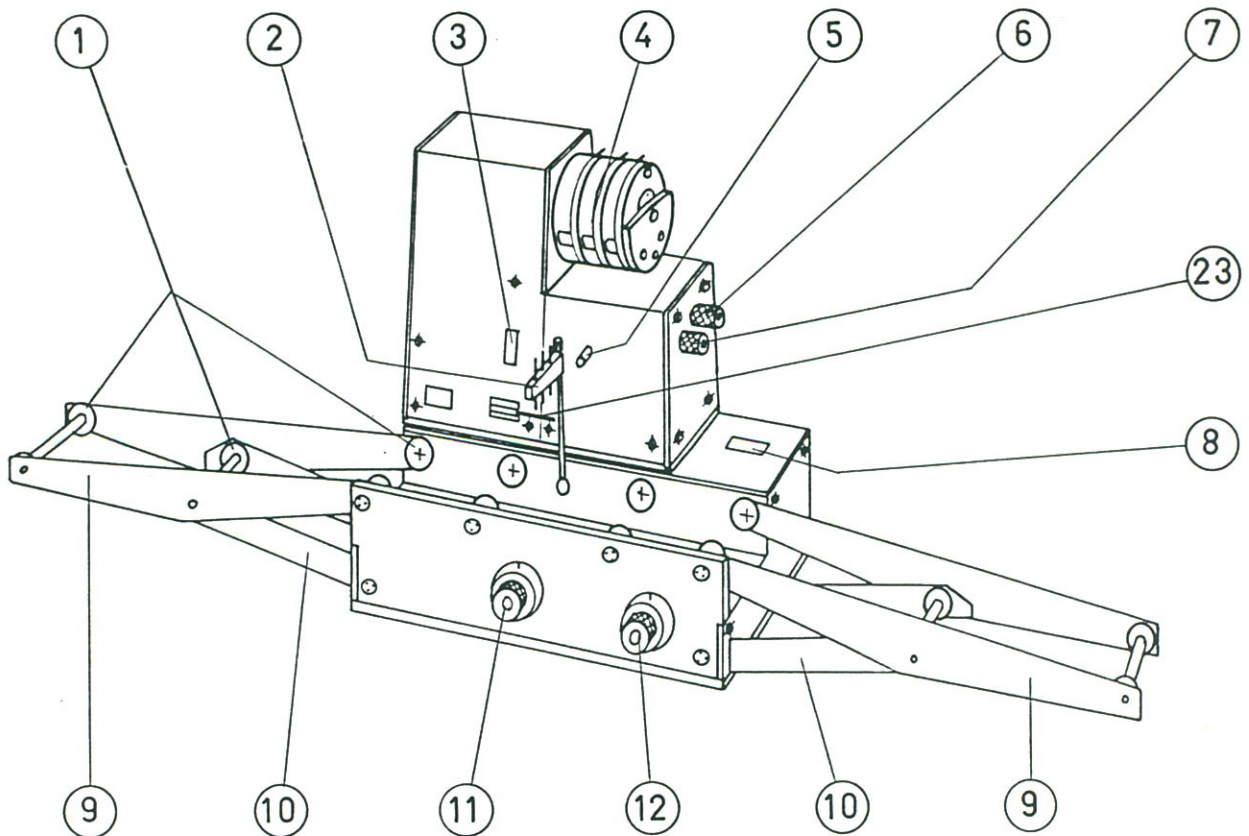
