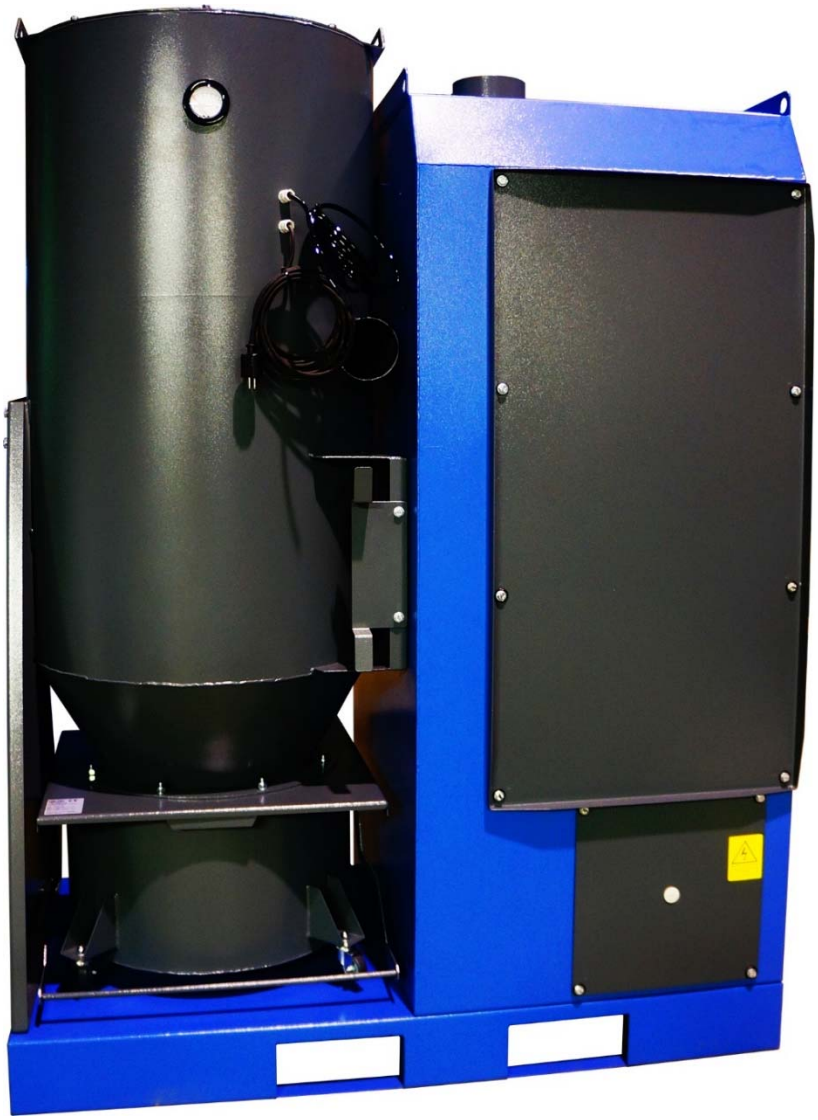
Formula Air
Supporting your performance



- ☐ HFU 5500 / CJF 13
- ☐ HFU 7500 / CJF 13
- ☐ HFU 9000 / CJF 13
- ☐ HFU 13000 / CJF 13
- ☐ HFU 20000 / CJF 13

- ☐ HFU-F 5500 / CJF 13
- ☐ HFU-F 7500 / CJF 13
- ☐ HFU-F 9000 / CJF 13
- ☐ HFU-F 13000 / CJF 13
- ☐ HFU-F 20000 / CJF 13

HFU & HFU-F – Cartridge filter

Maintenance manual

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1. EC- declaration of incorporation

EC-Declaration of Conformity

Manufacturer:

V. Aa. Gram A/S
Klintevej 4, 6100 Haderslev, Denmark
Tel.: +45 74 52 30 75, Fax: +45 74 53 01 64

hereby declare that:

Machine: High vacuum unit

Name: Gram

Type: HFU 5500 / CJF 13 (04 510 000)
HFU 7500 / CJF 13 (04 511 000)
HFU 9000 / CJF 13 (04 512 000)
HFU 13000 / CJF 13 (04 513 000)
HFU 20000 / CJF 13 (04 514 000)
HFU-F 5500 / CJF 13 (04 510 300)
HFU-F 7500 / CJF 13 (04 511 300)
HFU-F 9000 / CJF 13 (04 512 300)
HFU-F 13000 / CJF 13 (04 513 300)

HFU-F 20000 / CJF 13 (04 514 300)

Year: 20XX

Machine no.: XXXXXX-XXXXX

was manufactured in conformity with the provisions of the Machinery Directive (Directive 2006/42/EC) and with national implementing legislation under special reference to Annex I of the Directive on essential safety and health requirements relating to the design and construction of machinery and safety components.

ISO 12499
ISO 14694
ISO 13857
EN 1127-1
IEC standards
Directive 2006/95/EU

Position : XX
Name : XX

Company : V.Aa.Gram A/S

Date : XX.XX.XXXX

(Signature)

2. General description

The High vacuum unit type HFU and HFU-F are units used for the separation of dust from processed air.
Standard surface treatment in enameling and powder enameling for indoor execution.
Only ATEX-Zone XX-marked unit may be used in explosion dangerous environments.

