Training Manual

SCC Line
SelfCooking Center - Combi Master

Edition 10-2008a

Training Manual
SCC Line
Edition 10 - 2008a

General hints:

Isolate the appliance from mains supply before opening the appliance

When working with chemicals, i.e. aggressive cleaning materials always wear protective clothing, goggles and gloves!

After maintenance / repair the appliance must be checked for electric safety in accordance with your national, state and local requirements!

Whenever working on any gas component like:
Gas valve, gas blower and / or changing connected type of gas a detailed flue gas analysis MUST be done using adequate CO and CO2 measuring equipment! This shall ONLY be done by trained technicians!
Always check appliance for possible gas leakages!

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Structure of serial number

SCC Line: **E 61 S E 04 07 2345678**
from 04.2004

Energy	Unit size	Model	Version	Year	Month	Serial number
E - Electric G - Gas	61 - 6x1/1GN 62 - 6x2/1GN 11 - 10x1/1GN 12 - 10x2/1GN 21 - 20x1/1GN 22 - 20x2/2GN	S - SCC M - CM	E - initial unit F only CM, new pcb G -SCC + CM SCC Care Control	04 - 2004 10-2008	07 - Juli	7-digit number

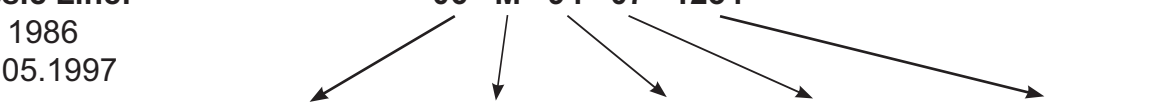
CPC Line: **E 61 C B 03 07 2345678**
from 06.1997
until 04.2004

Energy	Unit size	Model	Version	Year	Month	Serial number
E - Eletric G - Gas	61 - 6x1/1GN 62 - 6x2/1GN 11 - 10x1/1GN 12 - 10x2/1GN 21 - 20x1/1GN 22 - 20x2/2GN	C - CPC M - CM D - CD	A - initial unit B - new humidity C - CleanJet, CDS D - Motor control	03 - 2003	07 - Juli	4-digit number until 12.1998 7-digit number from 01.1999

C Line: **C 61 C 95 05 1234**
from 10.1993
until 05.1997

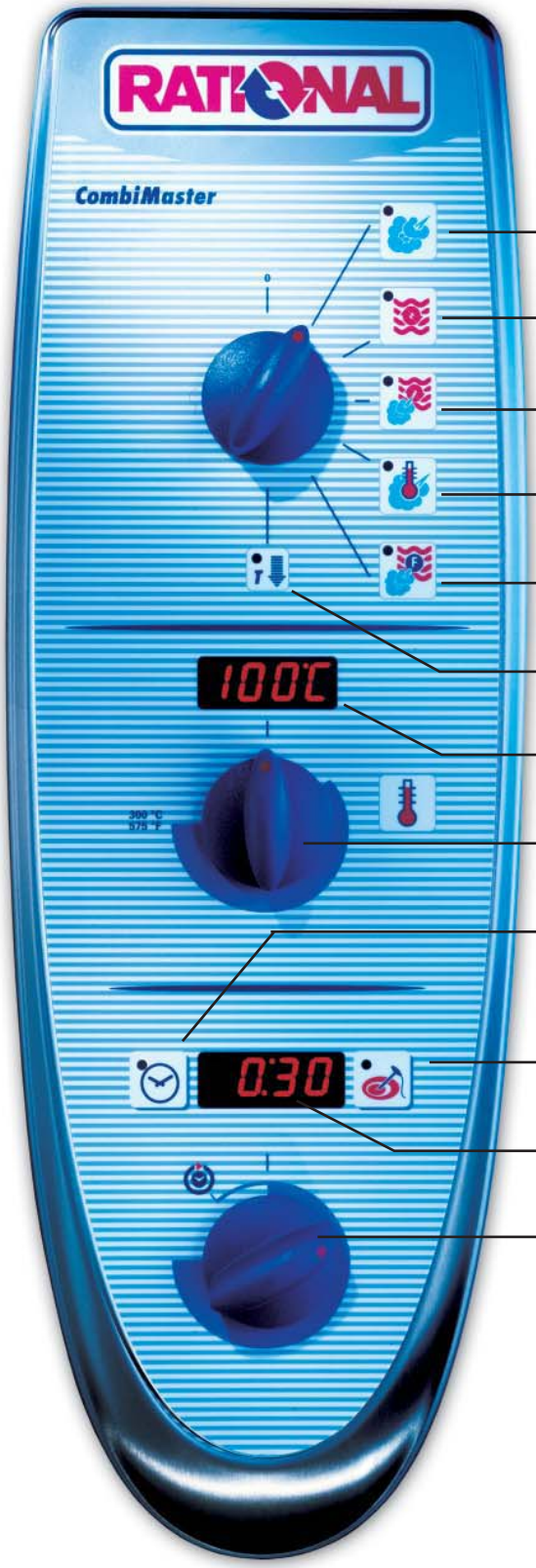
C-Line	Unit size	Model	Year	Month	Serial number
	61 - 6x1/1GN 11 - 10x1/1GN 12 - 10x2/1GN 21 - 20x1/1GN 22 - 20x2/2GN	C - CCC M - CCM D - CCD	95 - 1995	05 - Mai	4-digit number

Classic Line: **06 M 94 07 1234**
from 1986
until 05.1997



CD	Unit size	Model	Year	Month	Serial number
00694071234 10194071234 20194071234 02094071234 14G94071234 21G94071234	06 - 6x1/1GN 11 - 10x1/1GN 21 - 20x1/1GN 22 - 20x2/2GN	C - CC M - CM CM 101Gas CM 201Gas	94 - 1994	07 - Juli	4-digit number

CM Control Panel



Steam (100°C / 212°F)

Hot Air (30°C - 300°C / 86 - 572°F)

Combi Steam (30°C - 300°C / 86 - 572°F)

Low Temp. Steam (30°C - 99°C / 86 - 210°F)

Finishing (30°C - 300°C / 86 - 572°F)

Cool Down

Cabinet temperature display

Cabinet temperature setting

Timer

Set-Temp. -control

Gas: Reset key

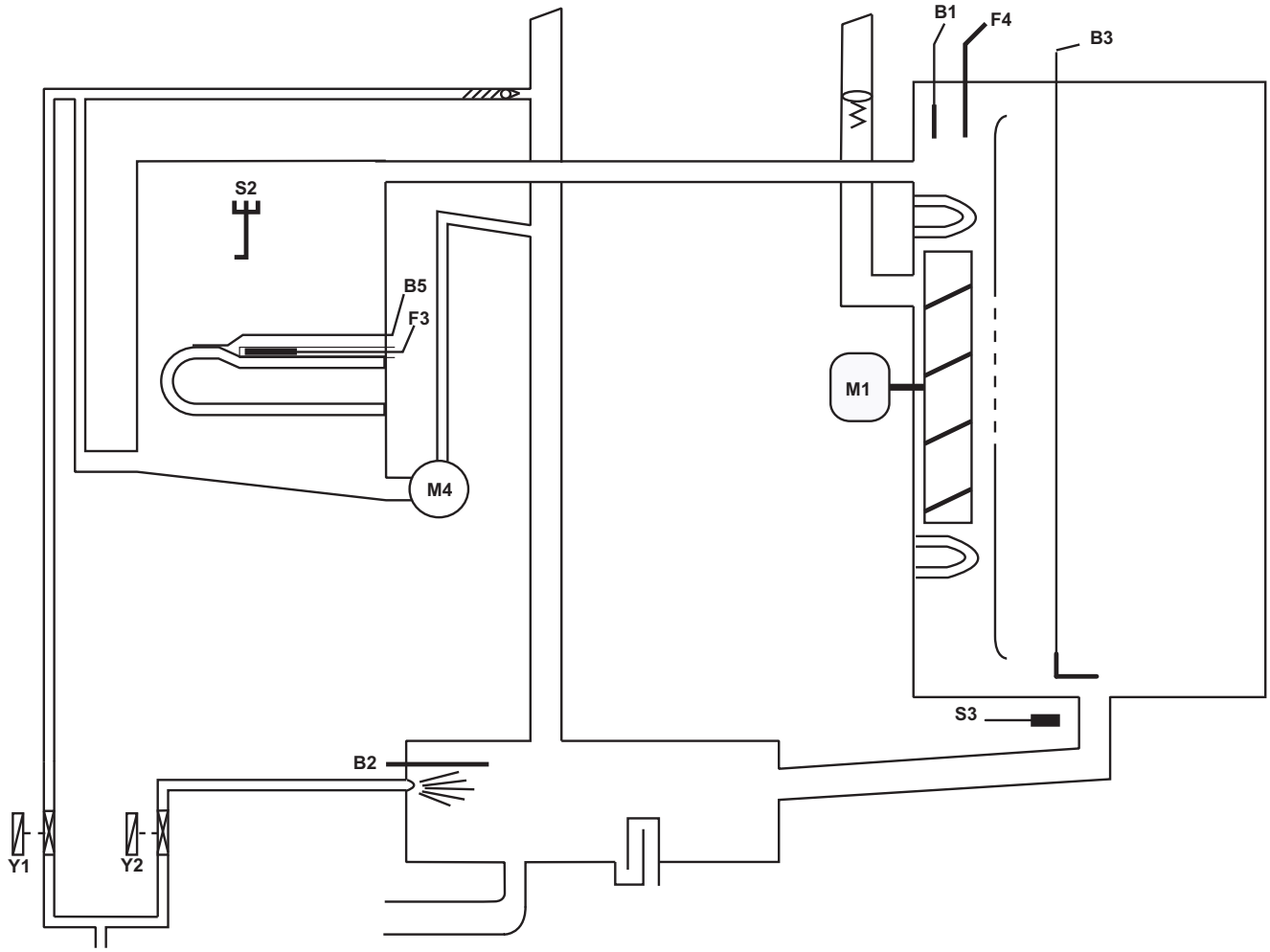
Core temperature

Set-Temp. -control

Timer - Core temperature display

Timer - Core temperature dial

CM Technique

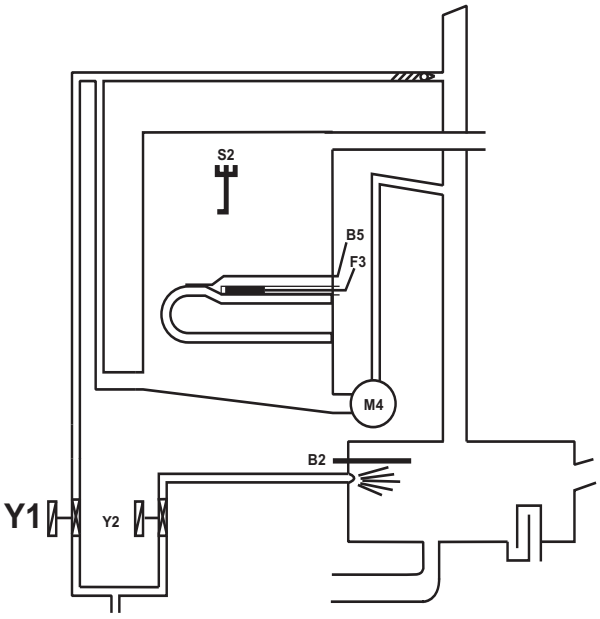


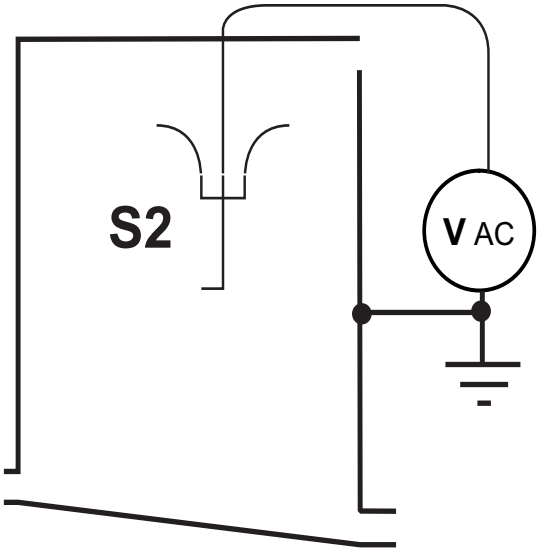
B1	Thermocouple cabinet
B2	Thermocouple quenching / Steam control
B3	Thermocouple core temperature
B5	Thermocouple steam generator (preheating, 180°C (356°F) max)
F3	Safety temperature limiter steam generator 160°C / 320°F
F4	Safety temperature limiter cabinet 360°C / 680°F
Y1	Solenoid valve filling
Y2	Solenoid valve quenching
M1	Fan motor (without jumper)
M4	Pump SC-Automatic
S2	Level electrode
S3	Door contact switch

CM 201/202 only:

M2	Fan motor top (with jumper)

Water level control Steam Generator



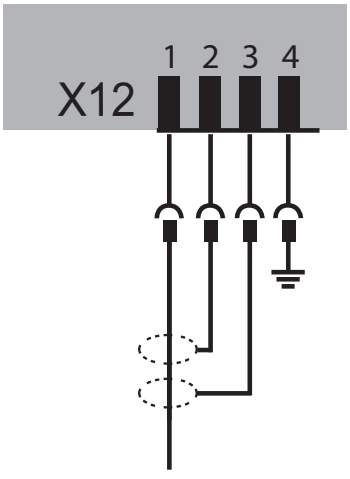


Center S2 ==> Ground: 2 - 6V AC:
water level too low
steam heating must switch OFF
solenoid valve filling Y1 ON

Center S2 ==> Ground: 0V AC:
water level reached
steam heating can switch ON
solenoid valve filling Y1 switched OFF

Every 2 minutes steam elements will switch off for water level control

PCB



RATIONAL SC Automatic

During the production of steam, the concentration of minerals inside the steam generator will increase over time. These minerals settle on the heating elements and heat exchanger as well as the interior steam generator walls.

In order to reduce this effect the steam generator will be pumped off and flushed regularly depending on the duration of steam production. This process needs approximately 45 seconds.
After emptying the steam generator it will be filled automatically with fresh water.

There are 4 conditions to start this SC Automatic:

1. Heating time of the steam generator must exceed 60 min.* (SCC Care Control: 120min) and

2. the temperature of the thermocouple inside steam generator (B5) must be below 65°C (149°F) and

3. the temperature of the thermocouple inside interior cabinet (B1) must be below 70°C (158°F) and

4. the unit is switched ON.

   * - can be adjusted from 20-120min

In case the unit is used permanently the above mentioned temperature conditions can not be met.

In this case the following 2 conditions apply:

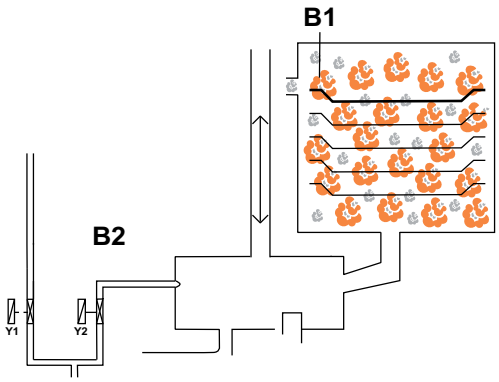
1. The heating time of the steam generator reaches the twice the set duration*, i.e. 120 min. and

2. the unit door is open for longer than 30 seconds

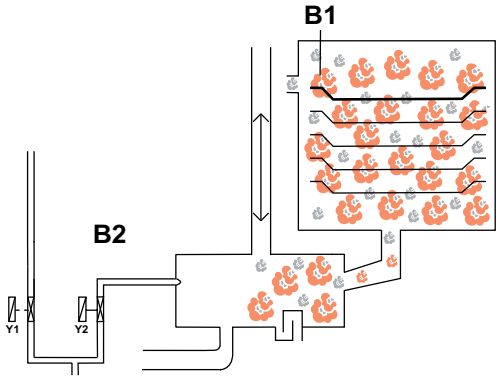
After completion of the SC-Automatic the accumulated steam heating time is re-set to zero.
SC-Automatic does not replace the need for descaling and/or installing water treatment Iter

Steam Control CM

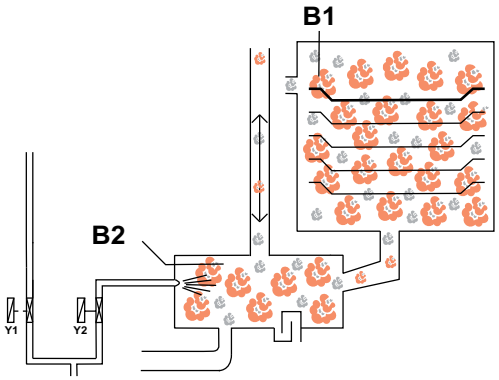
Intelligent steam control via quenching sensor



1. Filling of interior cabinet based on time and temperature control of B2 quenching sensor; (cabinet if fully filled with steam and all surfaces have reached steam temperature).

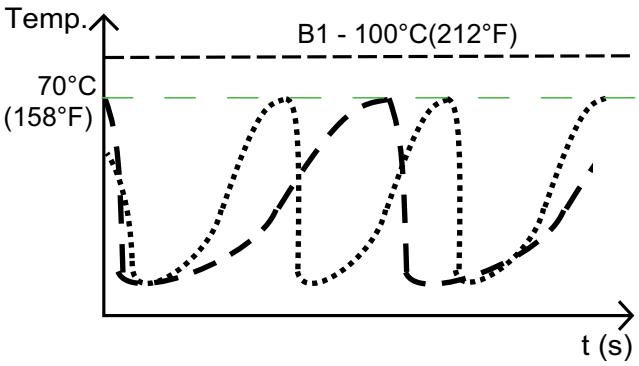


2. After steam saturation inside cabinet steam will also fill quenching chamber



3. After reaching quenching temperature (B2) quenching solenoid Y2 will be activated.

   Depending on the frequency of temperature raise of the quenching sensor B2 the duration of the next steam supply is calculated.



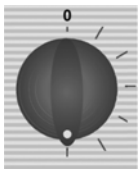
B2 temperature with partial load
B2 temperature with full load

4. The amount of steam inside the cabinet is directly depending on the temperature variation of quenching sensor B2.

Additional functions CM

Below are listed the additionaly functions for the user / operator:

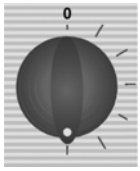
1. Cleaning program




1) Cool down cabinet below 60°C / 140°F
2) Spray inside cabinet with Rational cleaner
3) Close cabinet door
4) Select „Cool Down
5) Press core temperature key for 10 sec.
6) „CLEn“ will show in cabinet temperature display
7) Press timer key 1x; Cleaning program starts automatically (open cabinet door and rinse interior cabinet after 40 min.) Close door again. Since Software version C1-06-05 a 10 min step hot air will follow to dry the interior cabinet.
8) After end of program, leave cabinet door open over night.

2. Empty steam generator

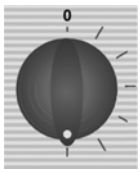
This should be done after each installation to verify free drain connection and prior to disconnection the unit for storage.





1) Open cabinet door
2) Select „Cool Down“
3) Press core temperature key for 10 sec.
4) „CLEn“ will be shown in cabinet temperature display
5) Select „SC“ with temperature dial
6) Close water tap
7) Press timer key 1x and remain on „Cool Down“ position for about 45 sec.

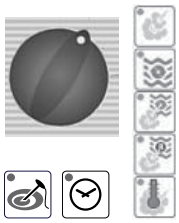
3. Descaling program






1) Open cabinet door
2) Select „Cool Down“
3) Press core temperature key for 10 sec.
4) „CLEn“ will be shown in cabinet temperature display
5) Select „CALC“ with temperature dial
6) Press timer key 1x and follow procedure of the decalcification instruction. (See user manual CM).

Additional functions CM



4. Changing temperature display from °C to °F

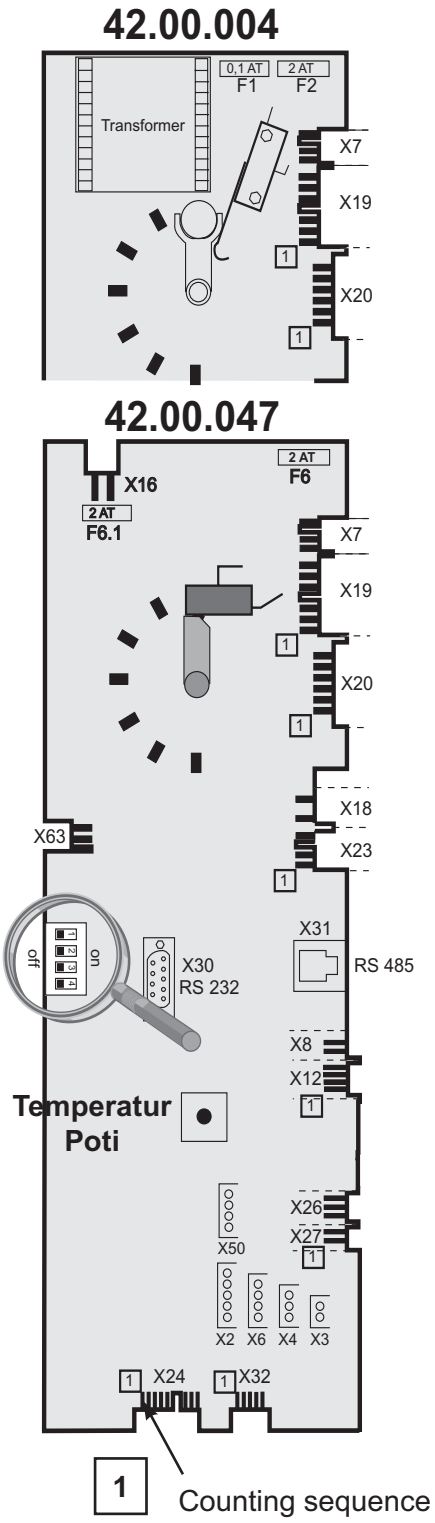
1) Select any mode
2) Press timer and core temperature key simultaneously for 10 sec. until Display changes from °C to °F or vice versa
3) Release both keys

Aborting of descaling program CM:

- Switch unit off and on again
- press core temperature key 1x
- remaining time of 20 minutes will be displayed. During this time the steam generator will be flushed and the unit will be operated in steam mode for a couple of minutes to eliminate all remaining chemical residues.

CM PCB

42.00.004 from 04-2004 ---- 42.00.047 from 02-2006



X2 B3 Core temperature

X3 B1 Interior cabinet

X4 B2 Quenching / Steam control

X6 B5 Steam generator

X7 ON - OFF switch

X8 Buzzer

X12 Level electrode

X 16 power supply from transformer (42.00.047)

X18 SC - pump

X19 Solenoid valves

X20 Energy management system / Sicotronic

X23 Vent hood (signal door open / closed)

X24 SSR

X26 SSR pulsing (USA version only)

X27 Door contact switch

X30 Serial interface (RS232)

X31 BUS interface

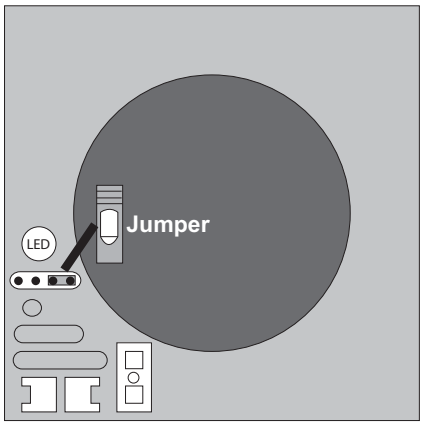
X32 Timer / Core Temp. Potentiometer

X50 external EEPROM

X63 Not used

Since February 2006 PCB 42.00.004 is replaced by 42.00.047.
(Conversion kit: 87.00.139, pls. see Technical info 04-2006)
The transformer on the new PCB 42.00.047 is no more existing and replaced by external transformer 40.00.227

Fan motor 40.00.274



Jumper 40.01.581 is used on floor model 201 and 202 for top position motor only!

Jumper is not used on models 61 - 102 with one motor only!

If jumper is not set correctly E12 will be displayed!

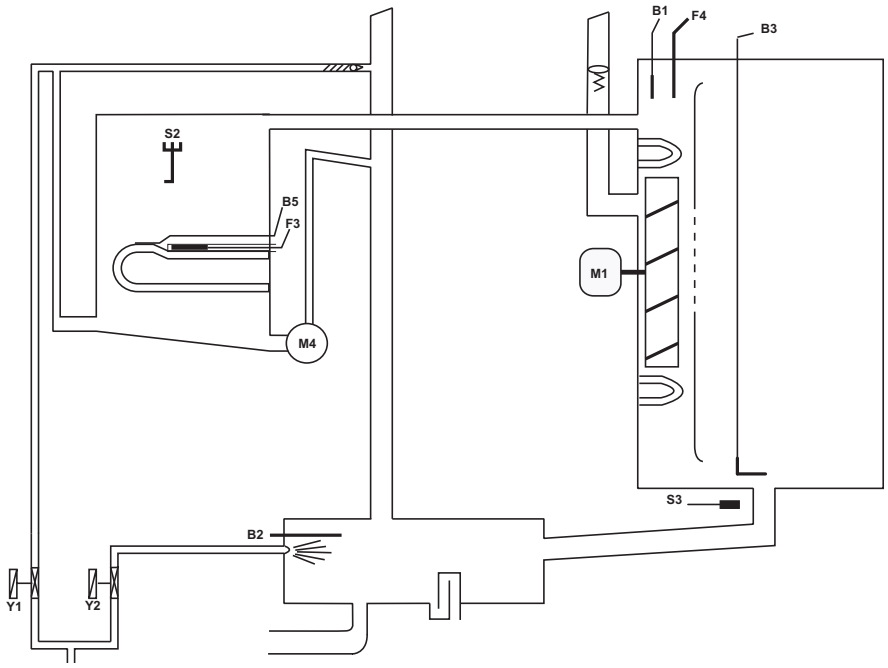
LED code fan motor SCC and CM from 04/2004		
	Reason	Remedy
1x	Motor doesn't start, no changing signal from hallsensor	Check for motor blockage or change motor.
2x	Voltage too low on motor pcb	Check supply voltage or change motor.
3x	Voltage too high on motor pcb	Check supply voltage or change motor.
4x	rpm measurement defective	Change motor.
5x	Motor pcb temperature >105°C	Check cooling system (cooling fan, air intake filter), otherwise change motor
6x	Supply voltage <80V	Check power supply (F1-F2)
7x	Motor pcb defective	Change motor.
8x	Motor pcb defective	Change motor.

Units 3AC400-480V (without neutral) are equipped with motor 40.00.276 (3-phase supply)

This motor is equipped with a 4 pole plug for the supply voltage.

CM - Sequence of events

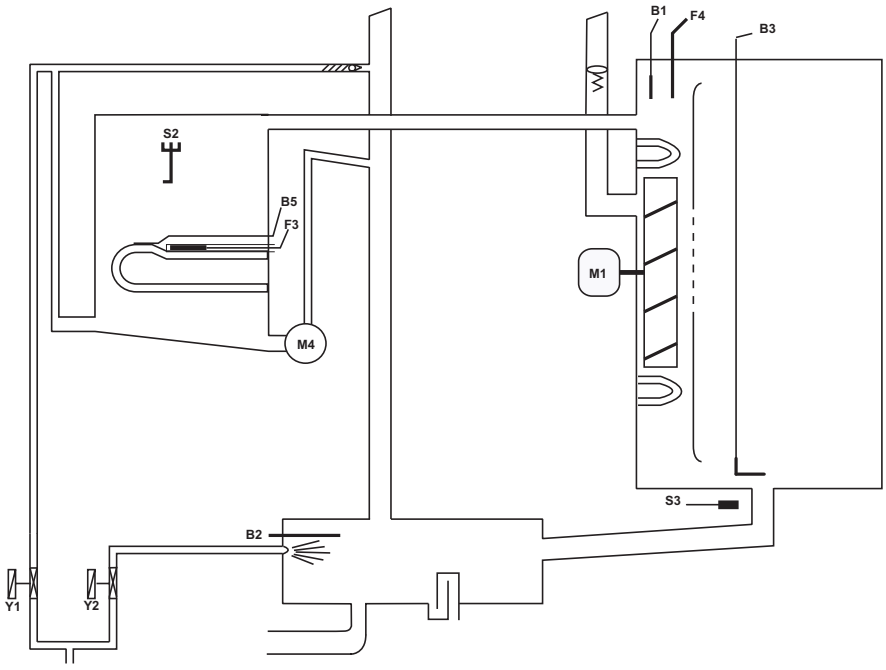
Mode: Steam 100°C (212°F), Temp. preset, not adjustable



Function Step	Responsible sensor
1. Select Steam mode	
2. Select time or core temperature	
3. Close cabinet door	Reed switch S3
4. Check water level inside steam generator	Level electrode S2 inside Steam Generatorr
5. Time based preheating of steam generator, if B5 is below 85°C (185°F);	Thermocouple B5 inside Steam Generator
6. Timer starts after successful preheating (blinking dot in Display)	Logic on PCB
7. Steam supply up to steam saturation inside cabinet	Quenching sensor B2 (Steam control)
8. Hot Air supply (only 50%) when set temperature (100°C/212°F) can not be reached in time by Steam alone	Cabinet sensor B1
9. Quenching (set to 70°C/158°F)	Quenching sensor B2

CM - Sequence of events

Mode: Low temperature steam; Temp. range 30-99°C (86-210°F)

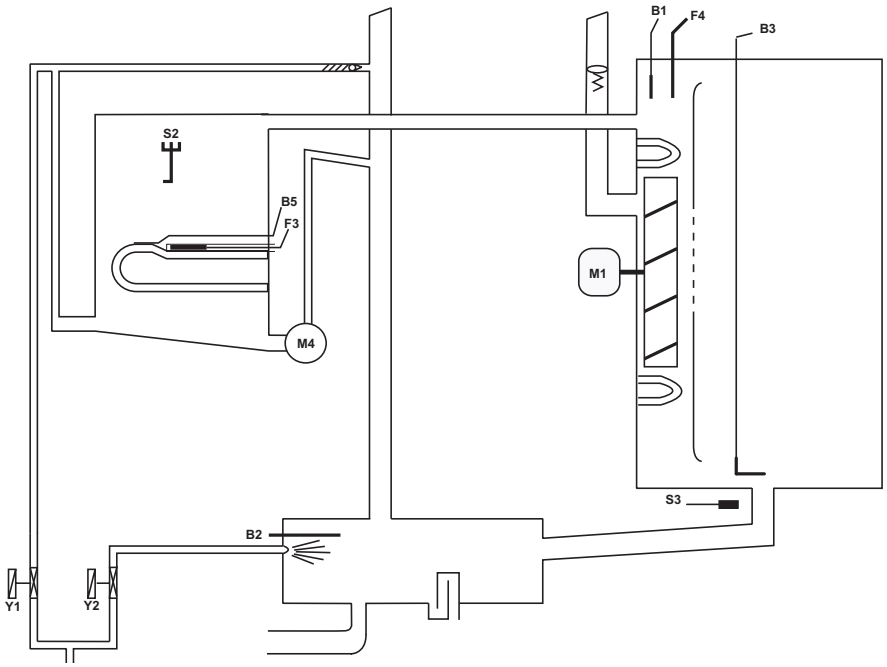


Function Step	Responsible sensor
1. Select Low temperature steam mode Set temperature 30-99°C (86-210°F)	
2. Select time or core temperature	
3. Close cabinet door	Reed switch S3
4. Check water level inside steam generator	Level electrode S2 inside Steam Generatorr
5. Time based preheating of steam generator, if B5 is below 85°C (185°F);	Thermocouple B5 inside Steam Generator
6. Timer starts after successful preheating (blinking dot in Display)	Logic on PCB
7. Steam supply until set temperature inside cabinet is reached	Cabinet sensor B1
8. Hot Air supply (only 50%) when set temperature can not be reached in time by Steam alone	Cabinet sensor B1
9. Quenching (set to 70°C/158°F)	Quenching sensor B2

Note: Reduction of fan motor speed
In case the actual temperature is 2°C / 4°F higher than the set temperature for longer than 2 minutes, the fan speed will be reduced automatically.

CM - Sequence of events

Mode: Combination; Temp. range 30-300°C (86-572°F)

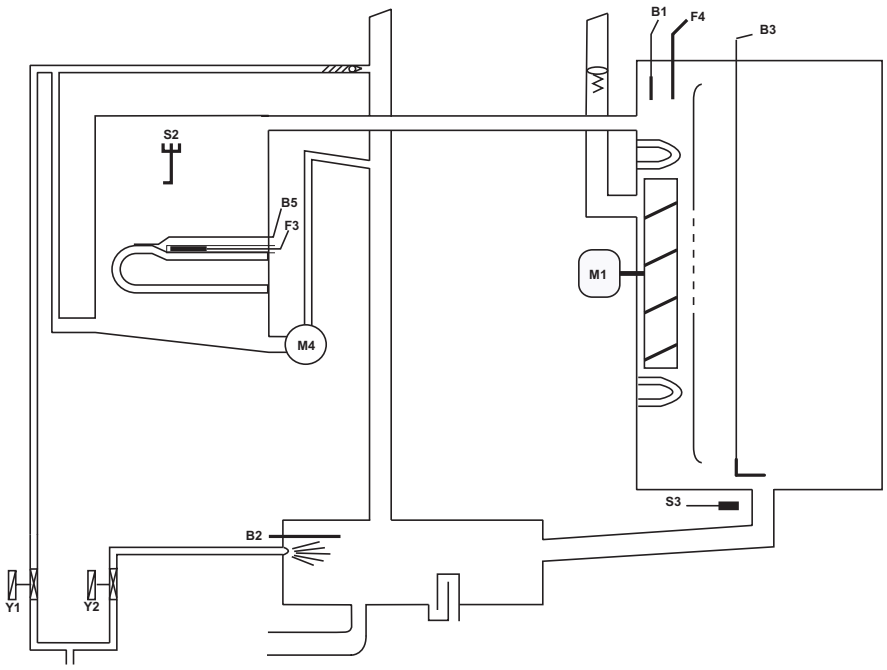


Function Step	Responsible sensor
1. Select Combi mode Set temperature 30-300°C (86-572°F)	
2. Select time or core temperature	
3. Close cabinet door	Reed switch S3
4. Check water level inside steam generator	Level electrode S2 inside Steam Generatorr
5. Time based preheating of steam generator, if B5 is below 85°C (185°F);	Thermocouple B5 inside Steam Generator
6. Timer starts after successful preheating (blinking dot in Display)	Logic on PCB
7. Hot Air supply until set temperature inside cabinet. **Hot air has priority**	Cabinet sensor B1
8. Steam supply up to steam saturation inside cabinet	Quenching sensor B2 (Steam Control)
9. Quenching (set to 70°C/158°F)	Quenching sensor B2

Note: Reduction of fan motor speed
In case the actual **temperature** in the range **of 30-99°C** (86 - 210°F) is 2°C / 4°F higher than the set temperature for longer than 2 minutes, the fan speed will be reduced automatically.

CM - Sequence of events

Mode: Finishing; Temp. range 30-300°C (86-572°F)

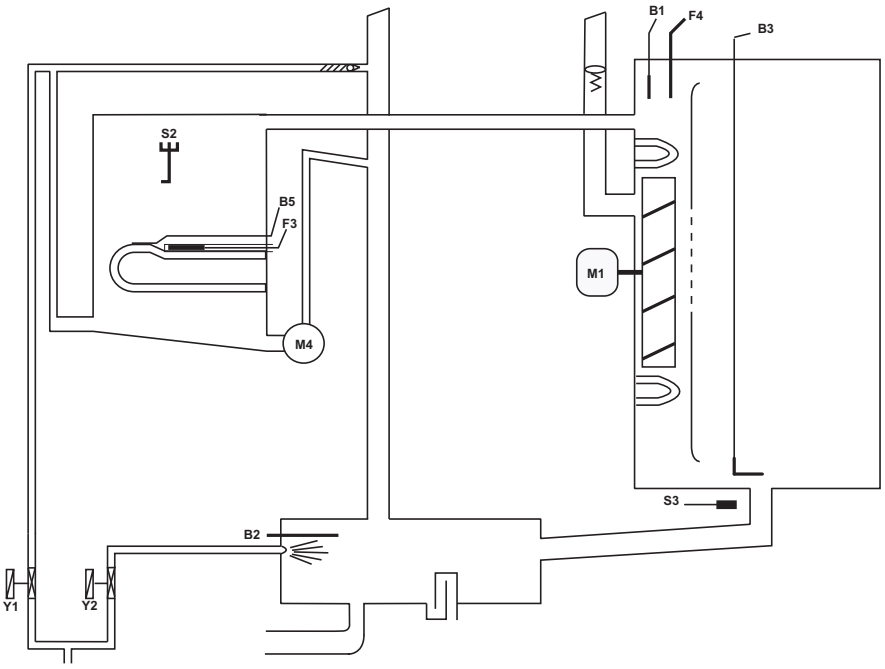


Function Step	Responsible sensor
1. Select Finishing mode Recommended temperature 30-300°C (86-572°F)	
2. Select time or core temperature	
3. Close cabinet door	Reed switch S3
4. Check water level inside steam generator	Level electrode S2 inside Steam Generator
5. Time based preheating of steam generator, if B5 is below 85°C (185°F);	Thermocouple B5 inside Steam Generator
6. Timer starts after successful preheating (blinking dot in Display)	Logic on PCB
7a. Electric units: alternating 12 sec. Hot Air 6 sec. Steam	 Cabinet sensor B1 Quenching sensor B2
7b Gas units: alternating 30 sec. Hot Air 15 sec. Steam	 Cabinet sensor B1 Quenching sensor B2
8. Quenching (set to 70°C/158°F)	Quenching sensor B2

Note: Reduction of fan motor speed
In case the actual **temperature** in the range of **30-99°C** (86 - 210°F) is 2°C / 4°F higher than the set temperature for longer than 2 minutes, the fan speed will be reduced automatically.

CM - Sequence of events

Mode: Hot Air; Temp. range 30-300°C (86-572°F)



Function Step	Responsible sensor
1. Select Hot Air mode Set temperature 30-300°C (86-572°F)	
2. Select time or core temperature	
3. Close cabinet door	Reed switch S3
4. Timer starts immediately	Logic on PCB
5. Hot Air supply unitl set temperature is reached	Cabinet sensor B1
6. Quenching (set to 90°C/194°F)	Quenching sensor B2

Note: Reduction of fan motor speed
In case the actual **temperature** in the range of **30-99°C** (86-210°F) is 2°C / 4°F higher than the set temperature for longer than 2 minutes, the fan speed will be reduced automatically.

Failure Codes CM

The following error codes are shown to the operator:
For showing information of the cabinet display press core temperature key

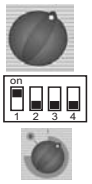
Time display	Cabinet display	Failure explanation	Description / remedy
OPEn	H2o	H2O open	Lack of water / open water tap
PoL	CHnG	Change Polarity	Phase / Neutral (only gas units)
rES		Reset Gas	Flame detection after ignition faulty
E 1		external EEPROM	Not initialised
E 2		Timeout of external power optimising system	Heating blocked by the extern. energy-optimising system for longer 2 min.
E 3		B1 Interior cabinet sensor	Sensor broken
E 4		B2 Quenching sensor	Sensor broken
E 5		B3 Core sensor	Sensor broken
E 6		B5 Sensor steam generator	Sensor broken
E 7		Thermocouple on PCB	Sensor broken
E 8		Poti interior cabinet	Defective
E 9		Poti timer/core temperature	Defective
E 10		external EEPROM	Defective
E 11		Mode switch	After 5 sec switching on the unit, a cooking mode couldn‘t be identified
E 12	1St 1Co 2St 2Co	Fan motor 1 (bottom) Fan motor 1 (bottom) Fan motor 2 (top) Fan motor 2 (top)	St = Status (probably Motor defect) Co = Communication, (Bus failure)
E 13		M4 SC-pump	Mal function
E 14		Solenoid valve filling Y1 (failure can only occur during the descaling program)	Mal function
E 15		PCB temperature	above 85°C (185°F)
E 16		Steam generator	Temperature B5 above 180°C (356°F)
E 17		Steam generator	Temperature B5 below -5°C (23°F)
E 18		Interior cabinet temp.	Temperature B1 above 340°C (644°F)
E 19		Free	

Failure Codes CM (cont.)

For showing information of the cabinet display press core temperature key

Time display	Cabinet display	Failure explanation	Description / remedy
E 20	1_ _ 2_ _	Ignition box 1 Ignition box 2	Ignition box does not reply, Bus failure
E 21	1_ _ 2_ _ 3_ _	Ignition box 1 Steam Ignition box 1 Hot air Ignition box 2 Hot air	Ignition box defective (change box)
E 22	1_ _ 2_ _ 3_ _	Ignition box 1 Steam Ignition box 1 Hot air Ignition box 2 Hot air	Testing of ignition and monitoring necessary
E 23		Free	
E 24		EEPROM	Actual data structure of the EEPROM does not match with the software; flash pcb first

Service level CM



1) Switch unit ON
2) On operator PCB set DIP switch 1 to „ON“ position
3) Select service package with timer dial:

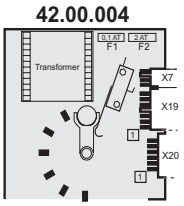
Diagnostic Program

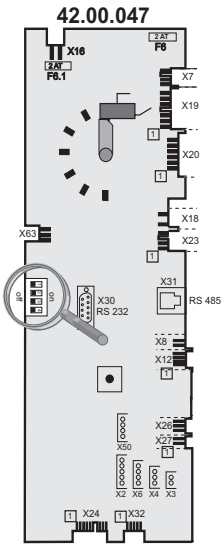
Error code history

Running times

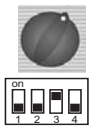
Basic settings

4) Activate with core temperature key the desired service package
5) Select with timer dial the desired step
6) Activate selected step by pressing timer key
7) To de-activate service package set DIP switch 1 to „OFF“ position.





Function Test



1) Switch unit ON
2) On operator PCB set DIP switch 3 to „ON“ position

First step of function test is displayed.

3) Select desired step of function test with timer dial
4) Activate preselected step by pressing timer key
5) Activate selected function step with core temperature key
6) To de-activate function test set DIP switch 3 to „OFF“ position.

Service level: dP -- Diagnostic Program

	Description	Connection	Cabinet Display	Time display	
dP 1	Software Version		Software Version: C - 1	Software 07.01	
dP 2	B1 Cabinet sensor	X 3	actual value	max value	Reset by pressing for 5 sec.
dP 3	B2 Quenching sensor	X 4	actual value	max value	Reset by pressing for 5 sec.
dP 4	B3 Core sensor	X 2	actual value	max value	Reset by pressing for 5 sec.
dP 5	B5 Steam generator sensor	X 6	actual value	max value	Reset by pressing for 5 sec.
dP 6	PCB temperature		actual value	max value	Reset by pressing for 5 sec.
dP 7	S3 Door contact	X27:(1-2)		1 - 0	0 = door open 1 = door closed
dP 8	S2 Water level steam generator	X12:(1-4) S2 X19:(1-3) Y1	S2: 0 - 1	Y1: 1 - 0	
dP 9	Steam elements 0 - off; 1 - 50%; 2 - 100%		actual Temp. B5	0 - 1 - 2	
dP 10	Hot Air elements 0 - off; 1 - 50%; 2 - 100%		actual Temp. B1	0 - 1 - 2	
dP 11	Speed fan motor bottom	BUS	Set rpm	actual rpm	
dP 12	Speed fan motor top	BUS	Set rpm	actual rpm	only floor model 201/202
dP 13	Energy management (Sicotronic)	X 20		1 - 0	
dP 14	SSR control (US version)	X24		1 - 0	**0 = US version only**
dP 15	Unit size and type		61 - 202	ELE - GAS	
dP 16	Flame current Steam			x.x µA*	since SW Version: C1-06-05 (flame current)
dP 17	Flame current Hot air top			Hot air top x.x µA*	since SW Version: C1-06-05 (flame current)
dP 18	Flame current Hot air bottom			Hot air bottom x.x µA*	since SW Version: C1-06-05 (flame current)

* With SW Version C1-06-05 the flame current will show as 20-24µA
(This value must be divided by 4 to get the correct flame current e. g. 22:4 = 5,5µA.)
Starting with SW version C1-07-01 the actual flame current is shown .

Service Level: ER -- Error code history

Since software version C1-07-01 the last 10 general error messages are shown (applies for electric and gas models)

Er **When timer key is pressed the error code will be displayed. i.e.:**

Error number	Error Code	Description
Er1	3	B1 Cabinet sensor defective
Er2	14	Y1 Filling solenoid defective
Er3 ---- ER10		

Gas error GE: (gas units only!)

Since software version C1-07-01 the last 16 gas error messages (GE11 - GE26) are shown in addition to the general error messages. These error codes are generated by the ignition box

Error number	Error Code	Description
GE11	20	No rpm signal
GE12	32	No flame after 5 ignition sequences
GE13 --- GE26		

Indication of ignition box error messages (1-32 is shown to the operator as „rES“):

1	Hot air or Steam	no gas, gas valve or electrode defective
14	Hot air	gas valve control, change ignition box
19	Hot air	no flame because flame current is too low check burner setting, flame current, ignition cable and plug
20	Hot air	wrong or no rpm signal from gas blower check gas blower, power supply gas blower and control harness of gas blower
22	Hot air	no flame after 5 ignition sequences no gas, gas valve or electrode defective
24	Steam	gas valve control, change ignition box
29	Steam	no flame because flame current is too low check burner setting, flame current, ignition cable and plug
30	Steam	wrong or no rpm signal from gas blower check gas blower, power supply gas blower and control harness of gas blower
32	Steam	no flame after 5 ignition sequences no gas, gas valve or electrode defective

Possible failure in case of „E21“

33, 36		Change ignition box
35		Check frequency of main
39	Hot air	Check burner setting, ignition electrode and distance, and flame current
40	Hot air	Check ignition cable
42	Steam	Check burner setting, ignition electrode and distance, and flame current
43	Steam	Check ignition cable

Is shown on display „CHnG PoL“

34	Change polarity of mains

All other numbers (2-13, 15-18, 21, 23, 25-28, 31): change ignition box

Service Level: rt -- Running Time

Description	Timer display: 1-999 Temp. display: >1000	Comment
rt 1 Total S3 door openings	number	Reset by pressing for 5 sec.
rt 2 Total time Y1 valve filling	min	Reset by pressing for 5 sec.
rt 3 Total time Y2 valve quenching	min	Reset by pressing for 5 sec.
rt 4 Total time M4 SC-pump	min	Reset by pressing for 5 sec.
rt 5 Total time steam heating time	hrs	Reset by pressing for 5 sec.
rt 6 Total time hot air heating time	hrs	Reset by pressing for 5 sec.
rt 7 Total time steam mode	hrs	Can not be reset
rt 8 Total time hot air mode	hrs	Can not be reset
rt 9 Total time combination mode	hrs	Can not be reset
rt 10 Total time vario steam mode	hrs	Can not be reset
rt 11 Total time finishing mode	hrs	Can not be reset
rt 12 Total time cleaning program	hrs	Can not be reset
rt 13 Total running time unit	hrs	Can not be reset

Service level: SE -- Basic settings
Switch unit OFF and ON again after any changes made!

Select desired step with timer dial
(fan motor and heating elements are automatically OFF)

Activate selected step with timer key

Steam heating time since last SC-Automatic

Press time and core key simultaneously for 5 seconds to set steam heating time (SE2) to preset steam heating time plus 1 minute (default 45+1min) => test function for SC-Automatic

---

Preset Steam heating time until SC-Automatic (default 60min)

Press time key and adjust preset steam heating time from 20 - 120 minutes with timer dial

---

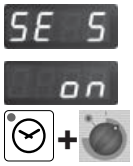
Flushing time SC-Automatik (default 45 seconds)

Press time key and adjust flushing time of SC-Automatik from 30 - 90 seconds with timer dial

---

Operation SC pump (**oFF** - continuous or **on** - pulsing)

Press time key and select „on“ or „oFF“ with timer dial



Show mode (on - oFF) SHO

Press time key and select „on“ or „oFF“ with timer dial

Setting new gas type (G20, G25, G30, G31, 13A)

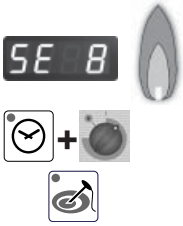
Press time key, keep it pressed and select new gas type with timer dial

Confirm new gas type by pressing core temperature key once.
Corresponding gas blower speed is automatically adjusted
NOTE: After changing gas type a waste gas analysis must be carried out in the function test.

Presetting of CO_2 screw in mm on gas valve after gas type modification / changing gas valve

Press time key, keep it pressed and select with timer dial “ST“ for steam, “HA1“ for hot air top or “HA2“ for hot air bottom (only 201/202) with timer dial;
Average lenght in mm of CO_2 screw on gas valve is shown on timer display

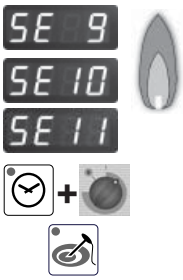
Service level: SE -- Basic settings



Adjustment of installation altitude above sea level (since SW C1-06-05) - 500m - 4500m

Press time key, keep it pressed and select installaton altitude in 500m steps by timer dial. Confirm altitude setting by pressing simultaneously core temperature key once

---

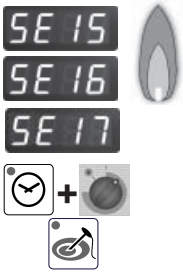


Adjusting speed of blower motor steam (+/ -10%)
(After blower speed adjustment the original rpm is shown in the temp. display, the changed rpm is shown in the time display)

Press time key, keep it pressed and adjust displayed rpm with timer dial
SE9 = MIN rpm; SE10 = Start rpm; SE11 = MAX rpm
NOTE: After changing speed of blower motor a waste gas analysis MUST be carried out in the function test.

Adjusting speed of blower motor hot air top (+/ -10%)
(After blower speed adjustment the original rpm is shown in the temp. display, the changed rpm is shown in the time display)

Press time key, keep it pressed and adjust displayed rpm with timer dial
SE12 = MIN rpm; SE13 = Start rpm; SE14 = MAX rpm
NOTE: After changing speed of blower motor a waste gas analysis MUST be carried out in the function test.



Adjusting speed of blower motor hot air bottom (+/ -10%)
(After blower speed adjustment the original rpm is shown in the temp. display, the changed rpm is shown in the time display)

Press time key, keep it pressed and adjust displayed rpm with timer dial
SE15 = MIN rpm; SE16 = Start rpm; SE17 = MAX rpm
NOTE: After changing speed of blower motor a waste gas analysis MUST be carried out in the function test.

Service level: F -- Function test

NOTE: In Function test components are NOT protected against overload!
Set DIP switch 3 to „ON“ position!

	Function	Connection PCB	Cabinet display	Time display	Comment
F 1	Steam 50%, Electric unit	X24:(1-2)	actual temp.B5 steam generator	1 / 0	Gas: no function
F 2	Steam 100% Electric unit	X24:(1-2)+(5-6)	actual temp.B5 steam generator	1 / 0	Gas: no function
F 3	Hot air 50% Electric unit	X24:(7-8)	actual temp.B1 cabinet	1 / 0	Gas: no function
F 4	Hot air 100% Electric unit	X24:(7-8)+(3-4)	actual temp.B1 cabinet	1 / 0	Gas: no function
F 5	Steam Gas unit	BUS	actual temp.B5 B5 Dampfgenerator	1 / 0	Electric: no function
F 6	Hot air top Gas unit	BUS	actual temp.B1 cabinet	1 / 0	Electric: no function
F 7	Hot air bottom Gas unit	BUS	actual temp.B1 cabinet	1 / 0	Electric: no function
F 8	Bottom Motor MAX rpm	BUS	Set rpm	Act. rpm	
F 9	Bottom Motor MIN rpm	BUS	Set rpm	Act. rpm	
F 10	Top Motor MAX rpm	BUS	Set rpm	Act. rpm	
F 11	Top Motor MIN rpm	BUS	Set rpm	Act. rpm	
F 12	Solenoid valve quenching	X19:(2-4)	actual temp. B2 quenching	Y2 1 / 0	
F 13	Solenoid valve filling	X19:(1-3)	Level electrode S2, 1 / 0	Y1 1 / 0	
F 14	SC Pump	X18:(1-2) M4 X12:(1-4) S2	Level electrode S2, 1 / 0	M4 1 / 0	
F 15	Buzzer	X8:(1-2)		1 / 0	
F 16	All Displays / LED				
F 17	Relais Ultravent (door open / close)	X 23: (1-2-3)		1 / 0	only existing with connected UV
F 18	no function				

Service Level: F -- Function Test

Note: In function test components are NOT protected against overload!
Set DIP switch 3 to „ON“ position!

	Function	Connection I/O pcb	Cabinet display	Time Display	Comment
F 19	Gas blower Steam MIN rpm	BUS	actual rpm	Set CO_2	Check CO_2 value
F 20	Gas blower Steam Start rpm	BUS	actual rpm		
F 21	Gas blower Steam MAX rpm	BUS	actual rpm	Set CO_2	Adjust CO_2 value with CO_2 screw
F 22	Gas blower Hot air top MIN rpm	BUS	actual rpm	Set CO_2	Check CO_2 value
F 23	Gas blower Hot air top Start rpm	BUS	actual rpm		
F 24	Gas blower Hot air top MAX rpm	BUS	actual rpm	Set CO_2	Adjust CO_2 value with CO_2 screw
F 25	Gas blower Hot air bottom MIN rpm	BUS	actual rpm	Set CO_2	Check CO_2 value
F 26	Gas blower Hot air bottom Start rpm	BUS	actual rpm		
F 27	Gas blower Hot air bottom MAX rpm	BUS	actual rpm	Set CO_2	Adjust CO_2 value with CO_2 screw

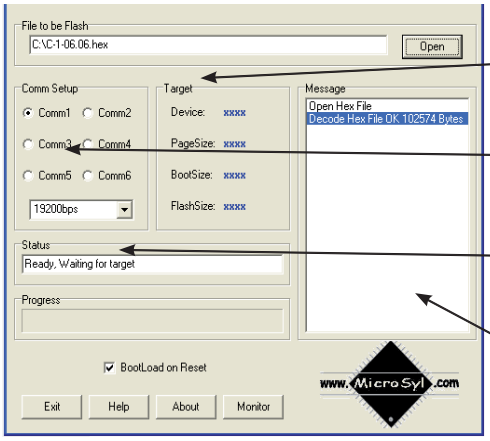
Software update CM units

1 General

To update a CM unit of new generation you need:
- CM-Software e.g. C-1-07.01.hex
- software „Megaload.zip“.

Both are available on the Rational Service internet page under:
„Technical documentation/Software update SCC-Line/CM“.

- download CM-Software e.g.“C-1-07.01.hex“
- download „megaload.zip“ to PC,
- open file„megaload.zip“,
- Start the program Setup.exe and follow the description on the screen,
- Start the program Megaload and carry out basic settings.



Open CM Software; e.g.: C-1-07.01.hex

Select desired interface on the PC, e.g. Com1

Transfer rate **must** be set to 19200 bps.

On the „Message“ window the progress of the download software download is indicated.

Now You can load the software:
- **direct from PC to CM unit, (see item 4 next page)** or
- with **Flash-Box 87.00.037 to CM unit,** (**see following items 2, 3)**.

2 Load software to Flash-Box

Flash-Box kit contains of:

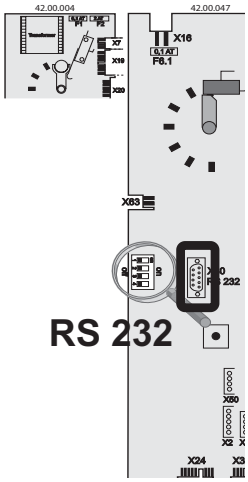
- Flash-Box
- Adapter cable RS 232 and USB-cable (only required for down loading the unit soft-ware to the Flash-Box).

- Open lid of the Flash-Box
- Set DIP - switch 2 to „ON“. (other switches remain in the „OFF“ position)

- Connect RS 232 adapter cable to Flash-Box and to the selected interface (e. g. COM 1) of the PC.
- Connect USB-cable to Flash-Box and PC.
- After the USB cable was connected the files which are transferred will appear on the Message window. An end sign indicates that the transfer is completed.
- On the Flash-Box set DIP- switch 2 to „OFF“ and 3 to „ON“ (the other switches remain „OFF“). Flash-Box is ready for use.

3 Copy software from ash box to unit:

- Switch off unit with mode switch and open control panel;
- Connect RS 232 interface of CM pcb with flash box;
- Switch CM unit on. Displays of pcb remain off. Green LED of flash box starts blinking.
- After successful uploading the CM pcb will switch on; the green LED on the flash box stops blinking and remains on continuously.
- Switch unit off and disconnect flash box.
- Unit is ready for operation;



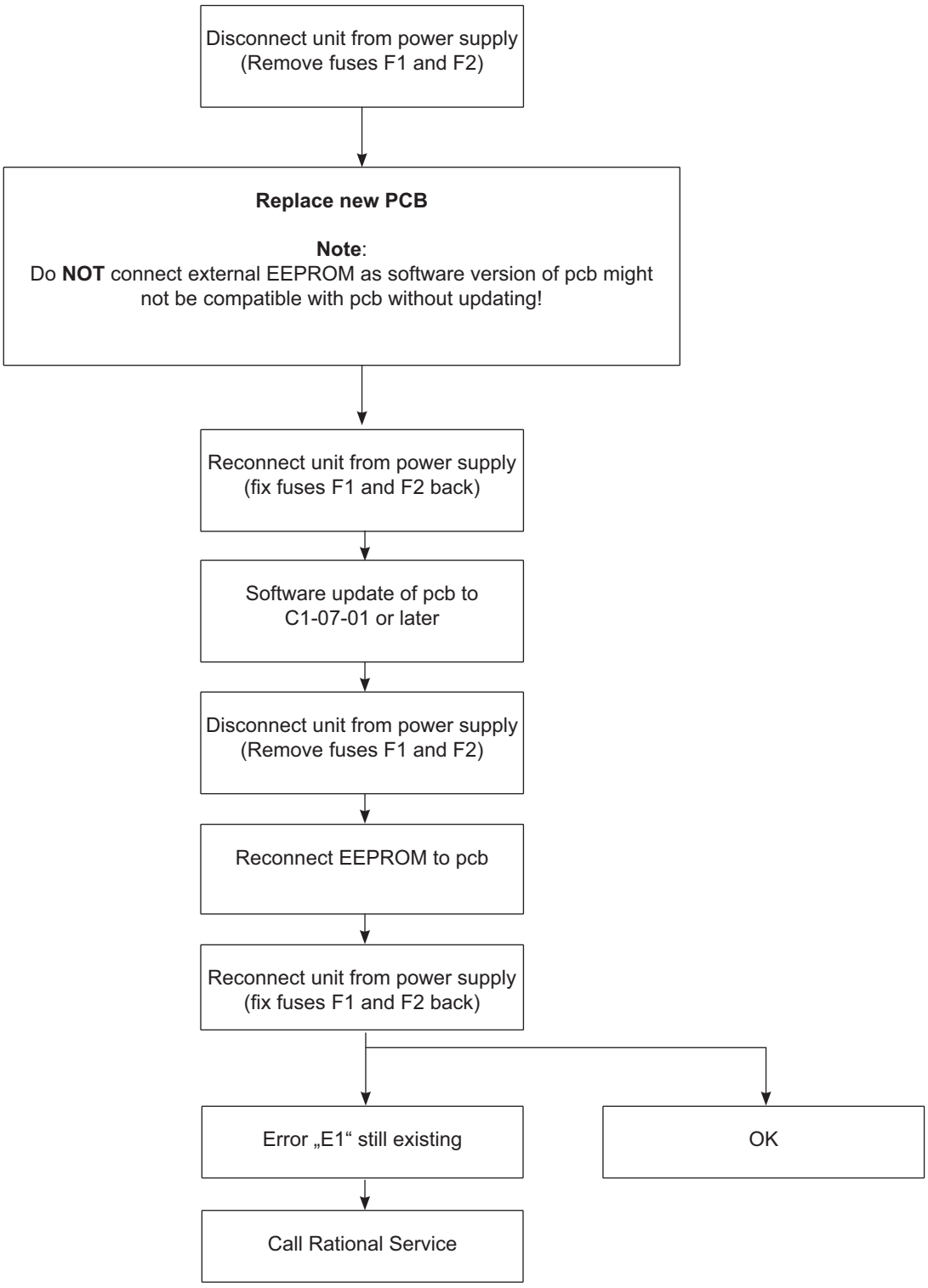
4 Load software via PC to CM unit:

- Switch off unit with mopde switch and open control panel
- Connect RS 232 interface of CM pcb with standard RS 232 cable to PC.
- Switch CM unit on. Displays of pcb remain off. The transfer status will be displayed in a message window.
- After successful uploading the CM pcb will switch on;
- Switch unit off;
- Close megaload program and disconnect RS 232 cable.
- Unit is ready for operation;

To connect via USB adapter the driver must be installed on the PC.
Set driver with the following setting:
Bit: 9600
Data bit: none
Parity: 8
Stop bit: none
Flow control: none
Connect USB cable with flash box and PC
Start Megaloader
Connect null modem cable with flash box and USB Adapter
After connecting the USB cable the download is shown in the display window.

