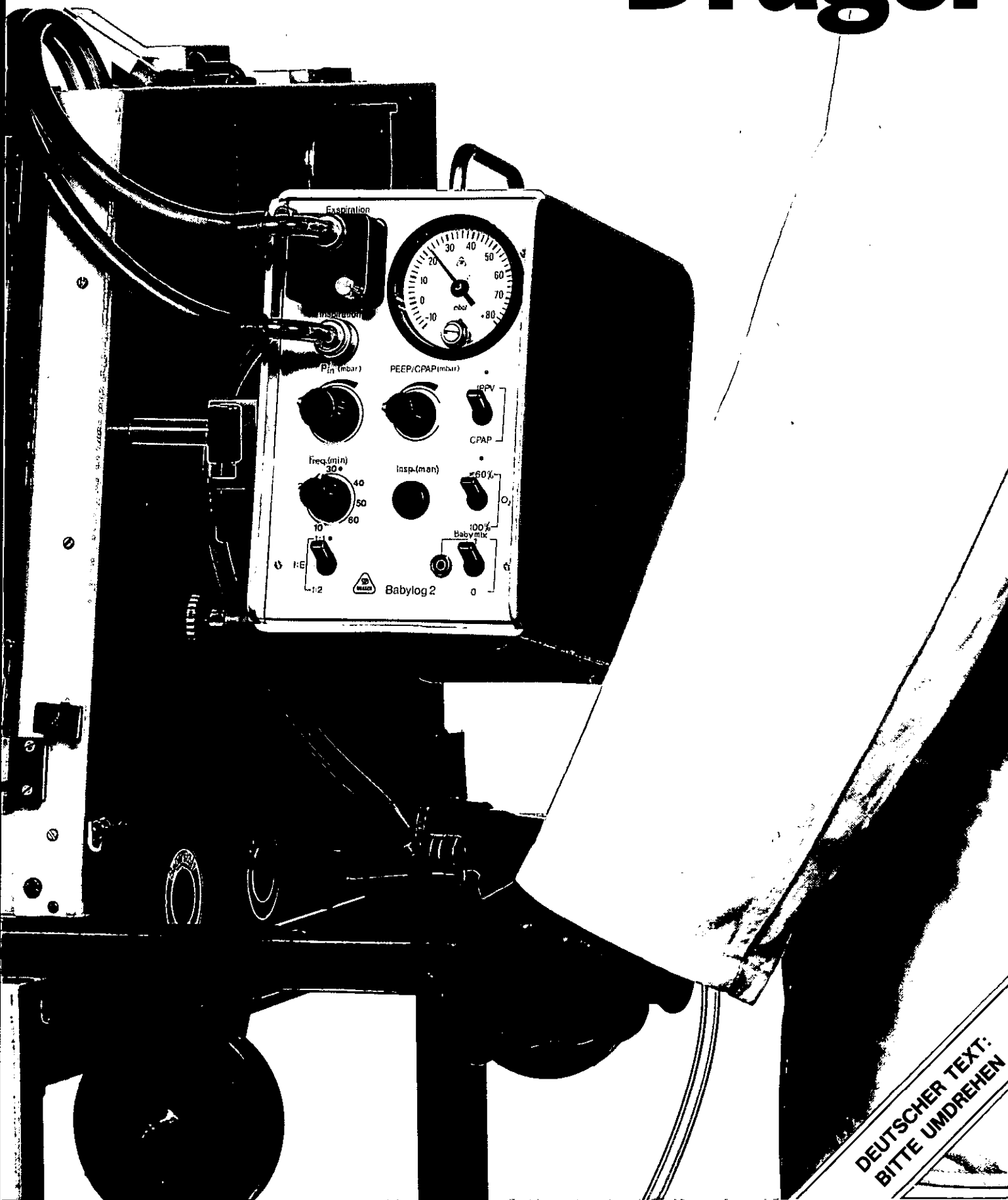


Dräger



DEUTSCHER TEXT:
BITTE UMDREHEN

Instructions for use

The Babylog 2 Ventilator

For Your Safety and that of your Patients¹⁾

For correct and effective use of the apparatus and to avoid hazards it is essential to read the following recommendations and to act accordingly:

Strictly follow the instructions for use

Any use of the apparatus requires full understanding and strict observation of these instructions. The apparatus is only to be used for purposes specified here.

