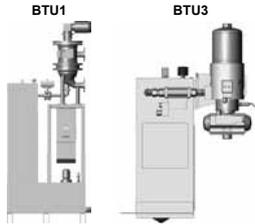


## Backflush Treatment Unit BTU



### 1. TECHNICAL SPECIFICATIONS

#### 1.1 GENERAL

The BTU unit with integral backflushing filter is a turnkey automatic filtration unit for water-miscible cooling lubricants, oils or washing water which continuously filters solid particles, such as very fine magnetic and non-magnetic metal particles, corundum, sand particles etc. It provides long-term filtration producing reduced-particle filtrate.

The quality of the filtrate is dependent on the separation limit of the filter used.

A BTU unit generally consists of:

- Backflushing filter for the main filtration
- Process twist sieve (PTS) to treat the backflushed volume
- Buffer tank with components (only BTU1)
- Control

The process twist sieve (PTS) is a component which is fitted downstream from the backflushing filter to filter the backflushed volume. In this way, with the help of the twist sieve, a further filtration process is carried out via the backflushing line.

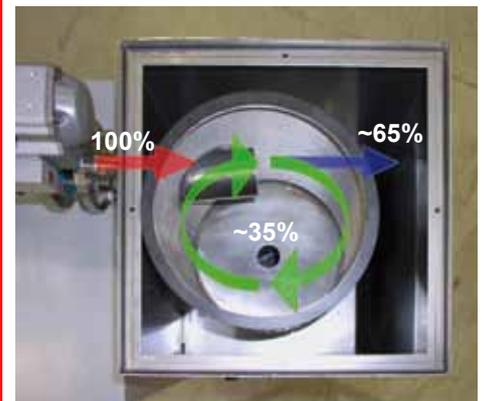
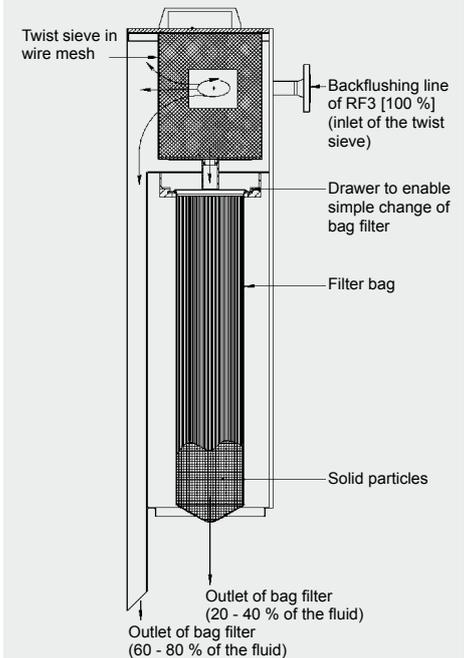
The solid particles from the backflushing volume are collected in a bag filter which is suspended under the twist sieve. When this is full, it is easy to dispose of by pulling open the drawer.

The fluid filtered by the twist sieve or the bag flows back to the buffer tank (BTU1). As soon as the fluid level in the buffer tank reaches the upper switch point of the level gauge (optional, the tank pump (optional) empties the tank.

Due to the short-term pressure shock when backflushing the automatic filter and due to the tangential inlet flow, the fluid is filtered by the wire mesh inside the twist sieve. Approx. 70 % of the backflushing volume passes through the twist sieve and is therefore already filtered when it flows into the buffer tank below the filter via the channel on one side of the twist sieve.

The remaining 30 % of fluid which is heavily contaminated with particles is forced by the centrifugal force and gravity through an opening in the floor of the twist sieve down into a bag filter. The fluid is filtered through the bag from the inside to the outside. Particles are retained and the cleaned emulsion flows into the buffer tank. The pressure shock ensures that the wire mesh (TopMesh) is flushed at every backflushing process, i.e. the twist sieve is self-cleaning and practically maintenance-free.