Fault tree: Changing CM pcb / replace EEPROM

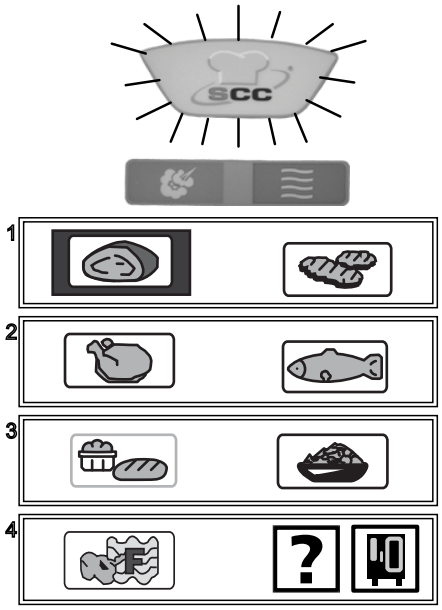
2 reasons to follow below procedure:
- Changing of pcb (software version on replacement pcb is not known)
- Unit display „E1“ - replace external memory with new EEPROM



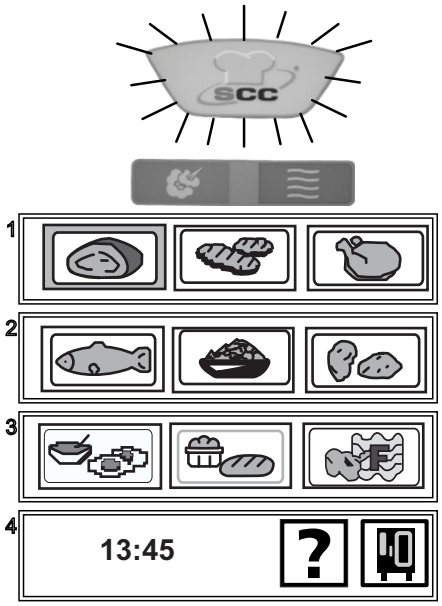
SCC Control panel

Comparing display of software version

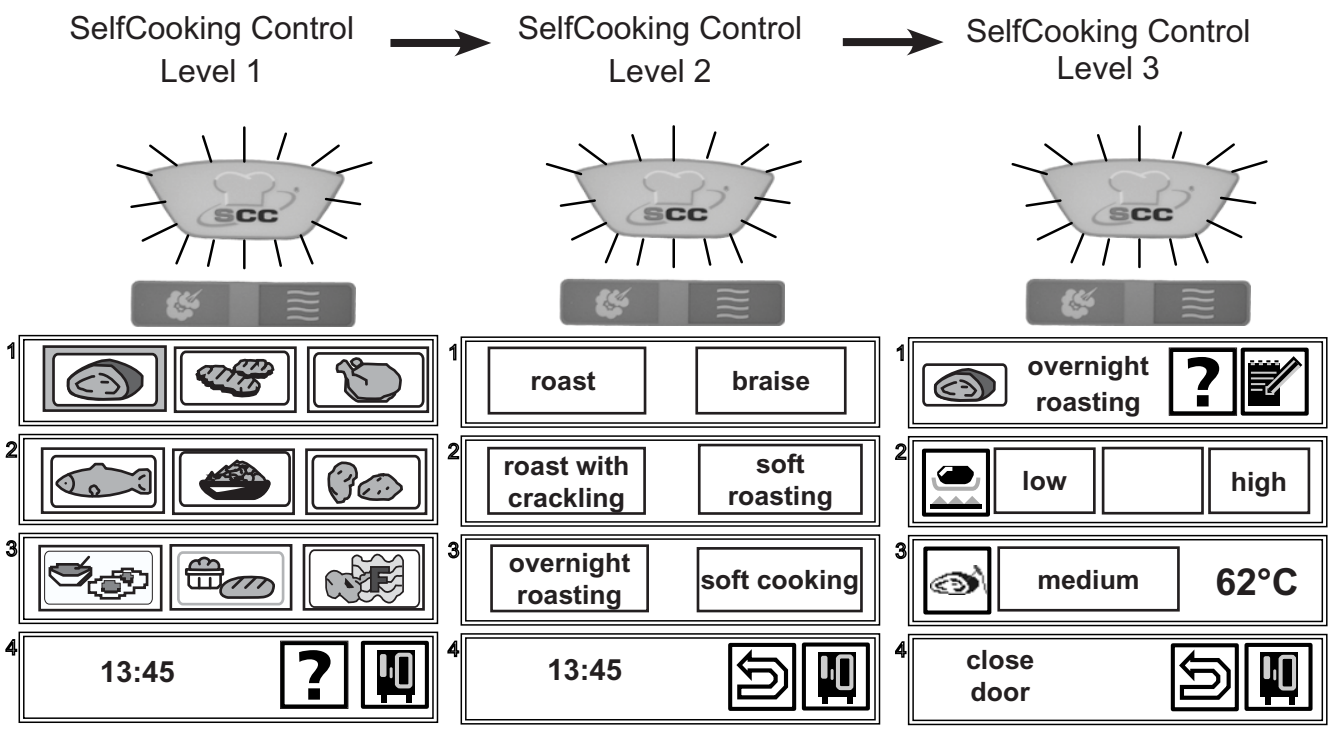
Display up to software version
SCC 01-07-12



Display since software version
SCC 02-01-01



Display since software version SCC 02-01-01



Large roast

Pan fries

Poultry

Fish

Side dishes

Potato product

Egg dishes/Desserts

Bakery products

Finishing

Back to previous level

CleanJet, HACCP, Delta T, E1/2
Start time, CDS, Descaling, Settings

Selection of core temperature

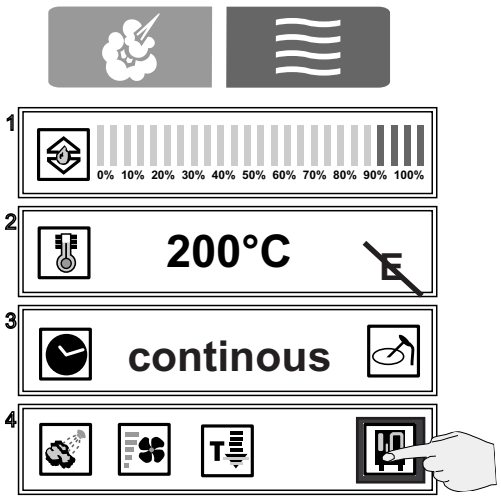
Help: guide line for selected setting; practical hints for product to be used in the respective SCC cooking process

Store selected setting

Searing

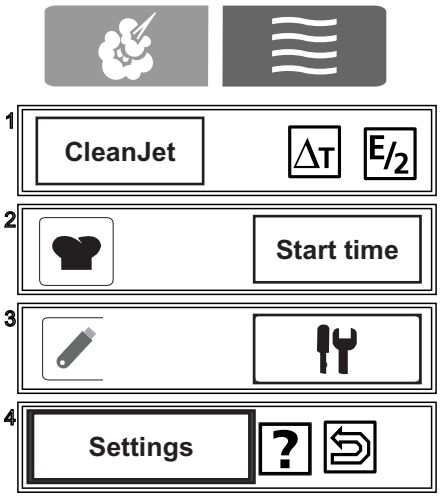
Display since software version SCC 02-01-01 to 03-01-05

Combi Steamer mode



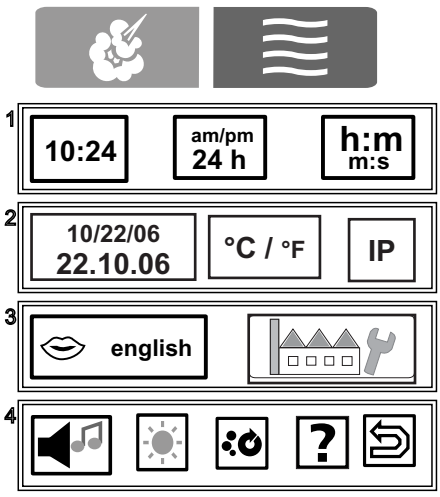
- Setting of humidity
- Setting of cabinet temperature
- Setting of time
- Setting of core temperature
- Moistening
- Setting of fan speed (lowest level=intermittent)
- Cool Down
- Function level — no link on I/O X20 / No 230V on I/O X21

Function level



- CleanJet — CleanJet programs
- ΔT E/2 — Delta -T cooking - 1/2 Energy
- Telephone Chef-Line, delete all programs, program lock, buzzer setting, time setting
- Start time — setting start time
- Download and upload of unit data like customer programs, HACCP and service data
- Service level
- Settings — Settings

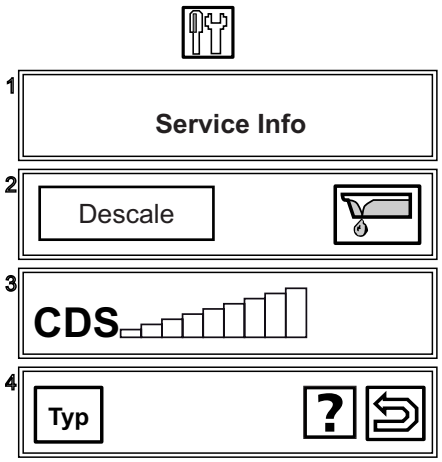
Settings



- am/pm 24 h — Setting of time format
- h:m m:s — Setting of time laps
- 08/22/03 22.08.03 — Setting of date format
- °C / °F — Setting of °C/°F
- english — Setting of language
- reset to factory setting english, °C, buzzer perm., h:min
- buzzer, Setting of buzzer sound
- Setting of display intensity
- Setting CleanJet request (only active when frame shows in red)

10:24 actual time — IP IP Adress

Display since software version SCC 02-01-01 to 03-01-05



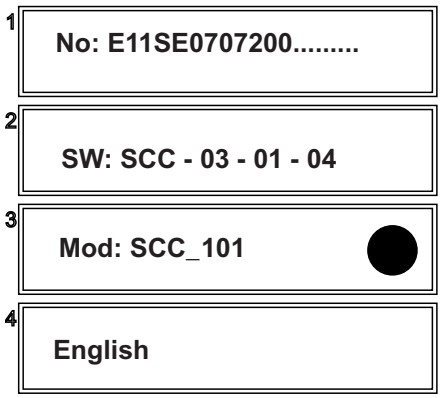
Service Info: Display of pending service faults

Descale — Descaling program: automatic process

empty steam generator (Door must be open!)

CDS — Display of scale level inside steam generator

Typ — Display of software version



No: E11SE0707200.... Serial number

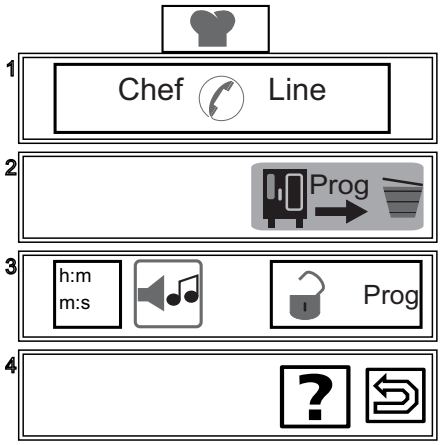
SW: SCC - 03 - 01 - 04 Software version

Mod: SCC_101 - Model and size

humidity emergency control currently active

humidity emergency control was active since last switch ON (will not be displayed when in „dry heat mode“)

English selected language



Chef Line — Display phone number of Chef-hotline

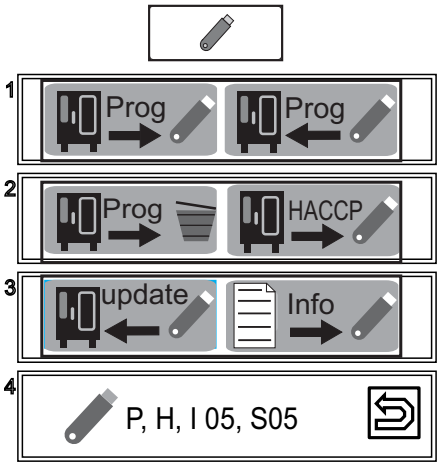
Prog — erase all customer programs

h:m m:s — Setting time in hours/minutes (h:m) or minutes/seconds (m:s)

setting buzzer (sound-duration)

Prog — setting existing SCC process or program can be copied and get an index number, i.e. 1; name can be edited and changed; „Program lock“ Password: 12345; TTREU

Data downloading



Copy customer program to stick

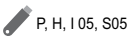
Reload customer programs from stick to unit

Erase customer programs

Download of HACCP-Data

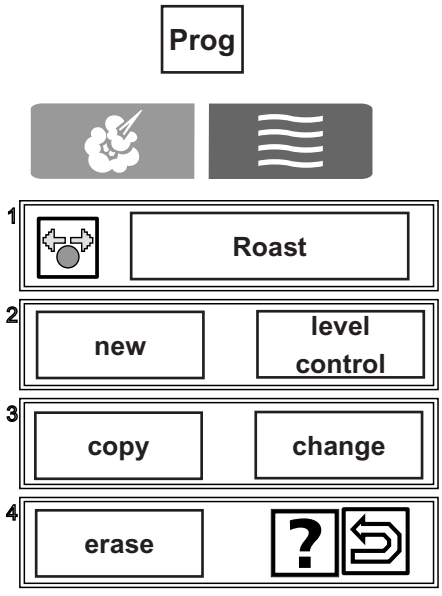
Software updates (Icon only shows when unit detects valid software on the USB stick)

Download of service data to stick.



Only shows when USB stick is connected

Programming




Select customer program with central dial

new
Give program name
(blank - between _ and @ sign)

copy
existing SCC process or program can be copied and get an index number, i.e. 1; name can be edited and changed;

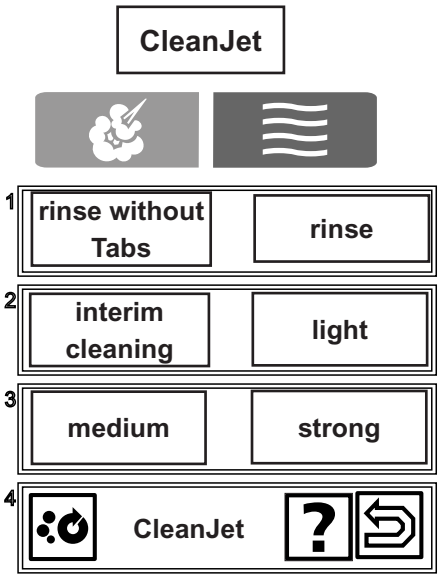
change
Change parameter and / or cooking mode of program in a non-active program;

confirm change by:

erase
selected program flashes; confirm delete by pressing again;

level control
1. Give program name
2. Store
3. select mode, temperature, time (in minutes and seconds) or core temperature,
4. Additional program with identical mode and temperature, but different time can be stored and selected alternating after pre-heating;

CleanJet



rinse without Tabs	Rinse with water only; cabinet will be dried out;
rinse	Rinse with 1 tab for cleaning after steaming;
interim cleaning	Rinse with 1 cleaner tab for cleaning in between cooking cycles; no drying of cabinet;
light	Cleaning of light soiling with drying of cabinet
medium	Cleaning of medium soiling with drying of cabinet
strong	Cleaning of strong soiling with drying of cabinet

Indicated number of tabs can be changed from software 03-01-01!
If unit shows Servcie 25 check if water hits the left rack at levels 3-4. Refer to fault tree at end of manual.

Interrupting CleanJet programs
- A CleanJet program can only be interrupted by switching the unit off and back on again.
- After restarting the unit “CleanJet interrupt” is shown and the buzzer sounds for 20 seconds.
- If the interrupt key was not touched within 20 seconds, then the CleanJet program continuous
- If the interrupt key was touched, then the interrupt program starts. Next the request for removing the tabs is coming up.
- After the door was opened and closed again, then the interrupt program starts with a duration of 10 minutes
- The interrupt program can also be aborted by switching the unit of and back on again. In this case cabinet must be rinsed manually and by pressing the arrow back key the cleanjet function can be stopped

Interrupting descaling program SCC:

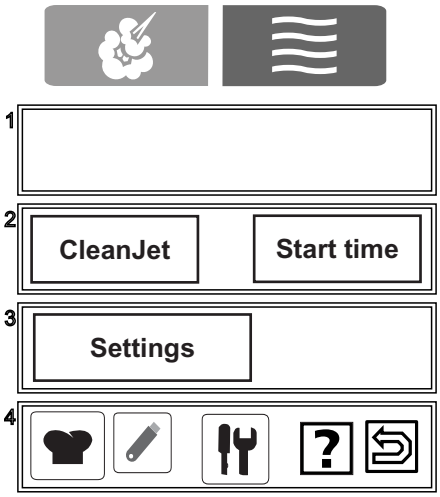
As long as no descaler was filled into the steam generator the „Arrow back“ in window 1 is still showing.
After the descaler was confirmed to be filled the only way to interrupt the descaling process is to:
- Switch unit OFF and ON again- Press „Abort“
- Remaining time of 1:08 will be displayed
- If now the key „Aborted“ is pressed again and the unit is switched OFF and ON again a remaining time of 23 min will show.
- After another 2 min this time display will drop to 5 min
- Now the steam generator will be flushed 2x. After this the „Arrow Back“ will be shown.
- By touching this key the descaling program will be exited

Note: Rinse the cabinet thoroughly with fresh water and operate the unit in steam mode for some minutes.

- Now the unit can be accessed for cooking again.

Display Unit Index “E” since software version SCC 04-01-01

Function level



CleanJet — CleanJet programs

Telephone Chef-Line, delete all programs, program lock, buzzer setting, time setting

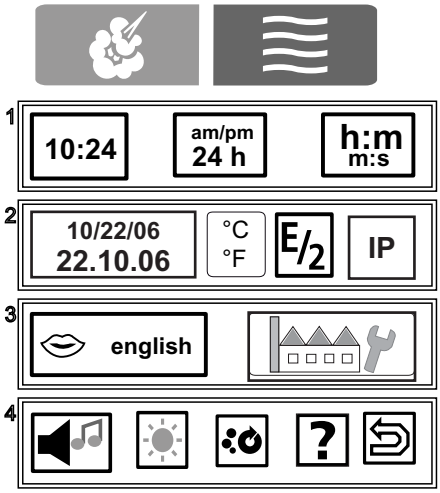
Start time — setting start time

Download and upload of unit data like customer programs, HACCP and service data

Service level

Settings — Settings

Settings



am/pm 24 h — Setting of time format

h:m m:s — Setting of time laps

08/22/03 22.08.03 — Setting of date format

°C °F — Setting of °C/°F

english — Setting of language

reset to factory setting
english, °C, buzzer perm., h:min

buzzer, Setting of buzzer sound

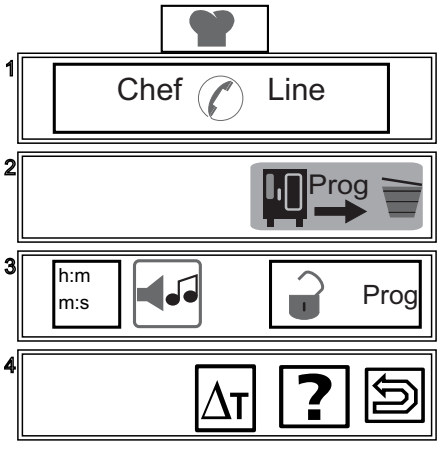
Setting of display intensity

Setting CleanJet request
(only active when frame shows in red)

10:24 — actual time

IP — IP Adress

E/2 — Half energy



Chef Line — Display phone number of Chef-hotline

Prog — erase all customer programs

h:m m:s — Setting time in hours/minutes (h:m) or minutes/seconds (m:s)

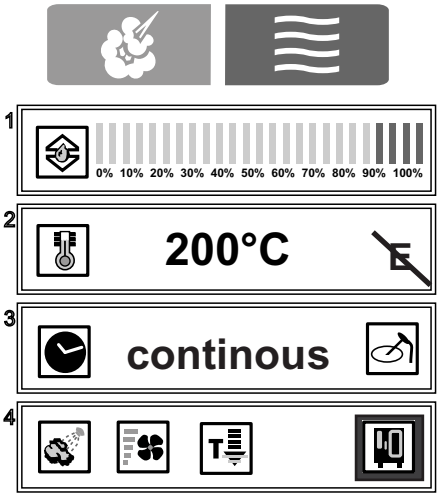
setting buzzer (sound-duration)

Prog — setting existing SCC process or program can be copied and get an index number, i.e. 1; name can be edited and changed; „Program lock“
Password: 12345; TTREU

ΔT — only possible with manual mode selected

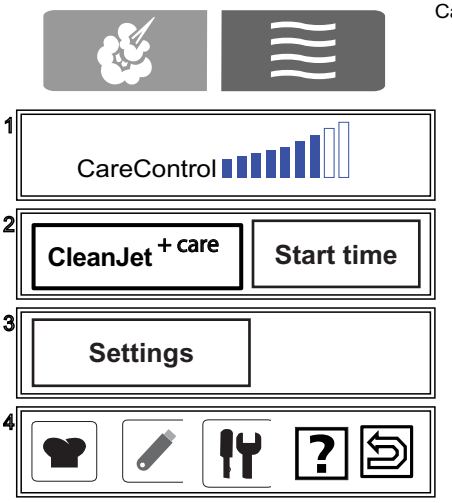
Display Index “G” since software version SCC 04-01-01

Combi Steamer mode



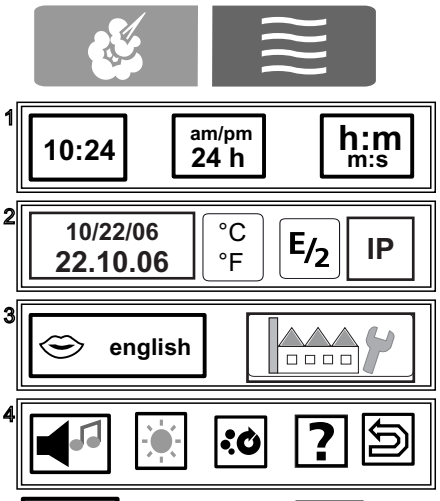
- Setting of humidity
- Setting of cabinet temperature
- Setting of time
- Setting of core temperature
- Moistening
- Setting of fan speed (lowest level=intermittent)
- Cool Down
- Function level — no link on I/O X20, No 230V on I/O X21

Function level



- CareControl — Indication of care status
- CleanJet + care — CleanJet programs
- Telephone Chef-Line, delete all programs, program lock, buzzer setting, time setting
- Start time — setting start time
- Download and upload of unit data like customer programs, HACCP and service data
- Service level
- Settings — Settings

Settings



- am/pm 24 h — Setting of time format
- h:m m:s — Setting of time laps
- 08/22/03 22.08.03 — Setting of date format
- °C °F — Setting of °C/°F
- english — Setting of language
- reset to factory setting, english, °C, buzzer perm., h:min
- buzzer, Setting of buzzer sound
- Setting of display intensity
- Setting CleanJet request (only active when frame shows in red)

10:24 actual time

IP IP Adress

E/2 Half energy

CareControl

Display Cleanjet +Care Index “G” (10-2008)
Software SCC 04-01-01

Intelligent cleaning process: The unit recognizes automatically the likely soiling of the cabinet using the data of used cooking programs, cooking temperatures and running times.

Cleanjet demand
The customer usage (based on used cooking programs, cooking temperatures and running times) determines the number of red bars in the display “Cleanjet demand” ==> Intelligent cleanjet process.
If all bars show in red, “Care Control” is displayed.

CDS

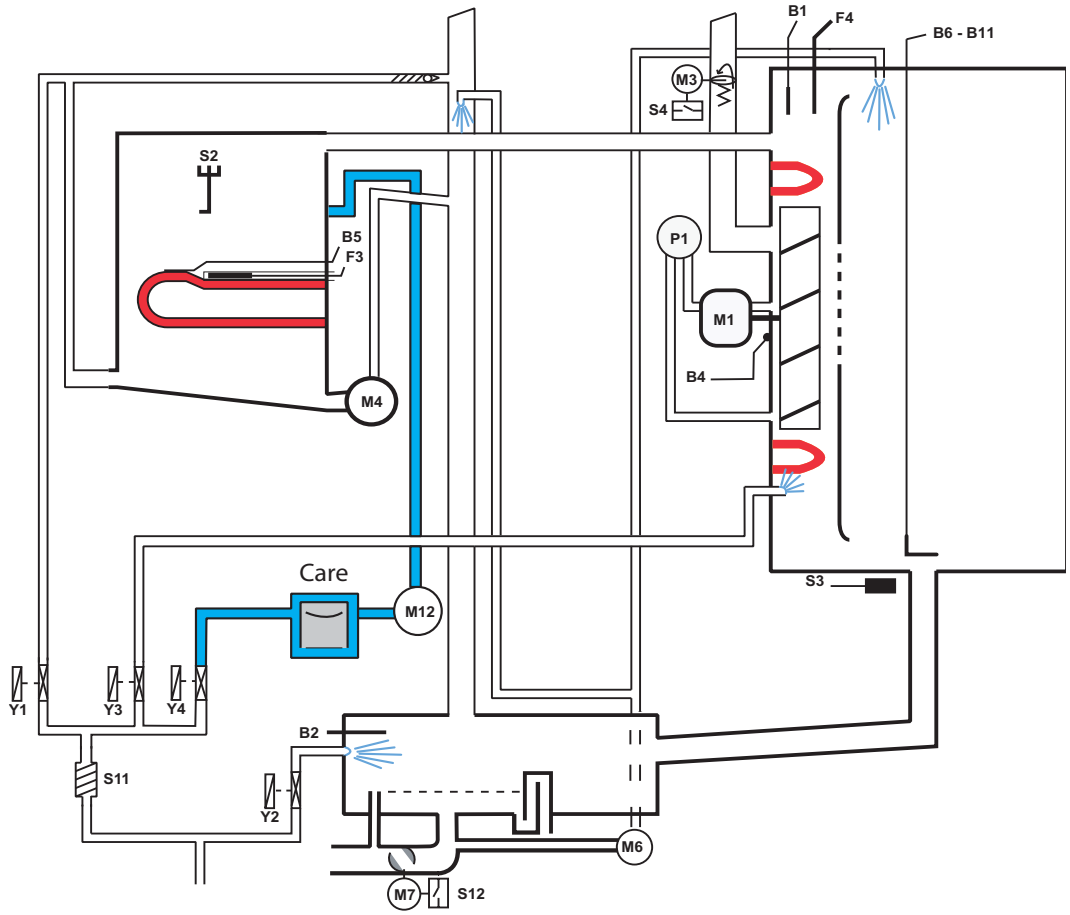
CDS display
The number of pulses of the CDS sensor determines the number of red bars in the CDS display.
If the customer always uses the recommended Care tabs when using cleanjet, the steam generator will stay free of scale and the display will not change to red bars.

CareControl

Display Care Control
The combination of the above mentioned information is a measure of the overall care status of the unit and as such the customers daily cleaning pattern
Less cleaning (and less usage of care tabs) causes less blue bars.
Should the customer continue the low level cleaning pattern the bars will start showing in red.

+ CDS = CareControl

SCC Electric - Basic principle



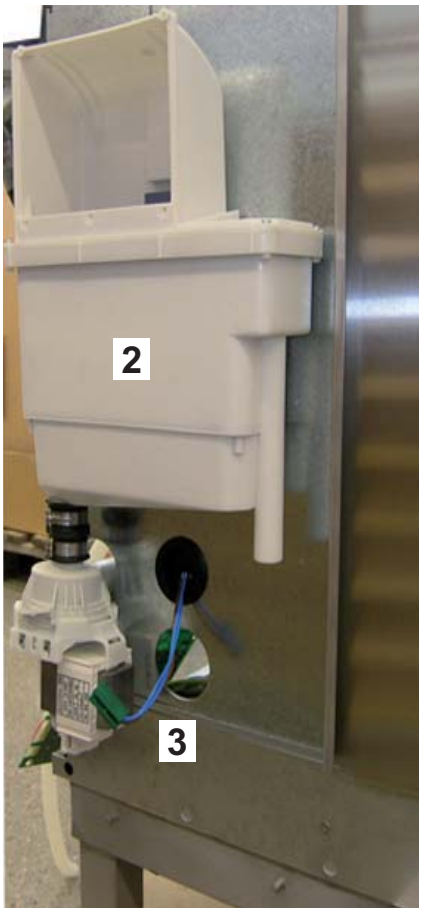
B1 Thermocouple interior cabinet
B2 Thermocouple quenching
B4 Thermocouple humidity
B5 Thermocouple steam generator (preheat, 180°C (356°F) max)
B6-B11 Thermocouples core temperature
F3 Safety thermostat steam generator 160°C (320°F)
F4 Safety thermostat interior cabinet 360°C (680°F)
Y1 Solenoid valve filling
Y2 Solenoid valve quenching
Y3 Solenoid valve moistening
Y4 Solenoid valve care
M1 Fan motor bottom
M3 Humidity flap motor
M4 SC-pump
M6 CleanJet pump
M7 Motor drain valve / ball valve
M12 Care pump
S2 Level electrode
S3 Door reed switch
S4 Micro switch humidity motor
S11 CDS sensor
S12 Micro switch drain valve
P1 Pressure sensor humidity

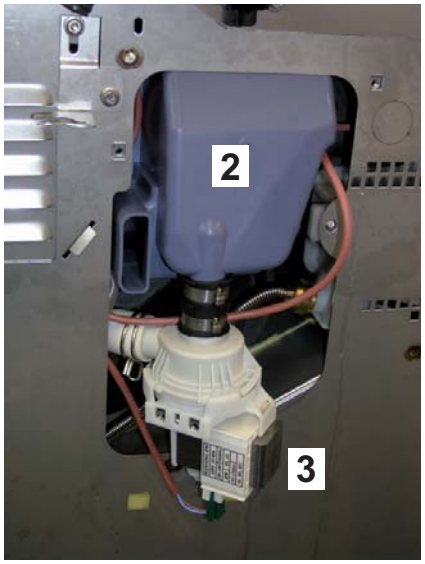
SCC 201/202 only:
M2 Fan motor top with jumper (floor units only)

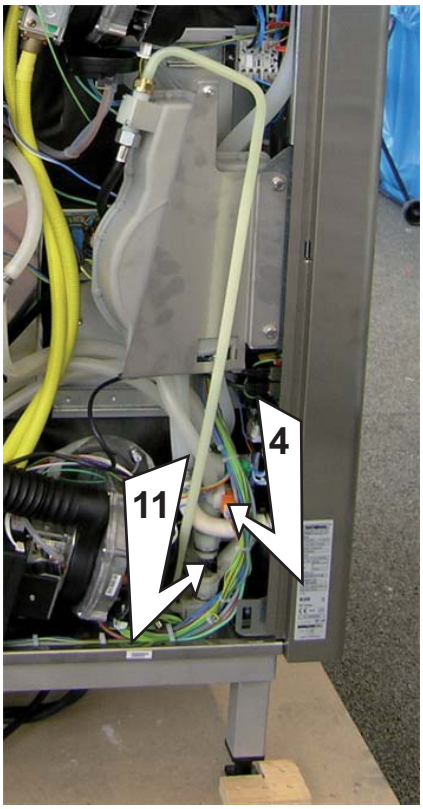
Parts identification (no CareControl)

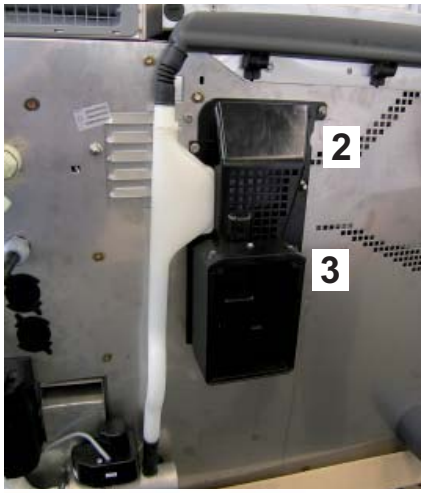
1	12
2	13
3	14
4	15
5	16
6	17
7	18
8	19
9	20
10	21
11	22

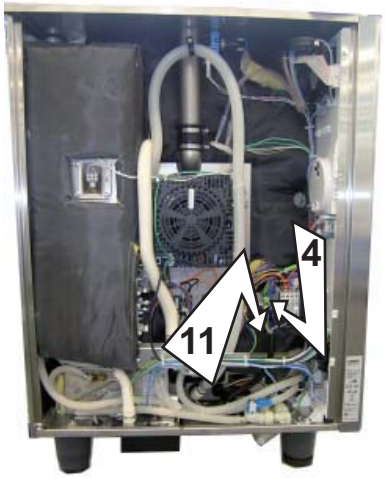
Parts identi cation CareControl

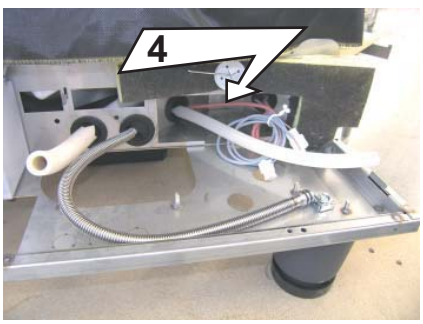












1
2
3
4
11

General information to software version SCC 04-01-01

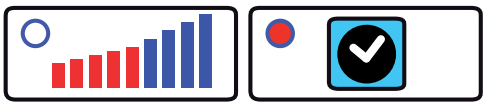
Software SCC 04-01-01 can also be used for units with index „E“ (from 04-2004).

With this software you have the following options:

Using the button “Cleanjet request” you can select the “Intelligent Cleanjet request”. In this case the cleanjet request will be based on used cooking programs, tempratures and cooking duration.

Selecting Cleanjet you will see the below symbol in window 4 of your display:

The second setting to choose is Cleanjet request based on cooking time only (as known from older software versions).
In order to deselect the Cleanjet request (turn symbol from red to blue again) select time functions and setb time to “0”..



In Service Mode Basic Settings position 26 you select „Softwater“ ON to indicate only the half amount of detergent tabs when cleanjet is choosen. The individual tab setting (as available since software SCC 03-01-01) is no more existing.

<u>Software SCC 04-01-01 in units with index „G“ (from 10-2008)</u>

Basic Settings 26 „Softwater“
In Service Mode Basic Settings position 26 you select „Softwater“ ON to indicate only the half amount of detergent tabs when cleanjet is choosen.

Basic Settings 28 „Selftest“:
After installation the unit will ask the user to start a Selftest. Water MUST be connected!
After the Clima Control valve and the drain valve have initialised the steam generator will fill,
SC pump will start shortly and Y1 will refill again.
In case the temperatures of B1, B2 and B4 are below 40°C now “Start” will be displayed.
After pressing “Start” the unit will adapt to the present installation conditions (duration appr. 15 min).
Should the unit be installed later at a different location, this “Selftest” can be re-initialised by setting “Selftest” to ON in basic settings position 28.

Basic Settings 29 „Warranty“:
After first switch on the unit will prompt the customer to register and validate his second year warranty online under www.rational-ag.com/warranty.
This prompting will discontinue after 4 days.
After registration a warranty certificate will be issued:
In case the unit was installed in a show room or exhibition, this prompting can be re-initialised by setting “Warranty” to ON in basic settings position 29.

Basic Settings 30 „Steam corrosion control“
The unit automatically recognises if the customer used it predominantely in steam mode. In case this usage is more than 90% during the last 20 hours of operation the unit will prompt a Cleanjet request daily regardless of the total duration of cooking time

Basic Settings 31 „Care Control Reset“
By setting the switch to “ON” all Care Control bars will be set to blue.

Controling the SC pump and solenoid valves before starting the cleanjet process:

If the Cleanjet Start key is pressed the unit will check first for the proper function of the SC pump and the solenoid valves.
The SC pump is operated shortly until the level electrode shows low water.
In case of failure “Servcie 10” is displayed and Cleanjet can not be started.
Y1 filling solenoid valve is started, function checked by CDS sensor
In case of failure “Low Water” will be indicated
Y3 moistening solenoid valve is started, function checked by CDS sensor
In case of failure Service 41
Y4 care solenoid valve is started, function checked by CDS sensor
In case of failure Service 42
All solenoid valves are switched off, CDS shall not send any pulses;
In case of failure Service 43

New Service Error codes

Service 40
Care pump faulty or does not fill enough care solution into steam generator;
- After filling of the care solution into the steam generator the CDS sensor sends too many pulses until the level electrode recognises water.
- Cleanjet finishes without care phase;
- Reset by successfull completion of Cleanjet process;

Service 41
- Solenoid valve Y3 defective or moistening nozzle blocked; CDS does not send any pulses;
- Reset error by successfull CDS measuring during next Cleanjet start;

Service 42
- Solenoid Y4 Care defective or hose to care container vlocked or kinked; CDS does not send any pulses;
- Reset error by successfull CDS measuring during next Cleanjet start;

Service 43
- CDS sensor sends always pulses; Solenoid Y1, Y3 or Y4 is passing water
- Reset error by successfull CDS measuring during next Cleanjet start (Self test)

Service 44
- No temperature raise during recognised by B5 during steaming time while being in Cleanjet phase
- Reset error by successfull B5 tempoerature measuring during next Cleanjet;

Service 110
- Malfunction of SC pump during the time when Care solution was inside the steam generator,
- Reset error by successfull completing a cleanjet abort cycle;

Service 120
- After operating care pump M12 (filling care solution into steam generator) and topping up with water (Y1) the level electrode does not recognise water;
- Y1 or level electrode defective;
- Display only after twice starting filling solenoid Y1 yet no water is detected;
- Reset error by successfull completing a cleanjet abort cycle;

It is possible to abort the cleanjet program. However the abort program of 30min. can not be shortened again as the steam generator must be neutralised from possible remaining care solution.

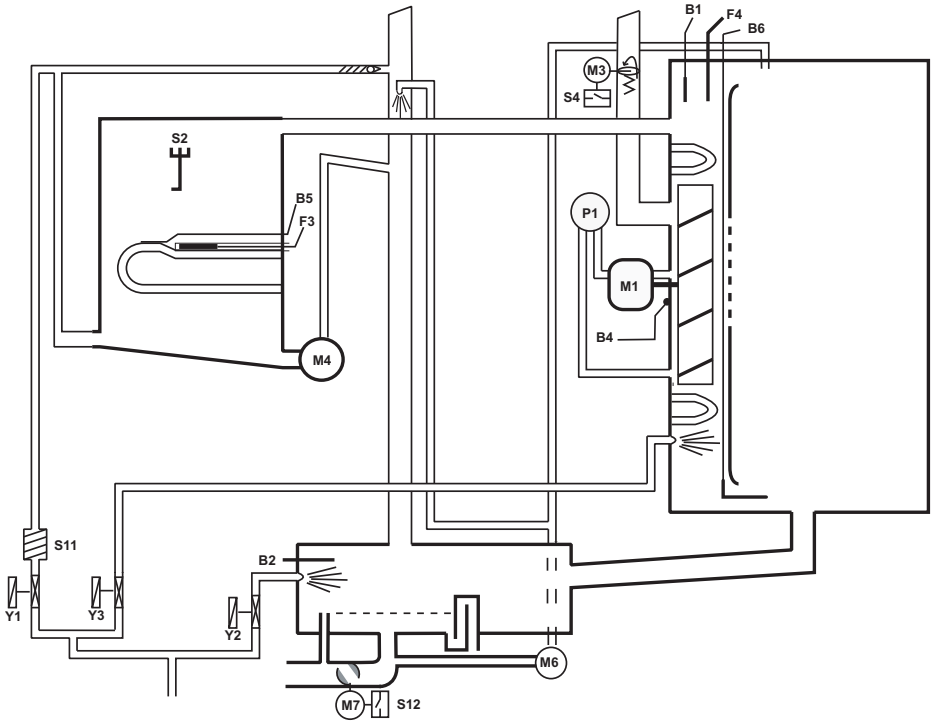
Cleanjet Abort program

During the abort program the steam generator will first be filled with Y1. After draining the steam egnerator it will be filled a second time to a level above the level electrode. After a second draining the steam generator will fill again exactly to the level electorde.
In case the level electrode does not recognise the water Error 120 will be shown.
At the end of the abort program a short steam period and rinsing the cabinet with Cleanjet pump will follow.

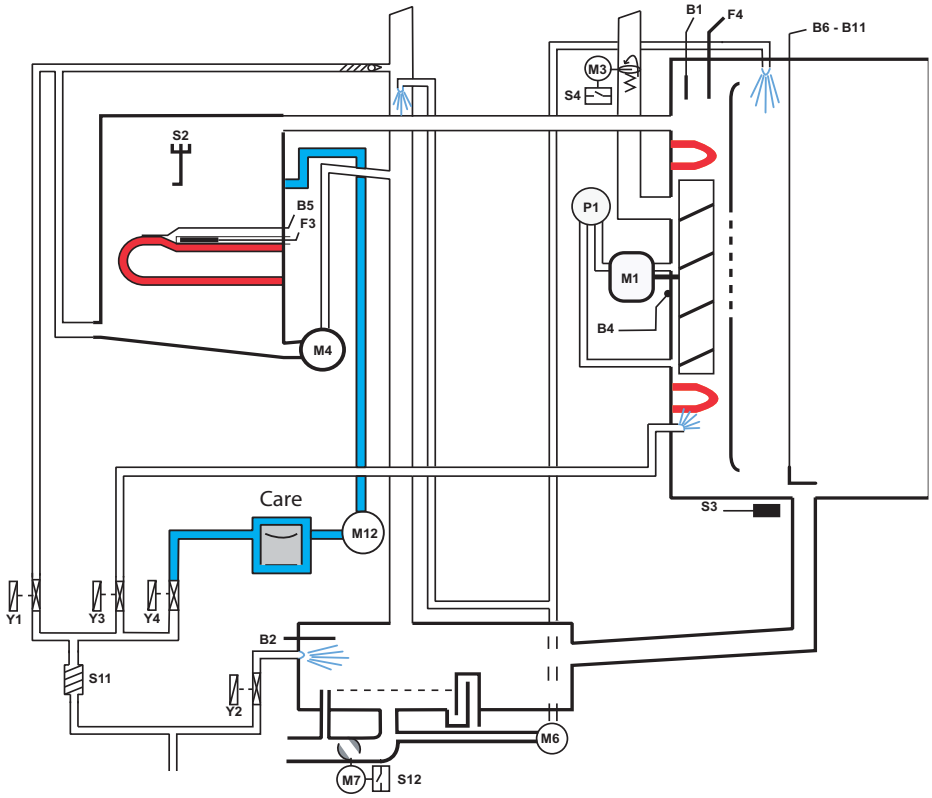
The duration of steam heating time unitl next SC automatic is now 120min (units with index “G”) .
However should the steam generator develop scale because the customer does not use the care tabs, this time will automatically be reset to 60 minutes.

Difference SCC Index „E“ versus Index „G“ SCC Care Control

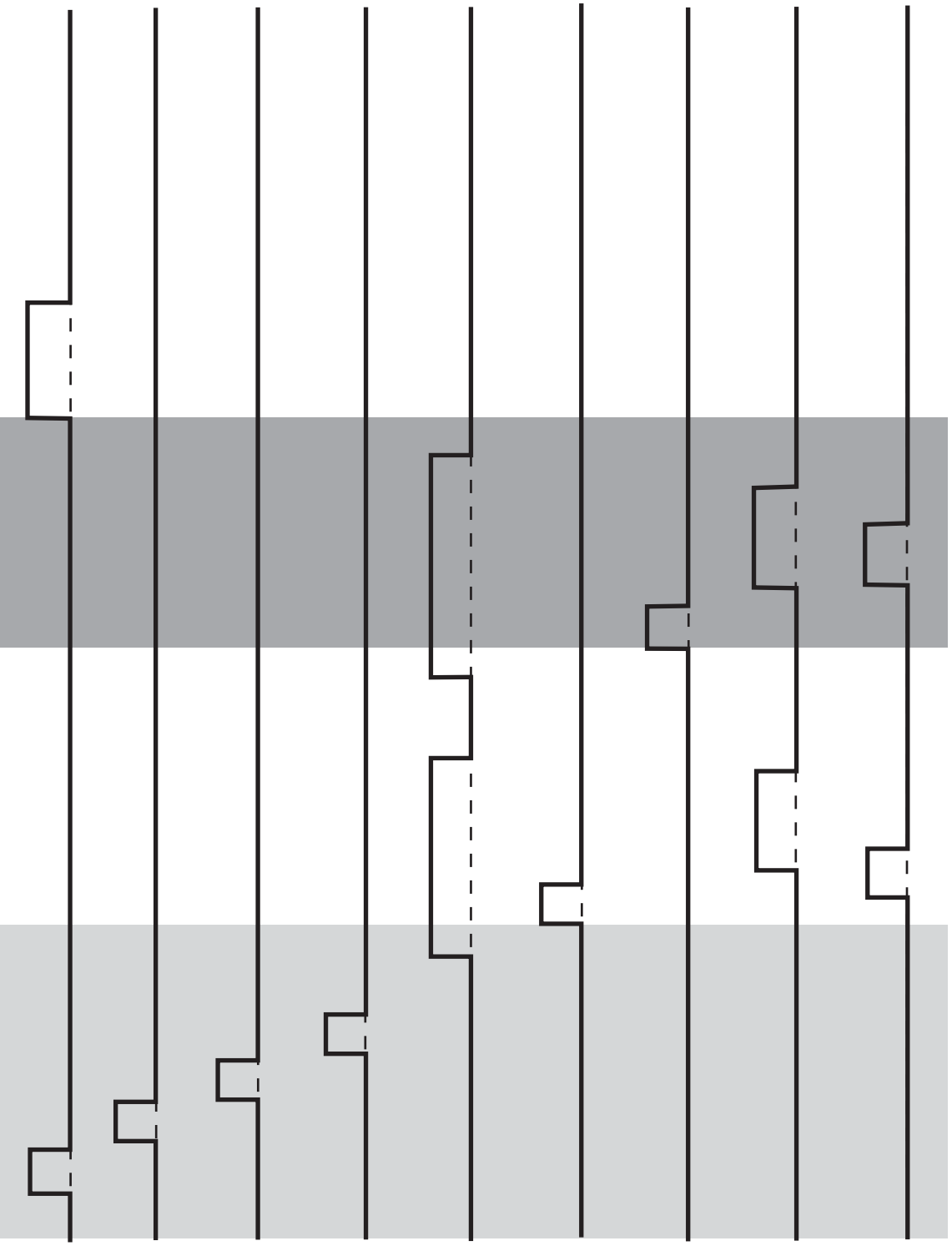
Index „E“



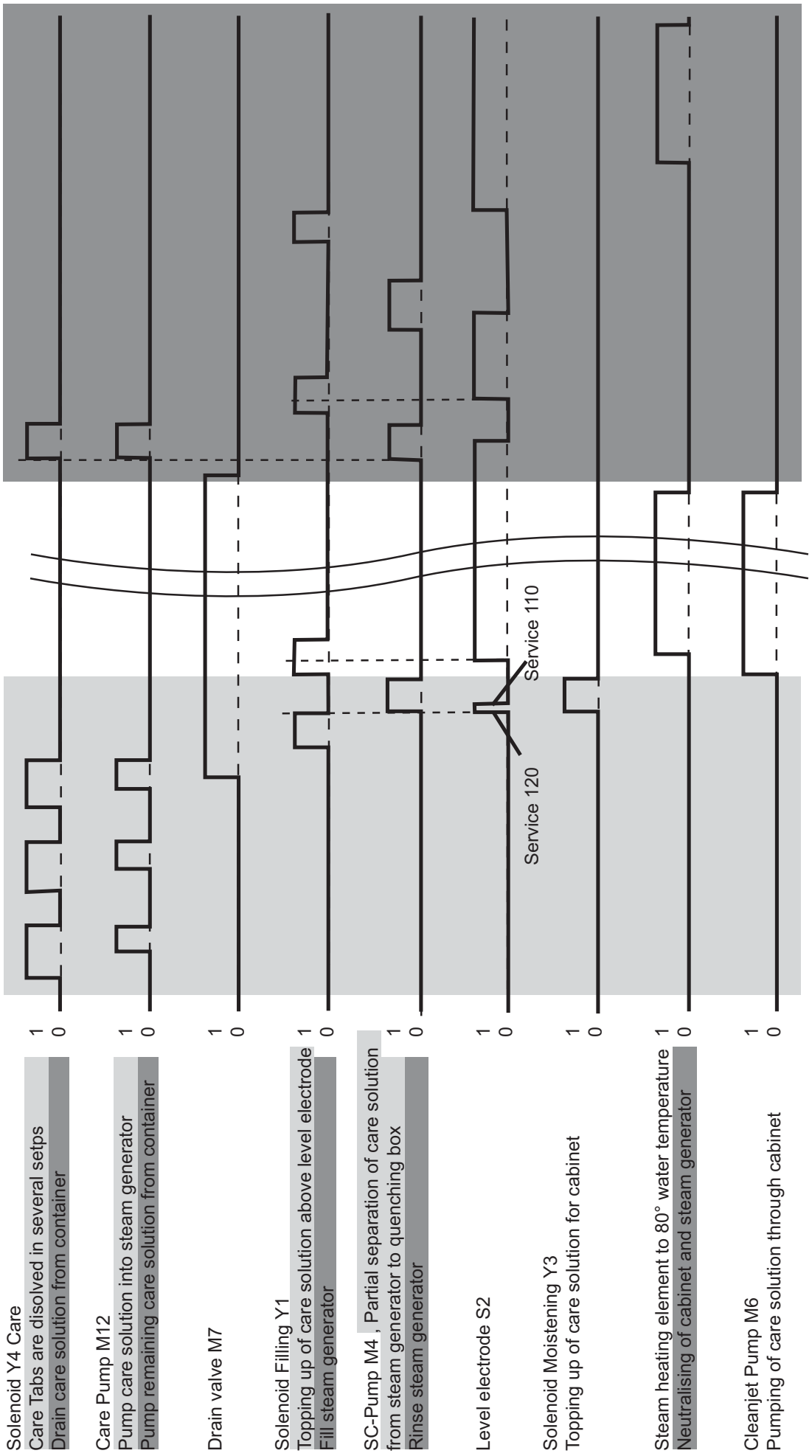
Index „G“



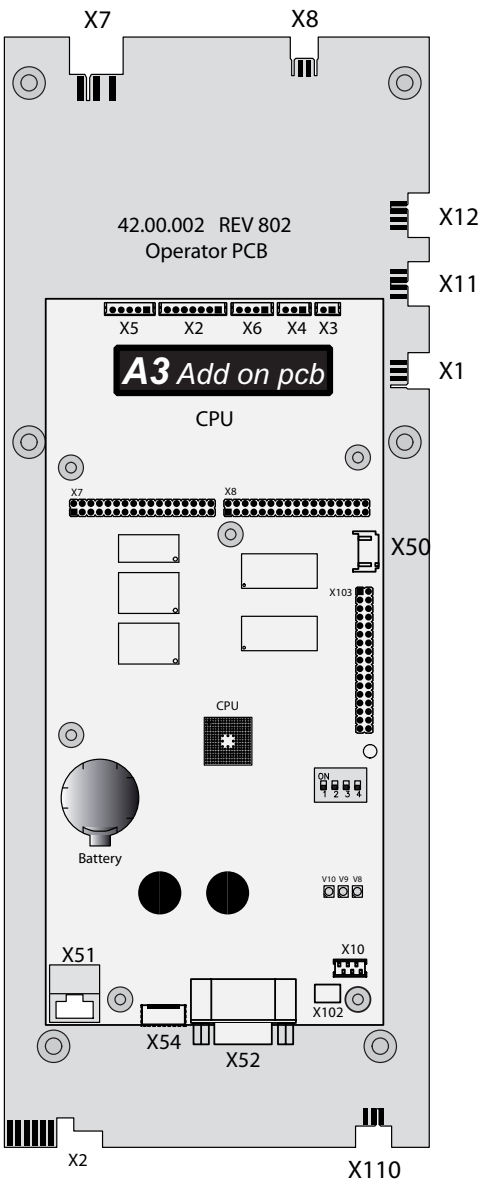
Sequence Cleanjet+Care Process: **1. step - Cleaning cabinet**; example: SCC 61, Index G



Sequence Cleanjet+Care Process: **2. step - Care Steam generator and cabinet**; example: SCC 61, Index G



SCC pcb (42.00.002)



Add on X2	*B6-11 thermocouple core probe*
Add on X3	*B1 thermocouple interior cabinet*
Add on X4	*B2 thermocouple quenching*
Add on X5	*B4 thermocouple ClimaPlus*
Add on X6	*B5 thermocouple Steam generator*
Add on X10	*Central dial*
Add on X50	*External EEPROM*
Add on X51	*BUS interface*
	and power supply for cpu from I/O pcb
Add on X52	*RS232 interface*
Add on X53	*USB interface (up to 12-2005)*
Add on X54	*USB intefarce*
Add on X102	*TouchPad connection*

X1 P1	pressure sensor
X2	Free
X7	200 - 240V input to I/0 Switch
X8	Buzzer
X11	ClimaPlus motor / Micro switch
X12	Level electrode
X110	Power suply for display 2,5 - 0 - 2,5

LED Code: SCC PCB

Green LED on - **ok**

Red LED blinks 1x during re-booting when switching on - **ok**

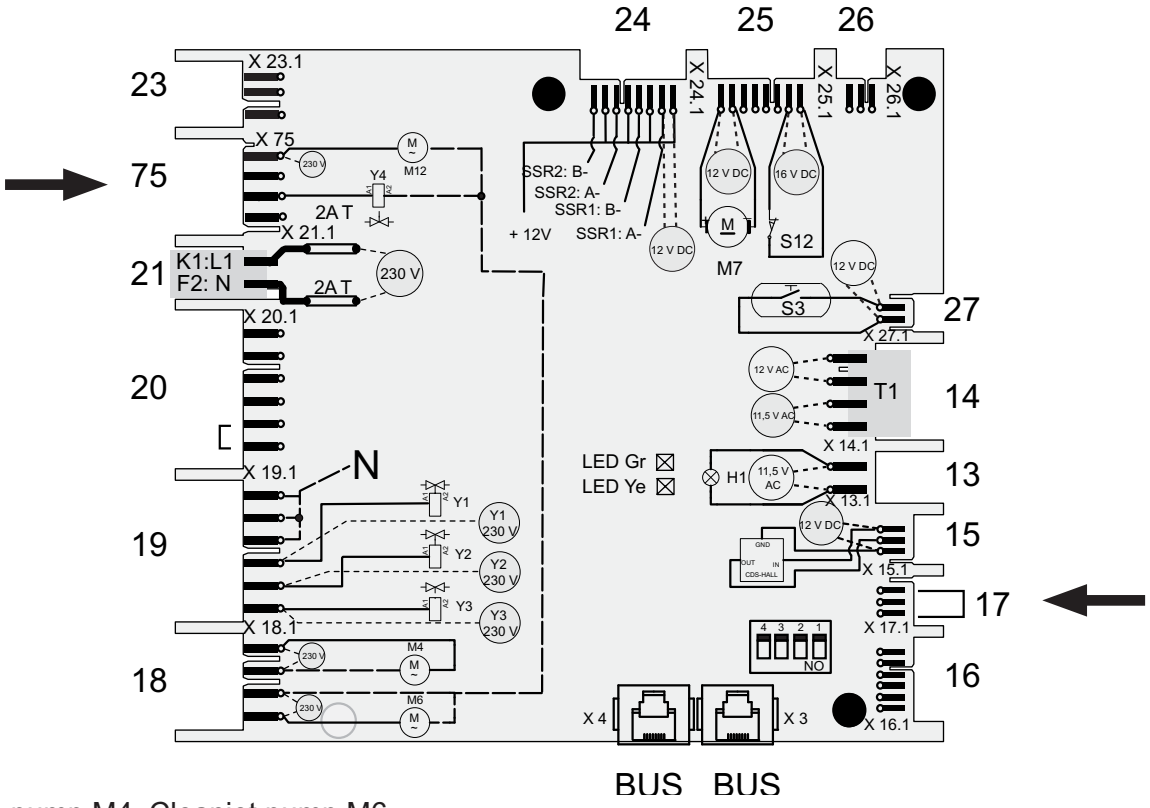
Green LED off - : Bus cable defective; CPU defective; I/O pcb or transformer defective

Red LED on: CPU defective

Red LED doesn‘t blink during re-booting when switching on - CPU defective

Yellow LED blinking: No operational software / CPU defective

New I/O PCB SCC (42.00.064P)
Wires of pcb edge connectors are pointing to component side of pcb!



18: SC-pump M4, Cleanjet pump M6
19: Solenoid vales Y1-filling, Y2 - quenching, Y3 - moistening
20. Energy optimizing plug with link on 5-6 used only on I/O pcb with 12 relais card!
21. 230V input
75. Care pump M12 and Care solenoid Y4 (free when used in Index “E” unit)
23. Connection to Ultravent (used for Ultravent without BUS connection only)
24. Output 12VDC to SSR
25. Output 12VDC to M7 drain valve, S12 micro switch drain valve
26. free
27. Output 12VDC to door contact
14. Input from Control transformer T1, 11.5V interior light, 12V CPU,
13. Output 11.5VAC to interior cabinet light
15. Output 12VDC to CDS sensor
17. Link Care unit (only existing when build into an Index “G” unit)
16. free
X3, X4. BUS connection

LED Code: I/O PCB

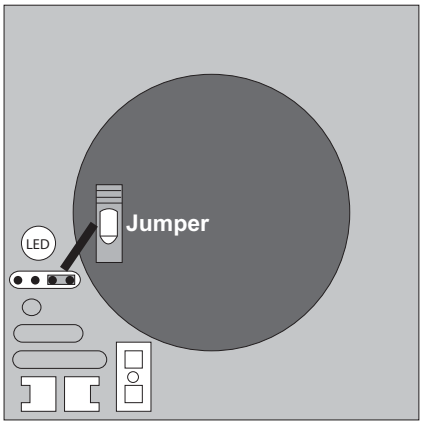
Green LED on - **ok**

Green LED off during operation **ok**

Yellow LED always blinking: unit switched off, unit in booting process, DIP switches not all set to OFF, bus connection defective

Green LED off: I/O PCB defectice, Transformer defective

Fan motor SCC 40.00.274



Jumper 40.01.581 is used on oor model 201 and 202 for top position motor only!
Jumper is not used on models 61 - 102 with one motor only!
(Service 34 will be shown when jumper is set wrongly)

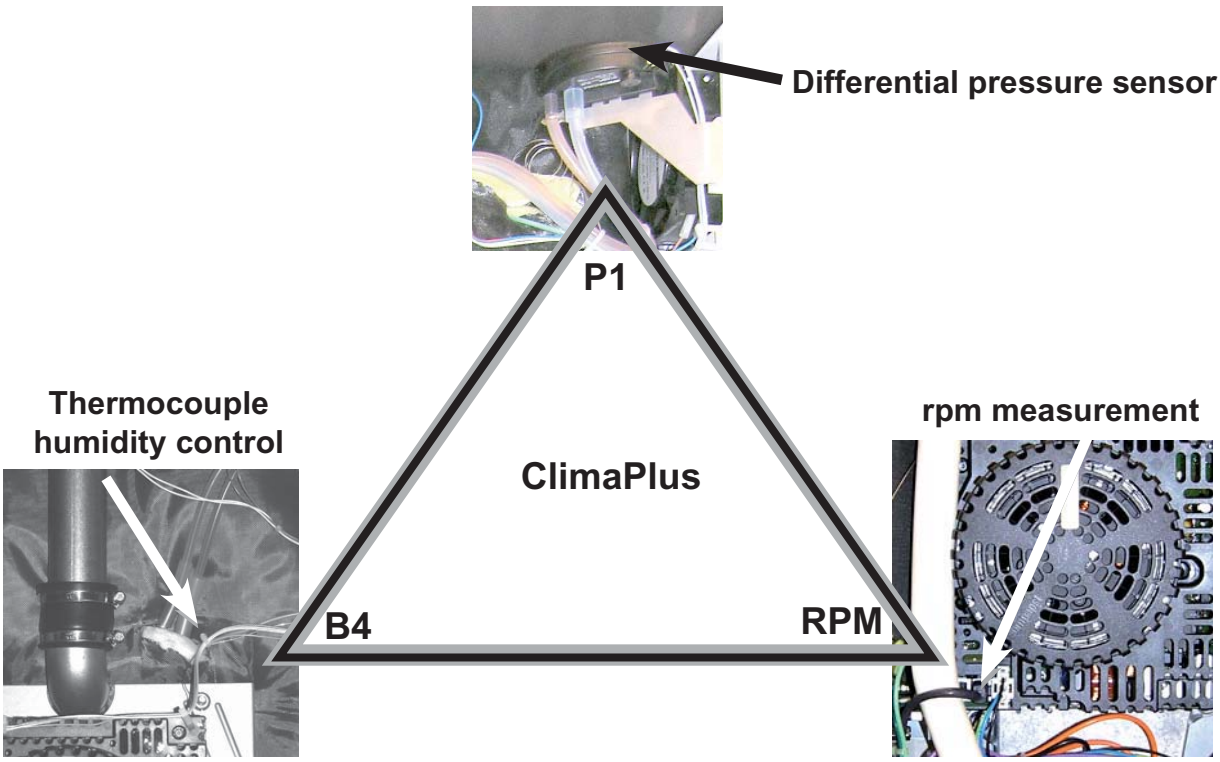
LED code fan motor SCC and CM from 04/2004		
	Reason	Remedy
1x	Motor doesn't start, no changing signal from hallsensor	Check for motor blockage or change motor.
2x	Voltage too low on motor pcb	Check supply voltage or change motor.
3x	Voltage too high on motor pcb	Check supply voltage or change motor.
4x	rpm measurement defective	Change motor.
5x	Motor pcb temperature >105°C	Check cooling system (cooling fan, air intake filter), otherwise change motor
6x	Supply voltage <80V	Check power supply (F1-F2)
7x	Motor pcb defective	Change motor.
8x	Motor pcb defective	Change motor.

Fan motor SCC 40.00.276 for units 3AC 400-480V (without neutral)

Clima Plus Control SCC

The calculated humidity inside the cabinet is based on:
1. Voltage output signal P1 (depending on fan motor speed, ref: function test #5)
2. Temperature B4 (thermocouple behind motor mounting plate)
3. RPM signal of the fan motor (via BUS signal)

The offset voltage of P1 (Motor not turning) is appr.: 0.45 - 0.55V



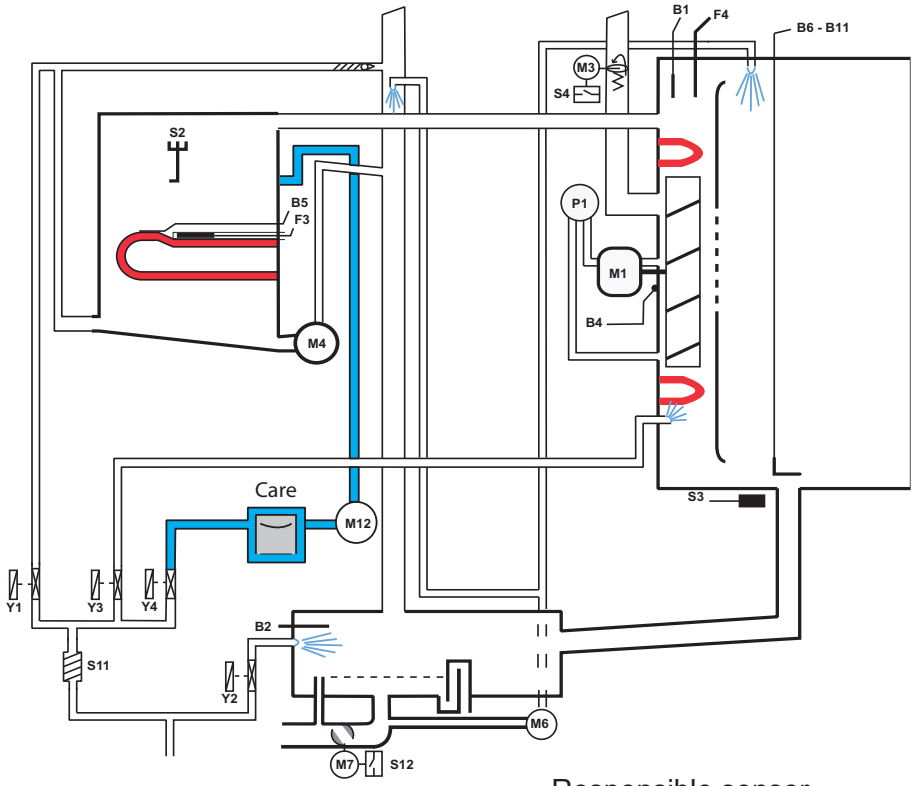
Basic rule: **The less humid, the higher is the voltage of P1,**
The higher the rpm, the higher the voltage of P1.

Example: SCC 101 E

RPM	P1 (approx. Volt)		Clima Status (approx. value in Pascal)
Speed 500rpm	Dry	1,1	Indicated values shall NOT be “0” or “85000”
	Wet	0,7	
	Combi	0,6	If “0” or “85000” is indicated re-calibration is needed
Speed 1250rpm	Dry	2.3	
	Wet	1.7	
	Combi	1.5	
Speed 1800rpm	Dry	2.9	
	Wet	2.4	
	Combi	1.9	
Speed 1900rpm	Dry	3,1	
	Wet	2.5	
	Combi	2.2	

SCC - Sequence of events

Steam: Temperature range 98-103°C (208-218°F)



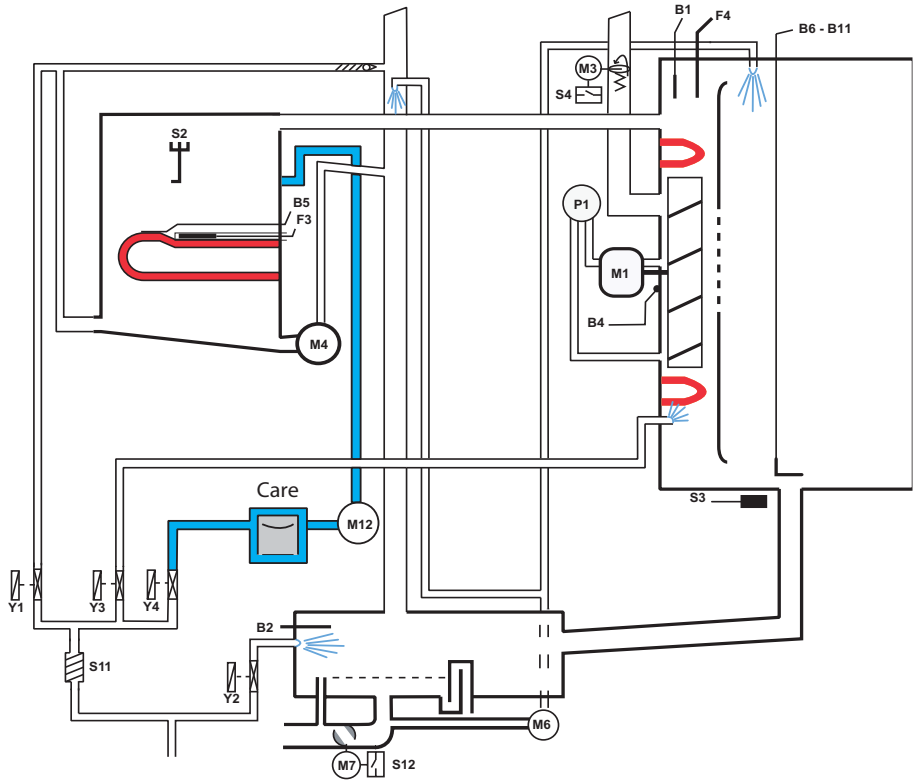
Function step		Responsible sensor
1	Select Wet heat (Temp 98-103°C (208-218°F))	
2	Select time or core temperature	
3	Close cabinet door	Reed switch S3
4	Check water level inside steam generator	Level electrode S2 inside Steam Gen
5	Time based preheating of steam generator, if B5 is below 85°C (185°F)	Thermocouple B5 inside Steam Gen.
6	Timer starts after successful preheating	Logic on PCB
7	Steam production up to saturation in cabinet	Pressure sensor P1, Thermocouple B4 rpm motor via BUS
8	Adding of Hot Air from 70°C (158°F) only possible, if 70% humidity reached	Cabinet sensor B1
9	Quenching (set to 70°C/158°F)	Thermocouple B2

Note: Steam heating only active when humidity flap (S4) is in closed position!

