

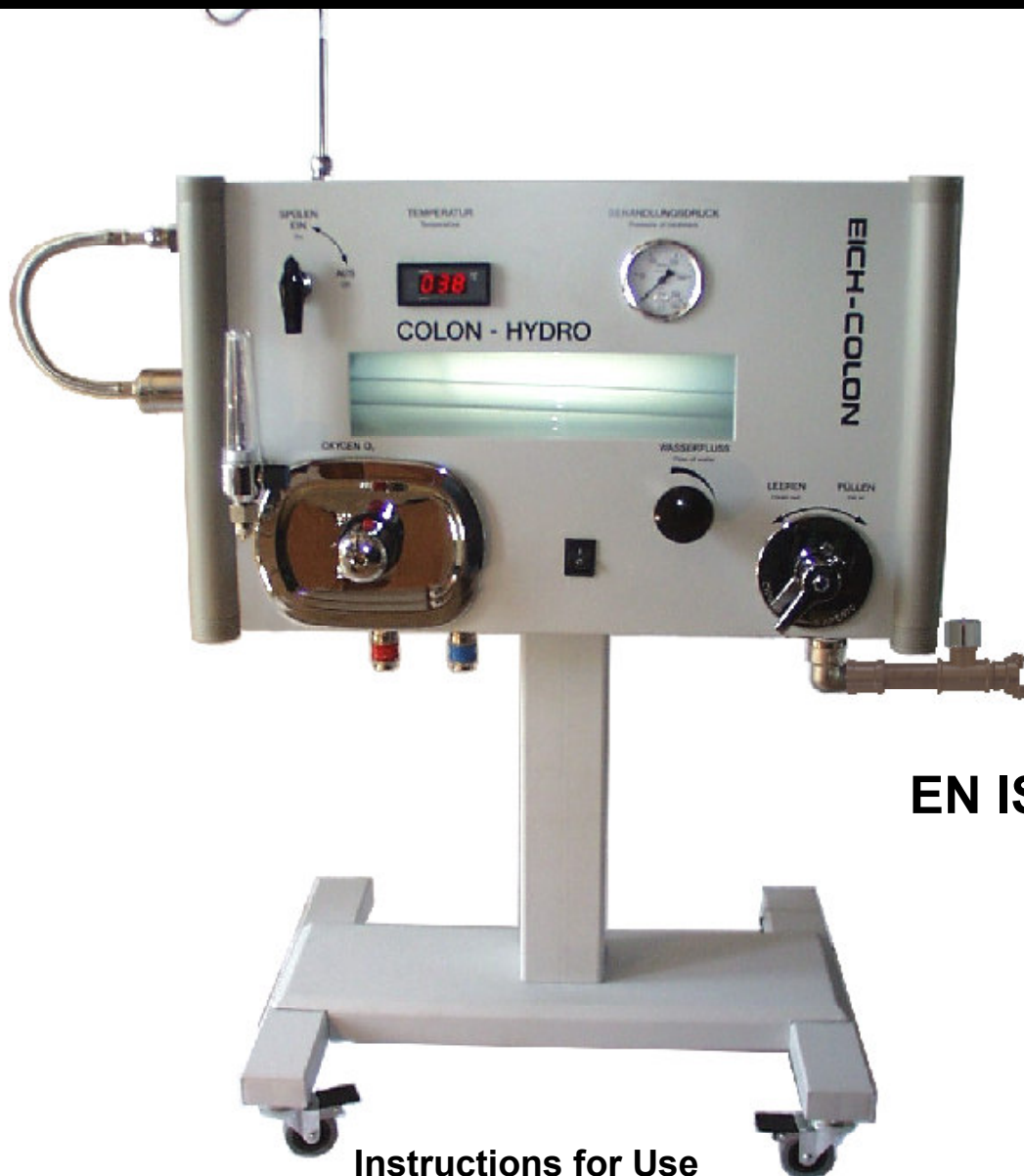
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# EICH-COLON®

Medical machines

# COLON-HYDRO

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**EN ISO 13485**

## Instructions for Use

The Colonic Irrigator offers new options for the treatment of disorders of the colon:

- Depolarized water – causes a positive change in the permeability of the cell membrane
- Activated water – promotes vital processes
- Colour therapy – strengthens the individual constitution
- Resonance therapy – collects valuable information on pathological and toxic processes
- Individual patient vibrations – passes on information contained in urine and sputum
- Integrated instillation of oxygen and infusions – attacks the problem directly at the source
- Appealing modern design – pleases the customer's sense of aesthetics
- Wall-mounted and mobile units – offers the therapist greater flexibility

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





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## 1 General Information

Definition of COLON-HYDRO-Therapy: A method to carry out enema with the support of an apparatus. (Closed circuit).

This operation manual contains important instructions which assist to ensure trouble free operation of your COLON-HYDRO. Keep this manual near your COLON-HYDRO.

## 2 Symbols and Logos

	Electric Current Supply ON
	Electric Current Supply OFF
	Equipment complies with Form 93/42 EEC
	Application part of Type B
	Use in closed rooms only
	DC-Current
	Instructions for use to consider
	manufacture date
	accompanying document to consider
	secure electrical separation
	protection class II
	no at residual waste to depollute
	One Way use only
<b>SN</b>	serial number
<b>REF</b>	part number

## 3 Technical Data

Description of Equipment:  
Electric Supply:

COLON HYDRO  
Mains adaptor input: 100-240 V-AC, 50-60 Hz  
0.35-0.75 A  
output: 12 V, 2,75 A  
IP-Protection: IP54

Protection Class:  
Protection Specification:  
Max. Water Pressure:  
Max Input Pressure Oxygen:  
Max. environmental temperatures  
during transport and storage.  
In operation:  
Pressure during Treatment:  
Recommended pressure for treatment  
Dimensions (excl. trolley stand)  
Dimensions (incl.trolley stand)  
Weight (excl.trolley stand)  
Weight (incl.trolley stand)

MSELV  
Type B  
4 bar  
0,5 bar  
  
+ 5°C to +45°C  
+ 18°C to + 40°C  
0 to 200 mbar adjustable  
150 mbar  
690 x 450 x 235 mm  
690 x 985 x 390 mm  
29 kg  
35 kg

## **4 Indication, Contra-indication, Side Effects and Interaction**

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### **4.1 Indication**

#### Intestinal diseases:

- Chronic constipation
- Flatulence
- Chronic diarrhoea
- Atonics colon
- Colon irritable
- Piles (haemorrhoids)
- Spastic colon
- Diverticulosis
- Morbus Crohn (during inactive phase)
- ulcerative colitis (during inactive phase)
- Parasitic infection (worms)
- Fungal disease (intestinal mycosis)
- Intestinaloxemia
- Acute retention of faeces
- Ulcerative colitis