#### Function principle PTS



## 2. SYSTEM SPECIFICATIONS

### 2.1. STANDARD CONFIGURATIONS

#### 2.1.1 Tank configuration

- BTU1: add-on unit (incl. buffer tank, tank volume 150 l)
- BTU3: tank-top unit (for retrofitting to existing tank)

#### 2.1.2 Filtration rating of twist sieve

- 25 µm to 150 µm SuperMesh

#### 2.1.3 Backflushing filter

- Series AutoFilt® RF3, sizes C, 0 and 1
- Size 2 on request
- Series AutoFilt® RF4, sizes 1 and 2

#### 2.1.4 Bag filter

- PE: Polyester
- PP: Polypropylene
- N: Nylon
- Filtration rating: 25 µm to 150 µm

#### 2.1.5 Material of twist sieve housing and buffer tank

- Stainless steel
- Carbon steel  
(for the backflushing filter, the available materials are as listed in the relevant brochure for the standard pressure ranges)

#### 2.1.6 Control versions

- Without control for integration into customer's own control system
- Level monitoring for buffer tank and/or bag filter
- Complete control (power unit control (Siemens CPU), monitoring of the backflushing filter, return pump level monitoring)

#### 2.1.7 Return pump (BTU1 only)

- Buffer tank with or without return pump

#### 2.1.8 Connection voltages

- 3 x 400V / 50 Hz with or without neutral wire
- 3 x 500V / 50 Hz without neutral wire
- 3 x 230V / 50 Hz with or without neutral wire
- 3 x 415V / 50 Hz without neutral wire
- 3 x 415V / 60 Hz with neutral wire
- 3 x 460V / 60 Hz without neutral wire

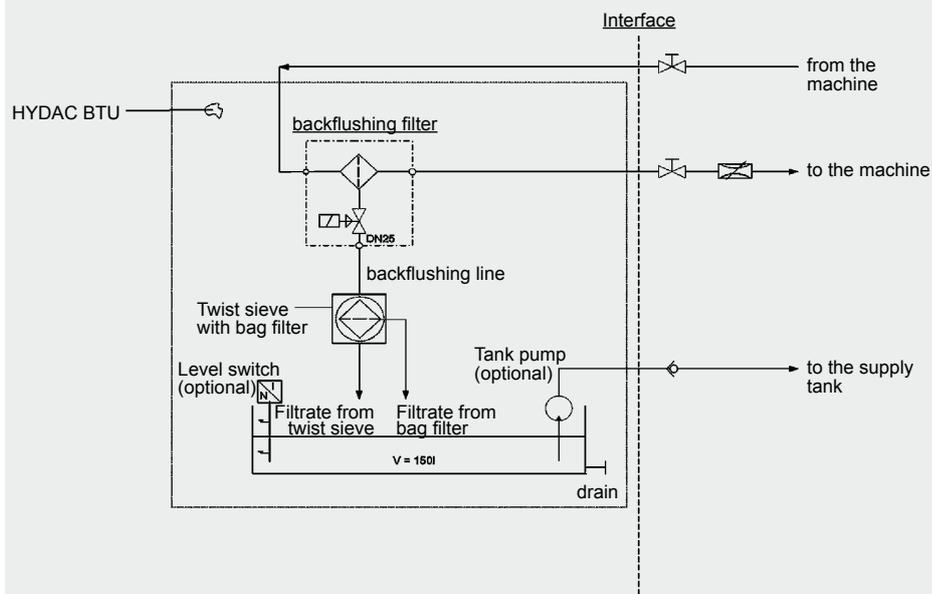
#### 2.1.9 Filtration ratings for the RF

- 25 µm, 40 µm, 60 µm SuperMesh
- 50 µm to 150 µm slotted tube

#### 2.1.10 Electrical protection class

- IP54

### 2.2 CIRCUIT DIAGRAM



### 2.3 OPTIONAL VERSIONS

There are a range of optional versions available for the Backflush Treatment Unit. For technical details and prices, please contact our Technical Sales Department at Head Office.

Customised special solutions can also be made available, for example, for retrofitting to existing backflushing filters.

### 2.4 CALCULATING THE FILTRATION SYSTEM / SIZING

When calculating the main filtration in the filtration unit, the relevant data sheets for the series AutoFilt® RF3 and AutoFilt® RF4 must be consulted.

