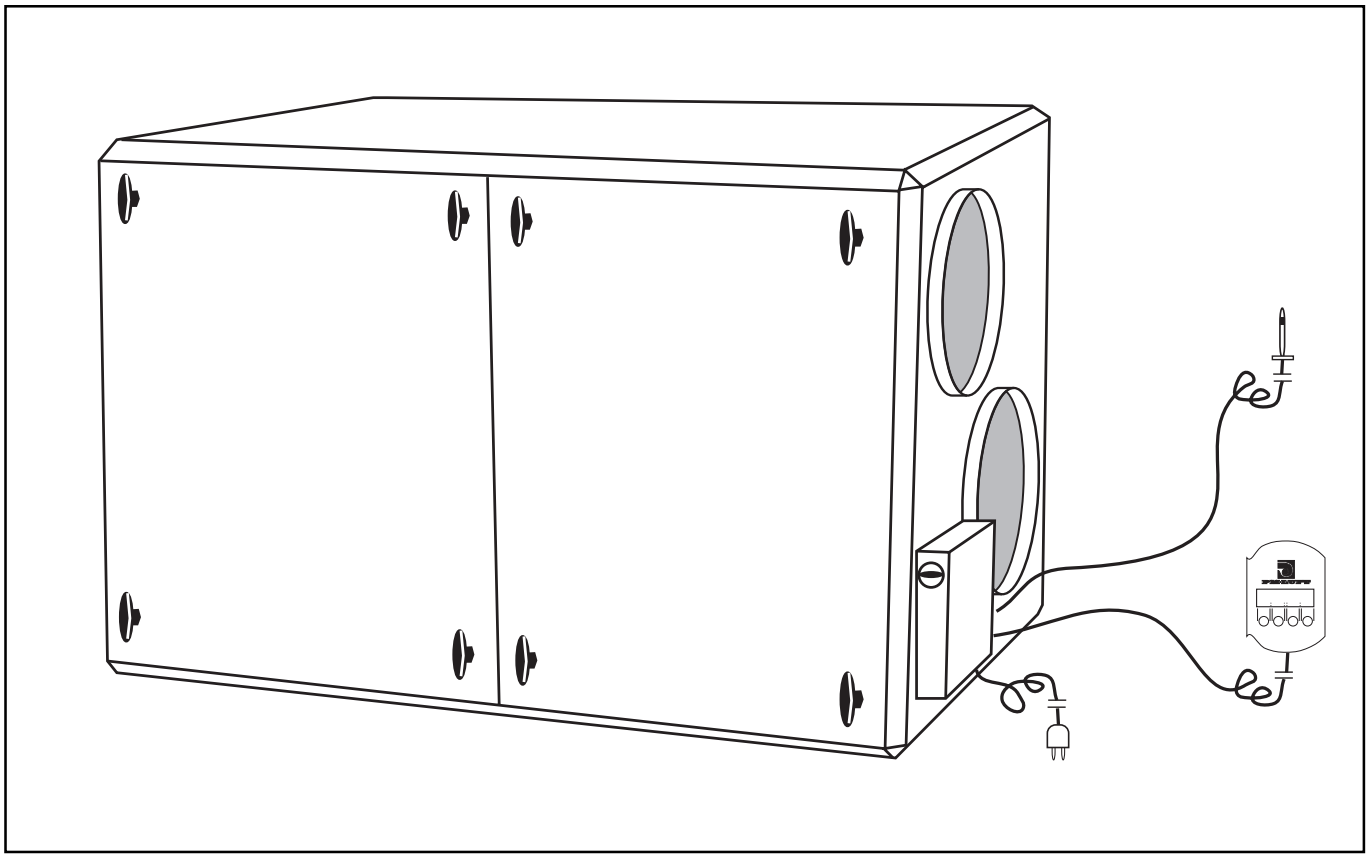
PM-LUFT

Commissioning, operation, and maintenance: GOLD 1-3



1. INTRODUCTION

1.1 GENERAL

GOLD is a complete air handling unit, with built-in control system, developed and manufactured by PM-LUFT AB. The unit contains supply and exhaust air fans, rotary heat exchanger Turbo, supply and exhaust air filters F85/EU7 and control system.

These instructions are for the commissioning, operation, and maintenance of the unit. It is important that they are read by all personnel involved before the unit is put into service. Please see separate instructions for installation

WARNING!

Inspection hatches located on the pressure side behind the fan must not be opened while the fan is operating. The hatch can open suddenly and cause personal injury.

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1.2 SPECIFICATION

When contacting PM-LUFT, please use manufacture number, program version (see 7.3), and description as given below:

Air Handling System **GOLD-a-b-cc**

Type
- Size 1 =2
- 2, 3 =3

Size 1, 2, 3

Display Language
- SWE - ENG =01
- SWE - FIN =02
- POL - ENG =03
- TJECK - TY =04
- FRA - ENG =05
- EST - ENG =06

COMPLEMENTS

Damper and motor **GOSA-1-aaa-b**

Tightness Class 4

Round size 016, 020, 025, 031, 040

Damper motor with spring return =1
On/Off =2

Adjustment Damper (Round) **GOSB-1-aaa**

Size 010, 012, 016, 020, 025, 031, 040

Water Heat Radiator **GOLA-1-a**

Incl. 2-way valve, adjuster, anti-freeze protection, and connection cable with bayonet coupling.

Size 1, 2, 3

Anti-freeze sensor **GOLZ-1-04**

Electric Heat Radiator **GOLE-1-a-b**

Incl. integrated thyristor and connection cable with bayonet coupling.

Size 1, 2, 3

Voltage
- 400V =1
- 230V =2

Water Cooling Radiator **GOKx-1-a-b-c-d**

Cooling Agent Water =A
Evaporative =C

Size 1, 2, 3

Duct Connection Dimension
- Ø 250 = 1
- Ø 315 = 2
- Ø 400 = 3
- Ø 500 = 4

No. of Tube Rows 4, 6

Connection Side
- Right =1
- Left =2

Silencer **GODA-1-aaa**

Size 025, 031, 040
Round, Size 016-040

Silencer **GODB-1-aaa**

Size 010, 012, 016, 020

Outdoor Air Hood
(Incl. ceiling vent assembly) **GOHA-1-a**

Exhaust Air Hood **GOHB-1-a**
(Incl. ceiling vent assembly)

Size 1, 2, 3

Combi Hood **GOHC-1-a**
(Incl. ceiling vent assembly)

Outer Wall Hood **GOHE-1-a**

Outer Wall Grille **GOHF-1-a**

Size 1, 2, 3

Smoke Function Box **GOQA-1-01**

Incl. Control Unit ABAV

Smoke Detector VS 1130 **GOQA-1-02**

Damper Adjuster SQ B 21.1 **GOQA-1-03**

EXTRA ACCESSORIES

Stand **GOLZ-1-a-02**

Size 1, 2, 3

Motion Detector **GOLZ-1-03**

Extension Cable **GOLZ-1-05-a**

Type
- 5 m with bayonet coupling to manoeuvre display, 4 pole =1
- 5 m with bayonet coupling to battery, 7 pole =2