Additional functions possible: 4 Fan speeds (Standard = Level 3), pulsed fan wheel, ½ Energy, HACCP output, ΔT.

SCC - Sequence of events

Low temperature steam: Temperature range 30-97°C (85-207°F)



Function step		Responsible sensor
1	Select Wet heat (Temp 30-97°C (85-207°F))	
2	Select time or core temperature	
3	Close cabinet door	Reed switch S3
4	Check water level inside steam generator	Level electrode S2 inside Steam Gen
5	Time based preheating of steam generator, if B5 is below 85°C (185°F)	Thermocouple B5 inside Steam Gen.
6	Timer starts after successful preheating	Logic on PCB
7	Steam supply until set temperature inside cabinet is reached	Cabinet sensor B1
8	Adding of Hot Air from 93°C (200°F) possible (only 50%)	Cabinet sensor B1
9	Quenching (set to 70°C/158°F)	Thermocouple B2

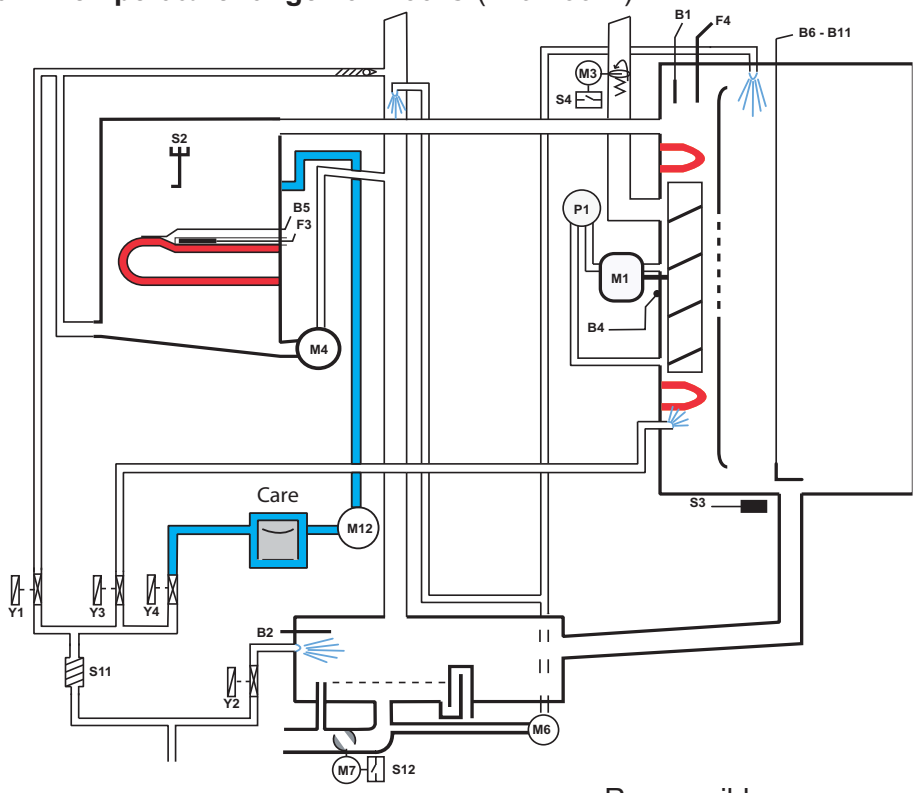
Note: Steam heating only active when humidity flap (S4) is in closed position!

Below 98°C fan at lowest speed when no energy required for longer than 2 minutes.

Additional functions possible: 4 Fan speeds (Standard = Level 3), pulsed fan wheel, ½ Energy, HACCP output, ΔT.

SCC - Sequence of events

Forced steam: Temperature range 104-130°C (219-266°F)



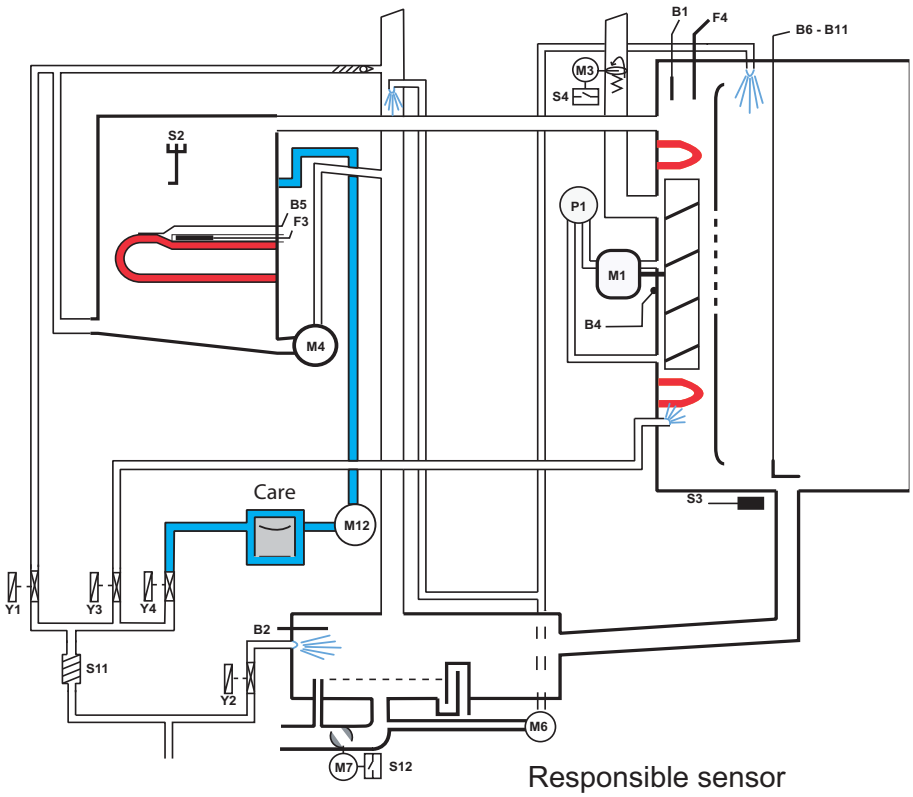
Function step		Responsible sensor
1	Select Wet heat (Temp 104-130°C (219-266°F))	
2	Select time or core temperature	
3	Close cabinet door	Reed switch S3
4	Check water level inside steam generator	Level electrode S2 inside Steam Gen
5	Time based preheating of steam generator, if B5 is below 85°C (185°F)	Thermocouple B5 inside Steam Gen.
6	Timer starts after successful preheating	Logic on PCB
7	Steam supply until saturation is reached inside cabinet	Pressure sensor P1, Thermocouple B4 rpm motor via BUS
8	Adding of hot air only when humidity is above 85%	Cabinet sensor B1
9	Quenching (set to 70°C/158°F)	Thermocouple B2

Note: Steam heating only active when humidity flap (S4) is in closed position!

Additional functions possible: 4 Fan speeds (Standard = Level 3), pulsed fan wheel, ½ Energy, HACCP output, ΔT.

SCC - Sequence of events

Combi steam: Temperature range 141-300°C (286-572°F)



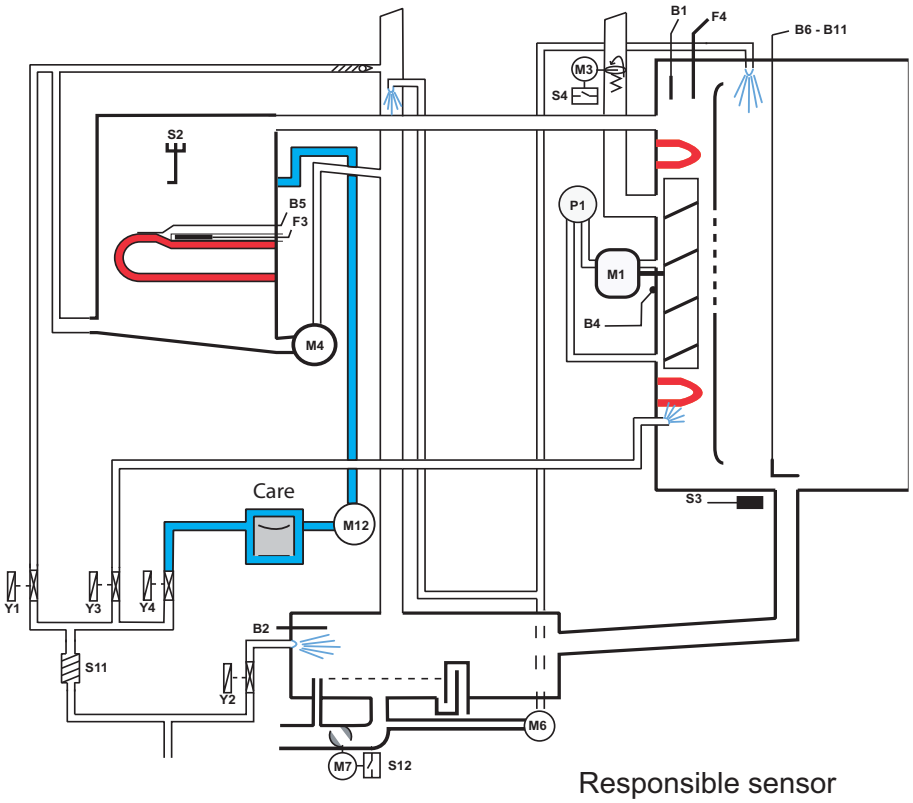
Function step		Responsible sensor
1	Select Wet and Dry heat (Temp 141-300°C (286-572°F)	
2	Select time or core temperature	
3	Close cabinet door	Reed switch S3
4	Check water level inside steam generator	Level electrode S2 inside Steam Gen
5	Time based preheating of steam generator, if B5 is below 85°C (185°F)	Thermocouple B5 inside Steam Gen.
6	Timer starts after successful preheating	Logic on PCB
7	Heat up cabinet with Hot Air until set temperature is reached; **Priority Hot Air**	Cabinet sensor B1
8	Adding of steam up to set steam saturation	Pressure sensor P1, Thermocouple B4 rpm motor via BUS
9	Quenching (set to 70°C/158°F)	Thermocouple B2

Note: Steam heating only active when humidity flap (S4) is in closed position!

Additional functions possible: 4 Fan speeds (Standard = Level 3), pulsed fan wheel, ½ Energy, HACCP output, ΔT.

SCC - Sequence of events

Finishing: Temperature range 30-140°C (86-284°F)



Function step		Responsible sensor
1	Select Wet and Dry heat (30-140°C (86-284°F))	
2	Select time or core temperature	
3	Close cabinet door	Reed switch S3
4	Check water level inside steam generator	Level electrode S2 inside Steam Gen
5	Time based preheating of steam generator, if B5 is below 85°C (185°F)	Thermocouple B5 inside Steam Gen.
6	Timer starts after successful preheating	Logic on PCB
7a	Electric units: alternating 8 s Hot air supply 8 s Steam supply	Hot air: Cabinet sensor B1 Steam: Pressure sensor P1, Thermocouple B4 rpm motor via BUS
7b	Gas units: alternating 20 s Hot air supply 20 s Steam supply	Hot air: Cabinet sensor B1 Steam: Pressure sensor P1, Thermocouple B4 rpm motor via BUS
8	Quenching (set to 70°C/158°F)	Thermocouple B2

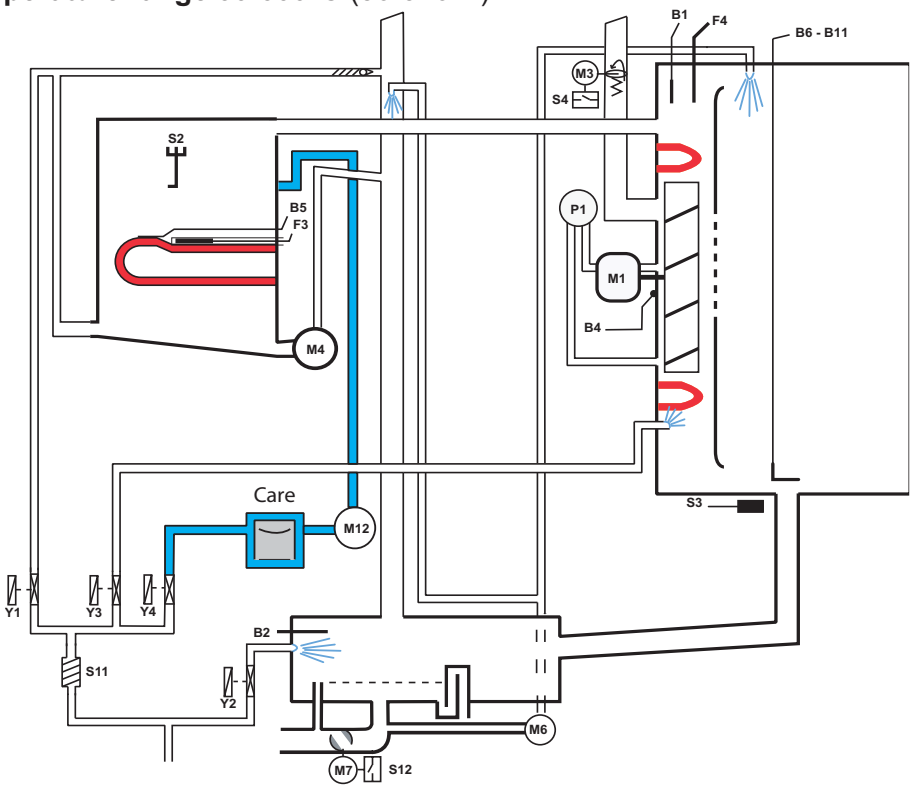
Note: Steam heating only active when humidity flap (S4) is in closed position!

Below 98°C fan at lowest speed when no energy required for longer than 2 minutes.

Additional functions possible: 4 Fan speeds (Standard = Level 3), pulsed fan wheel, ½ Energy, HACCP output, ΔT.

SCC - Sequence of events

Hot air: Temperature range 30-300°C (86-576°F)



Function step		Responsible sensor
1	Select Dry heat	
2	Select time or core temperature	
3	Close cabinet door	Reed switch S3
4	Timer starts at once	Logic on PCB
5	Heating of cabinet with Hot air to set temperature	Cabinet sensor B1
6	Quenching (set to 70°C/158°F)	Thermocouple B2

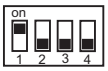
Below 98°C fan at lowest speed when no energy required for longer than 2 minutes.

Additional functions possible: 4 Fan speeds (Standard = Level 3), pulsed fan wheel, ½ Energy, HACCP output, ΔT.

ClimaPlus permanently measures the humidity evaporating from the food.
If needed the clima plus valve is opened to reduce the humidity to the set value.

Service level SCC

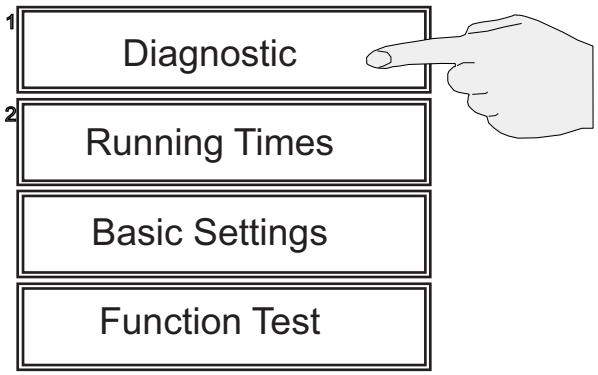
1) Switch on unit



2) Set DIP 1 on operator PCB to „“ON““ position

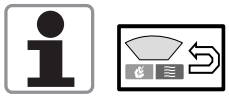
3) Press service key

4) On the displays the following available Service - modules will be shown

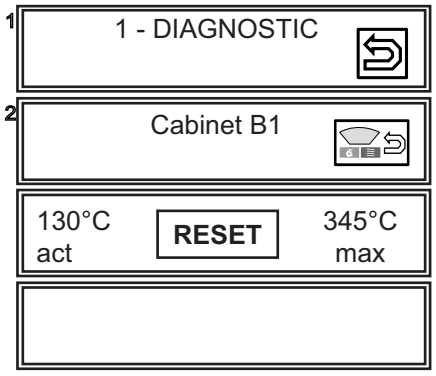


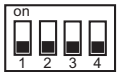
5) Activate selected service module by push on display or push on central dial

6) Deactivate selected service module by pushing on “return“ symbol



Returning to SCC display / cooking mode only possible from Diagnostic mode!



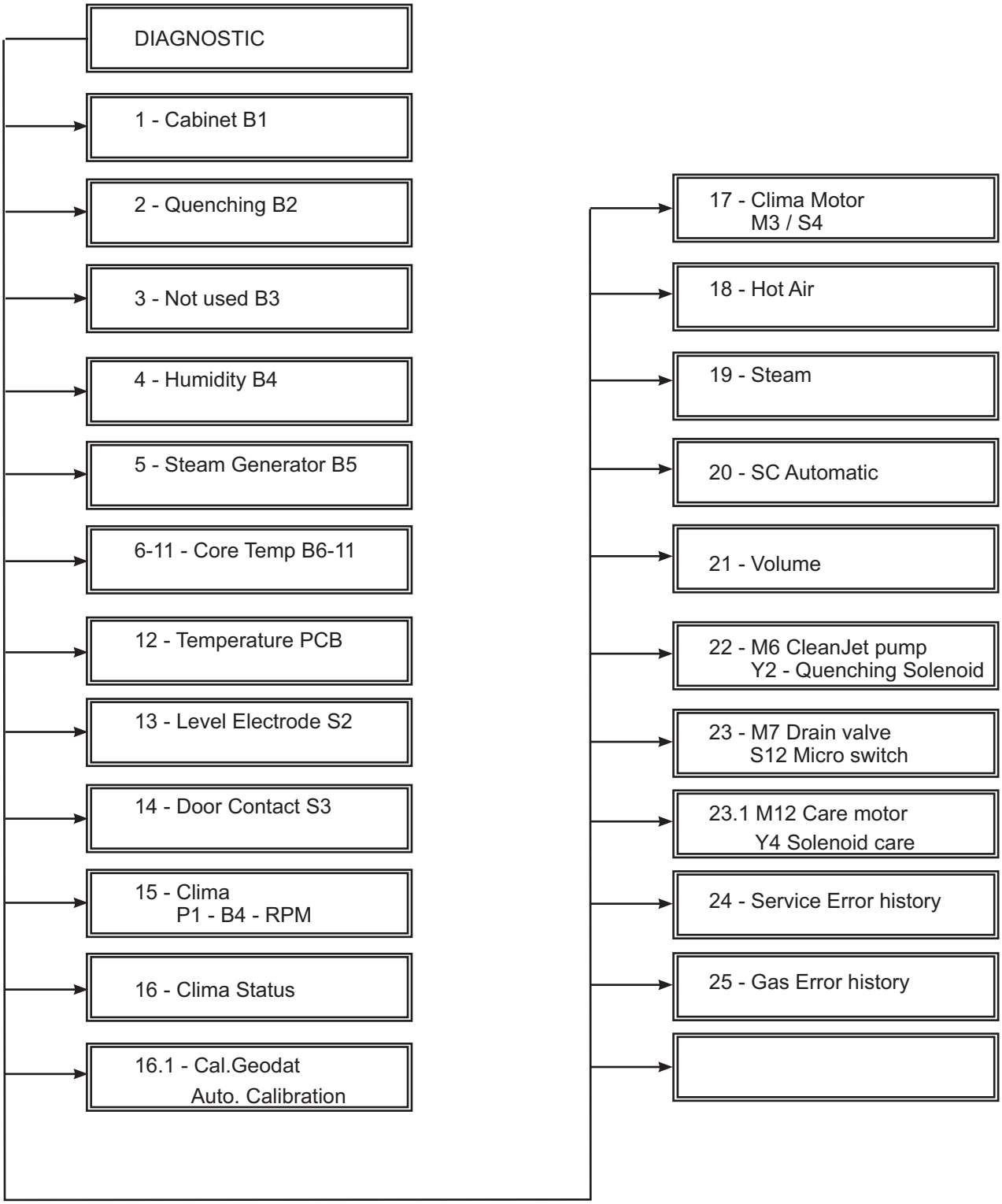


7) Set DIP 1 on operator PCB to “OFF“ position to deactivate Service level

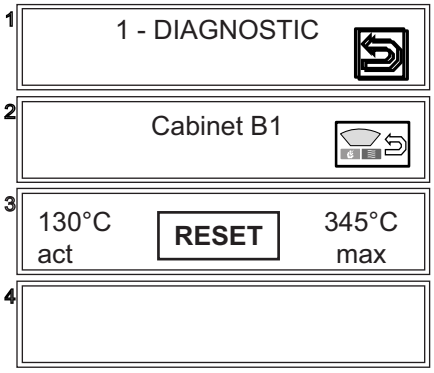
Starting with software version 01-07-02 gas related information is not shown on electric units!

Function data entry through central dial: press dial icon first, frame will turn to red ==> only no the value can be changed.

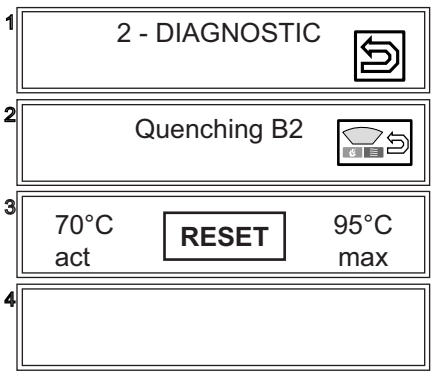
Diagnostic mode SCC



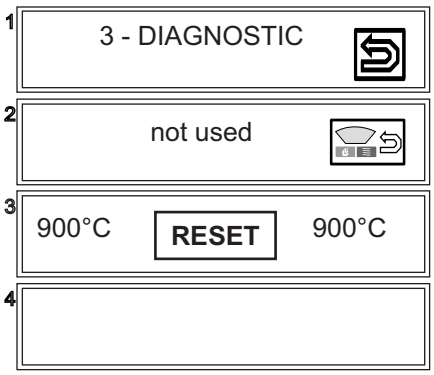
Diagnostic mode SCC



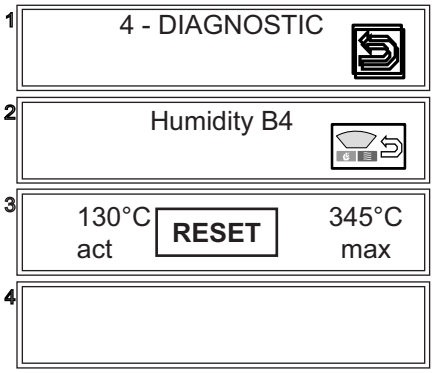
- Temp. range: -30 - 340°C (-22 - 644°F)
- 900°C (655°C until SW version 01-07-08) broken thermocouple or loose plug
- act: actual temperature
- max: maximum recorded temperature
- to reset max value press RESET



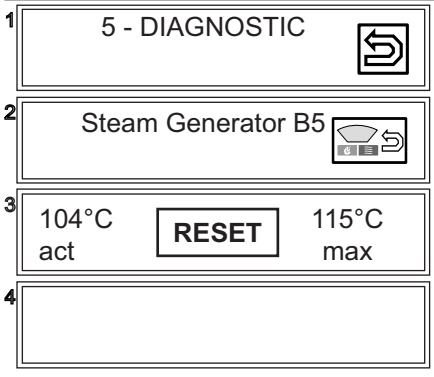
- Temp. range: -30 - 340°C (-22 - 644°F)
- 900°C (655°C until SW version 01-07-08) broken thermocouple or loose plug
- act: actual temperature
- max: maximum recorded temperature
- to reset max value press RESET



- B3 free, no function

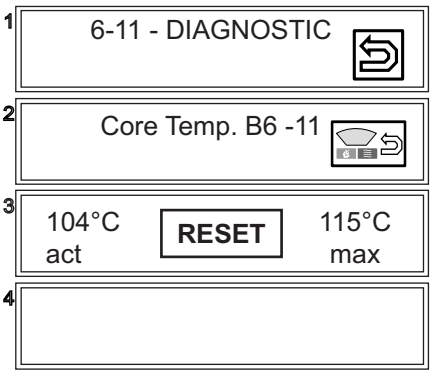


- Temp. range: -30 - 340°C (-22 - 644°F)
- 900°C (655°C until SW version 01-07-08) broken thermocouple or loose plug
- act: actual temperature
- max: maximum recorded temperature
- to reset max value press RESET

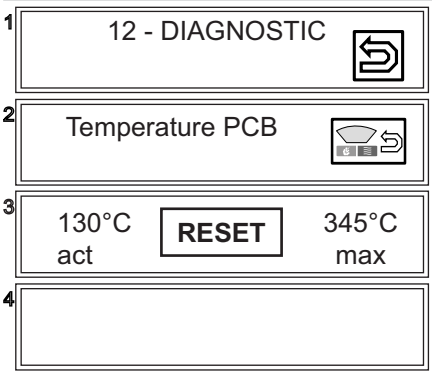


- Temp. range: -30 - 340°C (-22 - 644°F)
- 900°C (655°C until SW version 01-07-08) broken thermocouple or loose plug
- act: actual temperature
- max: maximum recorded temperature
- to reset max value press RESET

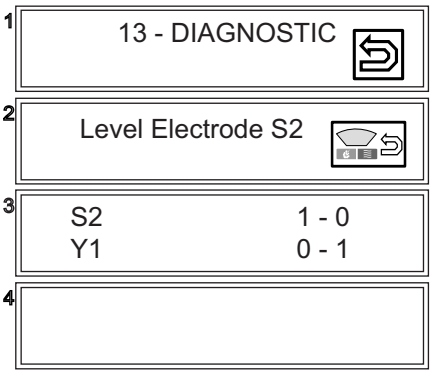
Diagnostic mode SCC



- Temp. range: -30 - 340°C (-22 - 644°F)
- 900°C (655°C until SW version 01-07-08) broken thermocouple or loose plug
- act: actual temperature
- max: maximum recorded temperature
- to reset max value press RESET

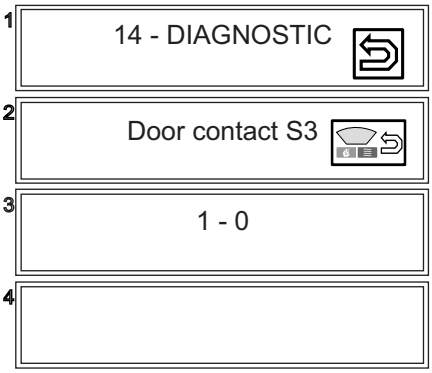


- Temp. range: -30 - 85°C
- act: actual temperature
- max: maximum recorded temperature
- to reset max value press RESET
- above 75°C (167°F) Warning=> Clean air filter
- above 85°C (185°F) => **Service 29**

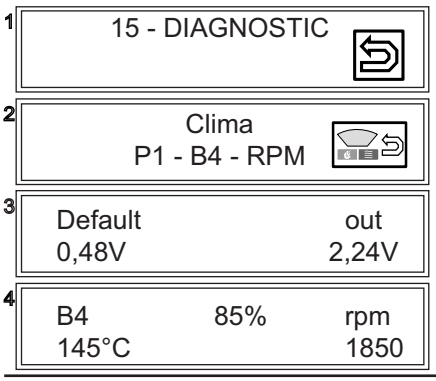


S2 = 1 => Water level reached
S2 = 0 => Water level too low

Y1 = 0 => Filling solenoid not active
Y1 = 1 => Filling solenoid active



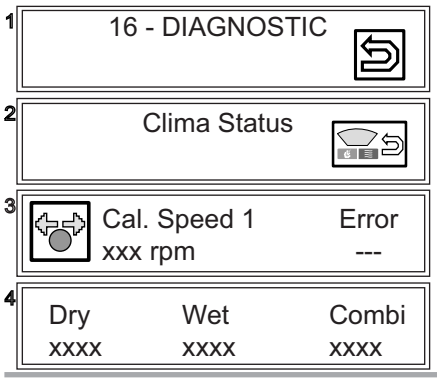
1 => Door closed
0 => Door open



Default: 0,4 - 0,55V (Value when fan motor not turning)

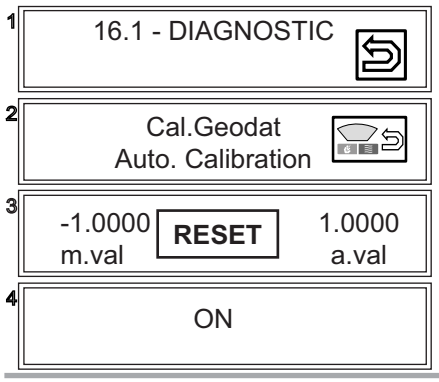
Output signal (out):
ca. 1,3 - 1,6V Combination 200°C
ca. 1,5 - 1,9V Steam 100°C
ca. 2,5 - 3,0V Hot air 60°C

Diagnostic mode SCC



- Display of calibration values relative to the different motor speeds and unit size;

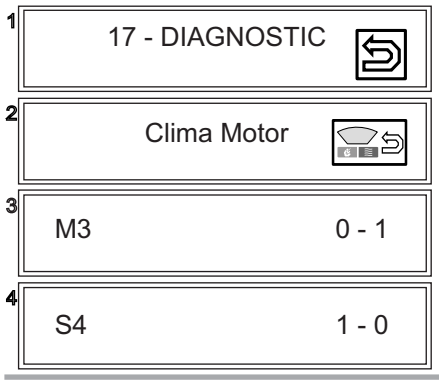
- Normal values between 72000-130000



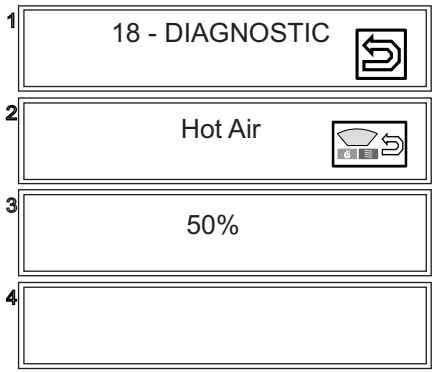
Automatic Humidity calibration

AFTER manual calibration this feature is set to „OFF“.
Do not reset to „ON“ after manual calibration.
When „ON“ Autocalibration will be done when cabinet is cold and the steam generator is preheating;

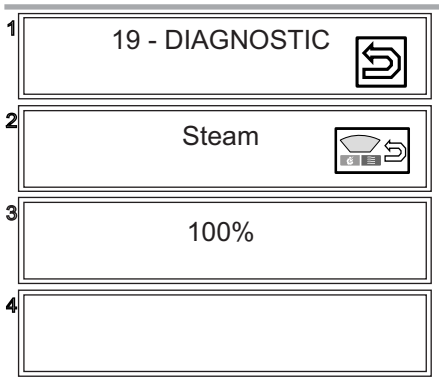
1.0000 is only shown when autocalibration is „OFF“



M3: Motor ClimaPlus Flap
S4: Micro switch ClimaPlus flap
No steam production, when S4 is „0“ => open!

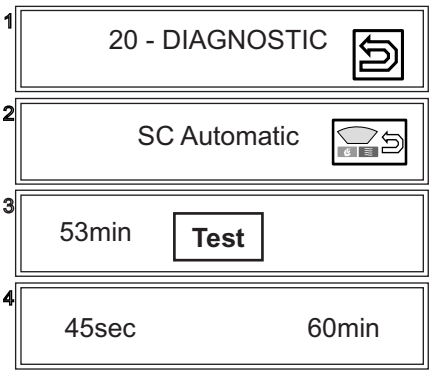


possible values:
0: hot air heating off
50%: hot air heating 50%
100%: hot air heating 100%



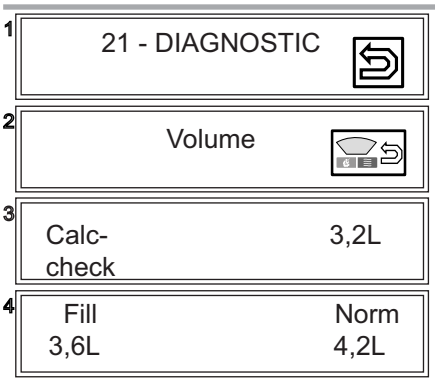
possible values:
0: steam heating off
50%: steam heating 50%
100%: steam heating 100%

Diagnostic mode SCC



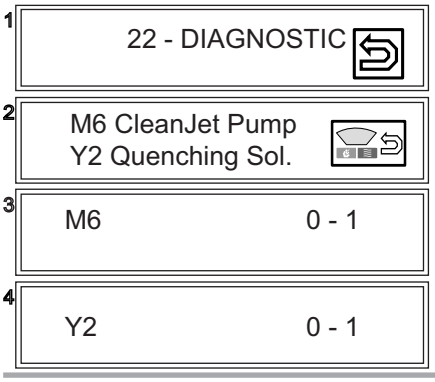
Window 3:
- 53min since last SC -automatic
- Pressing Test => time will be set to set time plus 1 minute

Window 4:
- 45sec: Preset SC-duration (20-90sec)
- 60min: Preset SC-time (20-90min)

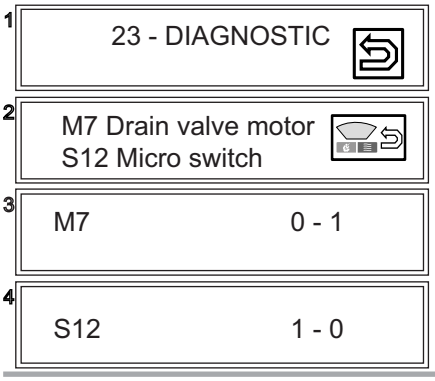


Calccheck 3,2l: Release volume for indication CalcCheck

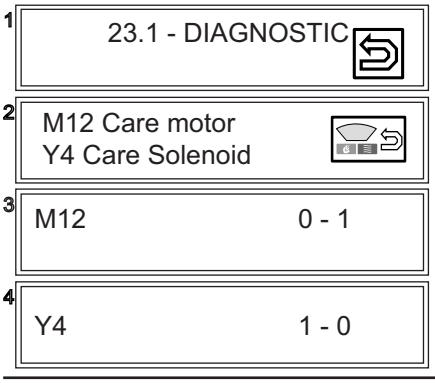
Fill 3,6l: actual measured water content steam generator
Norm 4,2l: Volume when steam generator is new and clean



M6: CleanJet Pump
Y2: solenoid valve quenching

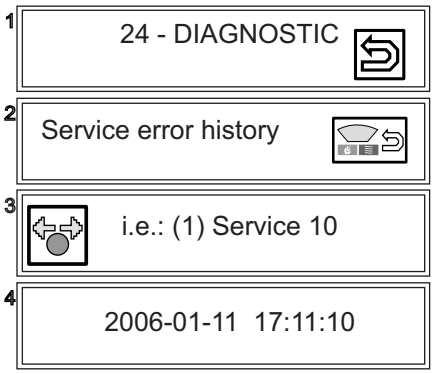


M7: Drain valve motor
S12: Micro switch drain valve

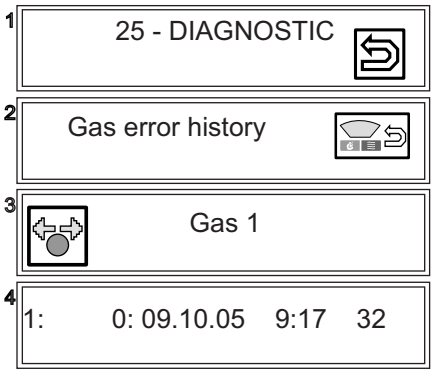


M12 Care motor
Y4 Care Solenoid
Display only from Software SCC 04-01-02

Diagnostic mode SCC



- since SW Version 01-07-09
  display of the last 10 stored error messages
  (ref: Service error messages)

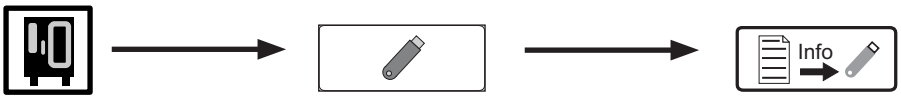


- since software version 01-07-09
Indication of the last 16 stored ignition box error messages including date and time.

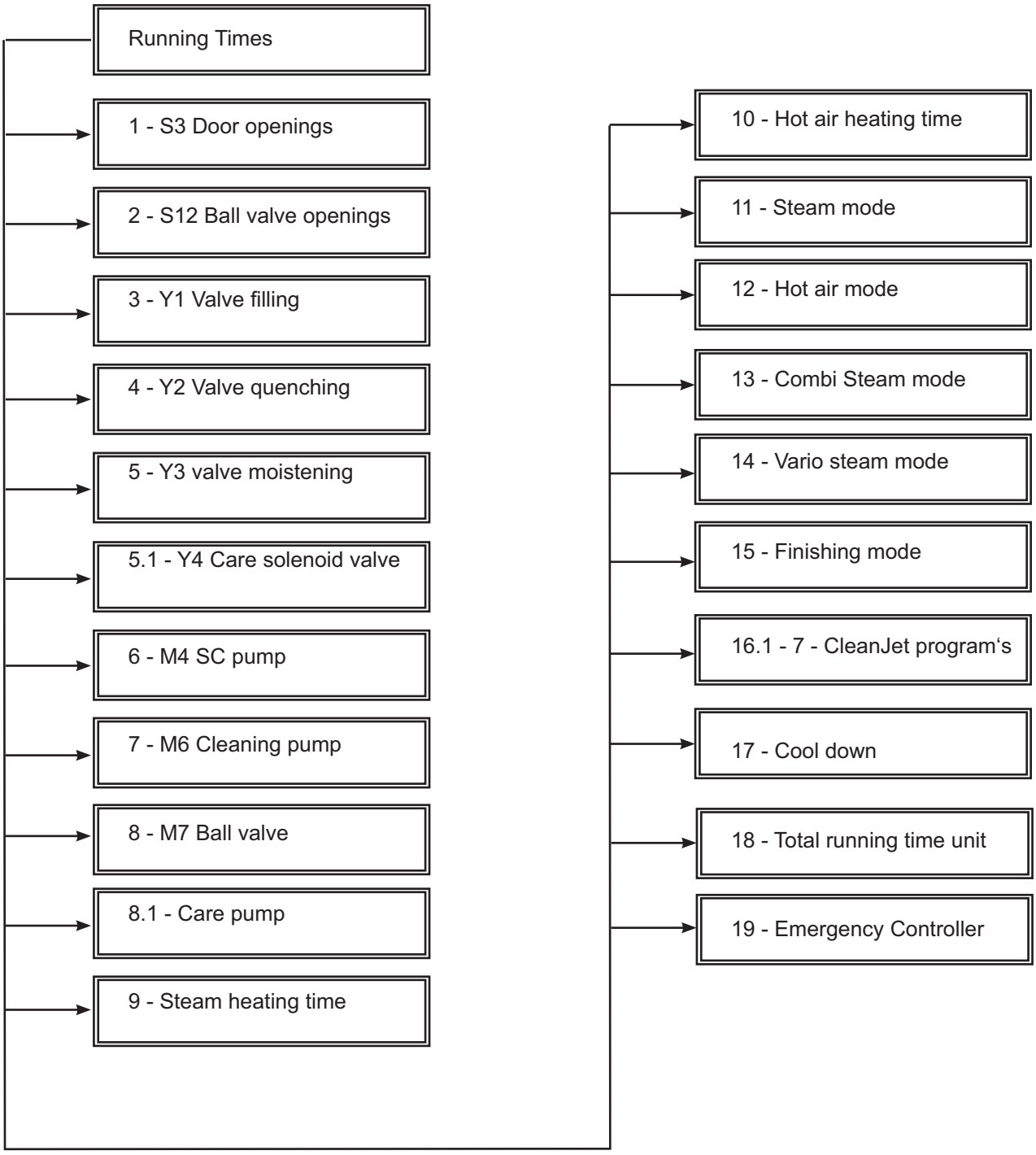
0= ignition box top
1= ignition box bottom

Only starting with Software version 01-07-09 the entire information of the service level can be downloaded to memory stick when DIP switch 1 is set to „1“.

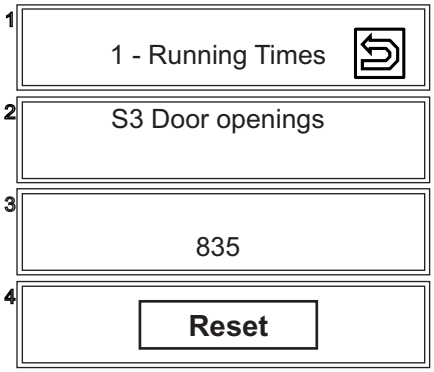
SInce Software version 02-01-01 the service package can be downloaded also by the customer without setting the dip switch using the function key followed by pressing the USB key and Info key.



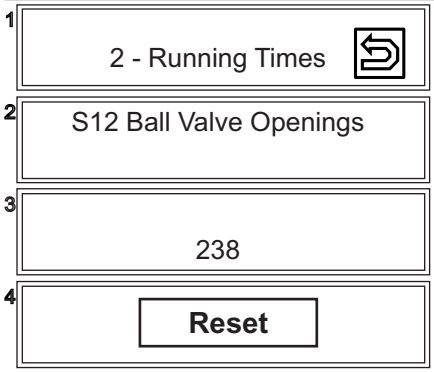
Running Times SCC



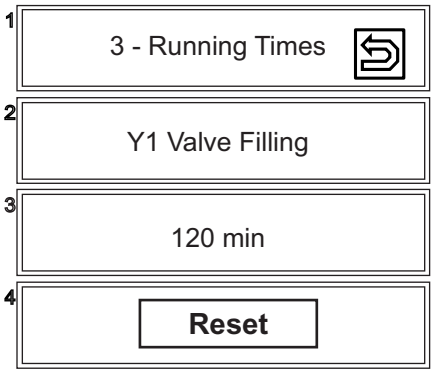
Running Times SCC



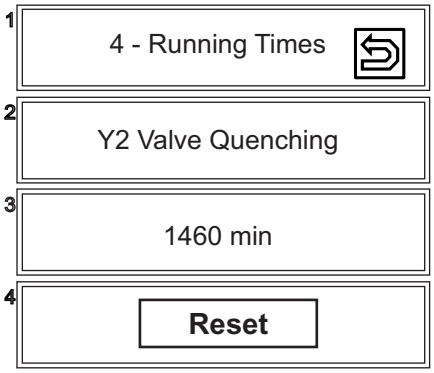
Number of events
Reset possible



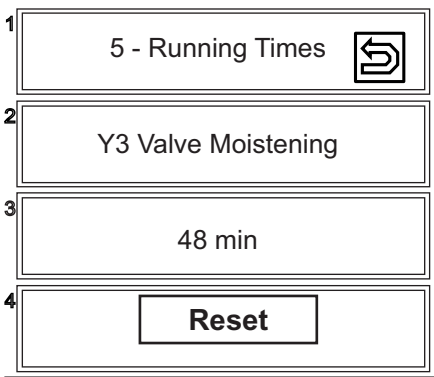
Number of events
Reset possible



Total minutes
Reset possible

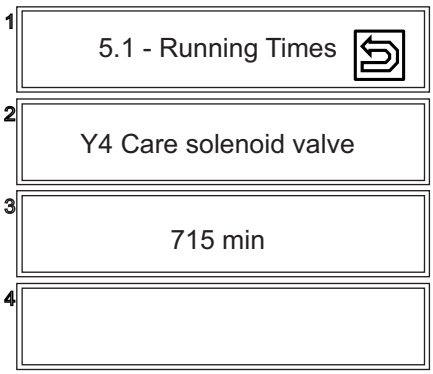


Total minutes
Reset possible

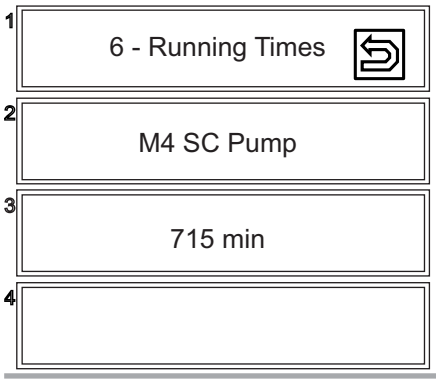


Total minutes
Reset possible

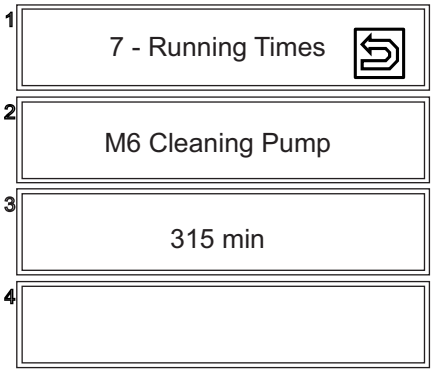
Running Times SCC



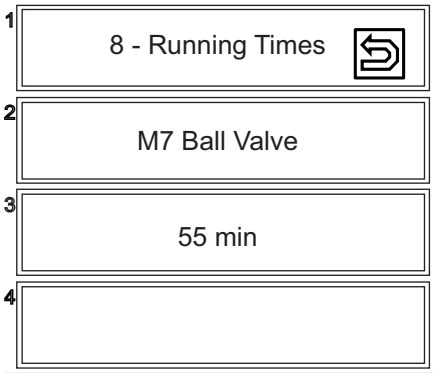
Total minutes
Reset possible



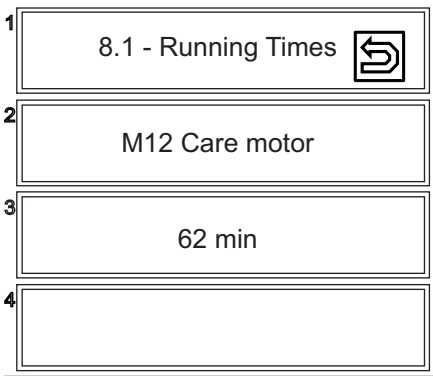
Total minutes
Reset possible



Total minutes
Reset possible



Total minutes
Reset possible



Total minutes
Reset possible

Running Times SCC

1	9 - Running Times	
2	Steam Heating Time	
3	4hrs	Total hours
4	**Reset**	

1	10 - Running Times	
2	Hot Air Heating Time	
3	4hrs	Total hours
4	**Reset**	

1	11 - Running Times	
2	Steam Mode	
3	4hrs	Total hours
4		

1	12 - Running Times	
2	Hot Air Mode	
3	4hrs	Total hours
4		

1	12 - Running Times	
2	Hot Air Mode	
3	4hrs	Total hours
4		

Running Times SCC

1	13 - Running Times 	
2	Combi Steam Mode	Total hours
3	4hrs	
4		

1	14 - Running Times 	
2	Vario Steam Mode **<97°C**	Total hours
3	4hrs	
4		

1	15 - Running Times 	
2	Finishing Mode **Finishing 97-140°C**	Total hours
3	4hrs	
4		

1	16.1-16.6 - Running Times 	Total hours Reset NOT possible 16.1 - Rinse w/o tabs 16.2 - Rinse 16.3 - Intermediate Clean 16.4 - Light 16.5 - Medium 16.6 - Strong
2	 Cleaning Program	
3	55 hrs	
4		

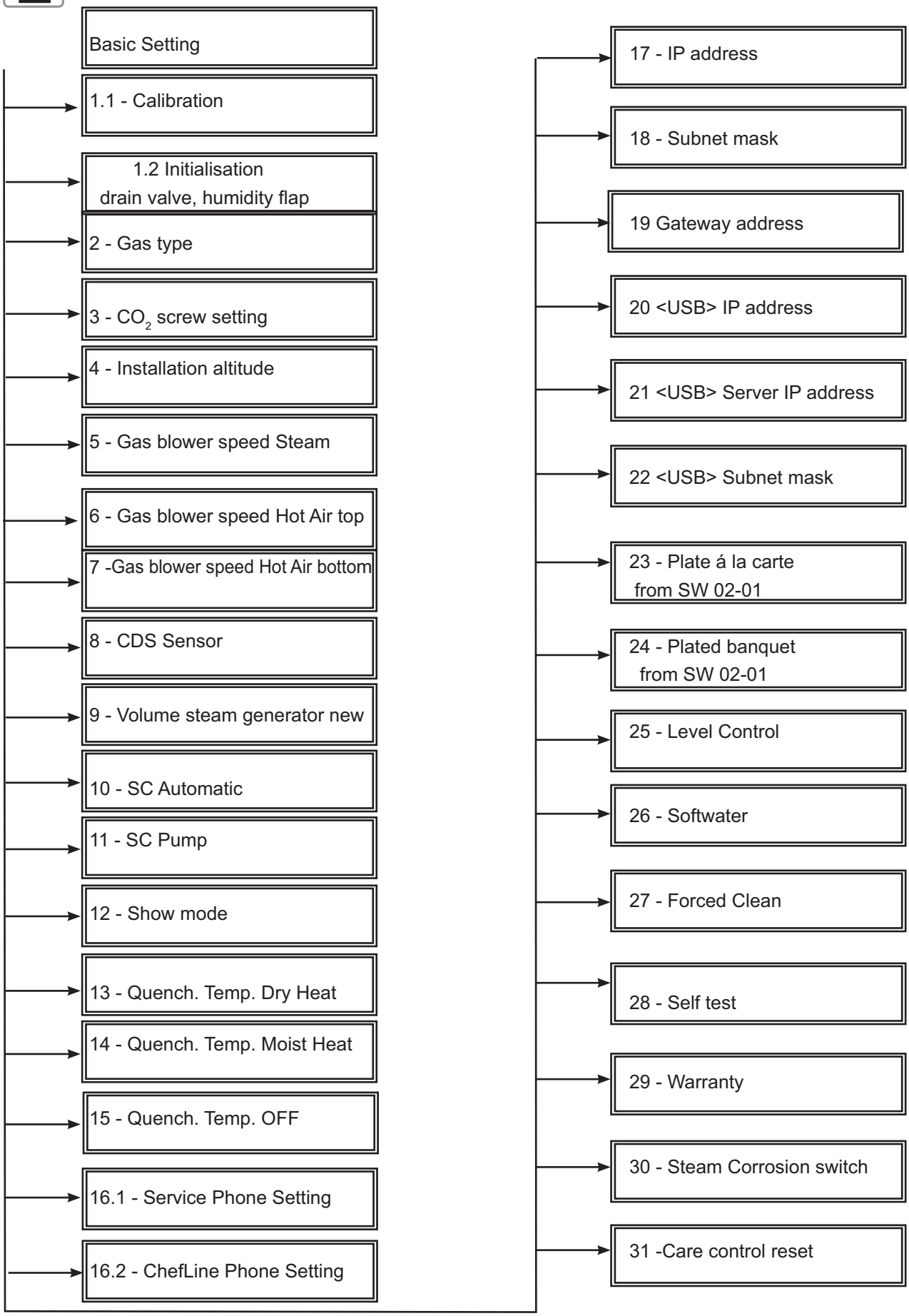
1	17 - Running Times 	
2	Cool Down	Total hours
3	4hrs	
4		

1	18 - Running Times	
2	Total running time unit	Total hours
3	4hrs	
4		

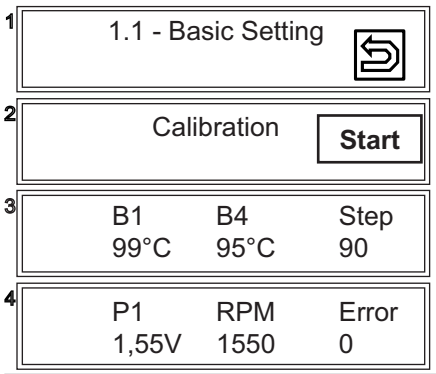
1	19 - Running Times	
2	Emergency controler	Number of events Reset possible
3	1	
4	**Reset**	

Basic Settings

NOTE: To validate changes made, switch unit OFF and ON again!
Wait 30 secondes before switching off.

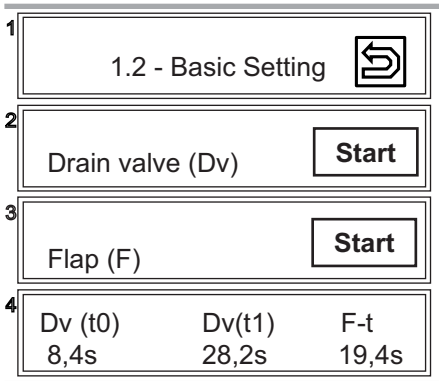


Basic Settings (To validate changes made, switch unit OFF and ON again!)



- To prepare unit for calibration run, see page „Calibration“
- When error is shown switch off and follow Error messages for repair.

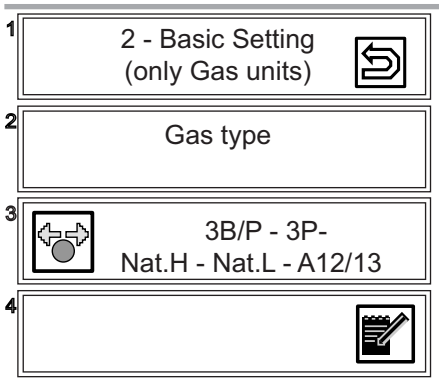
Afterwards start calibration run once again.



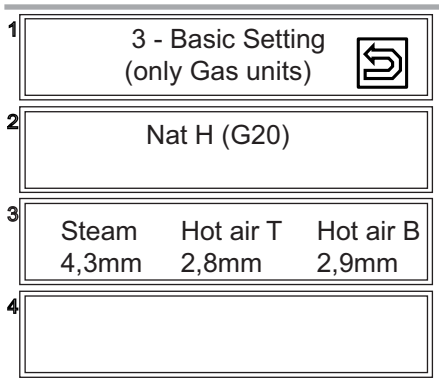
- Drain valve or flap shall be initialised after indication of Service 26, 27 or 21.

Times shown above are average times.

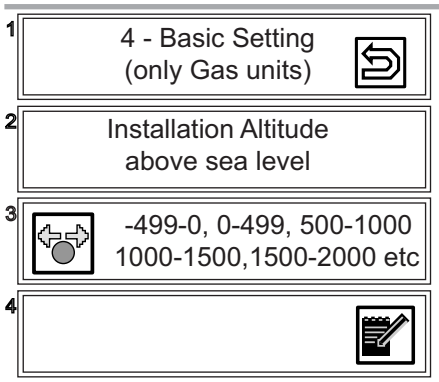
Dv(t0): time needed for 90° turning of drain valve (Drain valve open - closed)
Dv(t1): time needed for 270° turning of drain valve
F-t: time needed for 360° turning of ClimaPlus flap



- Selection of connected type of gas
- Confirm adjustment by touch on „Store“ icon.
- Corresponding blower speeds are automatically selected and loaded.
- Unit must be switched off and on to store new setting!
- A flue gas analysis MUST be done!

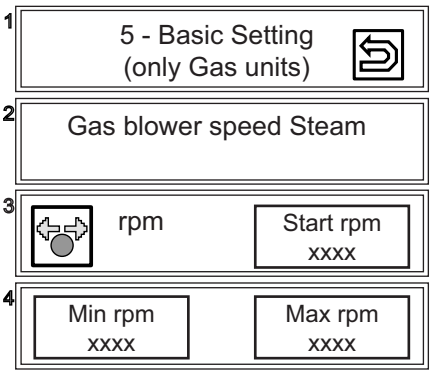


- Pre set lenghts of CO_2 screws
- After gas conversion or changing gas valve adjust CO_2 screw
- A flue gas analysis MUST be done!

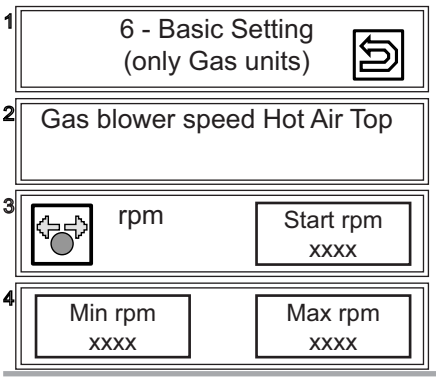


- Since software version 01-07-02
- Select installation altitude with dial icon
- After 5 sec. „Store“ icon will show
- To confirm press „store“ icon and switch unit off and on again.
- A flue gas analysis MUST be done!

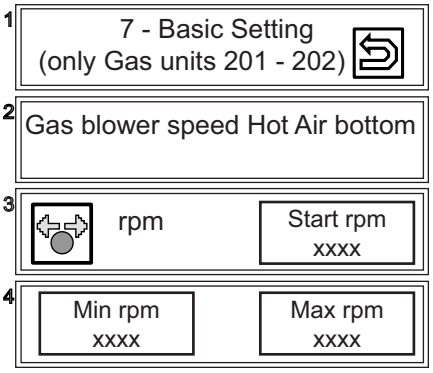
Basic Settings (To validate changes made, switch unit OFF and ON again!)



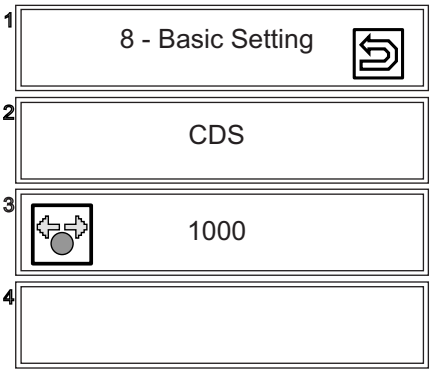
- Adjusting speed of blower motor steam (+/ -10%)
- Modified speed will be shown next to dial icon.
- To store new setting switch unit off and on again.
- A flue gas analysis MUST be done!



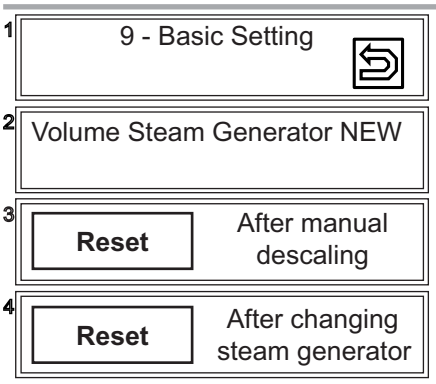
- Adjusting speed of blower motor hot air top (+/ -10%)
- Modified speed will be shown next to dial icon.
- To store new setting switch unit off and on again.
- A flue gas analysis MUST be done!



- Adjusting speed of blower motor hot air bottom (+/ -10%)
- Modified speed will be shown next to dial icon.
- To store new setting switch unit off and on again.
- A flue gas analysis MUST be done!



- Changing the number of pulses for the CDS sensor;



- Since Software version 01-07-02

- After manual descaling:
Press Reset for 5 seconds; Steam generator will be pumped off and filled again, CDS indication will be resetted;

- After changing steam generator:
Press Reset for 5 seconds; Steam generator volume will be reset to factory setting;

Basic Settings (To validate changes made, switch unit OFF and ON again!)

1 10 - Basic Setting 
2 SC Automatic
3  45sec (20-90sec)
4  60min (20-120min)

- Activation by touch on dial icon
- Adjust duration with dial
- Confirm adjustment by touch on dial icon

---

1 11 - Basic Setting 
2 SC Pumpe
3  CONTINUOUS Puls
4

- Activation by touch on dial icon
- Adjust pumping mode with dial
- Confirm adjustment by touch on dial icon

---

1 12 - Basic Setting 
2 Show mode
3  ON - OFF
4

- Activation by touch on dial icon
- Adjust mode with dial
- Confirm adjustment by touch on dial icon

---

1 13 - Basic Setting 
2 Quench. Temp. Hot Air
3  90°C (20 - 130°C)
4

- Setting quenching temperature in hot air mode
- Activation by touch on dial icon
- Adjust temperature with dial
- Confirm adjustment by touch on dial icon

---

1 14 - Basic Setting 
2 Quench. Temp. Moist Heat
3  70°C (20 - 130°C)
4

- Setting quenching temperature in all steam modes
- Activation by touch on dial icon
- Adjust temperature with dial
- Confirm adjustment by touch on dial icon

Basic Settings (To validate changes made, switch unit OFF and ON again!)

1 15 - Basic Setting 
2 Quench. Temp. OFF
Ablöschtemperatur ohne Betriebart
3  120°C
(20 - 130°C)
4

- Setting quenching temperature when no mode is selected
- Activation by touch on dial icon
- Adjust temperature with dial
- Confirm adjustment by touch on dial icon

---

1 16.1 - Basic Setting 
2 Service phone setting
3 **EDIT**
4 08191-327

- Press EDIT key; new display

---

1 16.1 - Basic Setting
Service phone setting 
2 08191-327_
3 0 1 2 3 4 5 6 7 8 9
4 **delete** **store** 

- Select new number with central dial
- Confirm number by pressing central dial
- „delete“ erases last digit
- „store“ will memorize number and returns to former display

---

1 16.2 - Basic Setting 
2 ChefLine phone setting
3 **EDIT**
4 08191-3270

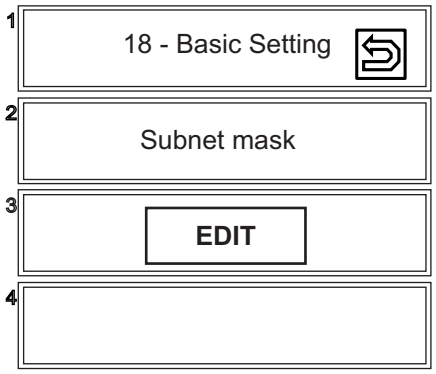
ref: 16.1 Basic Setting

---

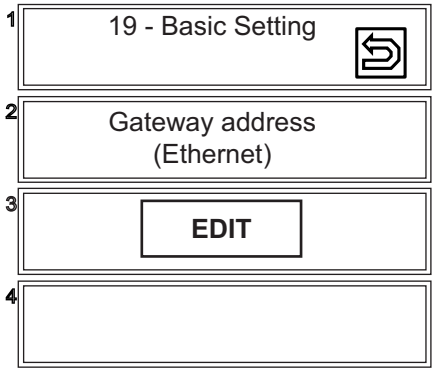
1 17 - Basic Setting 
2 IP Address
3 **EDIT**
4 168.65.8.217

ref: 16.1 Basic Setting

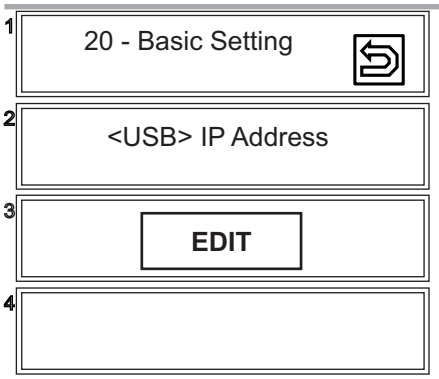
Basic Settings (To validate changes made, switch unit OFF and ON again!)