The type of backflush fluid treatment is selected according to the backflushing filter used:

- Size PTS180 for RF4-1 / RF4-2
- Size PTS250 for RF3-C / RF3-0
- Size PTS450 for RF3-1

### 3. MODEL CODE

**BTU1 - 80 - AS1EEE2L - P 50 - EE - S - T - X - 1234567**

#### 3.1 BACKFLUSH TREATMENT UNIT BTU

##### Type

BTU1 = add-on unit  
BTU3 = tank-top unit

##### Filtration rating of twist sieve

25 = D25  
40 = D40  
60 = D60  
80 = D80  
100 = D100  
150 = D150

##### Backflushing filter type

As per separate model code

##### Bag filter material

PE = polyester  
PP = polypropylene  
N = nylon

##### Filtration rating of bag filter

25 = 25 µm  
50 = 50 µm  
100 = 100 µm  
150 = 150 µm

##### Material of twist sieve housing and buffer tank

EE = housing and buffer tank: stainless steel  
EN = housing: stainless steel; buffer tank; carbon steel  
NN = housing and buffer tank: carbon steel  
NE = housing: carbon steel; buffer tank; stainless steel  
EEE = housing, buffer tank, filter frame: stainless steel

##### Control functions

0 = unit without control function  
N1 = level monitoring of buffer tank  
N2 = level monitoring of bag filter  
N3 = level monitoring of buffer tank and bag filter  
S = control complete

##### Pump

0 = without pump  
T = return pump in buffer tank  
(only possible with BTU1)

##### Modification number

X = the latest version is always supplied

##### Drawing number

For special models only

### 3.2 AUTOFILT® FOR BTU

A E 1 E E E 2 L

#### Size AutoFilt®

- A = RF3-C
- B = RF3-CG
- D = RF3-0
- E = RF3-0G
- F = RF3-1
- G = RF4-1
- H = RF4-2

#### Type of control

- 0 = without
- E = EPT

#### Type of voltage

##### For RF3:

- 0 = without control
- 1 = 3x 400 V/N/PE, 50 Hz
- 2 = 3x 400 V/X/PE, 50 Hz
- 3 = 3x 500 V/X/PE, 50 Hz
- 4 = 3x 230 V/N/PE, 50 Hz
- 5 = 3x 230 V/X/PE, 50 Hz
- 6 = 3x 415 V/X/PE, 50 Hz
- 7 = 3x 415 V/N/PE, 50 Hz
- 8 = 3x 460 V/N/PE, 50 Hz

##### For RF4:

- M = with control\*; with solenoid valve 230 V AC
- N = with control\*; with solenoid valve 24 V DC
- O = without control\*; with solenoid valve 230 V AC
- P = without control; with solenoid valve 24 V DC

\* Supply voltage of the control 230 V AC, 50 Hz

#### Materials of housing

##### For RF3 only:

- 0 = carbon steel, external primer ("N")
- 1 = carbon steel, external primer, internal coating ("NM")
- 3 = stainless steel ("E")

##### For RF4-1 only:

- AA = Configuration (AAE): aluminium, aluminium, stainless steel
- EE = Configuration (EEE): stainless steel, stainless steel, stainless steel

##### For RF4-2 only:

- NN = Configuration (NNE): carbon steel, carbon steel, stainless steel
- EE = Configuration (EEE): stainless steel, stainless steel, stainless steel

Note: The backflushing filter is supplied in the standard pressure range!

#### Materials of backflushing valve

##### For RF3 only:

- N = carbon steel
- E = stainless steel

##### For RF4 only:

- 1 = coaxial valve
- 2 = ball valve

#### Differential pressure gauge

##### For RF3 only:

- 1 = pressure chamber aluminium
- 2 = pressure chamber stainless steel
- 3 = with chemical seal / stainless steel

##### For RF4 only:

- F = fixed value: 0.5 bar
- A = adjustable: 0.1 - 1.0 bar
- G = GW indicator, N/C

#### Flange options (RF3 only)

- 1 = filter outlet opposite filter inlet (standard) (not for RF3-C)
- 2 = filter outlet offset by 90° clockwise to standard
- 3 = filter outlet offset by 180° clockwise to standard

#### Filter elements

with:	RF3	RF4-1	RF4-2
B =	KD25	KMD25	KND25
C =	KD40	KMD40	KND40
D =	KD60	KMD60	KND60
E =	KD80	KMD80	KND80
L =	KS50	KMS50	KNS50
M =	KS100	KMS100	KNS100
N =	KS150	KMS150	KNS150