Transformer 12 VDC **GOLZ-1-06**

For supply to motion detector

Set of Hinges **GOLZ-1-a-07**

Delivered unassembled

Cannot be used with the GOLZ stand

Size 1, 2, 3

Replacement Material

Filter F85/EU7, 1 pc. **GOLZ-1-a-01**

Size 1, 2, 3

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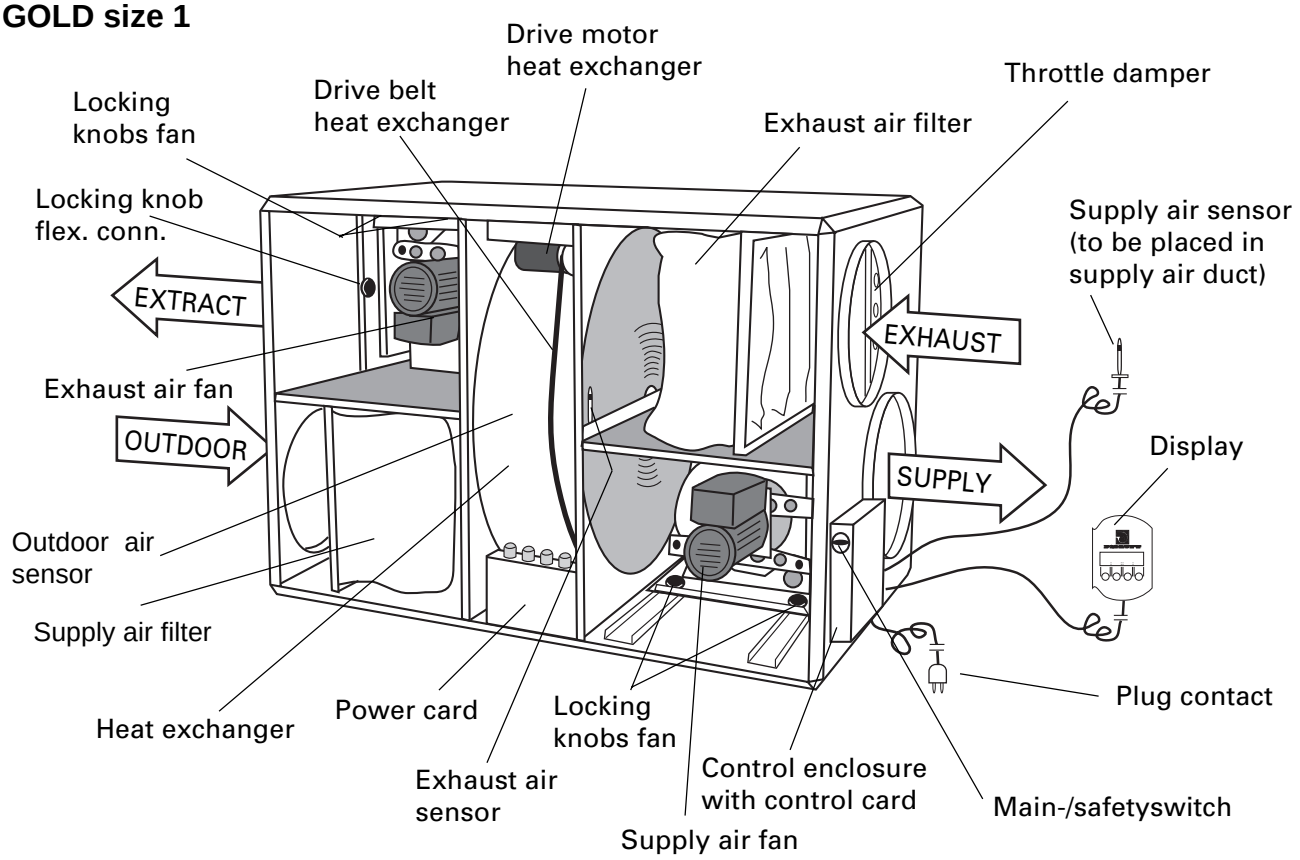
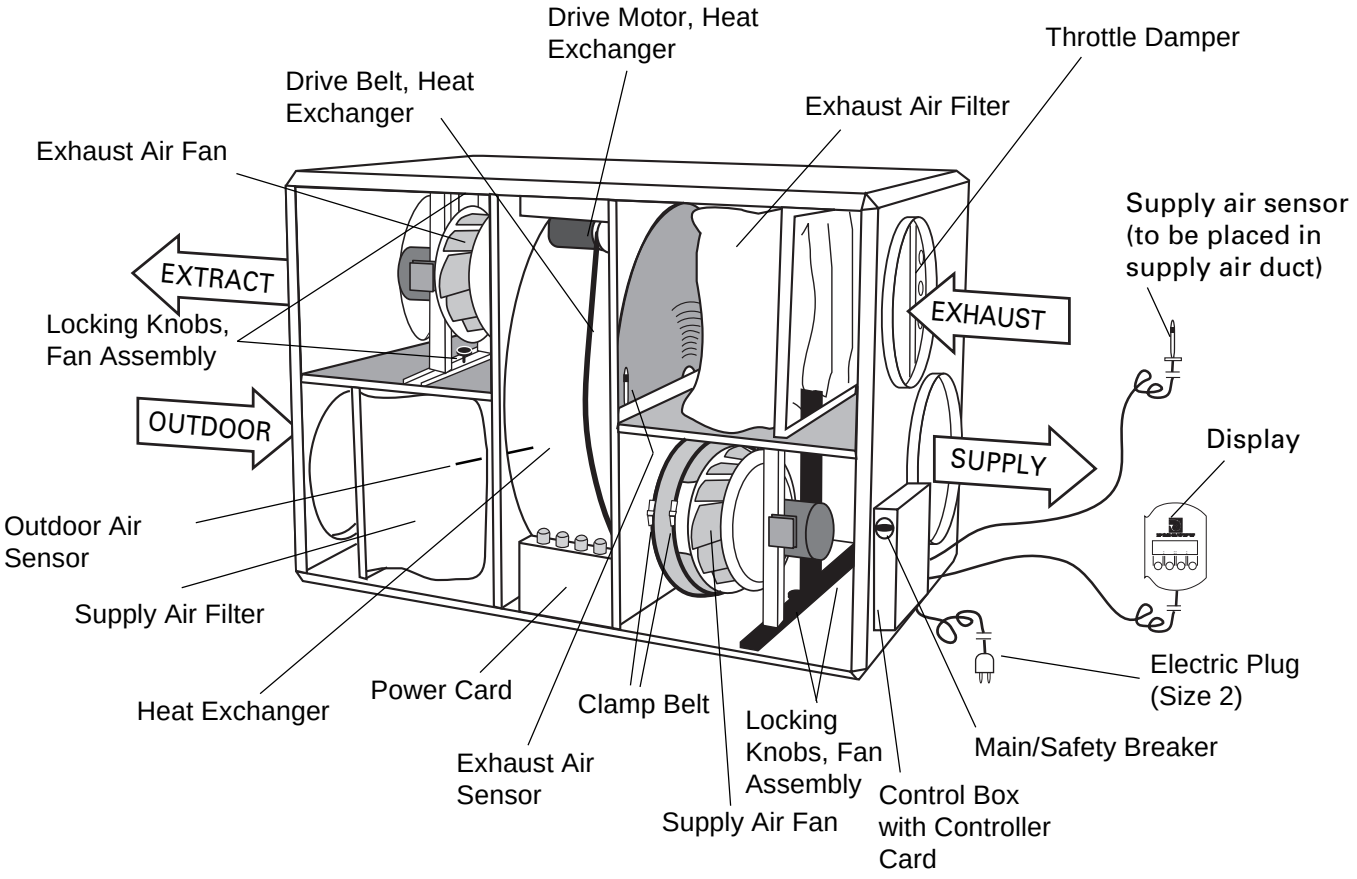
GOLD size 1



GOLD 2 and 3



2. ELECTRICAL CONNECTION

2.1 Power

Units in sizes 1 and 2 are connected with factory installed electrical plug, otherwise permanently connected to single phase 230V, 50Hz, 10A.

For size 3 permanent connection applies, 2 x 230 V + N, 50 Hz, 2 x 10 A.

2.2 Safety

Lockable isolator switch is located on the control enclosure.

2.3 Display

The display is connected to the unit via contact on the factory mounted cable on the display.

2.4 Supply air sensor

The sensor is fixed into the supply air duct at a distance of at least 5 x the duct diameter from the unit or possible reheater. Shall always be mounted after coil.

2.5 Reheater

2.5.1 Electrical heater

Power supply shall be carried out through working switch directly from distribution box.

Unit size 1	2,0 kW, 2-phase 400 v + earth, 5,0 A.
Unit size 2	3,6 kW, 2-phase 400 V + earth, 9,0 A.
Unit size 3	6,0 kW, 3-phase 400 V + earth, 8,7 A.

Control signal to the built-in thyristor is connected to the unit via a quick coupling on the factory mounted cable on the electrical heater.

Alarm from the overheating protection is transferred to the unit and shown on the display.

Possible reset of alarm is done on the battery and the display.

At stopped unit cooling is carried out when necessary.

2.5.2 Watercoil

The control signal to the valve + actuator is connected to the unit via a quick coupling on the pre-connected cable to the actuator.

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3. CONNECTION OF EXTERNAL FUNCTIONS

3.1 General

Cables from external functions are connected to connection boxes on the control card.

Knockout openings for screw caps are located in the control enclosure.

Functions: External stop of unit (external disconnection)
External Fire/Smoke (external disconnection)
External alteration High/Low speed (external connection/disconnection)
Set value shifting (external 0 – 10 VDC)
Flow indication FL/alt. stepless controlling of cooling unit (output 0 – 10 VDC)
Flow indication TL (output 0 – 10 VDC)
Summary alarm A (free making contact)
Summary alarm B (free making contact)
Controlling of cooling unit on/off (free making contact
Unit in operation (free making contact)

3.2 External stop

If the connection between connections 1–2 is broken the unit is unconditionally stopped. "Stop" is shown in the display. The unit is started when the connection closes. Clamp is factory mounted.

3.3 External Fire/Smoke

If the connection between connections 3–4 is cut the unit is unconditionally stopped and the alarm text "External Fire alarm released" is shown in the display. Alarm light and summary alarm relay A-alarm are activated. The error must be repaired and the alarm reset on the display before starting. Clamp is factory mounted.

3.4 External alteration Low/high speed

On connection 5–6 device for alteration between low and high speed can be connected. It might be presence sensor, overtime timer, overtime pushbutton, air quality sensor, hygrostat or other potential free contact function.

Use the display to choose if high speed is required with closed or broken contact. Delay of resetting to low speed after contact alteration is programmed with the display, 0.00–3.59 in hours and minutes.

The internal high speed of the time switch is placed above external contact function. If for instance presence sensor is used the internal time switch shall be programmed to low speed all the time.

3.5 External set value displacement

Connections 7(-) and 8(+) is input for 0–10 VDC for displacement of set value. Upon regulation of supply/exhaust air, the set value for supply/exhaust air temperature is displaced. Upon regulation of ERS, the difference between EA/SA is displaced.

The function is activated in the display. The influence is +/- 5°C according to 8.4.

3.6 Flow indication Supply–Exhaust air

On connections 9(+) and 10(-) there is a output voltage of 0 –10 VDC which is proportional to measured supply air flow. Connections 11(+) and 12(-) contains 0 – 10 VDC for exhaust air flow.

Size	0–10 VDC
1	0–320 l/s
2	0–500 l/s
3	0–900 l/s

3.7 Summary alarm outputs

Connections 13–14 summary alarm B free making contact (10 A), closed at alarm.

Connections 15–16 summary alarm A free making contact (10 A), closed at alarm.

3.8 Cooling unit

3.8.1 On/off control

Connections 17–18 free making contact (10 A) for ON/OFF controlling of possible cooling. The function is activated in the display.

