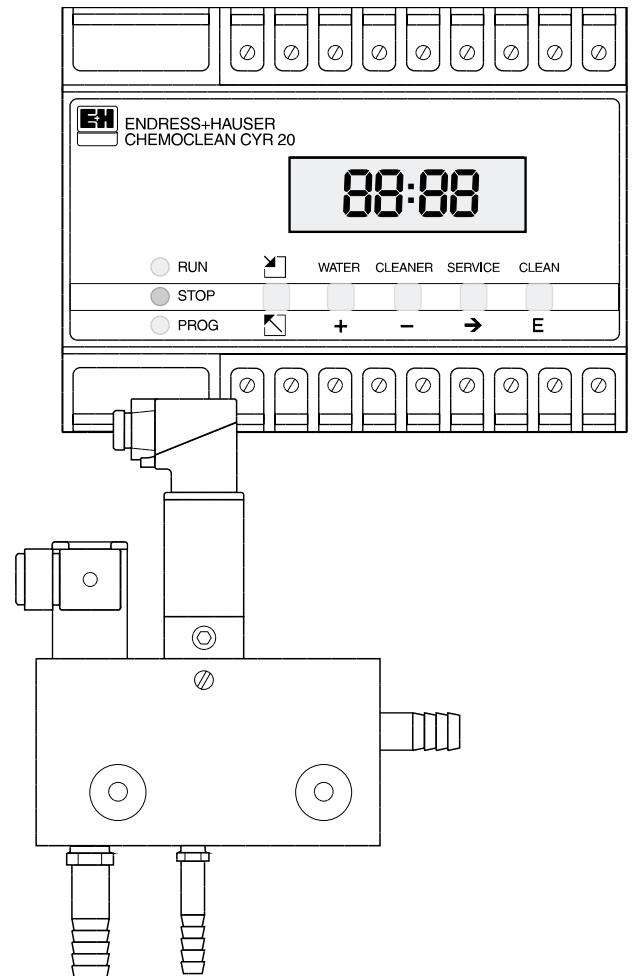


# Chemoclean Plus CYR 10 / CYR 20 Spray Cleaning System for pH, Oxygen and Turbidity

## Operating Instructions



Endress+Hauser

The Power of Know How



**Please refer to the following chapters for information on the cleaning system ChemoClean:**



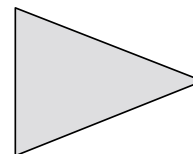
**1**

**General information**



**2**

**Safety notes**



**You wish to install and operate the cleaning system. The required steps are described in this chapter:**



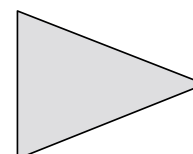
**3**

**Installation**



**4**

**Operation**



**5**

**Maintenance**



**7**

**Technical Data**



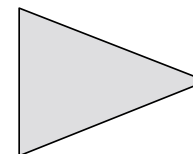
**6**

**Accessories**



**8**

**Index**



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# 1 General Information

## 1.1 Symbols used

**Warning:**

This symbol alerts to hazards which may cause serious injuries as well as damage to the instrument if ignored.

**Note:**

This symbol indicates important items of information.

## 1.2 Storage and Transport

For storage and transport the cleaning system has to be packed shock-resistant. Optimal protection ensures the original packaging material.

Beyond, you have to adhere to the permissible ambient conditions (see technical data)

## 1.3 Unpacking

Verify that the contents are undamaged! Inform the post office or freight carrier as well as the supplier of any damage.

Keep the original packaging material for case of the cleaning system has to be bedded or send off.

Damaged packaging material must be retained until the matter has been settled!

In case of any queries, please contact your supplier or the Endress+Hauser sales centre responsible (see back page of these Operating Instructions).

Inspect the delivery is complete and agree with the shipping documents, the instrument type and version as shown on the nameplate.

The following items are included in the delivery for CYR 10:

- Cleaning injector CYR 10
- Operating instructions BA 046C/07/en.

The following items are included in the delivery for CYR 20:

- Programme sequencer CYR 20
- Operating instructions BA 046C/07/en.

## 1.4 Dismounting, Packaging, Disposal

For later reuse the cleaning system has to be packed securely. The original packaging material ensures optimal protection. Please observe the local regulations for disposal.

### 1.5 Product structure

You can identify the instrument variant by the order code on the nameplate.

In case of any queries please give the order code.

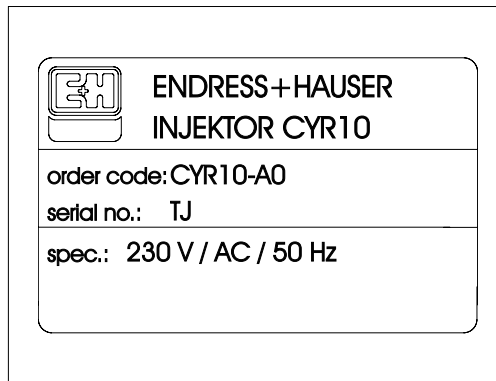


Bild 1.1 Example of a nameplate for injector CYR 10

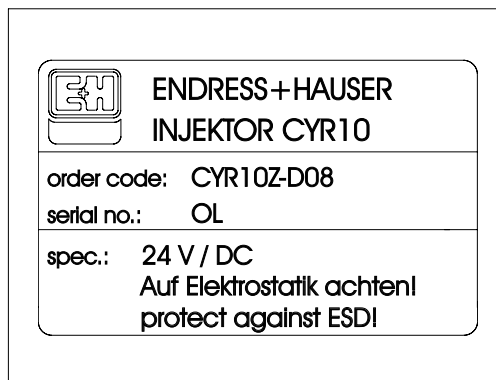


Bild 1.2 Example of a nameplate for injector CYR 10Z-D08

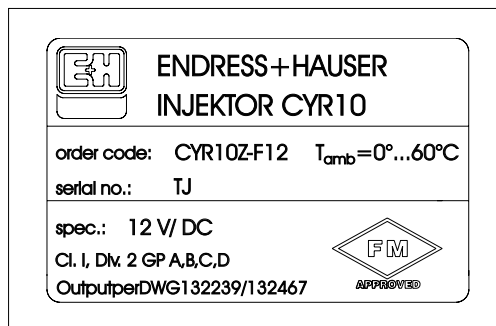


Bild 1.3 Example of a nameplate for injector CYR 10 Z-F12

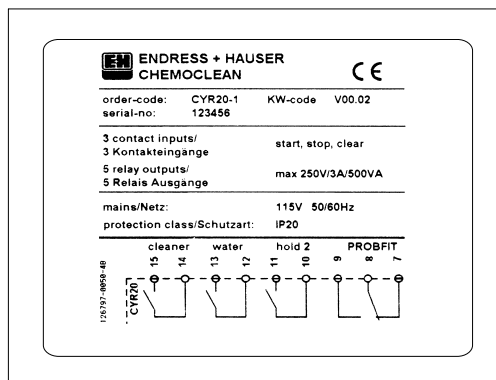


Bild 1.4 Example of a nameplate for programme sequencer CYR 20

**Injector CYR 10**

**Version**  
A Non-Ex version

**Power supply**  
0 230 V, 50 Hz  
1 115 V, 50 Hz  
8 24 V DC

CYR 10- [ ] [ ] ← complete order code

**Injector CYR 10 Z**

**Version**  
D08 Ex(d) version, power supply 24 V DC  
E12 Ex(i) version for CPM 152, power supply 12 V DC  
F12 FM- version for CPM152-F/-G, power supply 12 V DC

CYR 10Z- [ ] ← complete order code

**Programme sequencer CYR 20**

**Power supply**  
0 230 V, 50 Hz  
1 115 V, 50/60 Hz  
8 24 V DC

CYR 20- [ ] ← complete order code

## 2 Safety

### 2.1 Application

The ChemoClean Plus CYR 10 / CYR 20 is a spray cleaning system for pH / redox electrodes, oxygen and turbidity sensors. It is used with the appropriate cleaning agents to obtain optimal cleaning and sensor activation results for various types of soiling, in particular:

- limestone deposits and encrustations
- clogging with mud, e.g. by hydroxides or strongly soiled wastewater
- formation of coating by oil, grease and emulsions
- other deposited reaction products in process engineering

### 2.2 Safety notes

This device has been built and tested in accordance with EN 61010-1 and left the manufacturer's works in perfect condition.

However, if it is used improperly or other than for its intended purpose, it may pose a hazard, e.g. due to incorrect installation or the wrong operating conditions.



#### Warning:

- If the device is used for any application other than those described in this manual, it may lead to unsafe and improper functioning of the measuring system and is therefore not permitted!
- Make sure you strictly adhere to the warnings and notes in these Operating Instructions.

### 2.3 Mounting, Start-up, Operation



#### Warning:

- Installation, electrical connection, start-up, operation and maintenance of the cleaning system must be carried out exclusively by trained specialists authorised by the system operator.
- Technical personnel must be familiar with the instructions in this manual and must adhere to them.
- When the system is operated in explosive atmospheres, it is imperative to comply with the regulations applicable (see chapter 3.5.2).
- Before connecting the system please verify that the value of supply corresponds with the value on the nameplate.
- Before switching on the system check all the connections again for correctness.
- Never start-up the CYR 20 without protective earth.
- Do not operate damaged systems which could pose a danger, and mark them as defective.
- Measuring systems faults may only be repaired by authorised and trained personnel.
- If faults cannot be repaired, the system must be taken out of service and secured against unintentional start-up.
- Repairs may only be carried out by the manufacturer or by the Endress+Hauser service organisation.

## 2.4 Inspection and protection installation

### Protection installation

The instrument is protected against external influence and damage with following constructive measures:

- media-resistant material

## 2.5 Immunity to interference

This device has been tested for electromagnetic compatibility with industrial environments in accordance with the applicable European regulations and is protected against electromagnetic interference (see technical data, chp. 7).



### Warning:

The declared immunity to interference is only valid for the device being connected correctly.

## 2.6 Certificate of conformity

The injector CYR 10Z has been built and tested in accordance with European standards and regulations.



### Note:

An appropriate certificate of conformity is attached to the injector CYR 10Z-E12.

## 2.7 General notes for installation in hazardous areas

The injector CYR 10Z is built and tested in accordance with harmonised European regulations (CENELEC) for »Electrical equipment for explosive atmospheres«. The injector complies with the basic requirements of the 94/9/EC directive of March 23, 1994 and is suitable for use in hazardous areas.



### Note:

The Endress+Hauser basic information brochure GI 003/11/e, »Explosion protection of electric equipment and systems« contains helpful information on installation and operation of electric equipment in hazardous areas. This brochure can be ordered from the Endress+Hauser sales offices.



### Warning:

- Installation and operation are subject to the applicable national regulations.