#### Effects of auto intoxicated bowels

- Chronic polyarthritis (rheumatism)
- Allergies
- Skin diseases i.e. chronic itching, acne, nettle rash. dermatosis (allergies)
- Migraine or headaches
- Chronic prostrate infection
- Asthma bronchial
- Hypotony and hypertension
- General detoxication
- Nephrolithiasis (renal calculus)

As preparation for intestinal examination

- Colonoscopy
- Contrast enema
- Rectoscopy
- Sigmoidoscopy

As preparation for abdominal surgery

As preparation for therapeutically relevant dieting

- Modified juice diet according to Buchinger
- Mayr-fasting
- Calorie reduced diet for weight loosing
- Felke-dietry curing

**4.2 Contra-indication**

- Aneurysms
- Anaemia
- Acute intestinal infection
- Hemia
- Post colon surgery
- Post anal surgery
- Cracks and fistulae
- Gastrointestinal haemorrhage
- Infected piles
- Perforations
- Post 3 months pregnancy
- Cardiac degeneration
- Liver cirrhosis

**4.3 Side effects or interaction**

Possible side effects or interactions could be the intestinal perforation as a result of an improper operation. Pay attention to a smooth insertion of the speculum. Never insert it forcefully. Use lubricant gel or Vaseline.

## **5 Intended Purpose**

This COLON-HYDRO apparatus is suitable for the application of enema, in a closed-circuit system i.e. HYDRO-COLON-Therapy.

The manufacturer is not aware of frequent operational error with, or incorrect application of COLON-HYDRO.

## **6 General Warnings and Safety Precautions**

In your own interest and in the interest of patients, please observe the following:

- This COLON-HYDRO unit must not be used for any purpose other than the one described in this manual. (please see chapter 5, Intended Purpose, and chapter 11, Operation),
- The pressure reducer inside the device has been adjusted and sealed. Manipulation of the seal will lead to loss of right of warranty claims.
- No liability will be accepted for failure to comply with the operations manual, especially its warning notes
- Prior to connecting to mains, ensure compatibility of electrical system with main adaptor.
- During treatment, trolley roller breaks must be ON.
- When applying oxygen, use medical oxygen only. **ATTENTION! KEEP OXYGEN FITTINGS CLEAN OF LUBRICANT OR GREASE, OR ANY OIL. DANGER OF EXPLOSION!**
- Installation, Maintenance and Repair work must be carried out by either manufacturers representatives or personnel authorised by manufacturer or other qualified persons ONLY.
- COLON-HYDRO must not be operated during power cuts.
- COLON-HYDRO must be connected to power and water mains with original components as supplied by manufacturer, i.e. main adaptor, hoses etc..
- Operate COLON-HYDRO with authorised One-Way materials only. Customary Rules of Hygiene must be observed. (Gloves and Coat)
- Use recommended disinfectant only.
- Therapy with COLON-HYDRO may be carried out only if the patients ability to actively take part is ensured.
- After treatment, shut off water valve at the filter unit.
- never use specula twice – high risk of infection

## **7 *important safety instructions***

- take care that the applied voltage is in compliance with the value shown on the adapter or at least in-between the limits.
- The device / system may not be used in surgery rooms or explosive rooms
- device is not suitable for a use outdoors or during transport
- device is destined for a use in hospital or at home
- device may only be used and stored in dry conditions (not in the bathroom)
- operation of the device should be done on an even and solid underground
- if there are operational disruptions, please get in touch with your supplier
- if a safely operation seems no longer be guaranteed, e.g. if the isolation of the feeder or the feeder of the power supply to the device is defective, immediately decommission the device (pull out the plug of the socket) and protect it in such way that an operation is no longer possible. Only by this measure, a safe disconnection of the power supply is possible



## **8 Packaging, Transport and Storage**

### **8.1 Packaging**

Prior to shipment your equipment is thoroughly checked and tested, and carefully packed by EICH-COLON, with environmentally safe packing materials.

We request that you dispose of these materials in compliance with local rule.

### **8.2 Transport**

Despite the best possible care during transportation, accidental damage can at times not be completely avoided. Please check your equipment on receipt. In the event of damage or missing parts, please notify EICH-COLON at the address below: (see also chapter 8.1 supplies)

EICH-COLON  
Kunstmühlestr. 12  
D-72793 Pfullingen

Phone +49 (0) 71 21 / 7 24 41  
Fax +49 (0) 71 21 / 79 07 86  
E-Mail: [mail@eichcolon.de](mailto:mail@eichcolon.de)

### **8.3 Storage**

Store equipment at all times in a dry and clean room. Temperature limits as described in chapter 3 Technical Data, must be observed.

### **8.4 Durability**

If the handling and the storage is effected appropriately, the product disposes of a 10 years durability.