When need for cooling the contact closes. A neutral zone of 2°C is programmed. When the need for cooling stops a restart time of 10 minutes starts, which must end before the contact can close again. This time delay is to prevent the unit from starting and stopping too often.

3.8.2 Stepless control

Controlling can also be carried out stepless, depending of the need of cooling via 10 VDC. Connections 11(+) and 12(-), which normally are for indication of exhaust air flow, is then used. Due to this, indication of exhaust air flow can not be obtained.

When using the valve adjuster, 24V supply must be taken from an external source.

3.9 Operation indication

Connection 19–20 free making contact(10 A). The contact is closed when the unit is in operation (low/high speed). The contact is broken when unit is stopped, regardless to if it has been stopped manually, via clock or alarm.

3.10 UTG 230 V

Connections L, ⏚ , N marked with UTG 230 V is a connection with 230 VAC supply, which is cut off with the main switch.

The socket lays on the supply fuse and therefore the maximum load is depending on how hard the unit is driven.

The outlet is recommended for use for control voltage or for damper motors.

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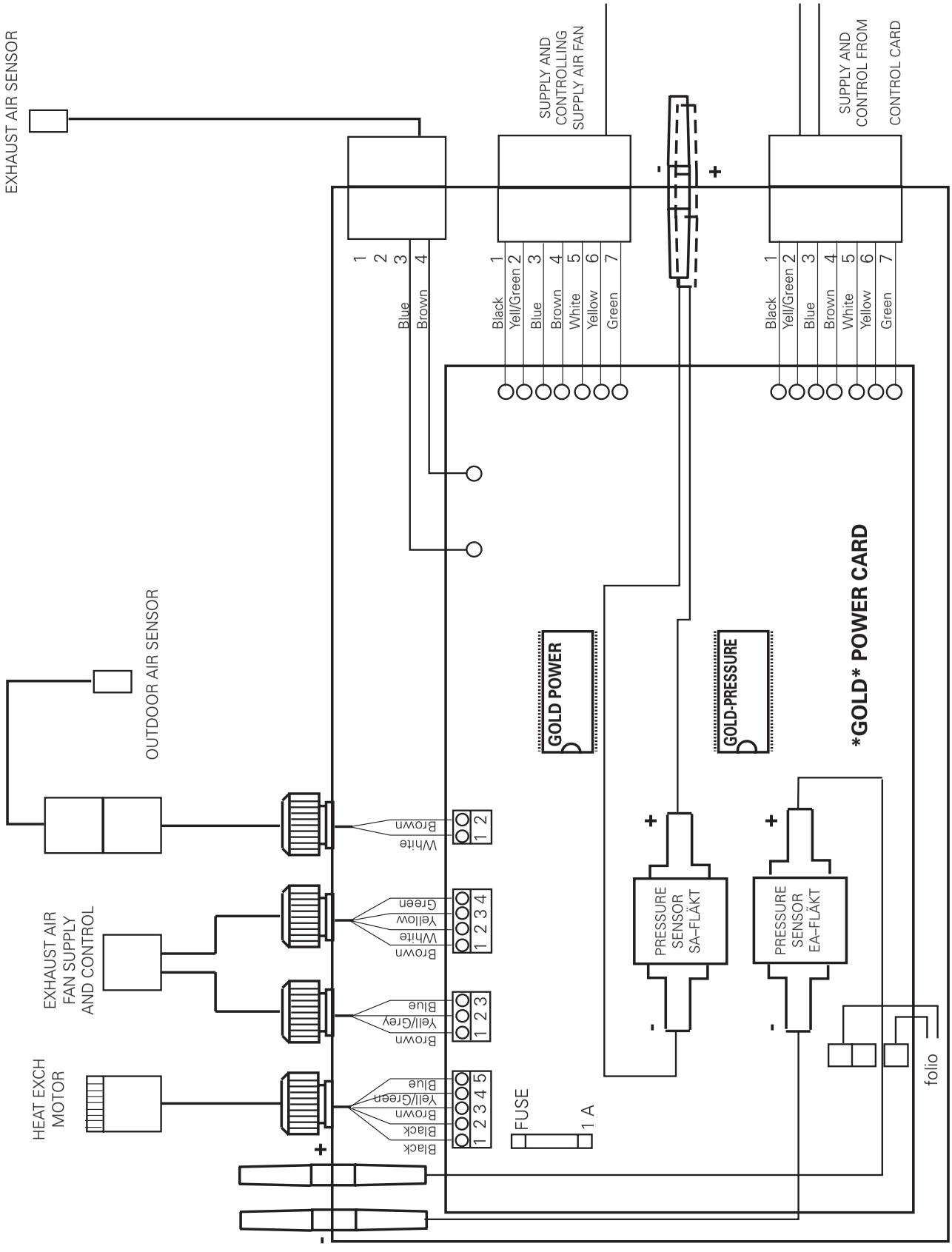
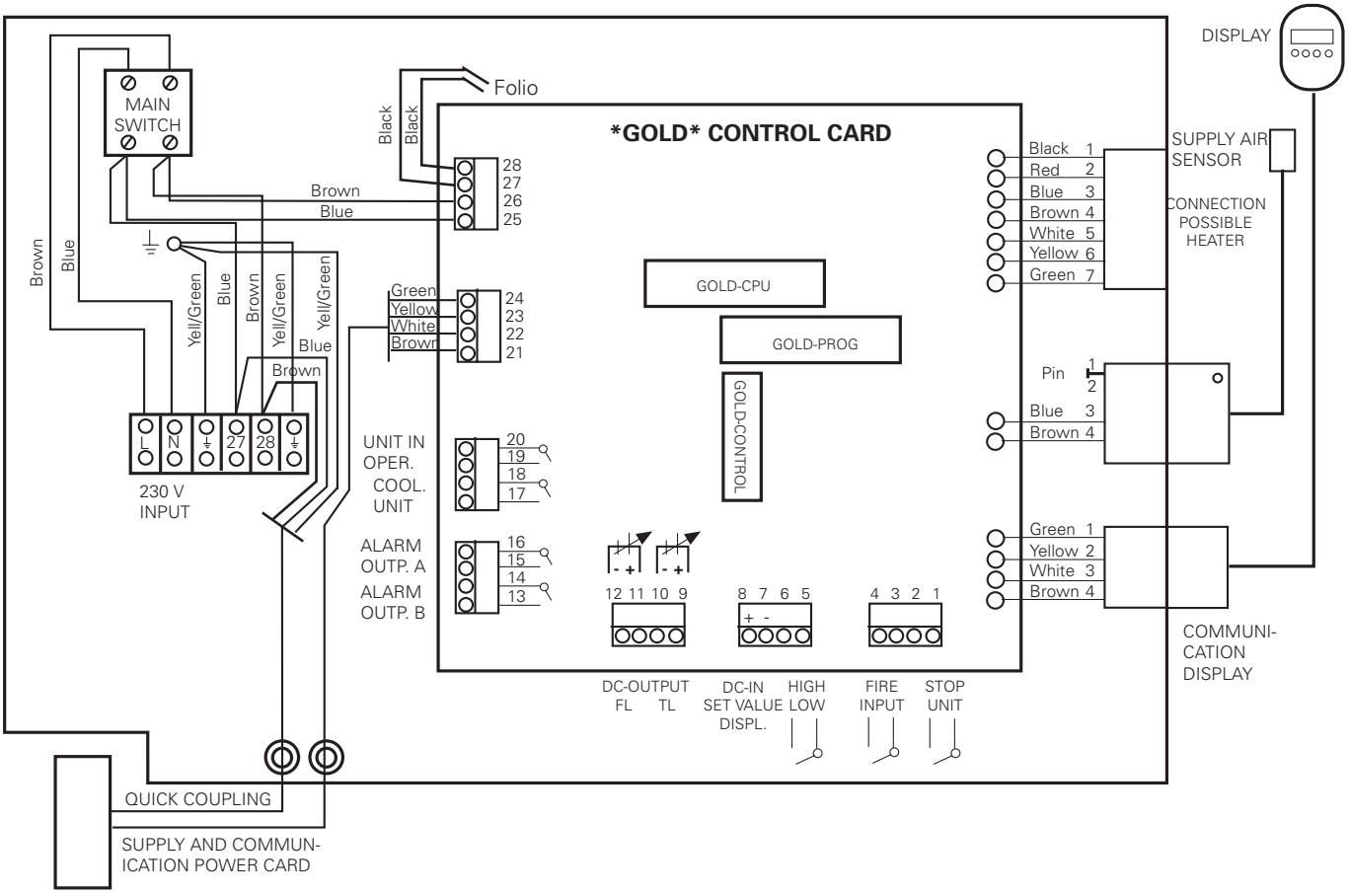
4. WIRING DIAGRAM POWER CARD