3. Functioning

Processed air is led in through the side, where after the air passes in the pre-separator and filter elements and side channel blower. Air leaves unit through the top of the unit.

Filtered material is collected in an emptyable dust container.

3.1 Daily maintenance

Differential pressure (display) or watch is monitored daily. The pressure may not exceed 2,300 Pa. However, with filter elements G115A and G116A, this may be increased up to 3,000Pa.

Dust container is emptied according to need, but may never be filled more that max. 75% of its volume.

At work with dangerous dust a plastic bag is placed in the dust container. The surplus plastic bag is turned over the dust container. When the bag must be removed, it is straightened out in its full length and is closed with 1 pcs. Plastic strips, before it is taken out of the dust container to be destroyed according to governmental demands.

Sack must always be mounted, when a relief hose is mounted.

Repairs may only be carried out by professional trained personnel. For ATEX units, the jet valves must be kept clean of dust.

4. Unit condition during operation

All filter doors must be closed and secured.

The dust container must be mounted and locked correctly during all steps of filter operation.

5. Intentional / unintentional application

High vacuum unit type HFU and HFU-F may not be used for the extraction of burning or incandescent substances, such as cigarettes, matches, metallic dust chips, paper, cleaning wipes, etc..
The filter unit may not be used for larger chips and the like. For this Gram cyclone type CY is used as a coarse separator.

In ATEX-zones only units may be used that are marked for the same zone. Filter units can- not be converted to another zone.

Repairs may only be performed with original spare parts.

6. Mounting

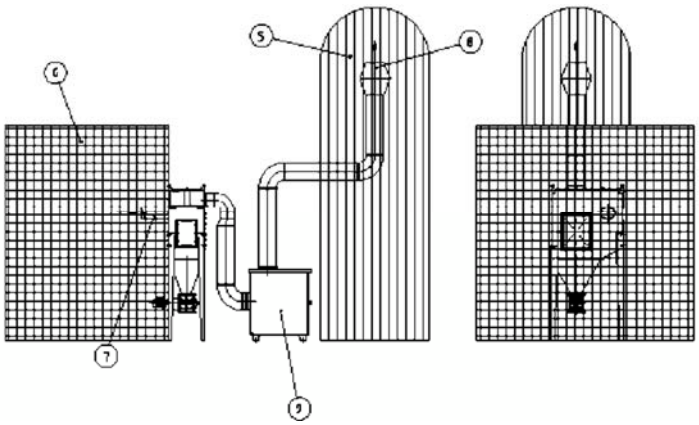
The high vacuum units HFU and HFU-F are delivered standing on an integrated pallet.

The shipment consists of the following parts : Unit and possible pressure reducing valve

Please note that these filters have to be bolted to the ground on an even surface before operation.

6.1 High vacuum unit placement

When placing a high vacuum unit, the environment and fire demands must be considered. At EX- unit mounting the danger zones must be taken into consideration :



Note : Zone range 5 is intended as a guide, normal radius of 1000mm around the outlet.

Zone range 6 depends on the dust type and the concentration of it.

6.2 Electrical connections

Electrical connection for TEC-33-N or differential pressure control type BA are made separately in the control box, which is connected to 230V, 50Hz and earth.

DO NOT FORGET to close the control box firmly after mounting. Humidity can destroy the print.

The side channel blower type VHB in the high vacuum unit type HFU is connected to 3x400V, 50Hz and earth.

Alternative voltage can be implemented, e.g. 3 x 220V so please control the markings on the motor tag.

The side channel blower type VHB in the high vacuum unit type HFU-F is connected to a frequency inverter for constant speed. The installation is finished with a CE plug with 3 x 400V, 50Hz, 0 and earth.

Type	Order #	50Hz Effect (kW)	60Hz Effect (kW)	Voltage (V AC)	Current (Amp)	Noise level (dB)
VHB 55	08 069 000	5,5	6,3	3 x 400	12,0	74
VHB 75	08 071 000	7,5	8,6	3 x 400	15,6	76
VHB 110	08 072 000	9,0	11,0	3 x 400	20,8	76
VHB 150	08 073 000	13,0	15,0	3 x 400	27,0	76
VHB 220	08 074 000	20,0	23,0	3 x 400	38,6	76

The sense of rotation is according to the arrow indication on the side channel blower.

Connection must be in accordance with the Power Code and must be breakable from supply.

Electrical connection must be active for so long after operation with BA-control as the after- cleaning takes. The control box diagram is enclosed.

High vacuum unit type HFU and HFU-F may not be used without this connection. Frequency converter connection diagram in high vacuum unit type HFU-F is enclosed.

For ATEX-units the special rules in the Power Code must be followed. And for ATEX-units all parts must be securely earthed. Where there is a dust container, this must also be earthed.

6.3 Compressed air connection

The compressed air connection must give min. 5.5 - max. 6.0 bar dry compressed air. The connection is made at the end of the header tank. A reduction valve and water separator from Gram order no. 04 493 500 (½") can be advantageous.
DO NOT FORGET the possible compressed air after-cleaning.

6.4 Ducting connection

The ducting connection must be made with approved ventilation pipes.

For ATEX-units, it must be ensured that the ducting cannot be blown away at a possible explosion.