### 3 Installation

#### 3.1 Cleaning system for non-Ex areas

The spray cleaning system ChemoClean consists of two basic units:

Necessary equipment for the operation of ChemoClean:

- Programme sequencer CYR 20
- Cleaning injector CYR 10
- Spray head suitable for the used assembly
- Power supply
- Motive water
- Cleaning agent

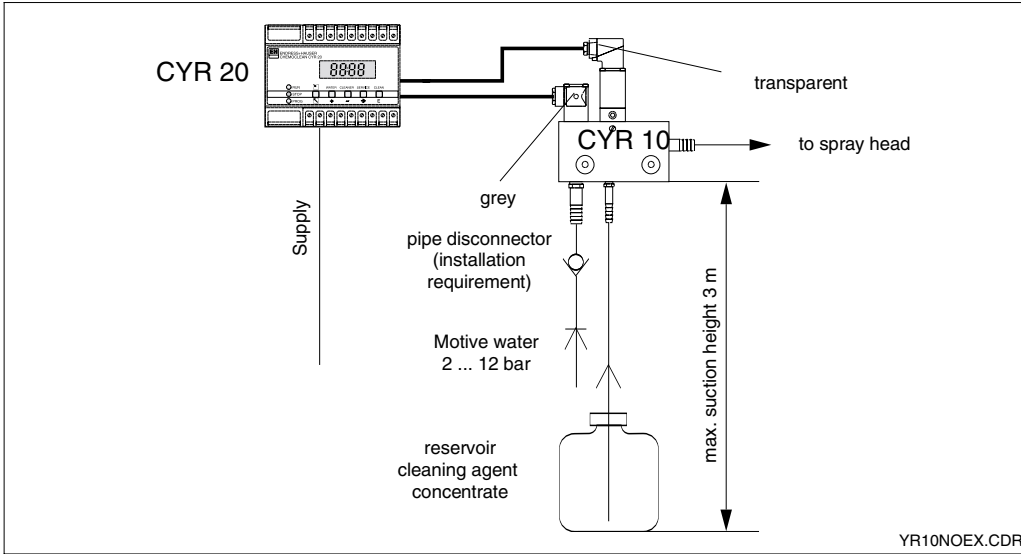


Fig. 3.1 Programme sequencer CYR 20 with injector CYR 10

### 3.2 Cleaning system for Ex areas

In Ex areas the cleaning system ChemoClean is used in connection with:

**Version with solenoid valves:**

- Programme sequencer CYR 20-8 (only 24 V DC; installation in Non-Ex area)
- Injector CYR 10Z-D08

**Version with piezoelectric valves:**

For Ex-approval:

- Injector CYR 10Z-E12
- Transmitter Mycom S CPM 153 (Ex) and the power supply adapter CCIZ or
- Transmitter Mycom S CPM 153 (Ex) with TopClean CPC 30

For FM-approval:

- Injector CYR 10Z-F12
- Transmitter Mycom S CPM 153 (Ex) and the power supply adapter CCIZ-F or
- Transmitter Mycom S CPM 153 (Ex) with TopClean CPC 30

Necessary equipment for the operation of ChemoClean:

- Spray head suitable for used assembly and sensor
- Power supply
- Motive water
- Cleaning agent
- Compressed air supply (for CYR 10Z-E12/-F12)

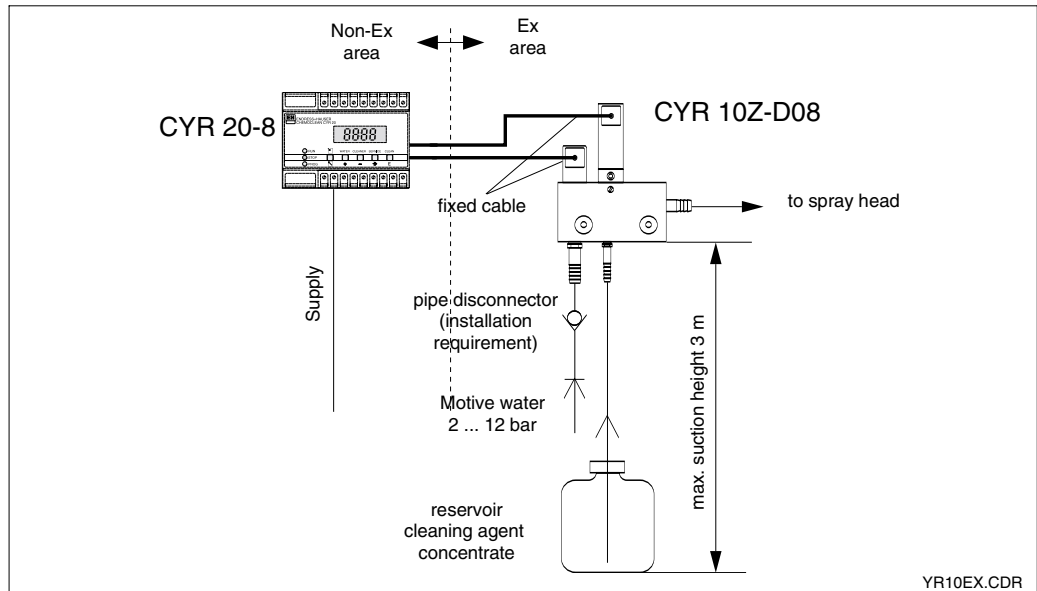
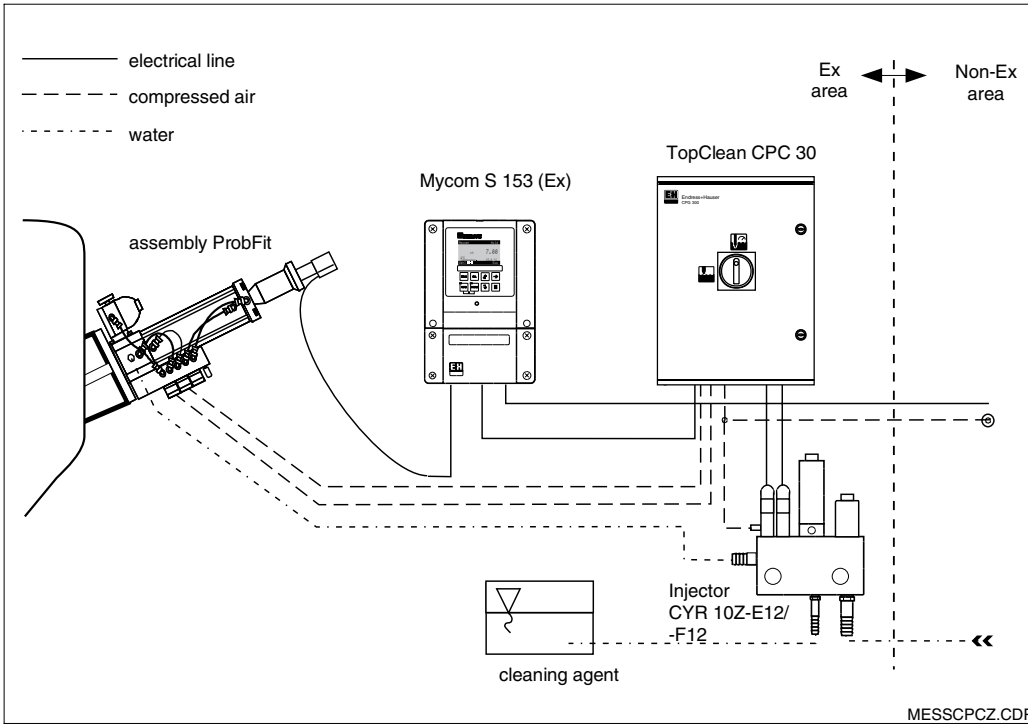
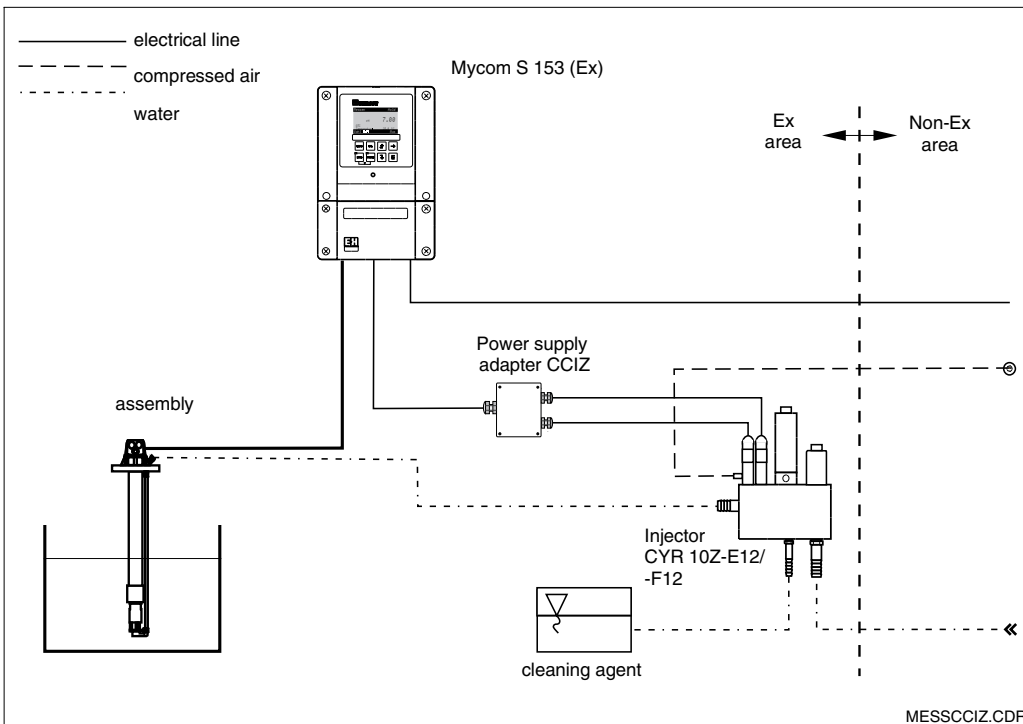


Fig. 3.2 Equipment with solenoid valves: programme sequencer CYR 20-8 an injector CYR 10Z-D08



Example of a cleaning system with piezoelectric valves equipment: Mycom S 153 (Ex) with TopClean CPC 30 and injector CYR 10Z-E12/-F12



Example of a cleaning system with piezoelectric valves equipment: Mycom S 153 (Ex) with power supply adapter CCIZ and injector CYR 10Z-E12/-F12