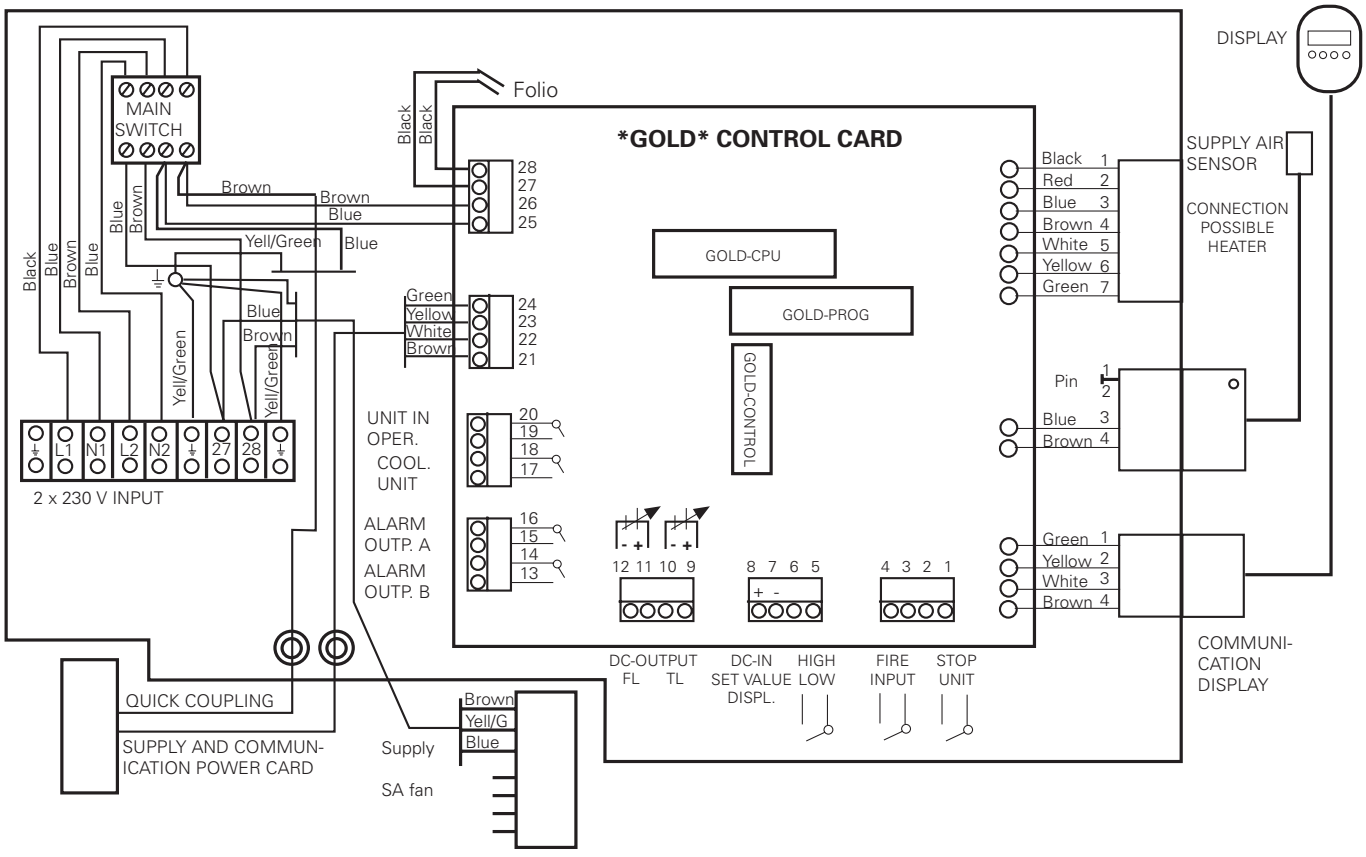


5. WIRING DIAGRAM CONTROL CARD

Size 1 and 2

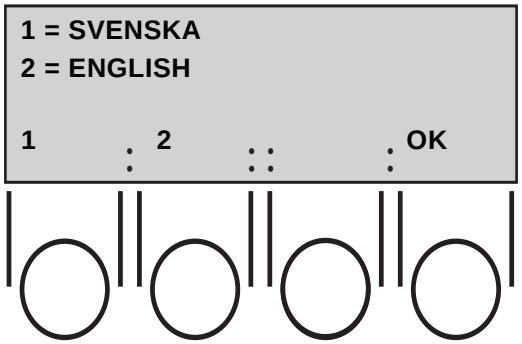


Size 3



6. STARTING-UP

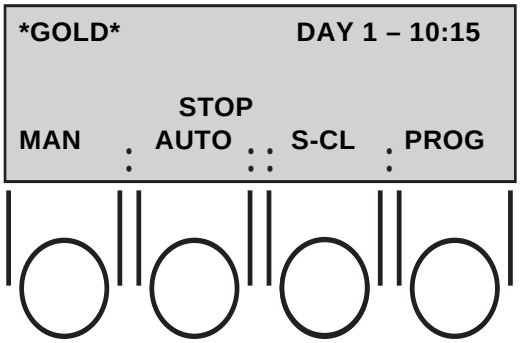
When the unit is connected and the main switch is connected for the first time, a language selection menu is shown on the display.



Choose desired language by pushing the button for respective number.

When desired language flashes push "OK".

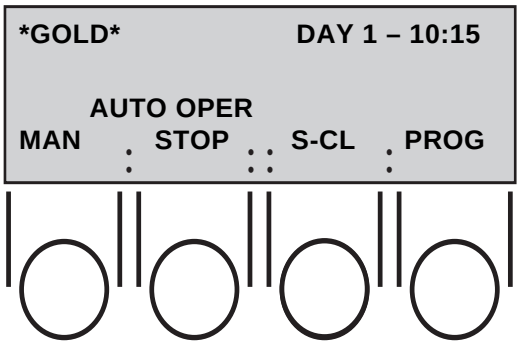
The picture in the display changes.



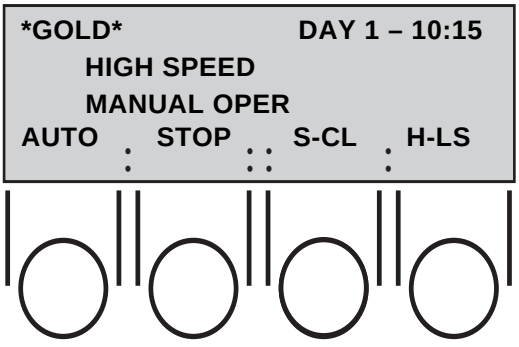
The third line gives operation type choosen, "STOP", "AUTO OPER", or "MANUAL OPER".

In this case STOP is shown.

Normally the unit shall operate in "AUTO OPER" (which is shown in the next sketch), since the switching clock handles alteration from High to Low speed.

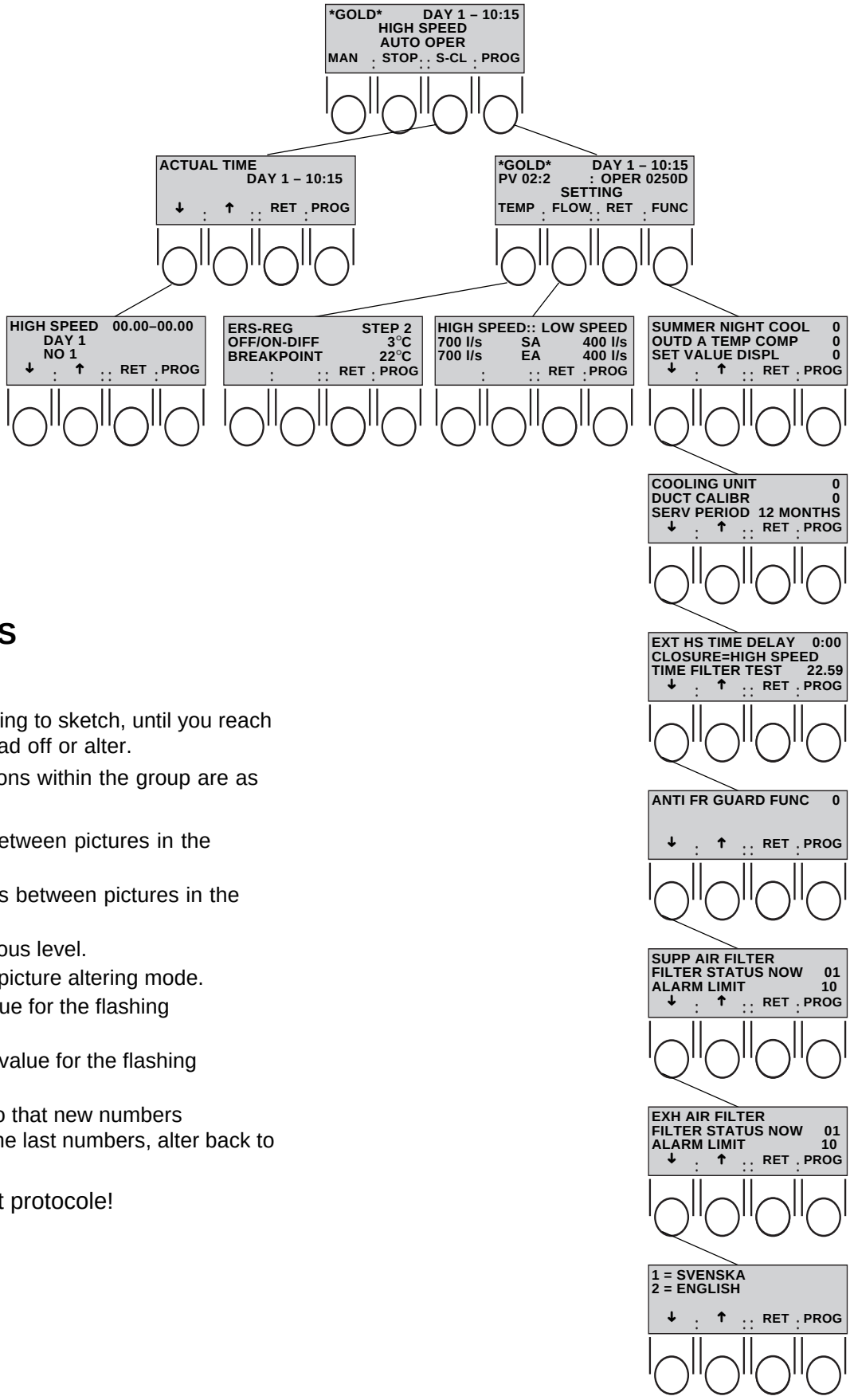


The second line shows which operating mode is current: HIGH SPEED, LOW SPEED, or STOP. If any other function is affecting the flow, it flashes on the second line alternately with current mode, e.g., FILTER TEST, SUMMER NIGHT COOL, ZERO SET CALIBR., ROTARY GUARD TEST, RECOOLING, or COOL RECOVERY.