## 9 Supply and Accessories

### 9.1 Supplies content

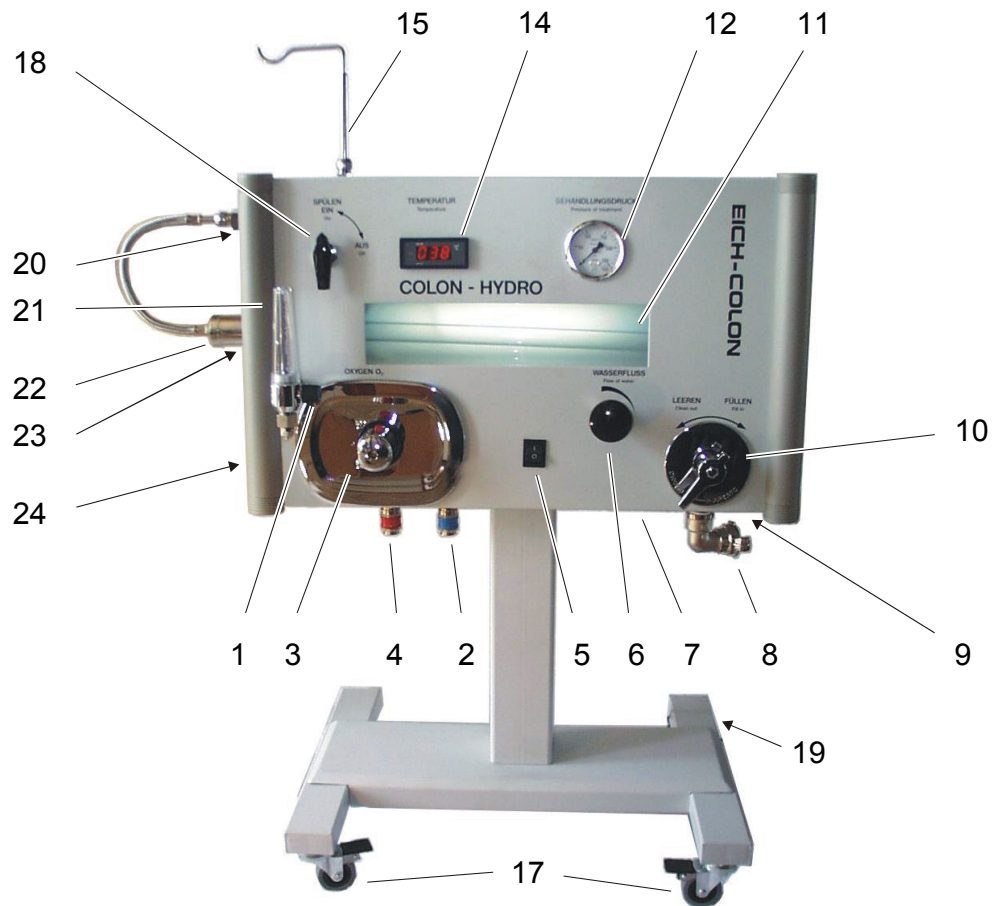
Parts identification	Quantity	Unit	Art.-Nr.
<b>COLON-HYDRO base equipment</b> (colour therapy optional) (free discharge optional)	1	pcs	11000
<b>Mains adaptor</b>	1	pcs	12000
<b>Installations- and accessories particles</b>			13000
Coupling for sewage water	1	pcs	3000
Coupling unit (O <sub>2</sub> ) 9 / 6/8	1	pcs	3010
Nipple for tap water 12 x 9 mm	2	pcs	3020
Hose clamp for sewage water 30/40 mm	1	pcs	3040
Spiral hose for sewage, 25 x 30, 2000 mm	1	pcs	3050
Hose clamp 10/16 mm	4	pcs	3060
Connecting hose for tap water 9 x 14, 16 bar	2	m	3070
Connecting hose for warm water 9 x 14, 16 bar	2	m	3080
Filter complete	2	pcs	3090
Angle adaptor for Filter, short	1	pcs	3100
Angle adaptor for Filter, long	1	pcs	3110
Flex-hose, metallic 3/8" x 10 mm, 1 m	2	pcs	3130
Disinfectant container, complete with hose	1	pcs	3140
Infusions set complete	1	pcs	3150
Brush for sight tube	1	pcs	3160
Allen key, 5 mm	1	pcs	3170
Key for rear door	1	pcs	3180
Hose adaptor with thread 9 / 3/8	2	pcs	3200
Instruction for use	1	pcs	3300
Packaging board	1	pcs	3310
Transparent bag	1	pcs	3311
Material carpet	1	pcs	3312
Styrodur	1	pcs	3313
Air bubble film	12	m	3314
Adhesive tape	10	m	3315

### 9.2. Available accessories

<b>Trolley stand</b>	1	pcs	14000
<b>Accessories</b>			15000
Speculum, standard size for Colon-Hydro-Therapie	25	pcs	5000
Speculum, olive size for Colon-Hydro-Therapie	25	pcs	5010
Speculum, infants size for Colon-Hydro-Therapie	25	pcs	5020

## 10 Essential Components and their Function

### 10.1 Illustration COLON-HYDRO



**Abb.1 EICH-COLON-HYDRO**

1	Flowmeter	13	Infusion container
2	Cold water coupling	14	Temperature gauge
3	Mixer	15	Container holder
4	Warm water coupling	16	Disinfectant container
5	ON/OFF-switch	17	Trolley wheels with brakes
6	Flow control	18	Rinsing valve ON/OFF
7	Oxygen connector	19	Trolley wheel
8	Sewage connection	20	Ball valve
9	Plug	21	Flow-meter
10	Valve FILLING/EMPTYNG	22	Coupling for rinsing system
11	Examination tube	23	Discharge pipe
12	Pressure gauge	24	Nipple for treatment hose

## **10.2 Description of Function of important individual Components**

**Discharge valve**.....permits FILLING and DISCHARGING.

**Disinfection set**.....comprises of container, hose, and nipple, and is required after every treatment for the disinfection of components.

**Coupling for rinsing system**.....must be connected to discharge pipe during the rinsing process.

**Pressure gauge treatment pressure**...indicates pressure rating, max 200 bar.

**Mixer**.....allows adjustment of water temperature (see chapter 11.7 Useful advice and recommendations).

**Rinsing ON/OFF**.....Valve for the selection of operating status.

**Water filter**.....filters mechanically particles in water larger than 40 micron.

**Water flow**.....infinitely variable valve to determine water pressure for treatment.

**Oxygen O<sup>2</sup>**.....Oxygen unit to complement treatment

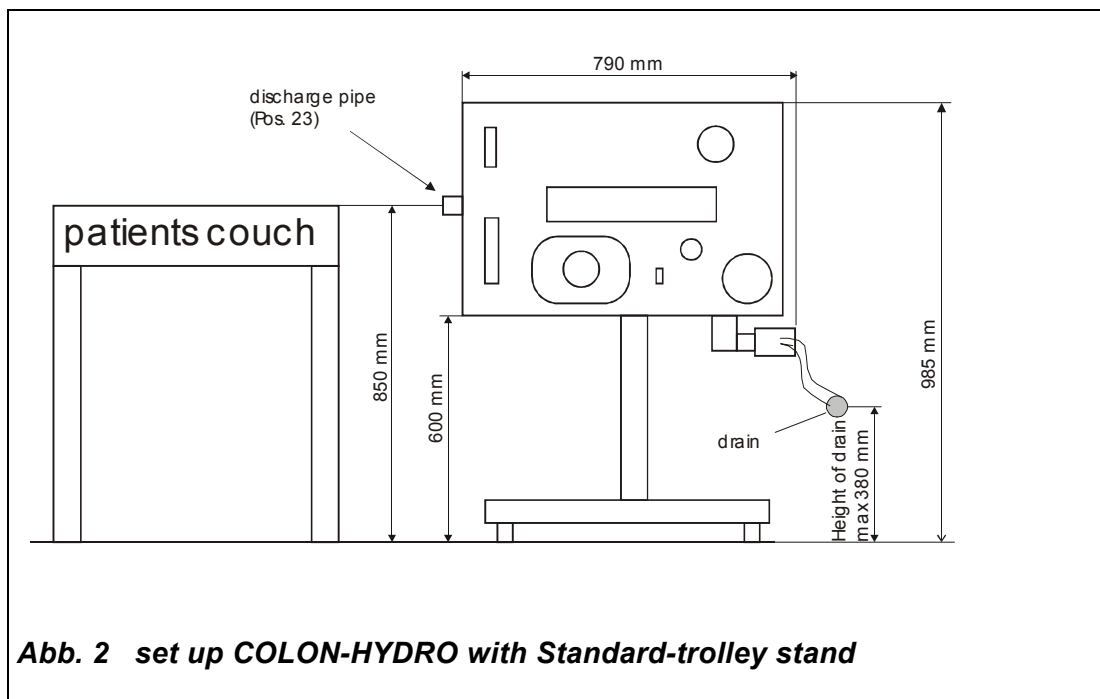
## 11 Installation and Start Up

### 11.1 Physical Conditions

A typical treatment room for the application of COLON-HYDRO therapy should have the following qualifications:

- Stone floor or linoleum, for reasons of hygiene.
- Tiled walls surrounding treatment area, for reasons of hygiene.
- Closed sewage discharge pipe.
- Our recommendation: Height adjustable bed.
- Hat-stand for patient's clothing.
- Seat for Therapist.