### 3.3 PROCESS TWIST SIEVE PTS

**PTS - 40 - 250 - E - L - 2 - P 50 - X - 12345678**

**Type** \_\_\_\_\_  
PTS = Process twist sieve

**Filtration rating PTS in µm** \_\_\_\_\_  
25 = D25  
40 = D40  
60 = D60  
80 = D80  
100 = D100  
150 = D150

**Diameter** \_\_\_\_\_  
180 = Ø 180 mm (only for RF4, without)  
180/1 = Ø 180 mm (only for RF4-1, with bracket)  
180/2 = Ø 180 mm (only for RF4-2, with bracket)  
250 = Ø 250 mm (only for RF3-C and RF3-0)  
450 = Ø 450 mm (only for RF3-1)

**Housing material** \_\_\_\_\_  
N = carbon steel, primed  
E = stainless steel

**Housing length** \_\_\_\_\_  
K = short (standard for PTS-180)  
L = long (standard for PTS-250/-450)

**Level switch** \_\_\_\_\_  
0 = without  
1 = with level switch stainless steel (only for diameters 250 mm, 450 mm)

**Bag filter material** \_\_\_\_\_  
PE = polyester  
PP = polypropylene  
N = nylon

**Bag filtration rating** \_\_\_\_\_  
25 = 25 µm  
50 = 50 µm  
100 = 100 µm  
150 = 150 µm

**Modification number** \_\_\_\_\_  
X = the latest version is always supplied

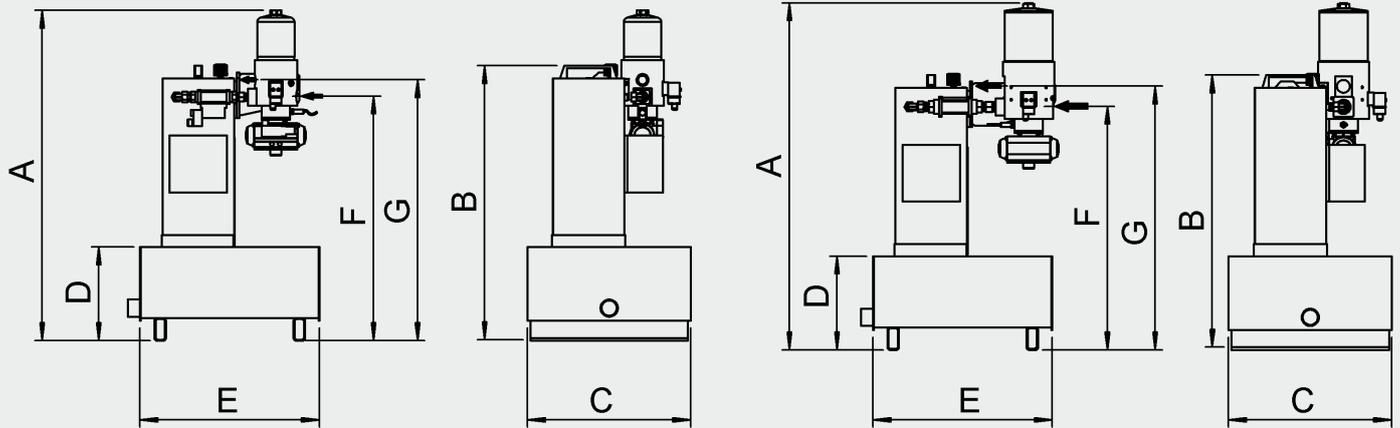
**Drawing number** \_\_\_\_\_  
For special models only