At "MANUAL OPER" button "H–LS is used in order to alter between manual high speed or manual low speed.

In "MANUAL OPER" there is no automatic switch between high and low speed via switching clock. External high speed is superior to Manual low speed.



7. ADJUSTMENTS

7.1 General

Push the buttons, according to sketch, until you reach the group you want to read off or alter.

The functions of the buttons within the group are as follows:

↓	Turn forward between pictures in the group.
↑	Turn backwards between pictures in the group.
RET	Return to previous level.
PROG	Alter to shown picture altering mode.
+	Step up the value for the flashing numbers.
-	Step down the value for the flashing numbers.
SET	Step forward so that new numbers flashes. After the last numbers, alter back to read off mode.

See also 9. Adjustment protocole!

7.2 Switching clock

First programme the right day and time.

Then programme desired times for High speed operation.

Then program desired times for High speed operation. DAY on second line can be chosen 0, 1, 2, 3, 4 , 5, 6, 7, 1–5, 1–7.

Day 0 means that set times do not have any influence.

Day 1.....7 are days of week, where Day 1 = monday.

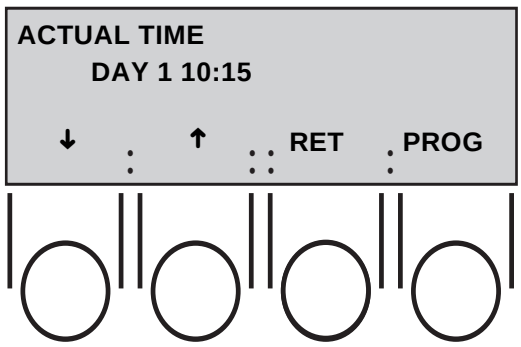
Day 1–5 means that set times applies for monday–friday.

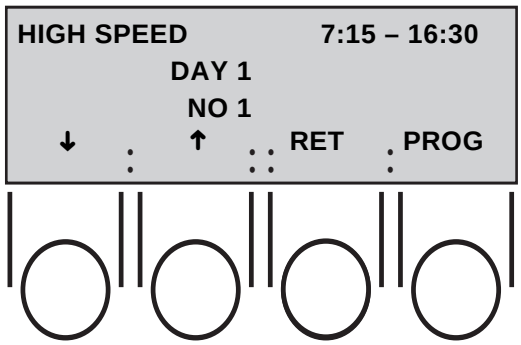
Day 1–7 means that set times applies for the whole week.

NO 1 shows which of the 12 programming pictures that is shown.

Totally 12 different variants are possible to program. No 1–12 on the third line gives which one of the 12 variants shown at the given time.

In certain cases two variants can be necessary, i e if high speed over a 24 hour joint is required. First from required time to 23.59, then new variant from 0.00 to required time. The unit will then operate at high speed during the programmed times.



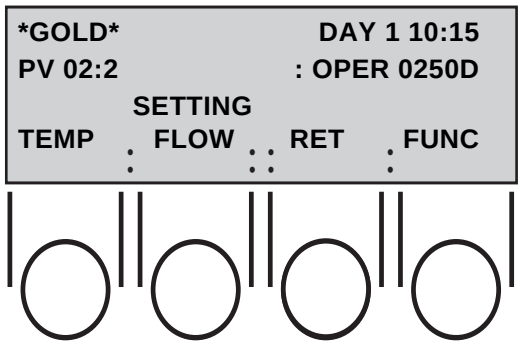


7.3 Programming menue

The upper line gives actual time,

"PV – xx" gives the version of the micro processor programme. Should always be given when contacting PM-LUFT about program.

"OPER" gives the the total operation time of the unit in days. Time for low speed and high speed are included.



7.4 Temperatures

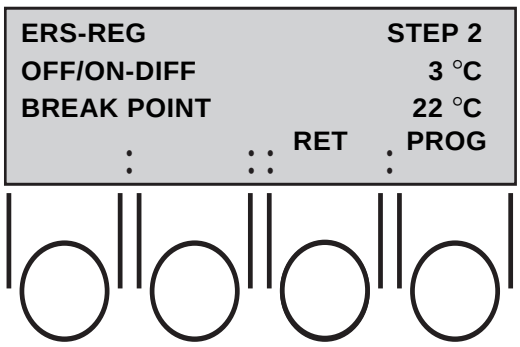
7.4.1 ERS regulation

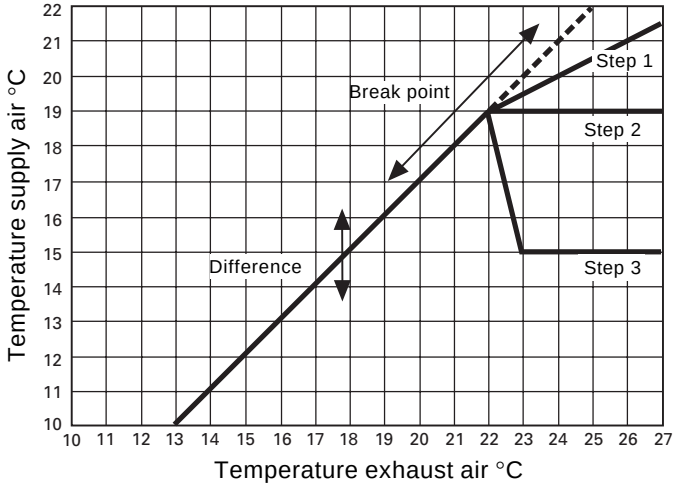
Exhaust air temperature Related Supply air regulation (ERS). This means that the supply air temperature is regulated in relation to the exhaust air temperature. GOLD is intended mainly for this type of regulation.

Choose step 1, 2 or 3 according to diagram to the right.

OFF/ON–DIFF is the difference which the supply air temperature shall be below the exhaust air temperature below the break point in the diagram to the right. The diagram is drawn for 3°C DIFF.

The BREAK POINT is the point in the diagram from where the steps starts. It is defined from the exhaust air temperature. In the diagram, the breakpoint is 22°C.





7.4.2 Other regulation types

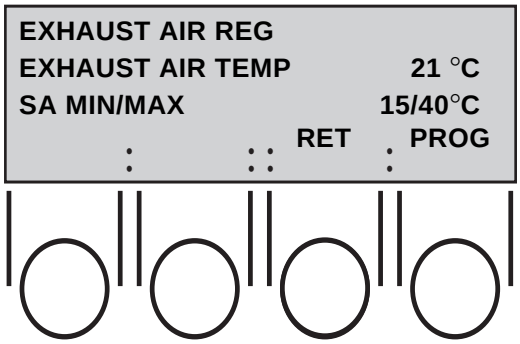
Change of regulation form to EXHAUST AIR REGULATION or SUPPLY AIR REGULATION is carried out in alteration mode where button three steps around between the regulation forms, "EA - R", "SA - R", and "ERS - R".

When PROG is pushed, the different values will flash. They are then possible to alter with button 1 and 2, which then shows + or - in the display.

7.4.2.1 Exhaust air regulation

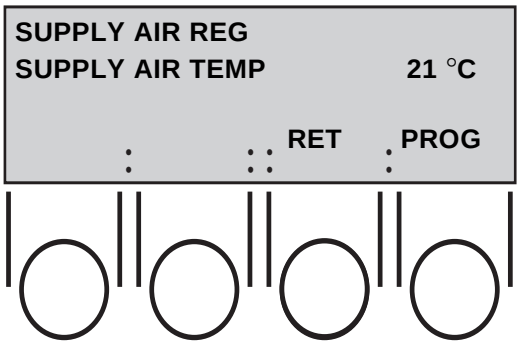
EXHAUST AIR TEMP is the desired temperature in the exhaust air duct.

SA – MIN is the lowest temperature and SA – MAX is the highest temperature allowed for supply air when the regulation tries to keep exhaust air constant.



7.4.2.2 Supply air regulation

SUPPLY AIR – TEMP is the desired temperature in the supply air duct.



7.5. Flows

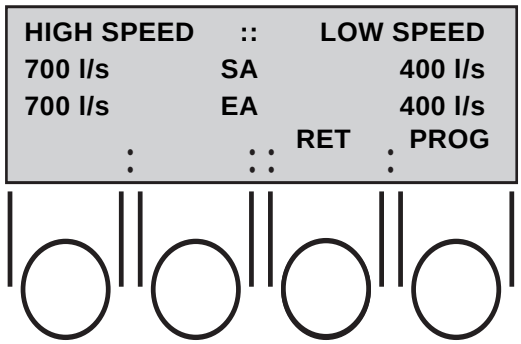
Where the flows are programmed in l/s and the smallest step is10 l/s.

Min and max flows:

Size	Min flow l/s	Max flow l/s
GOLD 1	70	320
2	110	500
3	230	900

Low speed flow can also be set to 0, which stops the unit at times for low speed on the switching clock.