3.3 Dimensions

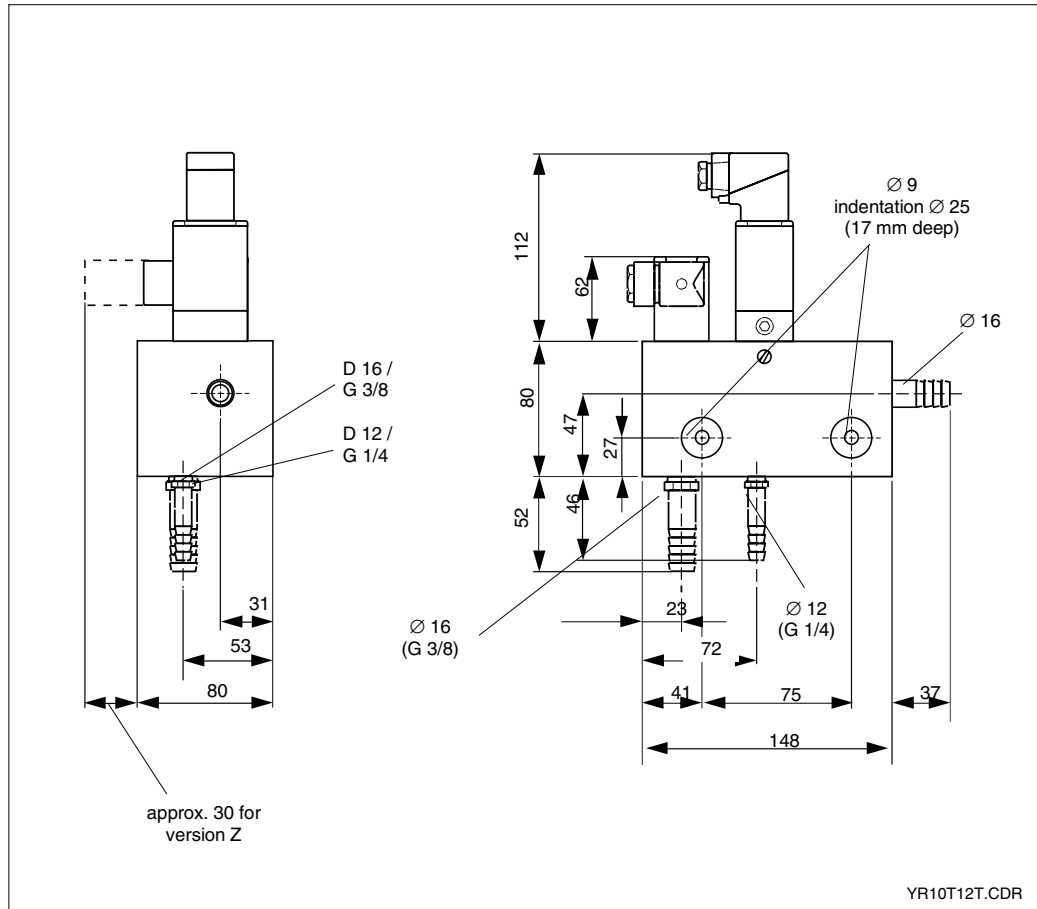


Fig. 3.6 Dimensions  
Injector CYR 10 /  
CYR 10Z-D08

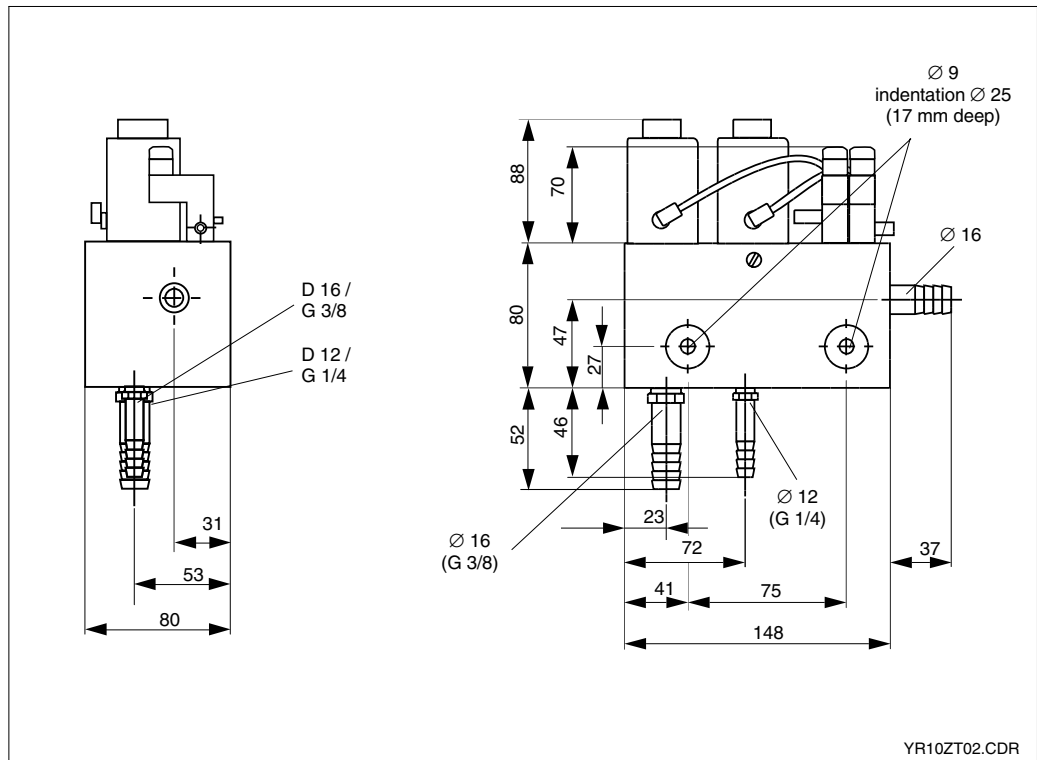
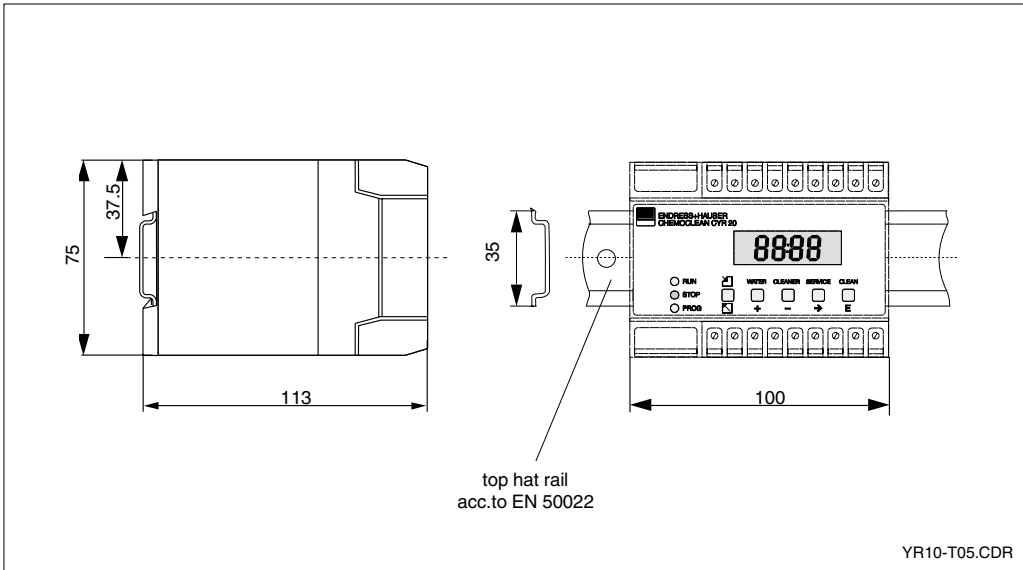
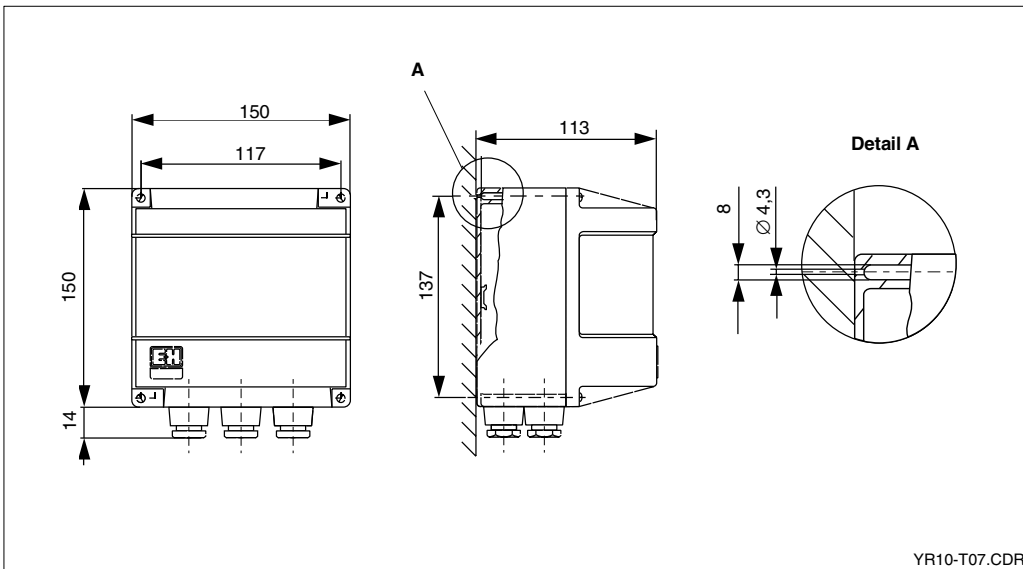


Fig. 3.5 Dimensions  
Injector CYR 10Z-E12/-F12



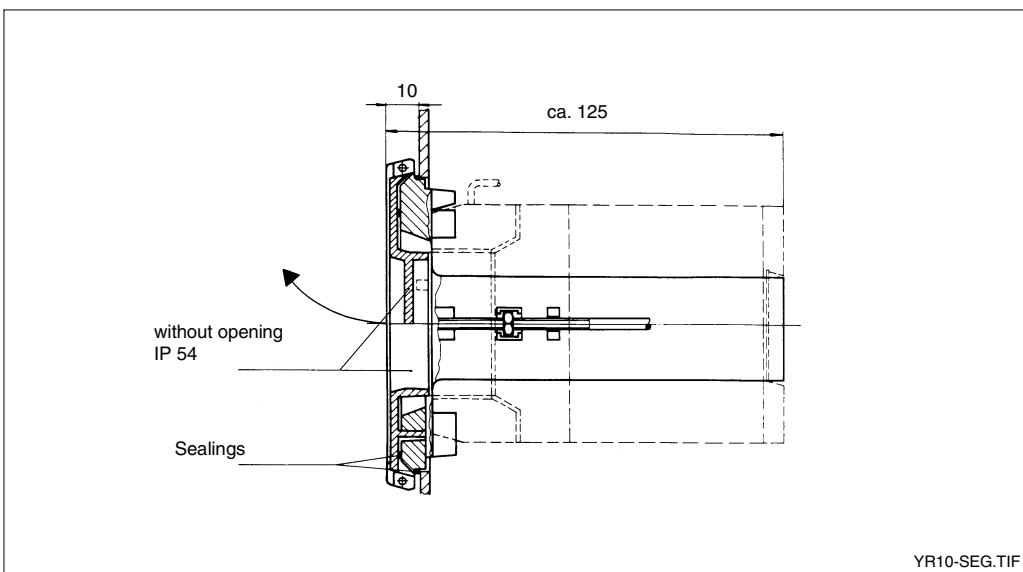
YR10-T05.CDR

Bild 3.7 Dimensions Programme sequencer CYR 20



YR10-T07.CDR

Fig. 3.8 Dimensions Protective housing SGH for CYR 20



YR10-SEG.TIF

Fig. 3.9 Dimensions Panel mounted frame SEG for CYR 20

### 3.4 Hose connections

For connecting the hoses please proceed the following instruction:

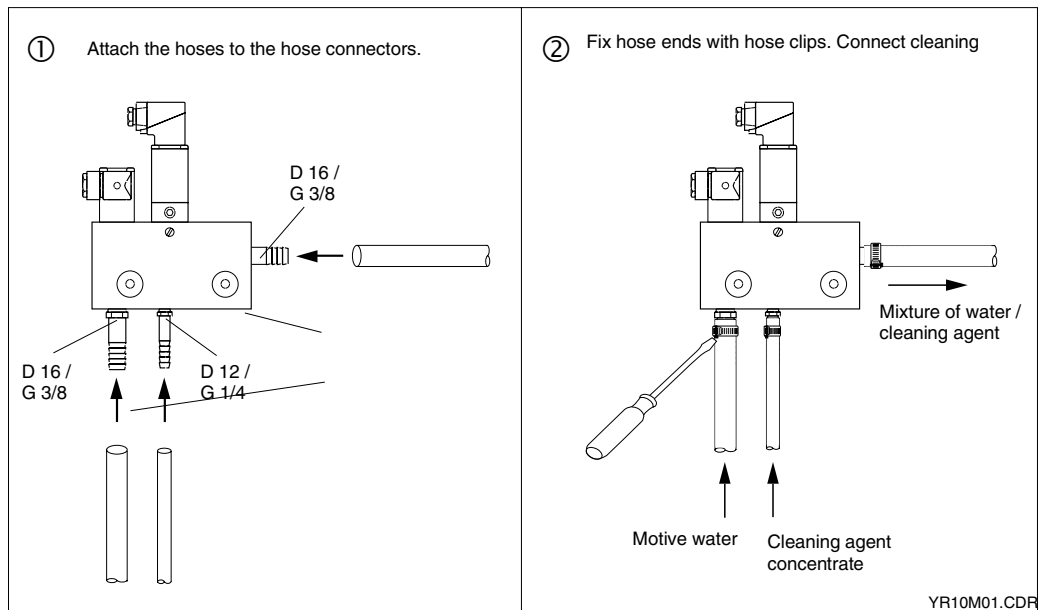


Fig. 3.10 Rinse connections



**Note:**

- Before mounting resp. starting-up the injector the pipings have to be cleaned off from impurities (e.g. solder residues, welding beads, metal filings, sealing material)
- For troublefree operation: for protection against blinding of the valves' flow chamber it is necessary to use a dirt pan (pore size 100 µm) in the pipe ahead of the motive water valve.
- For operation with pressurized systems it is advised to use a pipe disconnecter in order to avoid process medium soak into the motive water line in case of a defect water feeding.
- Place the cleaning agent concentrate vessel always underneath the injector.
- The maximum suction height is 3 m.
- The motive water pressure must not exceed 12 bar.
- The medium back pressure must not exceed 3 bar.

## 3.5 Electrical connection

### 3.5.1 Installation in Non-Ex areas

The power supply for the injector valves happens with the programme sequencer CYR 20.

For electrical connection of the injector CYR 10 please proceed as follows:



#### Note:

- Electrical connections may only be performed by properly trained specialist personnel acc. to the appropriate regulations.
- The device must completely be set voltage-free before starting the installation!
- Tighten all connections correctly.

- The electrovalve connectors must not be interchanged for reasons of interference immunity. They are designed in different colours for this purpose:  
 plug-in head water: grey or brown  
 plug-in head cleaning agent: transparent
- It is possible to turn the connector insertions in steps of 90°.

#### Version CYR 10:

- Unscrew screw on plug-in head.
- Remove and open plug-in head.
- Detach cable connection.
- Connect cable ends to the terminal block of the plug-in head.
- Screw on cable connection.
- Plug on connector and screw on.
- Connect cables to the programme sequencer CYR 20 as shown in Fig. 3.12.

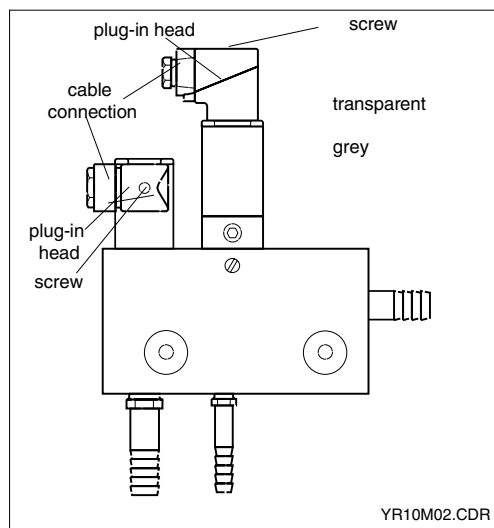


Fig. 3.11 Electrical connection  
CYR 10

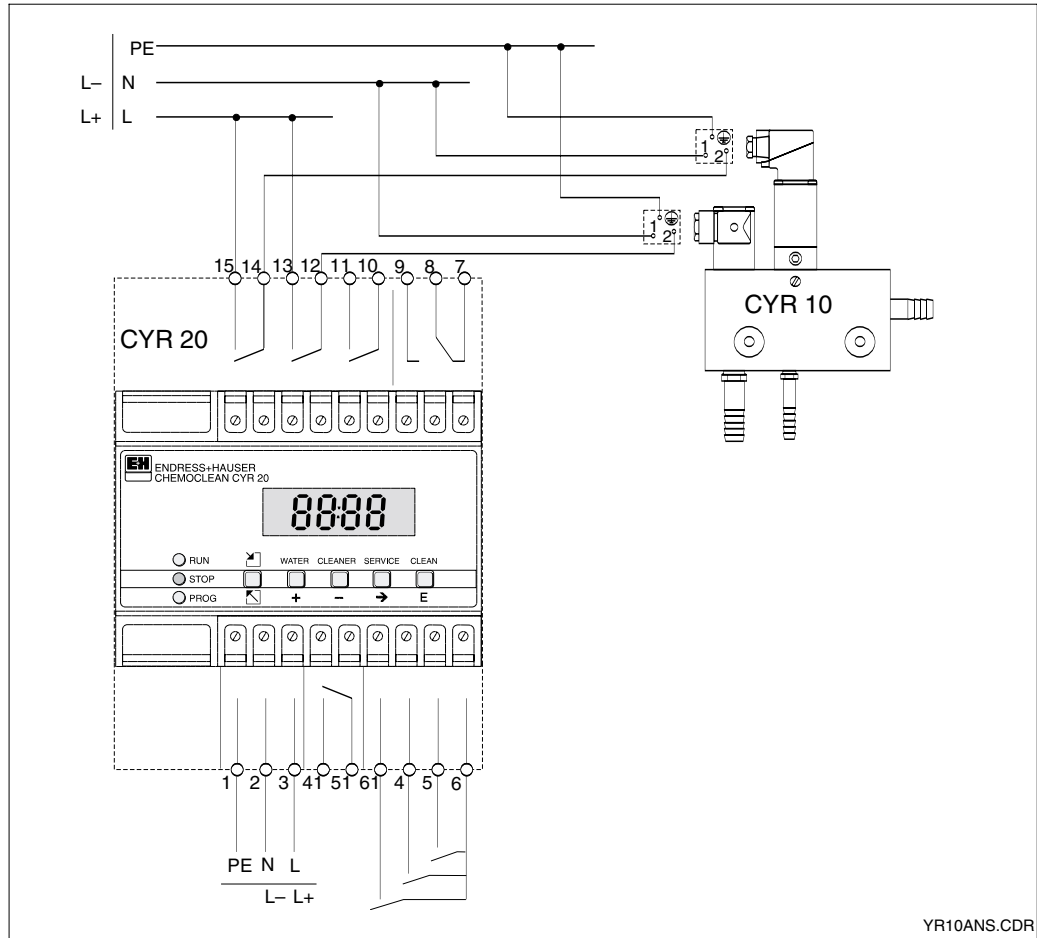


Fig. 3.12 Terminal connecting plan for CYR 10

YR10ANS.CDR



**Note:**

- When operating without assembly the internal hook switch S201 has to be closed (power supply module CCG / CCN).
- Please pay attention that the protective earth is connected to the plugs of the solenoid valves correctly.

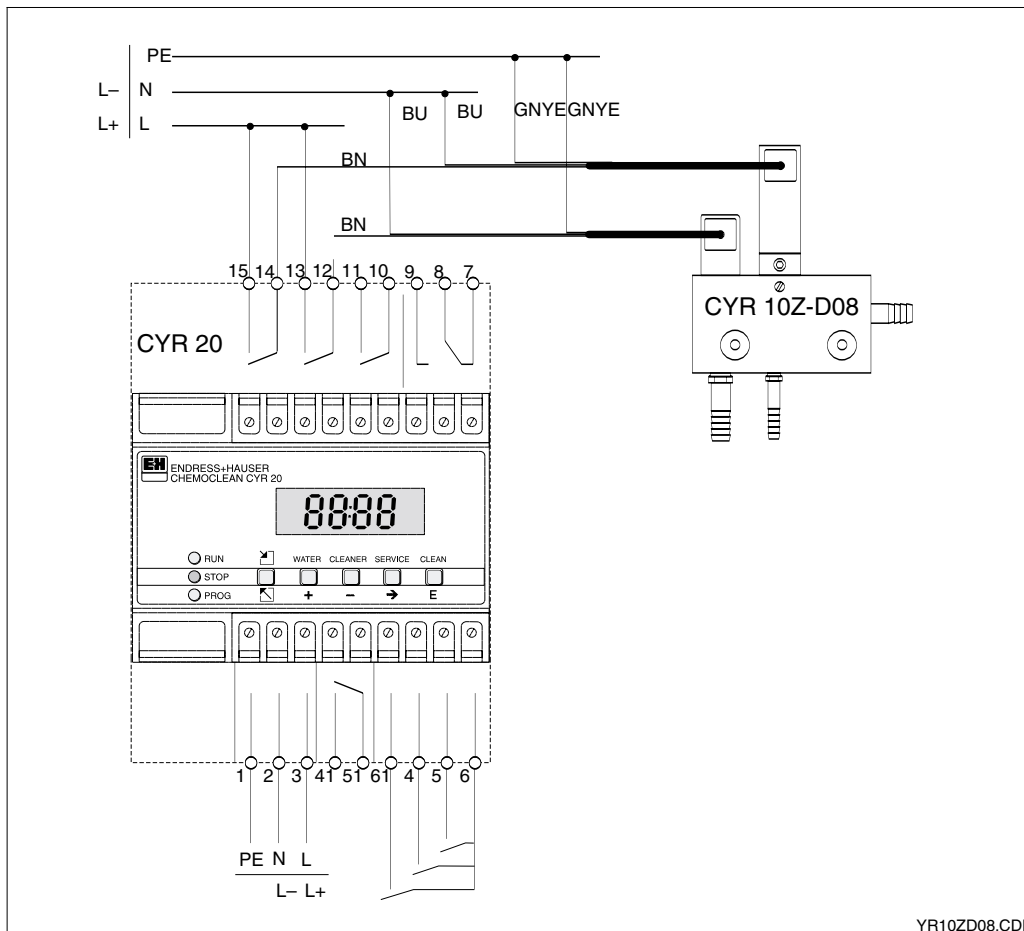


3.5.2 Installation in Ex area

CYR 10Z-D08 version

The injector CYR 10Z-D08 is an ex version with EEx ed valves (flameproof enclosure). The system is controlled by the programme

sequencer CYR 20-8. The injector is connected with a fixed cable connection. See connecting plan in Fig. 3.14.



Electrical connection of CYR 10Z-D08 in ex area in connection with CYR 20-8



Note:

- When operating without assembly the internal hook switch S201 has to be closed (power supply module CCG / CCN).
- Please pay attention that the protective earth is connected to the plugs of the solenoid valves correctly.

- Every solenoid valve has to be superposed with a fuse according to its nominal current (max. 3 x I Nom).
- The connection lines to the electrovalves have to be strong and installed in a way they are protected against mechanical damage.
- Tighten Pg cable connectors for reaching the protection IP 65.

