

# Betriebsanleitung

*operating instructions*

*Instruction de service*

## Flexo Auswaschsystem

*flexo wash-out system*

*Système de lavage Flexo*



### Typ: Variomat VF 2 / VF 3

Kunde:

*customer:*

*Client :* \_\_\_\_\_

VMN.-Nr.: \_\_\_\_\_

Kom.-Nr.:

*com.-no / No. de com :* \_\_\_\_\_

Baujahr :

*year of manufacture:*

*Année de fabrication:* \_\_\_\_\_

Betriebsspannung:

*operating of voltage:*

*Tension de fonctionnement:* \_\_\_\_\_

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R. SCHWAN GmbH - D - 56357 Miehlen - Tel : +49-6772 / 3393 und 3394

Fax : +49-6772 / 2053

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# 1. Data Specification of the Machine

## 1.1 Manufacturer's Address:

R. Schwan GmbH - D 56357 Miehlen - Kieselstraße 9

## 1.2 Type Name:

VF 2 / VF 3

## 1.3 Description of the Field of Application

The Flexo wash-out system VF 2 / VF 3 is for the automatic washing-out of nyloflex - printing plates of all kinds and thicknesses in connection with:

- a nyloflex - exposure device
- a nyloflex - drying device
- a nyloflex - after-treatment device

The plates are exposed in a previous operating cycle, whereby the later printing relief parts polymerize.

The plates horizontally pass through the wash-out area, whereby being washed out by means of oscillating flat brushes. As wash-out medium (solvent) tempered nylosolv® is used continually supplied to the brushes. After washing-out the plates pass through an after-flushing area where they are cleaned with fresh solvent. Before leaving the wash-out area of the machine the wash-out medium is removed from the upper surface of the plate by means of round brushes. The back side of the plate is drawn over a doctor blade lip. After leaving the wash-out area the plates pass through the pre - drying zone ventilating from the upper side.

The plates leave the machine in a hand-dry condition.

### 1.3.1 Description of the Procedure

- The passage speed of the plates is pre-selectable and can be adjusted to the single plate types.
- After exposing the plate it is first punched with the pneumatic stamping device.
- The plate is fixed on the transportation bar and inserted into input with the sensitized side upwards. Now it is manually supplied to the transportation spindles and passes through the following areas:

#### **Wash-out area:**

- Six flat brushes running on eccentric bearings, working in opposite direction, wash out the non-polymerized (non-exposed) part of the plate.
- The solvent directly gets to the flat brushes through brush carriers and borings.

#### **Pre-cleaning area:**

The pre-cleaning is effected by an oscillating round brush working in opposite direction, which removes the wash-out solvent from the relief side of the plate.

#### **Cleaning area:**

- The plate already washed out is drizzled with fresh solvent. This happens by nozzles attached at right angles to the passage direction.
- A second doctor blade round brush oscillating in opposite direction completely removes fluid rests from the relief side.

#### **Back side cleaning of the plates:**

The plate is drawn over a doctor blade lip, which is below the second round brush.

#### **Plate output station:**

- In the output station the backside of the plate is drawn over a plush.
- At the same time the relief side can ventilate.

Before using on printing machine the plates have to be:

- dried
- after-exposed
- and after-treated

## **1.4 Naming of the Working Places**

For the operation of the Flexo-wash-out system VF 2 / VF 3 one person is necessary. In order to guarantee a perfect production of the machine, the person running the machine with aid of the operating instructions must be instructed to operate the machine. The maintenance plan and other machine-specific information on set-up, maintenance etc. must be permanently available at the machine and can be found in the operating instructions. The machine is run from the input resp. output station. In order to make possible maintenance works a corresponding free space around the machine must be available (at least 1 m).

## **1.5 Data on Noise Emission**

Noise emission < 70 db (A)

## 1.6 Data on Radiation, Gases, Vapours, Dusts

Admitted concentration at the working place:

- perchlorethylene: 50 ppm (threshold limit value/MAK)
- nylosolv: 300 ppm (OIL)

As far as the room ventilation is concerned a 5 to 10 fold air change rate of the room must be guaranteed. A transverse ventilation of the production room is important.

### Attention:

**The room air is to be sucked off near the floor, because the solvent vapours are heavier than air.**

**The wash-out solution is dangerous for water and must not get into the sewer system or into the ground! A safety collecting basin must be established, which can take up the total solvent volume. (Standard accessories).**

The machine suction is in the plate entry and exit. The exhaust ducts of the machine exhaust fan must not be longer than 10 m at a maximum bend of 2-3/90°.

In case of exhaust ducts of more than 10 m of length an additional fan/machine exhaust air must be connected, which must cause a slight partial vacuum at the exhaust connection piece of the machine. The power in full operation is to be set on approximately 200 m<sup>3</sup>/h with the aid of a reducing damper.

## 1.7 Electric Equipment

	3 N ~ 400 V / 50 Hz		3 N ~ 230 V / 50 Hz		3 ~ 230 V / 60 Hz		3 N ~ 400V / 60 Hz	
	kW	A	kW	A	kW	A	kW	A
VF2 / 3	5	7,5 Fuse protection 10	5	13 Fuse protection 16	5	12 Fuse protection 16	5	7,5 Fuse protection 10

## 1.8 Operating Material-Specific Data

None



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## 2. Information on Transport and Installation of the Machine

### 2.1 Loading

When transporting the machine it has to be regarded that the machine can only be lifted from below at the points marked (see plan for transportation), at the basic frame of the machine and no body parts are damaged.