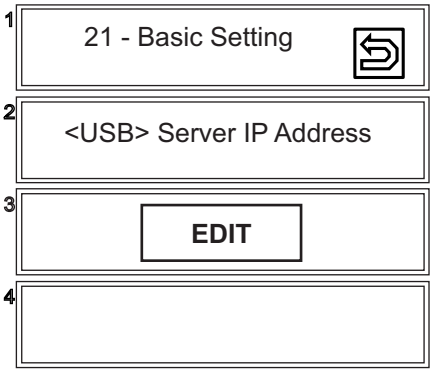
ref: 16.1 Basic Setting



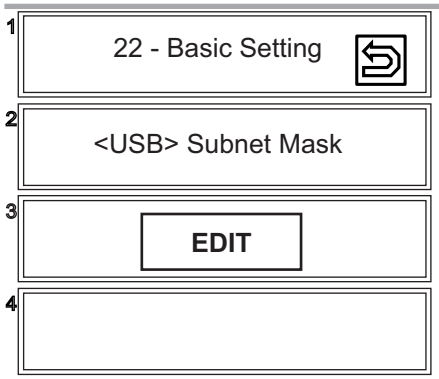
ref: 16.1 Basic Setting



ref: 16.1 Basic Setting

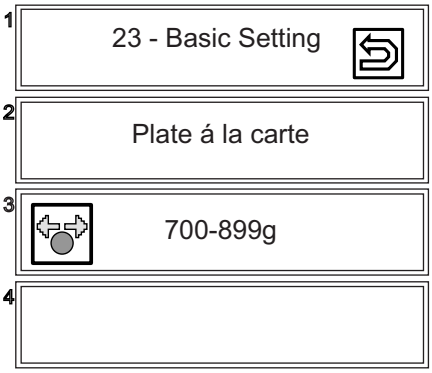


ref: 16.1 Basic Setting

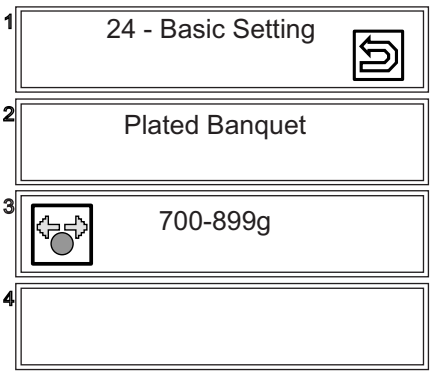


ref: 16.1 Basic Setting

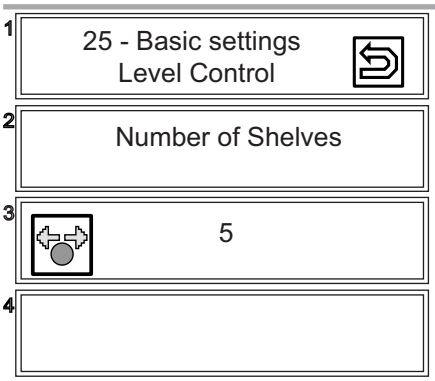
Basic Settings (To validate changes made, switch unit OFF and ON again!)



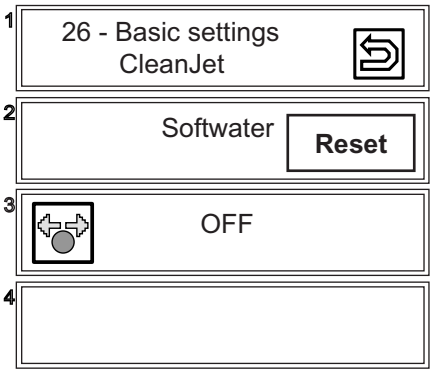
- Press dial icon
- Adjust to correct plate weight
  up to 700g; 700-899g; 900-1099g; above 1100g
- Press dial to memorize new setting



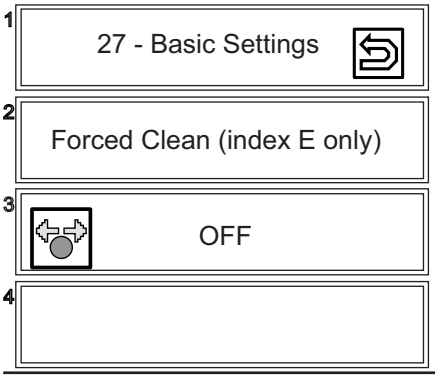
- Press dial icon
- Adjust to correct plate weight
  up to 700g; 700-899g; 900-1099g; above 1100g
- Press dial to memorize new setting



The number of indicated shelves can be indicated for Level Control
If „0“ is selected the max number of shelves is shown.
61-62: 1-6 levels
all others: 1-10 levels



Selecting Softwater “ON” will indicate 50% of the standad cleanr tabs;

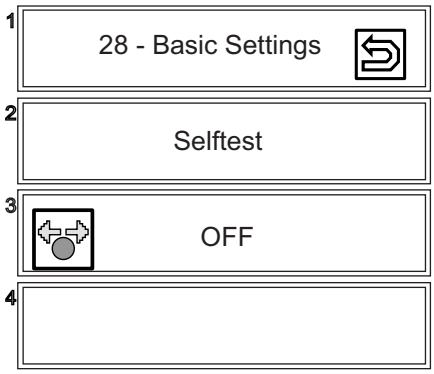


If setting is „ON“ the operator can use the equipment for the duration as set in „CleanJet setting“ under „Settings“.

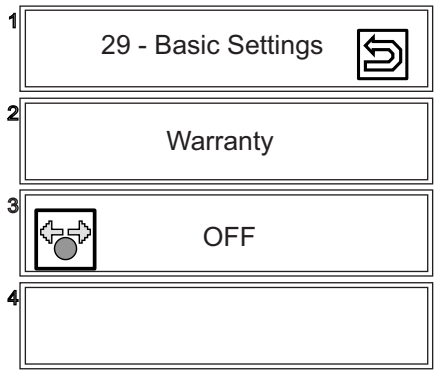
Thereafter he can extend this time for max 2x2hours before a CleanJet mode MUST be started.

If Forced Clean is set to „ON“ „!“ appears during running CleanJet program;;

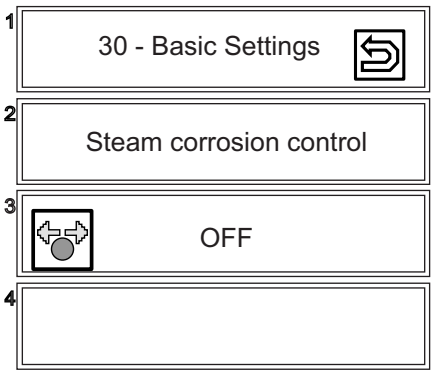
Basic Settings (To validate changes made, switch unit OFF and ON again!)



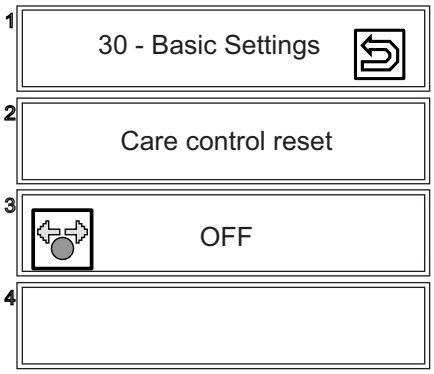
Basic Settings 28 „Selftest“:
After initial installation the unit will automatically run into a „Selftest“ mode. The operator is prompted to remove all containers and packing material from the cabinet. After appr. 1 minute a „Start“ buttom will appear under the condition B1, B2 and B4 is below 40°C (104°F).
Note: For this mandatory start-up function water must be connected!



Basic Settings 29 „Warranty“:
After first switch on the unit will prompt the customer to register and validate his second year warranty online under www.rational-ag.com/warranty.
This prompting will discontinue after 4 days.
In case the unit was installed in a show room or exhibition, this prompting can be re-initialised by setting “Warranty” to ON in basic settings position 29.

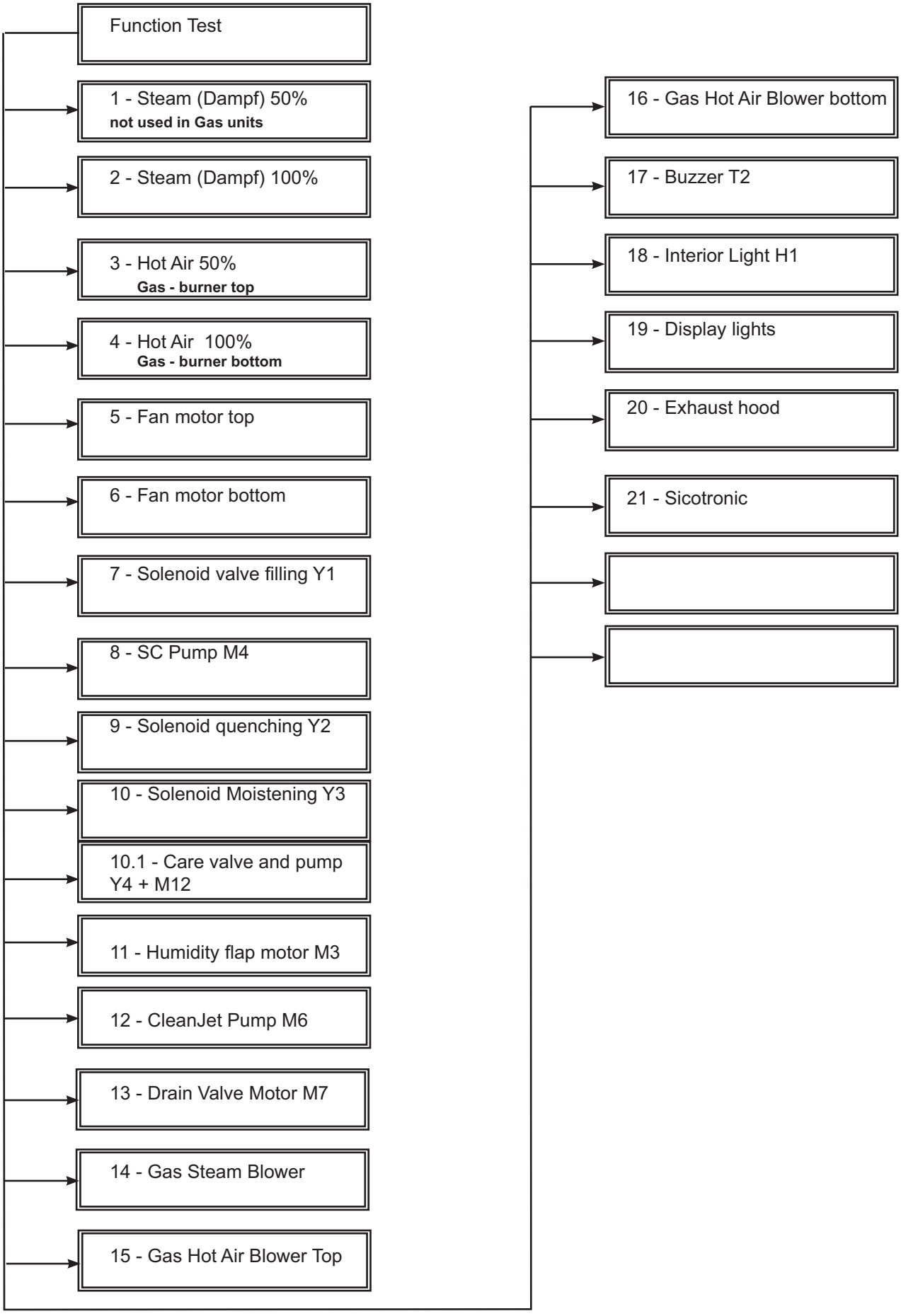


Basic Settings 30 „Steam corrosion control“
The unit automatically recognises if the customer used it predominantely in steam mode. In case this usage is more than 90% during the last 20 hours of operation the unit will prompt a Cleanjet request daily regardless of the total duration of cooking time

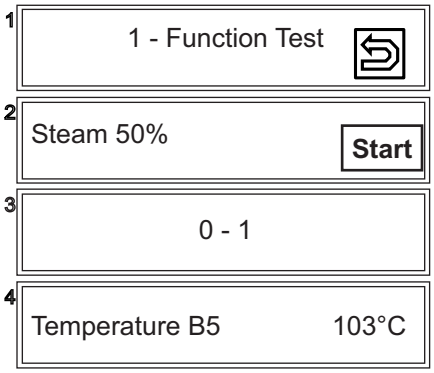


Basic Settings 31 „Care Control Reset“
By setting the switch to “ON” all Care Control bars will be set to blue.

Function test SCC

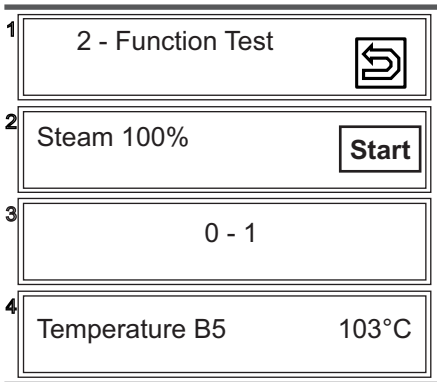


Function test SCC



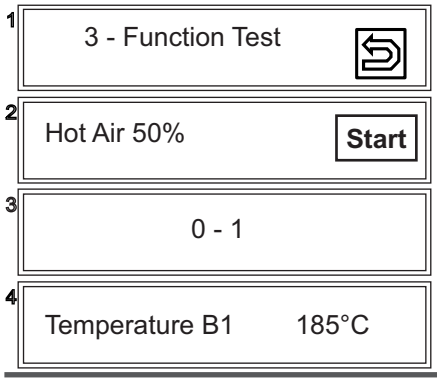
- Electric units: Steam heating 50%;
- Gas units: not used
- Actual temperature of B5

Attention: Parts are not protected against overload!



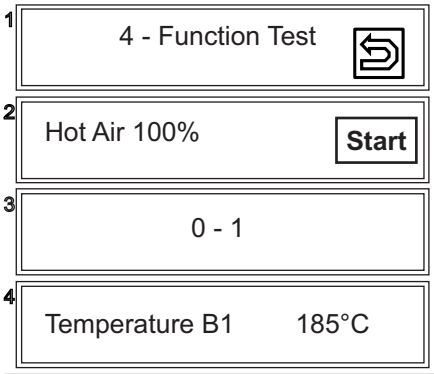
- Electric and gas units: Steam heating 100%;
- Indication gas units (window 2): „Steam Gas-Burner“
- Actual temperature of B5

Attention: Parts are not protected against overload!



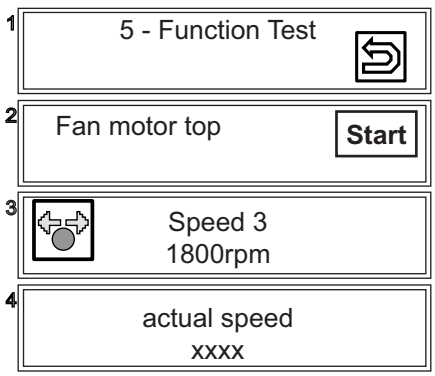
- Electric units: Hot air heating 50%;
- Gas units: Hot air heating 100%
- Indication window 2:
  Table models: „Hot Air Gas-Burner“
  Floor models: „Hot Air Gas-Top Burner“
- Actual temperature of B1

Attention: Parts are not protected against overload!



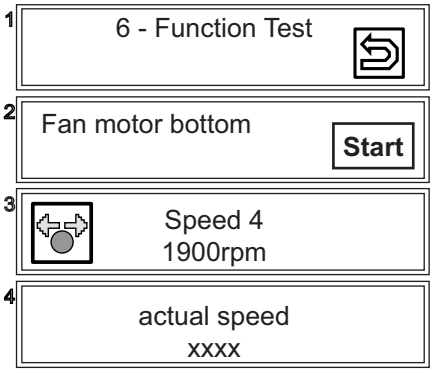
- Electric units: Hot air heating 100%
- Only gas oor models: Hot air heating 100%
- Indication window 2:
  „Hot Air Gas-Bottom Burner“
- Actual temperature of B1

Attention: Parts are not protected against overload!

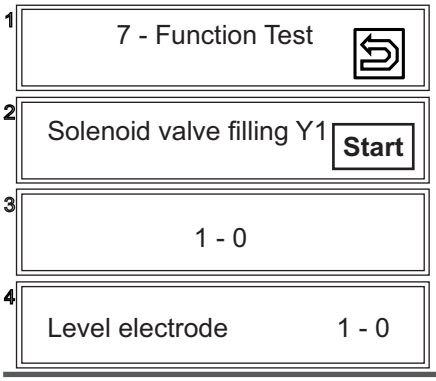


Fan motor top:
- Select RPM with central dial
  (default: second highest RPM):
- Typ 61: 500,1100,1550,1650
- Typ 62, 101, 201: 500,1250,1800,1900
- Typ 102, 202: 550,1450, 2000, 2200

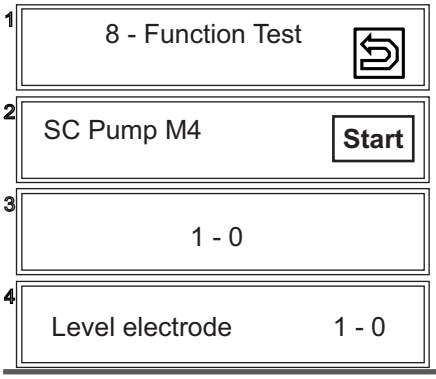
Function test SCC



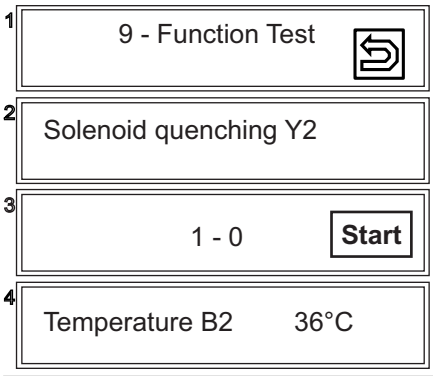
Fan motor bottom:
- Select RPM with central dial
(default: second highest RPM):
- Typ 61: 500,1100,1550,1650
- Typ 62, 101, 201: 500,1250,1800,1900
- Typ 102, 202: 550,1450,2000,2200



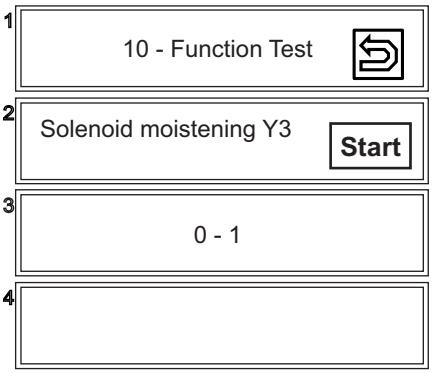
- Activat. of solenoid valve filling Y1
- Level electrode shows 1 = steam generator lled
- Level electrode shows 0 = steam generator partial lled



- Activation of SC Pump M4
- Level electrode shows 1 = steam generator lled
- Level electrode shows 0 = steam generator partial lled

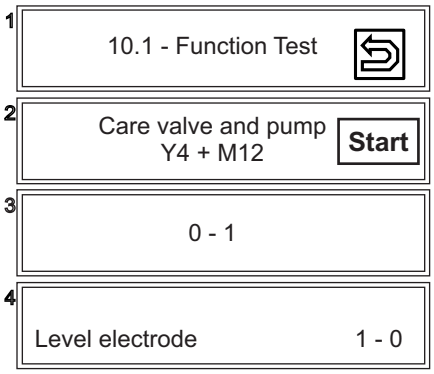


- Activation of solenoid valve quenching Y2
- Indication of actual temperature B2
(needed for testing quenching system).



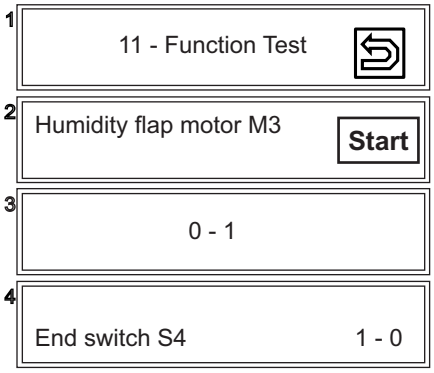
- Activation of solenoid valve moistening Y3

Function test SCC

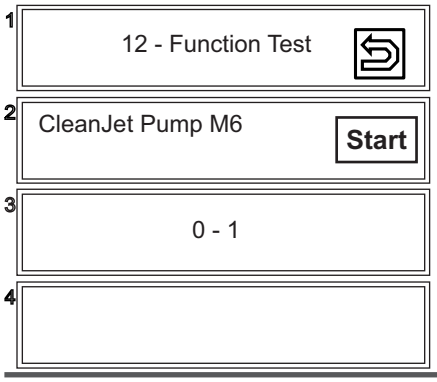


Simultaneous activation of Care valve and Care pump

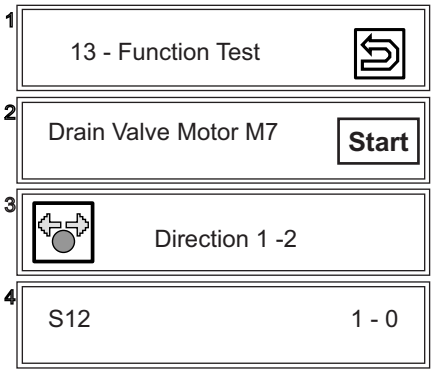
Stop activating the solenoid valve once the electrode shows “1” contact with water.
If solenoid is longer active the steam generator can self - syphon via the care pump and care container!



ClimaPlus motor
S4 shows 1 = Flap closed
S4 shows 0 = Flap open

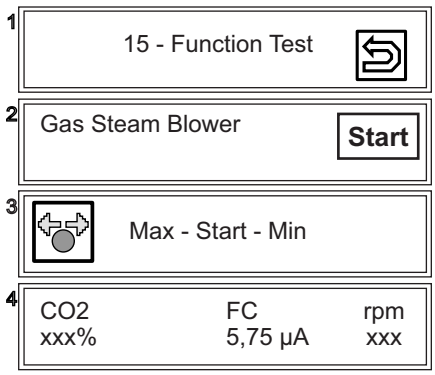


Activation CleanJet Pump



Activation drain valve
Direction 1: Clockwise
Direction 2: Counter clockwise

S12 microswitch drain valve



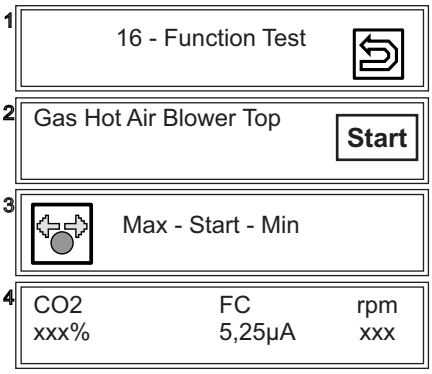
Flue gas analysis Gas blower Steam:
Press START to operate hot air gas burner top;

- CO_2 adustment with CO_2 screw at Max rpm
- CO_2 cross checking at Min rpm

- Flame current should be always above 4,0 µA, idealy 5,0-5,75 µA

Edition 10-2008a

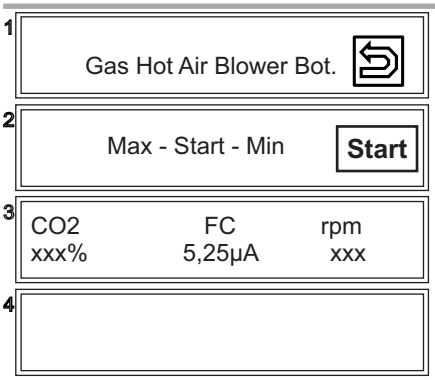
Function test SCC



Flue gas analysis Gas blower Hot air top:
Press START to operate hot air gas burner bottom;

- CO_2 adjustment with CO_2 screw at Max rpm
- CO_2 cross checking at Min rpm

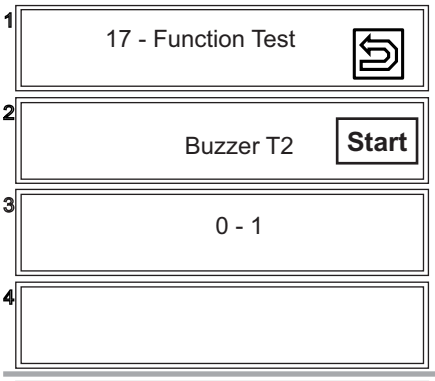
- Flame current should be always above 4,0 µA, ideally 5,0-5,75 µA



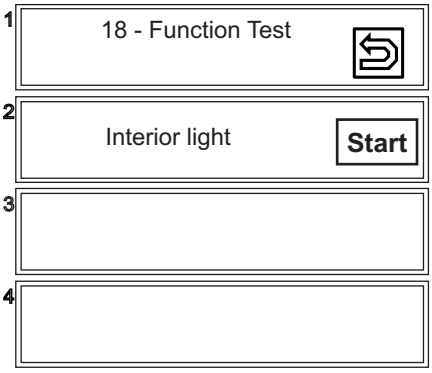
Flue gas analysis Gas blower Hot air bottom:
Press START to operate hot air gas burner bottom;

- CO_2 adjustment with CO_2 screw at Max rpm
- CO_2 cross checking at Min rpm

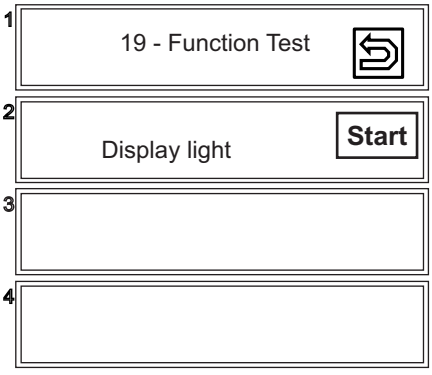
- Flame current should be always above 4,0 µA, ideally 5,0-5,75 µA



Activation buzzer



Activation interior light



- Testing of all display lights by pushing and holding Start key. The different lights will be activated in sequence.

Function test SCC

1 20 - Function Test

2 Exhaust hood Ultravent **Start**

3

4

UltraVent-Relais on I/0-PCB

1 21 - Function Test

2 Sicotronic **Start**

3

4

Sicotronic--Relais on I/0-PCB

Error code SCC

Service 10 SC Pump	Service 26 Drain valve closed
Service 11 CDS Sensor	Service 27 drain valve doesn‘t close
Service 12 CDS Sensor no signal	Service 28 Steam generator above 180°C
Service 13 Steam generator	Service 29 PCB temperature
Service 14 Level electrode - water	Service 30 Humidity control
Service 15 not used	Service 31.1 - 6 Core probe
Service 16 PCB with old software	Service 32 Ignition box
Service 17 EEPROM faulty	Service 33 Ignition box, Gas valve
Service 18 not used	Service 34.xx - Bus signal
Service 19 not used	Service 40 Care pump
Service 20 Thermocouple B1 cabinet	Service 41 Solenoid valve Y3
Service 21 Micro switch Clima Plus	Service 42 Solenoid valve Y4
Service 22 not used	Service 43 Any solenoid passing water
Service 23 SSR Steam	Service 44 Steam Heating, B5
Service 24 SSR Hot air	Service 100 Motor permanent on power
Service 25 CleanJet no function - water circ	Service 110 SC Pump
	Service 120 Care pump, level electrode

Buzzer frequency for faulty thermocouples (counted at 5 seconds intervall)	
B1	12x at 5 seconds
B2	6x at 5 seconds
B4	5x at 5 seconds
B5	8x at 5 seconds
Core probe	20x at 5 seconds

Error code SCC

Service 10 SC - Pump  Maintenance needed	- Appears for 30 sec. after switch ON - Display can be cancelled by touch - SC-automatic didn‘t work, water level does not decrease - Check SC-pump and drain hose of steam generator
Service 11 CDS Sensor  Maintenance needed	- Appears for 30 sec. after switch ON - Display can be cancelled by touch - Water level o. k., - Level electrode is working - Too many pulses measured by CDS sensor - Check electrode or water leakage through check valve
Service 12 CDS Sensor without Signal  Maintenance needed	- Appears for 30 sec. after switch ON - Display can be cancelled by touch - Level electrode o.k. - Check CDS sensor for blockage (no signal), water pressure too low
Service 13 Maintenance needed Only hot air manual possible	As of software version 01-07-09 - Only hot air possible - No low water signal during last 3x5 minutes of steam production ==> filled by auxilliary mode - Check 0-1 signal from level electrode to pcb
Service 14  Maintenance needed Only hot air manual possible	- Appears for 30 sec. after switch ON - Display can be cancelled by touch - Level electrode no water sensing - CDS sensor measured enough pulses; - Possible reasons: water conductivity too low, osmosis water treatment
Service 15	Not activated
Service 16 Unit without function	- Appears for 30 sec. after switch ON - Only active with pcb-SW version 01-07-09 and eeprom version later than 01-07-09 01-07-09 (Data protection Eeprom)
Service 17 EEPROM not initialized Unit without function	- Only active with pcb-SW version 01-07-09 - Data on EEPROM faulty - New original eeprom needed
Service 18	Not activated
Service 19	Not activated

Edition 10-2008a

Service Messages SCC

Service 20 Thermocouple B1 cabinet Unit without function	- Appears on time - Thermocouple broken or out of range - Buzzer sounds 30 seconds - Unit without function
Service 21 Micro switch ClimaPlus Maintenance needed	- Appears for 30 sec. after switch ON - Display can be cancelled by touch - Micro switch ClimaPlus without function during start routine - Manual cooking without humidity control possible
Service 22 	Not activated
Service 23 SSR Steam short circuit Unit without function Switch unit OFF	- Since SW 01-07-09 only! - Display at once when: Temp. B5 raises above 100°C (212°F) for 60sec. without energy demand - Intermittent buzzer 30 sec - Unit without function
Service 24 SSR Hot air short circuit Unit without function Switch unit OFF	- Since SW 01-07-09 only! - Display at once when: Temp. B1 raises starting from 150°C (300°F) to above 200°C (300°F) without energy demand - Intermittent buzzer 30 sec - Unit without function
Service 25 No water detection by fan motor CleanJet no function Rinse manually	- Display can be cancelled - Remove container from cabinet - CleanJet pump does not deliver - Fan motor does not reduce speed - Water must hit left rack at rail 3-4 - Check water tap, pump, quenching solenoid (refill function), quenching nozzle or or CleanJet pipe for blockage
Service 26 Drain valve closed Unit without function	- Appears on time when CleanJet is selected - Cooking not possible - drain closed - Micro switch drain valve in permanent closed position - Replace drain valve assembly
Service 27 Drain valve doesn‘t close CleanJet operation not possible Maintenance needed	- Appears for 30 sec. after switch ON - Display can be cancelled switch - drain valve in permanent open position, CleanJet not possible - Check micro switch drain valve - Start rinse (abort) program

Service Messages SCC

Service 28 Steam generator above 180°C Maintenance needed	- Appears if temperature at thermocouple steam generator B5 is above 180°C (300°F) - Indication goes off when temperature below 110°C (230°F)
Service 29 PCB temperature change air filter	- Appears on time after switch ON until temperature is low again - Temperature PCB above 85°C - Check air filter, cooling fan and control panel gasket - Check for external heat sources
Service 30 Humidity control Maintenance needed	- Appears for 30 sec. after switch ON - Display can be cancelled - Humidity control out of function - Humidity emergency control active since more than 1 hour - As of SW version 01_07_04 emergency control is shown with a dot under item „Mod.“
Service 31.xx Core probe Maintenance needed	- Appears for 30 sec. after switch ON - Core sensor defective - Combination of faults possible i.e.: 10 -->2+8) - 1: shaft probe 2- 5th probe (close to shaft) - 4: 4th probe 8: 3rd probe - 16: 2nd probe 32: 1st probe in tip
Service 32.0-2 Ignition box No function	- since SW version 01-07-09 - Internal Ignition box error is existing longer than 30 sec. Change ignition box - 0: Ignition box top - 1: Ignition box bottom - 2: Both Ignition boxes
Service 33.1-2 Ignition box No function Close gas valve	- Appears after 4x Reset command without positive result - 1: Ignition box top, - 2: Ignition box bottom - Check ignition wire, ignition box gas valve and gas supply.
Service 34.xx No BUS signal No function	- Appears as of SW 01-07-02 - Indication in case of bus signal problems - Main pcb can not communicate with the following parts - Combination of faults possible i.e.: 10 -->2+8 - 1: I/O PCB - 2: Motor bottom - 4: Motor top - 8: Ignition module top - 16: Ignition module bottom - Check bus cable plug and cable for connection and damage

Service 40 Care pump Cleanjet not possible	Care pump faulty or does not fill enough care solution into steam generator; - After filling of the care solution into the steam generator the CDS sensor sends too many pulses until the level electrode recognises water. Check if the hose from the care pump outlet is not cinqued; - Cleanjet finishes without care phase; - Reset error by pressing key: „Check Care Funktion“ after repair;
Service 41 Solenoid valve Y3 Maintenance needed	- Solenoid valve Y3 defective or moistening valve blocked; CDS does not send any pulses; - Reset error by successfull CDS measuring during next Cleanjet start;
Service 42 Solenoid valve Y4 	- Solenoid Y4 Care defective or hose to care container vlocked or kinked; CDS does not send any pulses; - Reset error by successfull CDS measuring during next Cleanjet start;
Service 43 CDS sensor 	- CDS sensor sends always pulses; Solenoid Y1, Y3 or Y4 is passing water - Reset error by successfull CDS measuring during next Cleanjet start (Self test)
Service 44 Steam heating / B4 	- No temperature raise during recognised by B5 during steaming time while being in Cleanjet phase - Reset error by successfull B5 tempoerature measuring during next Cleanjet;
Service 100 Main contactor - pcb on off switch No function Isolate unit from mains	Power remained present on fan motor when unit was switched off last. Main conatctor didn‘t disengage or ON/OFF switch on pcb defective; To clear error message: isolate unit from power, switch pcb OFF, change contactor or pcb, reconnect to power (wait 1 minute), switch pcb ON.
Service 11ß SC pump Unit without function	- Malfunction of SC pump during the time when Care solution was inside the steam generator, - Reset error by successfull completing a cleanjet abort cycle;
Service 120 Care pump, level electrode Unit without function	- After operating care pump M12 (filling care solution into steam generator) and topping up with water the level electrode does not recognise water; - Care Pump M12 or level electrode defective; - Display only after twice starting filling solenoid Y1 yet no water is detected; - Reset error by successfull completing a cleanjet abort cycle;

Flash SCC Software

USB stick MUST be formatted in FAT (FAT16) format.
NOTE: Only use the standard USB Flash stick for SCC Flash update!
This RATIONAL configured USB Flash memory stick can be ordered under part number: 87.00.010

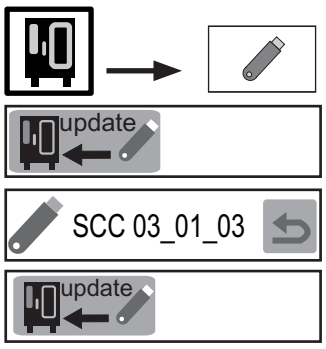
Software can only be updated to the next higher version. Flashing software versions prior to the existing version is NOT possible!

The actual software version can be downloaded from:
www/rational-ag.de/service/technical_documentation/SCC-Line/Software

Additionally the software on the USB stick can be automatically updated using the „update.exe“ file on the memory stick.
Note: A valid internet connection must be available on your computer.

NOTE!
Software update on a unit with unknown software version (in case a pcb from spare part stock is used) or in case the external EEPROM was faulty please observe the procedure on the following page.

The software can be updated by the customer using two different ways:



Connect the USB stick to the usb interface at the bottom left hand corner of the control panel

Press function and USB key

The update icon will show when a USB stick with software is connected

In window 4 the Software version of the USB stick is displayed.

Touch Update-key once starts the update process, “UPDATE” is shown on the displays.

“ON- Please wait” Is shown;

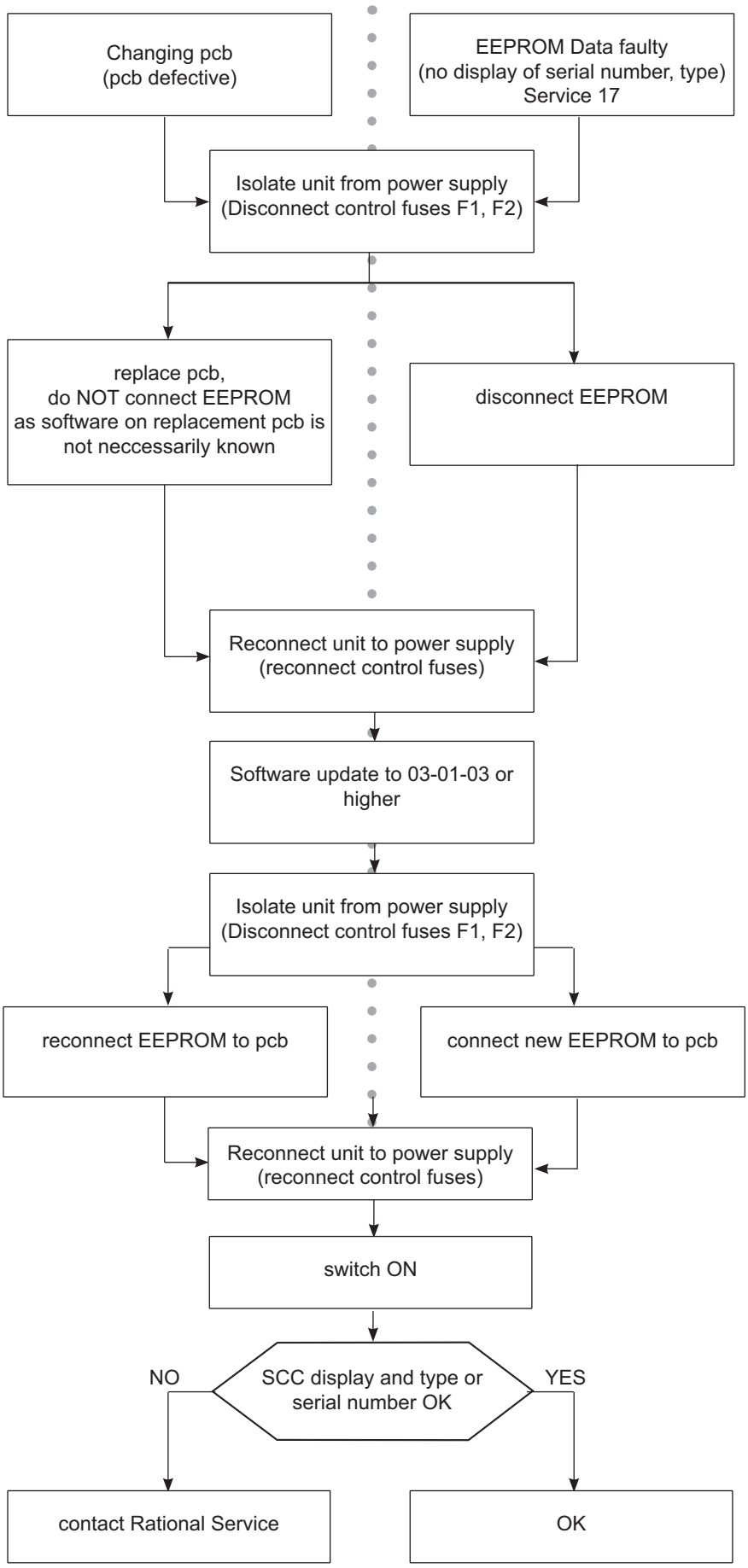
Disconnect the USB Stick only after the 9 main cooking icons are displayed.

For Standard Software Update please proceed as follows:

1. Switch unit on
2. Wait until the operator mode of the SelfCooking Center is displayed.
3. Connect the USB stick with the actual software version to the USB interface of the Rational SelfCooking Center.
4. Switch unit off and on again.
   The unit will display „UPDATE“ followed by „Please don‘t touch“.
   After the operator mode of the SelfCooking Center is displayed the USB stick can be removed from the unit.

Please make sure your customer has always the latest software on his unit.
Please make sure you have the latest update.exe dated December, 6th, 2004 (12.06.2004) on your USB memory stick.

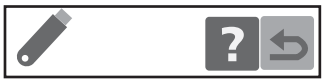
SCC pcb change - EEPROM change



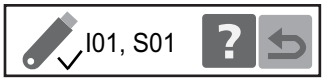
Download of unit service data

With this function all actual valid service data of the diagnose program can be downloaded onto a stick. This can be done during an active process or also if the unit is in standby (unit must be switched on). To get all data the download should be done during an active process. The maximum number of download‘s on one SCC is 4 times within one our.

Connect USB Stick to unit interface. If the stick is recognised it will be shown as a blue stick symbol right of the download key.



Touch key. During the Download-process the colour of the stick changes from blue to red and on the key in the symbol running lines are visible.



If the download-process was finished successfully then the colour of the stick changes from red to blue and a tick is shown underneath the stick symbol. Additional I, S (I01; S01) and the actual number of downloads are indicated

The following data can be found on the stick after connecting it to a PC:
On the stick the folder „log“ can be found.This folder contains txt- files.
RAG_xx_yy_STAT.txt and
RAG_xx_yy_SERVICE.txt.
xx: Serial number
yy: Date of Download

The files contain the service datas which are appropriate at the moment of the download.
The file RAG_xx_yy_STAT.txt shows the frequency of usage of the processes (SCC-process, customer program‘s, CleanJet and manual processes)
The file RAG_xx_yy_SERVICE.txt contains all relevant servcie data

(The file RAG_xx_yy_APPLOG.txt is not relevant for service)

The file RAG_xx_yy_SERVICE.txt is partitioned into the following block‘s:
a) Common Information
b) Basic settings
c) Diagnostic
d) Running Times
e) System Error Logger
f) Gas Error Logger Burner Control 0
g) Gas Error Logger Burner Control 1

In case your servcie call is subject to an unkonwn error and / or the error is sub ject to application problems please always download also the HACCP data!

Common Information

Date and Time..... : 20070907134033 =Moment of download (JJJJ/MM/TT/hh/mm/ss)
Startup Date and Time.....: 20000101000000 =20000101 - unit was updated with software
: 20070801141545 = unit operated for first 10 hours-warranty starts
Unit type..... : SCC_61
Energy type..... : G = Indication G(as) or E(lectric)
Unit Serial number..... : G61SE04061234567
Software version..... : „SCC-03-01-02 „ = Unit software
Script-Version.....: Indication of chain account
Software update..... : 20060907134033 =Date of last Updates
CPU-Board Revision..... : 612
CPU-Board Serial number..... : 24456703
CPU-Board Manufacturing date..... : 2007-07-30 03:19:24
Burner Control 0 SW-version..... : „1.4.4“ = Software version of ignition box
Burner Control 1 SW-version..... : not supported by version (on floor models indication of the 2nd igni. box)
Language..... : ENGLISH OTHERS = selected language

Basic Settings (Indication of the present values of the package basic settings)

B-1.2 Drain valve time0..... :8.6 s
B-1.2 Drain valve time1..... :28.7 s
⋮
B-22 <USB> Subnet mask... :???.???.???

Diagnostic (Indication of the present values of the package diagnostic)
D-1 Cabinet B1 act..... :24.84 C
D-1 Cabinet B1 max..... :693.40 C
⋮
D-23 S12 Micro switch..... :1

Running Times (Indication of the present values of the package running times)

R-1 S3 Door openings..... :248
R-2 S12 Ball valve openings. :91
⋮
R-19 Emergency Controller..... :3

System Logger

Last calibration..... : 20070801173010 date and time of last manual calibration
:19700101 = not calibrated since software update
Running time since last cal... :0 hrs
Calibrations..... :0
Last emergency run..... :19700101000000 = humidity control
Last emergency running time... :0 s
Heating request hotair..... :0
Heating request steam..... :0
Fanmotor1 running time..... :0 hrs
Fanmotor2 running time..... :0 hrs
Flap operating cycles..... :73
Flap running time..... :15 min
State of exhaust hood..... :0

System Error Logger (Indication of the last 10 Service-failures with the appropriate values at the moment the failure occurred)

1: „2006-07-25 10:50:54, B1: 28, B2: 28, B6: 30, B5: 253, M1 set: 0, M1 actual: 0, M2 set: 0, M2 actual: 0, **Mode: 1**, Humidity %: 4, Hot air %: 0, Steam %: 0, Y2: 0, Y1: 0, S2: 1, M4: 0, EC: 00002001 Service 31: 0, Service 32: 0, Service 34: 0, Service xx: 0“
SERVICE 10
2: EGE 1005 (Wildcards from 1-10 for additional Service failures. EGE 1005 is indicated in case there was no failure)

Example under item 1:

Service 10:	Actual failure (= SC-Pump without function)
„2006-07-25 10:50:54:	Failure is occurred at 25.07.2006 at 10:50:54 hour
B1 = 28°, B2 = 28°, B6 = 35°, B5 = 253°,	Temperature at sensors
M1 actual:0 and **M2 actual:0**	Motor was not running (Indication 0, otherwise actual REV‘S are shown)
Mode: 1	No mode was selected Possible indication: 2 = Steam 30-97°C 3 = Steam 98 - 103°C 4 = Steam 104 - 130°C 5 = Hot air 30 - 100°C 6 = Hot air 101 - 300°C 7 = Combination 30 - 100°C 8 = Combination 101 - 140°C 9 = Combination 141 - 300°C 10 = not relevant 11 = not relevant 12 = COOLDOWN
humidity%: 4	actual humidity 4 %;
Hot air %: 0	hot air heating switched off (possible indication 0/50/100)
Steam %: 0	steam heating switched off (possible indication 0/50/100)
Y2: 0	Solenoid valve quenching not active (possible indication 0 or 1)
Y1: 0	Solenoid valve filling steam generator not active (possible indication 0 or 1)
S2: 1	Level electrode has contact with water (possible indication 0 or 1)
M4: 0	SC-Pump not active (possible indication 0 or 1)
EC: 00002001	no relevant information

Service 31: 0, Service 32: 0, Service 34: 0:
This failure code will always be shown. If no failure has occurred then the failure code followed by „0“ is shown. If a failure has occurred it will be shown, like all other failures, in the error history. In this case instead of „0“ the corresponding code is shown, e. g.:
Service 31 Info 10 (pls refer to detailed service error list)

Error 31:0 is not shown anymore since Software SCC 03-01-03.

Gas Error Logger Burner Control 0
Indication of the last 14 gas-failures, generated by ignition box top)
Gas Error Logger Burner Control 1
Indication of the last 14 gas-failures, generated by ignition box bottom)

act: 0 2006-07-25 17:29:47
1: 30 2006-07-12 11:06:27
2: EGE 1005 (Wildcards from 1-13 for additional gas failures. EGE 1005 is indicated in case there was no failure)

Example under item 1
Failure 30 (wrong or no rev's of gas blower steam) occurred 12.07.2006 at 11.06:27 h.
feedback signal from blower motor to ingition box missing;

Indication of ignition box error messages (1-32 is shown to the operator as „Reset"):

1	Hot air or Steam	no gas, gas valve or electrode defective
14	Hot air	gas valve control, change ignition box
19	Hot air	no flame because flame current is too low check burner setting, flame current, ignition cable and plug
20	Hot air	wrong or no rpm signal from gas blower check gas blower, power supply gas blower and control harness of gas blower
22	Hot air	no flame after 5 ignition sequences no gas, gas valve or electrode defective
24	Steam	gas valve controll, change ignition box
29	Steam	no flame because flame current is too low check burner setting, flame current, ignition cable and plug
30	Steam	wrong or no rpm signal from gas blower check gas blower, power supply gas blower and control harness of gas blower
32	Steam	no flame after 5 ignition sequences no gas, gas valve or electrode defective

Possible failure in case of „Service 32"

33, 36		Change ignition box
35		Check frequency of main
39	Hot air	Check burner setting, ignition electrode and distance, and flame current
40	Hot air	Check ignition cable
42	Steam	Check burner setting, ignition electrode and distance, and flame current
43	Steam	Check ignition cable

Is shown on display „Change polarity"

34	Change polarity of mains

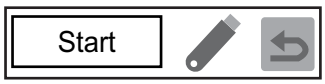
All other numbers (2-13, 15-18, 21, 23, 25-28, 31): change ignition box

Download of HACCP data

Output of cooking datas via the interface.
The cooking datas (interior cabinet temperature/core temperature a. s. o.) automatically are send to the interface when a cooking mode is active.
Additionally the HACCP datas from the last ten days are stored and can be downloaded by pressing the download key

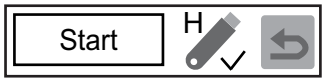
To download data proceed as follows
Connect USB-Stick to USB interface of the unit

If the USB stick was identified then the symbol of the stick appears on the download display



Touch “Start”-key

During the download procedure the hour glass appears and the colour of the stick changes from blue to red.



If the procedure was successfully completed, “Start” appears again and at the stick symbol “H” for HACCP data and a tick is shown

The following data can be found on the stick if it is connected to a PC for reading the HACCP-Data:
On the Stick the folder HACCP can be found.
In this folder two types of files are included.
Typ .txt and file .dat.
HACCP Data are in the file RAG_xx_yy_rlhaccp.txt

HACCP-Data are shown in the following format:

```
*** H A C C P ***
;
;       Ch-nr.    >>210<<                          = batch number
                                                     (number of stored cooking processes)
;       Typ       >>SCC_61<<                       = unit typ
;       Serial nr.>>E61SE04061234567<<             = Serial number of the unit
;       Version   >>SCC-01-07-11    -<<            = Software version of the unit
;       Time      >>2006.07.20 12:27:26<<          = Starting date and time of the cooking process
;       Progr.    >>Roast<<                        = Program name
                                                     (manual mode was used, if „>><<“ appears )

;       #1 : Gartemp.          / cabinet temp.
;       #2 : Kerntemp. Soll    / core temp. target
;       #3 : Kerntemp          / core temp.
;       #4 : Zeit (Std:Min:Sek) / time (h:min:sec)
;       #5 : Temp. Einheit     / temp. unit
;       #6 : Energie Opt.      / energy opt.
;       #7 : Energie 1/2       / energy 1/2
;       #1      #2      #3      #4              #5      #6      #7
; Mode HOT AIR                  000:00:00                               = used cooking mode
         29      -       32     000:00:00       C       -       -
; Mode COMBI                    000:00:04
         29      -       32     000:00:04       C       -       -
; Mode HOT AIR                  000:00:07
         29      -       32     000:00:07       C       -       -
         29      -       32     000:00:11       C       -       -
; end ***                                                               = End of cooking process
```

B) Additional indications:

Progr. >>SCC - Universal Roast<<	= Indication of selected SCC process
Progr. >>SCC - ~ pork (11000)<<	= Copied SCC process with new name (e. g. pork) and reference number of the original process (e. g. 11000)
parameters BROWNING : 2 CORE TEMPERATURE : 78 end ***	= At the end of the cooking process the selected cooking parameters are shown if a SCC process was used.
Door opened or Door closed	= during cooking process
Start (off)	= Cooking process was interrupted by switching unit off
Start (power failed)	= Power failure longer than 15 minutes
Restart (power failed)	= Power failure less than 15 minutes
Start (SW update)	= Software update performed
Start (SCC)	= CPU rebooting time
Start time Set	= programmed start time
Start time OFF	= start time de-selected
Start time Start	= process started based on start time
ABORT	= SCC process or manual program was terminated by SCC button or mode button

Calibration SCC

Calibration at the customers site must be done under the following conditions:
Changing of:

1. Pressure sensor P1,
2. B4 humidity sensor,
3. fan motor,
4. pcb,
5. external EEPROM,
6. detaching of the fan wheel,
7. replacing the air baffle or divider plate between the 2 fan motors of a floor model,
8. installation of the appliance above 1000m (3000ft) above sea level or below sea level (dead sea), installing with Ultravent of venting extension or as a Combi Duo
9. Usage of a different standard rack
10. Customer complaint for uneven cooking results

Basic condition Temperatures:

Cabinet sensor	Quench. sensor	Humidity sensor
B1 <40°C	B2 <45°C	B4 < 40°C

Basic condition Hardware:
Heating: OFF Fan motor: OFF Humidity flap: Closed
Side panel must be fitted; Unit must be clean, but may be wet

In order to achieve the best possible calibration values, insert
2 GN-container 20 or 40 mm deep with the opening facing downwards
in 61 and 62 units into rail 2 and 5
in 101 and 102 units into rail 3 and 7
in 201 and 202 units 3 GN container into rail 3, 10 and 17

Calibration SCC

To start calibration:
Set DIP switch 1 to "on", on pcb; Select: Basic Settings step 1.1; press START

Should an error code be displayed during calibration run, switch unit OFF and ON again, correct the error reason and re-start calibration.

Step	Unit Status	Error	Reason
1	Basic conditions o.k?: Continue with step 10	71	Basic conditions not met
10	Measurement: Offset Diff. pressure sensor P1 • Heating: OFF • Motor: OFF • Humidity flap: Closed	13	Offset out of range
In case of error „13" check: P1 or 12V power supply to P1			
20 (min: 4x20 s; max: 4x180 s)	Controlling with all 4 fan speeds: Steady signal of rpm and pressure • Heating: OFF • Motor: ON • Humidity flap: Closed	20 71	Offset out of range Max time of 4x180sec exceded
In case of error „20" check: In diagnostic mode: P1, B4, rpm			
30 (4x 30 s)	Measuring at all 4 fan speeds: Calibration value: cold cabinet • Heating: OFF • Motor: ON • Humidity flap: Closed	50	Calibration value not in expected range (logic)
In case of error „50" check: In diagnostic mode: P1, B4, rpm			

Step 20 and 30 will run 1x for each rpm setting!

Calibration SCC

Step	Unit status	Error	Reason
40 (max. 800 s)	Filling cabinet with steam until B2 sensor reaches 80°C (176°F) • Heating: ON • Motor: OFF • Humidity flap: Closed	11 71	No steam heating Max time of 4x800sec exceeded
In case of „11“ check: Steam elements, SSR, Quenching sensor			
50 (40 sek)	Stand-by in steam saturation • Heating: ON • Motor: ON (lowest speed) • Humidity flap: Closed	---	
60 (min: 4x20 s; max: 4x180 s)	Controlling with all 4 fan speeds: • Steam Heating: ON 50% • Motor: ON • Humidity flap: Closed	20 71	Value out of allowable range; Max time of 4x180sec exceeded
In case of „20“ check: In diagnostic mode: P1, B4, rpm			
70 (4x 30 s)	Measuring at all 4 fan speeds: Calibration value: Steam • Heating: ON 50% • Motor: ON • Humidity flap: Closed	60	Calibration value not in expected range (logic)
In case of „20“ check: In diagnostic mode: P1, B4, rpm			

Step 60 and 70 will run 1x for each rpm setting!

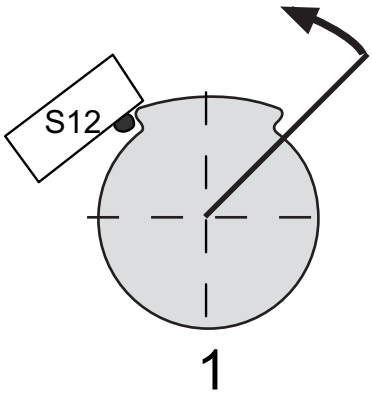
Calibration SCC

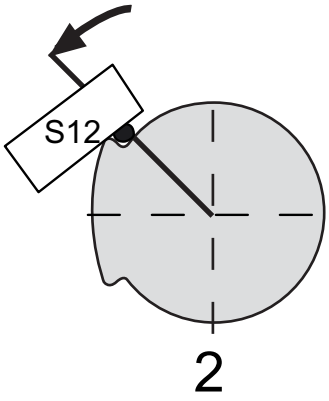
Step	Unit status	Error	Reason
75 (min 80 s max. 1000 s)	Heating of cabinet in combi. to 193°C (380°F) • Hot air heating: ON • Steam Heating: ON (when Hot air off) • Motor: ON (max rpm) • Humidity flap: Closed	12 71	No hot air heating Max time of 1000sec exceeded
In case of „12“ check: Hot air elements, SSR, cabinet sensor			
90 (min 360 s max 1000 s)	Combination 170°C (338°F) • Hot air heating: ON 50% • Steam Heating: ON (when Hot air off) • Motor: ON (max rpm) • Humidity flap: Closed	---	
100 (min: 4x20 s; max: 4x60 s)	Controlling with all 4 fan speeds: Steady signal of rpm and pressure • Hot air heating: ON 50% • Steam Heating: ON (when Hot air off) • Motor: ON (max rpm first) • Humidity flap: Closed	20 71	Value out of allowable range Max time of 4x240sec exceeded
In case of „20“ check: **In diagnostic mode: P1, B4, rpm**			
110 (4x 30 s)	Measuring at all 4 fan speeds: Calibration value: Combination • Hot air heating: ON if needed • Steam Heating: ON (when Hot air off) • Motor: ON (max rpm first) • Humidity flap: Closed	70	Calibration value not in expected range (logic)
In case of „70“ check: **In diagnostic mode: P1, B4, rpm**			
Step 100 and 110 will run 1x for each rpm setting!			
900	End – Exit diagnostic program and set DIP 1 to OFF		

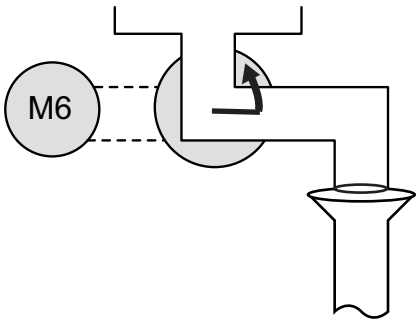
For data storage switch unit off and on!

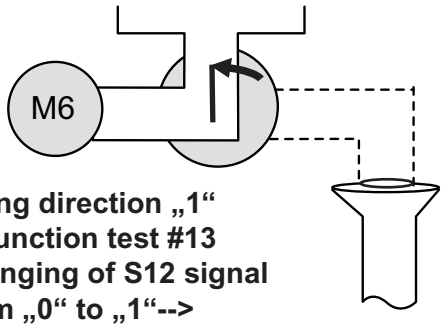
Control Drain Valve 54.00.357

1 - Drain valve: position cooking
2 - Drain valve: position CleanJet
S12 - Micro switch Drain valve
M6 - CleanJet Pump

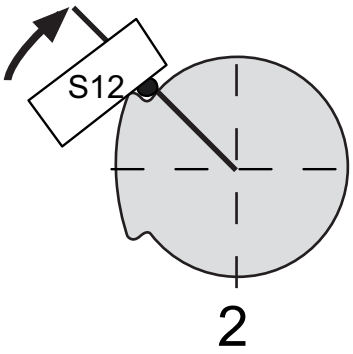


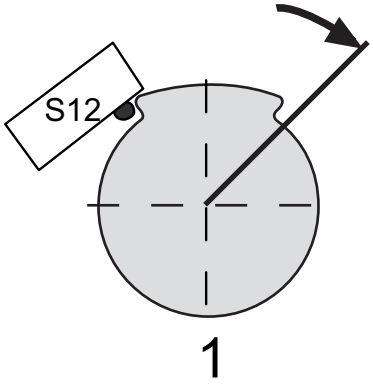


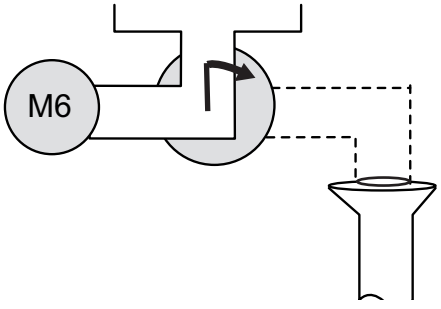


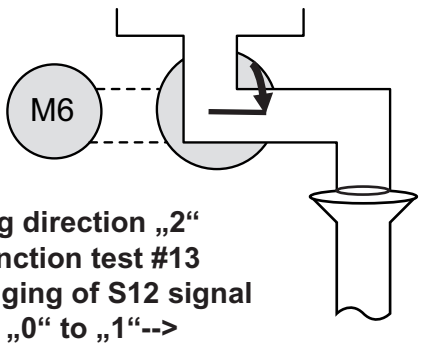


Using direction „1“ in function test #13 changing of S12 signal from „0“ to „1“--> Drain closed --> CleanJet



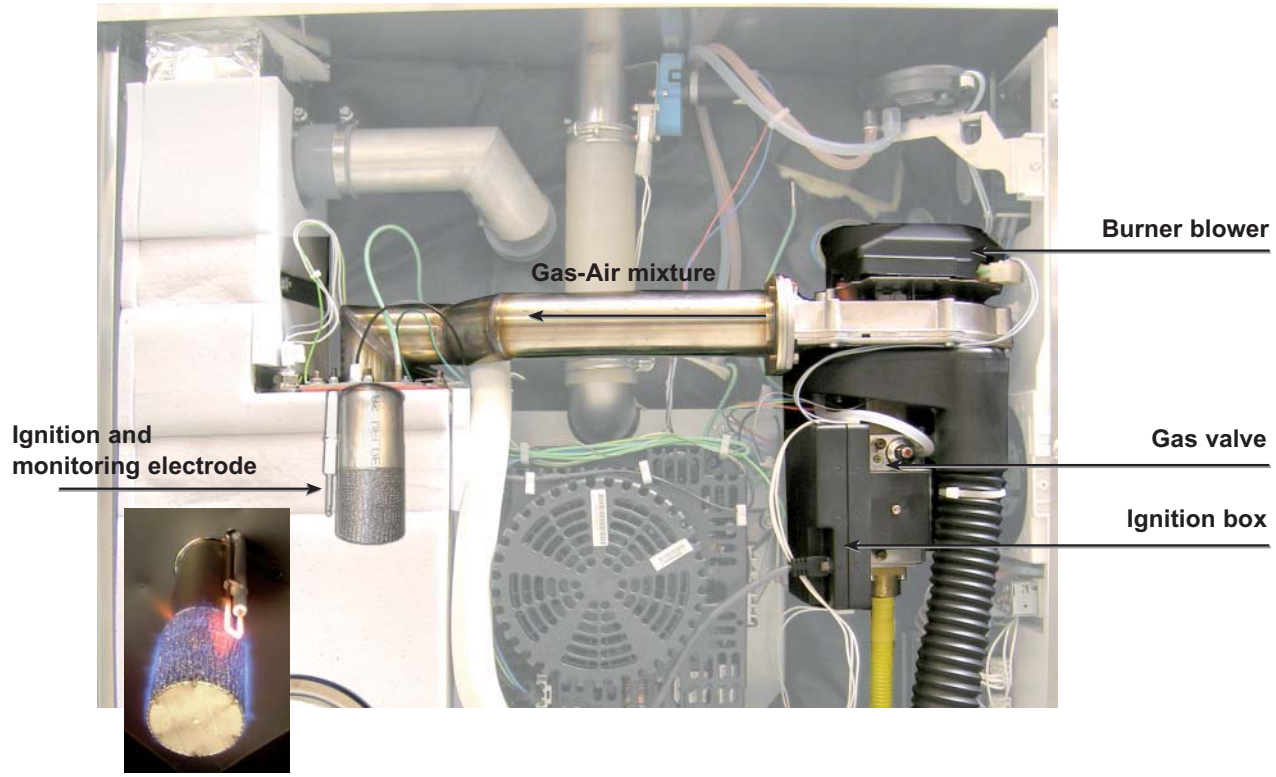




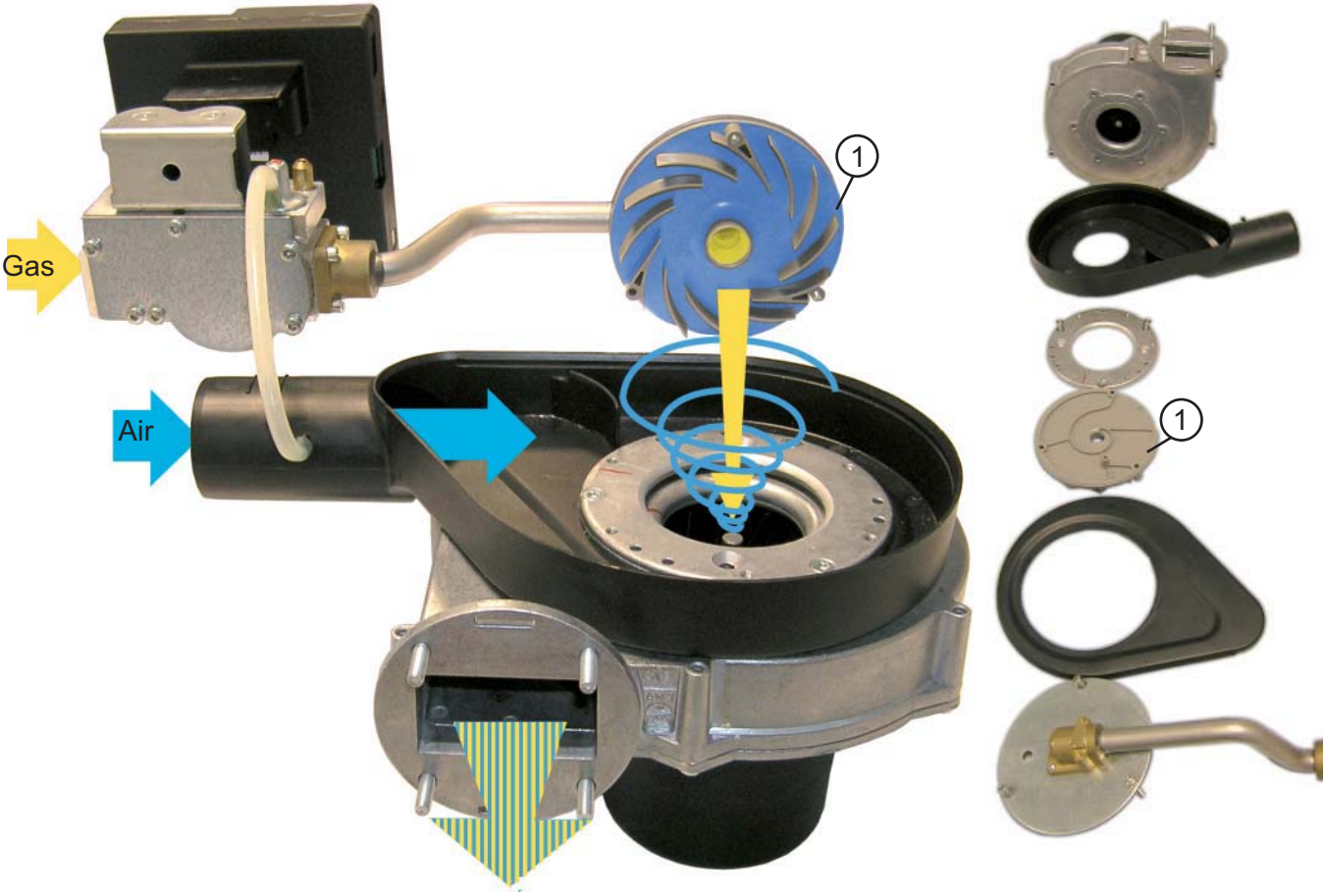


Using direction „2“ in function test #13 changing of S12 signal from „0“ to „1“--> Drain open --> cooking

Gas burner principle

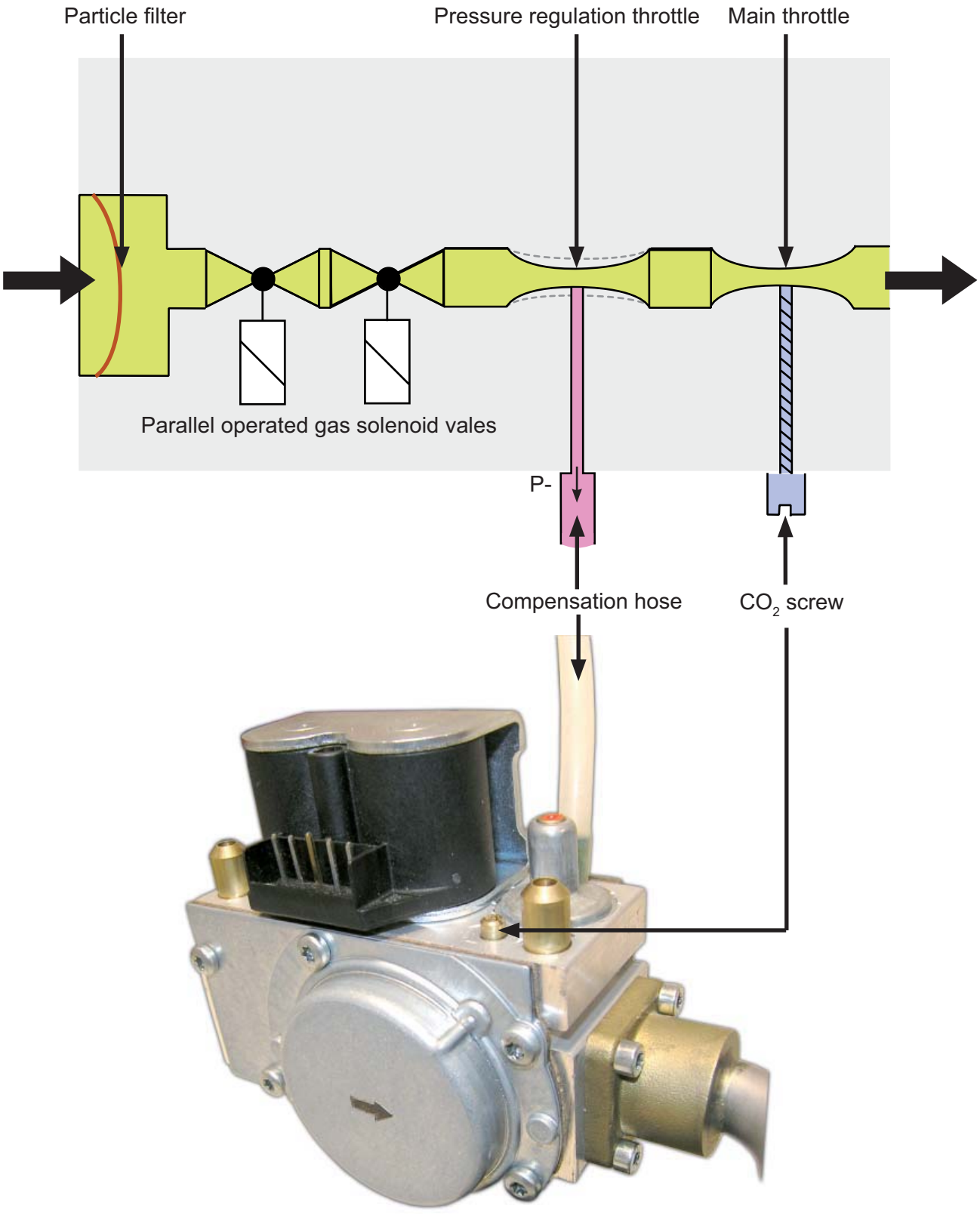


Mixing of gas and combustion air



Mixing of gas and combustion air (shown: gas valve -blower combination 202 steam)
The pulled-in air is brought into rotation in the stationary Whirlwind-disc (1) and completely mixed with the incoming gas.