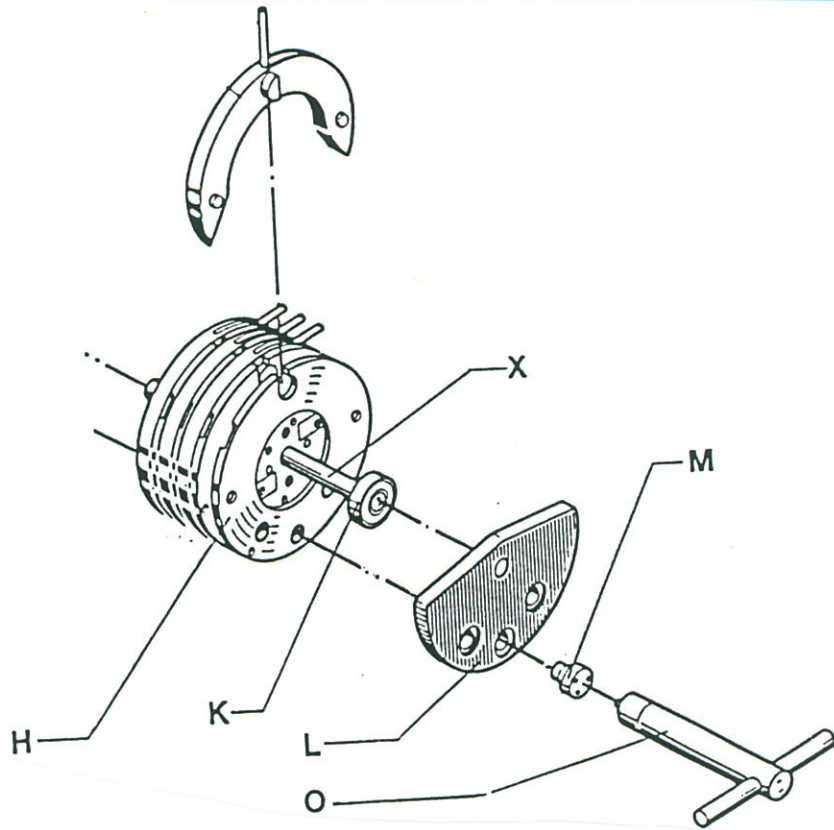