Maintenance²⁾

The apparatus must be inspected²⁾ and serviced²⁾ by experts at regular 6 month intervals (and a record kept).

We recommend obtaining a service contract with DrägerService.

Repairs²⁾ and general overhaul on the apparatus may only be carried out by DrägerService.

General overhaul by DrägerService of pressure reducers should occur every 6 years, and of oxygen blenders every 4 years.

Only original Dräger spare parts may be used for maintenance.

Liability for proper function or damage

The liability for the proper function of the apparatus is irrevocably transferred

to the owner or operator to the extent that the apparatus has been serviced or repaired by personnel not employed or authorized by DrägerService or when the apparatus was used in a manner not conforming to its intended use.

Drägerwerk Aktiengesellschaft cannot be held responsible for damage caused by non-compliance with the recommendations given above. The warranty and liability provisions of the terms of sale and delivery of Drägerwerk Aktiengesellschaft are likewise not modified by the recommendations given above.

Drägerwerk Aktiengesellschaft

1) Insofar as reference is made to laws, regulations or standards, these are based on the legal system of the Federal Republic of Germany.

2) In accordance with DIN 31051:

Inspection = examination of actual condition
Service = measures to maintain specified condition
Repair = measures to restore specified condition
Maintenance = inspection, service and, if applicable, repair

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Intended Use

Short-term ventilator for premature and newborn babies, designed to effect controlled ventilation (IPPV) with PEEP or spontaneous breathing with CPAP during transportation or for resuscitation.

IPPV Intermittent Positive Pressure Ventilation

CPAP Continuous Positive Airway-Pressure

PEEP Positive Endexpiratory Pressure

I:E Inspiration : Expiration

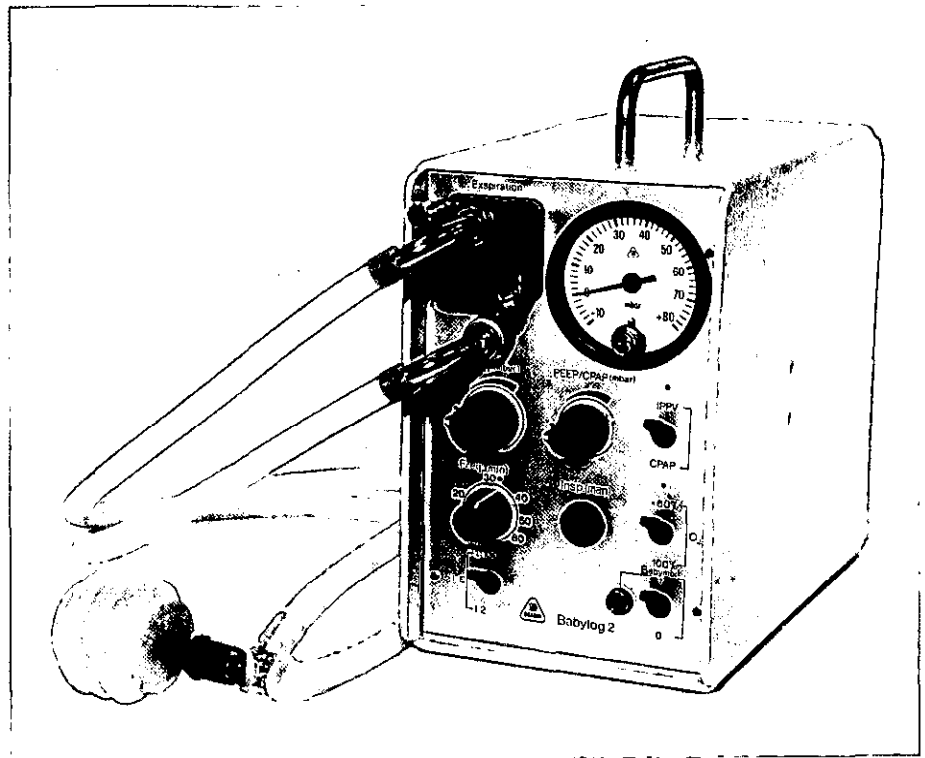


Fig. 1 Babylog 2

Description

Compressed gas (O_2 or compressed air or mixture of O_2 and compressed air) between 2 and 6 bar is required for driving the Babylog 2. If sufficient compressed gas is available, the indicator 13 (Fig. 2) lights – green – if the device is switched on.