Gas Valve



1. The burner blower creates a negative pressure inside the compensation hose, which governs the pressure regulation throttle.
2. The final adjustment of the heat load through the main throttle is achieved with the CO_2 screw.

Identification of gas burners / Gas blowers:

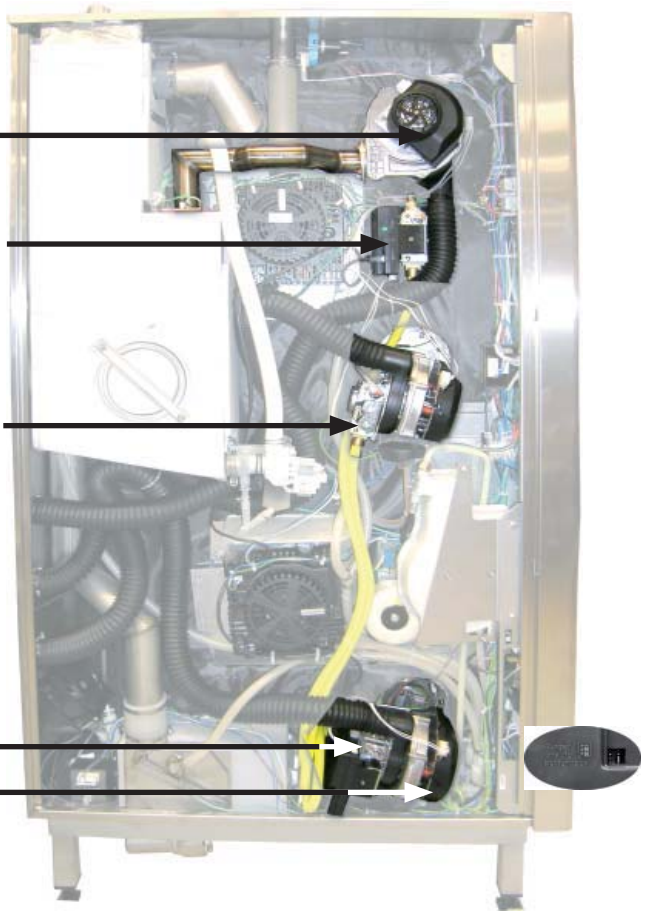
Unit 61 - 62 - 101 - 102

Steam Blower

Steam Gas valve with common ignition box for Steam **and** Hot Air (top) fitted

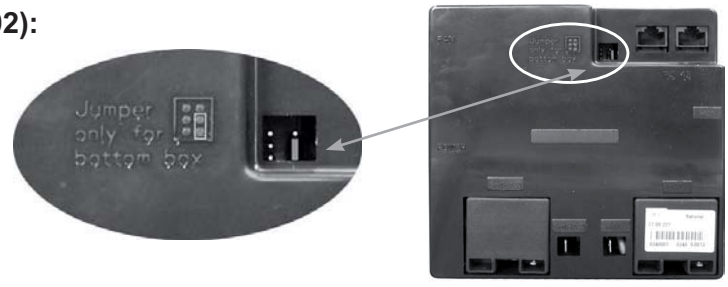
Blower and gas valve Hot Air blower (top)

Unit 201 - 202



Gas valve hot air (bottom) with second ignition box;
Jumper must be set!
Blower hot air burner (bottom)

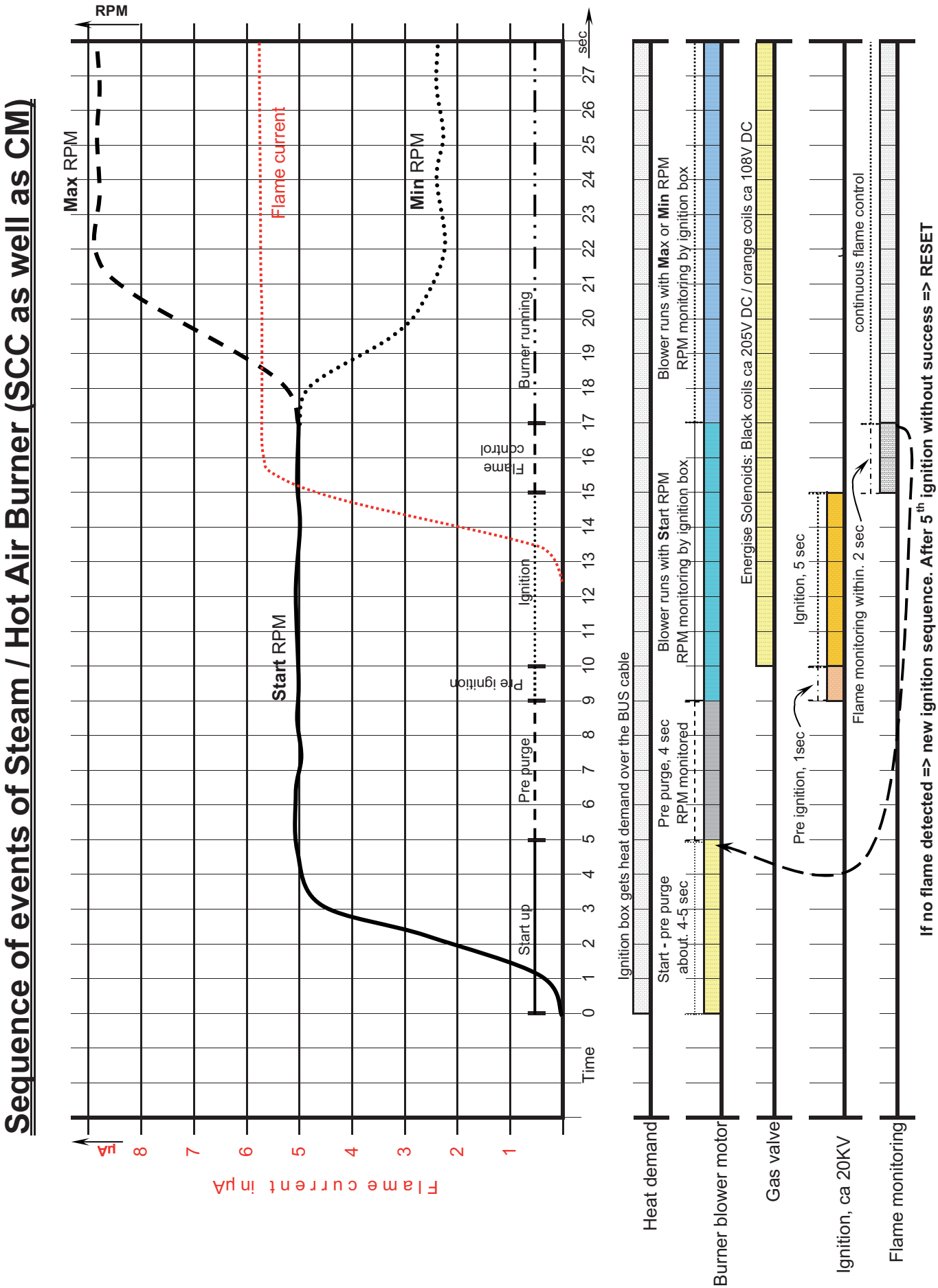
Ignition box hot air burner (bottom) (201-202):



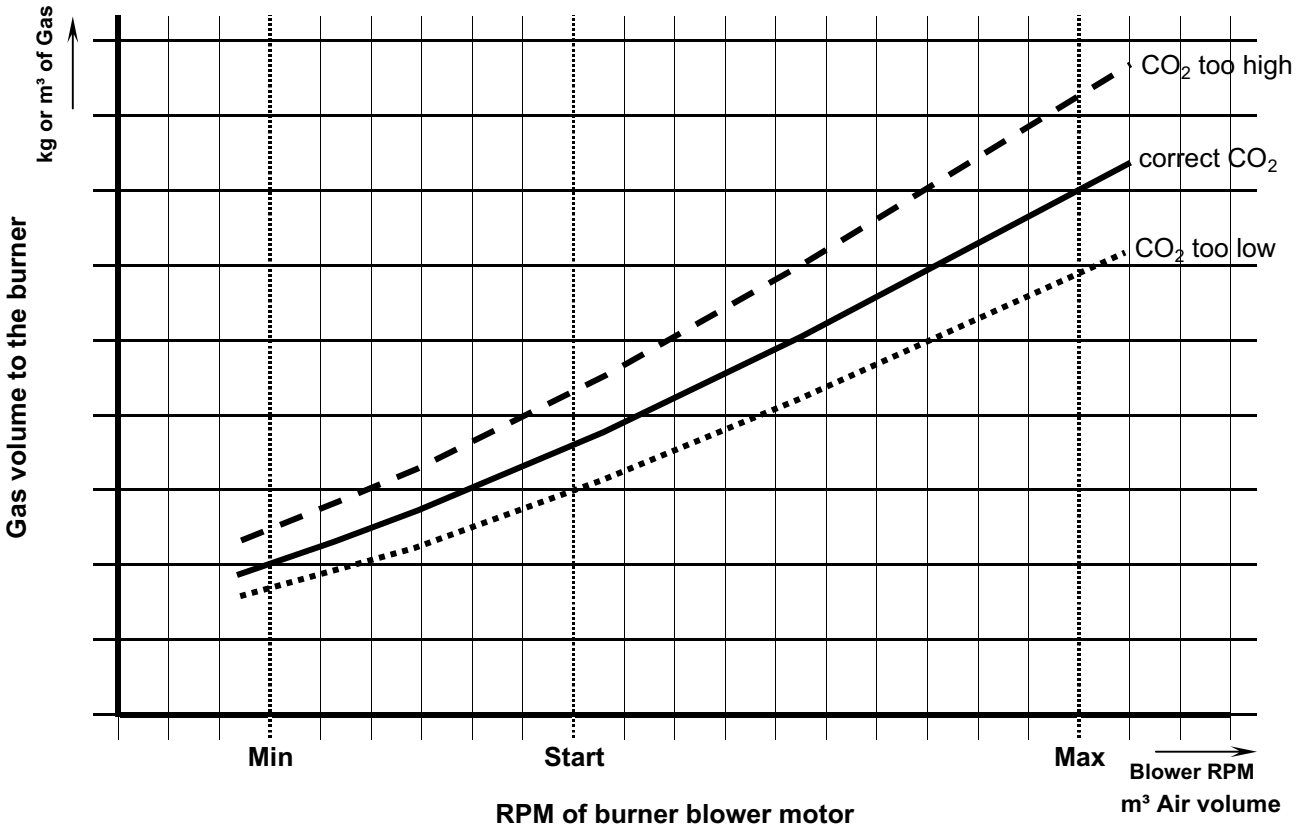
Jumper is only set on Ignition boxes for hot air burner bottom (201-202):

Sequence of events of Burner and Ignition control

Speed of burner blower motor in U/min



CO_2 Values



CO_2 set: - Correct gas - air mixture ratio
- Heat power corresponds with factory specification

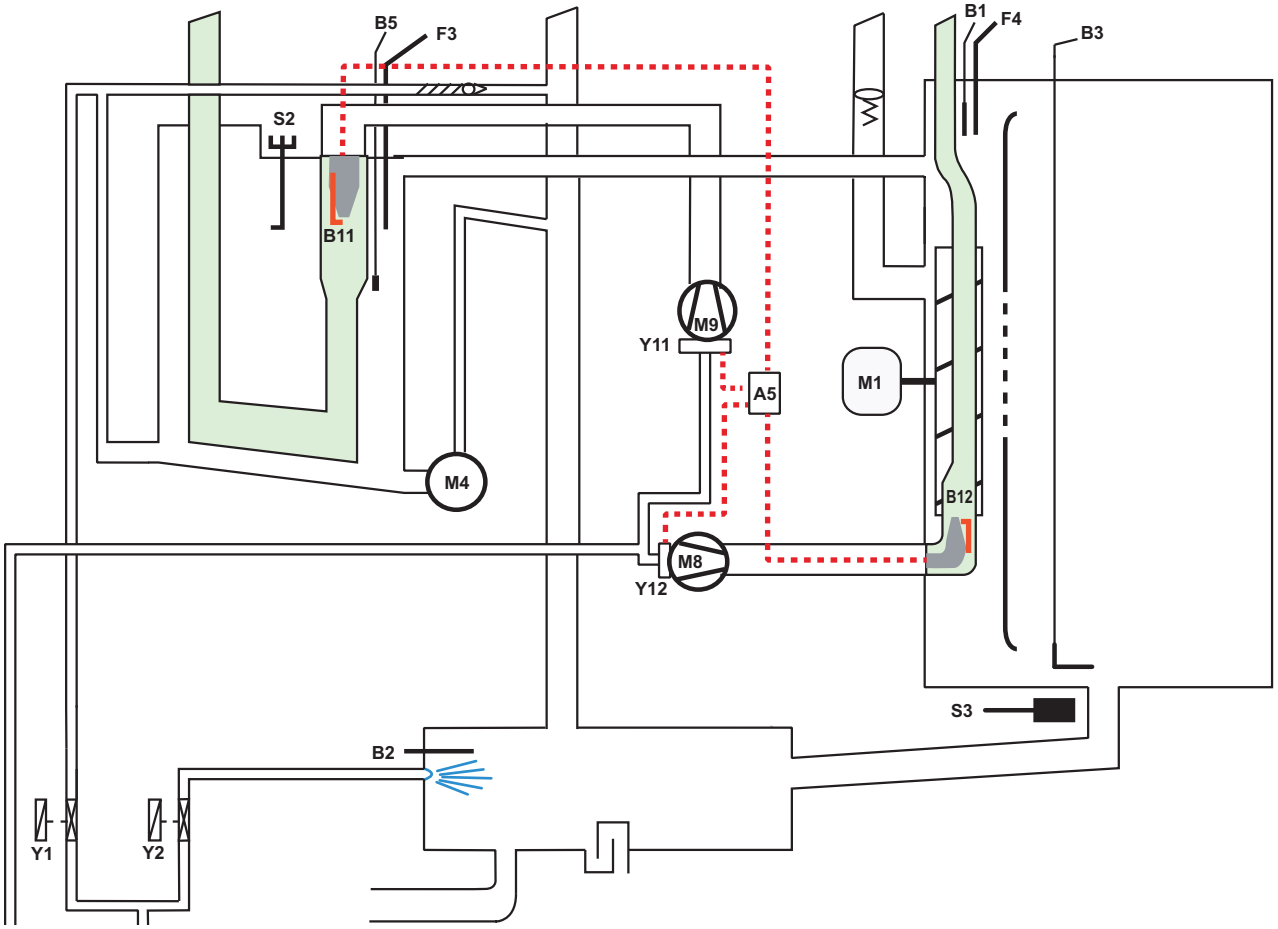
CO_2 too high: - gas - air mixture ratio too rich
- burner runs with overload
- Damage to heat exchanger, sooting possible

CO_2 too low: - gas - air mixture ratio too lean
- burner runs with less power than specified
- Start up problems may appear (specially when unit is cold)

Actual CO_2 values **MUST** be determined by flue gas analysis.

Correct CO_2 values as well as a brief adjustment instruction you will find on the table for burner adjustment.

CM Gas principle



A5	Ignition module
B1	Thermocouple interior cabinet
B2	Thermocouple quenching
B4	Thermocouple humidity
B5	Thermocouple steam generator
B6	Thermocouple core temperature
B11	Ignition/monitoring electrode steam
B12	Ignition/monitoring electrode hot air
F3	Safety thermostat steam generator 135°C
F4	Safety thermostat interior cabinet 360°C
Y1	Solenoid valve filling
Y2	Solenoid valve quenching
Y3	Solenoid valve moistening
Y11	Gas valve steam
Y12	Gas valve hot air
M1	Fan motor
M3	Humidity motor
M4	SC-pump
M6	CleanJet pump
M7	Drain valve
M8	Gas blower motor hot air
M9	Gas blower motor steam
S2	Level electrode
S3	Reed switch door contact
S4	Micro switch humidity motor
S11	CDS sensor
S12	Micro switch drain valve
P1	Pressure sensor humidity

Only floor untis 201 - 202

A6	Ignition module hot air bottom (with jumper)
M2	Fan motor top (with jumper)
M10	Gas blower hot air bottom
Y13	Gas valve hot air bottom
B13	Ignition/monitoring electrode hot air bottom

Check Gas Type / Gas Conversion

Whenever changing connected type of gas a detailed flue gas analysis MUST be done using adequate CO and CO_2 measuring equipment!

This shall ONLY be done by trained technicians!
Changing the gas setting only by adjusting the CO_2 screw will result in an unsafe flue gas condition, is dangerous to life and will damage the equipment!

Note: Yearly maintenance of Gas components is needed:
Clean Burner head, Electrode and interior blower housing from fats and dust! (TI03-2007)

1) Select any mode and cooking time

2) Open control panel

3) Set DIP switch 1 on PCB to „ON“ position

4) With timer dial select: „SE“ = Settings:

5) Activate „Settings“ by pressing core temperature key; display changes to „SE1“

6) With timer dial select: SE6

7) Activate position SE6 with timer key (keep key pressed)

8) Select new gas type with timer dial:
G20=Nat Gas H, G25=Nat Gas L, G30=3BP, G31=3P, 13A=Nat. Gas Japan

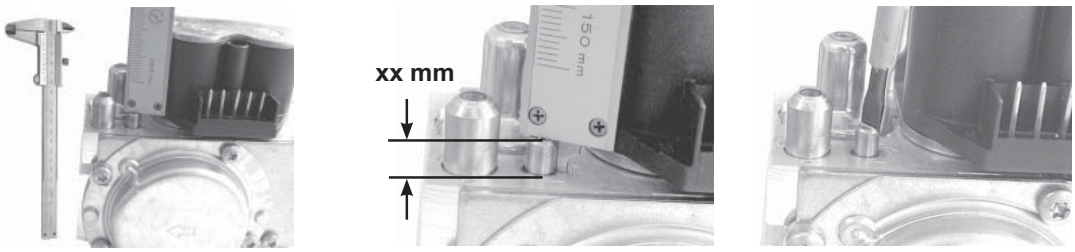
9) Confirm new gas type with core temperature key (now timer key can be released)

10) With timer dial select: SE7

11) Activate position SE7 with timer key (keep key pressed)

12) Keeping the timer key pressed the average length of the CO_2 screw is indicated. „St“ Steam, „HA1“ Hot air top, HA2“ Hot air bottom. Select the corresponding value with the timer dial (keep timer key pressed)

13) Set the CO_2 screw according the values of timer display or according the table “Values for burner adjustments“ Setting this screw to the given length shall ONLY bring the unit into working condition with the newly supplied gas. (! ! ! Set all CO_2 screws ! ! !). If the mm setting of CO_2 screw is too high, turn CO_2 screw first 1 turns clockwise and then to the requested length (Screw adjustment tolerance).



This does NOT replace ue gas analysis or make the ue gas analysis obsolete!

14) De-activate selected package “SE“ by pressing core temperature key

15) To exit service program set DIP switch 1 to „OFF“ position

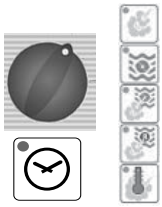
16) To store the new gas type the unit must be switched OFF and ON again!

17) Check / Set Installation Altitude in Basic settings. Perform flue gas analysis in function test at F21, F24, F27 as well as the check of CO_2 values at F19, F22, F25.

Changing installation altitude: CM gas

Adjusting the installation altitude compensates for the different concentration of oxygen in the air at different height above sea level by adjusting the blower speed accordingly.

Note: The altitude settings of 0-499 and 500-999m are identical. Therefore resetting of installation altitude needs to be done only when installing above 1000m (3280ft) or below sea level.



1) Select any mode and cooking time

2) Open control panel

3) Set DIP switch 1 on PCB to „ON“ position

4) With timer dial select: „SE“ = Settings

5) Activate „Settings“ by pressing core temperature key; display changes to „SE1“.

6) With timer dial select: SE8

7) Activate position SE8 with timer key and keep it pressed.

8) While pressing timer key corresponding installation altitude above sea level can be selected with the timer dial.

Possible altitude selection:

-500 m -	- 1 m
0 m -	499 m
500 m -	999 m
1000 m -	1499 m
1500 m -	1999 m
2000 m -	2499 m
2500 m -	2999 m
3000 m -	3499 m
3500 m -	3999 m
4000 m -	4499 m
4500 m -	4999 m

9) Confirm new altitude setting with core temperature key (Keep timer key pressed)

10) Release timer and core temperature key

11) De-activate selected package by pressing core temperature key

12) To exit service program set DIP switch 1 to „OFF“ position

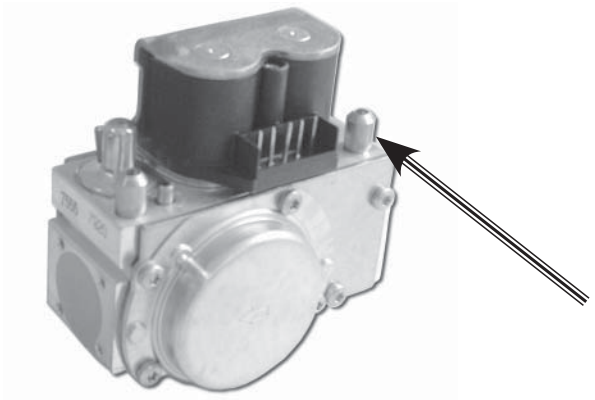
13) To store the new altitude setting the unit must be switched OFF and ON again!

14) Perform flue gas analysis in function test at F21, F24, F27 as well as the check of CO_2 values at F19, F22, F25.

Checking of dynamic input gas flow pressure

Before you carry out a flue gas analysis check input gas flow pressure

- Measure gas flow pressure when unit is switched off (static pressure)
- Switch on unit, select any cooking mode and time. Wait until burner has started
- Check input gas flow pressure
- See correct values of input flow pressure on data plate
- If necessary adjust gas input pressure



Necessary input gas flow pressure:

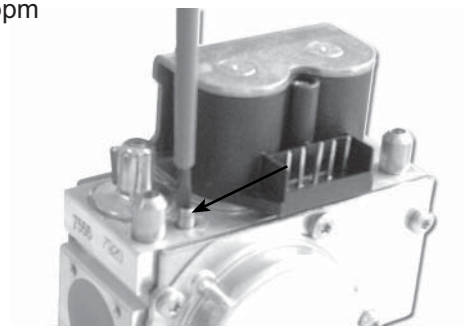
-	Natural gas	18 - 25 mbar (1,8 - 2,5kPa)	(180 - 255mm water column)
-	LPG	30 - 57 mbar (3 - 5,7kPa)	(305 - 580mm water column).

Note: All gas units in the kitchen must operate on high flame.

Flue gas analysis
Steam (F21) at MAX rpm and Checking CO_2 (F19) at MIN rpm

Before starting ue gas analysis make sure your ue gas analyser is set to the correct connected gas type!

1) Select any mode and cooking time
2) Open control panel
3) Set DIP switch 3 on PCB to „ON“ position
4) „F1“ is shown on timer display. With timer dial select position F21
5) Enter position F21 „Steam MAX“ with timer key
6) Activate position F21 with core temperature key;
   NOTE: In this position core temp. key is used as a switch and will automatically deactivate after 4 minutes. Gas blower rpm is shown in cabinet temp. display.
   Specific CO_2 value is shown on timer display, i.e. 9,5
7) Place flue gas testing nozzle in correct flue outlet.
   Adjust CO_2 to given value by turning CO_2 screw on gas valve.
   You also can find that value on table “Values for burner adjustments.
   - If CO_2 value is too low => turn CO_2 screw anti clockwise (+ direction),
   - If CO_2 value is too high => turn CO_2 screw first 1 turns clockwise (- direction), and than slowly anti clockwise (+ direction) till you get the indicated CO_2 value. (Screw adjustment tolerance).
   - CO value must be below 300 ppm



8) Press core temperature key. Burner will stop.
9) Leave position F21 „Steam MAX“ with timer key.
10) Select position F19 with timer dial.
11) Enter „Steam MIN“ with timer key.
12) Activate position F19 with core temperature key.
    NOTE: in this position core temp. key is used as a switch and will automatically deactivate after 4 minutes. Specific CO_2 value is shown on timer display, i.e 8,8
13) Carry out a CO_2 measurement to cross-check CO_2 value only.
    CO_2 value must be equivalent to the values mentioned in table “Values for burner adjustments“
14) If CO_2 value is out of allowed tolerance => **Change gas valve**
15) Press core temperature key. Burner will stop.
16) Leave position F19 „Steam MIN“ with timer key.
17) To exit service program set DIP switch 3 to „OFF“ position

Flue gas analysis
Hot air top (F24) at MAX rpm and Checking CO_2 (F22) at MIN rpm

1) Select any mode and cooking time

2) Open control panel

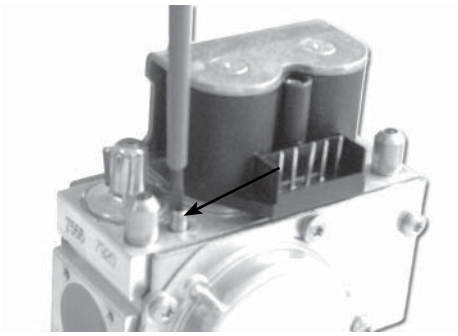
3) Set DIP switch 3 on PCB to „ON“ position

4) „F1“ is shown on timer display. With timer dial select position F24

5) Enter position F24 „Steam MAX“ with timer key

6) Activate position F24 with core temperature key;
NOTE: In this position core temp. key is used as a switch and will automatically deactivate after 4 minutes. Gas blower rpm is shown in cabinet temp. display.
Specific CO_2 value is shown on timer display, i.e. 9,5

7) Place flue gas testing nozzle in correct flue outlet.
Adjust CO_2 to given value by turning CO_2 screw on gas valve.
You also can find that value on table “Values for burner adjustments.
   - If CO_2 value is too low => turn CO_2 screw anti clockwise (+ direction),
   - If CO_2 value is too high => turn CO_2 screw first 1 turns clockwise (- direction), and than slowly anti clockwise (+ direction) till you get the indicated CO_2 value. (Screw adjustment tolerance).
   - CO value must be below 300 ppm



8) Press core temperature key. Burner will stop.

9) Leave position F24 „Steam MAX“ with timer key.

10) Select position F22 with timer dial.

11) Enter „Steam MIN“ with timer key.

12) Activate position F22 with core temperature key.
NOTE: in this position core temp. key is used as a switch and will automatically deactivate after 4 minutes. Specific CO_2 value is shown on timer display, i.e 8,8

13) Carry out a CO_2 measurement to cross-check CO_2 value only.
CO_2 value must be equivalent to the values mentioned in table “Values for burner adjustments“

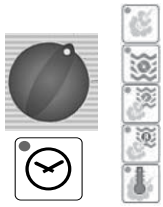
14) If CO_2 value is out of allowed tolerance => **Change gas valve**

15) Press core temperature key. Burner will stop.

16) Leave position F22 „Steam MIN“ with timer key.

17) To exit service program set DIP switch 3 to „OFF“ position

Flue gas analysis Hot air bottom (F27) at MAX rpm and Checking CO_2 (F25) at MIN rpm only (201/202)



1) Select any mode and cooking time

2) Open control panel

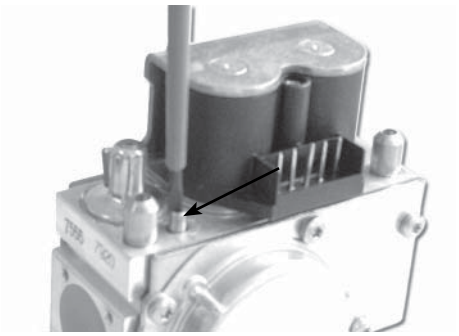
3) Set DIP switch 3 on PCB to „ON“ position

4) „F1“ is shown on timer display. With timer dial select position F27

5) Enter position F27 Hot air bottom MAX“ with timer key

6) Activate position F27 with core temperature key;
NOTE: In this position core temp. key is used as a switch and will automatically deactivate after 4 minutes. Gas blower rpm is shown in cabinet temp. display.
Specific CO_2 value is shown on timer display, i.e. 9,4

7) Place flue gas testing nozzle in correct flue outlet.
Adjust CO_2 to given value by turning CO_2 screw on gas valve.
You also can find that value on table “Values for burner adjustments.
- If CO_2 value is too low => turn CO_2 screw anti clockwise (+ direction),
- If CO_2 value is too high => turn CO_2 screw first 1 turns clockwise (- direction), and than slowly anti clockwise (+ direction) till you get the indicated CO_2 value. (Screw adjustment tolerance).
- CO value must be below 300 ppm



8) Press core temperature key. Burner will stop.

9) Leave position F27 Hot air bottom MAX“ with timer key.

10) Select position F25 with timer dial.

11) Enter Hot air bottom MIN“ with timer key.

12) Activate position F25 with core temperature key.
NOTE: in this position core temp. key is used as a switch and will automatically deactivate after 4 minutes. Specific CO_2 value is shown on timer display, i.e 8,7

13) Carry out a CO_2 measurement to cross-check CO_2 value only.
CO_2 value must be equivalent to the values mentioned in table “Values for burner adjustments“

14) If CO_2 value is out of allowed tolerance => **Change gas valve**

15) Press core temperature key. Burner will stop.

16) Leave position F25 Hot air bottom MIN“ with timer key.

17) To exit service program set DIP switch 3 to „OFF“ position

Burner adjustment SCC - CM 07-2008

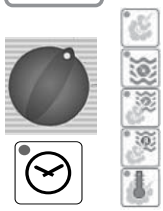
Type of gas	SCC - CM	Steam Burner						Hot Air Burner - Top Side						Hot Air Burner - Bottom Side (only at 201-202)					
		Input gas flow pressure	Adjustment of CO_2-Screw	CO_2 at „MAX“ rpm ± 0,2%		CO_2 at „Min“ rpm -0,2% / + 0,5%		Input gas flow pressure	Adjustment of CO_2-Screw	CO_2 at „MAX“ rpm ± 0,2%		CO_2 at „Min“ rpm -0,2% / + 0,5%		Input gas flow pressure	Adjustment of CO_2-Screw	CO_2 at „MAX“ rpm ± 0,2%		CO_2 at „Min“ rpm -0,2% / + 0,5%	
Natural Gas High (G20)	61	18 - 25 mbar	4,2 mm	9,4 %		8,9 %		18 - 25 mbar	3,6 mm	9,4 %		8,3 %							
	62	18 - 25 mbar	3,4 mm	9,4 %		7,9 %		18 - 25 mbar	3,5 mm	9,4 %		8,0 %							
	101	18 - 25 mbar	3,2 mm	9,4 %		7,7 %		18 - 25 mbar	3,3 mm	9,4 %		7,7 %							
	102	18 - 25 mbar	3,6 mm	9,4 %		8,4 %		18 - 25 mbar	3,1 mm	9,4 %		8,6 %							
	201	18 - 25 mbar	3,7 mm	9,4 %		8,2 %		18 - 25 mbar	3,3 mm	9,4 %		7,8 %		18 - 25 mbar	3,2 mm	9,4 %		7,8 %	
	202	18 - 25 mbar	3,7 mm	9,5 %		8,8 %		18 - 25 mbar	3,2 mm	9,4 %		8,7 %		18 - 25 mbar	3,2 mm	9,4 %		8,7 %	
Natural Gas Low (G25)	61	18 - 25 mbar	4,6 mm	9,4 %		8,6 %		18 - 25 mbar	4,5 mm	9,4 %		8,1 %							
	62	18 - 25 mbar	3,6 mm	9,4 %		8,0 %		18 - 25 mbar	3,9 mm	9,4 %		8,0 %							
	101	18 - 25 mbar	3,4 mm	9,4 %		8,0 %		18 - 25 mbar	3,4 mm	9,4 %		7,9 %							
	102	18 - 25 mbar	5,5 mm	9,4 %		8,1 %		18 - 25 mbar	3,8 mm	9,4 %		8,3 %							
	201	18 - 25 mbar	4,5 mm	9,4 %		9,0%		18 - 25 mbar	3,6 mm	9,4 %		7,8 %		18 - 25 mbar	3,6 mm	9,3 %		7,8 %	
	202	18 - 25 mbar	4,0 mm	9,4 %		8,9 %		18 - 25 mbar	3,5 mm	9,4 %		8,7 %		18 - 25 mbar	3,5 mm	9,3 %		8,7 %	
LPG 3BP (G30)				3BP	100% Butan	3BP	100% Butan			3BP	100% Butan	3BP	100% Butan			3BP	100% Butan	3BP	100% Butan
	61	30 - 57 mbar	2,5 mm	10,4 %	11,6 %	9,4 %	10,6 %	30 - 57 mbar	2,3 mm	10,4 %	11,6 %	9,0 %	10,4 %						
	62	30 - 57 mbar	2,4 mm	10,4 %	11,6 %	8,5 %	9,2 %	30 - 57 mbar	2,4 mm	10,4 %	11,6 %	8,9 %	9,6 %						
	101	30 - 57 mbar	2,4 mm	10,4 %	11,6 %	8,7 %	9,2 %	30 - 57 mbar	2,3 mm	10,4 %	11,6 %	8,9 %	9,6 %						
	102	30 - 57 mbar	2,5 mm	10,4 %	11,6 %	8,9 %	10,1 %	30 - 57 mbar	2,4 mm	10,4 %	11,6 %	9,5 %	10,3 %						
	201	30 - 57 mbar	2,5 mm	10,4 %	11,6 %	8,9 %	9,8 %	30 - 57 mbar	2,4 mm	10,4 %	11,6 %	8,9 %	9,6 %	30 - 57 mbar	2,4 mm	10,4 %	11,6 %	8,9 %	9,6 %
	202	30 - 57 mbar	2,5 mm	10,4 %	11,6 %	9,7 %	11,0 %	30 - 57 mbar	2,3 mm	10,4 %	11,6 %	9,4 %	10,1 %	30 - 57 mbar	2,3 mm	10,4 %	11,6 %	9,4 %	10,1 %
LPG 3P (G31)	61	30 - 57 mbar	2,9 mm	11,1 %		9,4 %		30 - 57 mbar	2,5 mm	11,1 %		9,8 %							
	62	30 - 57 mbar	2,5 mm	11,1 %		8,9 %		30 - 57 mbar	2,5 mm	11,1 %		9,2 %							
	101	30 - 57 mbar	2,4 mm	11,1 %		9,3 %		30 - 57 mbar	2,7 mm	11,1 %		9,7 %							
	102	30 - 57 mbar	2,6 mm	11,1 %		9,7 %		30 - 57 mbar	2,5 mm	11,1 %		9,9 %							
	201	30 - 57 mbar	2,6 mm	11,1 %		9,6 %		30 - 57 mbar	2,4 mm	11,1 %		9,1 %		30 - 57 mbar	2,4 mm	11,1 %		9,0 %	
	202	30 - 57 mbar	2,5 mm	11,1 %		10,7 %		30 - 57 mbar	2,3 mm	11,1 %		10,0 %		30 - 57 mbar	2,3 mm	11,1 %		10,1 %	
Natural Gas Japan (13A)	61	18 - 25 mbar	4,2 mm	9,5 %		8,6 %		18 - 25 mbar	3,5 mm	9,5 %		8,4 %							
	62	18 - 25 mbar	3,7 mm	9,5 %		7,8 %		18 - 25 mbar	3,4 mm	9,5 %		8,0 %							
	101	18 - 25 mbar	3,1 mm	9,5 %		8,0 %		18 - 25 mbar	3,0 mm	9,5 %		8,2 %							
	102	18 - 25 mbar	3,3 mm	9,5 %		8,5 %		18 - 25 mbar	3,1 mm	9,5 %		8,5 %							
	201	18 - 25 mbar	3,4 mm	9,5 %		8,4 %		18 - 25 mbar	3,1 mm	9,5 %		8,2 %		18 - 25 mbar	3,1 mm	9,5 %		8,2 %	
	202	18 - 25 mbar	3,5 mm	9,5 %		9,1 %		18 - 25 mbar	3,1 mm	9,5 %		8,8 %		18 - 25 mbar	3,1 mm	9,5 %		8,8 %	

How to carry out a burner adjustment:

1.) Check the gas type and installation altitude adjustment at „Basic Settings“.
2.) Check the given length of the CO_2 screw. See correct values from table up here.
3.) Check gas input flow pressure. See correct values from table up here.
4.) Select „Gas Steam Blower“ at „Function Test“. Exhaust temperature should be during the „gas flow analysis“ above 200°C.
Carry out first a CO_2 „Max“ adjustment.
Setting of exhaust values only by CO2 screw adjustment. CO_2 = see table above, CO = below 300ppm, if possible below 100ppm.
Carry out the CO_2 „Min“ measurement. At CO_2 „Min“ measurement no adjustment necessary on the CO_2 screw => ! ! ! Check only the CO_2 values ! ! ! !
Repeat same measurements at „Gas Hot Air Blower Top“ and „Gas Hot Air Blower Bottom (201-202)“.
5.) Recommendation: Note down all actual values (mm, CO_2, CO) inside the unit. The next technician will say thank you to you.

Changing Gas blower speed
CM Gas, i.e.Steam, MIN SE9

This setting shall ONLY be done by specially trained and RATIONAL approved technicians!



1) Select any mode and cooking time

2) Open control panel

3) Set DIP switch 1 on PCB to „ON“ position

4) With timer dial select: „SE“ = Settings:

5) Activate „Settings“ by pressing core temperature key; display changes to „SE1“

6) With timer dial select: SE9

7) Activate position SE9 „blower motor steam MIN“ rpm with timer.Timer display shows stored value from EEPROM, i.e. 6250.

8) While pressing timer key blower speed can be adjusted with timer dial by + / -10%. Note: Adjust steps in increments of 30rpm only! Changed rpm will be shown in timer display

9) Confirm new rpm setting with core temperature key (keep timer key pressed).

10) Release timer key.

11) De-activate selected package by pressing core temperature key

12) To exit service program set DIP switch 1 to „OFF“ position

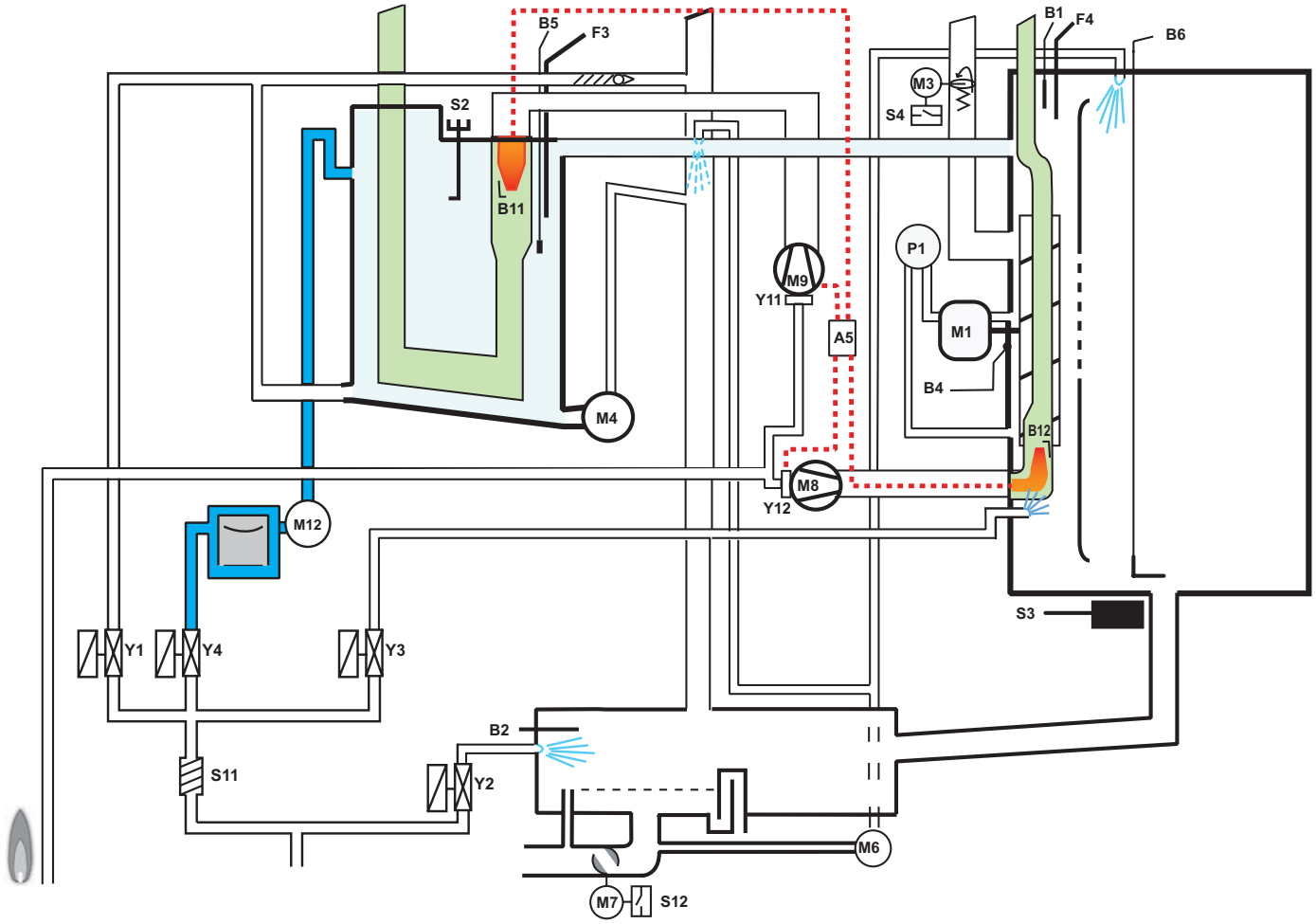
13) To store the new blower speed setting the unit must be switched OFF and ON again!

14) Perform flue gas analysis in function test at F21, F24, F27 as well as the check of CO_2 values at F19, F22, F25.

With this procedure you can change gas blower speed (MAX, Start, MIN rpm) for steam, hot air top and hot air bottom.
Changing blower speed must be followed by ue gas analysis!:

	Steam	Hot air top	Hot air bottom
MIN	SE 9	SE 12	SE 15
Start	SE 10	SE 13	SE 16
MAX	SE 11	SE 14	SE 17

SCC Gas principle



A5	Ignition module
B1	Thermocouple interior cabinet
B2	Thermocouple quenching
B4	Thermocouple humidity
B5	Thermocouple steam generator
B6	Thermocouple core temperature
B11	Ignition/monitoring electrode steam
B12	Ignition/monitoring electrode hot air
F3	Safety thermostat steam generator 135°C
F4	Safety thermostat interior cabinet 360°C
Y1	Solenoid valve filling
Y2	Solenoid valve quenching
Y3	Solenoid valve moistening
Y11	Gas valve steam
Y12	Gas valve hot air
M1	Fan motor
M3	Humidity motor
M4	SC-pump
M6	CleanJet pump
M7	Drain valve
M8	Gas blower motor hot air
M9	Gas blower motor steam
S2	Level electrode
S3	Reed switch door contact
S4	Micro switch humidity motor
S11	CDS sensor
S12	Micro switch drain valve
P1	Pressure sensor humidity

Only oor untis 201 - 202

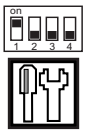
A6	Ignition module hot air bottom (with jumper)
M2	Fan motor top (with jumper)
M10	Gas blower motor hot air bottom
Y13	Gas valve hot air bottom
B13	Ignition/monitoring electrode hot air bottom

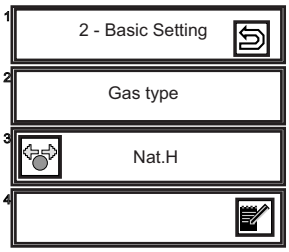
Gas conversion / fitting new gas valve

After conversion of the connected type of gas a flue gas analysis MUST be done using the correct measuring instruments. This shall only be done by trained technicians.

Any gas conversion without flue gas analysis is illegal.

Not following the instructions below may cause danger to life and equipment!

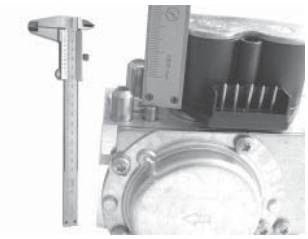


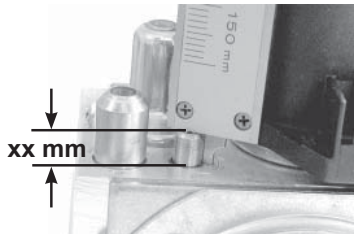


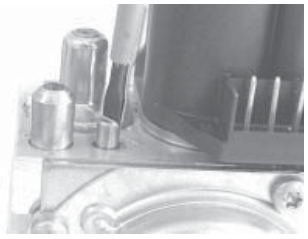
1) Switch unit on
2) Open control panel
3) Set DIP switch 1 on PCB to „ON“ position
4) Press service key
5) Select „Basic Settings“
6) At „Basic Settings“ select position „Gas type“
7) Press key and select with the central dial the new gas type

   G20 = Natural Gas H, G25=Natural Gas L, G30=3BP, G31=3P, 13A=Natural Gas Japan
8) Confirm new gas setting by pressing the „Store“ key.
9) Select 3-Basic settings for average CO_2 length setting.
10) Note: Setting this screw to the given length shall ONLY bring the unit into working condition with the newly supplied gas. This does NOT replace flue gas analysis or make the flue gas analysis obsolete!

    Set the CO_2 screw according the values of the display or according the table „Values for burner adjustments“(! ! ! Set all CO_2 screws ! ! !)
    If the mm setting of CO_2 screw is too high, turn CO_2 screw first 1 turn clockwise and then to the requested length (Screw adjustment tolerance)







11) Switch unit OFF and ON again to store newly gas type setting!

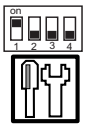
12) To exit service program set DIP switch 1 to „OFF“ position

13) **A comprehensive ue gas analysis must be done after this gas conversion. This is done using Function test, where the CO_2 values must be set according to the table for all burners in MAX speed followed by cross checking in MIN speed.**

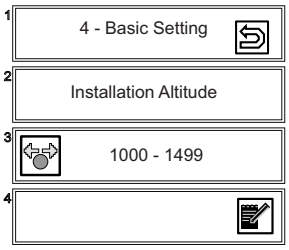
Adjustment of installation altitude above sea level
SCC Gas

Setting of the installation altitude above sea level compensates for the lower oxygen level at higher altitudes. This is achieved by altering the blower speed.

1) Switch unit ON;
2) Open control panel;
3) Set DIP switch 1 on pcb to ON position;



4) Press service key;
5) Select 4 - Basic Settings - Installation altitude above sea level
6) Set correct installation height with central dial



Possible altitude selection:

-500	-	-1m
0	-	499m
500	-	999m
1000	-	1499m
1500	-	1999m
2000	-	2499m
2500	-	2999m
3000	-	3499m
3500	-	3999m
4000	-	4499m
4500	-	4999m

7) Confirm new altitude setting with „store“ key;
8) Switch unit OFF and ON again to store new setting;

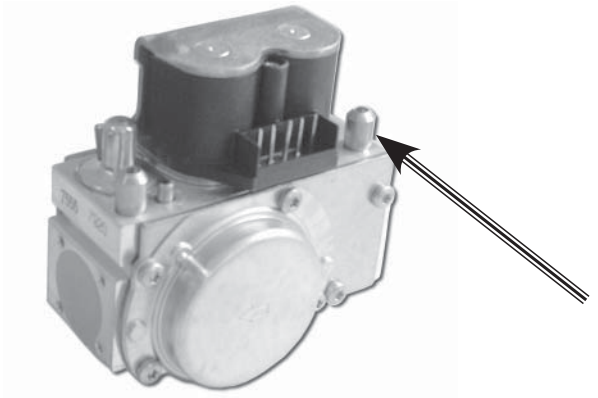
9) To exit service program set DIP switch to OFF position;

10) Perform a complete flue gas analysis at Max speed of each burner in „Function Test“ as well as a cross-check of CO_2 at Min speed of each burner at the „Function Test“

Checking of dynamic input gas flow pressure

Before you carry out a flue gas analysis check input gas flow pressure

- Measure gas flow pressure when unit is switched off (static pressure)
- Switch on unit, select any cooking mode and time. Wait until burner has started
- Check input gas flow pressure
- See correct values of input flow pressure on data plate
- If necessary adjust gas input pressure



Necessary input gas flow pressure:

-	Natural gas	18 - 25 mbar (1,8 - 2,5kPa)	(180 - 255mm water column)
-	LPG	30 - 57 mbar (3 - 5,7kPa)	(305 - 580mm water column).

Note: All gas units in the kitchen must operate on high flame.

Flue gas analysis

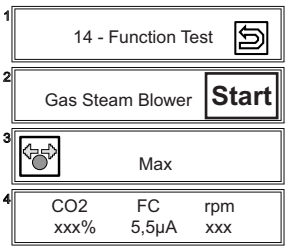
Flue gas analysis for STEAM at MAX rpm and cross checking CO_2 at MIN rpm

Before starting ue gas analysis make sure your ue gas analyser is set to the correct connected gas type!

1) Switch on unit
2) Open front panel

3) Set DIP switch 1 on PCB to „ON“ position

4) Press Service-key
5) Select “Function Test“
6) Select at „FunctionTest“ the position 14 „Gas Steam Burner“



7) Press key and select „Max“ rpm, if it‘s not already selected
8) Activate the burner with the „Start“ key.

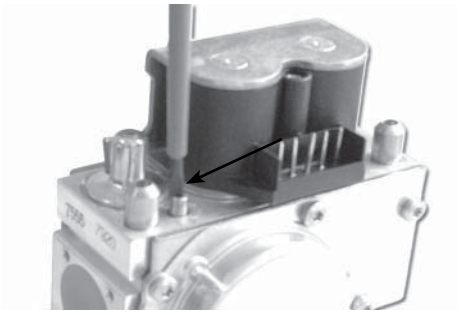
   Note: Start key is used as a switch and will automatically deactivate after 4 minutes.

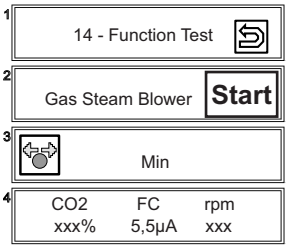
   Display 4 indicates the desired CO_2 value, e.g. 9,2%, flame cur rent, i.e. 5,5 µA and the corresponding rpm of the blower motor.
9) Place flue gas testing nozzle in correct flue outlet;
10) „Adjust CO_2 to given value by turning CO_2 screw on gas valve.

You also can find that value on table „Values for burner adjustments“

If CO_2 value is too low => turn CO_2 screw anti clockwise (+ direction),
If CO_2 value is too high => turn CO_2 screw first 1 turns clockwise (- direction), and than slowly anti clockwise (+ direction) until you get the indicated CO_2 value. (Screw adjustment tolerance).

CO value must be below 300





11) Press „Stop“ key. Blower will stop.
12) Press key and select „Min“ speed.
13) Activate the burner with the „Start“ key. Note: Start key is used as a switch and will automatically deactivate after 4 minutes

    Check CO_2 values. Measured values shall correspond with the table „Values for burner adjustment“ in this manual. Should CO2 value be out of the allowable range change gas valve.

Press „Stop“ key. Blower will stop.

14) To exit program set DIP switch 1 to „OFF“;

Flue gas analysis for Hot Air at MAX rpm and cross checking CO_2 at MIN rpm

Before starting ue gas analysis make sure your ue gas analyser is set to the correct connected gas type!

1) Switch on unit
2) Open front panel
3) Set DIP switch 1 on PCB to „ON“ position
4) Press Service-key
5) Select “Function Test“
6) Select at „FunctionTest“ the position 15 „Gas Hot Air Burner TOP“
7) Press key and select „Max“ rpm, if it‘s not already selected
8) Activate the burner with the „Start“ key.

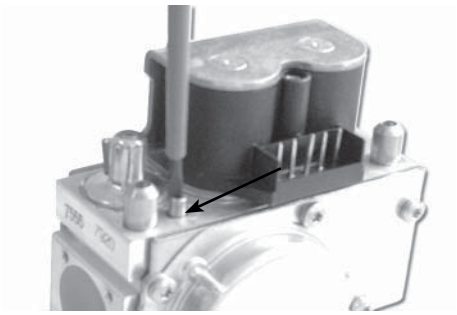
   Note: Start key is used as a switch and will automatically deactivate after 4 minutes.

   Display 4 indicates the desired CO_2 value, e.g. 9,2%, flame cur rent, i.e. 5,5 µA and the corresponding rpm of the blower motor.
9) Place flue gas testing nozzle in correct flue outlet;
10) Adjust CO_2 to given value by turning CO_2 screw on gas valve.

You also can find that value on table „Values for burner adjustments“

If CO_2 value is too low => turn CO_2 screw anti clockwise (+ direction),
If CO_2 value is too high => turn CO_2 screw first 1 turns clockwise (- direction), and than slowly anti clockwise (+ direction) until you get the indicated CO_2 value. (Screw adjustment tolerance).

CO value must be below 300 ppm!



11) Press „Stop“ key. Blower will stop.
12) Press key and select „Min“ speed.
13) Activate the burner with the „Start“ key. Note: Start key is used as a switch and will automatically deactivate after 4 minutes

    Check CO_2 values. Measured values shall correspond with the table „Values for burner adjustment“ in this manual. Should CO2 value be out of the allowable range change gas valve.

Press „Stop“ key. Blower will stop.

14) To exit program set DIP switch 1 to „OFF“;

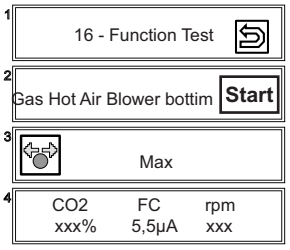
Flue gas analysis for Hot Air at MAX rpm and cross checking CO_2 at MIN rpm

(201-202 only)

1) Switch on unit
2) Open front panel

3) Set DIP switch 1 on PCB to „ON“ position

4) Press Service-key
5) Select Function Test“
6) Select at „FunctionTest“ the position 16 „Gas Hot Air Burner BOTTOM“



7) Press key and select „Max“ rpm, if it‘s not already selected
8) Activate the burner with the „Start“ key.

   Note: Start key is used as a switch and will automatically deactivate after 4 minutes.

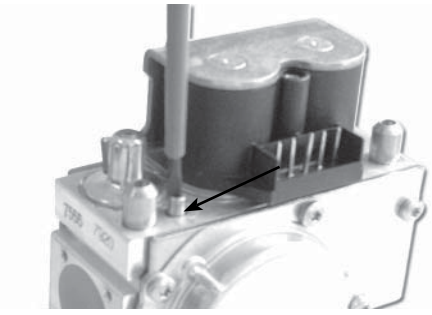
   Display 4 indicates the desired CO_2 value, e.g. 9,2%, flame cur rent, i.e. 5,5 µA and the corresponding rpm of the blower motor.

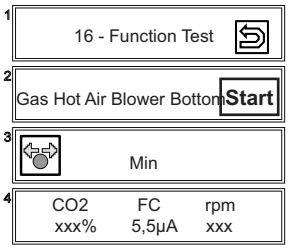
9) Place flue gas testing nozzle in correct flue outlet;
10) Adjust CO_2 to given value by turning CO_2 screw on gas valve.

You also can find that value on table „Values for burner adjustments“

If CO_2 value is too low => turn CO_2 screw anti clockwise (+ direction),
If CO_2 value is too high => turn CO_2 screw first 1 turns clockwise (- direction), and than slowly anti clockwise (+ direction) until you get the indicated CO_2 value. (Screw adjustment tolerance).

CO value must be below 300 ppm!





11) Press „Stop“ key. Blower will stop.
12) Press key and select „Min“ speed.
13) Activate the burner with the „Start“ key. Note: Start key is used as a switch and will automatically deactivate after 4 minutes

    Check CO_2 values. Measured values shall correspond with the table „Values for burner adjustment“ in this manual. Should CO2 value be out of the allowable range change gas valve.

Press „Stop“ key. Blower will stop.