### 2.2 Transport

The transport of the machine should only be carried through with the appropriate means of conveyance and free of torsion.

### 2.3 Installation and Adjustment

When installing the machine pay attention to sufficient distance to nearby walls and devices for service and maintenance (lateral distance approx. 1 m).

At the place of installation the machine is to be exactly adjusted by means of a water level. The cover of the wash-out area has to be removed for this. The water level is put against the top edge of the trough and the machine is exactly adjusted by the adjustment of the height of the stands.

For the installation of the ground trough a distance of ground to lower surface frame of 110 mm has to be observed.

### 2.4 Foundations

A special foundation for the machine is not necessary. The soil bearing capacity should be 10 kN/m<sup>2</sup>. The weight of the machine is to be taken from the dimensional sheet.

## **3. Information on the First Initiation of the Machine**

### **3.1 Requirements Regarding Fixing and Anchorage**

The machine stands on machine positioning feet, a special anchorage is not necessary.

### **3.2. Conditions for Mounting and Assembling**

The floor of the production room must be plain.

Apart from that it has to be regarded that it is sealed with a waterproof layer, also being resistant against the wash-out medium used.

Eventually existing floor drains must not be connected to the sewer network.

### **3.3 Space Requirements for Operation and Maintenance**

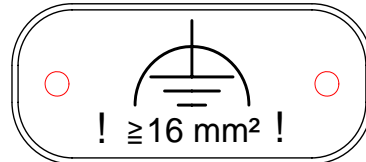
The machine is run from the input resp. output station. In order to make possible maintenance works a corresponding free space of at least 1 m around the machine must be available.

### **3.4. Admitted Ambient Conditions**

The ambient conditions should be similar to an office.

### 3.5 Data on Connection to Energy Supply; Preparation for First Initiation

As an additional equipotential bonding, the machine has to be connected to earth by means of a 16mm<sup>2</sup> cable. The connection position has been marked on the frame.



#### Electric Supply

(Recommendation)

Connect machine over wall switch eventually over safety section switch. Pay attention to the connection conditions of the local electric supply companies.

It is useful to run the tempering device over a separate time switch.  
(cf. Chapter 9: Operating instructions of the temperature controller ST 1.1)

#### Compressed Air Supply

To be able to run the plate stamp a compressed air supply free of water (7 bar/200 l/min according to DIN) is needed.

A rapid action hose coupling R 1/4" is on the left side of the machine of the plate stamp. The counterpiece of this coupling is included in the delivery programme.

#### Machine Exhaust Air

The exhaust air duct must correspond to the nominal width (NW 100) of the exhaust air connection piece in the output frame. It must be installed that the exhaust air opening ends free to the outside and outside of production rooms. Further ducts may consist of galvanized steel tube or appropriate plastic tube.

The machine exhaust air quantity (approx. 200 m<sup>3</sup>/h) should be adjusted to the exhaust duct. The installation of an adjustable reducing damper is useful.

## Connection Solvent Supply

The regular equipment of the machine corresponds to the "**barrel to barrel**" operation.

Fresh solvent is supplied from the barrel to the system corresponding to the plate size resp. the solid concentration. The used dirty solvent is pumped into an empty barrel.

In the delivery programme of the standard equipment of the machine there are two float switches included, one each for the fresh and dirty solvent barrels (200 l). The float switches are to be inserted into the frontal openings of the corresponding barrels. The longer float switch is used for the fresh solvent barrel, the shorter one for the dirty solvent barrel. The float switches are marked correspondingly.

In order to connect the **barrels to the wash-out system**, there are connection pieces on the right side of the machine. The other endings of the connection ducts are to be screwed into the second frontal opening of the barrels (dirty solvent barrel), or to be put in (fresh solvent barrel).

### Attention

It has to be regarded that the connection ducts are not longer than 10 m being on the same level. For safety reasons the hose must be visible in full length.

As **material** for the **connection ducts** petrol and oil proof hoses are used. As an alternative also fixed pipework can be used. It must be equipped with a flexible connection piece on the corresponding side of the barrel.

If the machine is operated with fixed tanks, special float switches have to be adjusted to the tanks. (Explosion proof resp. intrinsically safe float switches in explosion proof rooms).

In case of different conditions of installation please consult manufacturer or distributor.

### 3.6 Fundamentals Concerning First Initiation

- The first initiation is effected by a technician of BASF or a responsible representation.
- Before initiating the machine a functional test has to be carried through. A precondition is that the machine is connected to all supply and disposal systems. The air has to be evacuated from the pumps.
- The rotating direction of the pump has to be checked as in the following:
  - Turn on main switch
  - Press key "I" (at the control panel)
  - Actuate sensor Start
  - Check - let it run only a short time; danger of dry run!!

In case of wrong rotating direction change 2 phases of the main connection.

- The internal machine tank is to be filled with fresh solvent and the float switches are to be checked..