6.5 Adjustments

Every filter unit is dimensioned for a certain workload which may not be exceeded as it would result in an improper function of the unit or a premature lifespan.

The unit is dimensioned following the following criteria's :

_____ Maximum air volume in m³/h

_____ Type of dusts (welding smoke, grinding dust, etc..)

Fan contractor name :

_____

_____ (must be filled in by fan contractor)

6.6 TEC-33N control

There is no after-cleaning cycles on the TEC-33N control.

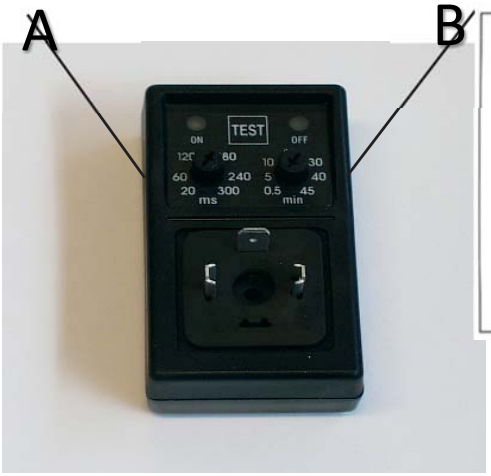
Cleaning cycles are done with the controller typeTEC33-N, preprogrammed at production. The parameters of opening time of the valve and the time between two cleaning cycles can be adapted according to the needs of the unit, de type of dust and the frequency of use.

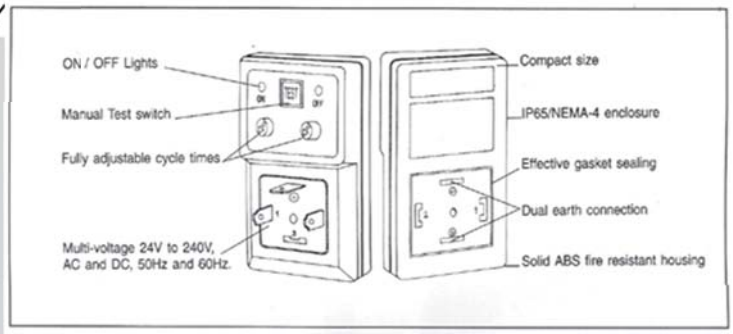
1. Connection:

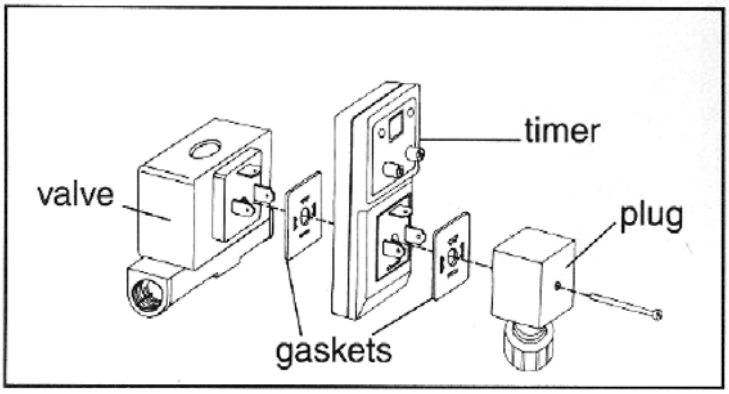
- The controller TEC33–N is directly mounted on the electro-valve.
- The electrical tension is 24 - 240VAC/DC.

2. Regulating : (see picture)

- Control « A » changes the signal length on the output. Possible from 20 and 300 m/s. The basic set value is 170 m/s.
- Control « B » controls the time interval between the cleaning (0.5-45min.)







TEC33-N can advantageously be mounted with after-running so control can break later than fan to ensure a better filter after-cleaning.

TEC33-N can advantageously be replaced with BA4 (09 550 000) that with constantly supplied current ensures correct after-cleaning and at the same time monitors the differential pressure above filter.

6.7 Differential pressure control

The cleaning of the cartridges can be done with a differential pressure control type BA programmed by V.Aa.gram A/S.

The unit is operational on delivery of the filter. The unit will indicate the first differential pressure control when it is at minimum 200 Pa.

See point 10 of this manual for the modifications to the basic settings.

7. Noise damping

The side channel blower is placed in a sound enclosure on the high vacuum unit HFU and HUF-F. A channel silencer is mounted on the outlet of the channel blower.

7.1 Noise data

Noise level ecxl. Shot level is approximately 75 dB(A)

Noise level during the cleaning shots is approximately 85 dB(A)

8. Maintenance

Filter unit must be maintained 1 to 2 times a year to work optimally.

WARNING, the side channel blower can be very hot.

Differential pressure settings are checked (see instructions for differential pressure control type BA/filter control type TEC33-N). Differential pressure may not exceed 2,300Pa (3,000Pa with filter material G115A and G116A) at max. set operation point for air volume.

At filter control type TEC33-N it is read on differential pressure manometer.

Check that all valves shoot correctly. If the valves are checked with open clean air chamber, you must use ear defenders for 95-110 dB(A) (SNR=35).

With electrical supply removed check the tightness of pipe connections, tank and valves. Tank is emptied for water through connection.

When compressed air is disconnected, check clean air chamber for possible dust.