### 11.2 Installation of COLON-HYDRO



Successful Flushing/Rinsing of the equipment relies to a large degree on the effectiveness of the sewage arrangement. Therefore please observe:

- Discharge pipe must not be installed above 380mm from the floor
- Height of bed should be in line with centre of discharge pipe.

### 11.3 Connection to Mains

A suitable socket for this electromechanical appliance must be provided.

Electrical connection data: depends on country

First connect low voltage plug (12 V) of the mains adaptor with socket (Pos.9) then connect plug of mains with mains socket.

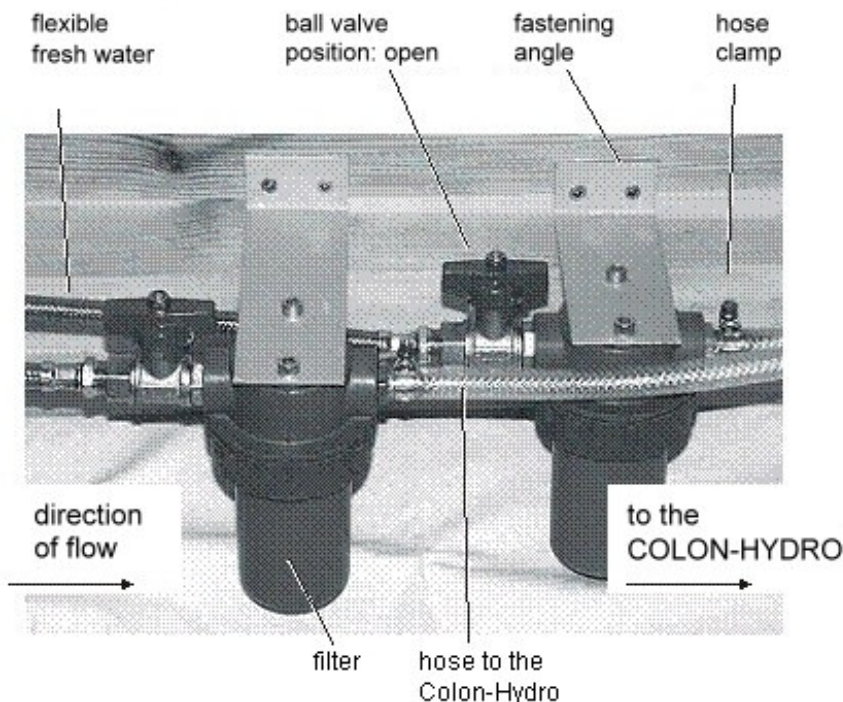
### 11.4 Connection to Potable Water, and Filter system.

A standard wash-basin with hot-and cold potable water connection can easily be modified to accommodate installation of COLON-HYDRO Recommended water pressure should be 3 - 4 bar, though not lower than 2,5 bar Recommended water temperature 60° C

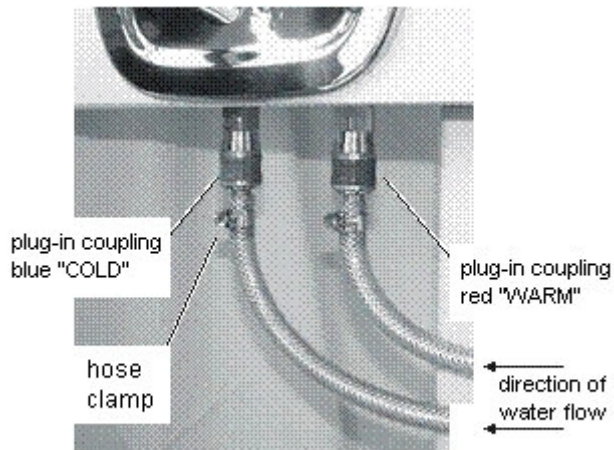
Connect flexible hose (delivery contingent with water mains and secure with 3/8" fitting. This fitting has been wrapped ex works with plastic seal, and has to be connected to the ball valve.

Filter systems must be installed to both Input for Cold water and Input for Hot water. This filter system has purely mechanical function and removes particles larger than 40 µm.

Filter units are to be secured to a wall (see photo, Illustration 3, filter layout)



**Abb. 3 filter assembly**



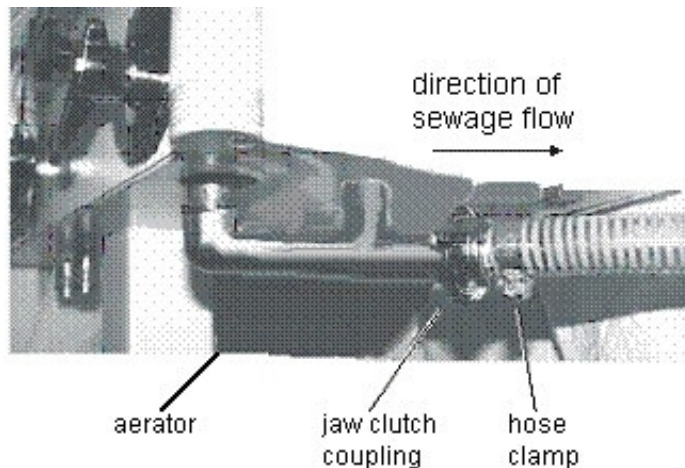
Connect hose-fitting to filter outlet (sealed with Teflon) and connect hose to fitting (see photo on the left) Ensure that HYDRO-COLON is securely connected.

**Please observe:**

For potable water connections use parts as originally supplied only.

**Abb. 4 fresh water connection**

### 11.5 Connection to Sewage



Waste water discharge from HYDRO-COLON may be effected through any existing sewage system. The device requires a 25 mm junction however, to which the end of the outlet hose is to be connected (Available from all builders markets). Advice: Please proceed with care when connecting plastics parts.