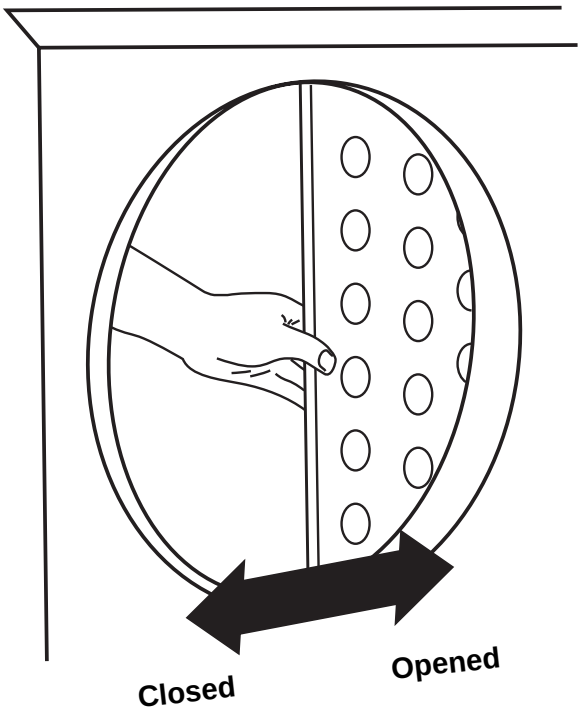
Programmed flows is automatically kept in GOLD.



7.6. Throttle damper

Before the throttle damper is adjusted, duct calibration shall be carried out, see 8.6.

The damper shall be fullyopened, pushed so that no part is in the the exhaust air inlet (see sketch).



Set the supply and exhaust air flows on the display (according to 7.5 above).

After that, make an adjustment which distributes the total supply and exhaust air flow so that each diffusor obtains the correct flow.

There after it is time to adjust the pressure balance in the unit with the help of the damper so that the purging flow goes to the exhaust air side.

On the external electrical enclosure there are two red pressure nipples for measuring the negative pressure on the supply and exhaust air side. At the nipples there are a **+** for the pressure on the supply air side and a **-** for the pressure on the exhaust air side.

Connect the manometer or other pressure meter to the connections for **+** and **-** and measure both pressures. NOTE! With both nipples negative pressures are measured.

If the negative pressure on the exhaust air side is at least as high as on supply air, the adjustment is ready.

If not, remove the inspection door, adjust the damper slightly, put back the inspection door and measure the pressures. Repeat until the negative pressure on the exhaust air side is at least as high as on supply air side (0–20 Pa).

New duct calibration should be done when the damper has been adjusted.

WARNING!
Inspection hatches located on the pressure side behind the fan must not be opened when the fan is operating. The hatch can open suddenly and cause personal injury.

8. FUNCTIONS

8.1 General

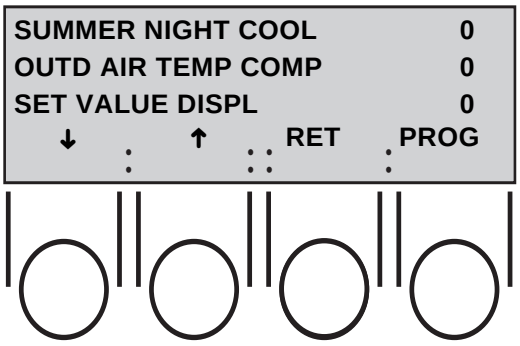
Following functions can be altered in the display.

Summer night cooling	(0/1)
Outdoor air temp compensation	(0/1)
Set value displacement	(0/1)
Cooling unit on/off	(0/1)
Cooling unit	0–10 VDC
Duct calibration	(0/1)
Service period	(0–9999 months)
Ext high speed time delay	(0–3.59 h)
External closure	(High speed/low speed
Time filter test	(00.00–22.59)
Anti-freeze guard	(0/1)
Supply air filter alarm limit	(0–100)
Exhaust air filter alarmlimit	(0–100)
Language selection	(SVENSKA, ENGLISH)

Other functions:

Cooling recovery function, Purging function, Recooling, Zero calibration

8.2 Summer night cooling



At summer night cooling = 1 (on) the unit is operating on high speed with a supply air of 10°C from 23.10 until the exhaust air temperature is lowered.

Conditions which must be satisfied before the summer night cooling function will start (at 23:10 hours):

– The exhaust air temperature should be above the preset value (+24°C).

– The outdoor air temperature must be above the preset value (+10 °C).

– The need for heating must have not existed between 12:00 and 23:00 hours.

– The unit must not run at high speed or be shut down by means of pressing the manual stop button on the control display or external stop.

Conditions which must be satisfied before the summer night cooling function will stop:

– The exhaust air temperature must fall below the preset value (+16 °C).

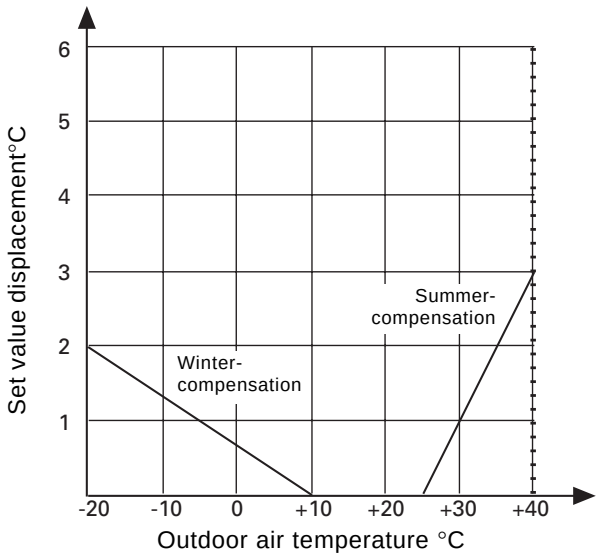
– The outdoor temperature must fall below the preset value (10 °C).

– The timer or external input must call for high-speed operation.

– The buttons on the control display will be influenced.

8.3 Outdoor air temperature compensation

If the function is = 1 (on), the temperature set value is displaced relative to the outdoor air temperature. The set value displaced is the supply air temperature at supply air regulation and exhaust air temperature at exhaust air regulation. The temperature set value is increased if the outdoor air temperature drops below +10°C according to winter compensation curve or raises above 25°C according to summer compensation curve. See diagram to the right.



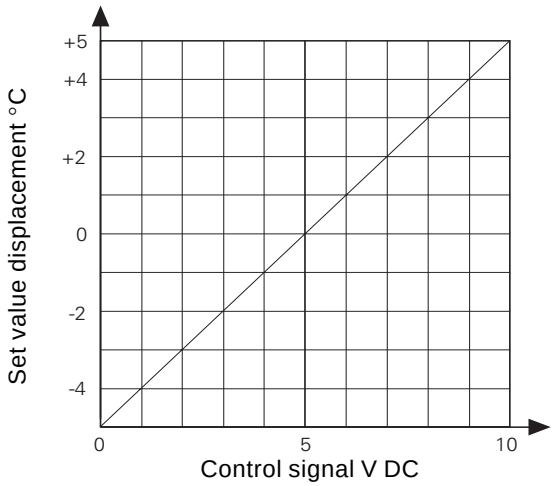
8.4 Set value displacement

At SET VALUE DISPL = 1 (on). The temperature set value can be displaced +/- 5°C with the help of 0–10 VDC external control.

The set value displaced is the EA/SA-differance at ERS-regulation, the supply air temperature at supply air regulation and the exhaust air temperature at exhaust air regulation.

When activating the function the set value is displaced according to diagram to the right. 0 VDC gives a decrease of the temperature set value of 5°C, 5VDC gives unchanged set value and 10 VDC gives an increase of 5°C. Upon ERS regulation, the EA/SA difference decreases when there is an increased control signal. EA/SA-DIFF cannot be less than 1° C.

The external control signal is connected on the connection box 7–8 (-)(+) of the control card.



8.5 Cooling unit

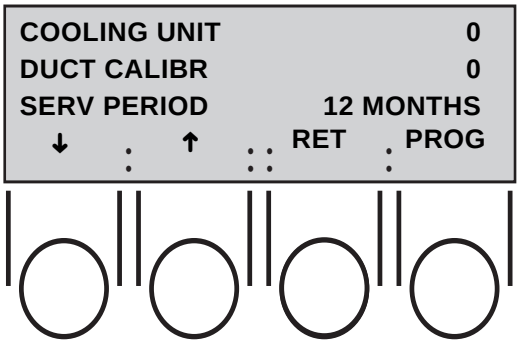
8.5.1 Cooling on/off

At COOLING UNIT = 1 (on).

When need of cooling occurs a closure of free making contact is obtained (connection box 17–18). This closure can be used to start an external cooling unit.

When the need of cooling stops the contact opens and a restart time of 10 minutes starts running. This is to prevent too many start/stops of the cooling unit

A neutral zone of 2°C is programmed so that set value at cooling is 2°C higher than set value.



Conditions for activation of cooling function.

Exhaust Air regulation:

- Exhaust air temperature rises above the set value including the neutral zone.
- Supply air temperature is above the set value on SA-MIN.

ERS Regulation, Step 3:

- Supply air temperature rises above the set value according to the set curve including the neutral zone.

Conditions for interrupting the cooling function:

Exhaust Air regulation:

- Exhaust air temperature has gone down to 0.5 degrees above the set value.
- Supply air temperature is below the set value on SA-MIN.