### 3.7 Functional Test

#### Brush Adjustment

With the main switch turned off and the covering cap taken off the brush adjustment can be checked. The height of brushes "Null" (Zero) is adjusted ex works. The brushes here just touch the plate passage. Visual inspection: the bristle tops must be in one level.

#### Float switches

With the main switch turned on the function of the float switches can be checked by manual lifting and lowering of the float.

### **Working Level Main Tank**

The working level is reached, if the float switch is activated. If the maximum level of the machine is reached, the dirt removal pump turns on. The pump runs until the lower wash-out level is reached.

Attention! Here check only short time; danger of dry run!!

### **Overflow-Safety Level Main Tank**

This function prevents an overflowing of the main tank. If the maximum level is reached, the after-flushing and metered adding is turned off. Only a pumping out is possible.

### **Safety Thermostat**

The temperature of the safety thermostat is (for nylosolv)adjusted to 35°C ex works.

### **Volume Stream for Washed Out Section**

Here it has to be checked, if the brush carriers are sufficiently flooded with solvent. The volume stream can be adjusted on valve V3.

### **Plate Transportation Function**

- For checking the plate transportation function a plate is to be punched with the pneumatic plate stamp and to be fixed on the transportation bar.
- Press switch "ON/EIN" and activate key "I".
- Select plate type, i.e. adjust height of the brushes and plate transportation speed.
- Insert plate with transportation bar into plate input and supply to the spindles manually. Activate sensor B2 "Start". Now the plate transportation function can be checked.

- At the same time the **function of after-flushing and doctor blade brushes** has to be checked.

The interval time of after-flushing eventually can be adjusted on the operating panel. (cf. Chapter 5.1: Operating panel)

During the first operating hours an increased "hair loosening" of the brushes is possible.

- When the plate leaves the machine, the function of the flow-out sensor can be checked.

- Now the plate has to be checked visually.

### **3.8 Safety Measures to be Taken by the User**

Avoid skin contact with the wash-out medium.

Use protective glasses and protective gloves for all works carried through when the machine is open (eventually use skin protective creme).

For filling and emptying by means of hoses and buckets protective gloves and face protection are to be worn.

A sufficient ventilation of the rooms is necessary.

Compare paragraph 4.3 Information on Rest Risks, Avoiding of Dangers.

### **3.9 Requirements regarding Machine Ambient Conditions when Used in Explosive Atmosphere**

The machine is not allowed to be operated in an explosive atmosphere.

## 4. Data for Using the Machine

### 4.1 Description of the Function of the Operating Elements

Name	Wiring Diagram Pos.No. Sheet No.	Function
Y 1 magnetic valve after-flushing	p.8, col.1	24 V= magnetic valves are activated together by sensor B 3 "after-flushing" and clocked by sensor B 4 "spindle impulse" and ATE "after-flushing time". Time can be adjusted with ♦♦ in sec.
Y 3 magnetic valve dose fresh solvent	p.8, col.2	24 V magnetic valve is controlled by the solids content meter (control point).
Y4 magnetic valve round brush moistening	p.6, col.6	24 V= magnetic valve is for moistening and flushing the round brushes and is activated by sensor B 2 "Start" and deactivated after run down of the set-up time ATE (60sec.) "doctor blade brush moistening". This process is only repeated after turning on the main switch Q1.
B1 thermostat safety thermostat	p.2, col.8	In case of exceeding the standard solvent temperature (> 35° C) the thermostat turns off the control circuit. The control circuit can only be turned on again, if the solvent temperature is < 34° C and is activated by button S1 "I".
M 2 gear motor brush drive	p.1, col.3	Drives flat and round brushes. Is activated by activation of sensor B2 "Start" and deactivated with the run down of the delay time machine off.
M 3 fan exhaust fan	p.1, col.4	Exhaust fan is turned on permanently with main switch ON.
M 4 pump main punp	p.1, col.5	Main pump is for solvent revolving and is activated by activation of sensor B2 "Start" and deactivated with the run down of the delay time machine off.



Name	Wiring Diagram Pos.No. Sheet No.	Function
M 5 pump fresh solvent pump	p.1, col.6	transports fresh solvent from barrel (or destil.tank) to machine and supplies valves Y1 - Y4. Is activated by button S5 "fresh solvent pump", sensor B3 "after-flushing" or solids content meter. As safety function preceded: float switch B8 "overflow danger", float switch B9 "fresh solvent barrel empty", or float switch B11 "dirty solvent barrel full".
M 6 pump dirty solvent pump	p.1, col.7	transports fresh solvent of the machine into the dirty solvent barrel (or destil.tank). Is activated by button S6 "dirty solvent pump", float switch B6 "pump out main tank" or float switch B8 "overflow danger". Preceded as safety function: float switch B11 "dirty solvent barrel full".
M 7 motor brush height adjustment (motor passage level)	p. 3, col.1	lifts and lowers the passage level and changes the distance passage level to flat brushes. Is activated by activation of button ♦ or ◆ on the control panel. Is limited by sensor B13 "passage level above" or sensor B14 "passage level below".
M 9 motor spindle drive	p.2, col.1	drives the plate transportation spindles. Is activated by sensor B2 "Start". The number of spindle resolutions is controlled from the control panel with help of the keys ♦◆ (mm/min/ "passage speed"). The transportation speed is indicated in mm/min on the LCD display.
S 5 button fresh solvent pump <i>dose fresh solvent</i>	p.6, col.2	is for manual filling of the machine tank. Activates M5 "fresh solvent pump" and Y3 "dose fresh solvent". <u>!!! Sight contact to the solvent necessary, overflow danger!!!</u>