**Abb. 5 Sewage connection**

### **11.6 Oxygen connection O<sup>2</sup>**

Oxygen is connected with a suitable hose (6x8) and the coupling set (Pos. 3010) at the underside of the equipment (Pos. 7)

#### **ATTENTION:**

- Avoid contact of oil or grease with oxygen equipment.....**explosive!**
- Oxygen pressure must not exceed 0,5 bar.
- do not use technical oxygen, only oxygen for medical purpose

Further information regarding the oxygen therapy may be found under 12.5 application of oxygen during colon hydro therapy

### **11.7 Initial Start Up**

Before starting the equipment the first time, ensure that the "water hydraulic system" is vented and rinsed at maximum temperature.

Status: "RINSING": Coupling for rinsing system is connected (Pos. 22), Rinsing valve (Pos. 18) is turned to "RINSING ON" and discharge lever (Pos. 10) is turned to "DISCHARGE"  
Open water flow (Pos.6).....RINSING

Secure correct water hardness. Your local water authority will inform on value. Use lime filter if water is found to be of "increased hardness", as the manufacturer of your HYDRO-COLON will refuse warranty claims for damage due to excess lime.



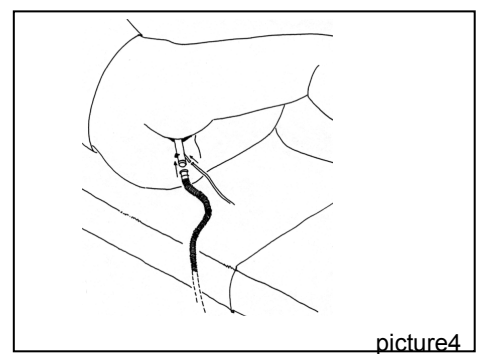
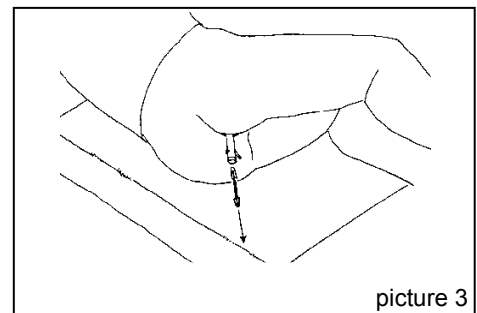
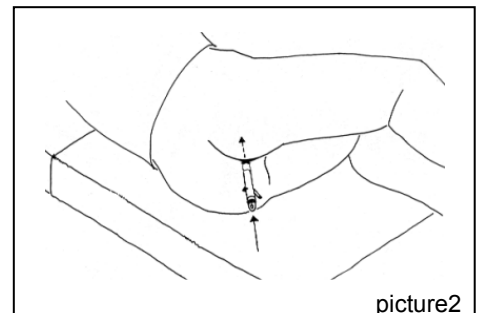
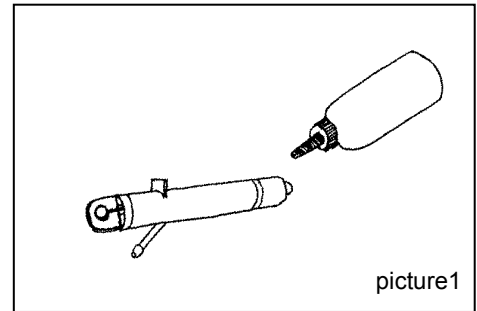
## **12 Operation**

### **12.1 Preparation of Equipment**

- Illumination of equipment with ON/OFF-Switch (Pos. 5)
- Turn discharge-leaver (Pos.10) to position "Discharge"  
Turn rinsing-valve (Pos. 18) to position "Rinsing On"
- Open Water-flow, now visible in viewing-pipe (Pos. 11) Rinse until temperature reaches a constant 38°C.
- Assemble treatment-hose (Freshwater supply to patient) to treatment-nipple (Pos. 24) and position the other end of the hose to Spekulum.
- Check function of insertion-help and hang spekulum on trolley stand.
- Shut down water-flow (Pos. 6)
- Disassemble coupling for rinsing-system (Pos. 22)
- Connect discharge-hose (from One-way set) to discharge-pipe (Pos. 23) and hang assembly onto trolley stand.

## 12.2 Preparation of Patient

- Patient should try an evacuation of the bowels and bladder by natural means
- Put draw sheet on bed
- Undress patient
- Patient takes Sims-position, left or right
- Put gel on insertion-help (picture 1)
- Insert Spekulum, Fresh-water nipple points to the genitals of patient (picture 2)
- Remove Insertion-help (picture 3) and assemble end of inlet/Outlet hose to Spekulum (picture 4)
- Patient lays on side back with knees drawn our recommendation: Place a support under the hollow of the knees of patient.



## 12.3 Application of the actual COLON HYDRO-Therapy

- Open Water-flow slowly; observe therapy treatment pressure on pressure gauge (Pos. 12). Rinse at 150 mbar until temperature has reached 38°C again. Explain to patient that she/he should signal when pressure in intestines is showing signs of discomfort.

## Instructions for Use 03/2009-3

- Switch discharge leaver (Pos. 10) to "FILL"
- Switch discharge leaver IMMEDIATELY to "EVACUATE" on receipt of patient signal  
Observe if pressure stays at 150 mbar during the rinsing process, adjust if necessary.  
If no discharge is visible in the observation pipe, return discharge leaver to Position "FILL", wait for signal from patient. This exchange between "FILL" and "EVACUATE" now takes place in intervals of approximately 10 minutes.  
The Rinsing phase will continue as long as discharge is visible in the observation pipe.
- Apply the first colon massage after approximately 10 minutes of treatment.
- After colon massage continue with intervals of "FILL" and "RINSING", observe correct pressure of 150 mbar.
- If applicable, oxygen may be applied during the last 10 minutes of treatment (see chapter Oxygen application with COLON HYDRO THERAPY).
- Terminate treatment after approximately 30 minutes if discharge is no longer apparent.