— sample volume ml/tube \_\_\_\_\_

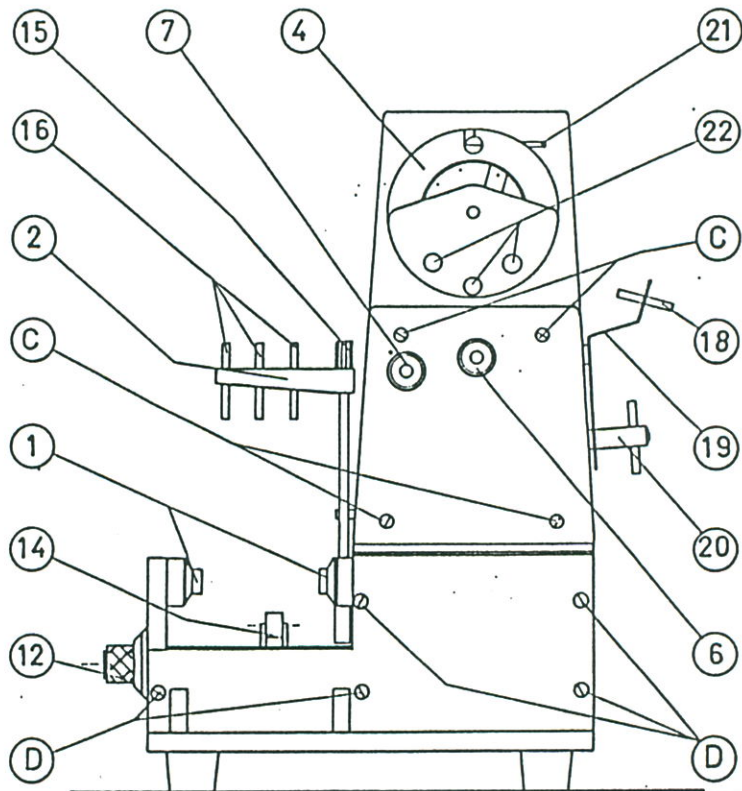
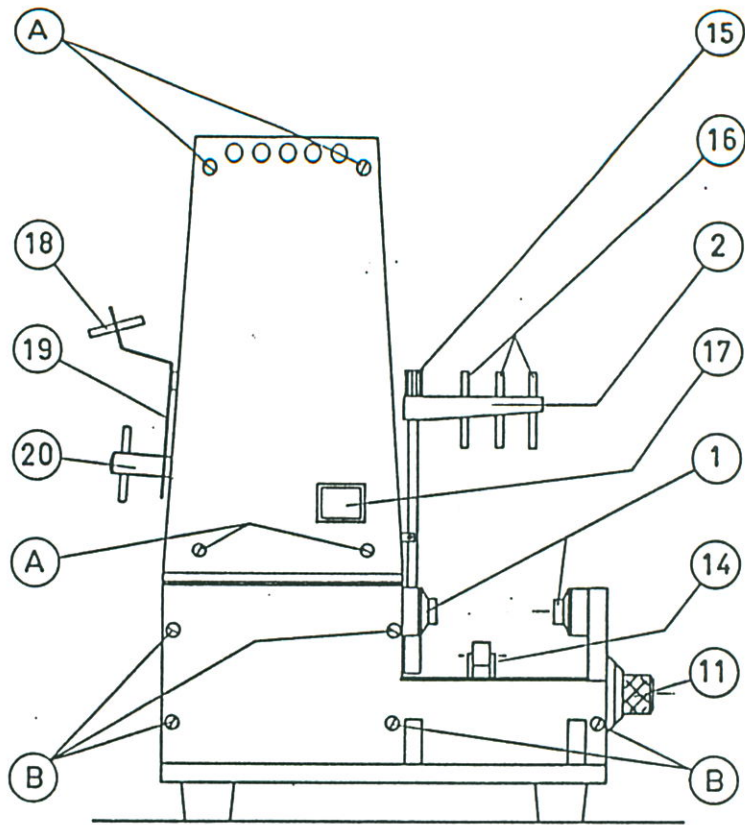
	0.5	1.0	2.0	3.0	4.0	5.0
0.5	1.0					
0.67	.75					
1.0	.5	1.0				
1.33	.375	.75				
2.0	.25	.5	1.0			
2.5	.2					
2.67		.375	.75			
3.0				1.0		
3.33	.15					
4.0		.25	.5	.75	1.0	
5.0	.1	.2				1.0
5.33			.375		.75	
6.0				.5		
6.67	.075	.15				.75
8.0			.25	.375	.5	
10.0	.05	.1	.2			.5
10.67					.375	
12.0				.25		
13.33		.075	.15			.375
15.0				.2		
16.0					.25	
20.0		.05	.1	.15	.2	.25
25.0						.2
26.67			.075		.15	
30.0				.1		
33.33						.15
40.0			.05	.075	.1	
50.0						.1
53.37					.075	
60.0				.05		
66.67						.075
80.0					.05	
100.0						.05