## 4. DIMENSIONS

### 4.1 DIMENSIONS OF BTU1 WITH RF4-1 OR RF4-2

BTU1 with RF4-1

BTU1 with RF4-2

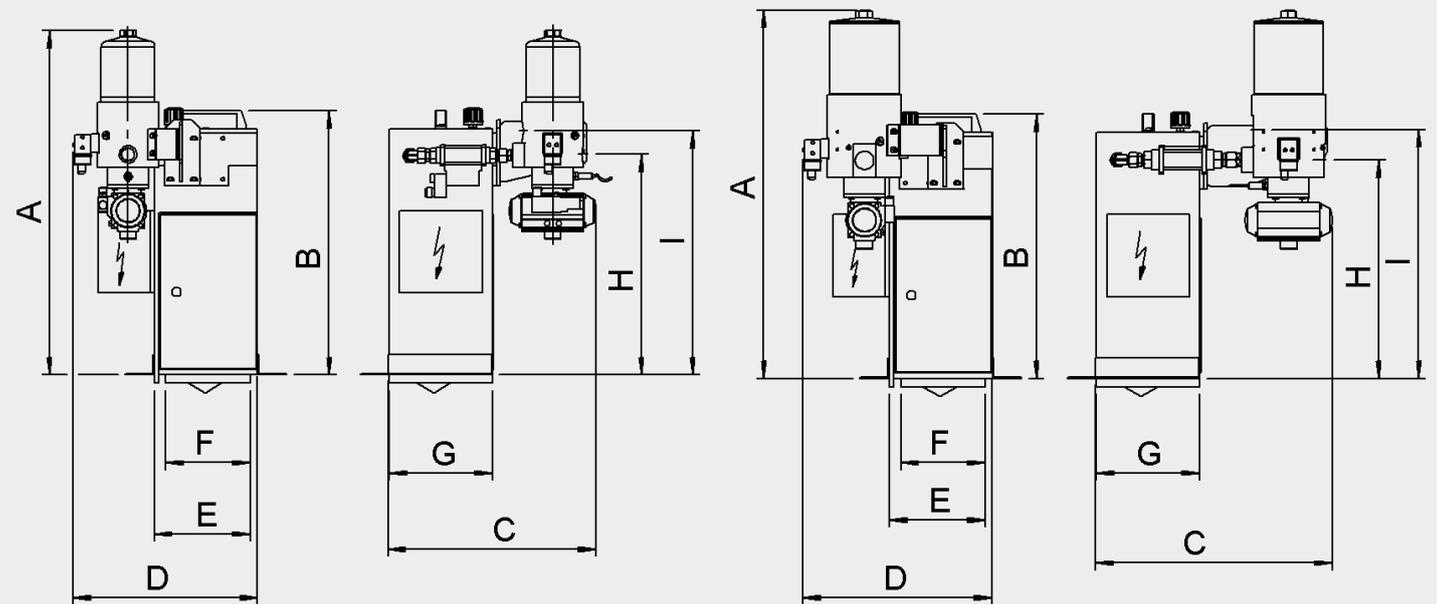


Type	A	B	C	D	E	F	G
BTU1 with RF4-1, 16 bar	1162	972	570	330	626	860	917
BTU1 with RF4-2, 16 bar	1223	972	570	330	626	860	929

### 4.2 DIMENSIONS OF BTU3 WITH RF4-1 OR RF4-2

BTU3 with RF4-1

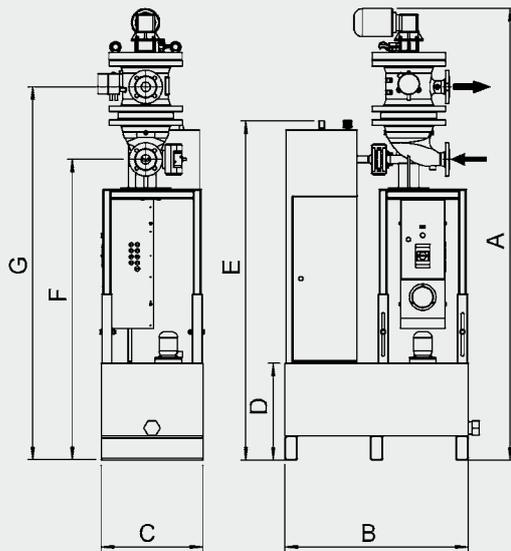
BTU3 with RF4-2



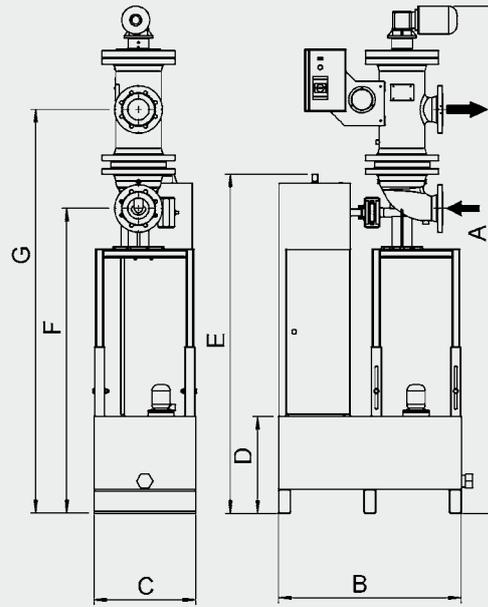
Type	A	B	C	D	E	F	G	H	I
BTU3 with RF4-1, 16 bar	840	645	505	447	232	204	250	538	596
BTU3 with RF4-2, 16 bar	898	645	537	457	232	204	250	533	607