The Babylog 2 provides a breathing-air flow of roughly 8 litres/min. The gas only flows during the inspiration phase in order to keep the gas consumption to a minimum. Consumption is reduced still further if the Babylog 2 conditions the breathing gas by way of the internal venturi gas mixing system. If oxygen is used as drive gas, half the breathing gas is sucked in in the venturi system from outside – i. e. air – via a filter; the resultant oxygen concentration in the gas is then roughly 60 vol. % when using O_2 for drive purposes.

The inspiration pressure (P_{in}) is limited on an infinitely variable basis between 10 and 60 mbar in the inspiration arm. Unintentional disconnection of the patient tubing can thus not lead to an uncontrollably high respiratory pressure.

The PEEP and CPAP are built up by way of corresponding actuation of the exhalation valve.

When the pushbutton 7 (Fig. 2) for manual inspiration is actuated, ventilation is triggered both in the controlled ventilation mode (IPPV) and in the spontaneous breathing mode (CPAP).

Technical Data

Drive and control:	pneumatic	
Control principle	with IPPV:	flow chopper
	with CPAP:	continuous flow
Inspiration:	time-cycled or manually triggered, pressure-limited	
Expiration:	time-cycled	
Respiratory pressure of inspiration – P_{in} :	infinitely adjustable between 10 and 60 mbar as plateau pressure	
Expiration pressure – PEEP/CPAP:	infinitely adjustable between 0 and 10 mbar	
Inspiration flow:	approx. 8 L/min with respect to 10 mbar	
O_2 concentration in breathing gas:	see »Initial Preparation« Page 4	
Respiratory rate f:	infinitely adjustable between 10 and 60/min.	
I:E ratio:	1:1 and 1:2	
Pushbutton »manual inspiration«:	for manual triggering of inspiration or »inflation hold«	
Ventilation modes:	IPPV and CPAP	
Main switch I/O:	switching Babylog 2 on and off	
Drive gas:	O_2 or dry compressed air, 2...6 bar	
Compressed-gas consumption:	Switch 9 in setting	Switch 6 in setting
		1:1 1:2
	»≈60%«	3 L/min 2 L/min
	»100%«	5 L/min 4 L/min
	Babymix«	
The green-dot settings correspond to the following values:	P_{in}	approx. 20 mbar
	PEEP/CPAP	0 mbar
	f	approx. 32/min
Weight:	approx. 2.5 kg	
Dimensions W x H x D:	120 x 195 x 200 mm	

What's What?

Front (Fig. 2)

- 1 Expiration connection
- 2 Exhalation valve
- 3 Inspiration connection
- 4 Inspiration pressure limitation P_{in}
- 5 Respiratory rate f
- 6 Selector switch for I:E
- 7 Manual inspiration

- 8 Selector switch on/off
- 9 Selector switch for O_2 concentration
- 10 Selector switch IPPV/CPAP
- 11 Expiration pressure PEEP/CPAP
- 12 Respiratory pressure gauge
- 13 Indicator for compressed-gas supply

Back (Fig. 3)