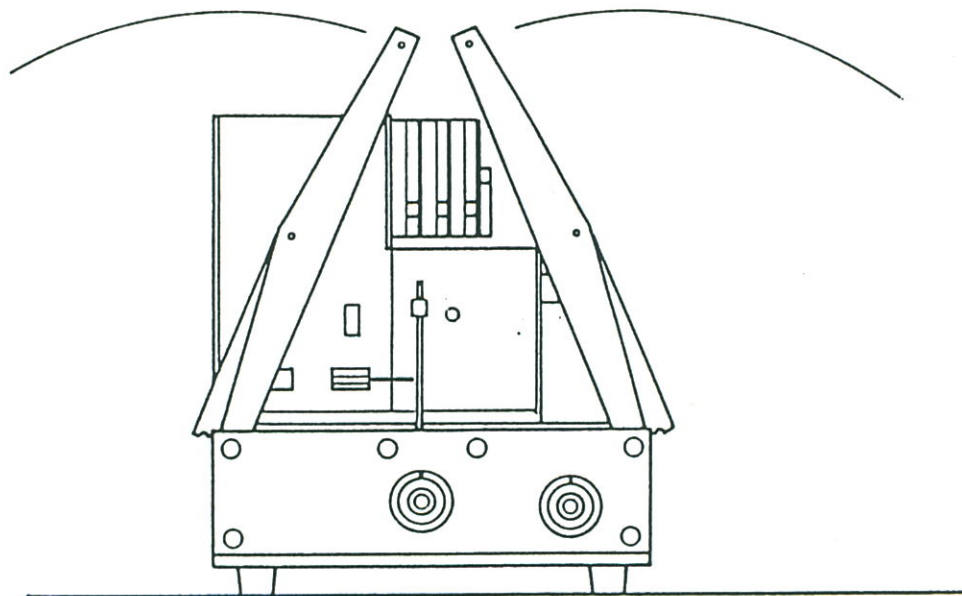
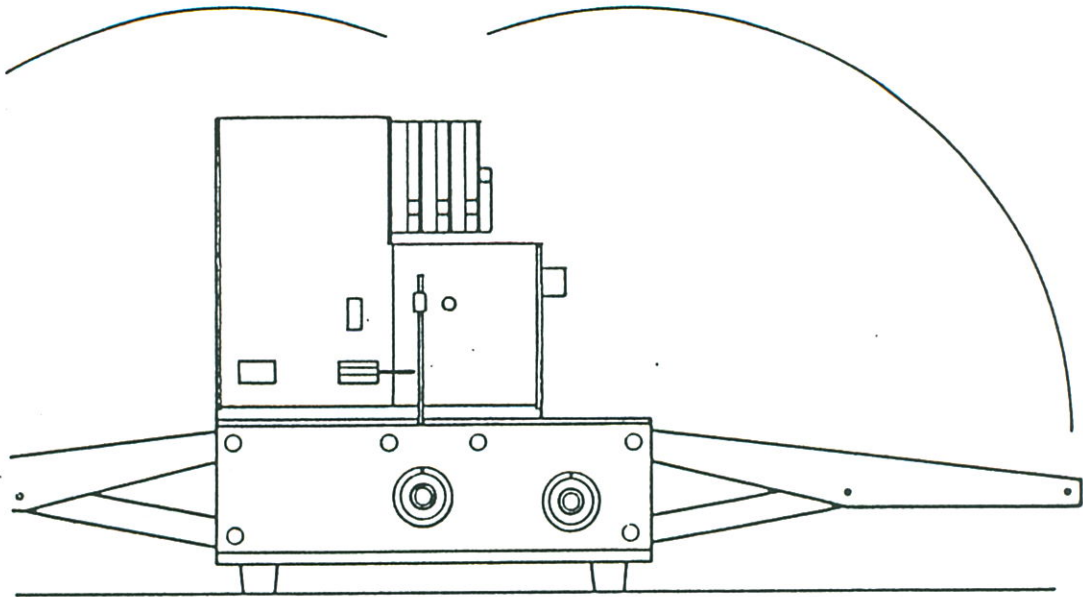
sampling period in seconds