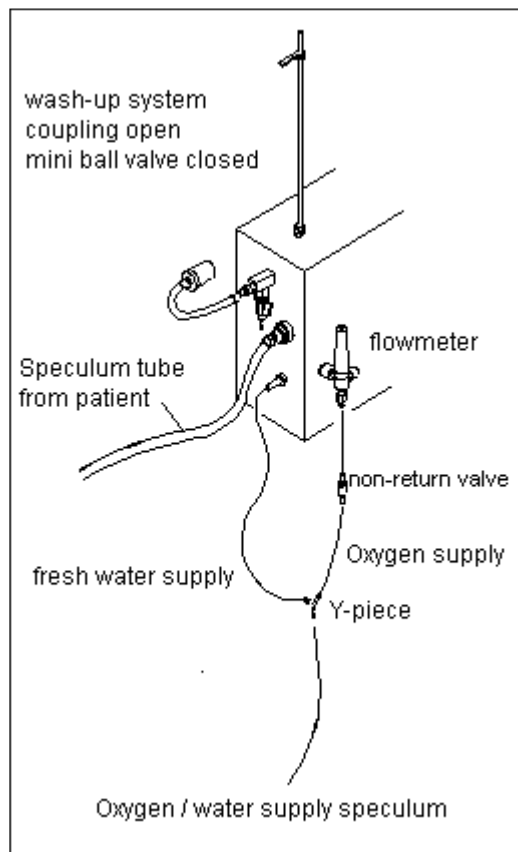
### **12.4 Termination of Treatment**

- Shut down Water flow (Pos 6)
- Remove treatment hose from nipple (Pos 24), elevate the end of hose in order to allow remaining air in the patient's intestines to leave through the hose system.  
The patient will thereby lose a feeling of pressure through the presence of water which now gets discharge as well.
- Patient now resumes Sims-Position for the removal of the Spekulum.
- Patient proceeds to the bath room (Toilet) to complete evacuation from water of bowels.
- Remove Discharge hose when empty from discharge nipple. Wrap used hose system with bed sheet for disposal.
- Assemble coupling for Rinsing system (Pos 22) to discharge nipple (Pos. 23)
- Turn Rinsing valve to position RINSING ON (18). turn mixing battery (Pos. 3) to maximum temperature and clean equipment, open water flow (Pos. 6).
- Disinfect equipment.

## 12.5 Application of Oxygen during Colon Therapy

Oxygen complements the Rinsing Effect.

Preparation of COLON-HYDRO equipment as per Illustration 6 *OXYGEN APPLICATION*.



Application of complementary oxygen treatment

- Connect oxygen bottle at pressure reducer with hose and coupling (Pos 7) with COLON-HYDRO
- Ensure that discharge lever has been switched to "EVACUATE". **Important:** Discharge lever must be on "EVACUATE" during the entire duration of the application with oxygen.
- Open valve at oxygen bottle and ensure that **oxygen pressure does not exceed 0,5 bar**
- With rinsing in progress, open flow meter (Pos 21) and adjust to 1 Litre/min
- Continue with oxygen treatment for approximately 3-4 min.
- On terminating application shut down flow meter

**Illustration 6 oxygen application**

## 12.6 Infusion treatment

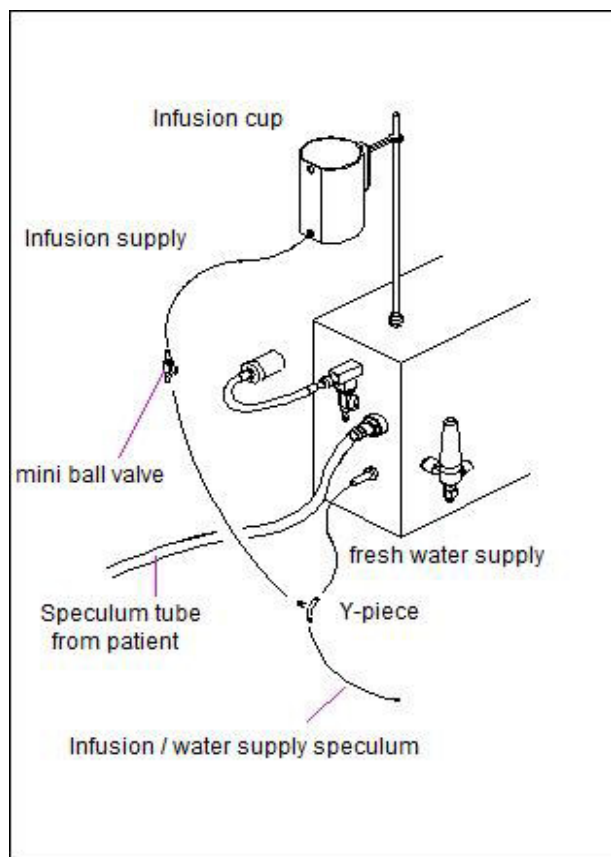
Infusion Treatment must be viewed as a supplementary application and serves to:

- enhance the patient's strength
- increases the quality of wellness

Suitable methods of Infusion:

Bread juice, coffee or tea etc.

The COLON-HYDRO will be prepared as illustrated below



**Illustration 7 Infusion application**

Application of supplementary Infusion treatment

- Shut ball valve (plastic)
- Fill bottle and hang on infusion rod
- Reduce pressure inside the patient's intestines before starting infusion. Shut down water flow and put discharge lever to EVACUATE
- Now put discharge on FILL
- Open ball valve and allow infusion to flow into bowels. (Treatment pressure approximately 50 mbar)
- Shut ball valve when bottle is empty

## **12.7 Useful Information for a successful therapy**

### Gain patient's trust

Ensure that only originally packed specula are used with every new treatment, and that these are opened in front of your patient. For your own safety wear protective clothing and gloves. Observe all general rules of hygiene.

### Patient' wellbeing:'

Some patients feel insecure during their first treatment. In order for the patient to reach a degree of relaxation, please follow these instructions:

- Keep patient warm
- Explain the principle of enema and its beneficial effect
- Administer massage
- Avoid bright light
- Play soft and soothing music during treatment

### Temperature of the rinsing medium

During summer rinsing temperature should not fall below 36°C, during winter rinsing should be carried out at 38°C. Intestines relax under the influence of warm water, but contract below body temperature. Contraction can cause uncomfortable sensations in the belly. In isolated special cases the therapist may employ lower than recommended temperatures, though never higher than 40°C.

### Numbers of applications and duration

In acute conditions - parasites, acute obstipation following opiates or codeine - three to six rinsing cycles are sufficient.

With chronic illnesses between ten and twenty rinsing cycles are recommended. Certain circumstances may require up to forty applications. Exceptional cases may command regular applications over prolonged periods. However, in order to gain a habitual effect for the bowels, a minimum of two weekly applications are necessary.

Accompanying massage

During rinsing soft massaging of the bowels assists in removing remains of excrement. It also stimulates peristaltic movement.

Documentation of treatment

In order to analyze reaction to treatment, record every treatment by collecting data as suggested:

- Serial number of therapy
- Date and time of therapy
- Personal data of patient
- Number of treatment
- Blood pressure and pulse of patient
- Age and height of patient
- Weight of patient before first and after last treatment

**12.8 Colour therapy (optional)**

To activate colour-therapy select the corresponding button. Depending on the purpose of the therapy press either red, blue, green or orange.