- 14 Compressed-gas connection
- 15 Bacterial filter with cap

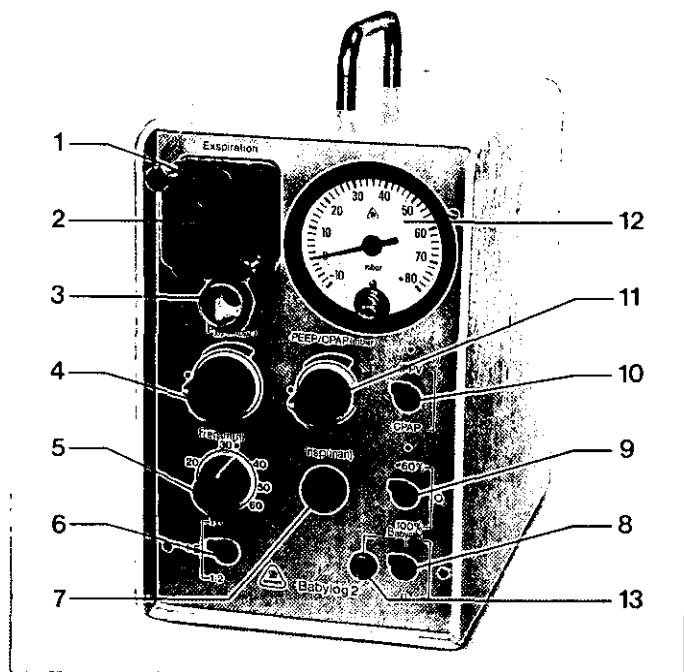


Fig. 2 Front of Babylog 2

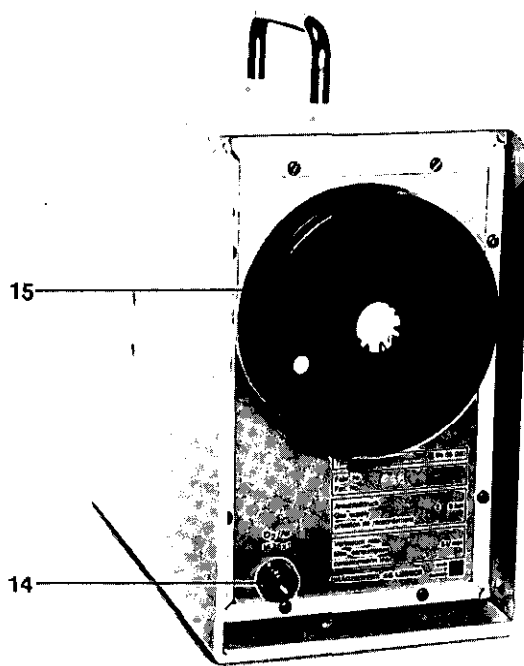


Fig. 3 Back of Babylog 2

Initial Preparation

Setting up or attachment of Babylog 2

The following possibilities exist:

- Installation in the »Intensive-care module« of the Dräger Transport Incubator 5400 (see Operating Manual »Transport Incubator 5400«). For this application the Babylog 2 is to be used **without** protective housing.

All other Babylog 2 applications require that the device be accommodated in a protective housing (with carrying handle).

Two such housings are available (see Order List):

- solely for Babylog 2,
- for Babylog 2 with Babymix gas mixer (Fig. 4).

- Suspension of Babylog 2 from a rail (section 10 x 25 mm) using mounting brackets. Various accessory sets »Rail mounting« are available for this purpose (see Order List):

Rail mounting brackets on left or right-hand side of protective housing (Fig. 5)

- for Dräger Intensive-Care Incubators 7310 and 7510 as well as Babytherm 4200,
- for Transport Incubator 5300

Babylog 2 in protective housing on wall-rail bracket (Fig. 6)

- for suspension from a wall rail.
As shown in Fig. 5 the bracket also makes it possible to set the device at an angle.

- Setting up of the Babylog 2 with protective housing on a table top or on a trolley.

Connection of Babylog 2 to the Dräger gas mixer »Babymix«

If oxygen and compressed air are available as drive gases, any O_2 concentration between 21 % and 100 % can be set in the breathing gas using the Babymix gas mixer.

Oxygen and compressed air are connected up to the back of the Babymix at the points indicated. The mixed-gas outlet of the Babymix is connected to the compressed-gas connection on the back of the Babylog 2. Switch 9 on the

Babylog 2 is to be set to »100 % - Babymix«. For further details see the Operating Manual »Babymix«.

Operation of Babylog 2 with only one compressed gas

The Babylog 2 is to be operated without a gas mixer if only one compressed gas (O_2 or compressed air) is available. The compressed gas is then to be connected directly to the Babylog 2.

The following O_2 concentrations result in the breathing gas:

Switch 9 in position »≈60%«	Driven by	
	Oxygen approx. 60% O_2 with CPAP approx. 60% to 80% O_2 with IPPV	Compressed air 21% O_2
»100% - Babymix«	100% O_2	21% O_2

Should lower and defined O_2 concentrations be required, we recommend to

make use of the »Babymix« gas blender or operation with compressed air.

»O₂ economy setting«

The Babylog 2 consumes the minimum amount of gas in the switch setting »60% O₂« (see »Description«, Page 3). This switch setting may however **not** be selected if the **Babymix** gas mixer is connected!