**CYR 10Z-E12 / F-12 version**

With the intrinsically safe version CYR 10Z-E12/F12 there are used piezoelectric pre-controlled pneumatic valves instead of electrovalves.

With the connection of the injector CYR 10Z-E12/F12 please proceed as follows:

- Slacken screw on plug-in head.
- Remove plug-in head.
- Disconnect the cable connection.
- Connect cable to the plug as shown in fig. 3.16.
- The cable connection to the programme sequencer is presented in fig. 3.9.
- Screw on the cable connection
- Attach the plug and screw it on.

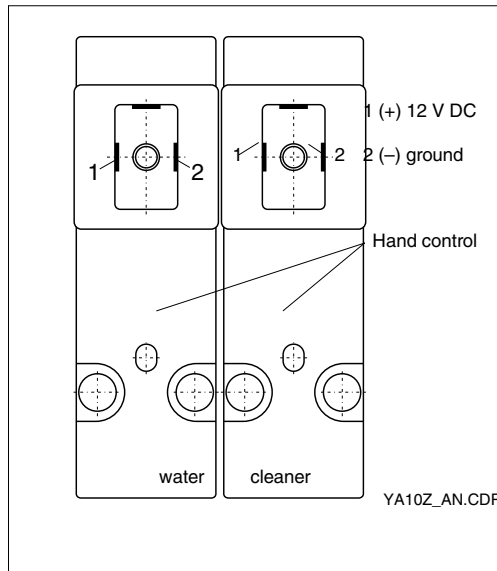


Fig. 3.14 left:  
Electrical connection  
CYR 10Z-E12/F12

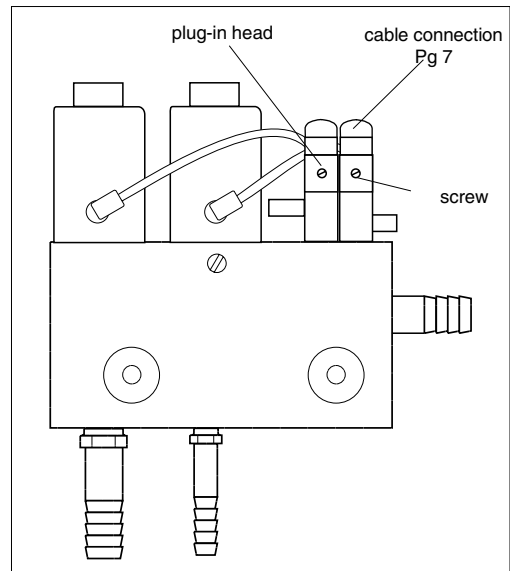


Fig. 3.15 right:  
Mounting the cable  
connection

**Please refer to the current safety regulations for mounting and operation of electrical units in hazardous areas.**



**Note:**

- The connection lines to the electrovalves have to be strong and installed in a way they are protected against mechanical damage.
- Pay attention to the polarity of the piezoelectric valves while connecting!
- Pay attention to the electrostatic discharge!
- Tighten Pg cable connectors for reaching the protection IP 65.

Connection of power supply adapter CCIZ to the cleaning system

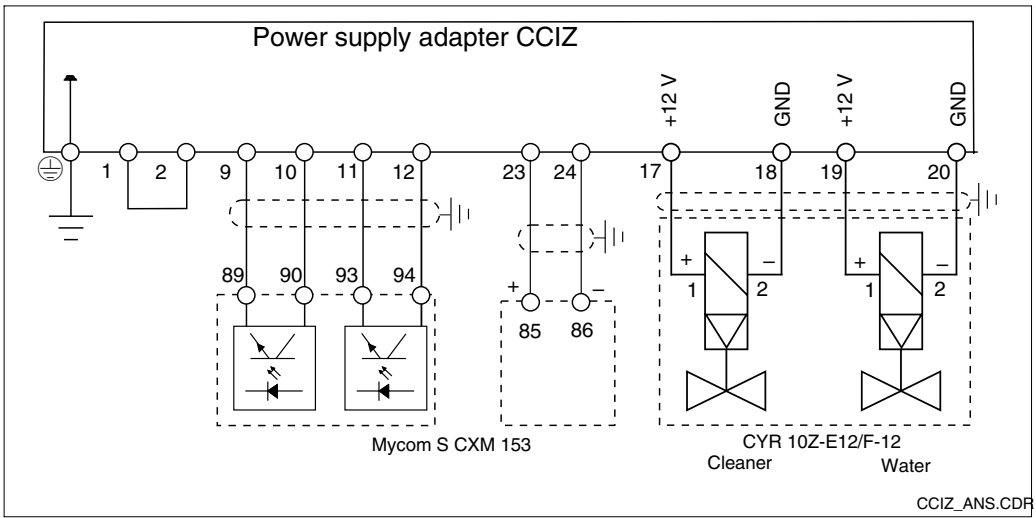


Bild 3.16 Connection of ChemoClean CYR 10Z in Ex area combined with Mycom S and CCIZ

Terminal	Assignment
9...12	Connection of the binary control signals from Mycom S CXM 153
17+/18-	Piezo valve cleaner
19+/20-	Piezo valve water
23+/24-	Power supply from Mycom S CXM 153

Terminal assignment CYR10Z-E12/F12 to power supply adapter CCIZ

Connection of TopClean CPC 30 to the cleaning system

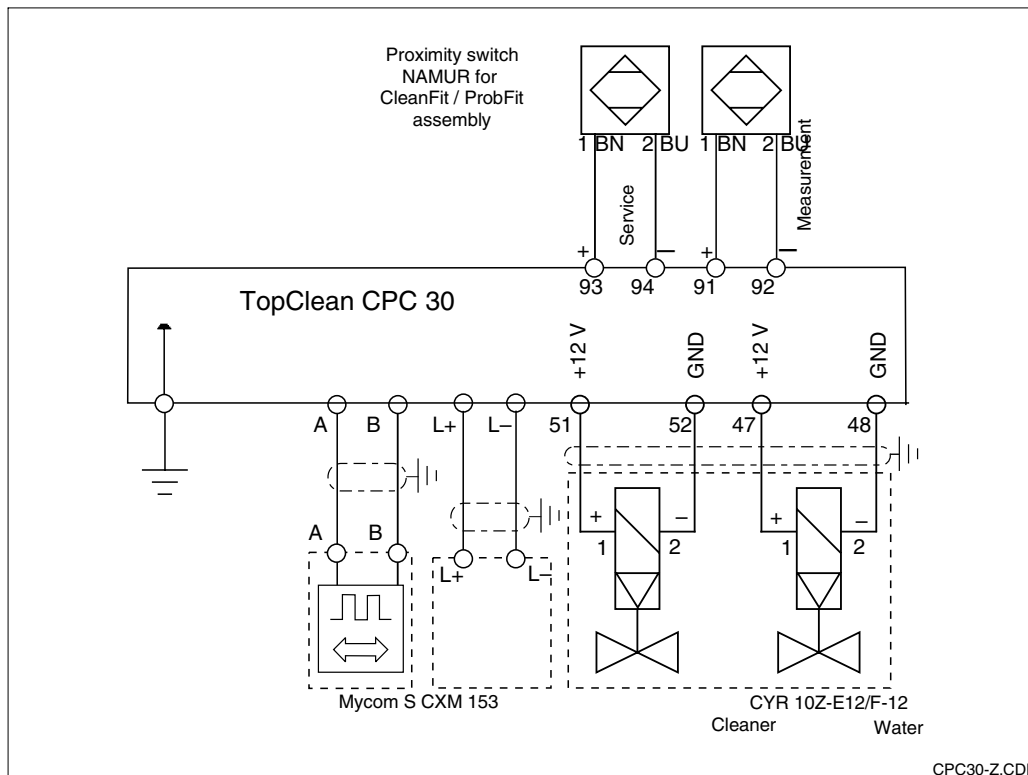


Bild 3.17 Connection of ChemoClean CYR 10Z in Ex area combined with Mycom S and CPC 30

CPC30-Z.CDR

Terminal	Assignment
93/94	(93+)(94-) Connection of proximity switch for feedback "service"
91/92	(91+)(92-) Connection of proximity switch for feedback "measurement"
A/B	Communication between CPC 30 and Mycom S
51/52	(51+)(52-) Piezo valve cleaner
47/48	(47+)(48-) Piezo valve water
L+/L-	Power supply from Mycom S CXM 153

Terminal assignment CYR10Z-E12/F12 with TopClean S CPC 30

### 3.6 Pneumatic connection to the piezoelectric valves (for Ex version)

The connector for the pressurized air is at the base plate of the piezoelectric valves.

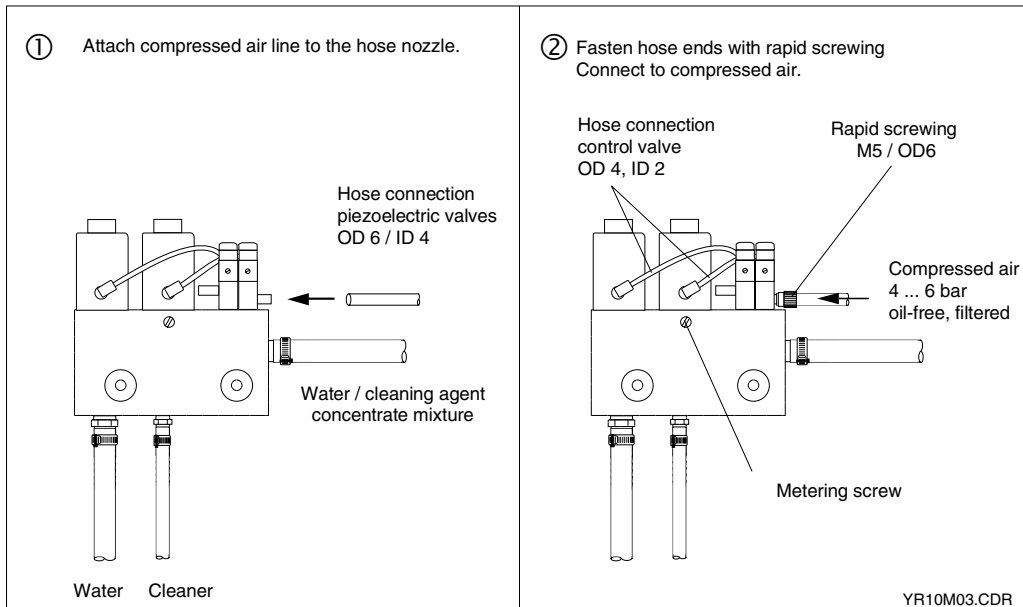


Fig. 3.18 Pneumatic connection to the piezoelectric valves



#### Note:

- Before connecting the pneumatic valves depressurise the piping system.
- The compressed air has to be filtered ( $< 5 \mu\text{m}$ ).
- Pay attention to electrostatic discharge!

## 4 Operation

### 4.1 Start-up


**Note:**

- Please familiarise yourself with the operation of the cleaning system ChemoClean CYR 10 / CYR 20 before power-up.
- Check that all connections have been properly made before powering up the system!