Name	Wiring Diagram Pos.No. Sheet No.	Function
S 6 button dirty solvent pump	p.6, col.3	is for manual emptying of the machine tank. Activates M6 "dirty solvent pump" !!! <u>Sight contact to the solvent is necessary, overflow danger!!!</u>
B 2 sensor start (input)	p.4, col.3	is the starting point for plate production. Activated are: M2 "brush drive", M4 "main pump", M9 "spindle drive", P1 "operating hours meter", "delay time machine off" and "round brush moistening" with Y4, M5 (60 sec.).
B 3 sensor after-flushing	p.4, col.4	the washed-out plate is flushed with fresh solvent in interval. Activates: "after-flushing time", M5 "fresh solvent pump" Y1 + Y2 "after-flushing" in time of B4 "spindle impulse".
B 4 sensor spindle impulse	p.4, col.5	is for clock frequency of after-flushing
B 5 sensor output (withdraw plate)	p.4, col.6	recognizes transportation guide gib at the output. Activates: "signal lamp" in the control panel and accoustic signal (horn).
B 6 float switch pump out main tank	p.4, col.7	recognizes upper level of the tank and starts the pumping out function. Activates: M6 "dirty solvent pump".
B 7 float switch main tank wash-out level reached	p.5, col.1	recognizes the lower level of the tank and terminates the pumping process. Deactivates: M6 "dirty solvent pump".
B 8 float switch tank overflow danger	p.5, col.2	recognizes <u>max.</u> level of the tank and starts the pumping out function. Activates: M6 "dirty solvent pump".
B 9 float switch fresh solvent barrel empty	p.5, col.3	recognizes the min. level of tank of fresh solvent container. Activates: signal lamp "barrel empty" and accoustic signal (horn). Deactivates: M5 "fresh solvent pump".

Name	Wiring Diagram Pos.No. Sheet No.	Function
B 10 float switch fresh solvent barrel nearly empty	p.5, col.4	recognizes lower level of fresh solvent container. Activates: signal lamp control panel "barrel nearly empty".
B 11 float switch dirty solvent barrel full	p.5, col.5	recognizes max. level of dirty solvent barrel. Activates: signal lamp control panel "barrel full", accoustic signal (horn). Deactivates: M5 "fresh solvent pump" and M6 "dirty solvent pump".
B 12 float switch dirty solvent barrel nearly full	p.5, col.6	recognizes upper level of dirty solvent barrel. Activates: signal lamp control panel "barrel nearly full".
B 13 sensor passage level above	p.5, col.7	safety function
B 14 sensor passage level below	p.6, col.1	safety function
button upwards control panel ATE ♦♦		by activation passage level goes upwards into direction 0,0mm of brush distance to passage level.
button downwards control panel ATE ♦♦		by activation passage level goes downwards into direction 2,5 mm of brush distance to passage level.

## 4.2 Instruction for Tooling and Set-Ups

## 4.3 Information on Rest Risks, Avoiding of Dangers

### 4.3.1 Environmental Protection

When operating the machine it has to be regarded that the wash-out solution is dangerous for water. It is not allowed to get into the sewer system or into the ground.

Under the machine the safety collecting basin delivered as standard accessories has to be established. It can take up the total solvent volume.