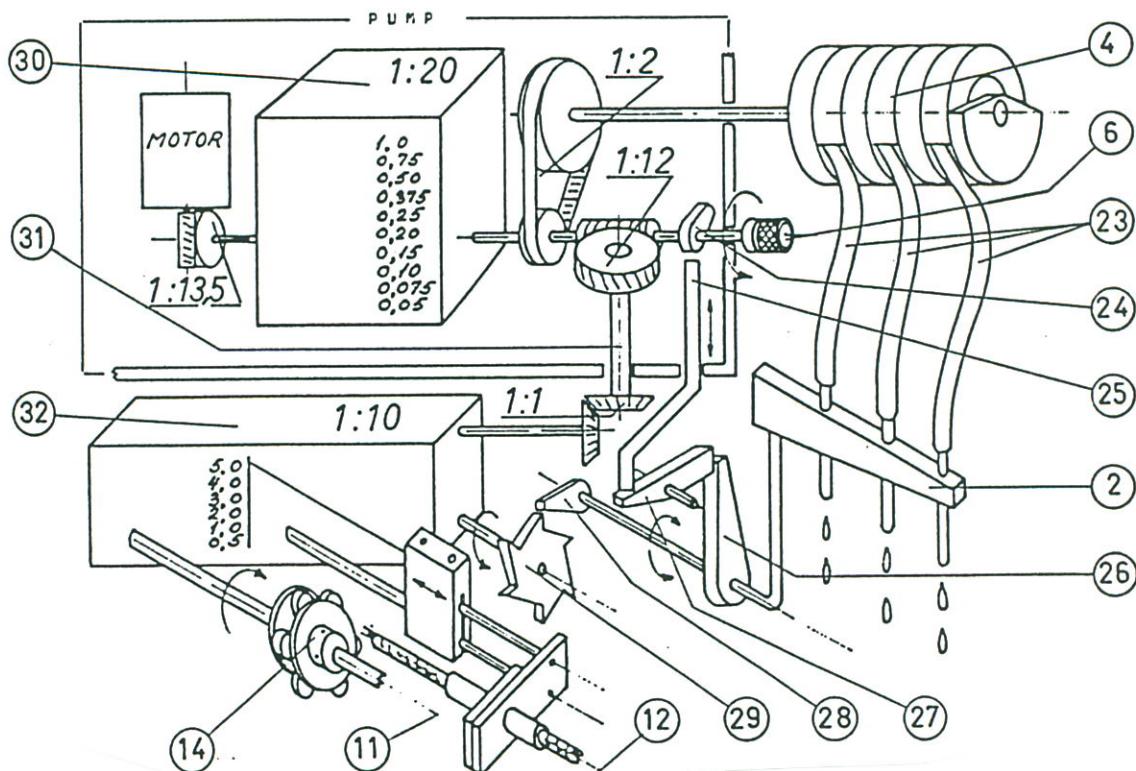
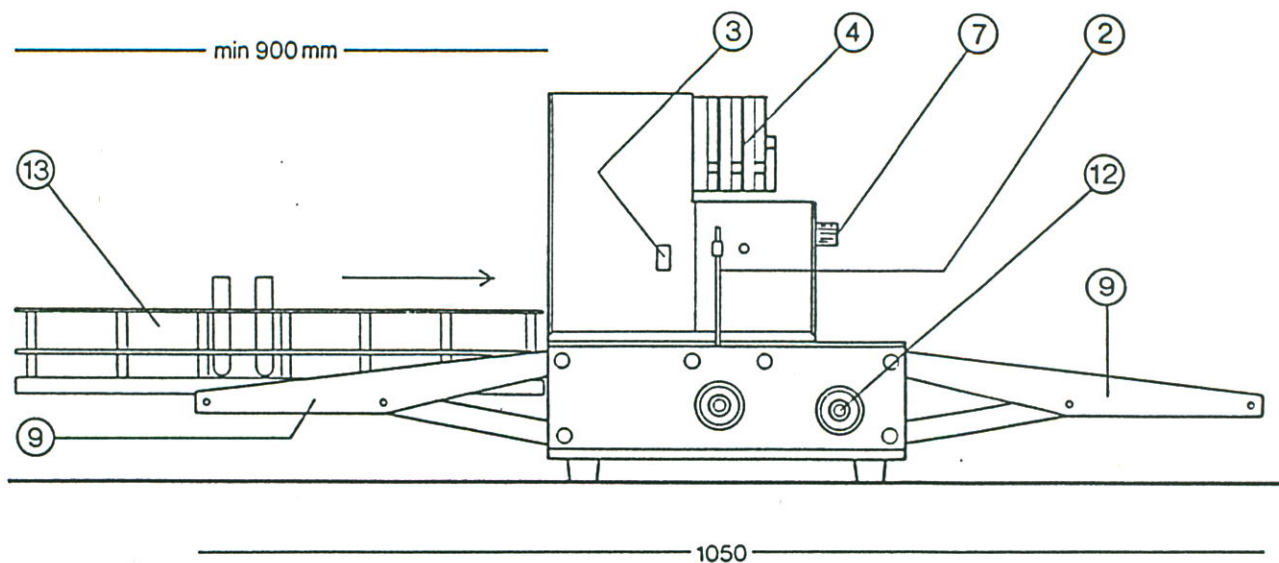
pump-speed adjustment \_\_\_\_\_