If dust occurs, check filter sealing and filter elements for tightness between elements. Sealing at doors and dust container are checked for damages - possible defects are corrected, of if necessary seals are replaced.

At filter defects, tight filters that cannot be washed (G105 and G104A), or worn-out filters must be replaced. Use protective clothing, gloves, and respirator with filter adjusted according to work place dust type.

Filter cartridge durability is variable, depending on circumstances like filter stress, dust type and volume. Filter cartridges get blocked with time due to very fine particles that attach themselves to the fibers.

Also be aware whether compressed air operates with defect pressure reducing valve. Under normal circumstances there will be a certain dust layer on the outside of cartridge, even after compressed air cleaning. This layer increases the filtration capacity and the differential pressure.

If noticeable capacity reduction occurs, we recommend cartridge cleaning with high pressure cleaner (see point 8.2).

Every filter cartridge is mounted with bayonet grip attached with 3 bolts in filter mounting plate.

8.1. Filter element replacement from clean air side

Every electric supply must be disconnected as well as pressure tank emptied for air before filter replacement from clean air side. Top lid of filter units is dismounted.

Pressure tank is dismounted. The 3 bolts in bayonet grip on filter cartridge is loosened and filter cartridge can carefully be pulled up.

At filter cartridge handling containing dangerous/health-hazardous dust you must be aware of personal precautions that protect the operator in the time of dismounting. The used filter cartridges must be securely packed and disposed of according to governmental demands.

When mounting new filter cartridges, ensure that the included rubber seal is correctly placed in the therefore designed groove on filter cartridge flange so that seal is between filter cartridge flange and filter mounting plate as well as mounting the cone from the old filter cartridge.

Once the filter element bolted, and the pressure tank is mounted by three bolts through the legs. The top lid of the filter unit may be remounted.

8.2 Filter element replacement from loaded air side.

Every electrical and compressed air connections must be disconnected before replacing the filter element replacement from loaded air side.

Doors in clean air and loaded air chamber are dismounted. Filter bolts in clean air chamber are loosened, and filter in loaded air chamber is dismounted.

At filter cartridge handling containing dangerous/health-hazardous dust you must be aware of personal precautions that protect the operator in the time of dismounting. The used filter cartridges must be securely packed and disposed of according to governmental demands.

When mounting new filter cartridges, ensure that the included rubber seal is correctly placed in the therefore designed groove on filter cartridge flange so that seal is between filter cartridge flange and filter mounting plate as well as mounting the cone from the old filter cartridge.

New filter is fastened, and both doors are mounted again.
Please, note: The cartridge seal must be undamaged.

8.3 Safety valve

Check that the safety valve(s) operate(s) at correct vacuum at max. power consumption.

Type	Hz	Max. vacuum	Max amp.	Type	Hz	Max. vacuum	Max. amp.
HFU 5500	50	27000 Pa	12,0	HFU-F 5500	60	28000 Pa	15,3
HFU 7500	50	32000 Pa	15,6	HFU-F 7500	60	32000 Pa	19,6
HFU 9000	50	20000 Pa	20,8	HFU-F 9000	60	20000 Pa	21,4
HFU13000	50	30000 Pa	27,0	HFU-F 13000	60	28000 Pa	30,0
HFU 20000	50	35000 Pa	38,6	HFU-F 20000	60	36500 Pa	44,0

8.4 Filter element cleaning

The filter elements that need cleaning can be dismounted as described in the procedure point 8.1. These can be cleaned with a high pressure cleaner with a maximum temperature of 50°C. Soap without detergent can be used if needed.

The fitter cartridges G104 and G105 cannot be cleaned.

Place the cleaner nozzle at a distance of 30 to 50 cm from the cartridge (on WIDE spread). Only clean the outside of the cartridge.

The cartridges must be completely dry before reinserting them in the filter unit.

New filter elements must be equal in dimension to the original filter element. Filtering media quality must be according to the filtering job. The original filtering element references can be seen on the machine marking.

8.5 Jet valve exchange / repair

Exchange may only take place, when supply and compressed air are not connected to unit, and compressed air tank is emptied by compressed air connection.

Coil, membrane and valve top are exchangeable by disconnecting electric plug, where after 4 pcs. M6-bolts are loosened and new coil and membrane are mounted.

8.6 Side channel blower

The side channel blower must be kept clean on the outside. Vibration dampers are checked and replaced if necessary.

Side channel blower repairs may only be carried out by professional trained personnel or by a certified repair shop.

Temperature will increase strongly when air flow is close to being blocked.

9. After maintenance

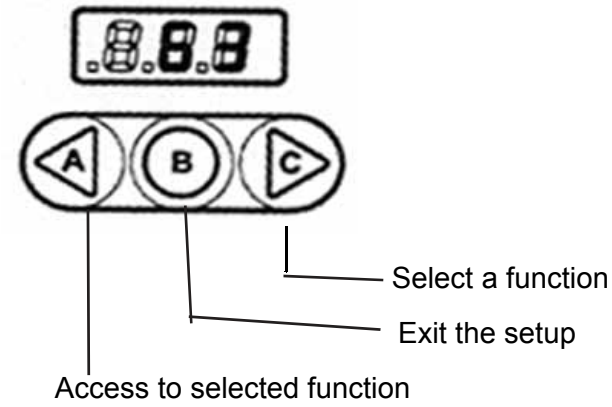
After the maintenance operations are completed, make sure that all electrical and pneumatic connections are established.