ERS Regulation, Step 3:

- Supply air temperature has gone done to 0.5 degrees above the set value according to the set curve.

The function is not applicable upon Supply Air regulation and ERS Regulation, Steps 1 and 2.

8.5.2 Stepless Regulation of Cooling

At COOL AGGREGATE = 2, a control signal of 0 - 10V DC is maintained on plinth 11 (+) and 12 (-) for regulation of stepless cooling. (See 3.8.2)

A neutral zone of 2° C. is allowed, as above.

When cooling is needed, the control signal is regulated steplessly so that the set value increases while the neutral zone is maintained.

SA-MIN maintains temperature limits for Supply Air upon Exhaust Air regulation.

A closed contact between plinths 17 and 18 is also maintained with this function when cooling is needed and the temperature rises above the set value including the neutral zone.

When the temperature has gone down to 0.5 degrees above the set value, the contact opens and a restart time of 10 minutes begins to run.

The contact also opens when SA-MIN goes below the set value upon Exhaust Air regulation.

8.6 Duct calibration

At DUCT CALIBR = 1 (on).

The unit is operating on a firm calibration flow and measures where in the flow diagram the unit is operating with care taken to connected duct system and with clean filters.

Duct calibration shall always be carried out when alterations in the duct system have been carried out.

Set the duct calibration to 1 and go to "main menu" Auto oper or Manual oper.

Duct calibration is carried out and 1 automatically changes to 0 when the unit has stored the calibration value and returned to normal operation (after appr. 5 min).

8.7 Service period

Shows how many months remaining until service period alarm is released. The programming is carried out in months.

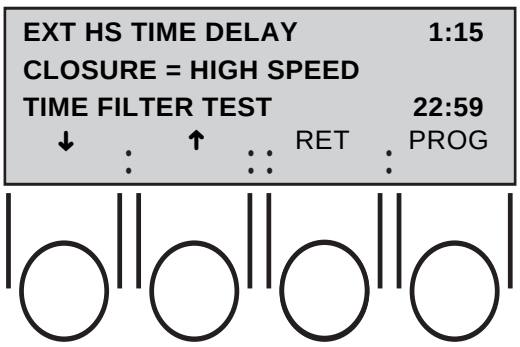
Resetting of alarm is carried out via programming SERV PERIOD to the next service interval.

8.8 External high speed (time delay)

The function gives time delayed reset to low speed when the input for external alteration between High speed and Low speed shifts.

The time can be set 0:00 – 3:59 which is the time in hours and minutes. 0:00 gives that the function is not activated.

Use: for instance prolonged operation with button or re-operation time together with presence sensor.



8.9 Closure = High speed or Low speed

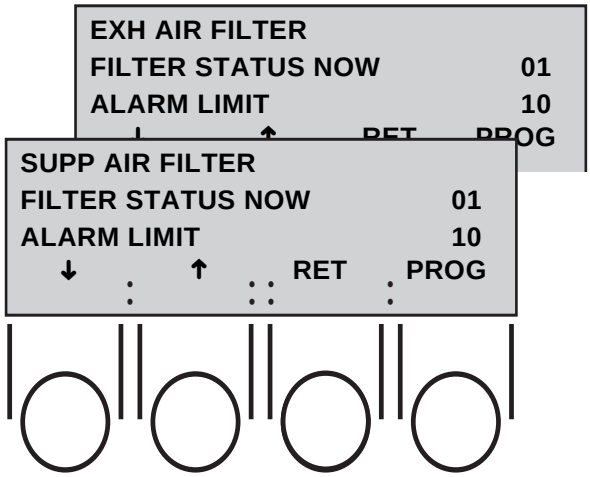
Here can be chosen if the external alteration HS/LS shall give High speed or Low speed at closed contact. Closure = Low speed shall be chosen at i e presence sensor. If the contact is not used "Closure = High speed" shall be chosen (factory set).

The external contact only influences when the internal switching clock calls for Low speed.

8.10 Time filter test

Set the start time for filter test (0.00–22.59). It shall be set on the time when the least inconvenience for the user is at hand, as the unit both is stopped and operates on filter test flow regardless to what flow is chosen. Factory set value is 22.59.

While External Stop is activated, no filter tests are done. The filter test can be done if the aggregate is running at low or high speed. Low speed can be set to 0 l/s, i.e. shut-off but still active. The filter test cannot be done on a manually stopped aggregate.



8.11 Filter test

At filter test, the unit is operated up to filter test flow and one of the pictures to the right is shown. The flow is stabilized after ca 1 minute.

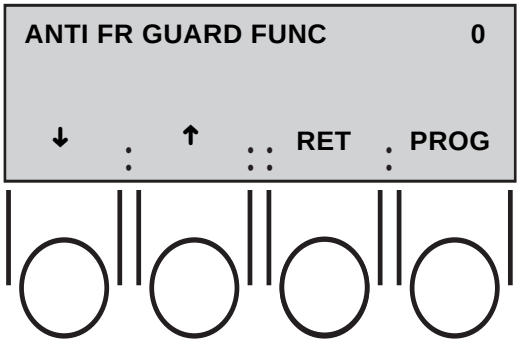
FILTER STATUS NOW shows the degree of pollutions for each filter and ALARM LIMIT shows what level of pollutions that provides a filter alarm. 10 units corresponds to recommended final pressure drop across the filter.

The limit can be set between 0 and 99. The factory set value is 10. This causes the rpm of the fan to increase approx. 5% from clean filter until alarm is shown.

8.12 Anti-freeze guard function

When water coil with anti freeze guard function is connected it is determined if the anti freeze guard function with heating of the water coil shall be activated or not (activated = 1). The function is keeping coil warm to 12°C at operation and to 25°C at stopped unit.

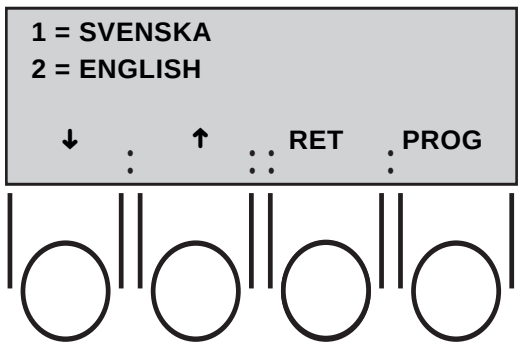
If the function is chosen and no sensor is connected, an alarm is obtained.



8.13 Language selection

The language can be altered between SVENSKA and ENGLISH at any time.

The alteration is carried out when return to "main menu" is done.



Cooling recovery function

The heat exchanger is driven on max speed to recover the relative cold in the room when the outdoor air temperature is higher than the exhaust air temperature.

Conditions for starting:

– No need of heating

– The outdoor air temperature is higher than the exhaust air temperature

Conditions for stopping:

– The unit calls for heating

–The outdoor air temperature drops below the exhaust air temperature

The text "COOL RECOVERY" flashes on the second line on the display.

Purging function

The unit is operating but there is no need of heating and the rotor does not operate.

After ca 3,5 hours the rotor is started during 1 minute on max for purging.

Recooling

If the reheater has been operating, the coil is cooled off on min. flow during 3 minutes, despite if Stop has been ordered.

The text "RECOOLING" flashes on the second line on the display.

Zero calibration

Every time the fans are stopped, the regulation controls that the zero values of the pressure sensors are correct. When the value is incorrect and the regulation carries out a new calibration, the text "ZERO CALIBRATION" flashes in the display. The fans are unable to start during this time.

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9. Adjustment protocole

Switching clock, actual time set ☐ Program version .....

Times for high speed

No 1 ..... – ..... DAY	No 5 ..... – ..... DAY	No 9 ..... – ..... DAY .....
No 2 ..... – ..... DAY	No 6 ..... – ..... DAY	No 10 ..... – ..... DAY .....
No 3 ..... – ..... DAY	No 7 ..... – ..... DAY	No 11 ..... – ..... DAY .....
No 4 ..... – ..... DAY	No 8 ..... – ..... DAY	No 12 ..... – ..... DAY .....

Function		Factory set value	Projected value	Adjusted value
Temperature	Regulation function	FRT	.....	.....
	Set value, °C	—	.....	.....
	Min temp, °C	—	.....	.....
	Diff temp, °C	3,0	.....	.....
	Step	2	.....	.....
	Break point, °C	22,0	.....	.....
Flow	High speed supply air, l/s	200, 400, 700 *	.....	.....
	Low speed supply air, l/s	100, 200, 400 *	.....	.....
	High speed exhaust air, l/s	200, 400, 700 *	.....	.....
	Low speed exhaust air, l/s	100, 200, 400 *	.....	.....
		**) The three values is for size 1, 2 respective 3.*	.....	.....
Functions	Summer night cooling	0	.....	.....
	Outdoor air temp. compensation	0	.....	.....
	Set value displcement	0	.....	.....
	Cooling unit on/off, Stepless 0-10V	0	.....	.....
			.....	.....
	Duct calibration carried out	—	.....	.....
	Service period, months	12	.....	.....
	Ext high speed/low speed input			
	switch off delay, hours:min	0:00	.....	.....
	closure = high speed/low speed	high speed	.....	.....
	Time for filter test	22:59	.....	.....
	Anti freeze guard function *(When having water coil. Demands anti freeze guard sensor.)*	0	.....	.....
	Alarm limit filter guard			
	Supply air filter, units	10 **	.....	.....
	Exhaust air filter, units	10 **	.....	.....
		***) Corr. to rec. final pressure*		

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10. ALARM

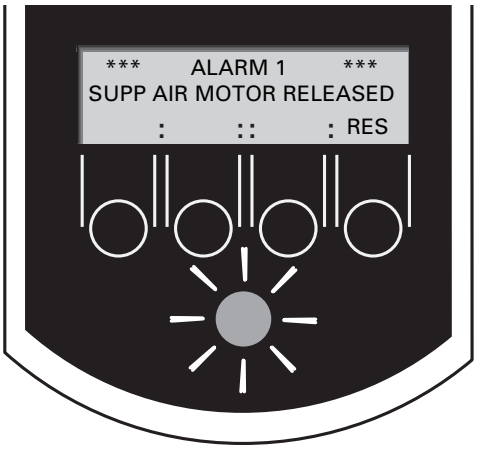
Alarm is given in plain text in the display and a red zone below the buttons on the display.