Assembly of patient system

- Insert diaphragm into valve cover (Dräger symbol must be legible, Fig. 7).
- Insert valve cover with diaphragm into Babylog 2 (Fig. 8).
- Assemble patient system as per Fig. 9 and connect up to Babylog 2. Make sure that hoses are firmly in position on sockets!

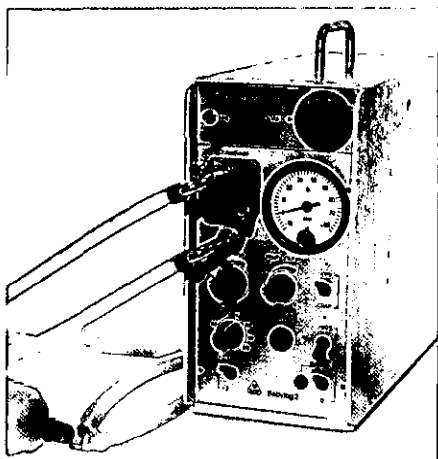


Fig. 4 Babylog 2 with Babymix in protective housing

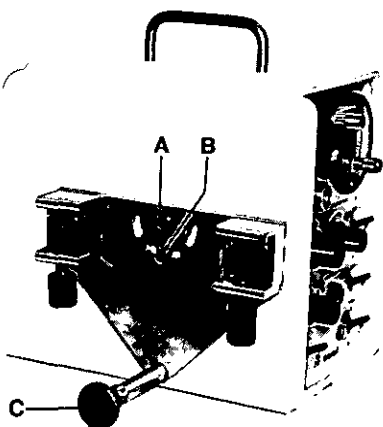


Fig. 5 Rail mounting brackets on left or right-hand side of protective housing

- A central screw
- B adjusting screw enabling any angle of inclination to be set thus guaranteeing optimum handling of device
- C support for setting device exactly perpendicular