Test and control the filter unit before operation.

10. Differential pressure control - type BA

In operation mode :

Press «C » to Scroll through the functions.



Mount the differential pressure control in a suitable location.

Electrical connections :

See diagram furnished with the controller. Display will light up once connected.

DO NOT FORGET : clamp 14 & 15 must be short-circuited (jumper) for the activation of the dP program.

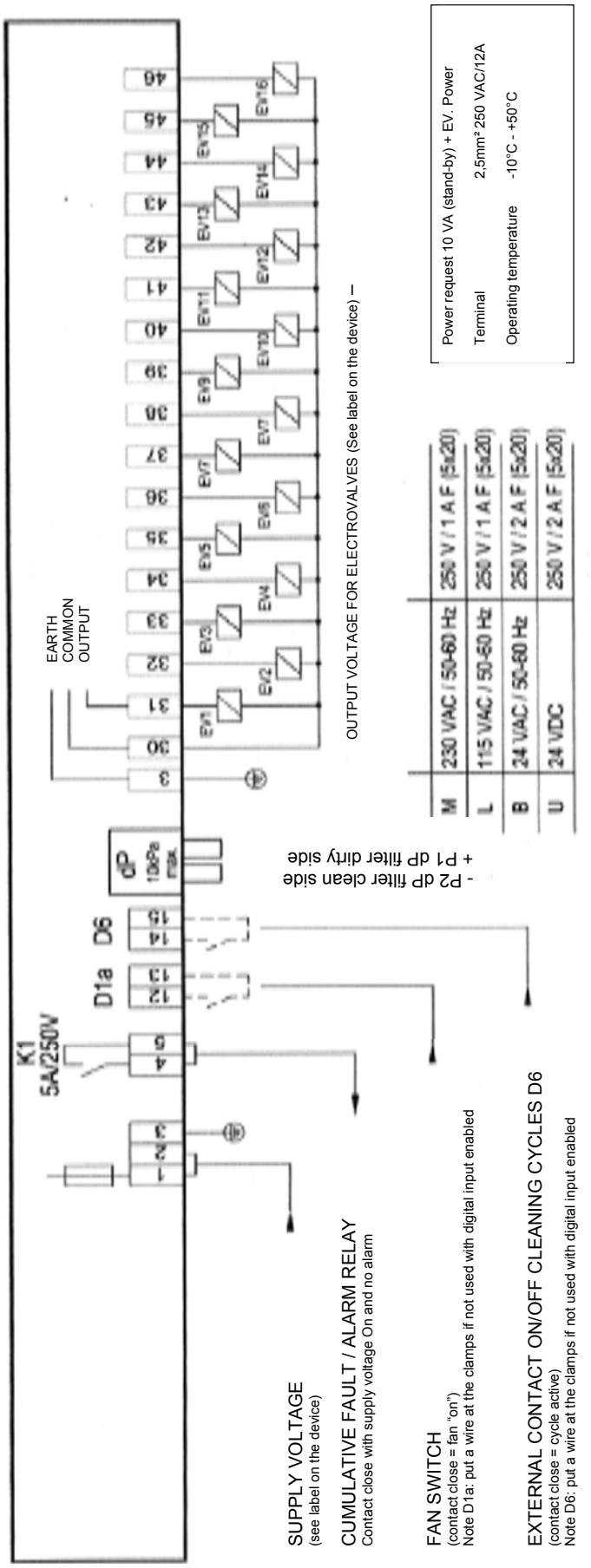
Setting operation data :

1. Press C to enter the menu. Function « F01 » is displayed on the screen.
2. Press A to enter in the function.
3. Press A or C to increase or decrease the value of the function.
4. Press B to go back to the functions menu.
5. Press C to move forward in the functions menu.
6. Repeat points 2 to 5 until function 13 is established.
7. Press B to leave the set-up menu.

Function	Description	Recommended value
F01	External start/stop - signal “0” / differential pressure control “1”	1
F02	Pulse time 0.05 - 5.00 seconds	0.24
F03	Pulse time 1 - 999 seconds	20 - 40
F04	Define number of valves (0 - 16)	See model
F05	Other cycles after fan stops (0 - 99)	15
F06	Manual activation of each valve. Press C selection; press A to activate	-
F07	Activation of dP program	1
F08	Output voltage	24V
F09	Zero adjustment“0.00”of the dP value at first unit start	0
F10	Set stop cycle cleaning in min. dP	0.60
F11	Set start cycle cleaning in max. dP	0.90
F12	3rd threshold – alarm max. dP used with relay K1	2.3
F13	Fan control - “0” by switch / “1” by pD reading	1