### Disposal

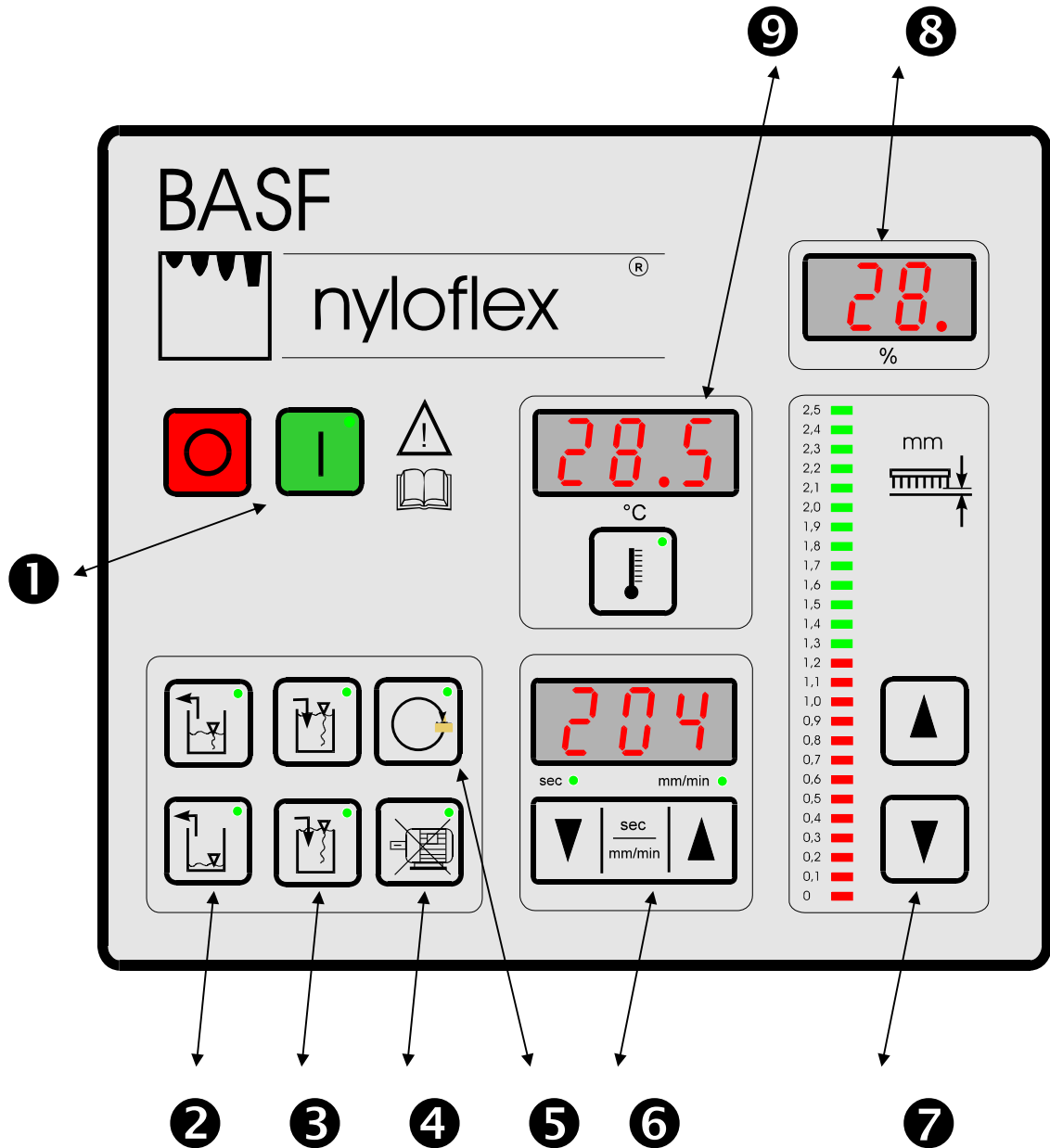
Dirty solvent can be reprocessed by distillation. Apart from that it is regarded as hazardous waste according to the waste key no. 55326.

- Cleaning cloths soaked with solvent have to be disposed as hazardous waste.
- Residues in the distillation facility have to be disposed as hazardous waste according to the waste key no. 59703.

Information about hazardous waste disposal are to be obtained by the environmental protection authorities, the industrial inspection board/Gewerbeaufsichtsamt, the District Office/Landratsamt and others.

## 5. Handling

### 5.1 Operating Panel



- ❶ **Button “I”** means Start and switches the machine into readiness for production:  
Displays 2-4 corresponding signal lamp lights up.
- ❷ **Display:**  
Fresh solvent barrel nearly empty - fresh solvent barrel empty
- ❸ **Display:**  
Dirty solvent barrel nearly full - dirty solvent barrel full
- ❹ **Display:**  
Malfunction motors
- ❺ **Display:**  
Production cycle finished; withdraw plate
- ❻ **Display/Adjustment: Transportation Speed**  
The signal lamp next to *mm/min* lights up.  
With the buttons  $\blacklozenge$ ,  $\blacklozenge$  the transportation speed can be continuously adjusted from 0-250 mm/min.  
**Display/Adjustment: After-Flushing Time**  
If the key *sec: mm/min* is pressed and kept pressed the adjusted value for the after-flushing time appears in the display. As activation check the signal lamp next to *sec* lights up. Now the after-flushing time can be adjusted from 0,1-12 sec with the buttons  $\blacklozenge$ ,  $\blacklozenge$ .
- ❼ **Display/Adjustment: Height of Passage Level**  
With the buttons  $\blacklozenge$ ,  $\blacklozenge$  the height of passage level can be adjusted. The adjusted value can be indicated with help of the luminous diodes.
- ❽ **Display: Value of Solid Metering**  
Here the solid content of the solvent is indicated.  
**Adjustment of the maximum solids concentration**  
If the push button  $\text{⑥} \frac{\text{sec}}{\text{mm/min}}$  is depressed for five seconds and is kept depressed, the display  $\text{③}$  will render the maximum value of the solids concentration in the tank. By means of the push buttons  $\text{⑦} \blacklozenge$ ,  $\blacklozenge$  the value can be set from 1% to 7%. If this pre-set value is made during the production process, the machine will start metering in fresh solvent to the first round brush until the value drops below the maximum concentration.
- ❾ **Display: Solvent Temperature**  
Here the solvent temperature is indicated.  
Yellow colour of the signal lamp → temperature not reached yet  
green colour of the signal lamp → temperature o.k.  
red colour of signal lamp → temperature too high

## 5.2 Filling of the Machine Internal Tank

Fresh solvent barrel is filled; dirty solvent barrel is empty. Both barrels are connected to the wash-out system.