## **13 Disinfection, cleaning and care**

### **13.1 Disinfection**

After every treatment the equipment must be disinfected. Proceed as follows:

- Shut off water supply (Pos. 6)
- Adjust equipment to "RINSE", (coupling for rinsing system >pos.22< is connected to Socket, rinsing valve >pos.18< is put on "START RINSING" and discharge leaver >pos.10< on "DISCHARGE").
- Fill disinfection container with disinfectant and connect to corresponding valve (pos.20)  
**Attention:** Do not use other than recommended disinfectants. Chapter 8.2 accessories.
- Open water supply and rinse
- After approximately 30 seconds open ball valve (pos.20) into direction of flow and observe through tube.
- After disinfectant starts to fill up sight tube, put discharge leaver on "FILLING".
- Shut off water supply as soon as observation tube is filled with water.
- Shut ball valve.
- Let disinfectant work according to requirement.
- Put discharge leaver on DISCHARGE and open water supply.
- Rinse equipment thoroughly for about 1 minute, until all hoses are clear of disinfectant
- Finally separate equipment from water supply by shutting off both ball valves.

### **13.2 Cleaning**

#### **13.2.1 General cleaning**

The COLON-HYDRO with mains receiver must be cleaned with moist cloth only. Wash disinfectant with I.e. Ethanol 45% may be applied.

#### **13.2.2 Cleaning of sight glass (pos.11)**

Heavily polluted sight tubes should be cleaned with the supplied brush through discharge pipe (pos.23). Please protect yourself with gloves and breathing mask during this operation.



## **14 Maintenance**

### **14.1 General**

EICH-COLON recommend for the COLON-HYDRO maintenance at yearly intervals. Necessary repairs should be reported to manufacturer. For spare parts orders always quote serial number, type and year of manufacture of equipment.

### **14.2 Filter cartridge**

Filter units must be cleaned at intervals of three months. Open filter housing and remove cartridge. Put cartridge into a solution of vinegar for at least 12 hours. Rinse carefully in water before replacing.

### **14.3 Hoses**

Inspect all hoses every six months for damage. Replace damaged items.

## 15 Repairs

### 15.1 Troubleshooting

<b>Error that has occurred</b>	<b>Possible cause</b>	<b>Remedy</b>
No water flowing or recommended water temperature of 37°C is not reached	<ul style="list-style-type: none"> <li>• Water valve closed</li> <li>• Water connection not correct</li>   <li>• Temperature gauge faulty</li> <li>• Mixer tap faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Open valve</li> <li>• Check water connection (that both ball valves are open) and repair if necessary</li> <li>• Switch off unit and inform EICH-COLON</li> </ul>
Water does not drain away when RINSING	<ul style="list-style-type: none"> <li>• Drain blocked</li>   <li>• Drain height not correct</li>   <li>• Height of patient's bed is incorrect</li> </ul>	<ul style="list-style-type: none"> <li>• Clean drain</li>   <li>• Change drain height, Inform EICH-COLON if necessary</li> <li>• Correct height – see page 13</li> </ul>
After switching on, the temperature gauge and examination tube do not light up	<ul style="list-style-type: none"> <li>• No electricity supply</li> <li>• Power supply unit faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check power supply (plug)</li> <li>• Send in for repairs</li> </ul>
Buzzer sounds during treatment	<ul style="list-style-type: none"> <li>• Cold water feed faulty</li> <li>• Mixer tap faulty</li> <li>• Buzzer sensor module faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check cold water feed and repair, if necessary</li> <li>• Have mixer tap replaced</li> <li>• Have EICH-COLON replace the temperature module</li> </ul>
Pressure display above 100 mbar	<ul style="list-style-type: none"> <li>• Fault in a hydraulic component</li> </ul>	<ul style="list-style-type: none"> <li>• Have it repaired</li> </ul>

## 15.2 Repair Work on the COLON-HYDRO

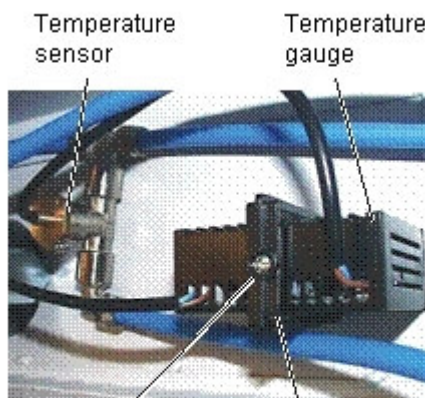
### Please note the following:

Repairs on the COLON-HYDRO may only be carried out by the manufacturer; persons authorised to do so by the manufacturer or by the relevant specialist personnel.

### 15.2.1 Replacing the temperature gauge (item 14)

EICH-COLON tests and calibrates every temperature gauge. Therefore it is only possible to replace the complete temperature gauge, i.e. with temperature sensor.

- Remove the plug from the outlet (separate the unit from the power supply)
- Open the unit with the rear door key (rear panel)
- Remove the retaining bracket for the temperature gauge
- Ease out the temperature gauge by moving it towards the front plate
- Disconnect the connecting cable (unscrew the connecting screws from the top)
- Remove the temperature sensor by unscrewing the clamping screw
- Completely remove the temperature gauge



**Figure 8** Temperature gauge

To install the replacement temperature gauge, follow the above steps in reverse order.

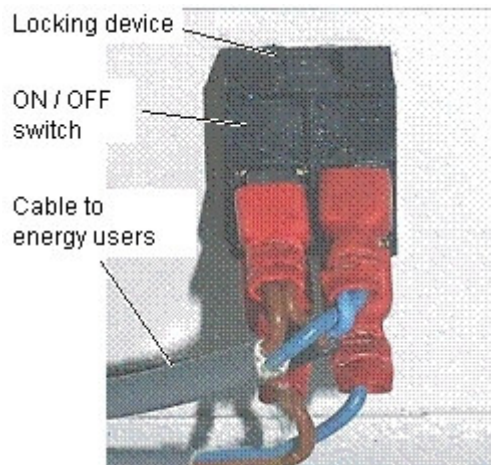
**Check** the unit after completing the repair work:

Connect the unit to the power supply and switch on. If the temperature gauge shows a “sensible” temperature, the repair work was successful.