Standard description

Code	Description
B1a	**MANUAL SELECTION OF NUMBER OF OUTPUTS / ELECTRO-VALVES BY KEYBOARD** Every EDABUS line can drive up to 32 RED modules. If over 32, the activation of the RED modules will automatically switch from one line to the next one.
B2x	**SET ACTIVATION TIME FOR EACH OUTPUT FROM 0.05 TO 5.00 SEC.**
B3x	**SET INTERVAL TIME BETWEEN TWO ACTIVATIONS FROM 1 TO 999 SEC.** If the pulse time is lower than 1 sec. it is possible to set any interval time value in the range indicated. If the activation time is higher than 1 sec. the minimum settable interval time is: Minimum interval time = 5 times pulse time (B2x)
B8a	**SHORT CIRCUIT OUTPUT PROTECTION** In case of short circuit, the output is automatically shipped, relay K1 - normally active - is deactivated and the terminal board contact opens. The display alternatively shows code E1 and the number of the faulty output. Press key B to reset the alarm.
B10	**MANUAL ACTIVATION OF EVERY SINGLE OUTPUT** From the keyboard you can manually and individually activate every single output for a operation test. Press key A to select the output you wish to activate. Press key C to activate the output.
C0	**INPUTS ACTIVATION FROM KEYBOARD** In Set up you can activate or deactivated the control of all the inputs of the device. If inputs are deactivated, they are considered as always closed and no jumper is required on the terminal board. Use a jumper for unused
C1d	**DIFFERENTIAL PRESSURE DIGITAL CONTROL** With dP control active (set F07), the cleaning cycle starts and stops according to the dP reading. With dP reading under the STOP threshold the cleaning cycle stops and the display shows dP reading and letter P alternatively. The cleaning cycle stop is at the end of the cycle. With dP reading over the START threshold the cleaning cycle is able to start.
C3	**DIFFERENTIAL PRESSURE READING BY INTERNAL TRANSDUCER (max. 10 kPa)**
C7d1	**MAXIMUM dP ALARM WITH ALARMED OPEN CONTACT AND AUTOMATIC RESET** If the dP readout is above the threshold in Set up, the maximum dP alarm is activated. The display shows the alarm condition code E7 (see the alarm description) or the dP readout and the letter H alternatively, according to model. The corresponding alarm relay will signal its condition. The alarm is automatically reset when the dP readout is below the alarm thresh- old again. The activation of this alarm is delayed by 20 seconds by default.
C8	**ZERO dP READING AJDUSTMENT** In this Set up code it is possible to adjust the zero reading of differential pressure. In this function the display shows the dP reading and, with plant stop or air pipes not connected if the dP reading is not 0.00 kPa it is possible to adjust it by key A or C.
C13_10	**dP READING FULL RANGE 10 kPa** Maximum differential pressure measurable by the sequencer 10.00 kPa = 100.0 mbar = 1012 mmH2O With dP reading over 10 kPa the display shows “E” instead of the numeric value of dP.
D1ab1	**ADDITIONAL POST-CLEANING CYCLES AFTER THE STOP OF THE FAN** In Set up you can select the mode intended to manage the fan and the post-washing cycles: SET = 0 If you connect a voltage-free auxiliary contact of the circuit intended to drive the fan with the timer, you can add a pre-set number of washing cycles after the fan stop. Their number can be set from the keyboard from 0 to 99. Post-cleaning cycles can be also activated when the C6 contact is open. If the D1a contact is open, the display will show “-0-” and signal that the cycle is not working because the fan is off. The decimal points on the display will flash on and off during the cycles after the fan stop. NOTE D1a: Connect D1a by means of a jumper, if it is not used with active inputs (see F01). SET = 1 If the dP control is activated, you can add a pre-set number of washing cycles after the fan stop. Their number can be set from the key- board from 0 to 99. The timer will automatically recognize the fan state by comparing the dP readout with a 0.20 kPa fixed threshold: dP > 0.20 kPa = fan on, dP < 0.20 kPa = fan off. Post-cleaning cycles will be activated even if the dP readout = 0. If the fan is off, the display will show “-0-”. The decimal points on the display will flash on and off during the additional cycles. Post-cleaning cycles will be activated only if the dP readout should reach the cycle STOP threshold value during the normal operation
D6	**ON/OFF CLEANING CYCLE BY EXTERNAL VOLT FREE CONTACT** If contact D6 is open, the cleaning cycle is not enabled and the display shows “OFF”. By closing D6, the cleaning cycle can start from the first electro valve. NOTE D6: Use a jumper for D6 if it is not used with active inputs (see F01).
G1	**MAXIMUM LOAD POWER FOR 25W OUTPUT FOR MAX. 5 SEC.**
HV	**INPUT AND OUTPUT VOLTAGE SELECTION BY JUMPER JP1, JP2, JP3 ON THE BOARD** Use the jumpers on the board to select the supply voltage and the output voltage for the electro valves (see the plates on the sequencers). JP1: Supply voltage selection between 115VAC and 230VAC. JP2: Output voltage selection between 24, 115, 230V (Only with 115 VAC or 230 VAC power supply). JP3: Output voltage selection between AC and DC only with JP2 set to 24V. ATTENTION: Set F08 to the same output voltage that has been selected by means of the jumpers to adjust the short circuit trip thresh- old. Otherwise, this might cause any malfunction or damage to the sequencer.



PLEASE NOTE!

Turbo differential pressure control type BA is connected to constant current and is not cut off with fan or the like.