For filling the tank the main switch must be adjusted to "ON/EIN". Input plugh and tank cap have to be removed so that there is visual contact to the float switches. Now activate key S5 "fresh solvent pump" until the tank is filled. (level sensor wash-out level is reached).

## 5.3 Preparation for Operation

- The main switch of the machine must be turned on. The solvent tempering device must be turned on separately.
- Pre-select the temperature controller.
- Activate key I "Start" (control system is activated);

## 5.4 Adjustment of the solids concentration

- cf. Chapter 5.1: operating panel (Ⓢ)

**Now the machine is ready for work, production can be started**  
(after reaching the wash-out temperature).

## 5.5 Plate Production

### Passage Speed

The passage speed of the plates through the machine can be adjusted with the aid of the potentiometer. It is shown in the LCD display in mm/min.

## Brush Distance

The brush distance can be pre-selected on the control panel with the following keys:

- ♦ "lift transit level"
- ◆ "lower transit level"

The display is shown on the left side next to the control panel (red scale).

## Preparing, Inserting and Taking Out of the Plate

- The plate is to be punched with the pneumatic punch stamp also delivered and to be fixed to the transportation bar with the sensitized side upwards.
- Insert plate with carrier bar into plate input and supply to the spindles. Activate Sensor B2 "Start".
- The plate passes through the machine, until sensor B5 "plate output" is reached. An acoustic sign is to be heard and the plate can be taken out with the transportation bar. (see the lamp ⑤ on the operating panel; cf. Chapter 5.1 operating panel)

## Areas of Plate Production

- Wash-out area:  
The 6 oscillating flat brushes wash out the non-polymerized parts of the plate.
- Pre-cleaning area:  
The cross winding round brush rotating in opposite direction removes the wash-out solvent from the plate.
- After-flushing area:  
The plate is flushed with fresh solvent pulsatingly.
- Cleaning area:  
A second round brush removes the solvent from the plate.



- Back side cleaning:  
The back side is drawn over a doctor blade lip.
- Pre-drying zone and output:  
When passing through the pre-drying zone the plate ventilates until reaching the output.

## 5.6 Operation ("Barrel to Barrel")

The barrel to barrel operation is controlled by the barrel float switches.

Float Switch/ Switch Contact	Description	Measure
Fresh solvent barrel nearly empty	Signal lamp on the control panel; only a few liters of fresh solvent in the container	Don` t insert new plate! Change fresh solvent barrel
Fresh solvent barrel empty	Signal lamp on the control panel and acoustic signal; fresh solvent pump turns off	Main switch on position "OFF/AUS" Change fresh solvent barrel, further plate production ist not possible before that
Dirty solvent barrel nearly full	Signal lamp on the control panel;only a few liters capacity in the barrel	Don` t insert nw plate! Change dirty solvent barrel.
Dirty solvent barrel full	Signal lamp on control panel and acoustic signal plate production is not possible any more	Main switch on position "OFF/AUS". Change dirty solvent barrel; further plate production is not possible before that.

## 6. Information on Maintenance

### 6.1 Kind and Frequency of Inspections

Maintenance Plan Variomat VF 2 / VF 3	every day	every week	every month	every quarter	every year	every two years
Brush sieves dirty?	C					
Tank sieve	CL					
Doctor blade round brush dirty?		C			(CH)	CH
Deposits in the tank?		C				
Outlet pushes dirty?		C		CH		
Pump sealings rings		SC				CH
Driving joints			G		CH	
Pump filter dirty			C			
Doctor blade lip			CL		CH	
Brush doctor blade			CL			
Toothed and angular wheels			G			
Brush rotation bearings			G			
Filter control panel blower					CH	
Exhaust ventilator						CL
flow level temperature control unit		SC				
condensation bank of the temperature control unit *			CL			

C = check, CL = clean and eventually act, SC = sight check and eventually act,

G = grease, CH = change

\* = blow off with compressed air (max. 6 Atm)

## 6.2 Instructions for Maintenance Works

Turn off main switch!

Maintenance works not listed in the maintenance plan are only allowed to be carried through by service technicians (or after previous talking to the manufacturer).

Generally the maintenance works should be carried through on Monday morning before the beginning of work, if possible. The machine is ventilated then and a minimum molestation due to smelling is to be expected. Before and during the maintenance works the interior space of the machine is to be ventilated by an additional fan. Provide a good room ventilation.

For per- and nylosolv run machines the following is valid:  
check per- and nylosolv concentration with a Dräger tube.

## 6.3 Addresses of the Importer and the Service Shops

### **BASF Drucksysteme GmbH**

Sieglestr. 25

D-70469 Stuttgart

Telefon: +49-711 / 9816-0

Telefax: +49-711 / 9816-801

Telex: 7252160

### **BASF Gerätetechnik:**

**Printing Plates Equipment Group**

Telefon: +49-711 / 9816-211

Telefax: +49-711 / 9816-269

### **Rolf Schwan GmbH**

Kieselstr. 9

D-56357 Miehlen

Telefon: +49-6772-3393

Telefax: +49-6772-2053

## 7. Information Concerning Safety on closing Down and Dismounting of the Machine

Before dismounting the machine the solution has to be pumped out completely and to be disposed in appropriate containers.

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## **8. Instruction for the Emergency Case**

### **8.1 Description of the Fire Extinguishing Equipment**

All commercial fire extinguishers can be used.