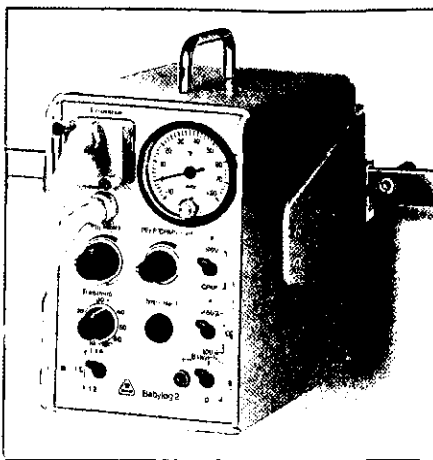


Fig. 6 Babylog 2 in protective housing on wall-rail bracket

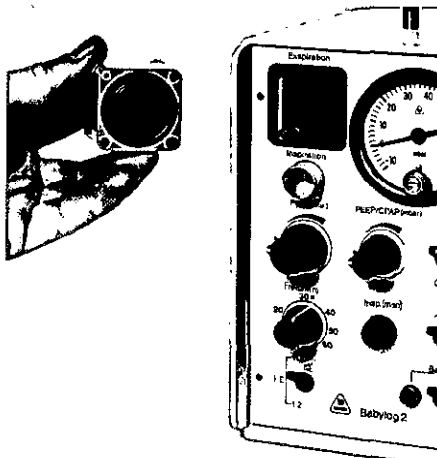


Fig. 7 Diaphragm in valve cover

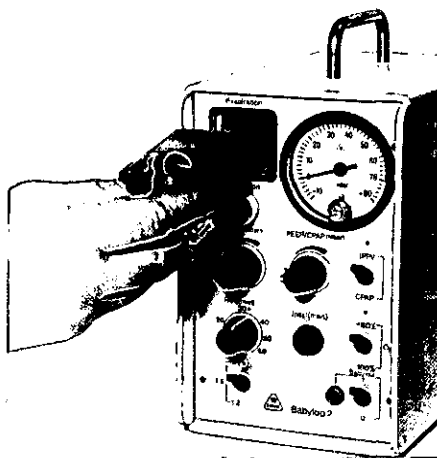


Fig. 8 Inserting valve cover

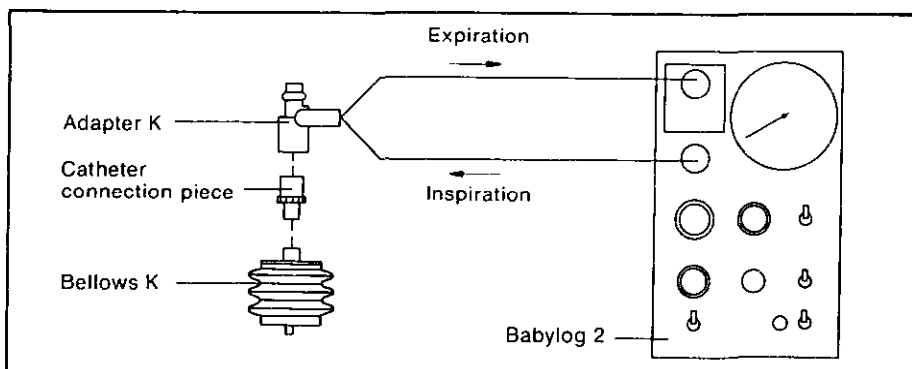


Fig. 9 Schematic representation of Babylog 2 with patient system. The bellows K are only to be attached for performance of functional check

Functional Check

- To perform functional check, attach bellows K with catheter connection piece (size 9) to Y-piece (Fig. 9). Use adapter K.
- Check whether bacterial filter has been fitted (back of device).
- Supply device with compressed gas (open cylinder valve(s) or connect device to central gas supply).
- Set all ventilation parameters to green-dot settings. Set switch 8 to »I«. If difficulties are encountered with start-up of device, consult section headed »Trouble Shooting«.
- Controlled ventilation must now be effected with the following values:

Frequency:	30–35/min
I:E ratio:	approx. 1:1
Inspiration pressure:	approx. 20mbar
PEEP:	0 mbar
- Set rotary knob 11 PEEP/CPAP to maximum (right-hand stop). A PEEP of approximately 10 mbar must result.
- Set switch 10 to CPAP. The pressure of roughly 10 mbar must be maintained. If a pressure of roughly 10 mbar does not result, the diaphragm in the exhalation valve 1 is to be checked for correctness of installation.
- Actuate pushbutton 7 »manual inspiration«. An inspiration pressure of approximately 20 mbar must build up.

Operational Use

After consulting doctor, set ventilation parameters to values appropriate to the patient.

Monitoring

The airway pressure gauge should be carefully observed in order that faults in ventilation can be early detected and

risks for the patients can be avoided. Should use be made of the »Babymix« gas blender, the O₂ concentration must be monitored in addition, e.g. by means of the Dräger O₂ monitor »Oxydig«.

Caution!

For safety reasons the rotary knob 4 P_{in} is to be set to the green dot in the CPAP

mode so that, when switching to IPPV, an excessive respiratory pressure is not unintentionally applied to the patient.

The vent hole in the exhalation valve must always be kept open to prevent blockage of the patient's exhalation.

Shut-Down Actions

Shut off compressed-gas supply (e. g. close cylinder valves).
Set switch 8 to »0«.

Care

For cleaning and disinfection purposes the Babylog 2 is to be disassembled as follows:

- Remove patient tubing system from device and disassemble into individual components.
- Remove exhalation valve 1 by loosening the two knurled screws.
- Remove diaphragm from exhalation valve.
- Remove bacterial filter 14 with cap.

Cleaning

With the exception of the bacterial filter, all disassembled parts are to be thoroughly cleaned under running water. The parts are then to be dried (DRÄGER drying unit 2 M 8220). This reduces the propagation of bacteria and the likelihood of corrosion. Any dirt on the device is to be removed using a damp cloth impregnated with a standard detergent (wetting agent).

Disinfection in Aseptor®

The device is to be prepared for disinfection as described under »Cleaning«. The device, its components and the tub-

ing must be **dry** as otherwise there is a risk of unpleasant odours following disinfection.

The bacterial filter must not be placed in the Aseptor.

Place components on Aseptor shelf. The patient tubes are to be slipped over the suction nozzles in the Aseptor. Place Babylog 2 in Aseptor. The Aseptor is then to be supplied with disinfectant and neutralization agent and switched on.

The »Guidelines for disinfection in the Aseptor« (Operating Manual 6751.10e) are to be observed as regards disinfection in the Aseptor.