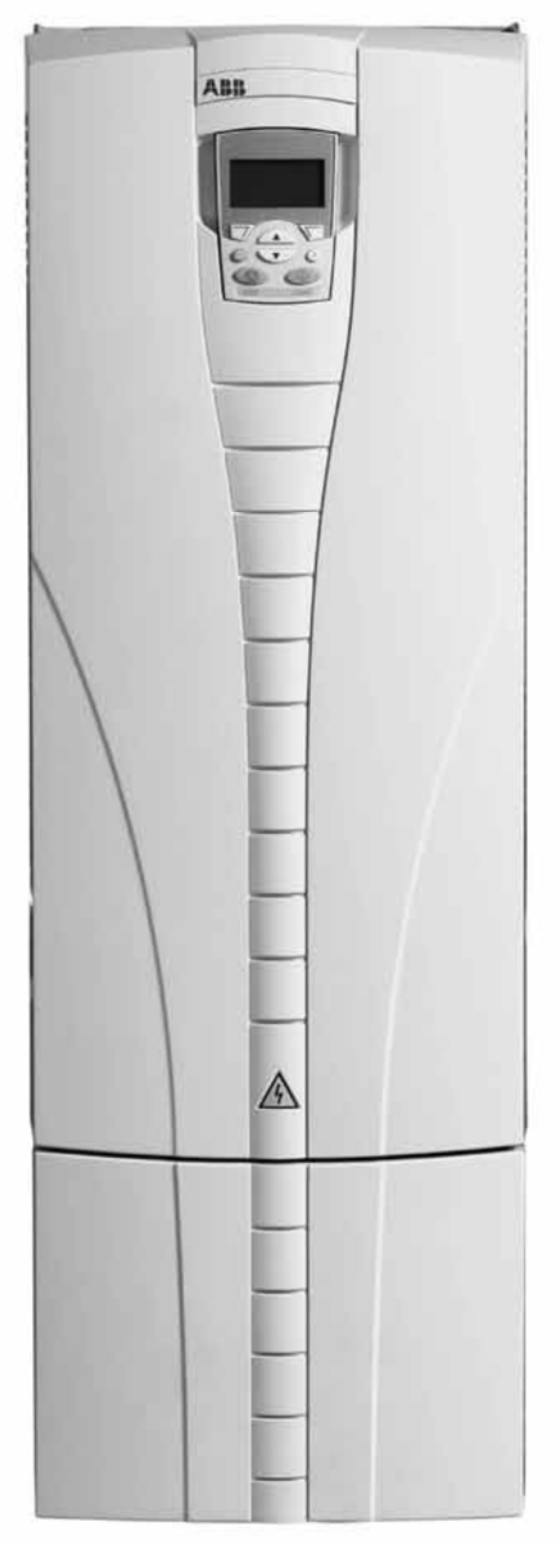
Operation

When power is on, cleaning cycle will start, if all necessary conditions for operation are present.
OFF Cycle stops for cleaning, consent is missing (D6 open).
-0- Cycle stops for fan OFF (D1a open).
1.00/P Cycle stops for low dP (display blinks).
A01 Number of activated electro valves.
... Cycles after fan stop active (blinking points).
1.23 Differential pressure reading (kPa).

E dP reading above 9.99 kPa.
Key B = Alarm reset
Key C = Access to set-up.

11. Quick guide ACH550 for high vacuum unit type HFU-F

Quick guide for ABB Frequency inverter series ACH550, 3 x 400 V.
This is only valid for the HFU-F units.



Drive^{IT} Lavspændings AC Drev

Quick opstartsguide

ACS550-01 drev (0,75…90 kW)

Oversigt

Installationen af ACS550 drevet skal ske i henhold til nedenstående oversigt.

Opgave

FORBEREDELSE til installationen
↓
Drevet **PAKKES** ud
↓
Montagestedet **KLARGØRES**
↓
FJERN frontdækslet
↓
MONTER drevet
↓
TRÆK kablerne
↓
KONTROLLER installationen
↓
GENMONTER frontdækslet
↓
Spændingen **TILSLUTTES**
↓
OPSTART

Applikation

Denne vejledning giver en hurtig anvisning i installation af ACS550-01 drev med standard-kapsling.

Note! Denne guide giver ikke detaljerede instruktioner om installation, sikkerhed og drift. Der henvises til ACS550 Brugermanual for det komplette informationsmateriale.

Forbered installationen

Advarsel! ACS550 skal installeres af en kvalificeret elektriker.

Kontroller

- Motorkompatibilitet – motortype, mærkestrøm, frekvens og spændingsområde skal passe til drevspecifikationerne.
- Passende miljø – drevet har brug for opvarmet indendørsmiljø, som er egnet til den valgte kapsling.
- Kabelføring – følg de lokale bestemmelser for kabelføring, kredsløbsbeskyttelse og EMC.

Henvis til Brugermanualen og bekræft, at alle forberedelser er gennemført.

Nødvendigt værktøj

Skruetrækkere, kabelstrips, målebånd, monteringsskruer eller bolte samt bor.

Drevidentifikation

ACS550-01-08A8-4
U_1 3~ 380…480 V
I_{2N} / I_{2hd} 8.8 A / 6.9 A
P_N/P_{hd} 4 / 3 kW
Serienr. *2030700001*

Anvend nedenstående angivelser til forklaring af typekoden, som findes på drevets mærkeseddel.

ACS550-01-08A8-4+...

AC, Standard Drev – 550 serien

Konstruktion (områdespecifik)
01 = Opstil./dele til IEC instal./overensst.
U1 = Opstil./dele til US instal./overensst.