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**SPAREPARTS**

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101/105	Single channel complete for pumpwheel type 101.10.00 2 roller.
101.10.00	Pumpwheel
101.10.03	Pressureroller
101.10.04	Shaft for pressureroller
101.10.20	Pressureunit complete
103.00.16	Input shaft complete
103.00.17	Intermediate shaft complete
103.06.04	Input shaft without gearwheels
103.06.07	Wormwheel complete
103.06.17	Intermediate shaft without gearwheels
103.09.20	Drivebelt
103.10.20	Main switch
103.10.21	Lamp for mainswitch
103.10.26	Capasitor with leads
103.11.00	Motor complete without bolsterplate
103.12.01	Gearwheelset
103.17.02	Single shifter gear
105.00.05	Rollertrack complete "B"
105.01.02	Distance piece
105.01.03	Tube holders 1 set
105.01.04	Spring
105.02.01	Dividing plate
105.04.01	Guide bush set (3pcs)
105.04.02	Stay bolts for modul set (3pcs)
105.06.01	Front bearing plate
105.07.01	Shaft for pumpwheels
105.08.01	Cap nut for bearing plate
154.08.20	Key for cap nuts
240.03.07	Distribution arm
240.03.11	Nozzle set (3 pcs)
240.04.18	Adaptor for 1,5 ml or 2 ml eppendorf tubes. (When ordering please state diameter of holes).
240.08.27	Tube system complete
240 RACK	150 Tuberack for 150 pcs tubes
240 RACK	75 Tuberack for 75 pcs tubes (When ordering please state type of tubes).

**CONDITIONS OF GUARANTEE**

*Should this apparatus be found to have defects or deficiencies, use can be made of the guarantee as stipulated in this written guarantee.*

**PERIOD OF GUARANTEE**

*This guarantee is valid for 12 months from the documented date of purchase from us or our agents.*

*Our service department or our agents undertake at our expense to rectify production or material failures which can be ascertained in normal use of the apparatus.*

*When possible failures are to be rectified, the purchaser must at his own expense and risk deliver the apparatus with reference to its date of purchase and serial number to our service department or to the agent from whom the product was purchased. If the apparatus is to be dispatched or transported for service (repair), the packaging instructions must be closely adhered to. If the pump is to be transported for service, it is important that the packing is of good quality, otherwise the pump motor suspension can be damaged by bumps and jolts. Damages and defects which arise during transport (dispatch) as a result of incorrect or inadequate packing etc. are not covered by the guarantee.*

*Repairs effected under the guarantee will be carried out free of charge. The repair will not extend nor give rise to a new start date for the period of the guarantee. Parts which are replaced will become our property.*

**THE GUARANTEE DOES NOT COVER**

*Defects or damages arising directly or indirectly as a result of incorrect operation or use, or inspection of the apparatus as prescribed in the instruction for use.*

*Defects and damages arising as a result of the ingress of water, incorrect installation or connection, or as the result of fire, accident, lightning, extraordinary voltage variations or other electrical disturbances such as, e.g. defective fuses in the electrical power supply installations, and repair or other maintenance not carried out by us or our agent, without our written consent.*

**DATE OF PURCHASE:**

**STAMP:**

**INVOICE NO.**

**TYPE/SERIAL NO.**

**AGENT:**