14) To exit program set DIP switch 1 to „OFF“;

Burner adjustment SCC - CM 07-2008

Type of gas	SCC - CM	Steam Burner				Hot Air Burner - Top Side				Hot Air Burner - Bottom Side (only at 201-202)			
		Input gas flow pressure	Adjustment of CO_2-Screw	CO_2 at „MAX“ rpm ± 0,2%	CO_2 at „Min“ rpm -0,2% / + 0,5%	Input gas flow pressure	Adjustment of CO_2-Screw	CO_2 at „MAX“ rpm ± 0,2%	CO_2 at „Min“ rpm -0,2% / + 0,5%	Input gas flow pressure	Adjustment of CO_2-Screw	CO_2 at „MAX“ rpm ± 0,2%	CO_2 at „Min“ rpm -0,2% / + 0,5%
Natural Gas High (G20)	61	18 - 25 mbar	4,2 mm	9,4 %	8,9 %	18 - 25 mbar	3,6 mm	9,4 %	8,3 %				
	62	18 - 25 mbar	3,4 mm	9,4 %	7,9 %	18 - 25 mbar	3,5 mm	9,4 %	8,0 %				
	101	18 - 25 mbar	3,2 mm	9,4 %	7,7 %	18 - 25 mbar	3,3 mm	9,4 %	7,7 %				
	102	18 - 25 mbar	3,6 mm	9,4 %	8,4 %	18 - 25 mbar	3,1 mm	9,4 %	8,6 %				
	201	18 - 25 mbar	3,7 mm	9,4 %	8,2 %	18 - 25 mbar	3,3 mm	9,4 %	7,8 %	18 - 25 mbar	3,2 mm	9,4 %	7,8 %
	202	18 - 25 mbar	3,7 mm	9,5 %	8,8 %	18 - 25 mbar	3,2 mm	9,4 %	8,7 %	18 - 25 mbar	3,2 mm	9,4 %	8,7 %
Natural Gas Low (G25)	61	18 - 25 mbar	4,6 mm	9,4 %	8,6 %	18 - 25 mbar	4,5 mm	9,4 %	8,1 %				
	62	18 - 25 mbar	3,6 mm	9,4 %	8,0 %	18 - 25 mbar	3,9 mm	9,4 %	8,0 %				
	101	18 - 25 mbar	3,4 mm	9,4 %	8,0 %	18 - 25 mbar	3,4 mm	9,4 %	7,9 %				
	102	18 - 25 mbar	5,5 mm	9,4 %	8,1 %	18 - 25 mbar	3,8 mm	9,4 %	8,3 %				
	201	18 - 25 mbar	4,5 mm	9,4 %	9,0%	18 - 25 mbar	3,6 mm	9,4 %	7,8 %	18 - 25 mbar	3,6 mm	9,3 %	7,8 %
	202	18 - 25 mbar	4,0 mm	9,4 %	8,9 %	18 - 25 mbar	3,5 mm	9,4 %	8,7 %	18 - 25 mbar	3,5 mm	9,3 %	8,7 %
LPG 3BP (G30)				3BP	100% Butan	3BP	100% Butan			3BP	100% Butan	3BP	100% Butan			3BP	100% Butan	3BP	100% Butan
	61	30 - 57 mbar	2,5 mm	10,4 %	11,6 %	9,4 %	10,6 %	30 - 57 mbar	2,3 mm	10,4 %	11,6 %	9,0 %	10,4 %						
	62	30 - 57 mbar	2,4 mm	10,4 %	11,6 %	8,5 %	9,2 %	30 - 57 mbar	2,4 mm	10,4 %	11,6 %	8,9 %	9,6 %						
	101	30 - 57 mbar	2,4 mm	10,4 %	11,6 %	8,7 %	9,2 %	30 - 57 mbar	2,3 mm	10,4 %	11,6 %	8,9 %	9,6 %						
	102	30 - 57 mbar	2,5 mm	10,4 %	11,6 %	8,9 %	10,1 %	30 - 57 mbar	2,4 mm	10,4 %	11,6 %	9,5 %	10,3 %						
	201	30 - 57 mbar	2,5 mm	10,4 %	11,6 %	8,9 %	9,8 %	30 - 57 mbar	2,4 mm	10,4 %	11,6 %	8,9 %	9,6 %	30 - 57 mbar	2,4 mm	10,4 %	11,6 %	8,9 %	9,6 %
	202	30 - 57 mbar	2,5 mm	10,4 %	11,6 %	9,7 %	11,0 %	30 - 57 mbar	2,3 mm	10,4 %	11,6 %	9,4 %	10,1 %	30 - 57 mbar	2,3 mm	10,4 %	11,6 %	9,4 %	10,1 %
LPG 3P (G31)	61	30 - 57 mbar	2,9 mm	11,1 %	9,4 %	30 - 57 mbar	2,5 mm	11,1 %	9,8 %				
	62	30 - 57 mbar	2,5 mm	11,1 %	8,9 %	30 - 57 mbar	2,5 mm	11,1 %	9,2 %				
	101	30 - 57 mbar	2,4 mm	11,1 %	9,3 %	30 - 57 mbar	2,7 mm	11,1 %	9,7 %				
	102	30 - 57 mbar	2,6 mm	11,1 %	9,7 %	30 - 57 mbar	2,5 mm	11,1 %	9,9 %				
	201	30 - 57 mbar	2,6 mm	11,1 %	9,6 %	30 - 57 mbar	2,4 mm	11,1 %	9,1 %	30 - 57 mbar	2,4 mm	11,1 %	9,0 %
	202	30 - 57 mbar	2,5 mm	11,1 %	10,7 %	30 - 57 mbar	2,3 mm	11,1 %	10,0 %	30 - 57 mbar	2,3 mm	11,1 %	10,1 %
Natural Gas Japan (13A)	61	18 - 25 mbar	4,2 mm	9,5 %	8,6 %	18 - 25 mbar	3,5 mm	9,5 %	8,4 %				
	62	18 - 25 mbar	3,7 mm	9,5 %	7,8 %	18 - 25 mbar	3,4 mm	9,5 %	8,0 %				
	101	18 - 25 mbar	3,1 mm	9,5 %	8,0 %	18 - 25 mbar	3,0 mm	9,5 %	8,2 %				
	102	18 - 25 mbar	3,3 mm	9,5 %	8,5 %	18 - 25 mbar	3,1 mm	9,5 %	8,5 %				
	201	18 - 25 mbar	3,4 mm	9,5 %	8,4 %	18 - 25 mbar	3,1 mm	9,5 %	8,2 %	18 - 25 mbar	3,1 mm	9,5 %	8,2 %
	202	18 - 25 mbar	3,5 mm	9,5 %	9,1 %	18 - 25 mbar	3,1 mm	9,5 %	8,8 %	18 - 25 mbar	3,1 mm	9,5 %	8,8 %

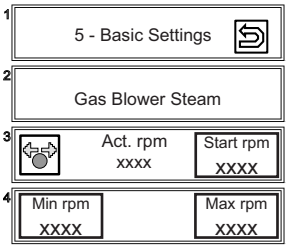
How to carry out a burner adjustment:

1.) Check the gas type and installation altitude adjustment at „Basic Settings“.
2.) Check the given length of the CO_2 screw. See correct values from table up here.
3.) Check gas input flow pressure. See correct values from table up here.
4.) Select „Gas Steam Blower“ at „Function Test“. Exhaust temperature should be during the „gas flow analysis“ above 200°C.
Carry out first a CO_2 „Max“ adjustment.
Setting of exhaust values only by CO2 screw adjustment. CO_2 = see table above, CO = below 300ppm, if possible below 100ppm.
Carry out the CO_2 „Min“ measurement. At CO_2 „Min“ measurement no adjustment necessary on the CO_2 screw => ! ! ! Check only the CO_2 values ! ! ! !
Repeat same measurements at „Gas Hot Air Blower Top“ and „Gas Hot Air Blower Bottom (201-202)“.
5.) Recommendation: Note down all actual values (mm, CO_2, CO) inside the unit. The next technician will say thank you to you.

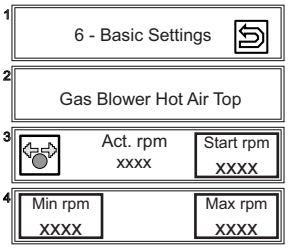
Changing gas blower speed SCC Gas (MAX, Start, MIN rpm)

Please do not change any gas blower speed without consulting your Rational Servcie manager. This shall only be done by factory trained technicians!

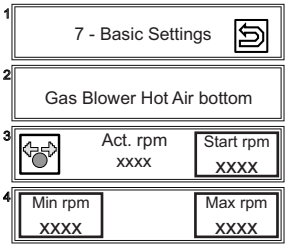
1) Switch unit ON
2) Open control panel
3) Set DIP switch 1 on PCB to „ON“ position
4) Press service key
5) Select Basic Settings
6) At Basic Settings select i.e. position 5 - Gas Blower Steam
   The factory stored blower speed is shown at MAX, Start und MIN.
7) To change the rpm of MAX, Start and MIN, select the desired step.



8) Set the new speed (given by the manufacturer) using the central dial.
   To confirm press the „Dial“ key again.
9) To store the new value switch unit off and on
10) To exit service program set DIP switch 1 to „OFF“ position



In order to change the other rpm settings of the same burner repeat steps 7-9 accordingly



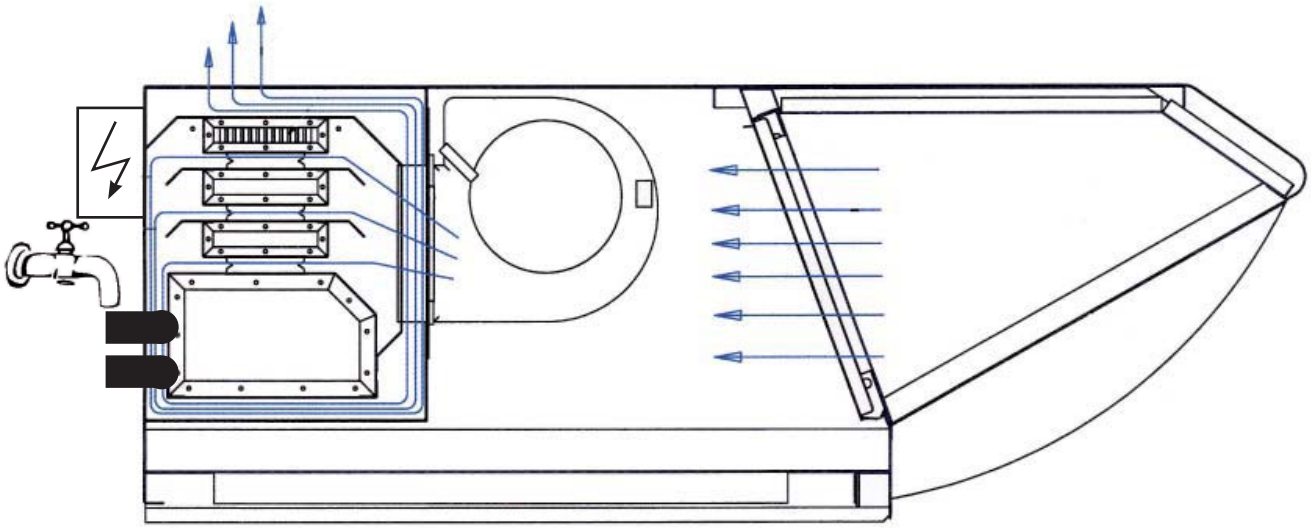
Perform a complete flue gas analysis at Max speed of each burner in „Function Test“ as well as a cross-check of CO2 at Min speed of each burner in „Function Test“

Ultravent

Serial number example: **6606 2 0111 2120**

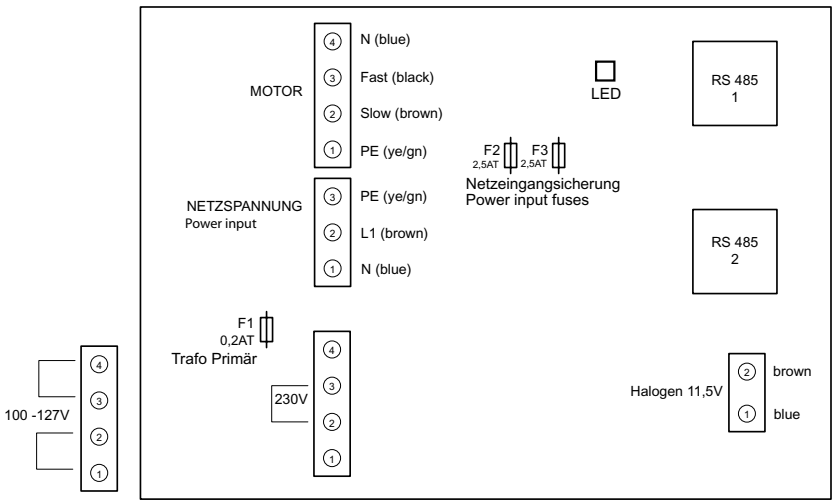
Typ	Year	Revision	Day	Month	Number
66	06	2	01	11	2120
66 61/101 Electric		**1**= with Relais control			
68 61/101 Electric, Combi-Duo		**2**= with Bus control			
70 61/101 Gas					
72 62/102 Electric					
73 201 Electric					
Vent hood (EH):					
60 61/101 Electric					
62 61/101 Electric, Combi-Duo					
64 61/101 Gas					
08 62/102 Electric					

Air circulation



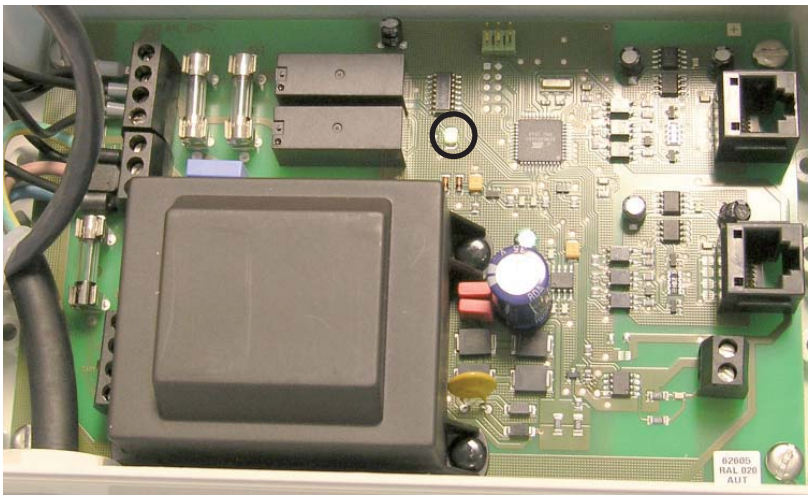
Ultravent with Bus control (since November 2006)

No main ON-OFF switch. Ultravent will start running when SCC/CM is switched on.
Connect bus cable at fan motor at electric units, at ignition box at gas units;
Ultravent for single units have only one bus connection terminal, those for Combi Duo have two bus terminals;
Only pcb with two bus terminals are send when you need a replacement pcb for Ultravent (42.00.050)



LED on Ultravent pcb

After connecting the Ultravent to the bus system the SCC/CM must be switched off and on again to detect the new connection.



If the LED is permanent ON the bus connection is not established. ☹

Blinking of the LED means bus connection ok. ☺

SCC units

The SCC must run on at least software version 01.07.11
(earlier versions do not support the bus control)

Software Version 01.07.11 - 02.01.02

Ultravent light will be ON or OFF as the SCC is switched ON or OFF.
Fan motor will continue to run even after the cooking process (time or core probe) is finished and stops only when the cooking process is de-selected or the unit is switched OFF.

From version 03.01.01

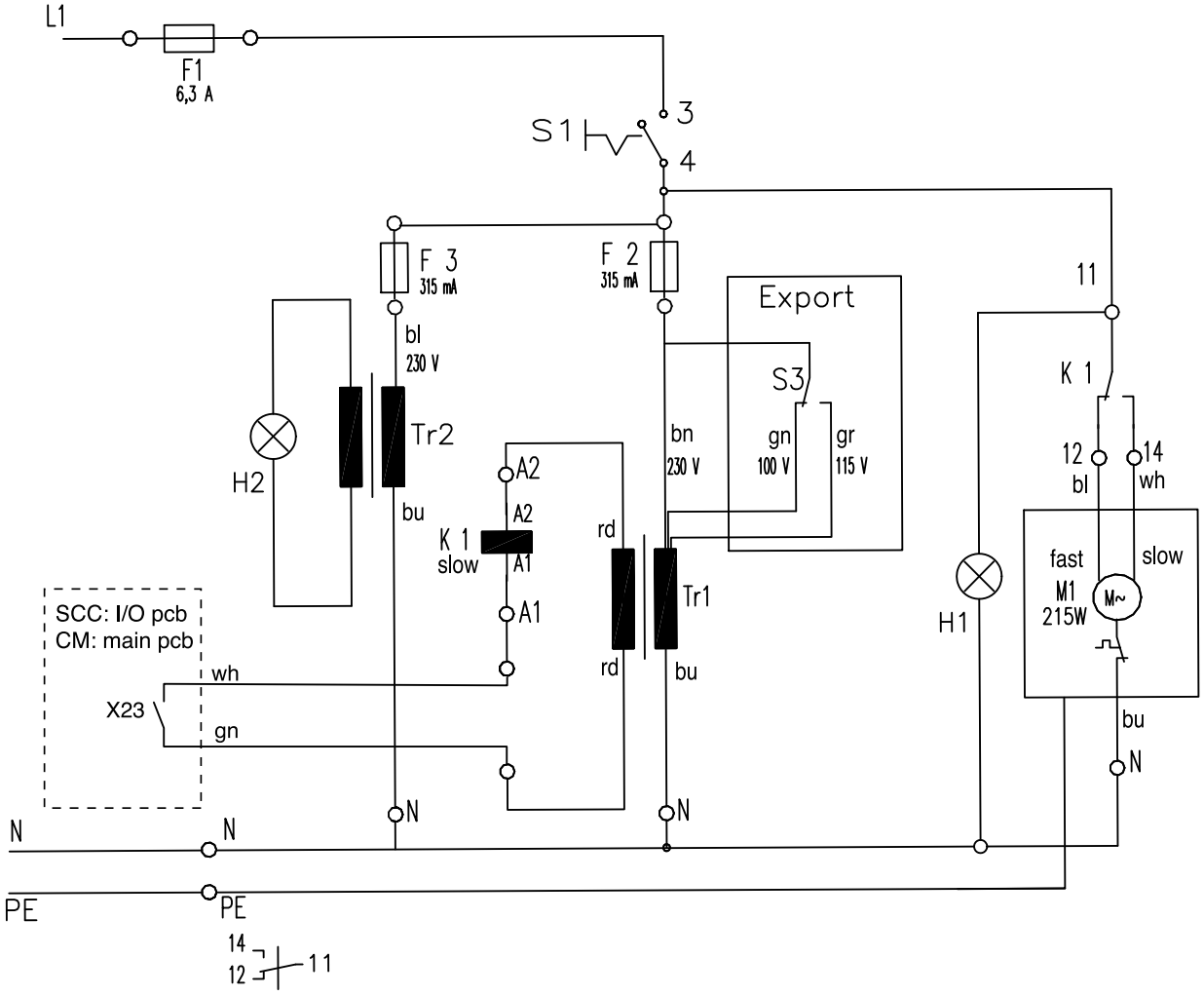
Ultravent light will be ON only after selecting a cooking process.
Fan motor starts after the cooking process is started and continues for another 30 minutes after the coking process is stopped. at the same time the light will be switched OFF.
Same applies for any Cleanjet process.

CM units

The CM must run on at least software version C1.07.01
Ultravent will start and stop as the CM is switched ON or OFF.

Ultravent with relais control produced until 10/2006

Ultravent is switched on with ON/OFF switch (fan motor and light will be on);
Fan motor is controlled from contact of X 23 on I/O pcb (SCC units) or main pcb (CM units).
If cabinet door is open this contact is open and the fan motor runs on high rpm.
If cabinet door is closed this contact is closed as well and the fan motor runs on low rpm.



Water info

Because of continuous examinations of systems for water treatment we would like to offer you a few information on some different systems.
The given statements are only related to Rational units.
If you already have made experiences with systems for water treatment, we would be very thankful if you could send us a short fax about your experiences.

1. Recommended systems for water treatment:

A) With pure scale problems in the steam generator we recommend hydrogen-(H+)-Ionic exchanger. These type of filters will extend the intervals of descaling to approx. 5 to 8-times of the normal descaling intervals. But even with this type of filters it is still necessary to descale the steam generator.

B) With a high chloride – content above 150mg/l of water, it is possible, that the interior cabinet starts to corrode. To remedy this problem it is necessary to install a reverse - osmosis – filter.

C) With chlorine-contents above 0,2 mg/l of water an active carbon filter should be installed, to avoid corrosive radicals when chlorine is heated up.

D) If the water is soiled with sand, iron particles or suspended matters a particle filter with 5-15 µm is recommended.

2. Limited recommended systems for water treatment.

A) Phosphate dosing systems
For verifying the function of this system, it is necessary to mix the water with a very high content of phosphate. Because of this the maximum allowed content of 5 mg phosphate per litre of water will be exceeded. This means the water has no drinking water quality any more. Therefore phosphate dosing systems can only be recommended for avoiding scale in the quenching chamber as it is not necessary to have drinking water quality for the quenching system.

B) Physical systems for water treatment:
On some sites this type of water treatment (is directly installed in the water supply of the unit) showed satisfactory results. On other sites there was no positive effect visible with this type of system. Because of these circumstances we can not make a final assessment of this system.

3. Not recommended systems for water treatment.

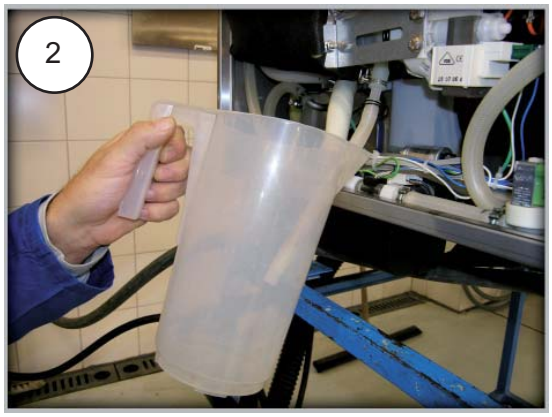
A) Sodium-Ionic exchanger:
With this filter system calcium is replaced by sodium. On chlorine contents of the water above 50mg/l, sodium reacts with chlorine to NaCl (=salt). This increase of salt in the water results in a delay in boiling of the water. This delay in boiling can cause ”spitting” steam generators.

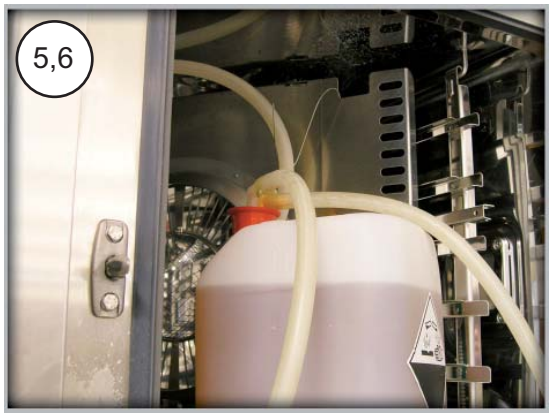
B) Silicate-dosing systems:
This kind of systems are problematic, as the adding of non conductive silicates, will influence the water level measurement.

Rational recommends Water treatment Iters systems of BRITA company.

Intruction for manual descaling

Protective clothing and tools needed:
- Protective clothing:
  Goggels, gloves, apron
- Container with descaler
- Foot pump (6004.0203)





1 SCC or CM shall only be descaled when the cabinet temperature is below 40°C (104°F)
Start cool down if needed.

2 Empty and refill steam generator to cool it down. Now empty steam generator again manually and measure the amount of water draining from the steam genrator.

3 **Descaler shall ONLY be filled via the steam inlet port inside the steam generator!**

Remove hinged rack (trolley) and swing air baffle open.

4 Insert hose of descaler pump into steam inlet port inside interior cabinet.
Do NOT fill through level electrode opening!
Damage to other components may occur!

5 Place descaler can into cabinet.

6 Insert the other hose end into can. Make sure the red rubber plug firmly sits in the can opening

recommended quantity SLOWLY into the generator.

Caution:
Chemical may react violently with scale and cause foaming back though steam inlet port!

8 After filling remove pump and descaler can from cabinet and rinse both cabinet and pump thoroughly with fresh water.

9 Allow enough time for descaler to react
15 % concentration: ~ 1,5 hours,
30 % concentration: ~ 45 minutes

10 carefully remove moistening nozzle and descale in separate container with descaler liquid.
Isolate unit from power supply!

11 Open left side panel, remove quenching box cover and remove any scale / deposits from quenching box and cover.
After reassembly make sure no leakages are present.

12 Reconnect unit to power. After given time (pt.9) use function test to drain liquid from steam generator.

13 Let steam generator fill and drain 3 times.

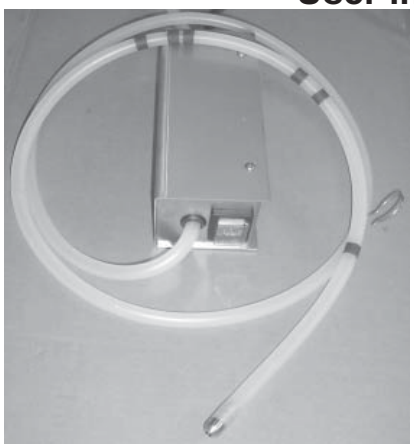
14 Operate the unit for 15 min. in steam mode.

15 Rinse cabinet again with hand shower.

16 Isolate unit from power and drain steam generator manually to measure the new volume without scale.

17. SCC only: After completion of work reset steam

User instruction electrical descaler pump



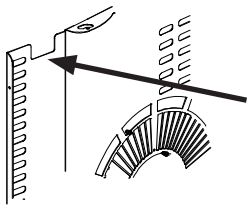
The descaler pump 60.70.409 (230V) and 60.70.497 (110V) must only be used to fill chemical part number: 6006.0110 into steam generators of equipment bearing either of the following marks on the data plate:

- **When working with chemicals, i.e. aggressive cleaning materials, always wear protective clothing, goggles, face mask and gloves!**
- **Please observe all information given on the Material Safety Data Sheet of your descaling chemical!**
- **Only personnel specially trained on handling hazardous materials shall follow the instructions below!**
- **Descaler shall ONLY be lled through steam inlet port inside cabinet!**

1. Unlatch the left side hinged rack and the air baffle. Swivel them towards the right side.

2. Insert the pump hose marked with rings into the steam inlet port at the rear left top corner of the interior cabinet.
The hose must be inserted at least to the following marking rings:

All electric heated units	3rd Ring 43cm (17“)
CM/SCC 61 and 62 Gas:	1st Ring 17cm (6,5“)
CM/SCC 101 and 102 Gas:	2nd Ring 31cm (12“)
CM/SCC 201 and 202 Gas:	3rd Ring 43cm (17“)



To prevent the hose from slipping out of the steam inlet port se cure the hook which is attached to the hose at 100cm (40”) from end of the hose onto the air baffle cut out for the core probe as indicated.

3. Insert the suction hose of the pump into the descaling liquid bottle. Please observe the below listed quantities for descaler used for the different model sizes. Given Quantities are average volumes and depending on Scale build up inside the steam generator.

Descaler volume for electric units (quantity in gal given as US gallons!)

SCC/CM 61	SCC/CM 62	SCC/CM 101	SCC/CM 102	SCC/CM 201	SCC/CM 202
3,6 L / 0,95gal	8 L / 2,1gal	8 L / 2,1gal	11,5 L / 3 gal	12 L / 3,1gal	14,6 L / 3,85gal

Descaler volume for gas units SCC and CM

SCC/CM 61G	SCC/CM 62G	SCC/CM 101G	SCC/CM 102G	SCC/CM 201G	SCC/CM 202G
6 L / 1,6gal	8 L / 2,1gal	9 L / 2,4gal	11 L / 2,9gal	10 L / 2,6gal	14 L / 3,7gal

User instruction electrical descaler pump

4. Lean the cabinet door close and fill the above mentioned quantity of descaler at 10 sec intervals into the steam generator

NOTE: Descaling liquid can react very violently with the scale inside the steam generator!
Should any foam appear at the steam inlet port stop filling and wash the interior cabinet with fresh water.

5. After filling the required quantity remove the hose from the steam inlet port. Pump the remaining liquid from inside the hose back into the descaler container bottle

6. **Flush and rinse pump and pump hoses with fresh water.**
Caution: not rinsing can cause internal corrosion of the pump.

7. Rinse the cabinet with fresh water.

8. Follow the further instructions given in the users manual for completing the descaling process.

Additional information for manual descaling

In order to determine the amount of scale inside the steam generator drain and measure the amount of water from the steam generator.
The steam generator should be descaled when not more then the below list volumina are drained from the steam generator:

1 liter = 0.264gal (US); 1gal (US) = 3,78 liter; 4,5 liter = 4,5 x 0,264 = 1,19 gal(US)

	Unit size	Descale if less than below volume is drained	Needed amount of descaler	Volume of clean steam generator
SCC/CM Electric units	61	2,7 l	3,6 l	3,6 l
	62	4,5 l	6,0 l	6,0 l
	101	4,7 l	6,2 l	6,2 l
	102	6,4 l	8,5 l	8,5 l
	201	6,8	9,0 l	9,0 l
	202	8,7 l	11,6	11,6
SCC/CM Gas units	61 Gas	3,0 l	4,0 l	4,0 l
	62 Gas	4,5 l	6,0 l	6,0 l
	101 Gas	5,3 l	7,0 l	7,0 l
	102 Gas	6,8 l	9,0 l	9,0 l
	201 Gas	6,0 l	8,0 l	8,0 l
	202 Gas	8,3 l	11,0 l	11,0 l
CPC/CM Electric units	61	2,4 l	4,0 l	3,2 l
	101	4,0 l	7,0 l	5,0 l
	102	6,5 l	11,0 l	7,7 l
	201	6,9 l	12,0 l	8,1 l
	202	9,6 l	15,0 l	11,0 l
CPC/CM Gas units	61 Gas	2,6 l	4,5 l	3,6 l
	101 Gas	4,8 l	8,0 l	6,0 l
	102 Gas	4,9 l	8,0 l	6,1 l
	201 Gas	4,9 l	8,0 l	6,1 l
	201 Gas	7,2 l	12,0 l	8,4 l
Classic-Line Gas units	CM 62 Gas	3,5 l	6,0 l	5,5 l
	CM 101 Gas	3,5 l	6,0 l	5,5 l
	CM 201 Gas	7,0 l	12,0 l	11,0 l
Classic-Line electric units	CD/CM/CC 6		2,5 l	
	CD/CM/CC 101		4,0 l	
	CD/CM/CC 201		7,0 l	
	CD/CM/CC 20		10,0 l	

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Send by E-Mail

Print form

RATIONAL INSTALLATION / COMMISSIONING CHECKLIST SCC / CM

To be completed individually for each ***Rational*** Combi installation.
This checklist is to be completed and returned within 14 days of installation / commission to validate warranty.

Customer address:	Name	
	Company	
	Street	
	ZIP code	
	Town	
	Country	
Phone:		
Unit serial number:		
Commissioned by: (RSP Partner):		
Date of installation:		
Date of commissioning:		

Installation complies ○ does not comply ○ with manufacturers specifications.

Please fill all information required into the embossed fields.

If the measured values are NOT complying with the values in the installation manual please inform the customer and your Rational dealer / office.

We confirm the installation was done according to the attached installation checklist, the installation manual and all national and local codes which ever may apply.
The equipment was handed over free of defects. Operation and maintenance of the equipment was explained.

---------- ----------

Sign / Date RSP / Dealer SIgn / Date customer

1. Perimeter clearances	all units	measured space:
left side minimum	50 mm	
left side 201 / 202 electric unit minimum	500 mm	
left side recommended for all units for service or with adjacent heat source:	500 mm	
rear side	50 mm	
right side	50 mm	

2. Levelling and floor fixing		yes	no
Electric 61, 62, 101, 102	Mounting surface is level?	○	○
	Unit is level?	○	○
Gas 61, 62, 101, 102	Mounting surface is level?	○	○
	Stand is fixed to the floor?	○	○
	Unit is secured to mounting surface?	○	○
Electric and Gas 61, 62, 101, 102	Transport trolley is level with unit and stand	○	○
	is fixed to the floor (optional)?	○	○
Electric and Gas 201, 202	Unit is level?	○	○
	Unit is fixed to the floor?	○	○
	Area under unit level?	○	○
	Trolley stands level inside the unit?	○	○

3. Water connection	yes	no
Cold water service shut off valve for each unit?	○	○
Shut off valve accessible from front by operator?	○	○
All units: Min: 150Kpa (1,5 bar, 22 psi,), Max 600Kpa (6bar, 88psi)	○	○
Water filtration / treatment system installed?	○	○

Manufacturer and type of water filter

Measured water hardness at filter inlet? Measured water hardness at filter outlet?

Measured water pressure at filter outlet?

4. Drain	yes	no
Steam temperature resistant pipe (I.e. part # 8720.1031)? (No flexible hose)	○	○
Table unit with P-trap or open drain	○	○
Floor unit with P-trap or open drain? (open drain ending NOT under the unit)	○	○
Combi Duo connected with separate P-trap or open drain for each unit	○	○

5. Electrical connection - Observe Local and National Codes!

a) measured voltage L1- L2 ____ L1 - L3 ____ L2 - L3 ____

L1 - N ____ L2 - N ____ L3 - N ____ N - PE ____

	yes	no
b) Unit connected to equipotential bonding?	○	○
c) Does indicated voltage on the unit data correspond with the measured voltage?	○	○
d) 3 phase breaker installed?	○	○
e) Breaker accessible from front by operator?	○	○

f) Breaker size / Fuse rating A ____

g) Measured amps per phase (electric unit) L1 ____ L2 ____ L3 ____

h) Measured amps per phase (gas unit) A ____

6. Gas connection - Observe Local and National Codes!	yes	no
Required diameter of gas line to each Combi: All units 3/4" minimum	○	○
Individual gas shut off valve installed for each unit?	○	○

Type of connected gas (i.e. LPG, Natural gas, G20, G30): ____

Measured gas pressure with unit switched off?: ____

Measured gas pressure with unit switched on, when all other gas consumers in the kitchen are switch on? ____

At which altitude above sea level is the unit installed?: ____

	yes	no
Unit adjusted to installation height? (above 1000m above sea level or below sea level)	○	○
Flue gas analysis carried out?	○	○

measured CO2 value Hot Air 1 (61-202) ____ Hot Air 2 (201-202) ____ Steam (61-202) ____

measured CO value Hot Air 1 (61-202) ____ Hot Air 2 (201-202) ____ Steam (61-202) ____

7. Exhaust / Vent hood	yes	no
Exhaust / Vent hood installed?	○	○
Serial number Rational UltraVent		
Serial number Rational exhaust hood		
Free space between top egde of unit and lower edge of exhaust hood / ceiling in cm		

8. Function test / commissioning	yes	no
All electrical connections and plugs tight	○	○
All water connections tight and not leaking	○	○
All modes operational	○	○
All additional functions / features operational	○	○
Unit was manually calibrated?	○	○
Please copy value out of Diagnostic 16, Cal Speed 3, WET		
Customer advised in basic operation and Programming	○	○
Customer advised in daily cleaning routine incl. door gasket	○	○
Customer advised in preventative maintenance (descaling, changing air inlet filter, door gasket cleaning, etc)	○	○

Comments:

Send by E-Mail

Preventative maintenance

To save filled form open with Adobe Reader version 7 or later

Print form

INSPECTION LIST SCC / CM

To be completed individually for each ***Rational* SCC or CM** installation.
This checklist is your guide line for preventative maintenance on Rational SCC and CM.

Customer address:	
	Name
	Company
	Street
	ZIP code
	Town

Unit serial number: Software version:

Preventative Maintenance Work Scope:	According Installation Manual		Comments:
Installation			
Placement - floor fixing of 201 - 202	◯ YES	◯ NO	
Water connection	◯ YES	◯ NO	
Type of water treatment (if installed)	◯ YES	◯ NO	
Drain	◯ YES	◯ NO	
Gas connection	◯ YES	◯ NO	
Electrical connection	◯ YES	◯ NO	
Door	**Function**		
Door lock	◯ YES	◯ NO	
Door catch	◯ YES	◯ NO	
Door hinges / screws	◯ YES	◯ NO	
Inner glass hinges	◯ YES	◯ NO	
Door gasket (steam tight at 100°C Steam)	◯ YES	◯ NO	
Door contact	◯ YES	◯ NO	
Trolley gasket (201-202)	◯ YES	◯ NO	
Castors of mobile trolley (201-202)	◯ YES	◯ NO	
Interior Cabinet			
Cabinet light	◯ YES	◯ NO	
Core probe	◯ YES	◯ NO	
Interior cabinet sensor	◯ YES	◯ NO	
Humidity flap not leaking air	◯ YES	◯ NO	
Air baffle	◯ YES	◯ NO	
Moistening nozzle free of scale	◯ YES	◯ NO	
Drain sieve properly mounted	◯ YES	◯ NO	
Corrosion at unit or accessory visible	◯ YES	◯ NO	

Preventative maintenance

INSPECTION LIST SCC / CM

Preventative Maintenance Work Scope:	Function		Comments:
Water - Drain			
Dynamic water pressure	bar	kPa	
All water connections leak tight	◯ YES	◯ NO	
Hand shower and retracting mechanism	◯ YES	◯ NO	
Drain connection	◯ YES	◯ NO	
Quenching - drain box clean	◯ YES	◯ NO	
Drain valve SCC	◯ YES	◯ NO	
Steam generator			
Leak tight	◯ YES	◯ NO	
Steam generator pump - flushing	◯ YES	◯ NO	
Insulation steam generator ok	◯ YES	◯ NO	
Descale steam generator if needed	◯ YES	◯ NO	
Reset CDS indication	◯ YES	◯ NO	
Level electrode clean	◯ YES	◯ NO	
Electrical components			
Earth bonding	◯ YES	◯ NO	
All wire insulation undamaged	◯ YES	◯ NO	
All wires tightly secured	◯ YES	◯ NO	
All contacts of main contactor free (not stuck)	◯ YES	◯ NO	
Amp draw - Hot Air	L1	L2	L3
Amp draw - Steam	L1	L2	L3
Max temperature pcb	°C	°F	
Gas specific parts **NOTE: Yearly burner maintenance needed!**			
All gas connections leak tight	◯ YES	◯ NO	
Cleaning of burner head (TI 03-2007)	◯ YES	◯ NO	
Cleaning of ignition electrode	◯ YES	◯ NO	
Change blower gasket Steam and Hot Air if damaged	◯ YES	◯ NO	
Burner blower ok and free of dust / fat residues	◯ YES	◯ NO	
Visual inspection of external flue gas venting	◯ OK	◯ NO	
Dynamic flow pressure (unit in operation)		mbar	kPa
CO2 max steam - flame current - CO ppm		%	µA ppm
CO2 min steam - flame current - CO ppm		%	µA ppm
CO2 max hot air top - flame current - CO ppm		%	µA ppm
CO2 min hot air top - flame current - CO ppm		%	µA ppm
CO2 max hot air bottom - flame current - CO ppm		%	µA ppm
CO2 min hot air bottom - flame current - CO ppm		%	µA ppm
Lenght of CO2 screw of gas valve in mm	Steam	Hot air top	Hot air bottom

Preventative maintenance

INSPECTION LIST SCC / CM

Preventative Maintenance Work Scope:	Function		Comments:
Control panel			
Control panel closing mechanism	◯ YES	◯ NO	
Control panel gasket and panel overlay	◯ YES	◯ NO	
Plug for opening control panel in place	◯ YES	◯ NO	
Dials	◯ YES	◯ NO	
Mode switch (CM)	◯ YES	◯ NO	
Temperature and time control	◯ YES	◯ NO	
Core probe function	◯ YES	◯ NO	
LED indicators	◯ YES	◯ NO	
PCB visual check (water marks etc)	◯ YES	◯ NO	
Air filter clean	◯ YES	◯ NO	
Exhaust / Vent hood			
Exhaust / vent hood installed	◯ YES	◯ NO	
Exhaust hood / lighting operational	◯ YES	◯ NO	
Serial number Rational UltraVent - Rational exhaust hood			
Free space between top egde of unit and lower edge of exhaust hood / ceiling in cm			
Function test / commissioning			
All electrical connections and plugs tight	◯ YES	◯ NO	
All electrical connections and plugs tight	◯ YES	◯ NO	
All modes operational	◯ YES	◯ NO	
All valid service error codes checked	◯ YES	◯ NO	
All max values of sensors resetted	◯ YES	◯ NO	
Humidity control functional	◯ YES	◯ NO	
Customer advised in basic operation and Programming	◯ YES	◯ NO	
Customer advised in preventative maintenance (descaling, changing air inlet filter, door gasket cleaning, etc)	◯ YES	◯ NO	
Service phone number entered	◯ YES	◯ NO	
Chef line phone number entered	◯ YES	◯ NO	
Demonstration CleanJet	◯ YES	◯ NO	
Safe Service data - HACCP data to usb stick	◯ YES	◯ NO	
Electrical safety test			
Electrical safety tested according local codes	◯ YES	◯ NO	

RSP : Name	Technician : Date and signature	Customer : Date and signature

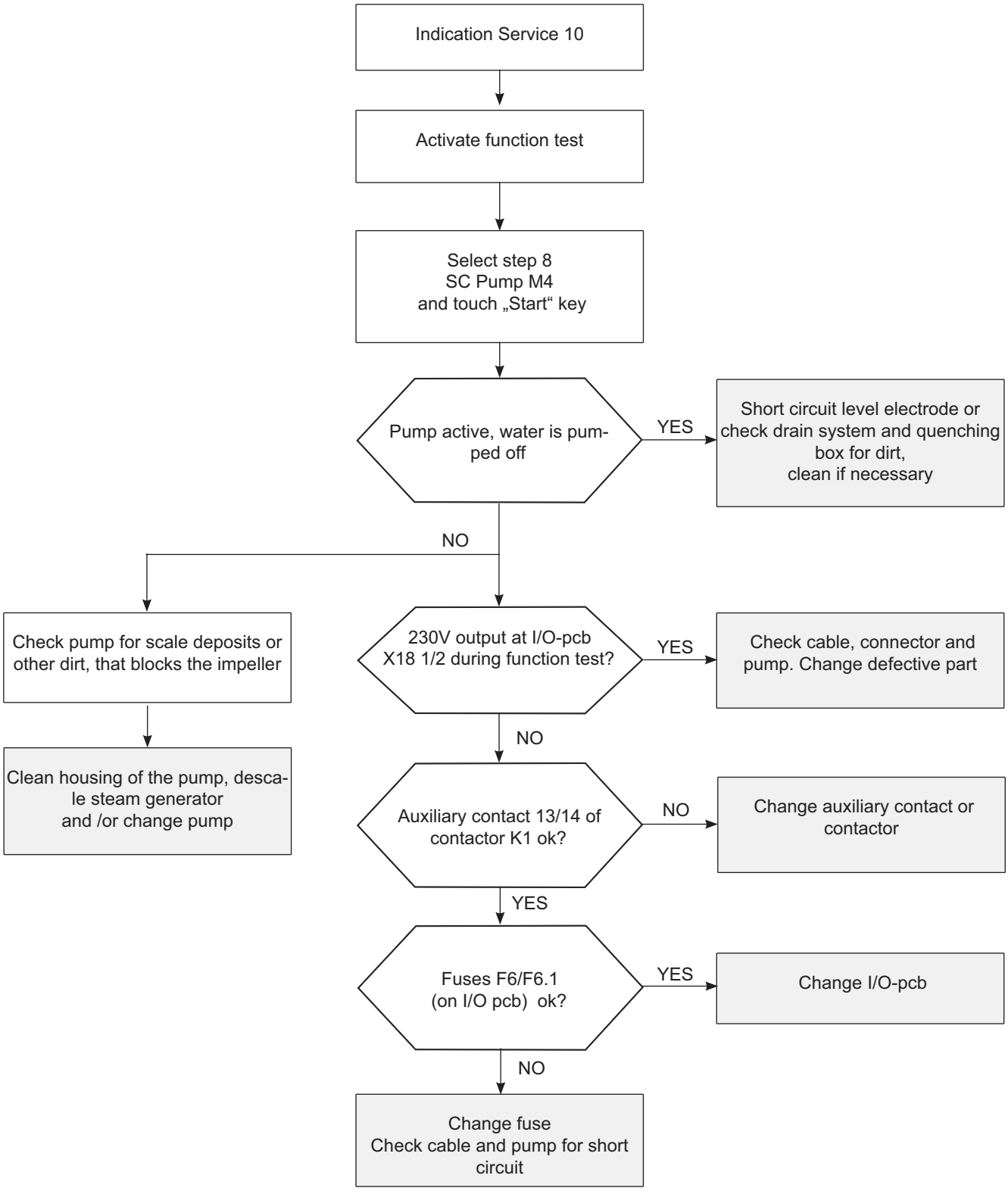
List of fault tree for SCC - CM

SCC

CM

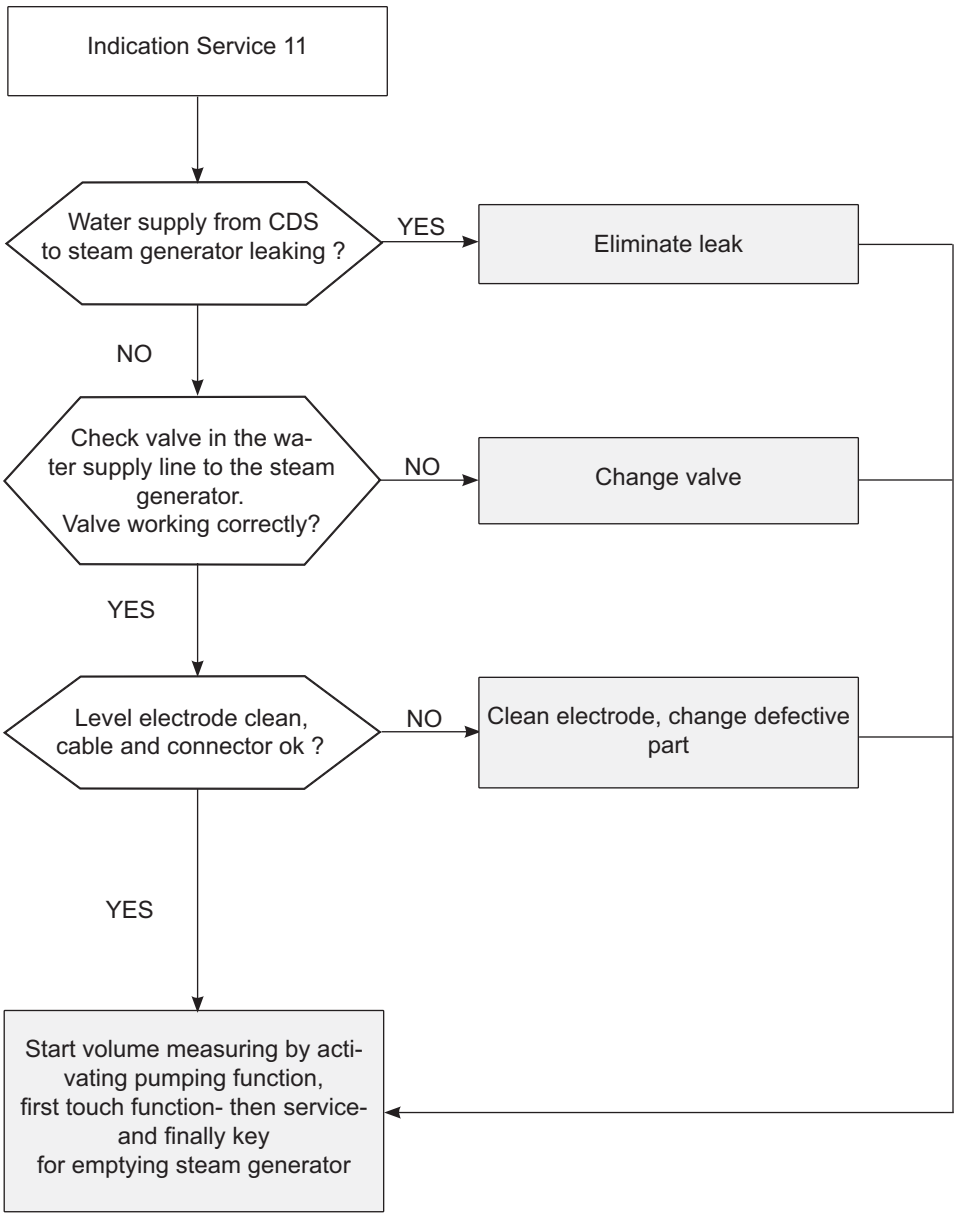
Service 10 (SC Pump)

Level electrode of the steam generator did not recognise a reduction of the water level during last SC-Automatic



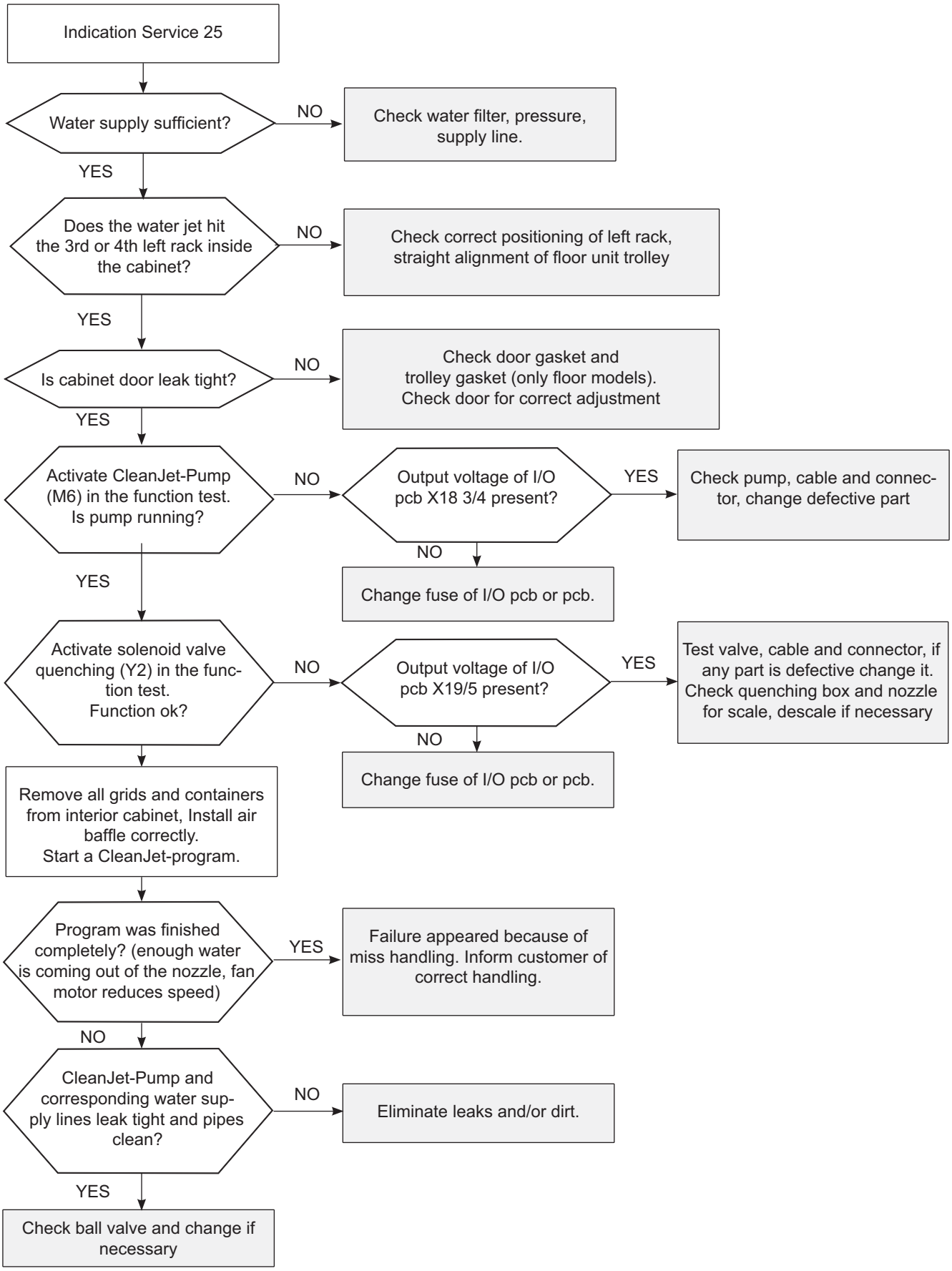
Service 11 (CDS Sensor)

Actual measured filling volume above reference volume of steam generator



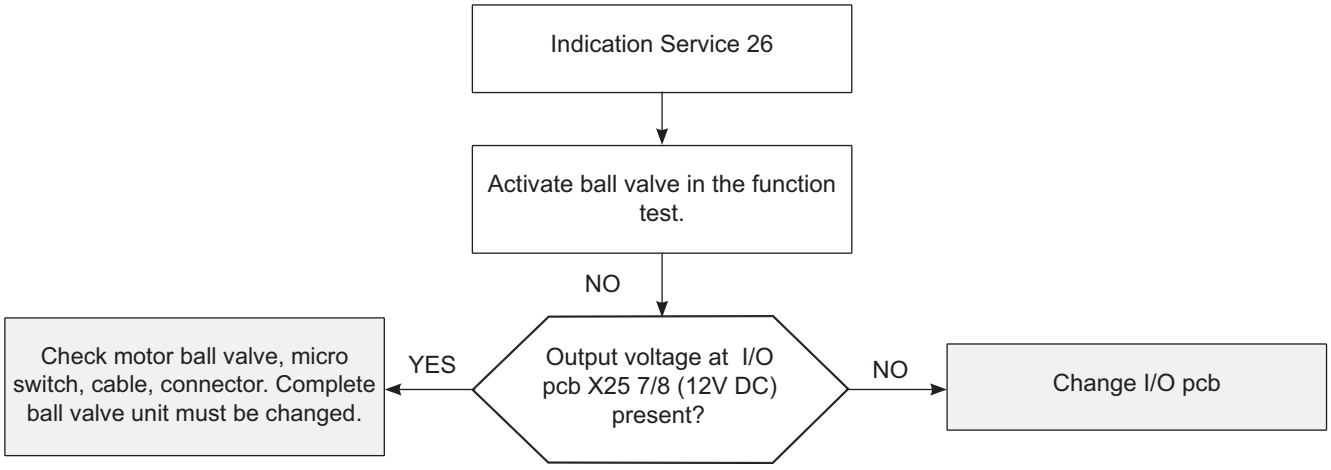
Service 25 (Cleanjet Pump)

CleanJet does not deliver enough water to the fan wheel of the motor.
Typical indication: The running time of the program will be exceeded.
Check correct position of left rack and / or oor unit trolley!



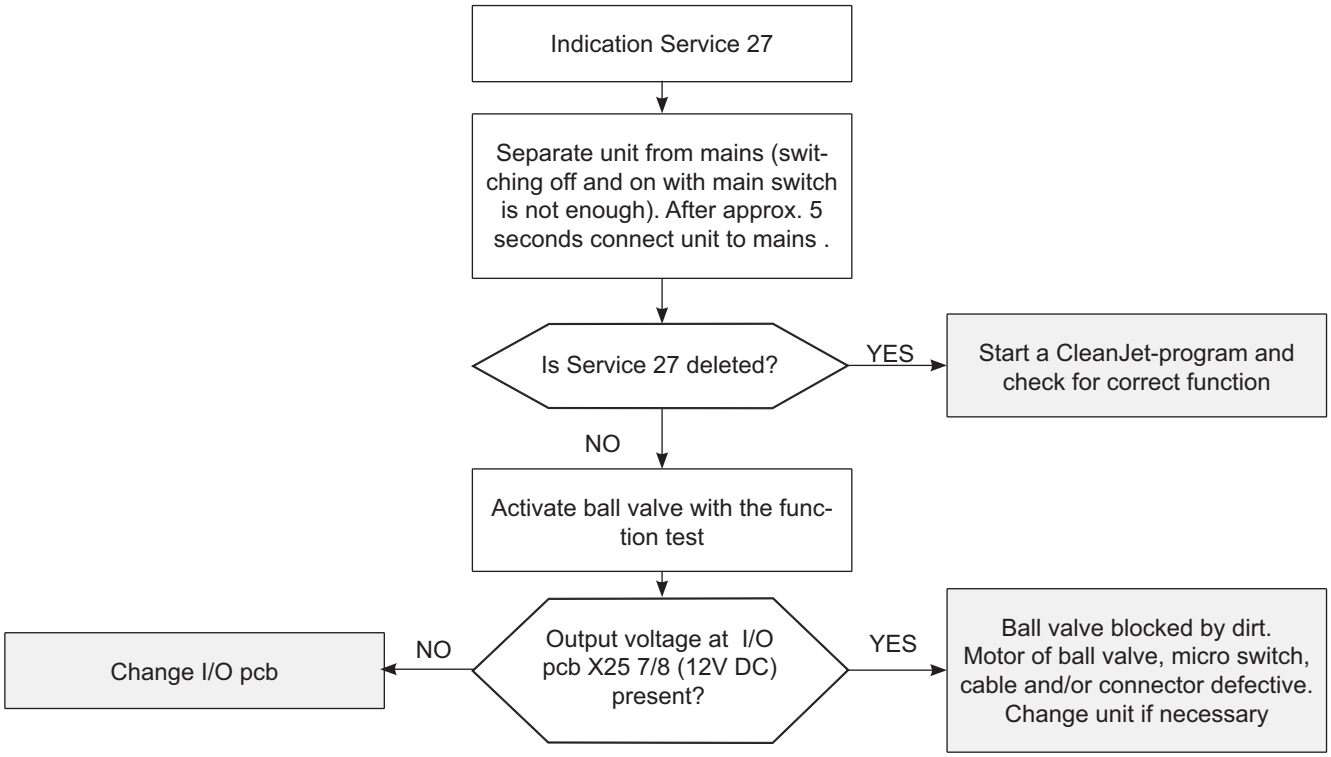
Service 26 (Drain Valve)

Micro switch ball valve in permanent closed position.
Unit out of order



Service 27 (Drain Valve)

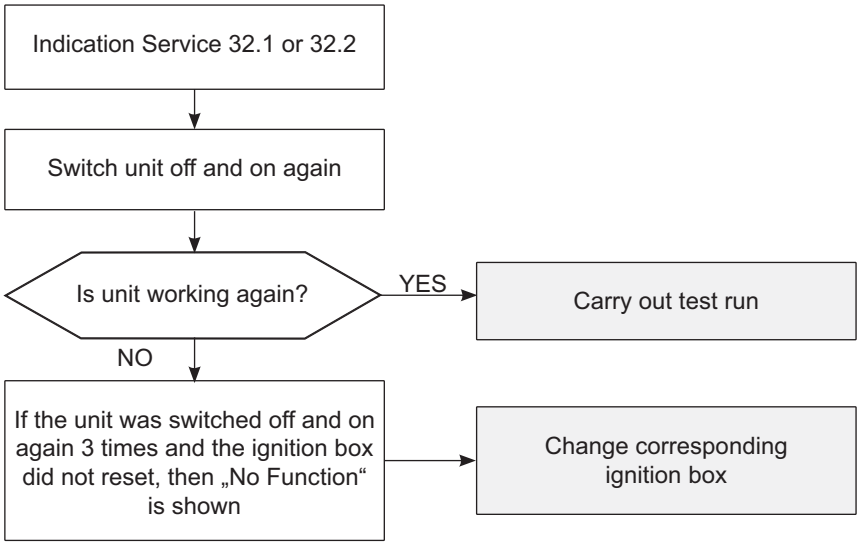
Micro switch ball valve in permanent open position.
CleanJet can not be used



Should Service 27 appear more often and I/O-pcb with revision status 402 respec. 403 is installed, change I/O-pcb

Service 32 (only gas unit)

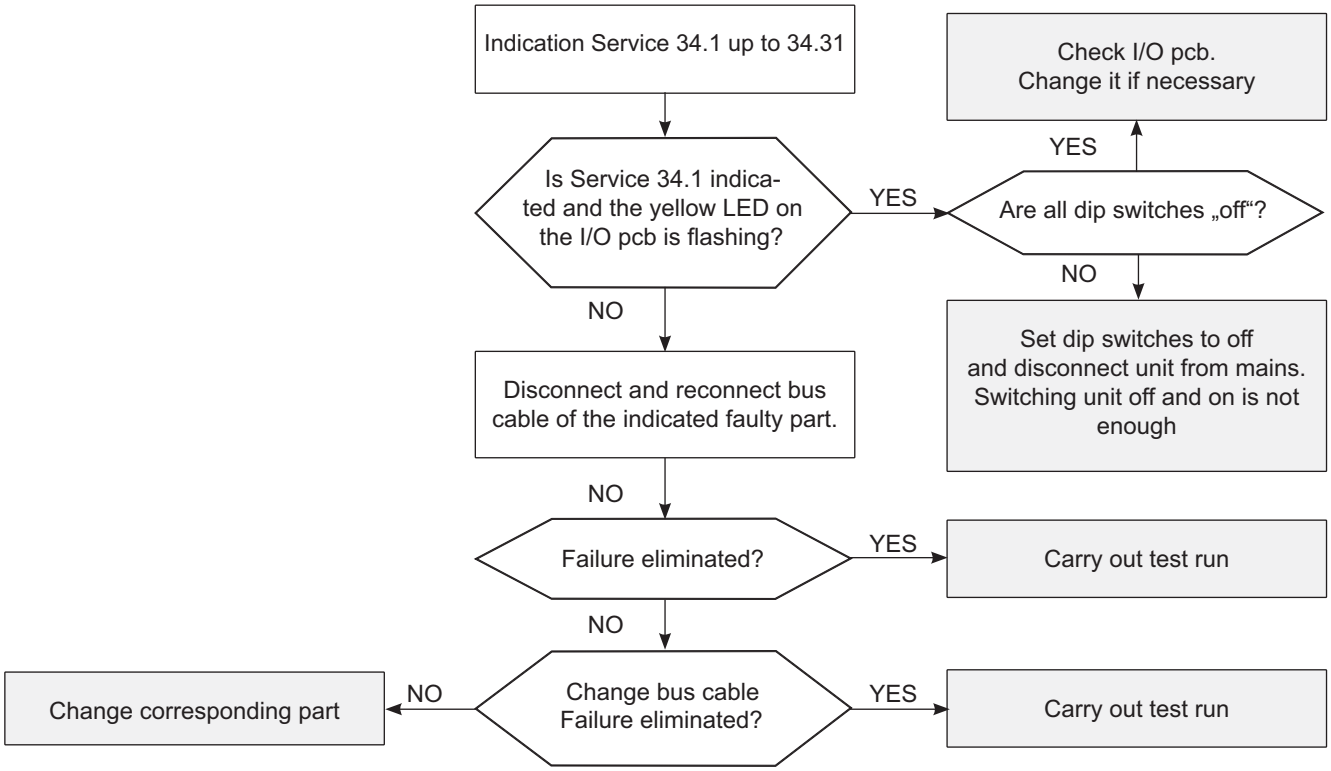
Internal fault of ignition box
Service 32.1 Table models and oor models upper box
Service 32.2 Floor models lower box



Service 34 (BUS)

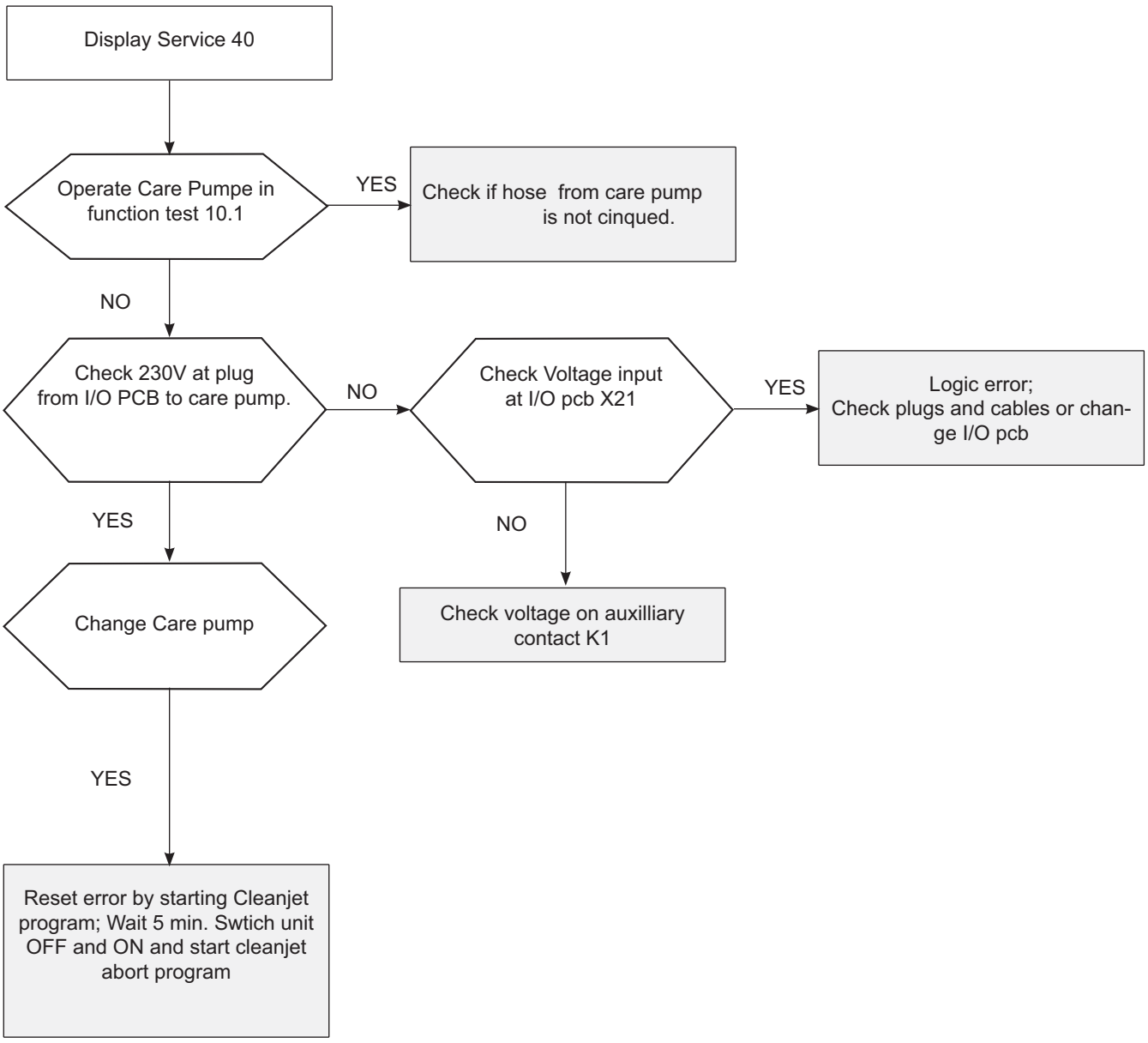
Bus failure - Indication of the faulty knot with the following code (combination of different faults possible):