### **8.2 Advices for Releasing Persons from Dangerous Situations**

In case of solvent contact with the skin or the eyes the corresponding safety regulations of the solvent manufacturer have to be regarded.

## 9. Operating instructions of the temperature controller ST 1.1



### 9.1 Data on the temperature controller

#### 9.1.1 Type description

Temperature controller ST 1.1

#### 9.1.2 Description of the field of application

The temperature controller is a circulating cooling / heating system using water as a constant-temperature medium. The unit is used to heat and cool an external closed system in a temperature range of between 13° Celsius (55.4° F) and 40° Celsius (104° F).

The unit is equipped with an air-cooled chilling machine and an electric heating. The temperature control is carried out by a two-position controller (set in the works of the manufacturer). The unit is switched off at a temperature of 40° Celsius (104° F).

A float switch in the storage tank is used as a level control and dry-running protection. The liquid can be checked through an inspection glass, which can be viewed from the outside.

#### 9.1.3 Electric Equipment

230 V ~ N, PE, 50 Hz, 3 kW, 15 A

## 9.2 Information on Transport and Installation of the Machine

### 9.2.1 Loading

The temperature controller has to be in an upright position at all times.

The temperature controller has to be transported as shown in Fig. 1 and/or Fig. 2.

Fig. 1

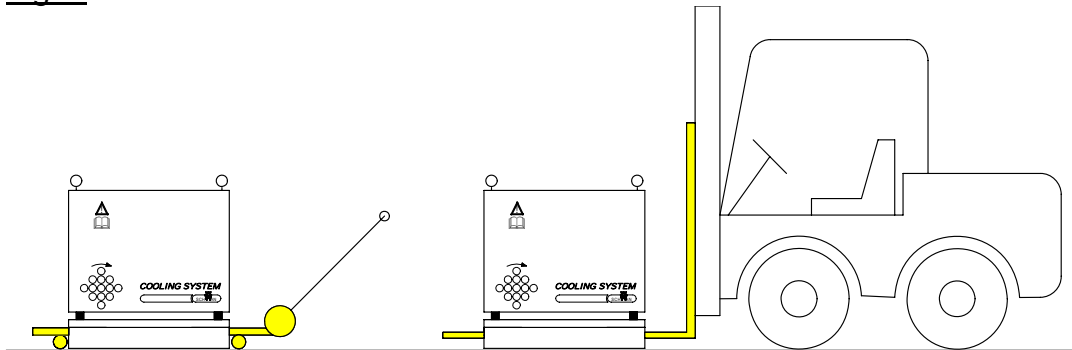
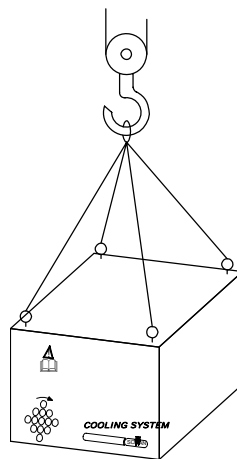


Fig 2



### 9.2.2 Erection of the temperature controller

The temperature controller may be operated in closed rooms only.

As the machine has an air-cooled condenser, the choice of the site of erection is very important.

- The machine has to be erected in an upright position under consideration of the required distances. In order to safeguard a sufficient ventilation of the temperature controller a free space of at least 1 metre (3.2 ft.) has to be provided around the unit.
- The machine must not be erected in the vicinity of heating sources.

## 9.3 Information on the initial operation of the temperature controller

Prior to the initial operation the unit has to be filled with water and an addition of 3% to 5% of glycol up to the control line on the filling level control window (B). For filling use the lateral filler neck (A) of the unit.



- Use the hoses supplied along with the machine to link the connection of the temperature controller (C / D) with the constant-temperature circuit (spiral in the tank) of the washing system. Ensure the correct fit of the hoses.



- The external temperature sensor (E) of the temperature controller has to be inserted in the opening (F) provided in the lower outer tank side of the constant-temperature tank.



- Check the connecting data of the power supply in compliance with the data of the type plate. Connect the unit up to the power supply. (We recommend to have the switch-on control of the temperature controller carried out by an additional time switch. Thus, the unit can start up prior to the beginning of the operation.)
- Use the switch (G) on the upper side of the housing to switch the unit on.



- Check the unit and the hose system for leaking fluid.
- The temperature controller has been set for operation in the works of the manufacturer and will start operating. Check the temperature control by observing the temperature display on the operating panel of the washing system.

#### **Imperative for the initial operation:**

Repeatedly check the fluid level in the temperature controller through the inspection glass. Top up water, if required.