### 4.2 Operation of programme sequencer CYR 20

#### 4.2.1 Operating modes

The programme sequencer CYR 20 has the following three modes of operation:

- Automatic mode
- Service mode
- Programming mode

#### Automatic mode

In the »automatic mode« the cleaning programmes use the parameters that have been set in the »programming mode« (see chp. 4.2.5.). You can select between interval cleaning or a weekly programme with individual cleaning times. Automatic cleaning can be disabled as required without modifying the values programmed. While no cleaning cycle is active, it is possible to manually start a cleaning cycle independent of the programmed cleaning times in the automatic mode.

#### Service

The »service mode« can be used to interrupt the automatic mode, e.g. for maintenance work. The motive water valve and cleaning agent valve can be opened by pressing a key.

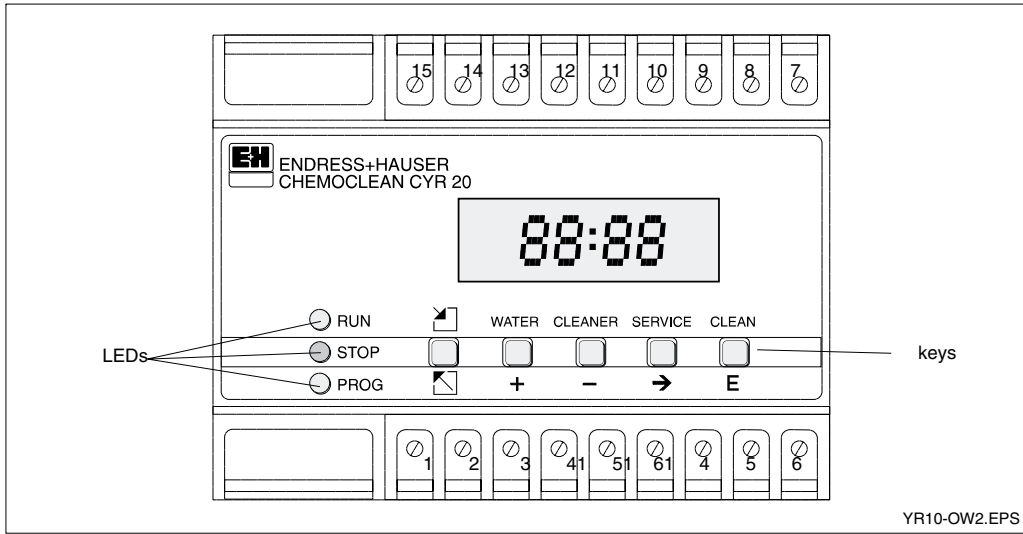
#### Programming mode

The »programming mode« is used to enter all the times for the automatic mode:

- Choose a cleaning programme
  - Cleaning type (off, interval cleaning, weekly programme)
  - Interval cleaning (interval 10 min ... 99 h possible, input with HH:MM)
  - Weekly programme (entry of each day: 1 = Mo, 2 = Tue, ..., 7 = Su; entry of 12 starting times per day)
- Choose a cleaning cycle
  - Enter pre-rinse time  $t_1$  in [s] ( $t_1 = 1 \dots 60$  s)
  - Enter cleaning time  $t_2$  in [s] ( $t_2 = 1 \dots 60$  s)
  - Enter post-rinse time  $t_3$  in [s] ( $t_3 = 1 \dots 60$  s)
  - Economic function; every n-th cleaning ( $n = 1 \dots 9$ ) with cleaning agent, otherwise only with water
- Set time and day (HH:MM and 1 = Mo, 2 = Tue, ..., 7 = Su)

### 4.2.2 Operating elements

The operating of the programme sequencer CYR 20 works with keys. LEDs show the current operating status.



Programme sequencer CYR 20  
Front panel with display and operating keys

#### Key functions:

##### Automatic mode



Switches the unit from the automatic to the programming mode.

CLEAN

Clean  
Starts a manual cleaning cycle

SERVICE

Service  
Switches the unit to the service mode

##### Mode Service

WATER

Water  
Opens the motive water valve  
(valve remains open while key is pressed)

CLEANER

Cleaner  
Opens the motive water and cleaning agent valves simultaneously  
(valves remain open while key is pressed)

##### Programming mode



Switches the unit from the programming to the automatic mode or backs up one programming level



Confirm / store settings



Select decimal place



Increase value / select function within programming level



Decrease value / select function within programming level

#### LEDs

##### Automatic mode



Automatic mode  
green LED »RUN« lights up



Cleaning cycle runs  
green LED »RUN« blinks



External Stop  
Red LED »STOP« lights up

##### Service mode



Service mode  
Red LED »STOP« blinks

##### Programming mode



Programming mode  
Yellow LED »PROG« lights up

### 4.2.3 Power-up

When the operating voltage is applied or after the event of a power failure the programme sequencer CYR 20 starts up in the automatic mode. The display after power-up looks like in the following figure.

The unit starts up in the »service« mode if the »service« mode has been active prior to switching the unit off.

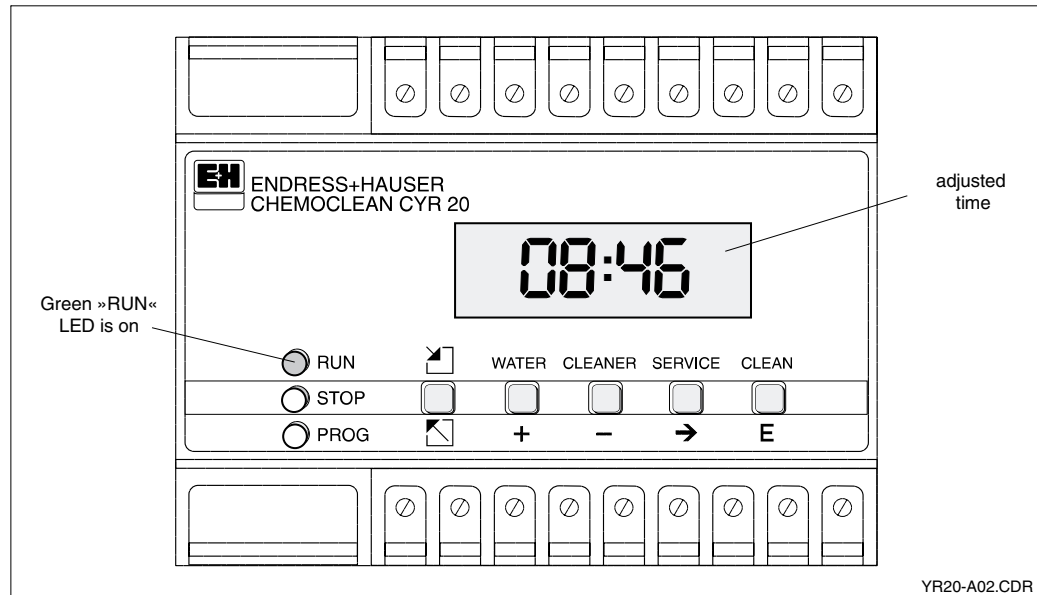


Fig. 4.2 Display after powering up the programme sequencer CYR 20

### 4.2.4 Factory settings

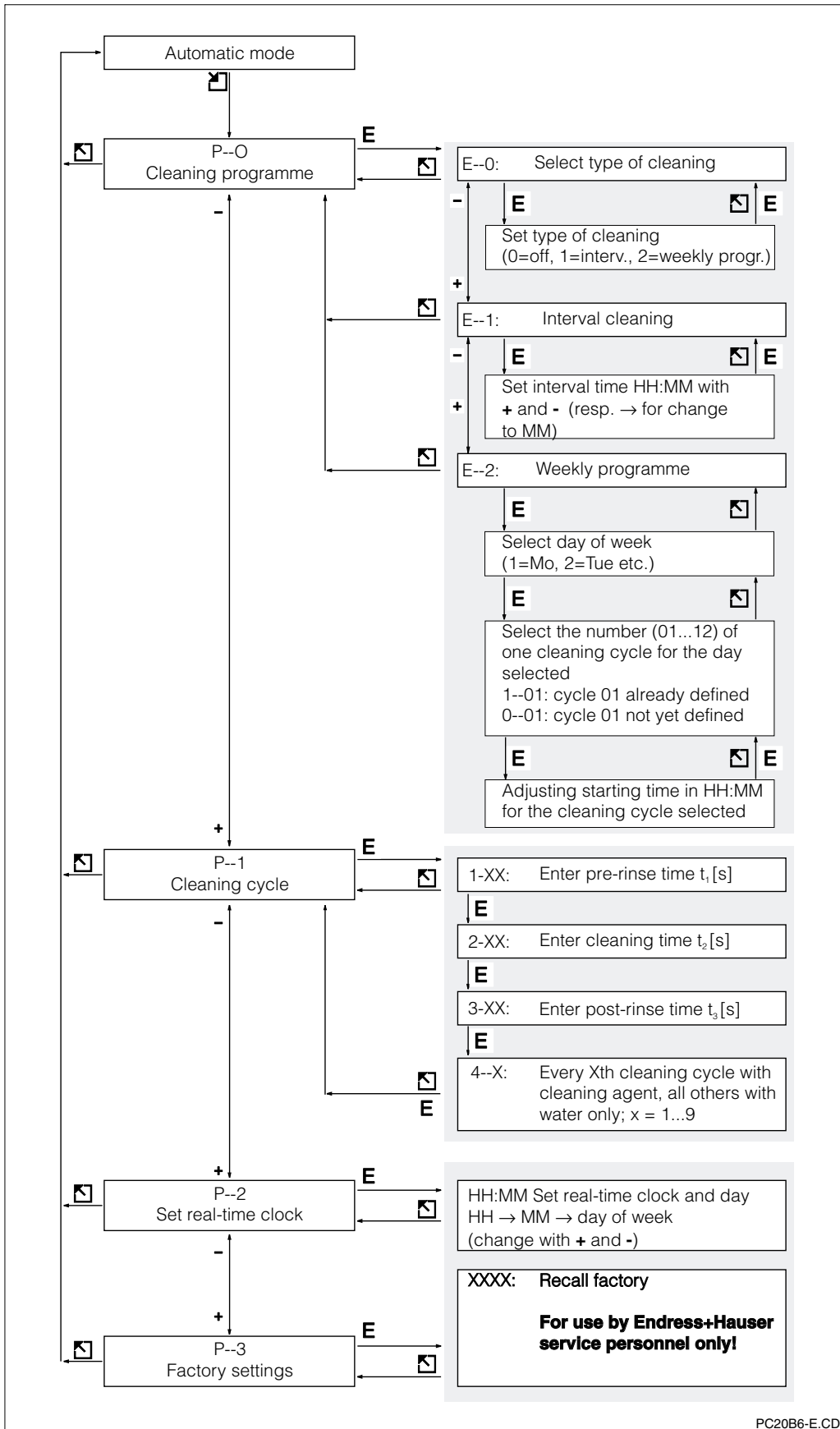
When the programme sequencer is started up for the first time, its operating state is as follows:

- Automatic cleaning is disabled.
- Real-time clock is not set.
- No times for interval cleaning and weekly programme are programmed.
- Default values for cleaning cycle are in effect:
  - Pre-rinse time . . . . . 10 s
  - Cleaning time  $t_2$  . . . . . 5 s
  - Post-rinse time  $t_3$  . . . . . 10 s

See chapter 4.2.5 »Programming« for modifying the factory settings.