Disinfection using liquid disinfectants

The device is to be prepared for disinfection as described under »Cleaning«. The components and patient tubes are then placed in a standard, cold disinfectant solution. It is to be ensured that following disinfection any residual solution is completely removed and the components are then to be thoroughly dried again.

The Babylog 2 can be wiped over with a liquid disinfectant.

Sterilization in steam

The ventilator itself cannot be sterilized in an autoclave. All other parts (patient system including exhalation valve 1) can be sterilized in an autoclave in superheated steam up to max. 134°C. These parts are to be prepared for sterilization in steam as described under »Cleaning«.

Caution!

Sterilization in superheated steam affects painted surfaces and changes their appearance. The natural aging of rubber parts is accelerated and their service life shortened.

Assembly of device

The patient system is to be assembled as described in the Section »Initial Preparation«.

The bacterial filter 14 with cap is to be inserted with the arrow facing the device.

Functional check

Before renewed use of the device a check is to be performed in accordance with the Section entitled »Functional Check«.

Maintenance, Inspection

In the event of frequent sterilization in superheated steam in an autoclave the rubber diaphragm of the exhalation valve is to be checked regularly for cracks and replaced after one year. The bacterial filter on the back is to be replaced after two months of sustained operation.

Further maintenance work by the hospital personnel exceeding that described in the section »Care« is not necessary. The device is to be inspected twice a year by trained personnel.

Trouble Shooting

	Fault	Cause	Remedy
1	Device does not work	Device does not have the specified supply pressure of 2 to 6 bar	Check the pressure. Make sure that connection of supply hoses is correct
2	Inadequate build-up of airway pressure	System leaking	Check all hose and plug connections, check diaphragm of exhalation valve 1 for correct seat and perfect condition
3	No pressure decrease possible during expiration	Hose kinked	Correct hose routing
4	In the event of all other defects		Call DrägerService

Parts List

No. in Fig. 10	Designation and description	Order No.
1	Babylog 2 basic unit	
2	Filter 905 St	84 02 926
3	Filter cap	M 18 477
4-13	Accessory set Babylog 2	84 06 010
4-12,14	Accessory set Babylog 2-TI	84 06 713
4	Set of diaphragms (qty. 5)	84 03 945
5	Exhalation valve (valve cover)	84 03 943
6	Set of bolts with washers (2 each)	84 03 944
7	Set of tubes (qty. 2)	84 04 409
8	Set of catheter connection pieces K sizes 1.5 – 5.5 (total of 9)	84 03 684
9	Adapter K 90	84 03 077
10	Set of caps (qty. 5)	84 02 953
11	Catheter connection piece, straight, size 9	M 19 347
12	Bellows K	84 03 208
13	Catheter connecting elbow	M 25 567
14	Catheter connection	84 06 840

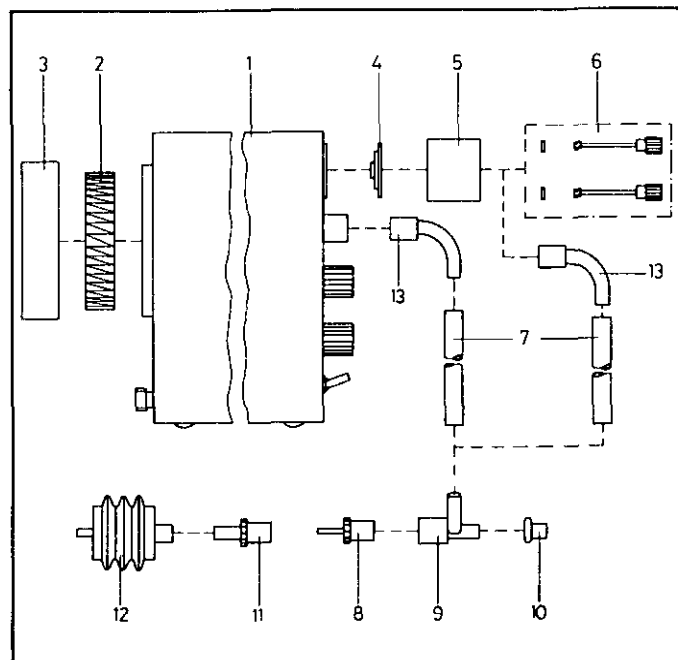


Fig. 10 Component parts

AP - 7

Order List

The articles preceded by a (▶) symbol, e. g. masks, Y-pieces, corrugated hoses and connectors, correspond in terms of their connection dimensions to the ISO Draft Standard ISO/DP 5356. There are also various items which can be used both with ISO and with standard DW connecting elements.