### 4.3 DIMENSIONS OF BTU1

BTU1 with RF3-CG



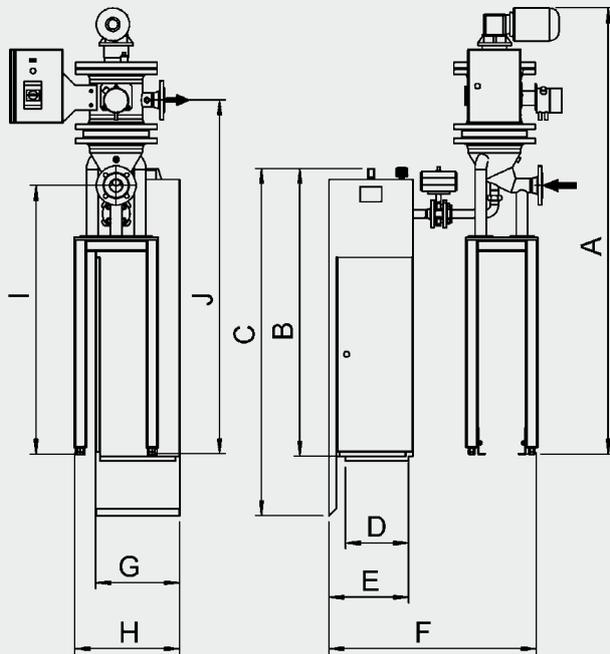
BTU1 with RF3-0G



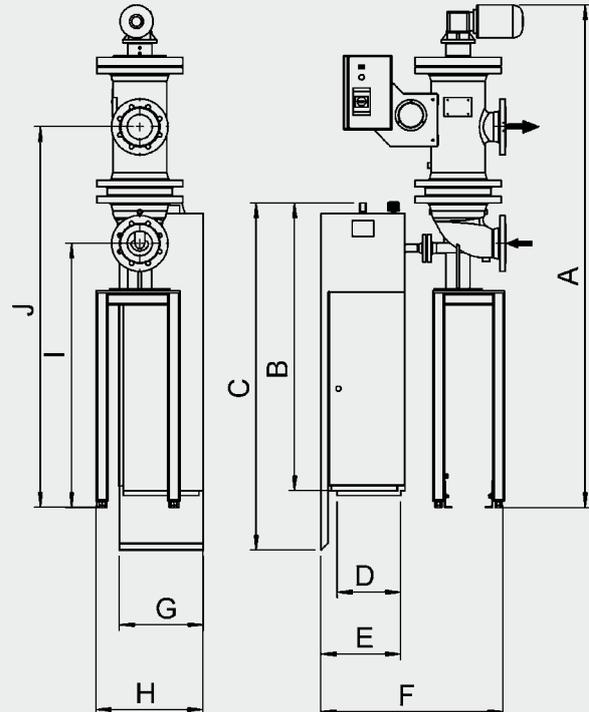
Type	A	B	C	D	E	F	G
BTU1 with RF3-CG	2234	900	500	480	1680	1487	1846
BTU1 with RF3-0G	2512	900	500	480	1680	1507	1997

### 4.4 DIMENSIONS OF BTU3

BTU3 with RF3-CG



BTU3 with RF3-0G



Type	A	B	C	D	E	F	G	H	I	J
BTU3 with RF3-CG	1877	1210	1460	264	332	867	350	437	1130	1488
BTU3 with RF3-0G	2113	1210	1460	264	332	760	350	446	1110	1600

#### NOTE

The information in this brochure relates to the operating conditions and applications described.  
 For applications or operating conditions not described, please contact the relevant technical department.  
 Subject to technical modifications.

**HYDAC** Process Technology GmbH  
 Am Wrangelflöz 1  
 D-66538 Neunkirchen  
 Tel.: +49 (0)6897 - 509-1241  
 Fax: +49 (0)6897 - 509-1278  
 Internet: www.hydac.com  
 E-Mail: prozess-technik@hydac.com