4.2.5 Programming CYR 20



PC20B6-E.CDR

Fig. 4.3 Programming programme sequencer CYR 20

**Programming example**

**Setting the time of day**

Programme sequencer is in automatic mode,  
no cleaning cycle is running.

The real-time clock is to be set to Tuesday,  
08:46.

Key	Programming step	Display
	Access to mode »programming«, P—0 »cleaning programm«	
	Change to level P—1 »cleaning cycle«	
	Change to level P—2 »set real-time clock«	
	Select the parameter entry	
	Set the hours	
	Change decimal places	
	Set the minutes	
	Go on to the day of the week	
	Set the day of the week (1 = Mo, 2 = Tue, ..., 7 = Su)	
	Confirm your entry and return to programming level P—2 »set real-time clock«	
	Return to »automatic« mode of operation	

### 4.2.6 External control

The programme sequencer CYR 20 can be accessed from external controls via its contact outputs (normally open contacts).

A cleaning cycle can be externally started resp. the start of a not yet started cycle can be inhibited (independent of the cleaning programme selected) in order to prevent cleaning agent from affecting important control processes.

The programme sequencer CYR 20 has two (floating) outputs that can be used to control external devices, e.g. Mycom transmitters, PLCs or transducers.

The terminal assignment of the programme sequencer CYR 20 is shown in the following table :

Terminal	Input / Output	Command	Description
61	Input	Start	Start of a cleaning cycle
4	Input	Stop	The start of a cleaning cycle not started yet is inhibited.
5	Input	Clear	Control inputs for operation of ProbFit assemblies.
6	Input	Clear	Normally terminals 5/6 are shorted-out with a gravity hook.

Terminal assignment  
CYR 10  
(external control)



**Note:**

- The unit ignores the external start signal in the »service« mode.
- When the external »stop« signal has been activated, the unit cannot be operated via the keyboard.
- The stop input is not an emergency stop! It does not interrupt a running cleaning cycle.

### 4.2.7 Control of a CleanFit / ProbFit assembly

With the terminal outputs 7, 8 and 9 an assembly of the CleanFit or a ProbFit CPA 463-R assembly can be controlled with the programme sequencer CYR 20.

The connection of the assembly is shown in figure 4.4.

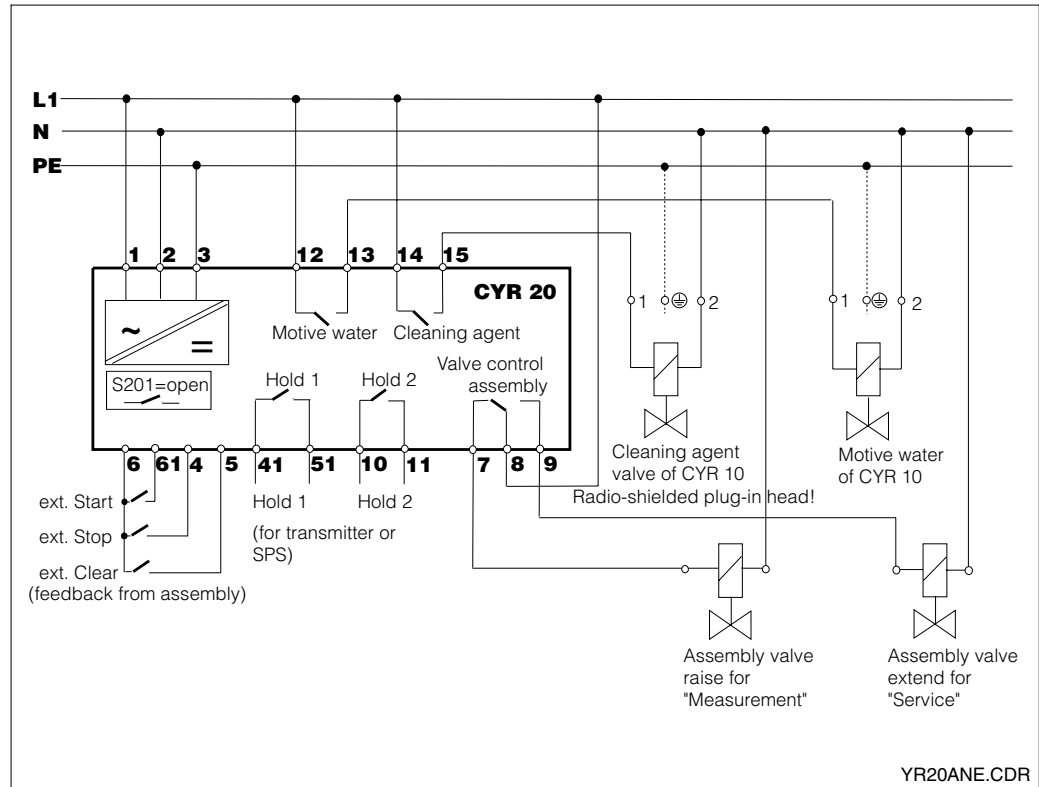


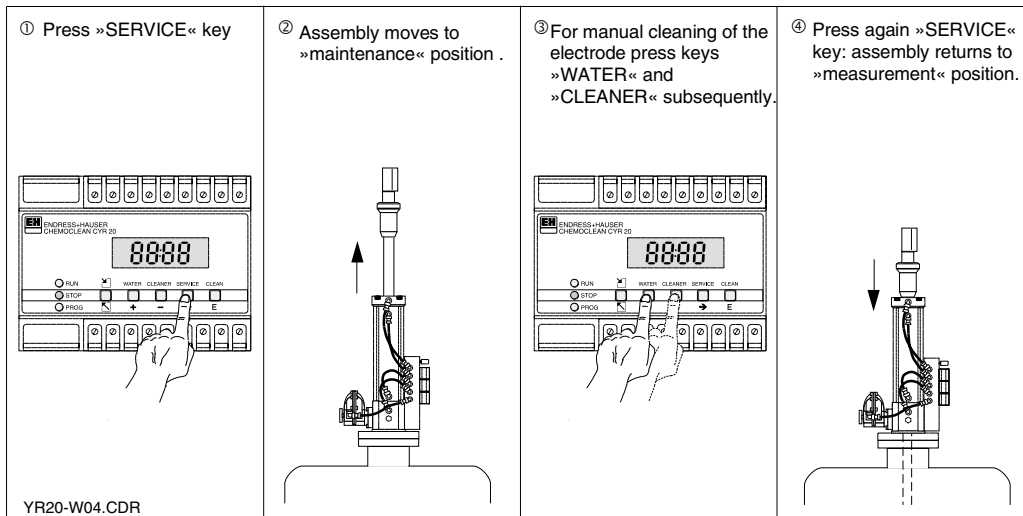
Fig. 4.4 Connection of a retractable assembly to the programme sequencer CYR 20

The assembly can be operated in the »automatic« mode or in the »service« mode:

#### CYR 20 in the »automatic« mode

The assembly is driven automatically into the »maintenance« position before the cleaning cycle starts. The feedback of the assembly is used as a CLEAR signal for the programme sequencer CYR 20 (terminals 5 and 6).

When the cleaning cycle is finished, the assembly automatically returns to the »measuring« position .

**CYR 20 in »service« mode****Note:**

- When using the programme sequencer CYR 20 as a control unit for a retractable assembly ProbFit CPA 463-R or CleanFit the gravity hook (terminal 5 and 6) has to be open.
- The programme sequencer emits electric signals. The assembly is controlled pneumatically. Simultaneous operation requires an additional p/e converter.
- For complete automatical control of retractable assembly e.g. the pneumatic ProbFit CPA 463 or CleanFit the complete system CPC 20 with the CYR 20 programme sequencer is available.

### 4.2.8 Cleaning cycle

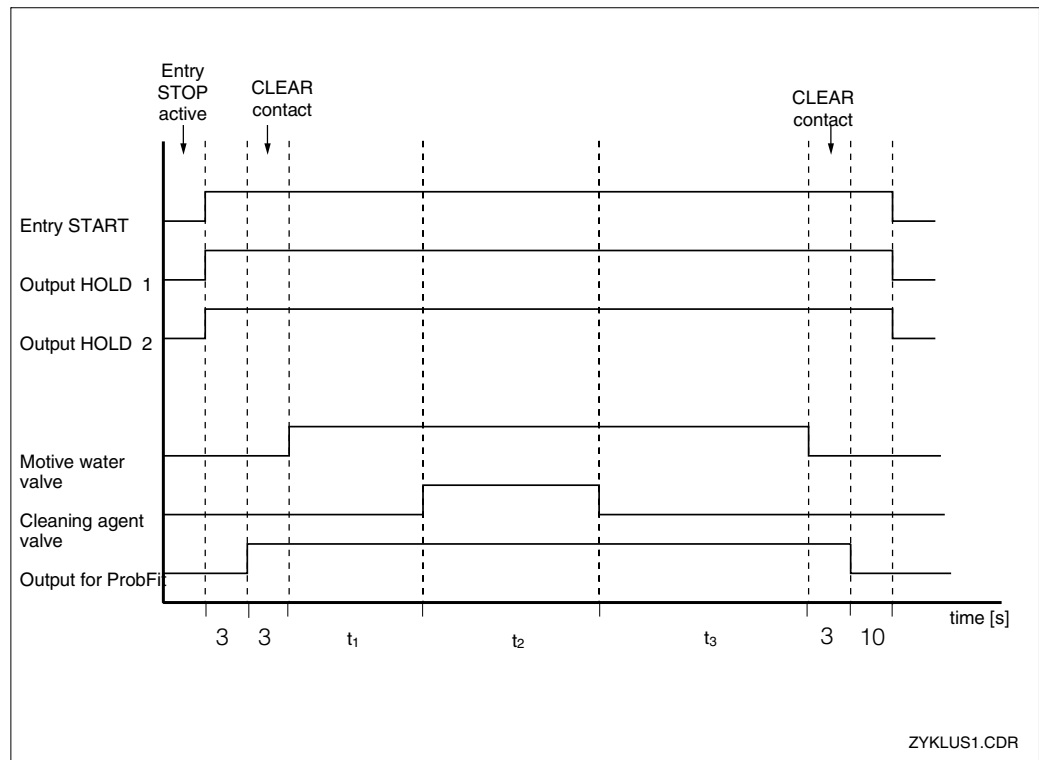


Fig. 4.5 Behaviour of inputs and outputs while cleaning cycle is running

ZYKLUS1.CDR



**Note:**

- Any cleaning cycle that has started (automatically, manually or externally) is completed to the end and cannot be interrupted. Switching to the »service« mode during operation is not possible.
- The control relays drop out in the event of a power failure during a cleaning cycle. This closes the motive water and the cleaning agent valve.
- At the CLEAR input always a puls is required for continuing the running cleaning cycle. Short-out the terminals 5 and 6, if the CLEAR input is not used. Factory-provided terminals 5 and 6 are shorted-out with the internal gravity hook S201.