- **1: I/O pcb**
- **2: Bottom motor**
- **4: Top motor**
- **8: Top ignition box**
- **16: Bottom ignition box**



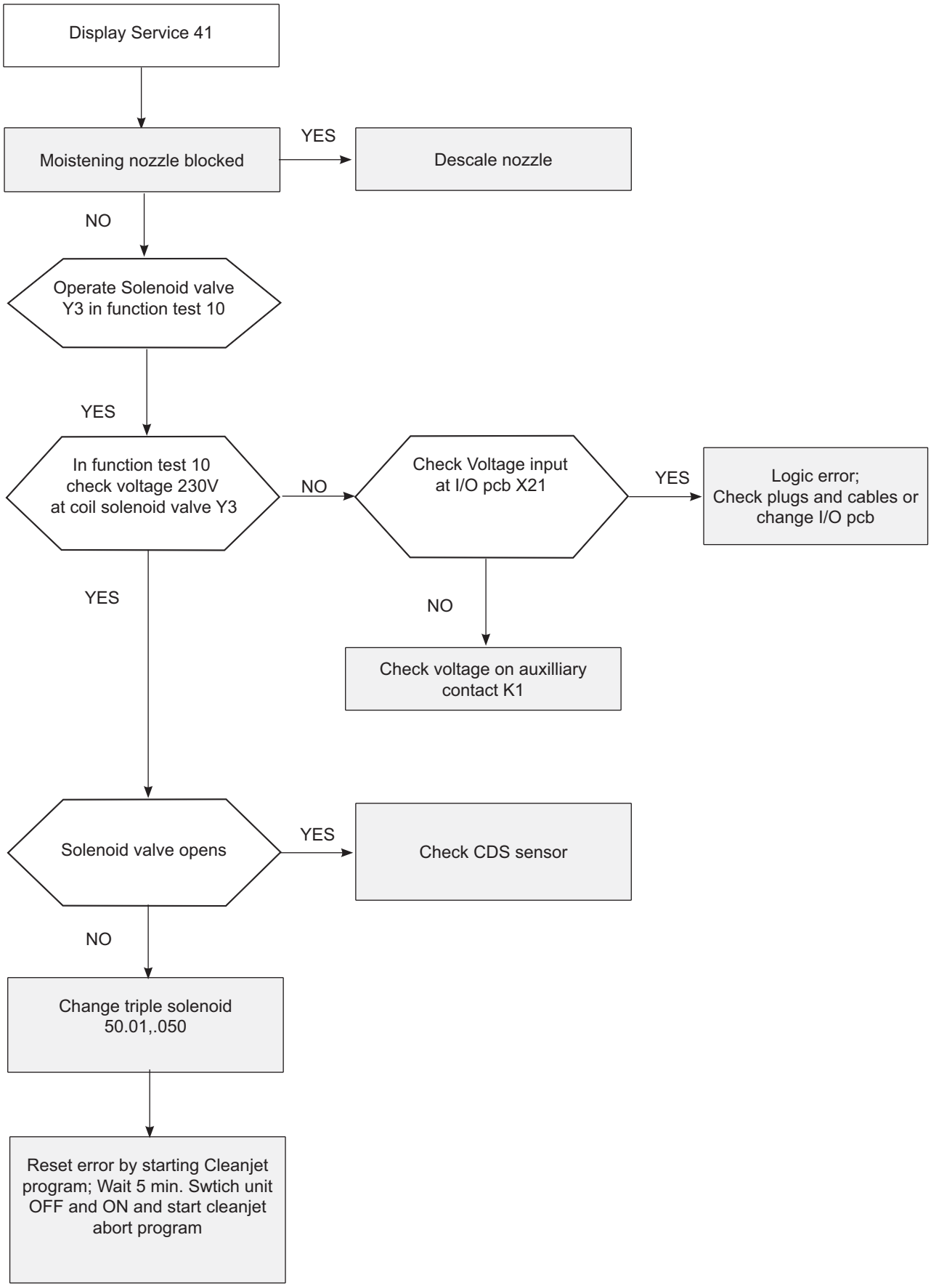
Service 40 (Care Pump)

Care Pumpe defective respectively does not pump enough care solution into steam generator



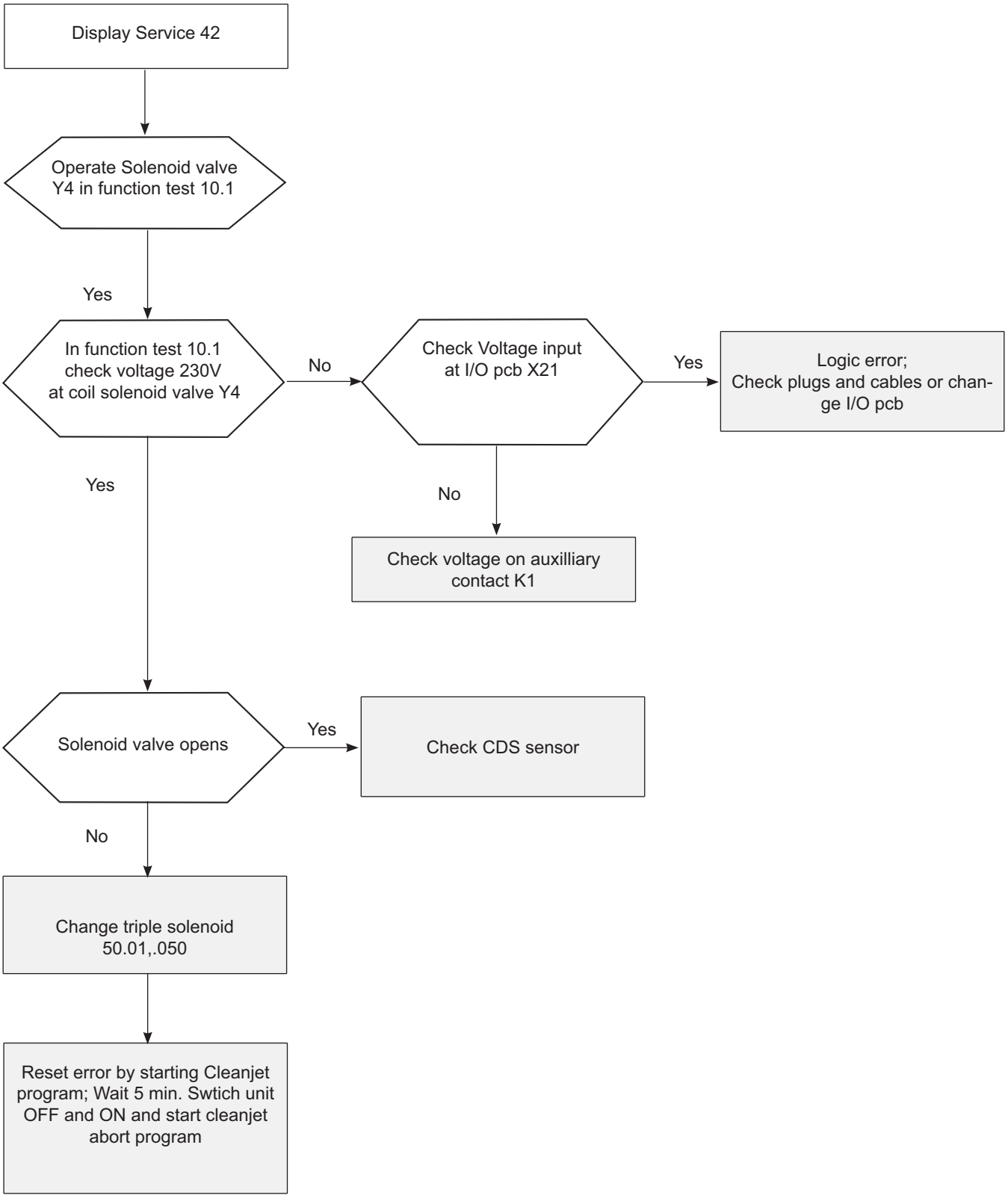
Service 41 (Y3)

Solenoid valve Y3 defective of moistening nozzle blocked;
CDS does not send any pulses;
First time display: Descale moistening nozzle, Second time display: Servcie 41



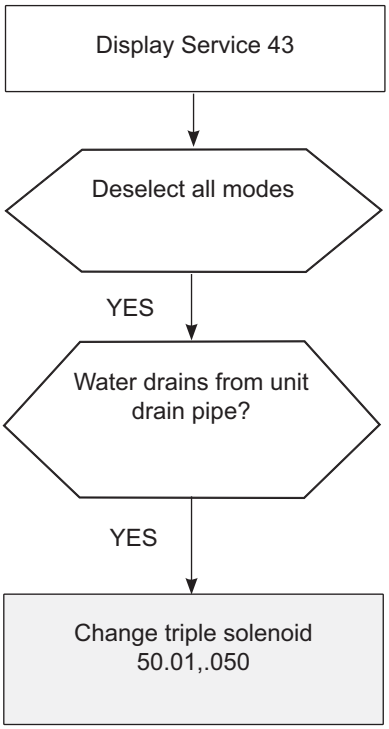
Service 42 (Y4)

Solenoid valve Y4 defective or feeding hose to care container blocked
CDS does not send any pulses



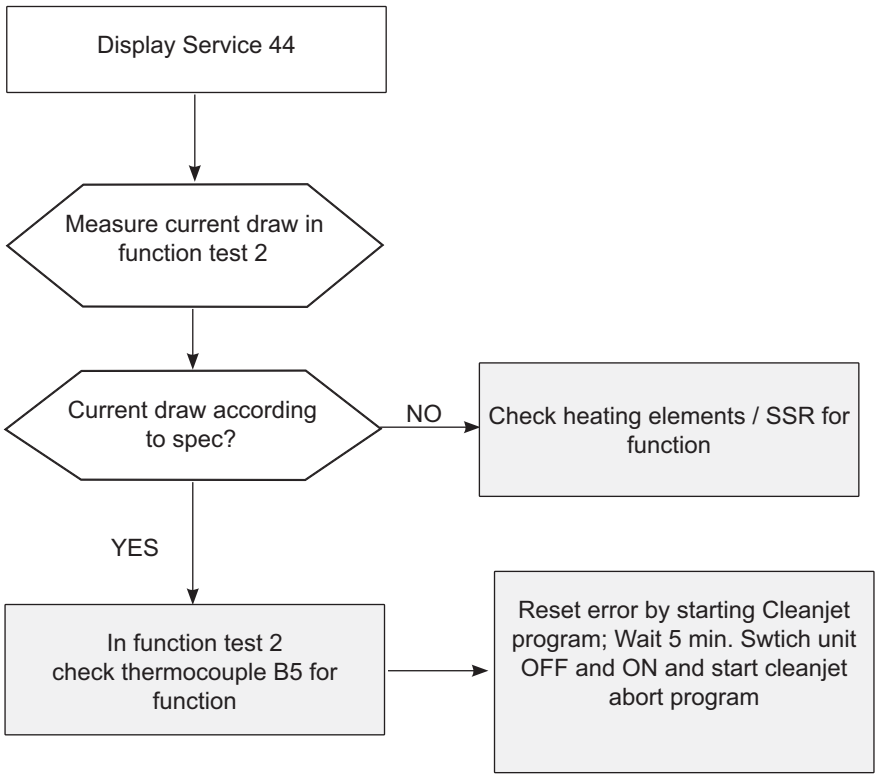
Service 43 (triple solenoid valve)

CDS Sensor sends permanent pulses during start of Care process



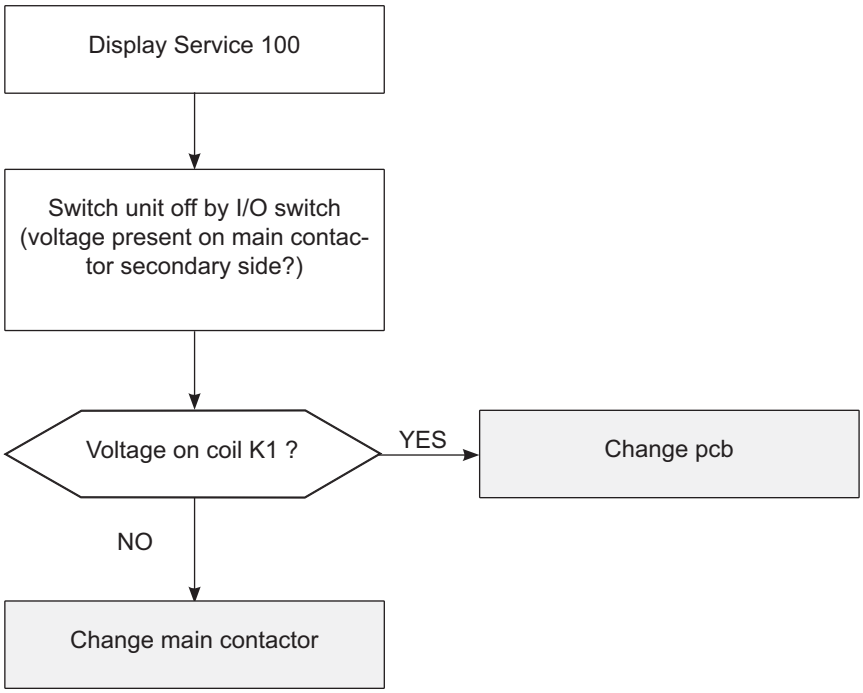
Service 44 (Steam Heating)

No steam heating during Care Phase



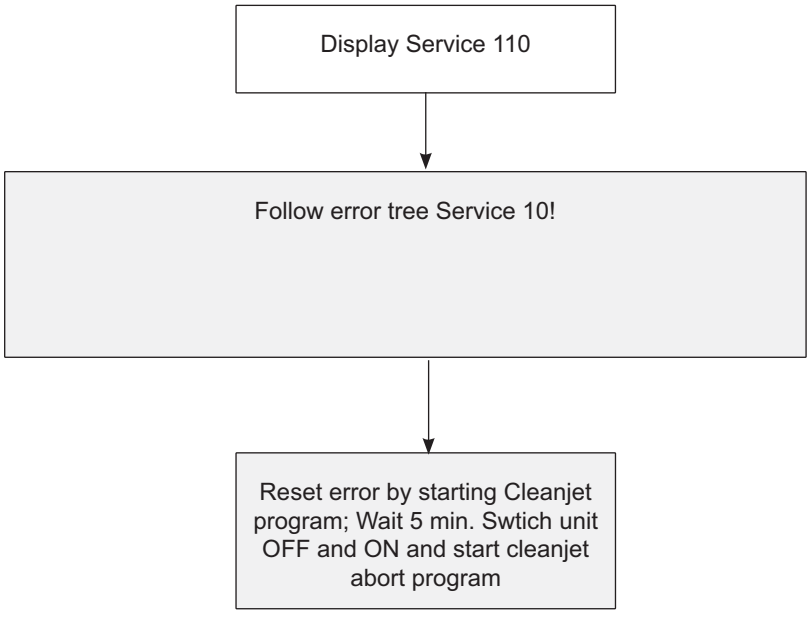
Service 100 (Main Contactor)

Reason: **Main contactor didn‘t disengage during last switch off or main switch on pcb defective**



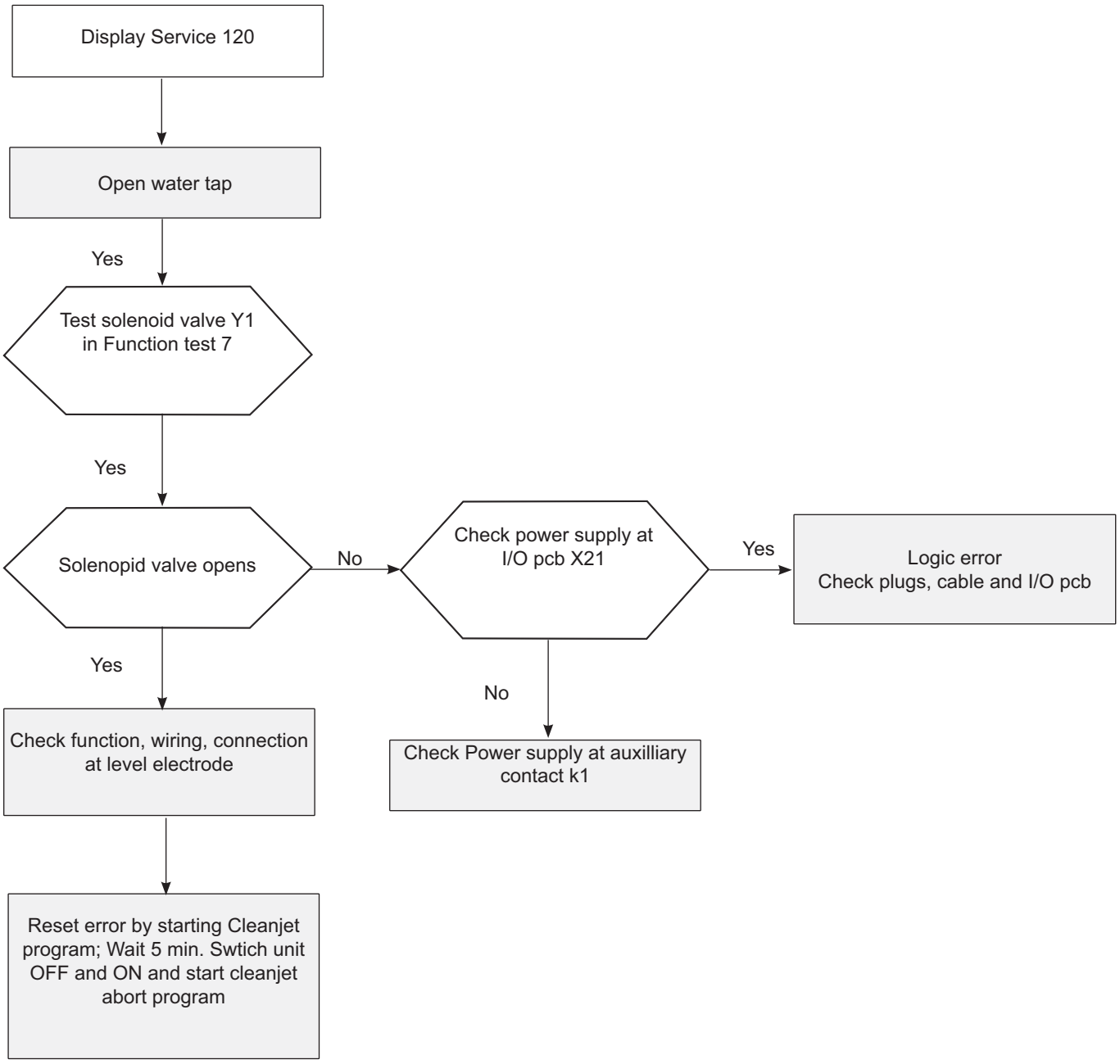
Service 110 (SC-Pump)

SC pump not functioning during the time when there is care solution inside the steam generator; Care solution could not be pumped off; unit without function;

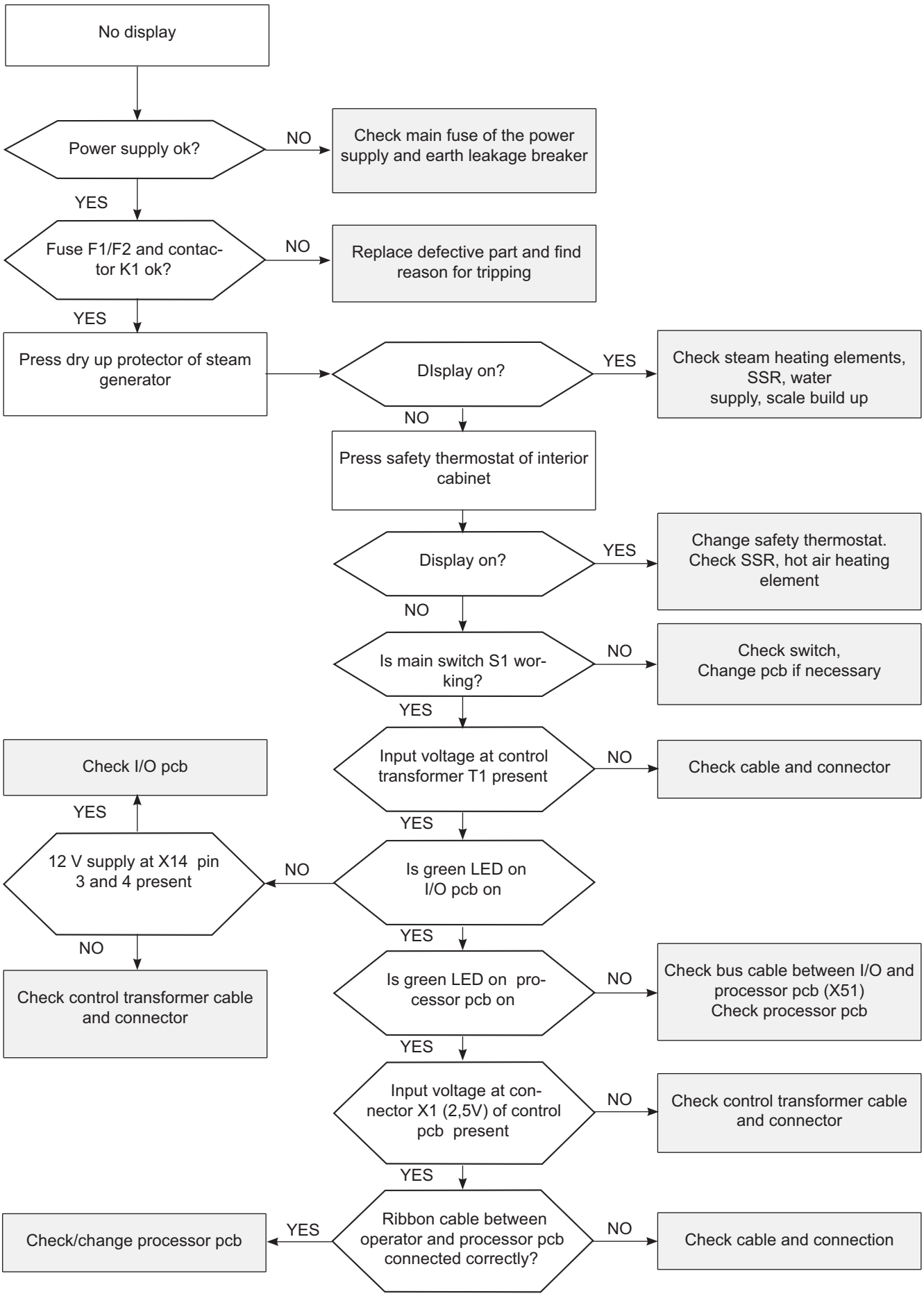


Service 120 (Y1, Level electrode)

After Filling steam generator via M12 the steam generator does not fill with water via the filling solenoid.
Detection: level electrode does not get contact with water; Steam generator can not be flushed; unit is without function.

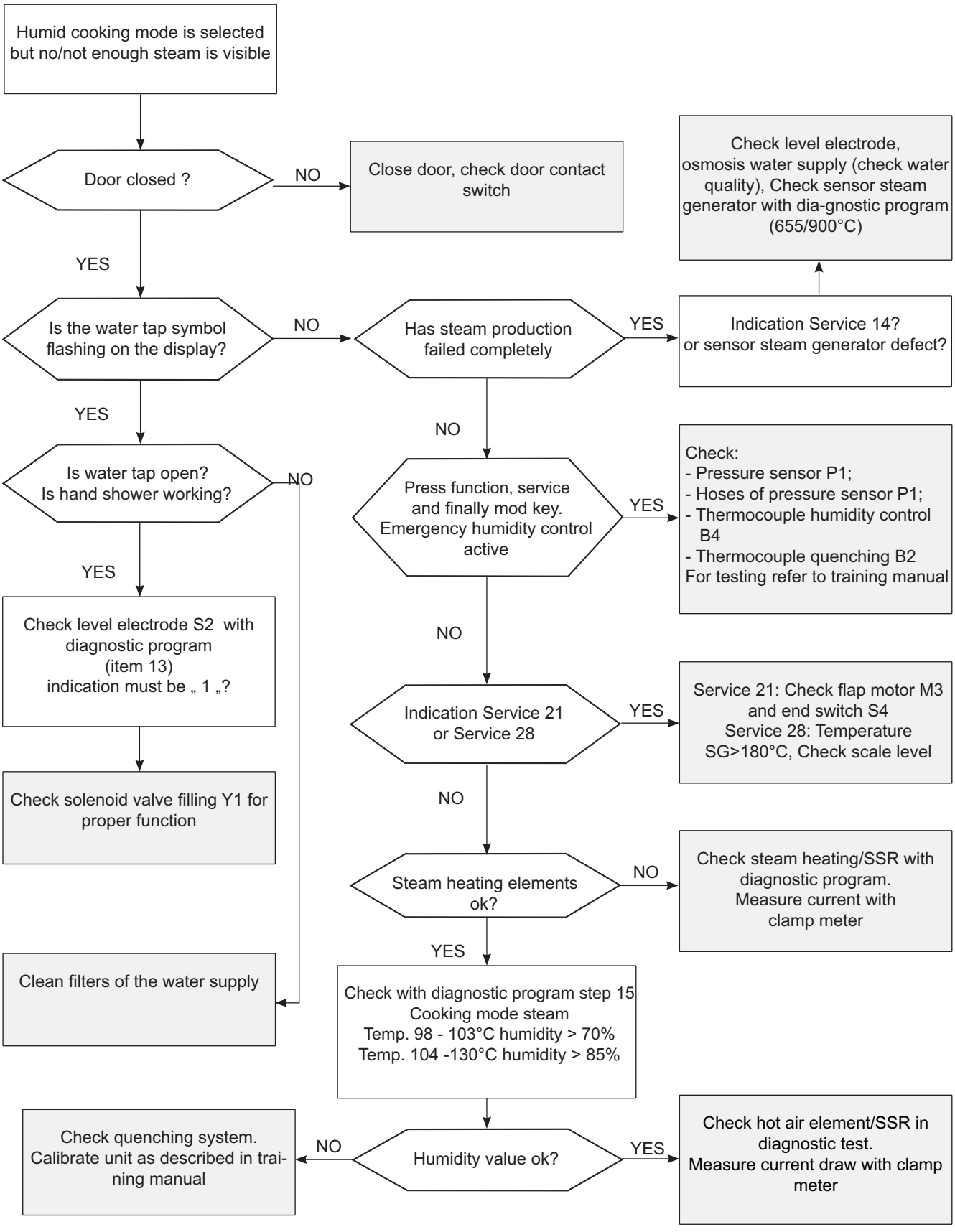


No display - safety circuit



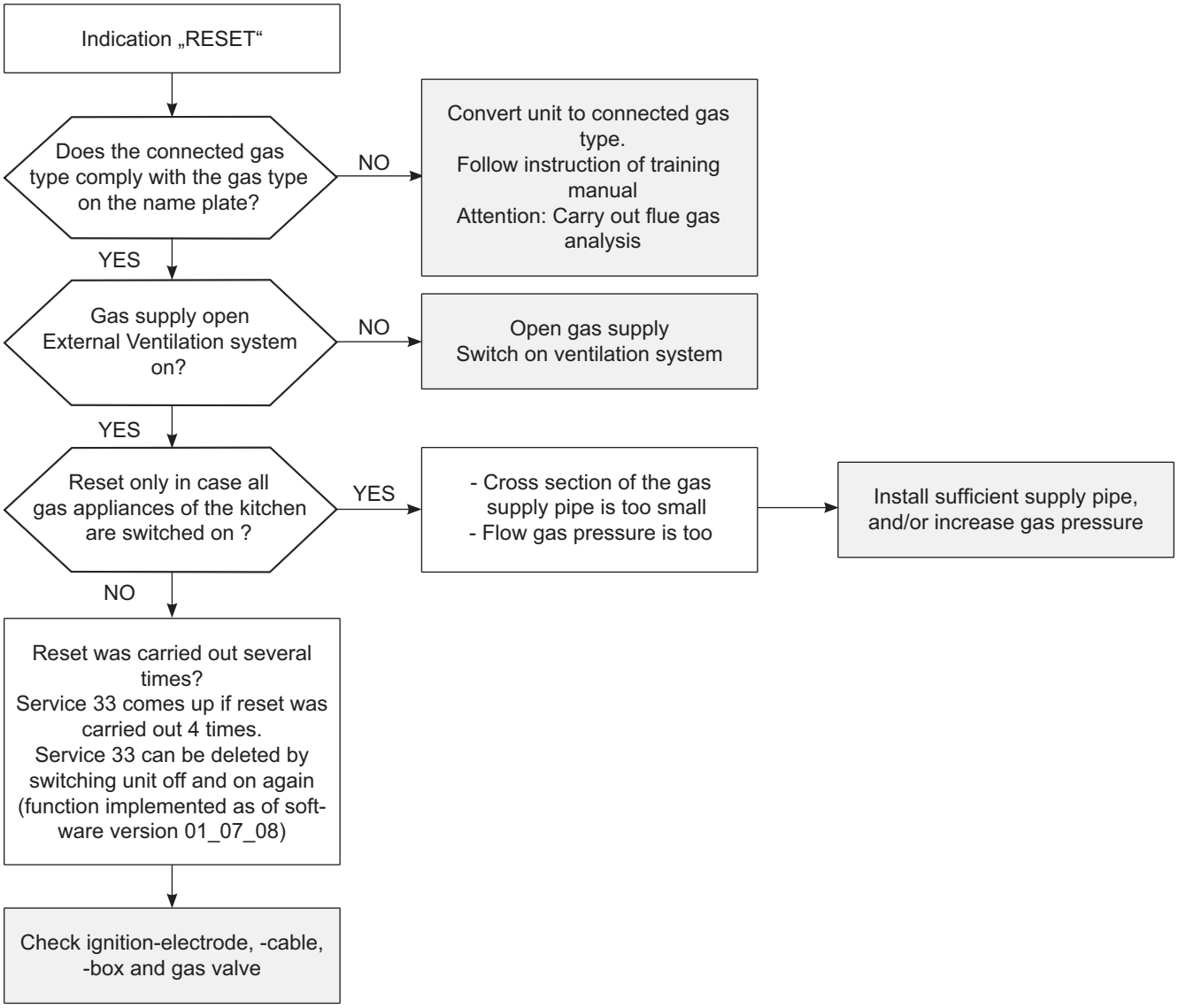
No or to low steam production

Steam above 110°C is not visible, it does not condensate on the cabinet door!



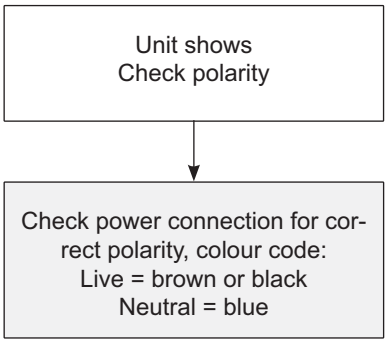
„RESET“ indication (Gas units)

Reason:
Flame monitoring does not work after ignition



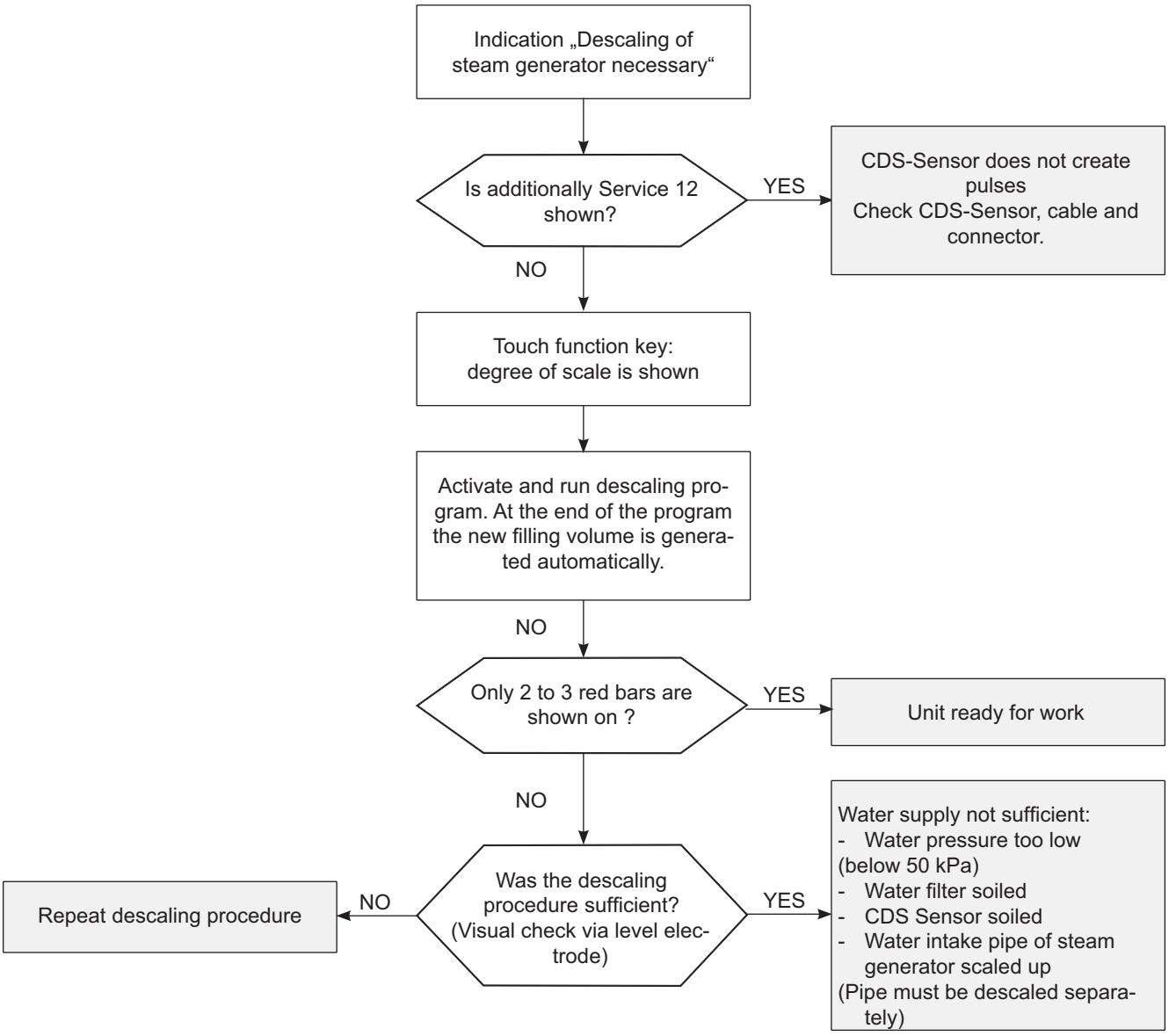
Check polarity (Gas units)

For ame monitoring mains must be connected with correct polarity



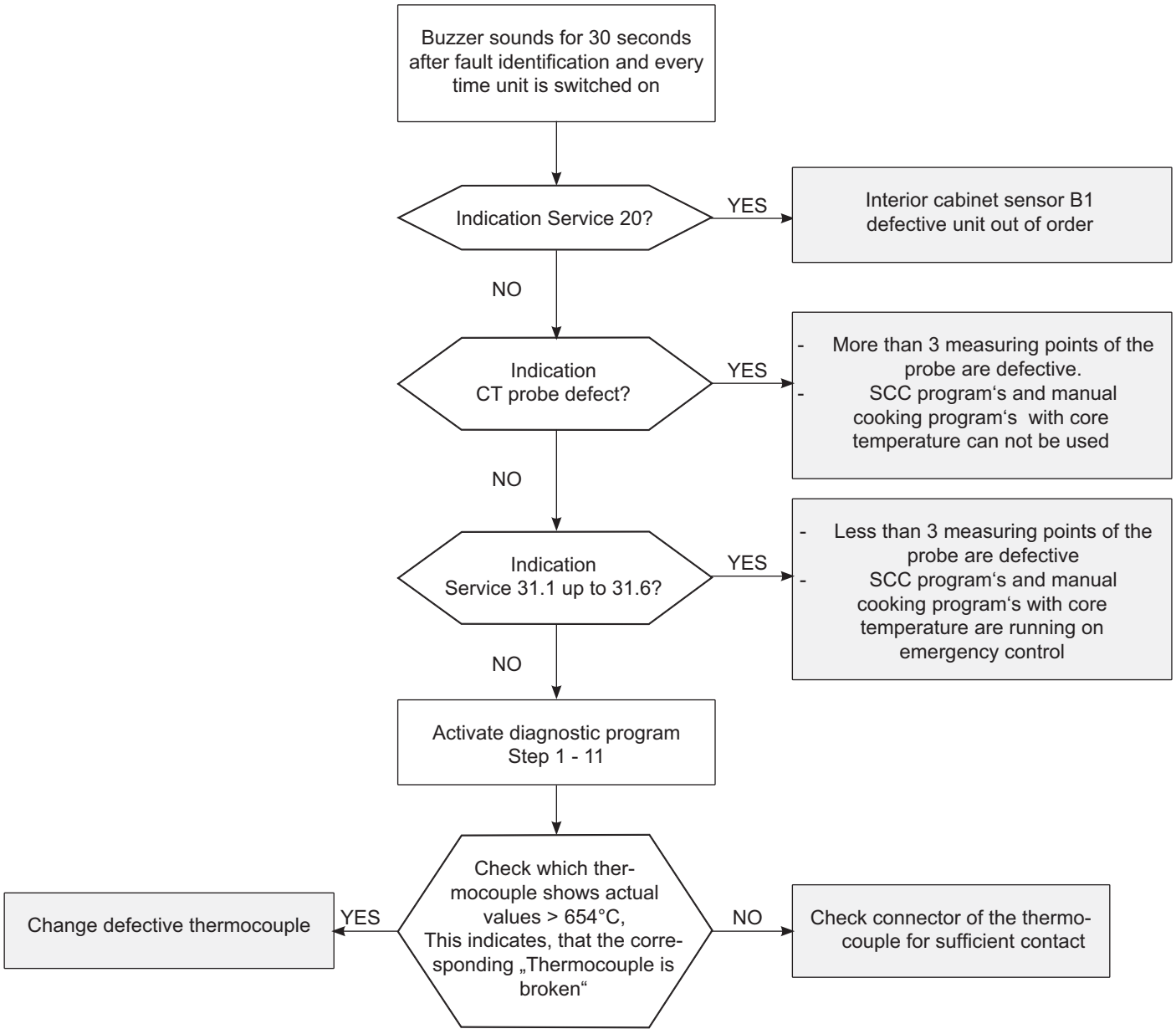
Service 12 / Indication descaling

Steam generator scaled up; CDS display shows 9 red bars



Buzzer sounds

Reason: Any thermocouple is defective
Different buzzer intervals depending which thermocouple is defective

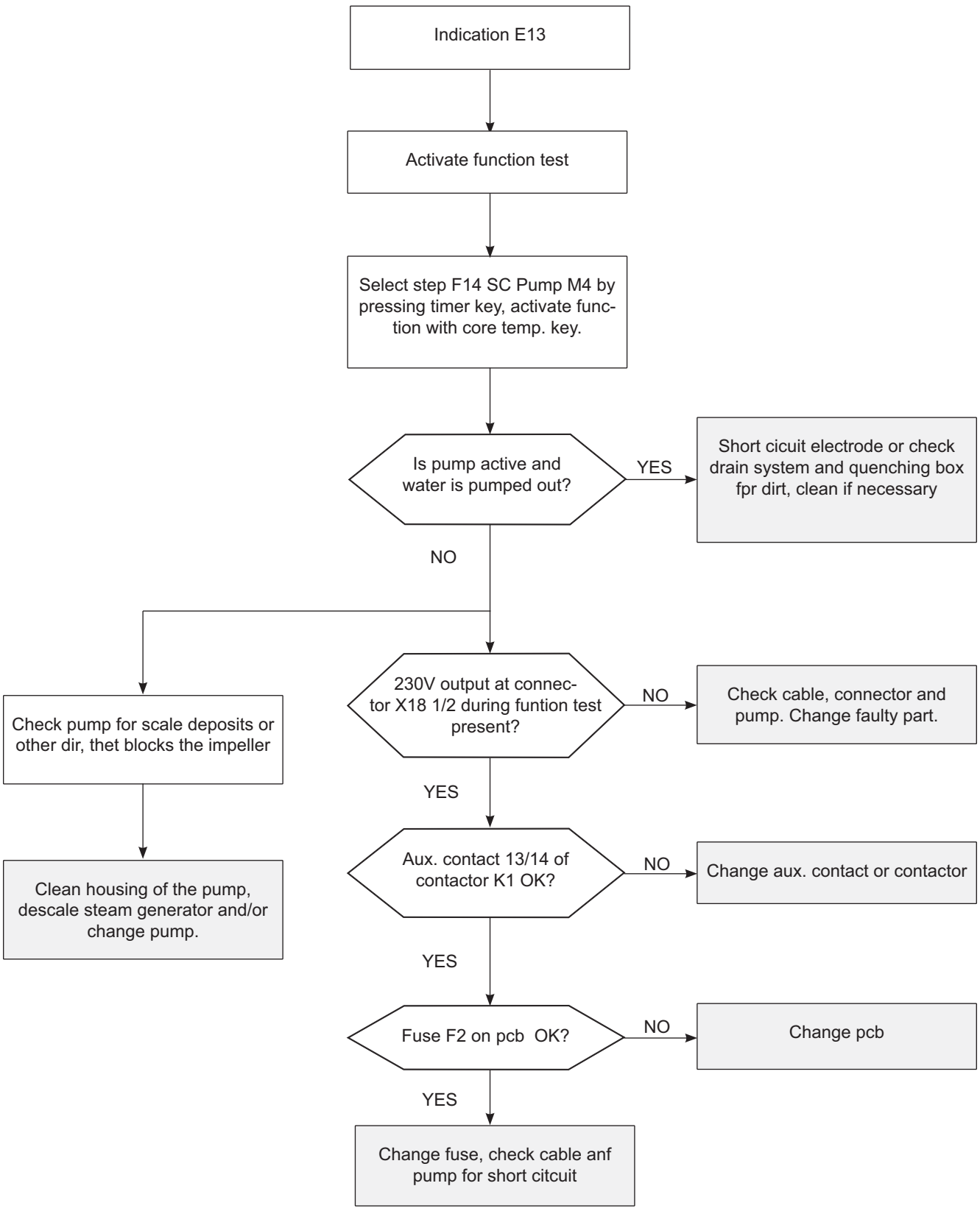


Buzzer frequency by failure of thermocouple (counting in 5 sec.)

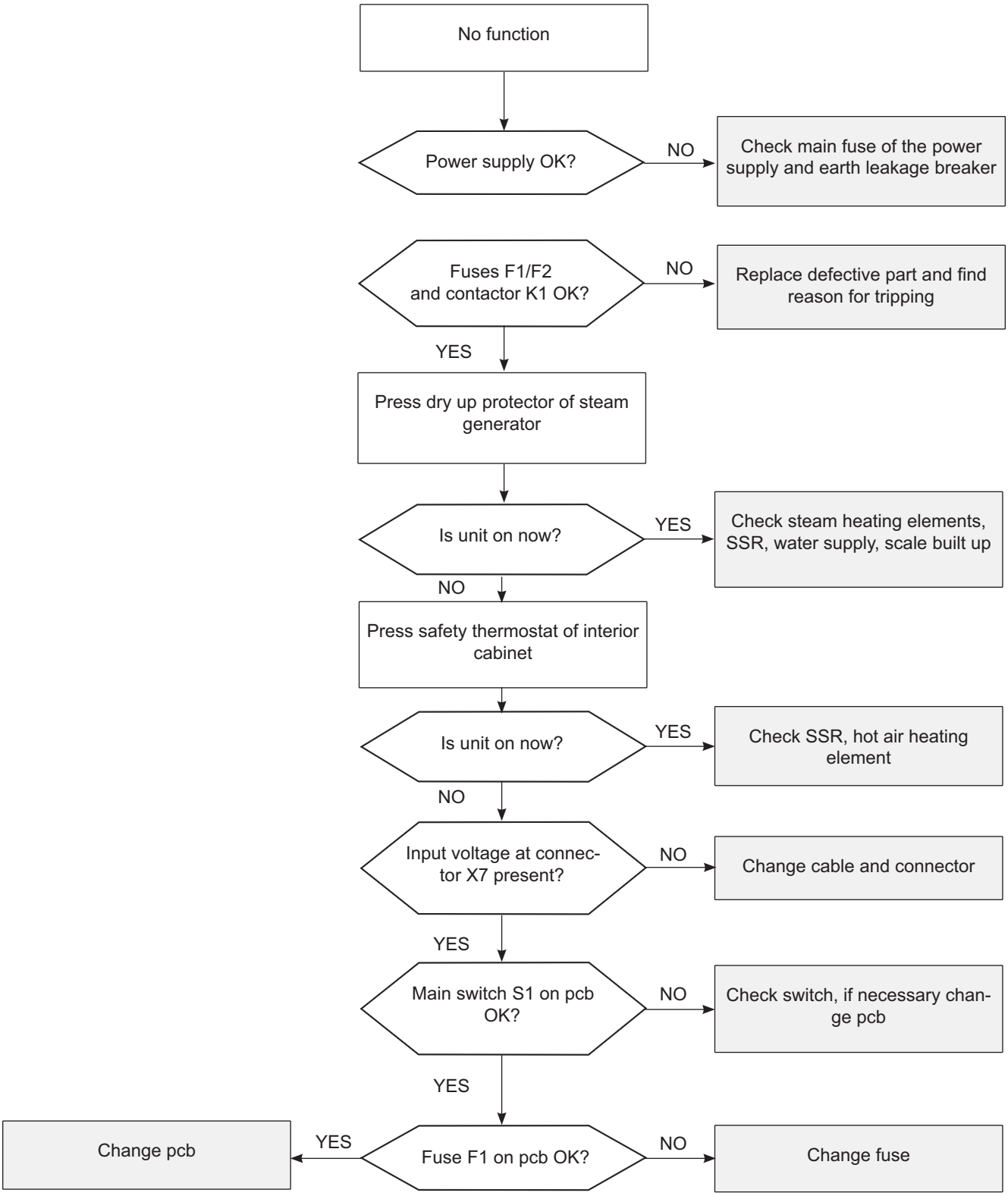
B1	12	in 5 sec.
B2	6	in 5 sec.
B4	5	in 5 sec.
B5	8	in 5 sec.
Core temperature sensor	20	in 5 sec.

Indication „E13“ (SC-Automatic)

Level electrode of the steam generator did not recognise a reduction of the water level during last SC-automatc

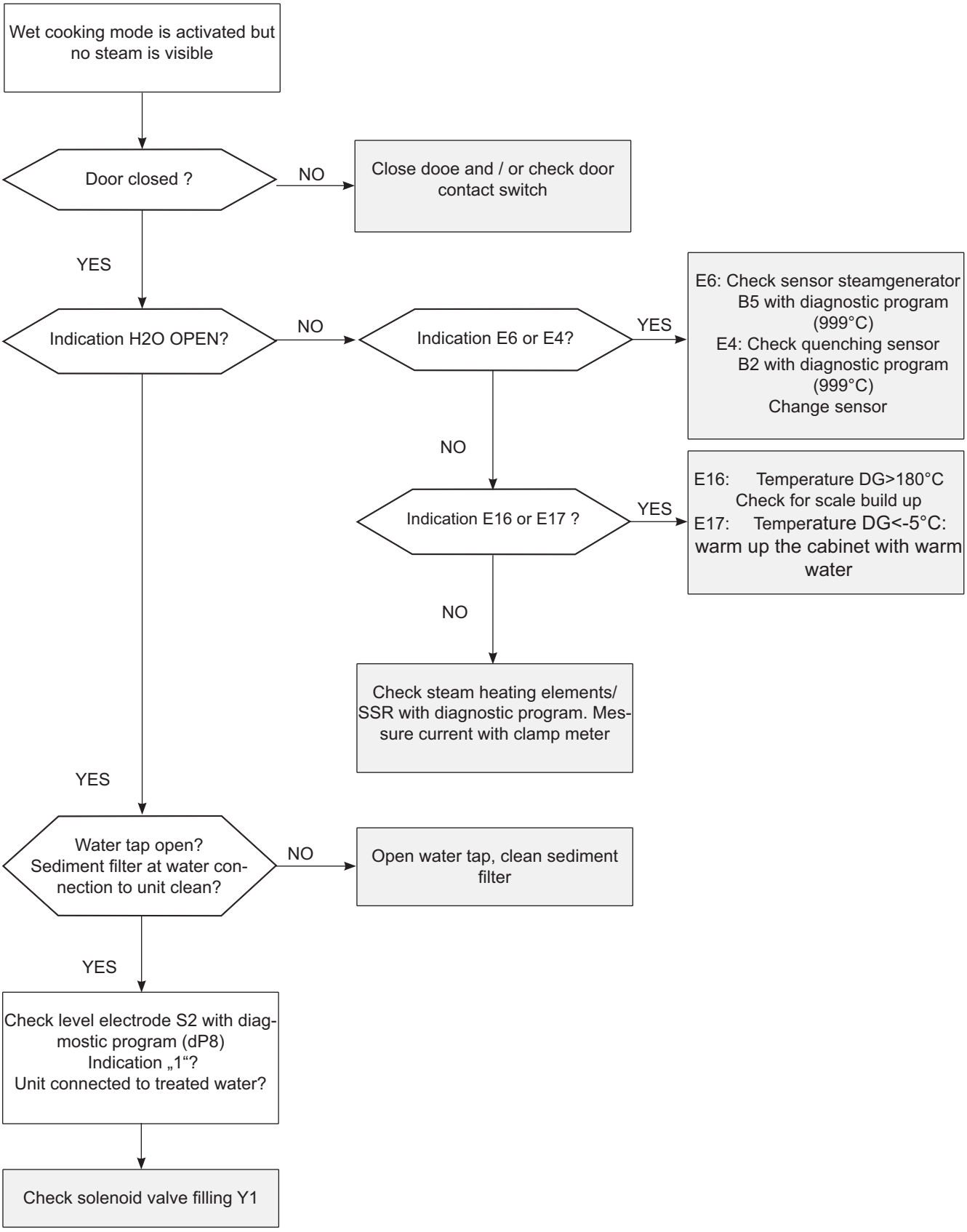


CM - No function- safety circuit



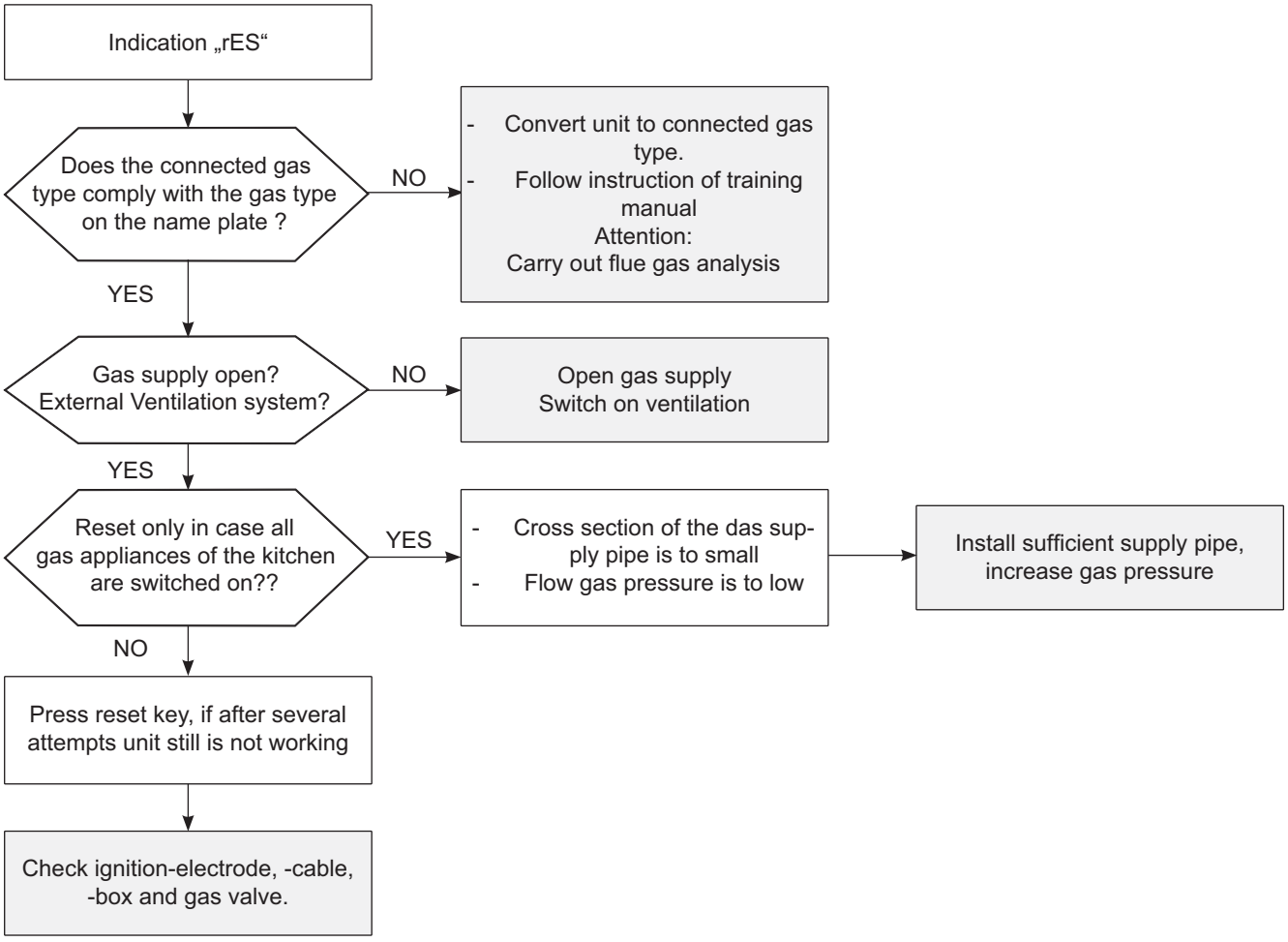
No Steam

Attention: Steam above 110°C is not visible, it does not condensate on the cabinet door!



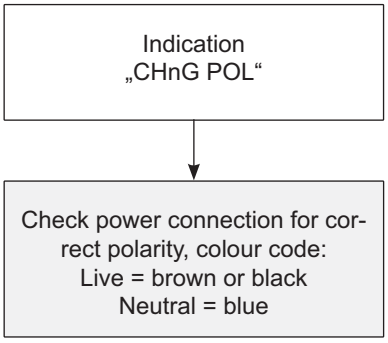
Indication „rES“ (=reset)

Reason:
No ame sensing after ignition



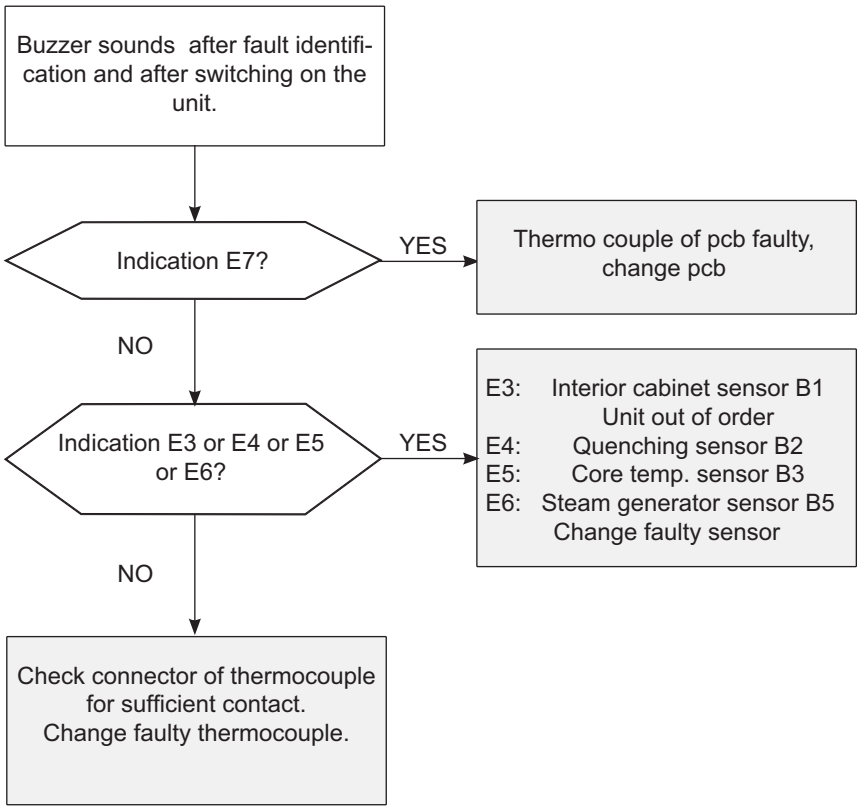
CHnG POL (check polarity)

For ame monitoringL1 mains must be connected with correct polarity



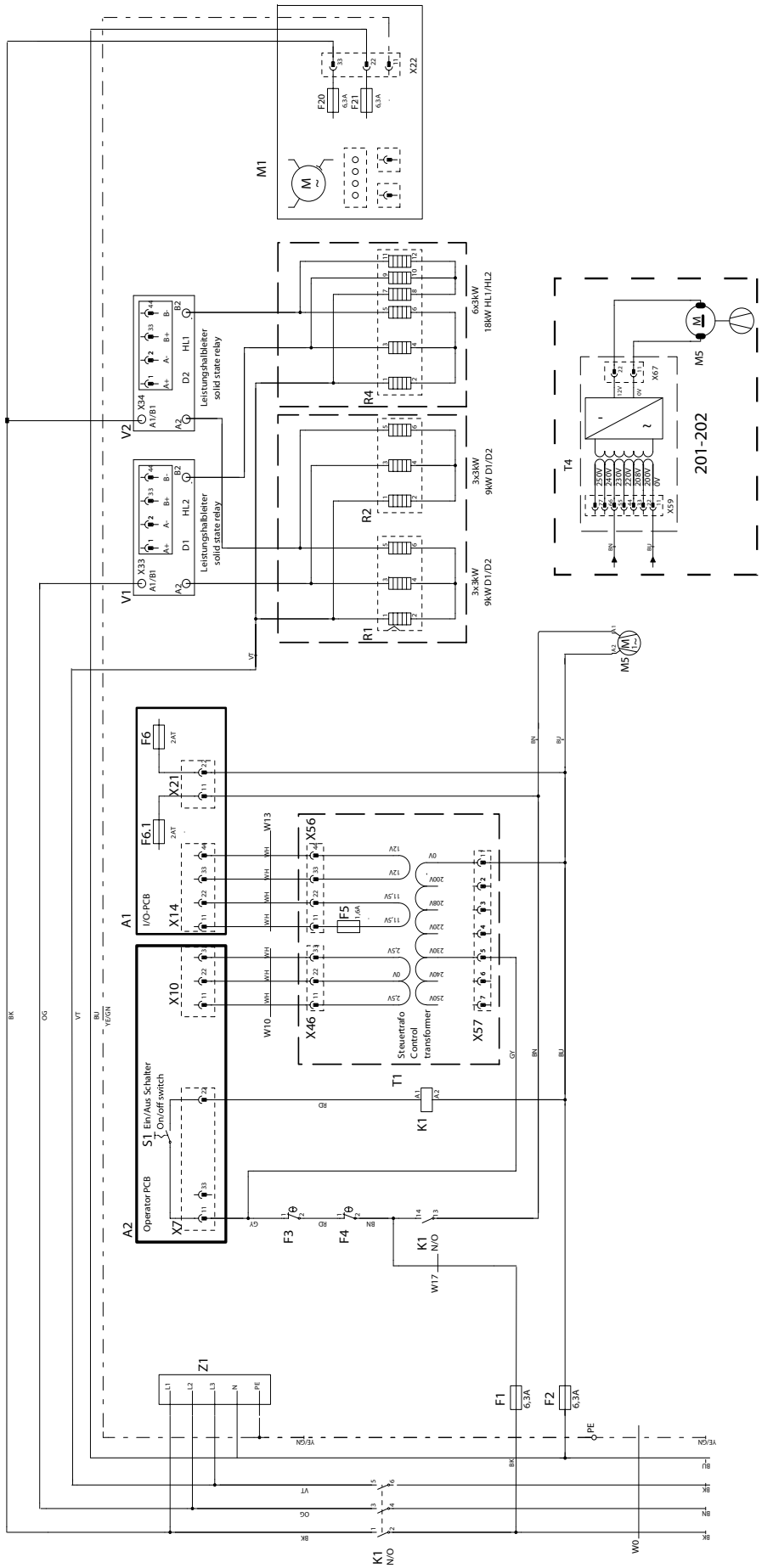
Buzzer sounds

Reason of fault: Any thermocouple is faulty



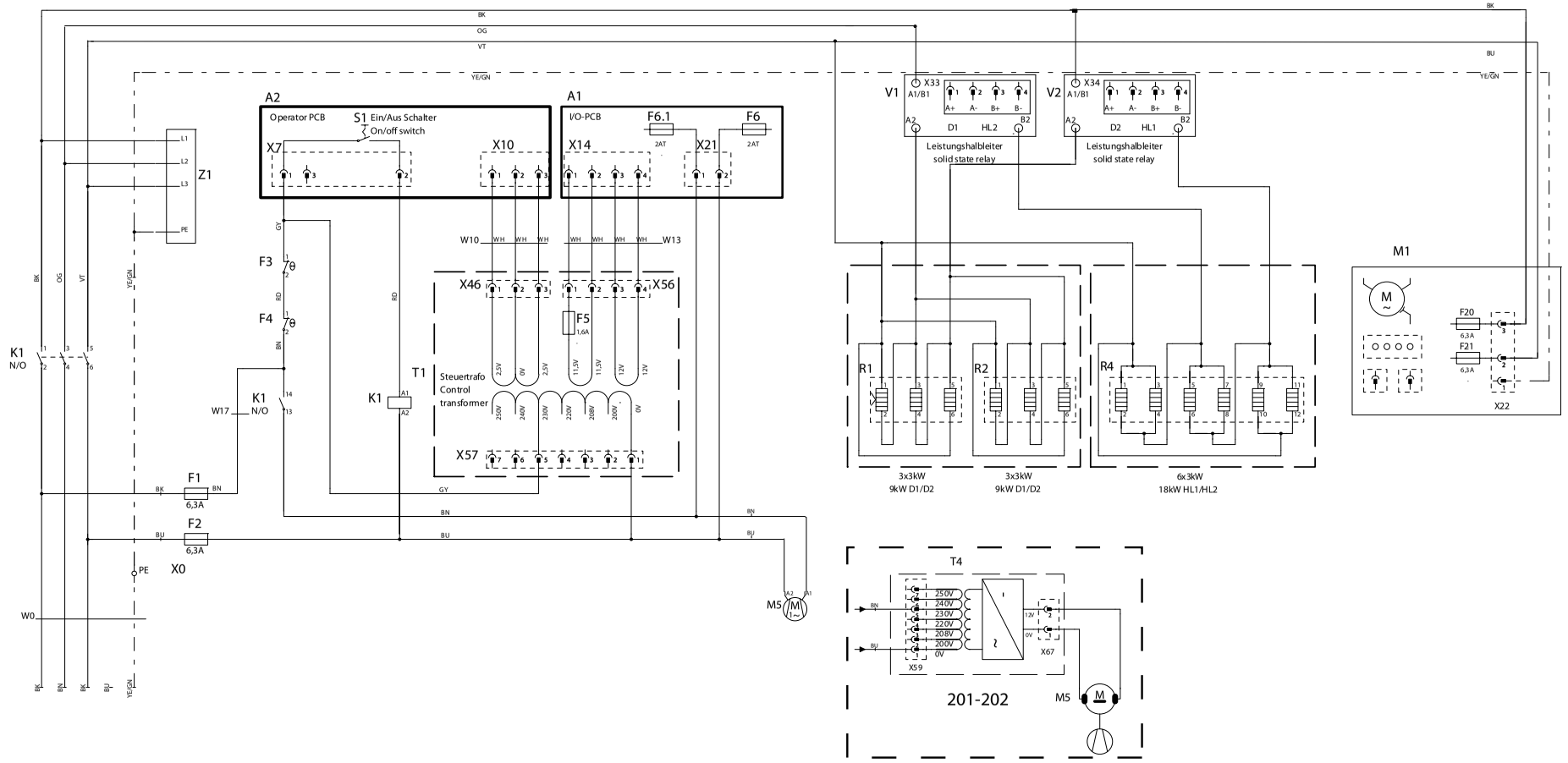
Rational SCC-Linie: Leistungsteil
Rational SCC-Line: Power circuit
Rational Linea SCC: Circuito di alimentazione
Rational SCC-Line: Circuit de puissance
Rational Linea SCC: Circuito de la energía