All alarm texts are described below. Cause and some check points are given. If the error still remains, contact PM-LUFT . The alarms are not activated in programming menues.

Resetting of alarm:

– Manual reset means, if not anything else is said, that the button RES on the display is pushed.

– Automatical reset means that the alarm is reset when the error is repaired.



*** ALARM 1 ***

"SUPP AIR MOTOR RELEASED"

*** ALARM 2 ***

"EXH AIR MOTOR RELEASED"

A-alarm, the unit has stopped.

The summary alarm from the supply air motor has released.

– Check that the fans do not operate outside the operating range of the unit.

– Check that the motor cables are correctly connected.

– Measure in the connection box for 230 VAC between connection L and N.

Manual reset on display.

*** ALARM 3 ***

"INTERNAL FIRE ALARM RELEASED"

A-alarm, the unit has stopped.

The supply air sensor has measured a temperature above 70°C or exhaust air sensor has measured a temperature above 50°C. The alarm is activated in the Service menue.

Manual reset on display.

*** ALARM 4 ***

"EXTERNAL FIRE ALARM RELEASED"

A-alarm, the unit has stopped.

The input External fire alarm between connection 3 and 4 broken.

– Check possible fire and smoke unit.

Manual reset on display.

*** ALARM 6 ***

"SUPP AIR TEMP SENSOR BROKEN"

*** ALARM 7 ***

"EXH AIR TEMP SENSOR BROKEN"

A-Alarm, the unit has stopped.

The temperature sensor broken or has measured a temperature below –20°C or above +70°C.

The alarm has a delay period of 5 minutes.

Automatical reset when the fault is repaired.

*** ALARM 8 ***

"TEMPERATURE BELOW ALARM LIMIT"

A-alarm, the unit stopped.

The exhaust air temperature has been below the alarm limit (factory set 15°C).

The alarm has a delay period of 20 minutes.

Manual reset on display.

*** ALARM 9 ***

"TEMPERATURE BELOW SET VALUE"

A-alarm, the unit has stopped.

The supply air temperature has diverged (factory set 5°C) too much from the set value.

The alarm has a delay period of 20 minutes.

Manual reset on display.

*** ALARM 10 ***

"COMMUNICATION TO POWER CARD BROKEN"

A-alarm, the unit has stopped.

The head processor can not communicate with the processor on the power card.

– Check that the processors are placed correctly in the sockets.

– Check that the cable between the cards is correctly connected.

Manual reset on display.

*** ALARM 11 ***

"CONTROL CARD BROKEN"

A-alarm, the unit has stopped.

The head processor can not communicate with the I/O processor on the control card.

–Check that the processors are placed correctly in the sockets.

Automatic reset when the error is repaired.

*** ALARM 12 ***
"ANTI FREEZE GUARD WATER COIL RELEASED"

A-alarm, the unit has stopped.

Anti freeze guard function is chosen. The temperature at the anti freeze guard sensor has been below + 7°C.

– Check the water temperature and the flow.

Manual reset on display.

*** ALARM 13 ***
"ROTARY GUARD RELEASED"

B-alarm, operation continue.

The rotary guard test is done in conjunction with the filter test. The test is activated if the difference between supply air temperature and outdoor temperature is more than 10° C. The exchanger runs at 100% for four minutes. If the difference between Exhaust Air and Supply Air is greater than 8° C, the alarm is activated.

– Check the drive belt and the drive motor.

Manual reset on display.

*** ALARM 14 ***
"OVER TEMP EL HEATER RELEASED"

B-alarm, operation continue.

The overheating protection in the electrical heater has released.

Manual reset on the coil and display.

*** ALARM 15 ***
"SUPP AIR FILTER DIRTY"
*** ALARM 16 ***
"EXH AIR FILTER DIRTY"

B-alarm, operation continue.

The degree of soiling has overstepped the alarm limit four tests in a row. The alarm can also release if the unit is new and duct calibration has not been carried out.

– Check and replace filter. If filter recently been replaced, check also if the duct system is dirty.

– If duct calibration was not carried out when the unit was new, carry out duct calibration.

Manual reset on display.

*** ALARM 17 ***
"SA-FLOW BELOW SET VALUE"
*** ALARM 18 ***
"EA-FLOW BELOW SET VALUE"

B-alarm, operation continue.

The flow is 10 % below the set value.

– Check that not too high flow has been chosen regarding the duct pressure drop.

– Check hoses to the pressure meters.

– Check that the motors operate correctly.

–Measure the control voltage to the motors.

The alarm has a delay period of 5 minutes and can be activated under the service menu.

Manual reset on display.

*** ALARM 19 ***
"SA FLOW ABOVE SET VALUE"
*** ALARM 20 ***
"EA FLOW ABOVE SET VALUE"

B-alarm, operation continue.

The flow is 10% above set value.

– Check the hoses to the pressure meters.

– Check that the motors operate correctly.

– Check the control voltage to the motors.

The alarm has a delay period of 5 minutes and can be activated under the service menu.

Manual reset on display.

*** ALARM 21 ***
"SERVICE PERIOD ABOVE ALARM LIMIT"

B-alarm, operation continue.

The alarm is obtained when the service period is counted down to zero.

The alarm has a delay period of 5 minutes.

Resetted by programming SERV-PERIOD to the next service.

*** ALARM 22 ***
"OUTD AIR TEMP SENSOR BROKEN"

B-alarm, operation continue.

The temperature sensor has reached a temperature above +70°C or been damaged.

The alarm has a delay period of 5 minutes.

Automatic reset occurs when the fault is corrected.

***** ALARM 30 *****

"COMMUNICATIONEN TO CONTROL CARD BROKEN"

The unit has stopped.

The communication ¨between head processor and the display is broken.

– Check cable and contact.

11. MAINTENANCE

11.1 Filter replacement

When filter alarm has activated, filter shall be replaced.

Release the expander locking and withdraw the filters straight from the unit. The filters are of disposable type and shall be replaced with new filters.

Lock the new filter on its' place with the expander handle. This is important in order to achieve complete sealing.

Duct calibration shall always be carried out when replacing filter.

11.2 CLEANING

11.2.1 General

Internal cleaning of the unit is carried out when necessary. Checks should be carried out in connection to filter replacement or at least twice/year.

WARNING!

Inspection hatches located on the pressure side behind the fan must not be opened while the fan is operating. The hatch can open suddenly and cause personal injury.

11.2.2 Heat exchanger

The rotor is easily accessible from all sides which makes inspection and cleaning easy.

The rotor is mainly cleaned with vacuum cleaner with a soft nozzle so that the air ducts of the rotor are not damaged.

When taking out rotor.

Mechanically:
The suspension consists of screw–distance–shaft–distance–screw. One of the distances is tooled in a way that enables a grip around the shaft if the screw jams. The rotor is withdrawn with the shaft in position.

Electrically:
The contact of the heat exchanger motor is disconnected. The screws in the rubber A/V:s are loosened and then the motor is removed.

The electric box is loosened with four screws on the outside of the exchanger, then it is pushed sideways. The electric box is not withdrawn from the unit but folded out from the unit and cables are placed in the socket on the heat exchanger gable.

When heavily dirtied cleaning with pressured air can be carried out. It is also possible to use detergent, if the rotor is withdrawn from unit.

After cleaning the rotor is dried off with pressured air.

Detergent must not be corrosive to aluminium!

After cleaning check that the drive belt runs correctly around the motor pulley and heat exchanger.

11.2.3 Fans

On Size 1, the fan brackets are attached with 2 locking knobs and the flexible web hose with 1 locking knob.

On Sizes 2 and 3, the fan assembly is attached with 2 locking knobs. The flexible web hose is attached over the collar, using a clamp belt with off-centre lock.

All locking wheels must be loosened before disassembly.

Also the contacts the cables are loosenened before the fans are withdrawn.

The fans are vacuum cleaned. Remove possible dirt on the fan blades. Check that the impellers are balanced.

The fan motor is vacuum cleaned or brushed. It can also be gently cleaned with a wet rag and detergent.

When mounting the fans for Sizes 1 and 2, make sure that the flexible web hose has a good seal against the aggregate side.

When mounting the fans for Sizes 2 and 3, make sure that the flexible web hose and the clamp band are securely clamped over the collar so that the connection is tight.

11.2.4 Coils (accessory)

Installation of coils shall be carried out in a way that enables inspection and cleaning.

Check necessity of cleaning at least twice per year.

Cleaning is only allowed by pressured air towards ordinary air direction, vacuum cleaning with a soft nozzle or wet cleaning with water and/or detergent.

If detergent is used it must not be corrosive to aluminium or copper.

Before cleaning starts nearby duct shall be protected.

In connection to cleaning check in applicable cases venting.

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