#### **9.4 Maintenance of the unit**

cf. chapter 6.1 Type and frequency of inspections



## 9.5 Adjustment data of the temperature controller

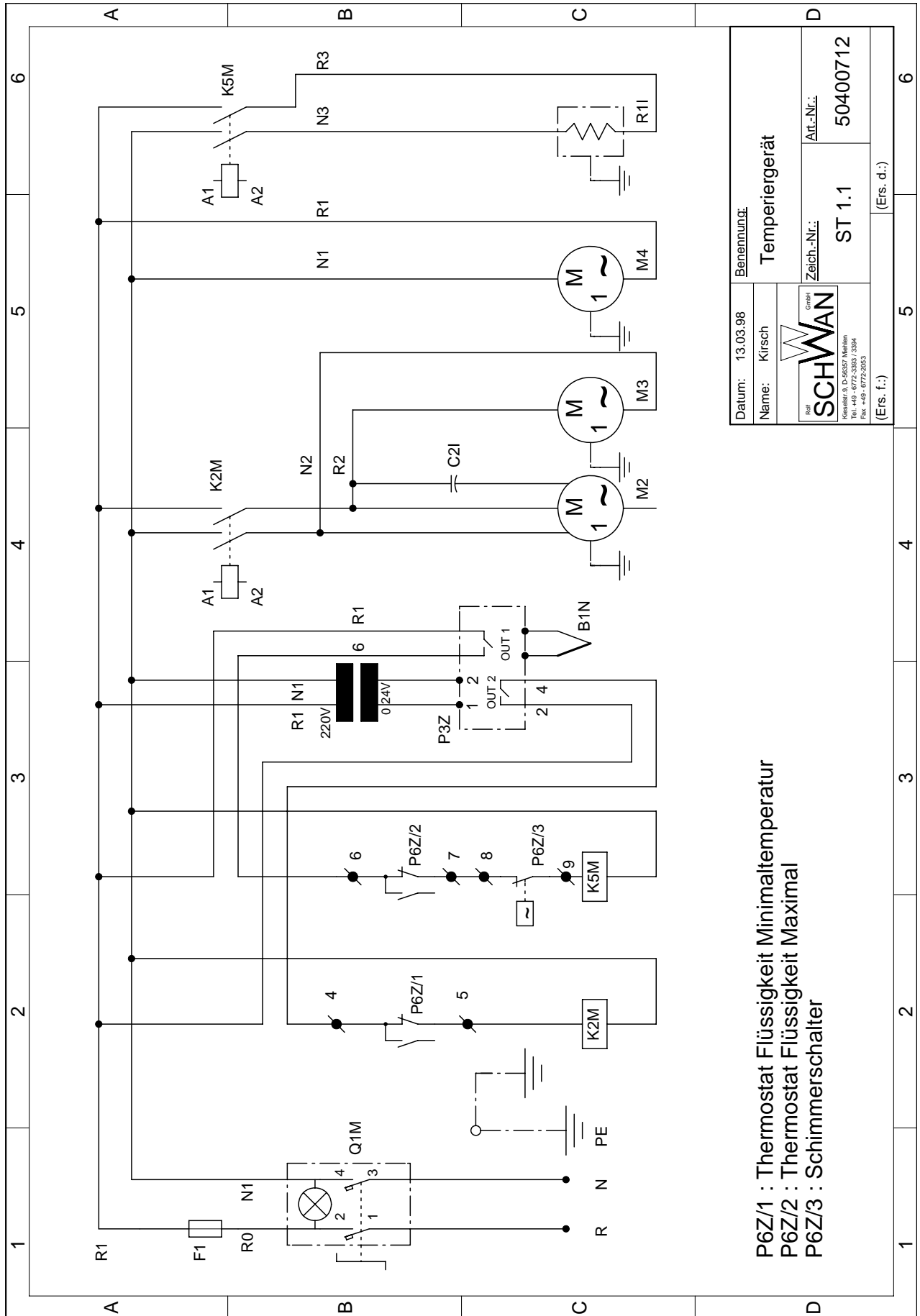
Adjustment of the parameters for the three-level controller EWPC 905 T.

Parameter	Adjustment EWPC 905 T
HC1	---
HC2	---
d1	---
d2	---
db	1
LS1	13
LS2	---
HS1	40
HS2	---
Ca/Cal	1.4
rP1	ro
rP2	ro
PS	---
Pt	---
Od	0
Lci	---
Hci	---
PSE	---
Ft	nr
OCO	---
LF1	di
LF2	di
dP	on
hdd	n
tAb	---

These parameters have been set and tested within the framework of the final inspection. The parameters must not be changed.

## 9.6 Technical data

<b>Temperature Controller ST 1.1</b>	
constant-temperature fluid	water (with 3% to 5% glycol)
temperature controller	with double set for cooling and heating control
temperature sensor (external)	thermoelement with a connecting cable of 10m (32 ft.)
connection - fluid control	1/2" hose connection
range of working temperature	13° Celsius (55.4° F) to 40° Celsius (104° F)
cooling capacity	1.74 kW
coolant	R 404 A
heating capacity	1.5 kW
circulating pump	approx. 5 to 30 l/min.
pumping head (pressure)	approx. 2.7 to 0.3 bar (39.1 to 4.3 psi)
tank (internal)	18 l with submerged evaporator
filling level monitor	in the tank
dimensions: W x D x H	510 x 790 x 420
weight	50 kg
mains connection	230 VAC N, PE, 50 Hz
power consumption	15 A
order No. of Schwan Company	504 007 12



## 10. Appendix

- Principal of function
- Plan for transportation
- Dimensions, technical data
- Switching points for float switches
- Schematic diagram for fluid system
- Basic position of wash-out brushes
- Illustration
- List of spare parts
- Wiring diagram