3NAC 400 - 415V



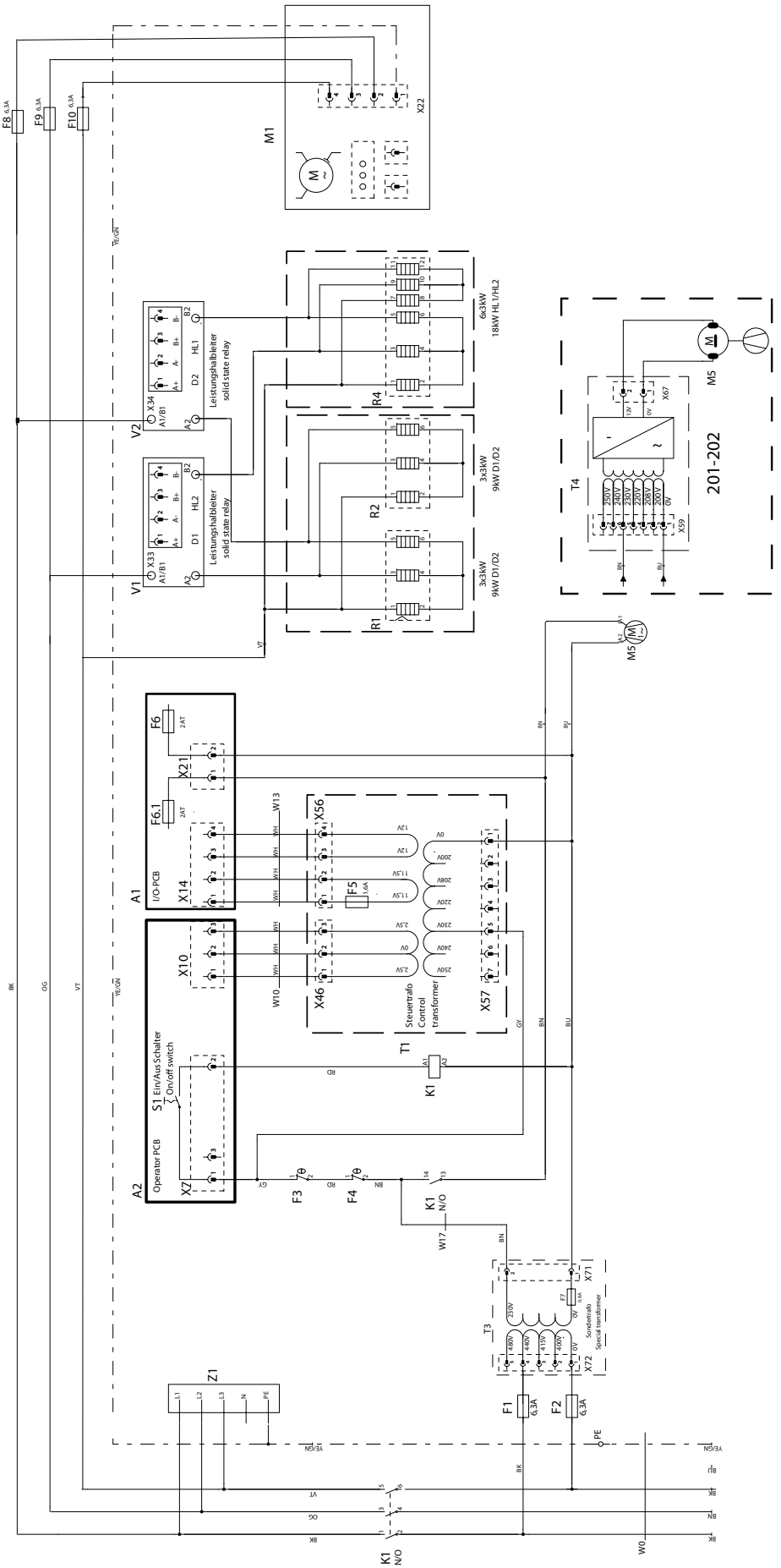
Rational SCC-Linie: Leistungsteil
Rational SCC-Line: Power circuit
Rational Linea SCC: Circuito di alimentazione
Rational SCC-Line: Circuit de puissance
Rational Linea SCC: Circuito de la energía

3AC 200-240V



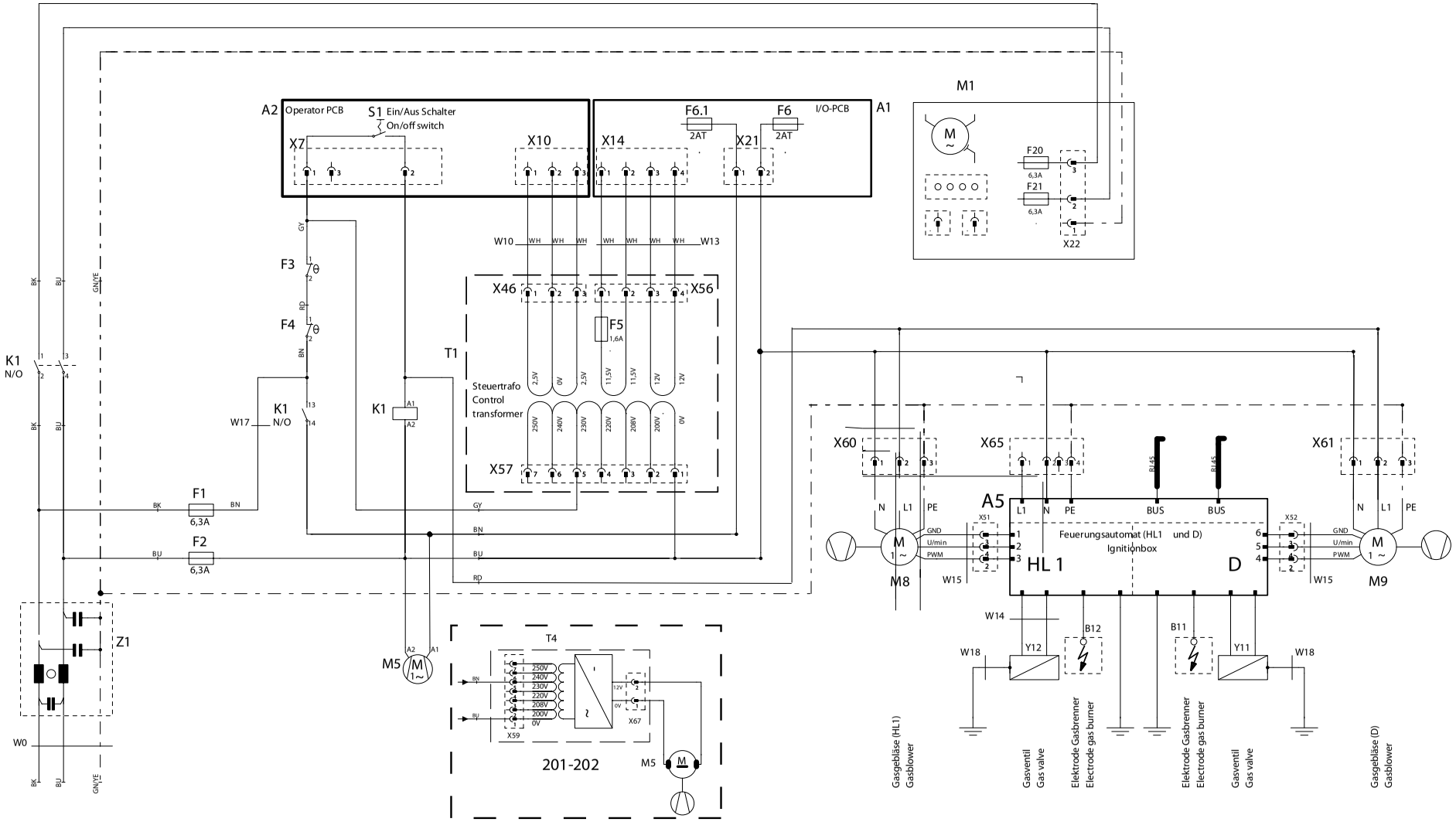
Rational SCC-Linie: Leistungsteil
Rational SCC-Line: Power circuit
Rational Linea SCC: Circuito di alimentazione
Rational SCC-Line: Circuit de puissance
Rational Linea SCC: Circuito de la energía

3AC 400-480V



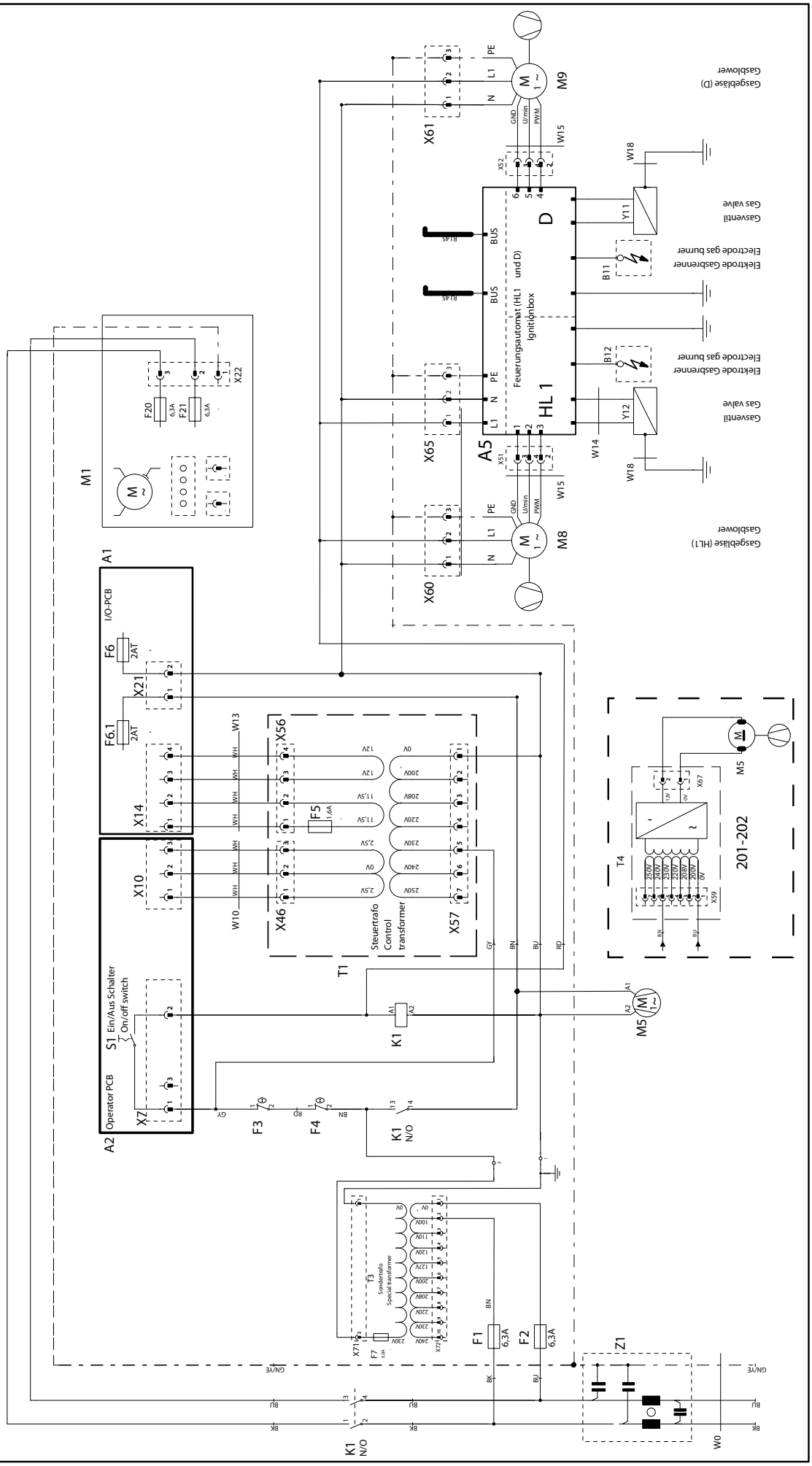
Rational SCC-Linie: Leistungsteil
Rational SCC-Line: Power circuit
Rational Linea SCC: Circuito di alimentazione
Rational SCC-Line: Circuit de puissance
Rational Linea SCC: Circuito de la energía

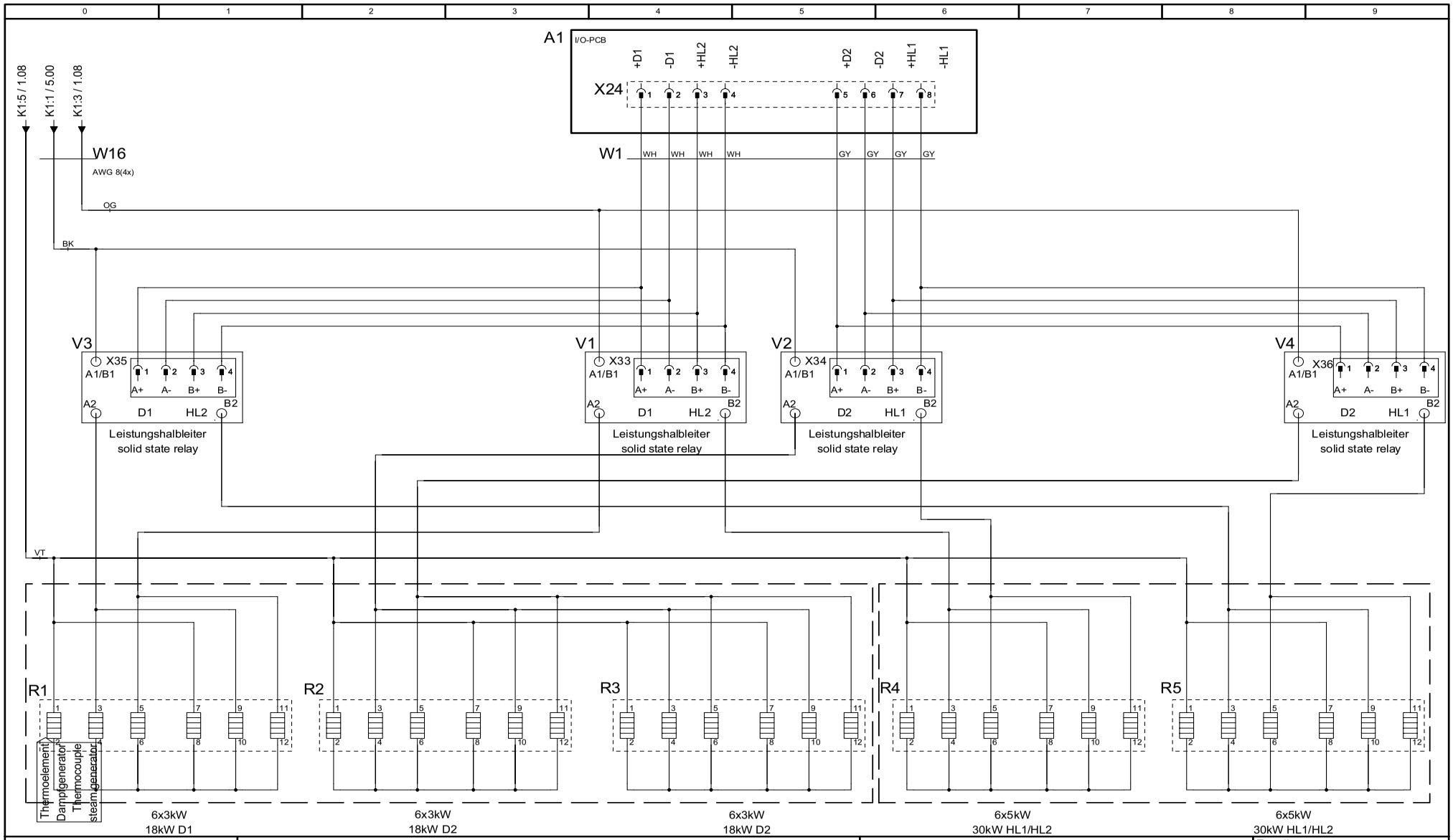
1NAC 230V - Gas



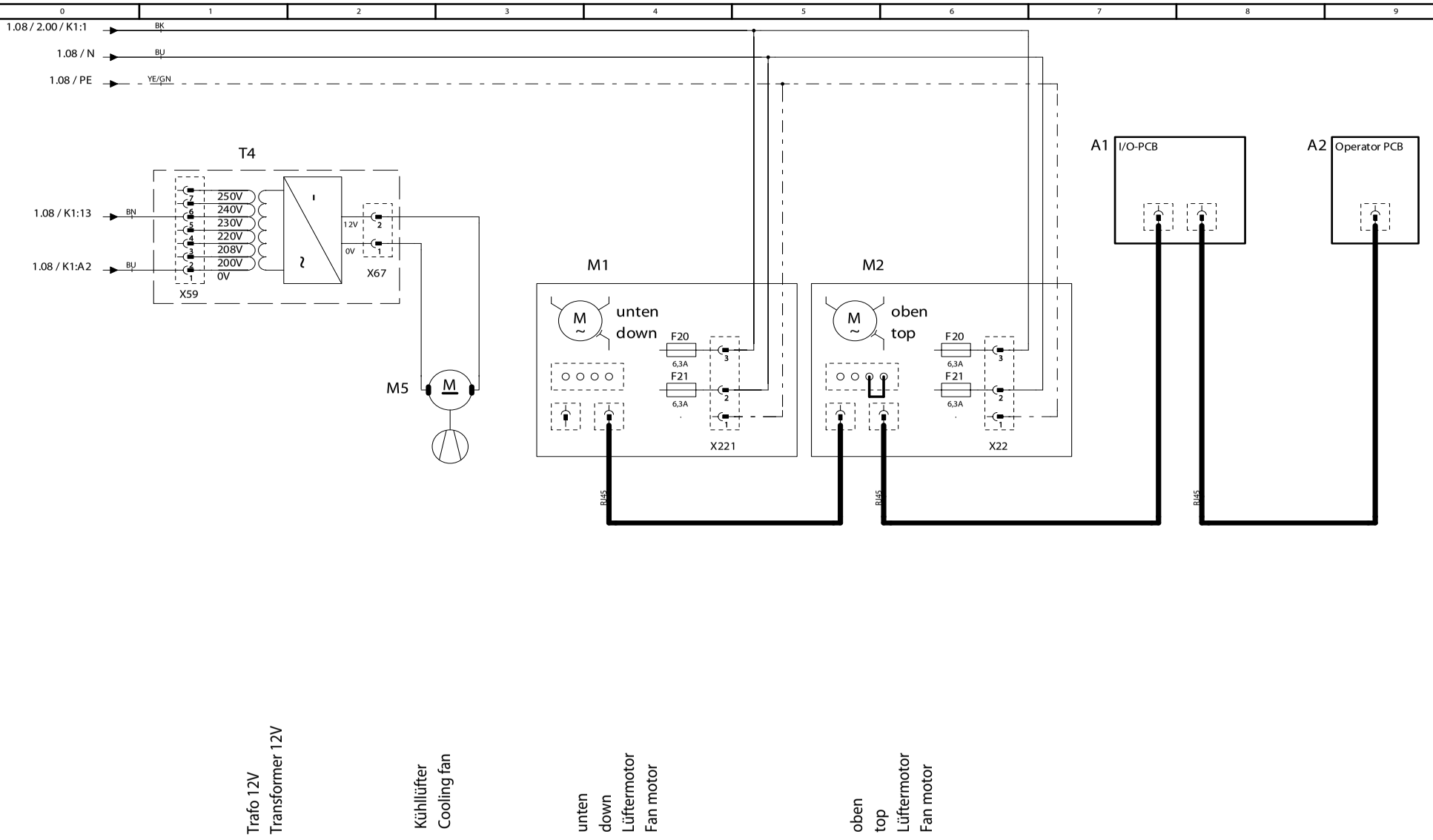
Rational SCC-Linie: Leistungsteil
Rational SCC-Line: Power circuit
Rational Linea SCC: Circuito di alimentazione
Rational SCC-Line: Circuit de puissance
Rational Linea SCC: Circuito de la energía

1NAC 100 - 127V, 1NAC 240V, 2AC 200 - 240V - Gas





76-00016	MODUL 2 Heißluftheizung/Dampfheizung Hot air heating/Steam heating	SCC202E	Erstellt von / Created by: PA Datum / Date: 30.04.2004 Blatt / Page: 2
Version 0		3NAC400V 50-60Hz	



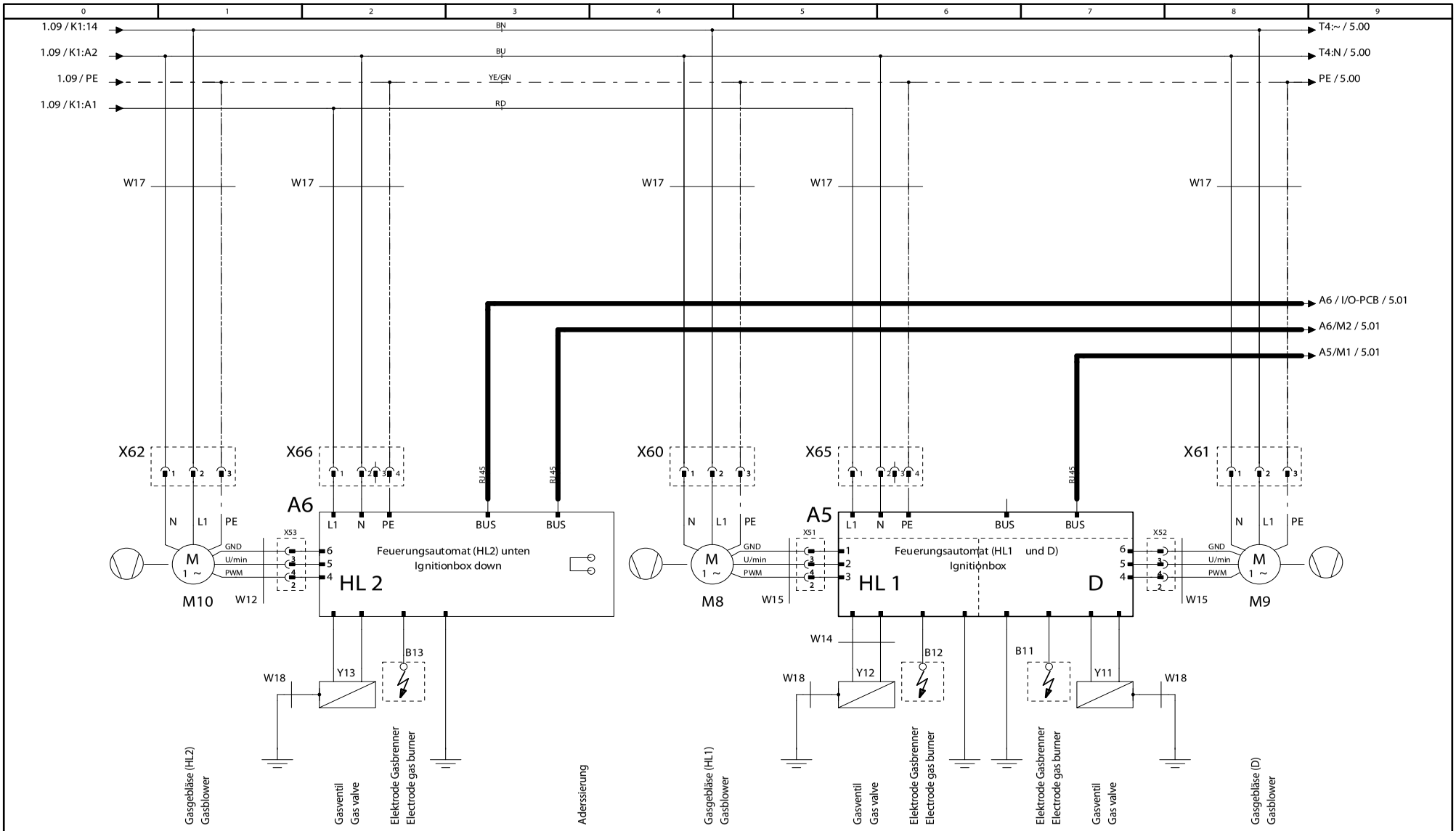
Trafo 12V
Transformer 12V

Kühllüfter
Cooling fan

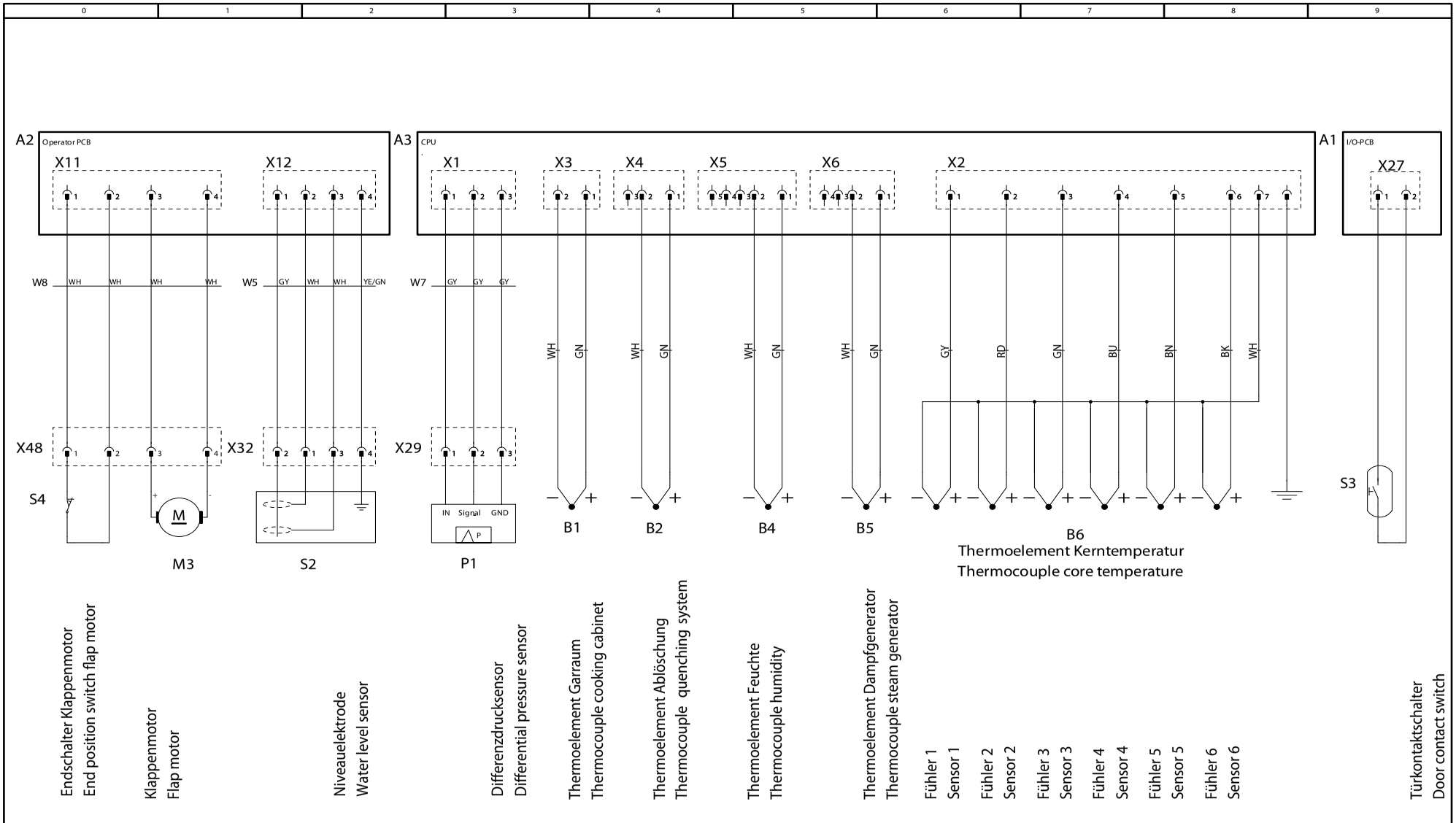
unten
down
Lüftermotor
Fan motor

oben
top
Lüftermotor
Fan motor

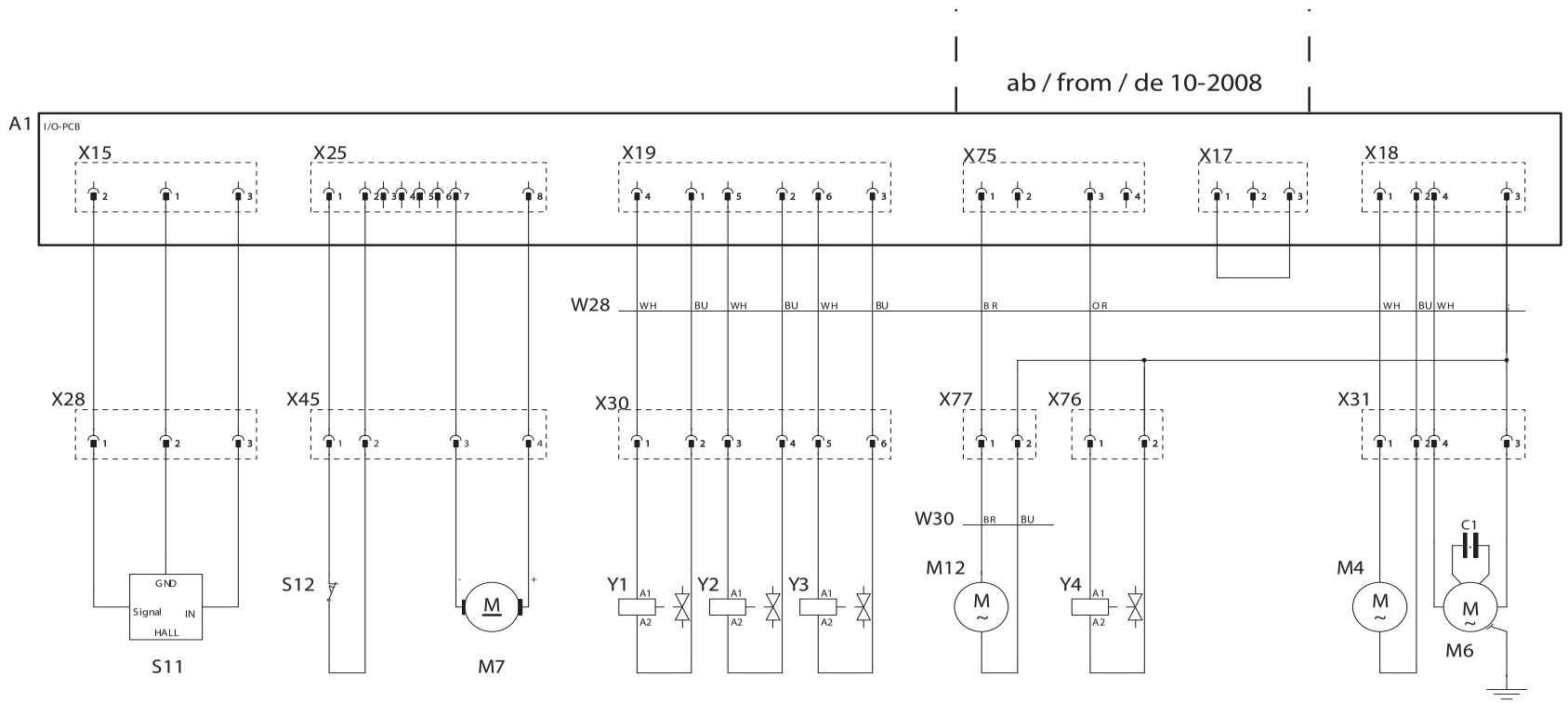
76-00016	MODUL 5 Lüftermotor Fan Motor, Cooling Fan	201 - 202	Erstellt von / Created by: PA Datum / Date: 30.04.2004 Blatt / Page: 5
Version 0			



76-00051	MODUL 2 Heißluftheizung/Dampfheizung Hot air heating/Steam heating	201/202 G	Erstellt von / Created by: PA Datum / Date: 30.04.2004 Blatt / Page: 2
Version 0			



76-00014	MODUL 3 Klima Plus, Fühler Humidity control, Sensors		Erstellt von / Created by: PA
Version 0			Datum / Date: 30.04.2004
			Blatt / Page: 3



CDS-Sensor
CDS-sensor

Endschalter Verschlußmotor
End switch drain valve

Verschlußmotor
Drain valve

Magnetventil-Füllen
Solenoid valve filling

Magnetventil-Ablöschung
Solenoid valve guenching system

Magnetventil-Beschwadung
Solenoid valve moistening

Pumpe Pflegemittel
Care Pump

Magnetventil Pflegemittel
Solenoid valve Care

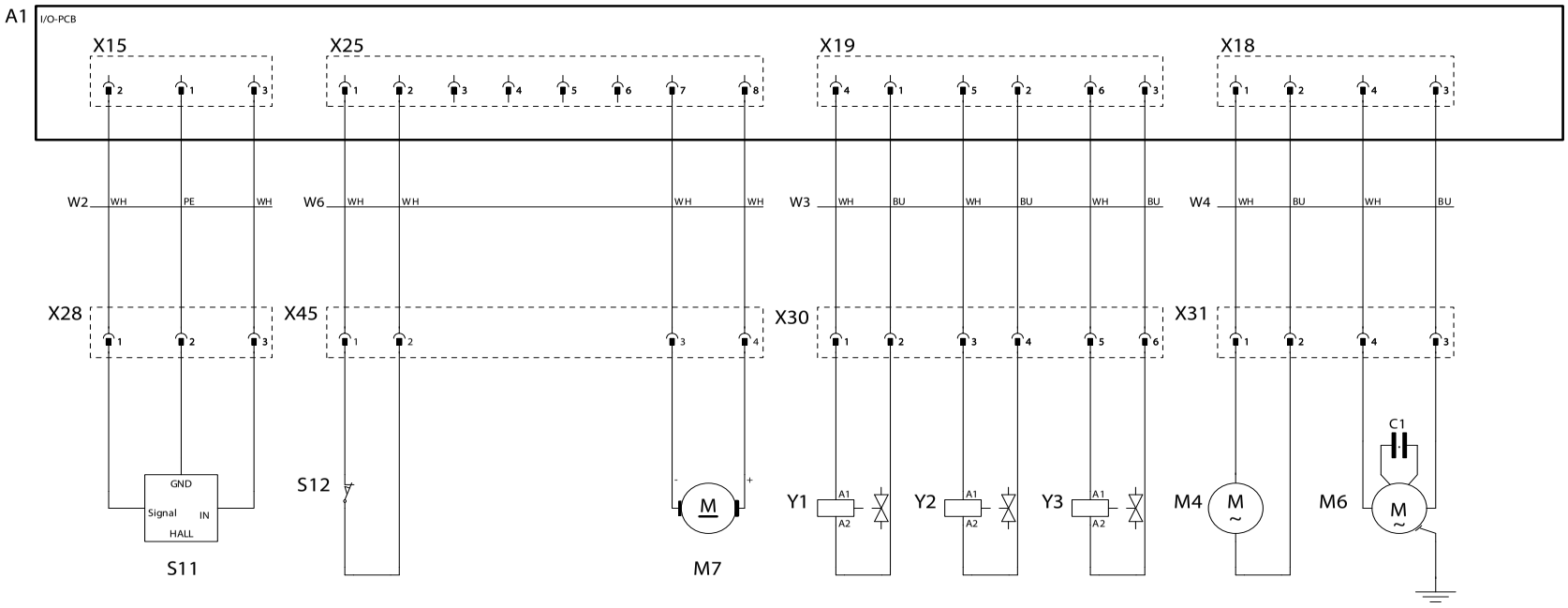
Care Brücke
Care link

SC-Pumpe
SC-pump

Kondensator C1 2,5µF
Capacitor

Umwälzpumpe Reinigung
Cleanjet circulation pump

Version	MODUL 4 Wasser Water, Drain, CleanJet	Erstellt von / Created by: schd Datum / Date: 25.06.2008 Blatt / Page: 4



CDS-Sensor
CDS-sensor

Endschalter Verschlußmotor
End switch drain valve

Verschlußmotor
Drain valve

Magnetventil-Füllen
Solenoid valve filling

Magnetventil-Ablöschung
Solenoid valv e guenchi ng system

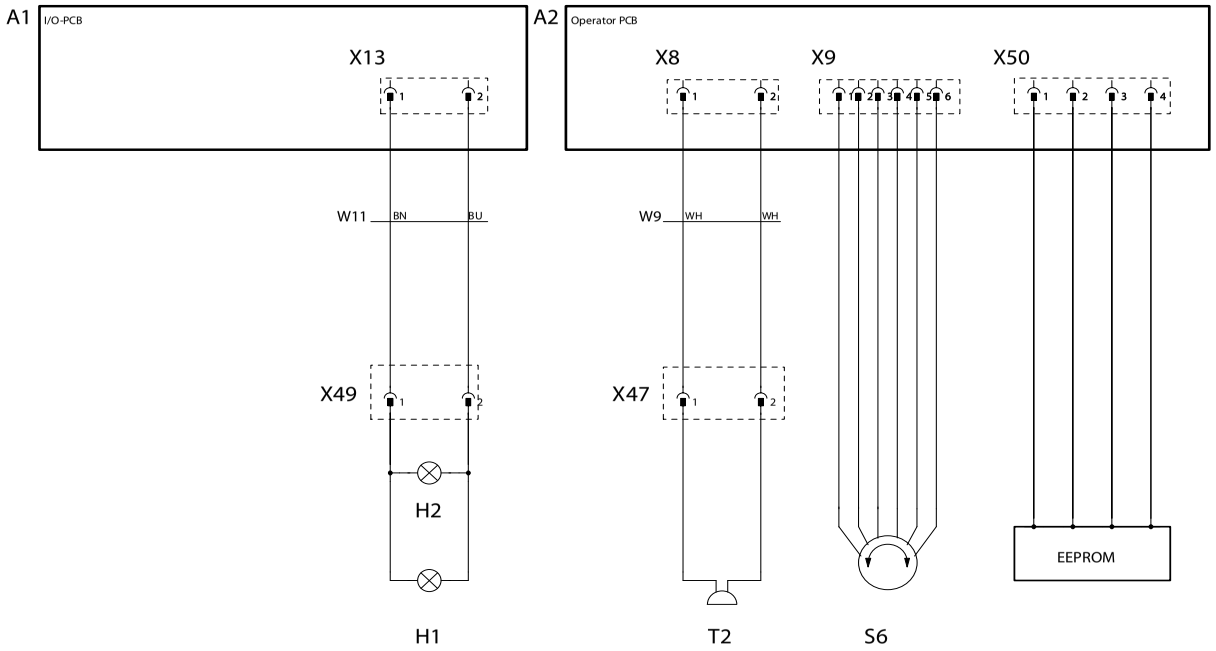
Magnetventil-Beschwadung
Solenoid valve moistening

SC-Pumpe
SC-pump

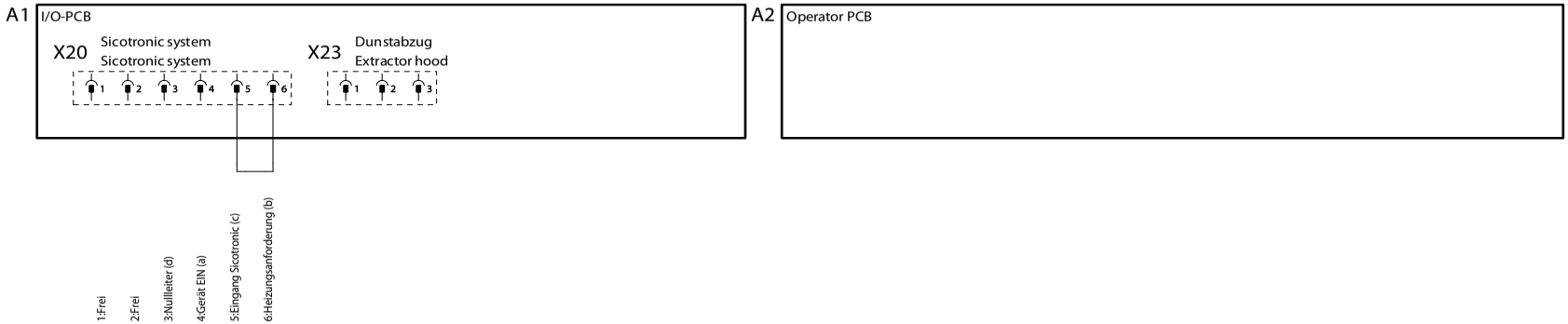
Kondensator C1 2,5µF
Capacitor

Umwälzpumpe Reinigung
Cleanjet circulation pump

76-00014	MODUL 4 Wasser Water, Drain, CleanJet		Erstellt von / Created by: PA
Version 0			Datum / Date: 30.04.2004
			Blatt / Page: 4



76-00014	MODUL 6 Garraumbeleuchtung, Summer, Zentrales Einstellrad, EEPROM	201 - 202	Erstellt von / Created by: PA
Version 0			Datum / Date: 30.04.2004
			Blatt / Page: 6



76-00014	MODUL 7 Option Options		Erstellt von / Created by: PA
Version 0			Datum / Date: 30.04.2004
			Blatt / Page: 7

Positionsliste
Bill of material

Name Name	Artikelnr. Item number	Artikelbezeichnung	Item description	Module Modul
A1	42.00.065	I/O-PCB	I/O-PCB	Modul 8
A2	42.00.002	Bedienplatine SCC	Operator PCB SCC	Modul 1
B1	40.00.594	Thermoelement Garraum	Thermocouple interior cabinet	Modul 3
B2	40.00.398	Thermoelement Ablöschung	Thermocouple quenching system	Modul 3
B5	40.00.291	Thermoelement Dampfgenerator	Thermocouple steam generator	Modul 3
B6	40.00.295	Thermoelement Kerntemperatur SCC	Thermocouple core temperature	Modul 3
F1	4001.0224	Steuersicherung	Control fuse	Modul 1
F2	4001.0224	Steuersicherung	Control fuse	Modul 1
F3	40.01.329	Sicherheitstemp. Begrenzer G135°C/275°F E160°C/320°F	Safety temp. limiter G135°C/275°F E160°C/320°F	Modul 1
F4	40.00.605	Sicherheitstemperaturbegrenzer 360°C/680°F	Safety temperature limiter 360°C/680°F	Modul 1
H1	3024.0201	Halogenbeleuchtung alle	Interior cabinet light	Modul 6
H2	3024.0201	Halogenbeleuchtung 201/202	Interior cabinet light	Modul 6
K1	40.01.558	Hauptschütz	Main contactor	Modul 1
M1	40.00.275	Lüftermotor TG u. SG	Fan motor	Modul 5
M2	40.00.275	Lüftermotor SG	Fan motor 201/202	Modul 5
M3	3101.1010	Klappenmotor SCC	Flap motor	Modul 3
M4	44.00.207	SC-Pumpe	SC-pump	Modul 4
M5	40.00.474	Kühllüfter 61-202E/G	Cooling fan	Modul 5
M6	56.00.186	Clean Jet Pumpe SCC	CleanJet pump	Modul 4
P1	3017.1011	Differenzdrucksensor	Differential pressure sensor	Modul 3
R1	44.00.195	Dampfheizkörper 61-202	Heating element steam 61-202	Modul 2
R2	44.00.533	Dampfheizkörper 61-202	Heating element steam 61-202	Modul 2
R3	44.00.533	Dampfheizkörper 202	Heating element steam 202	Modul 2
R4	40.00.267	Heißluftheizkörper 61-202	Heating element hot air 61-202	Modul 2
R5	40.00.267	Heißluftheizkörper 102-202	Heating element hot air 102-202	Modul 2
S1	TEXT	Ein/Aus Schalter SSC	On/off switch SCC	Modul 1
S11	44.00.211	CDS-Sensor	CDS-sensor	Modul 4
S2	3002.0402	Niveauelektrode	Water level electrode	Modul 3
S3	40.00.335	Türkontaktschalter	Door contact switch	Modul 3
S4	3016.0102	Mikroschalter Feuchtemotor	Micro switch humidity motor	Modul 3
S6	40.00.404	Zentrales Einstellrad	Central dial	Modul 6
T1	40.00.277	Trafo	Transformer	Modul 1
T2	3006.0107	Alarmsummer	Buzzer	Modul 6
T4	40.00.592	Trafo Kühllüfter	Transformer cooling fan 12V DC	Modul 5
V1	40.00.453	Leistungshalbleiter 61-202/E	Solid state relay	Modul 2
V2	40.00.453	Leistungshalbleiter 61-202/E	Solid state relay	Modul 2
V3	40.00.453	Leistungshalbleiter202Eu*102-202UL/J	Solid state relay	Modul 2
V4	40.00.453	Leistungshalbleiter202Eu*102-202UL/J	Solid state relay	Modul 2
X20	40.00.338	Sicotronic-Klemme	Sicotronic system	Modul 7

	Änderungsdatum	**2004-04-02 11:36:31**	Name	**SCC202E**	Dokument-Nr. **78-00024**
	Erzeuger	**SCHD**	Spannung	**3NAC 400/415V 50-60Hz**	Version **0**

Positionsliste
Bill of material

Name Name	Artikelnr. Item number	Artikelbezeichnung	Item description	Module Modul
Y1	50.00.138	Magnetventil Füllen / SCC (Y3) Beschwaden	Solenoid valve filling / SCC (Y3) moistening	Modul 4
Y2	50.00.139	Magnetventil Ablöschung	Solenoid valve guenching system	Modul 4
Z1	40.00.465	Entstörfilter	Electronic noise filter	Modul 1
W1	40.00.235	Kabel-Ansteuerung I/O PCB - SSR	Cable I/O PCB - SSR	Modul 2
W10	40.00.231	Kabel:Trafo-Bedienplatine	Cable transformer - operator pcb	Modul 1
W11	40.00.224	Kabel:Halogenbeleuchtung	Cable Halogen light	
W13	40.00.225	Kabel:Trafo - I/O Platine	Cable transformer - I/O pcb	Modul 1
W16	40.00.239	Kabel:Hauptschütz - SSR	Cable Main contactor - SSR	Modul 2
W17	40.01.298	Kabel: Steuerstamm	Cable Control Supply	Modul 1
W2	40.00.202	Kabel: I/O Platine - CDS-Sensor	Cable I/O pcb - CDS-Sensor	Modul 4
W3	40.00.203	Kabel: Platine - Magnetventile	Cable pcb - solenoid valve	Modul 4
W4	40.00.226	Kabel: Platine - SC-Pumpe	Cable pcb - SC-pump	Modul 4
W5	40.00.205	Kabel:Niveauelektrode	Cable water level sensor	Modul 3
W7	40.00.238	Kabel: CPU SCC - Differenzdrucksensor	Cable CPU SCC - Differential pressure sensor	Modul 7
W8	40.00.208	Kabel:Bedienplatine - Klappenmotor	Cable Operator pcb - flap motor	Modul 3
W9	40.00.209	Kabel:Alarmsummer	Cable Buzzer	Modul 6

Positionsliste
Bill of material

Name Name	Artikelnr. Item number	Artikelbezeichnung	Item description	Module Modul
A1	42.00.065	I/O-PCB	I/O-PCB	Modul 8
A2	42.00.002	Bedienplatine SCC	Operator PCB SCC	Modul 1
A5	74.00.221	Feuerungsautomat Brenner 61-202	Ignition box	Modul 2
A6	74.00.221	Feuerungsautomat Brenner 201/202 HL	Ignition box	Modul 2
B1	40.01.099	Thermoelement Garraum	Thermocouple interior cabinet	Modul 3
B2	40.00.398	Thermoelement Ablöschung	Thermocouple quenching system	Modul 3
B5	40.00.292	Thermoelement Dampfgenerator	Thermocouple steam generator	Modul 3
B6	40.00.295	Thermoelement Kerntemperatur SCC	Thermocouple core temperature	Modul 3
F1	4001.0224	Steuersicherung	Control fuse	Modul 1
F2	4001.0224	Steuersicherung	Control fuse	Modul 1
F3	3014.0328	Sicherheitstemp. Begrenzer G135°C/275°F E160°C/320°F	Safety temp. limiter G135°C/275°F E160°C/320°F	Modul 1
F4	40.01.482	Sicherheitstemperaturbegrenzer 360°C/680°F	Safety temperature limiter 360°C/680°F	Modul 1
H1	3024.0201	Halogenbeleuchtung alle	Interior cabinet light	Modul 6
H2	3024.0201	Halogenbeleuchtung 201/202	Interior cabinet light	Modul 6
K1	40.00.451	Hauptschütz	Main contactor	Modul 1
M1	40.00.274	Lüftermotor TG u. SG	Fan motor	Modul 5
M10	70.00.028	Gasgebläse Hl oben	Gas blower motor Hot Air top	Modul 2
M2	40.00.274	Lüftermotor SG	Fan motor 201/202	Modul 5
M3	3101.1010	Klappenmotor SCC	Flap motor	Modul 3
M4	44.00.207	SC-Pumpe	SC-pump	Modul 4
M5	40.00.474	Kühllüfter 61-202E/G	Cooling fan	Modul 5
M6	56.00.186	Clean Jet Pumpe SCC	CleanJet pump	Modul 4
M8	70.00.028	Gasgebläse HL unten	Gasblower Hot Air bottom	Modul 2
M9	70.00.067	Gasgebläse DG	Gasblower Steam	Modul 2
P1	3017.1011	Differenzdrucksensor	Differential pressure sensor	Modul 3
S1	TEXT	Ein/Aus Schalter SSC	On/off switch SCC	Modul 1
S11	44.00.211	CDS-Sensor	CDS-sensor	Modul 4
S2	44.00.514	Niveauelektrode	Water level electrode	Modul 3
S3	40.00.335	Türkontaktschalter	Door contact switch	Modul 3
S4	3016.0102	Mikroschalter Feuchtemotor	Micro switch humidity motor	Modul 3
S6	40.00.404	Zentrales Einstellrad	Central dial	Modul 6
T1	40.00.277	Trafo	Transformer	Modul 1
T2	3006.0107	Alarmsummer	Buzzer	Modul 6
T4	40.00.592	Trafo Kühllüfter	Transformer cooling fan 12V DC	Modul 5
Y1	50.00.138	Magnetventil Füllen / SCC (Y3) Beschwaden	Solenoid valve filling / SCC (Y3) moistening	Modul 4
Y2	50.00.139	Magnetventil Ablöschung	Solenoid valve guenching system	Modul 4
Z1	40.01.483	Entstörfilter	Electronic noise filter	Modul 1
W0	40.01.596	Anschlusskabel	Power connection cable	Modul 1
W10	40.01.543	Kabel:Trafo-Bedienplatine	Cable transformer - operator pcb	Modul 1

	Änderungsdatum	**2004-04-05 16:53:15**	Name	**SCC201G**	Dokument-Nr.	**78-00061**
	Erzeuger	**SCHD**	Spannung	**1NAC230V 50-60Hz**	Version	**0**

Positionsliste
Bill of material

Name Name	Artikelnr. Item number	Artikelbezeichnung	Item description	Module Modul
W11	40.00.224	Kabel:Halogenbeleuchtung	Cable Halogen light	
W12	40.00.221	Kabel:Feuerungsautomat - Gasgebläse	Cable Ignition box - gas blower motor	Modul 2
W13	40.00.225	Kabel:Trafo - I/O Platine	Cable transformer - I/O pcb	Modul 1
W14	40.00.230	Kabel:Feuerungsautomat - Gasventil	Cable Ignition box - gas valve	Modul 2
W15	40.01.485	Kabel:Feuerungsautomat - Gasgebläse	Cable Ignition box - gas blower motor	Modul 2
W17	40.01.301	Kabel: Steuerstamm	Cable Control Supply	Modul 1
W18	40.00.237	Kabel:Erdung Gasventil	Cable ground connection gas valve	Modul 2
W2	40.01.541	Kabel: I/O Platine - CDS-Sensor	Cable I/O pcb - CDS-Sensor	Modul 4
W3	40.00.203	Kabel: Platine - Magnetventile	Cable pcb - solenoid valve	Modul 4
W4	40.00.226	Kabel: Platine - SC-Pumpe	Cable pcb - SC-pump	Modul 4
W5	40.01.542	Kabel:Niveauelektrode	Cable water level sensor	Modul 3
W7	40.00.238	Kabel: CPU SCC - Differenzdrucksensor	Cable CPU SCC - Differential pressure sensor	Modul 7
W8	40.00.208	Kabel:Bedienplatine - Klappenmotor	Cable Operator pcb - flap motor	Modul 3
W9	40.00.209	Kabel:Alarmsummer	Cable Buzzer	Modul 6

	Änderungsdatum	**2004-04-05 16:53:15**	Name	**SCC201G**	Dokument-Nr. **78-00061**
	Erzeuger	**SCHD**	Spannung	**1NAC230V 50-60Hz**	Version **0**

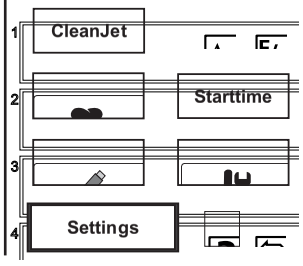
SCC Service Reference

SCC key c

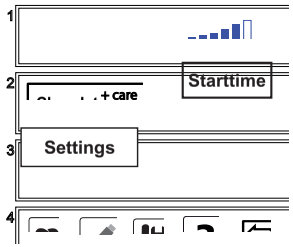
Function key a

Prog key b

(since SW SCC 02_xx_xx to 03_xx_

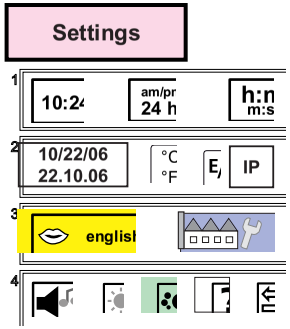


(since SW SCC 04_xx_xx)



http://service.rational-ag.de

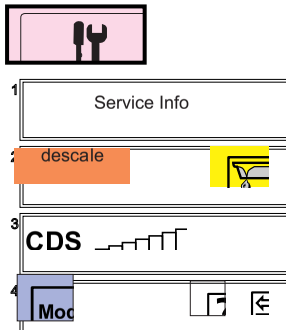
SelfCooking Center



Setting of language

reset to factory setting

Setting CleanJet request (only activ when frame shows in red)

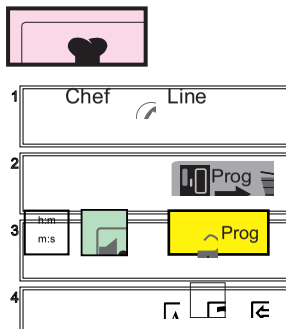


Descaling program: automatic process

empty steam generator (Door must be open!)

Display of scale level inside steam generator

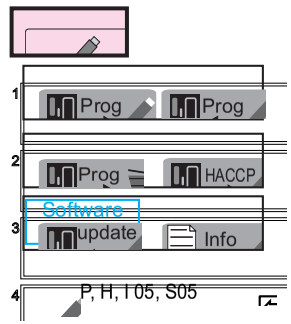
Display of software version, Serial number



erase all customer programs

„Program lock“ Password;12345; TTREU

setting buzzer (sound-duration)



Copy customer program to stick

Reload customer programs from stick to unit

Erase customer programs

Download of HACCP-Data

Software updates (Icon only shows when unit detects valid software on the usb stick;

Download of service data to stick.

SelfCooking Center

Enter Service level
set dip switch „1“ on pcb to ON position
Diagnostic RunningTimes Function Test Basic Settings

Abort CleanJet
switch unit off and on again

Abort de-scaling program
before filling de-scaling liquid - use „BACK“ arrow
after filling de-scaler into steam generator - switch unit off and on again - press ABORT key - remaining time will be adjusted automati-cally - switch unit off and on again - press ABORT key - time will be adjusted automatically 2x - use steam mode for 15 min. and rinse interior cabinet

Show Mode - switch off or on	
ON	press function key „a“ followed by program key „b“ and SCC key „c“ for 10 seconds until - acoustic signal - Beep and door handle in icon function key „a“ shows in red
OFF	press function key „a“ followed by program key „b“ and SCC key „c“ for 10 seconds until - acoustic signal - Beep and door handle in icon function key „a“ shows in blue

Service error code:	
Service 10	SC-Pump without Function
Service 11	level electrode (Osmosis water) or check valve above steam generator for leakage
Service 12	CDS sensor no output signal
Service 13	change level electrode
Service 14	Level electrode (Osmosis water)
Service 16	since 01-07-09, flash new software version first
Service 17	external EEPROM faulty
Service 20	thermocouple B1 faulty
Service 21	micro switch clima control faulty
Service 22	
Service 23	SSR steam short circuit
Service 24	SSR hot air short circuit
Service 25	CleanJet water circulation faulty - water doesn‘t hit fan wheel - check pump, foreign bodies in water pipe, racks / trolley must be inside cabinet
Service 26	drain valve closed
Service 27	drain valve doesn‘t close, CleanJet without function
Service 28	B5 in steam generator above 180°C (356°F), de-scale steam generator
Service 29	pcb temperature too high (above 85°C / 185°F); change air filter
Service 30	humidity control faulty
Service 31.X	core probe faulty
Service 32.X	ignition box faulty, change ignition box 0-top; 1-bottom; 2-both
Service 33.X	4x Reset without function, change ignition box; 1-top; 2-bottom
Service 34.X	BUS signal error 1-I/O pcb, 2-motor bottom; 4-motor top; 8-ignition box top; 16-ignition box bottom

Service error code:	
Service 40	Cleanjet not possible, Care pump faulty
Service 41	CDS does not send any pulses; solenoid valve Y3 defective or moistening valve blocked;
Service 42	CDS does not send any pulses; Solenoid Y4 Care defective or hose to care container blocked up or kinked;
Service 43	CDS sensor sends always pulses; Solenoid Y1, Y3 or Y4 is passing water
Service 44	Steam heating or SSR faulty
Service 100	Main contactor - pcb on off switch
Service 110	SC pump faulty or level electrode calcifies
Service 120	Care Pump M12 or level electrode defective

Calibration SCC

Calibration at the customers site must be done under the following conditions: Changing of:

1 Pressure sensor P1,
2 B4 humidity sensor,
3 fan motor,
4 pcb,
5 external EEPROM,
6 detaching of the fan wheel,
7 replacing the air baffle or divider plate between the 2 fan motors of a floor model,
8 installation of the appliance above 1000m (3000ft) above sea level or below sea level (dead sea), installing with Ultravent of venting extension or as a Combi Duo
9 Usage of a different standard rack
10 Customer complaint for uneven cooking results

Basic condition Temperatures:

Cabinet sensor	Quench. sensor	Humidity sensor
B1 <40°C	B2 <45°C	B4 < 40°C

Basic condition Hardware:

Heating: OFF Fan motor: OFF Humidity flap: Closed
Side panel must be fitted; Unit must be clean, but may be wet
In order to achieve the best possible calibration values, insert 2 GN-container 20 or 40 mm deep with the opening facing downwards
in 61 and 62 units into rail 2 and 5
in 101 and 102 units into rail 3 and 7
in 201 and 202 units 3 GN container into rail 3, 10 and 17

To start calibration: Set DIP switch 1 in on pcb, Select: Basic Settings, Pkt. 1.1: START

Gas-settings - values	
Dyn. pressure LPG	27-57 mbar; 2,7-5,7 kPa
Dyn. pressure natural gas	18-25 mbar; 1,8-2,5 kPa
CO2 max LPG (G30) 3BP	10,4% +/- 0,2% for type 61-202
CO2 max LPG (G31) 3P	11,1% +/- 0,2% for type 61-202
CO2 max natural gas H (G20)	9,4% +/- 0,2% for type 61-201 9,5% +/- 0,2% for type 202
CO2 max natural gas L (G25)	9,3% +/- 0,2% for type 61-201 9,4% +/- 0,2% for type 202

CM Service Reference
SCC Line

Key code CM (SCC line)	
Cleaning program	
select Cool Down with „1“ press key „5“ for 10 sec. „CLEn“ is shown in temperature display press key „4“ 1x;	CLEn
De-scaling program	
select Cool Down with „1“ press key „5“ for 10 sec. „CLEn“ is shown in temperature display select „CALC“ with „2“ press key „4“ 1x;	CLEn CALC
empty steam generator	
select Cool Down with „1“ press key „5“ for 10 sec. „CLEn“ is shown in temperature display select „SC“ with „2“; open door, press key „4“ 1x;	CLEn SC
select °C - °F	
select any cooking mode press key „4“ and „5“ for 10 seconds	

Error code		
Time display	Cabinet display	
OPEn	H2O	open water tap
PoL	CHnG	change polarity of mains supply
E 1		External EEPROM data error
E 2		heating blocked by energy optimising
E 3		B1 cabinet sensor defective
E 4		B2 quenching sensor defective
E 5		B3 core probe sensor defective
E 6		B5 steam generator sensor defective
E 7		Thermo sensor on pcb defective
E 8		potentiometer cabinet temp. defective
E 9		potentiometer time / core probe defective
E 10		External EEPROM defective
E 11		mode switch defective
E 12	1St 1Co 2St 2Co	fan motor bottom Bus error (LED shows?) fan motor bottom defective fan motor bottom Bus error (LED shows?) fan motor bottom defective
E 13		M4 SC-pump defective or blocked
E 14		filling solenoid defective / sieve blocked
E 15		pcb temp. above >85°C (185°F), change air filter
E 16		B5 steam generator sensor above 180°C (356°F), de-scale steam generator
E 17		B5 steam gen. sensor below -5°C (23°F)
E 18		B1 cab. sensor above 340°C (640°F) (SSR?)
E 20		Ignition box top bus error Ignition box top bus error
E 21	1_ _ 2_ _ 3_ _	1xx - Steam, 2xx - Hot air top 3xx - Hot air bottom Ignition box defective - change box
E 22	1_ _ 2_ _ 3_ _	1xx - Steam, 2xx - Hot air top 3xx - Hot air bottom Ignition electrode, Ignition box, cable
E 24		flash new software first

Enter Service level (Diagnostic, Settings, Running times)
Set dip switch 1 on pcb to „ON“ position

Enter function test
Set dip switch 3 on pcb to „ON“ position

	Diagnostic program	
dP 1	Software version	
dP 2	B1 cabinet sensor	
dP 3	B2 quenching sensor	
dP 4	B3 core probe sensor	
dP 5	B5 sensor steam generator	
dP 6	PCB temperature	must be below 75°C (167°F)
dP 7	S3 door contact	o - open; 1 - closed
dP 8	S2 level electrode	0 - no water; 1 - ok
dP 9	steam element energised	0 ; 1=50%; 2=100%
dP 10	hot air element energised	0 ; 1=50%; 2=100%
dP 11	rpm fan motor top	
dP 12	rpm fan motor botttom	
dP 13	Sicotronic energy optimi-sing	
dP 14		
dP 15	Unit type and size	
dP 16	Gas - Flame current steam	normal: 4,5 - 5,5µA
dP 17	Gas - Flame current hot air top	normal: 4,5 - 5,5µA
dP 18	Gas - Flame current hot air bottom	normal: 4,5 - 5,5µA

	SE - Basic Settings
SE 1	Steam heating time since last SC-Automatic
SE 2	Preset Steam heating time until SC-Automatic
SE 3	Flushing time SC-Automatik
SE 4	Operation steam generator pump
SE 5	Show mode
SE 6	Setting new gas type
SE 7	Presetting of CO2 screw in mm
SE 8	installation altitude above sea level
SE 9	rpm blower motor steam MIN
SE 10	rpm blower motor steam Start
SE 11	rpm blower motor steam MAX
SE 12	rpm blower motor hot air top MIN
SE 13	rpm blower motor hot air top Start
SE 14	rpm blower motor hot air top MAX
SE 15	rpm blower motor hot air bottom MIN
SE 16	rpm blower motor hot air bottom Start
SE 17	rpm blower motor hot air bottom MAX

RT - Running Times	
rt 1	S3 door openings
rt 2	Total time Y1 valve filling
rt 3	Total time Y2 valve quenching
rt 4	Total time M4 SC-pump
rt 5	Total time steam heating time
rt 6	Total time hot air heating time
rt 7	Total time steam mode
rt 8	Total time hot air mode
rt 9	Total time combination mode
rt 10	Total time vario steam mode
rt 11	Total time finishing mode
rt 12	Total time cleaning program
rt 13	Total running time unit

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