### 4.3 Operation of CYR 10

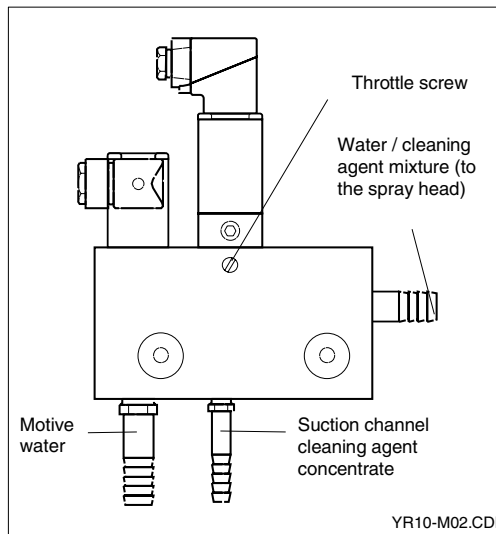
#### 4.3.1 Mixing process

The injector CYR 10 employs the venturi jet principle to mix motive water and concentrated cleaning agent to obtain the actual cleaning agent.

Appropriate hoses are used to supply motive water and concentrated cleaning agent and to feed the mixed cleaning agent to the spray head.

The intake of motive water and concentrated cleaning agent are controlled in the injector by means of two solenoid valves. The motive water flows through a venturi jet (injector) and on to the spray head. The motive water is mixed with the concentrated cleaner drawn in by the injector.

The mixture ratio can be adjusted with the aid of a throttle screw (see fig. 4.6.).The relation between motive water pressure and medium counterpressure is shown in fig. 4.7.



Injector CYR 10  
Position of throttle screw

#### 4.3.2 Mixing ratio

Please refer to the following table for the relation between the throttle screw position and concentrated cleaner flow:

Throttle screw position	Cleaning agent flow
'closed' to 1/4 revolution 'open'	50 %
1/2 revoultion 'open'	75 %
'open' more than 1,5 revolutions	100 %



**Note:**

- The motive water admission pressure should be 2 ... 12 bar (see diagramme in fig. 4.7).
- Cleaning time  $t_2$  should be followed by an adequately long post-rinse time  $t_3$  to assure proper rinsing of the line towards the spray head. This prevents undesirable influences of residual cleaning agent on subsequent measurements.
- The hose towards the assembly must not be kinked.
- The concentrated cleaner reservoir should always be placed underneath the injector housing.
- The suction line for concentrated cleaning agent shall be secured with a check valve.

### 4.3.3 Diagramme of characteristics

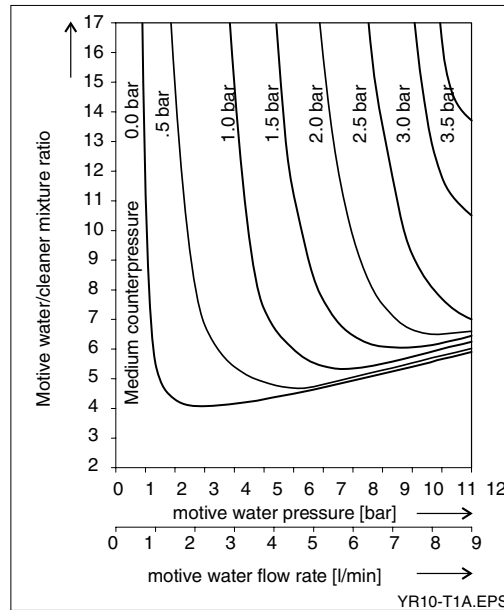


Fig. 4.7 Diagramme of characteristics motive water pressure / medium counter pressure

The diagramme of characteristic curves shows the relations among medium counterpressure, motive water pressure and mixture ratio with the throttle screw open all the way.

For example, with a medium counterpressure of 2 bar there is a required motive water pressure of 8 bar to reach a mixing ratio motive water : cleaner of 10:1 (with throttle screw fully open).

### 4.3.4 Cleaning agents

The selection of cleaning agent is dependent on the type of fouling.

The most frequent fouling and the associated cleaning agents are listed in the table below.

Type of contamination	Cleaning agent
Greases and oils	Substances containing tensides (alkaline) or watersoluble organic solvents (e.g. alcohol)
Limestone deposits, metal hydroxide deposits, heavy biological deposits	HCl (10%) in jector diluted to approx. 3 %
Sulphide deposits	Mixture of hydrochloric acid (3 %) and thiocarbamide (commercially available)
Protein deposits	Mixture of hydrochloric acid (0.1 molar) and pepsin (commercially available)
Fibres, suspended substances	Pressurised water, poss. with surface-active agents
Light biological deposits	Pressurised water



**Note:**

Only clean redox electrodes mechanically. Chemical cleaning applies a potential to the electrode that takes

several hours to decay. This potential causes measuring errors.





## 5 Maintenance and Service

### 5.1 Cleaning

We recommend the use of solvent-free cleaners to clean the front panel.

### 5.2 Maintenance

The hoses and pipes has to be checked on tightness regularly.

### 5.3 Repairs

Repairs work must be carried out directly by the manufacturer or by the Endress+Hauser service organisation.

See the back cover of these operating instructions for an overview of the Endress+Hauser service network.



**Warning:**

Any other intervention or modifications to the system are not permitted and will void the warranty.

## 6 Accessories and spare parts

The following accessories for ChemoClean CYR 10 / CYR 20 can be ordered separately:

- Protective housing SGH  
Protective housing for outdoor installation of programme sequencer CYR 20, ingress protection IP 55.  
Order no.: 50003264
- Mounting frame SEG  
Mounting frame for panel installation of programme sequencer CYR 20  
Order no.: 50005143
- Spray cleaning head CPR 30 for pH electrodes for mounting to DipSys CPA 111 assembly (even supplementary).  
Order no.:  
for assembly length 1000 mm: 50066567  
.....2000 mm: 50066568  
..... 500 - 3000 mm: 50068152
- Jet Cleaning System CPR 31 for assemblies CPA 111, CPA 140, CPA 240, CPA 250  
(Operating Instructions 201C/07/en)  
Order no.: 51500331
- Spray Cleaning Set for CYA 611 for mounting on CYA 611 (even supplementary)  
Order no.: 50086336
- Spray cleaning head CPR 3 for CPA 250, CPA 320.  
Versions see price list.
- Spray cleaning head COR 3-0 for direct installation to oxygen sensors COS 3/COS 4.  
Order no.: 50004310
- Spray cleaning head CUR 3-1 for assemblies CUA 250, COA 250.  
Order no.: 50060691
- Spray cleaning head CUR 4 for direct installation to turbidity sensors.  
Order no.: 50066917
- TopClean CPC 30  
Control system for automatic cleaning of pH retractable assemblies. Control unit with pneumatic valves, position feedback, terminal block for status signals.
- Power supply adapter CCIZ for injector CYR 10Z-E12/-F12 (in connection with Mycom CXM 153)  
Best.-Nr.: 51503405

Following spare parts are available:

- Wearing parts water valve for AC valves 110 / 220 V  
Best.-Nr.: 50086190
- Wearing parts water valve 24 V DC  
Best.-Nr.: 50086191
- Wearing parts check valve  
Best.-Nr.: 50086192

## 7 Technical data

Programm sequencer CYR 20		
<b>General specifications</b>	Manufacturer	Endress+Hauser
	Instrument designation	Chemoclean CYR 20
<b>Installation</b>	Mounting types	top hat rail EN 50022 protective housing SGH panel mounting frame SEG
<b>Dimensions</b>	Programme sequencer CYR 20	113 mm x 100 mm x 75
	Protective housing SGH	164 mm x 150 mm x 113 mm
	Panel mounting frame SEG	119 mm x 106 mm x 25 mm
	Top hat rail	35 mm x 7.5 mm
<b>Electrical connection</b>	Power supply	230 V AC, 110 V AC, 24 V DC
	Terminal blocks	2 x 9 terminals, detachable
<b>Contact outputs</b>	Output relay contacts, floating: Injector valves Hold external device Operation of a retractable assembly Contact load	2 NO contact 2 NO contact 1 change-over contact 230 V , 3 A, 100 VA
<b>Contact inputs</b>	External Start External Stop External Clear	NO contact NO contact NO contact
<b>Cleaning programme</b>	Pre-rinse time	1 ... 60 seconds
	Cleaning time	1 ... 60 seconds, adjustable
	Post-rinse time	1 ... 60 seconds, adjustable
	Interval cleaning	10 min. ... 99 hours, adjustable
	Weekly programme	12 x per day, real-time, adjustable
<b>Ambient conditions</b>	Ambient temperature	0 ... +50 °C
	Limit operating temperature	-20 ... +60 °C
	Electromagnetic compatibility	Interference emission and interference immunity acc. EN 61326-1:1997 / A1: 1998
	Ingress protection	with SEG with SGH IP 54 IP 55

Subject to modifications.

<b>Injector CYR 10 / CYR 10Z</b>		
<b>General specifications</b>	Manufacturer	Endress+Hauser
	Instrument designation	Chemoclean CYR 10
<b>Dimensions</b>	Injector CYR 10 / CYR 10Z-D08	244 mm x 148 mm x 80 mm
	Injector CYR 10Z-E12 / 10Z-F12	220 mm x 148 mm x 80 mm
	Weight	approx. 2 kg
<b>Electrical connection CYR 10 (Non-Ex)</b>	Power supply	230 V AC, 110 V AC, 24 V DC
	Connecting cable cross section CYR 10	1 x 2.5 mm <sup>2</sup> , or 2 x 1.5 mm <sup>2</sup>
	Power consumption	8 VA (AC), 21.6 W (DC)
<b>Electrical connection CYR 10Z-D08</b>	Power supply	24 V DC
	Power consumption	59 W (pick up), 10.9 W (hold)
	Connecting cable cross section CYR10Z-D08	3 x 0.75 mm <sup>2</sup>
<b>Electrical connection CYR 10Z-E12 CYR 10Z-F12</b>	Power supply	12 V DC (from CCIZ or CPC 30)
	Power consumption	7 mW
	Explosion protection	EEx ia IIC T6 / resp. Cl. 1, Div. 2, Group A, B, C, D
	Max. input voltage	U <sub>max</sub> = 28 mV
	Max. input current	I <sub>max</sub> = 65 mA
	Max. input power	P <sub>max</sub> = 0,9 W
	Certificate of conformity piezoelectric valves	LCIE 95 D 6146 X
<b>Process connections</b>	Motive water connection	Pressure hose nozzle D 16 (G 3/8)
	Cleaning agent concentrate connection	Pressure hose nozzle D 12 (G 1/4)
	Cleaning agent output connection	Pressure hose nozzle D 16 (G 3/8)
	Pressurised air connection piezoelectric valves CYR 10Z-E12 / 10Z-F12	ID 4 / OD 6
<b>Materials</b>	Injector	PVC
	Surface resistance PVC	10 <sup>9</sup> ... 10 <sup>11</sup> Ω
<b>Operating data</b>	Medium temperature	max. 60 °C
	Motive water pressure	2 ... 12 bar
	Medium counterpressure	max. 3 bar
	Suction height cleaning agent concentrate	max. 3 m
	Mixing ratio	1:4 ... 1:17, adjustable with throttle screw and motive water pressure
	Motive water flow	min. 2 l/min max. 10 l/min
	Compressed air supply for CYR 10Z-E12 / -F12	4 ... 6 bar, oil-free, filtered (< 5 µm)
<b>Ambient conditions</b>	Ambient temperature	-5 ... +40 °C
	Storage temperature	-40 ... +60 °C
	Ingress protection CYR 10Z	IP 65

Subject to modifications.

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### Sultanate of Oman

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### Australia

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