Name and description	Order No.
Basic units	
Babylog 2 with protective housing (without Babymix)	84 05 300
Combination Babylog 2/Babymix comprising Babylog 2, Babymix and protective housing	84 07 570
Accessories required for operation	
1. For operation without Babymix	
Accessory set Babylog 2 Comprising: 2 adapters K, 2 patient tubes 1.2 m, 1 expiration valve, 2 catheter connecting elbows	84 06 010
<i>Connecting hoses CS, option of:</i>	
O₂/compressed-air connecting hose, 2 m (Angled plug-in socket)	M 22 360
O₂/compressed-air connecting hose, 3 m (Angled plug-in socket)	M 22 361
O₂/compressed-air connecting hose, 5 m (Angled plug-in socket)	M 22 362
<i>Attachment, option of:</i>	
Trolley, Babylog 2 for accommodating Babylog 2	84 09 275
Wall rail bracket for accommodating Babylog 2 on intensive-care rail	84 04 481
2. For operation with Babymix	
Accessory set, Babylog 2 Comprising: 2 adapters K, 2 patient tubes 1.2 m, 1 expiration valve, 2 catheter connecting elbows	84 06 010
<i>Connecting hoses CS, option of:</i>	
O₂ connecting hose, 3 m (Angled plug-in socket)	M 22 346
O₂ connecting hose, 5 m (Angled plug-in socket)	M 22 347
Compressed-air connecting hose, 3 m (Angled plug-in socket)	M 22 496
Compressed-air connecting hose, 5 m (Angled plug-in socket)	M 22 497
Trolley, Babylog 2 for accommodating Babylog 2	84 09 275
or	
Wall rail bracket	84 07 665
Accessories required for operation with Babymix	
<i>For continuous measurement and monitoring of O₂ in inhalation gas:</i>	
Oxydig, complete Oxygen meter and alarm instrument Oxydig with cable, sensor housing and sensor capsule for continuous monitoring of the oxygen concentration in the breathing-gas mixture. Measuring range 0 to 100% O ₂ . With upper and lower alarm limit which generate audible and visual alarm once set limits are exceeded or dropped below, as well as battery-discharge alarm and INOP alarm in the case of sensor defects.	83 04 411

Name and description	Order No.
<i>Connecting elements required:</i>	
O₂ meter holder	2M 17 770
O₂ measurement set For Babylog 2/Babymix	84 03 988
Special accessories	
Silicone mask No. 0	21 09 980
Silicone mask No. 1	21 09 972
Silicone mask No. 2, circular	21 11 446
Breathing mask, size 1 New-born babies	M 07 483
Breathing mask, size 0 Premature babies, medium	M 08 576
Breathing mask, size 00 Premature babies, small	M 08 577
Replacement parts for sterilization	
Accessory set, Babylog 2	84 06 010
Catheter elbow size 9-ISO	▶ M 25 567
Set of 5 caps (84 01 645)	84 02 953
Set of catheter connectors K-ISO (1 x each sizes 1.5-5.5)	▶ 84 03 684
Set of 5 diaphragms (84 03 377)	84 03 945
S-set, non-return valve (as of device no. 975)	84 03 943
S-set, non-return valve (up to device no. 975)	84 03 952
S-set pin, (2 ea)	84 03 944
S-set, tubing	84 04 409
Adapter K 90°	84 03 077
Bellows K for infants	84 03 208
Spare and wearing parts	
Protective housing Babylog 2	84 05 022
Protective housing Babylog 2/Babymix	84 05 194
Bacteria filter	84 02 926
Cap for bacteria filter	M 18 477
Oxydig sensor housing	68 50 250
O₂ sensor capsule	68 50 645
Battery for Oxydig (alkali manganese) 4 ea required	13 35 804

These Instructions for use apply only to
Babylog 2 with Serial-No.:

Without entry of Serial-No. by Dräger these
instructions for use are provided for general
information only and are not destined to be
used with a specific device!

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