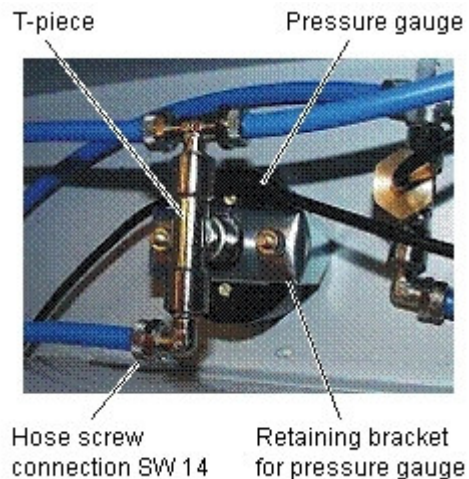
**Please note:** The temperature module for the buzzer can only be replaced and calibrated by EICH-COLON itself. (Not shown in the illustration above)

### 15.2.2 Replacing the ON/OFF switch (item 5)

- Remove the plug from the outlet (separate the unit from the power supply)
- Open the unit with the rear door key (rear panel)
- Remove all four cable connections from the ON/OFF switch (pull and move them back and forth at the same time)
- Press the switch locking device together (top and bottom side) and remove the switch by pulling it forward.



**Figure 9 ON/OFF switch**



**Figure 10 Pressure Gauge**

To install the on/off switch, follow the above steps in reverse order.

**Check** the unit after completing the repair work:

Connect the unit to the power supply and switch on. The replacement switch works properly if the temperature gauge and the examination tube light up.

### 15.2.3 Replacing the pressure gauge (item 12)

- Remove the plug from the outlet (separate the unit from the power supply)
- Close the ball valves on the water filters and disconnect the fresh water hoses from the unit
- Open the unit with the rear door key (rear panel)
- Loosen the three hose screw connections (SW 14) on the pressure gauge
- Remove the pressure gauge retaining bracket and unscrew the pressure gauge from the T-piece
- Remove the faulty pressure gauge

To install the pressure gauge, follow the above steps in reverse order. The screw connections must be resealed with Teflon.

**Check** the unit after completing the repair work:

Place the unit in "RINSE" mode (see 11.7 *Starting Up for the First Time*), slowly turn the drainage tap to FILL and watch the pressure gauge carefully. The pressure gauge should rise slowly. Water must not enter the pressure gauge. If both tests are positive, the repair work has been successful.

#### **15.2.4 Replacing the fluorescent tube**

The fluorescent tube used here is one that is readily available from a specialist shop (8 watts).

- Remove the plug from the outlet (separate the unit from the power supply)
- Open the unit with the rear door key (rear panel)
- Remove the cover over the fluorescent tube
- Turn the fluorescent tube 90° and remove from its socket
- Insert a new fluorescent tube and attach the tube in the socket by turning it 90°
- Close the unit

**Check** the unit after completing the repair work:

Connect the unit to the power supply and switch on. The replacement fluorescent tube works properly if the examination tube is illuminated.

## 16 Reference to the electromagnetic compatibility

Guidance and manufacturer's declaration - electromagnetic emissions		
The Eich Colon is intended for use in the electromagnetic environment specified below. The customer or the user of the Eich Colon should assure that it is used in such an environment.		
Emission test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR11	Group 1	The Eich Colon uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR11	Class B	The Eich Colon is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes
Harmonic Emissions EC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration - electromagnetic immunity			
The Eich Colon is intended for use in the electromagnetic environment specified below. The customer or the user of the			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines -> not applicable	±2 kV for power supply lines ±1 kV for input/output lines -> not applicable	Mains power quality should be that of a typical commercial or hospital environment
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % UT (>95 % dip in UT) for 0.5 cycles 40 % UT (60 % dip in UT) for 5 cycles 70 % UT (30% dip in UT) for 25 cycles <5 % UT (>95 % dip in UT) for 5 s	<5 % UT (>95 % dip in UT) for 0.5 cycles 40 % UT (60 % dip in UT) for 5 cycles 70 % UT (30% dip in UT) for 25 cycles <5 % UT (>95 % dip in UT) for 5 s	Mains power quality should be that of a typical commercial or hospital environment. If user of the Eich Colon requires continued operation during power mains interruptions, it is recommended that the Eich Colon be powered from an uninterruptible power supply or a battery.  In case of disfunction, the Eich Colon has to be restarted.
Power frequency (50/60 Hz) magnetic fields	3A/m	3A/m	Power frequency magnetic field should be at levels characteristics of a typical location in a typical commercial or hospital environment
NOTE UT is the a.c. mains voltage prior to application of the test level.			

<b>Guidance and manufacturer's declaration - electromagnetic immunity</b>			
The Eich Colon is intended for use in the electromagnetic environment specified below. The customer or the user of the Eich Colon should assure that it is used in such an environment			
<b>Immunity test</b>	<b>IEC 60601 test level</b>	<b>Compliance level</b>	<b>Electromagnetic environment - guidance</b>
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	<p>Portable and mobile RF communications equipment should be used no closer to any part of the Eich Colon, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p><b>Recommended separation distance</b></p> $d = 1,2\sqrt{P}$
Radiated RF IEC 61000-4-3	3V/m 80 MHz to 2,5 GHz	3V/m	$d = 1,2\sqrt{P} \quad 80 \text{ MHz to } 800 \text{ MHz}$ $d = 2,3\sqrt{P} \quad 800 \text{ MHz to } 2,5 \text{ GHz}$ <p>where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m)</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, a) should be less than the compliance level in each frequency range. b)</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p>
NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.			
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people			
<p>a) Field strength from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site should be considered. If measured field strength in the location in which the Eich Colon is used exceeds the applicable RF compliance level above, the Eich Colon should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Eich Colon.</p> <p>b) Over the frequency range 150 kHz to 80 MHz, field strength should be less than 3 V/m</p>			

<b>Recommended separation distances between portable and mobile RF communications equipment and the Eich Colon</b>			
The Eich Colon is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Eich Colon as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter  W	Separation distance according to frequency of transmitter  m		
	150 kHz to 80 MHz  $d = 1,2 \sqrt{P}$	80 MHz to 800 MHz  $d = 1,2 \sqrt{P}$	800 MHz to 2,5 GHz  $d = 2,3 \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
For transmitters rated at maximum output power not listed above, the recommended separation distance $d$ in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where $P$ is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.			
NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.			
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			



### **17 Warranty conditions**

EICH-COLON provides for all COLON-HYDRO devices a manufacturer's warranty (on components)

- for the period of 2 years from date of purchase /date of invoice
- for the period of 10 years for the delivery of spare parts

Excluded from the warranty are:

- wear parts
- damage, caused by defective electricity supply
- damage, caused by inappropriate use
- damage, caused by lack of maintenance
- damage, caused by inappropriate installation
- damage, caused by lime scale

Tear off and send to EICH-COLON, Kunstmühlestr. 12, 72793 Pfullingen

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## Warranty card

Model: COLON-HYDRO

Serial-no.

Please complete:

Name of buyer: \_\_\_\_\_

Street and house number: \_\_\_\_\_

Postcode and town: \_\_\_\_\_

Date of purchase: \_\_\_\_\_