Udgangsstrøm
Se dimensionseringsdata i Brugermanualen

Spændingsdata
2 = 208…240 VAC
4 = 380…480 VAC

Tæthedsgrad
Ingen specifikation = IP 21 / UL type 1 / NEMA 1
B056 = IP 54 / UL type 12 / NEMA 12

Registrering af motordata

Registrer følgende data fra motorens mærkeplade til anvendelse i forbindelse med opstart af ACS550:

- Spænding _____
- Nominel motorstrøm _____
- Nominel frekvens _____
- Nominel hastighed _____
- Nominel effekt _____

Pak drevet ud

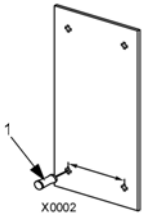
Note! Løft ACS550 i chassiset og ikke i dækslet.

1. Pak drevet ud.
2. Kontroller for beskadigelse.
3. Kontroller at det leverede svarer til det bestilte / er som anført på følgeseddel.

Forbered montagestedet

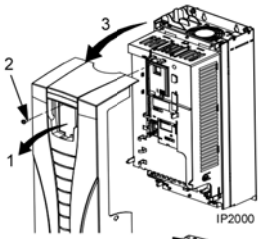
Drevet kræver en jævn, vandret, solid overflade, uden varme og fugt, med tilstrækkelig plads for ventilation – 200 mm (8 in) ovenfor og nedenfor, og 25 mm (1 in) rundt om drevets sider.

1. Marker mont.stederne.
2. Bor ud til mont.hullerne.



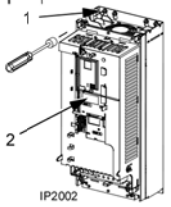
Fjern frontdækslet

1. Fjern styrepanelet
2. Skruen i toppen løsnes.
3. Træk i toppen for at fjerne dækslet.



Monter drevet

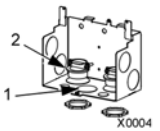
1. Anbring ACS550 og anvend skruer eller bolte til fastg. i de 4 hjørner.
2. Placer advarselsetiketten med den danske tekst indvendigt i plastiklommen.



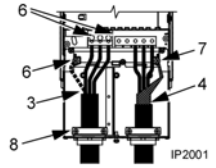
Monter kablerne

Effektkabler

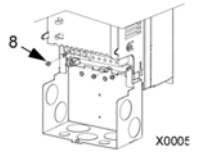
1. Tryk de passende huller ud i kabelboksen.
2. Monter kabelklemmer til effekt/motorkablerne.
3. På netkablerne afisoleres kapperne så langt, at kablerne kan trækkes enkeltvis.



4. På motorkablerne afisoleres kapperne så langt, at kobberkabelskærmen kan snos. Sørg for, at snoningen er så kort som mulig for at reducere støjudstrålingen.

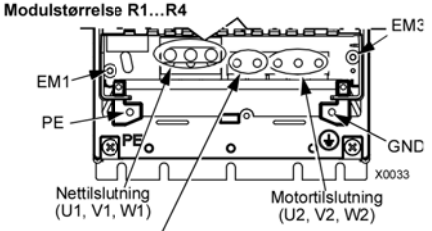


5. Træk begge kablerne gennem klemmerne.
6. Afisoler og forbind net-/motorkablerne og jordkablet til drevterminalerne. Se nedenfor eller i afsnittet "Effektforbindelser" i Brugermanualen.
7. Forbind den snoede motorkabelskærm.
8. Monter kabelboksen og stram kabelmufferne.



Advarsel! Ved isoleret net fjernes skruerne på EM1 og EM3 på modulstørrelser R1…R4.

Modulstørrelse R1…R4



Bremse (option)

Modul-str.	Terminal mærker	Bremseoptioner
R1, R2	BRK+, BRK-	Bremsemodstand
R3, R4	UDC+, UDC-	• Bremseenhed • Chopper og modst.

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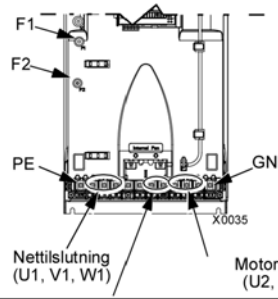
Advarsel! Ved isoleret net fjernes skruerne på F1 og F2 på modulstørrelser R5 eller R6.

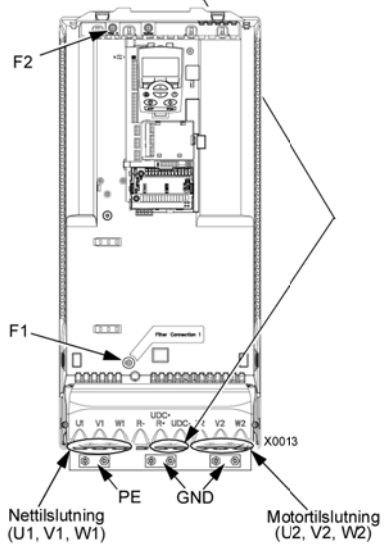
Modulstørrelse R5



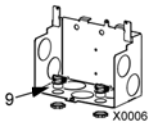
Bremse (option)

Modul-str.	Terminal-betegnelse	Bremseoptioner
R5, R6	UDC+, UDC-	• Bremseenhed • Chopper og modstand

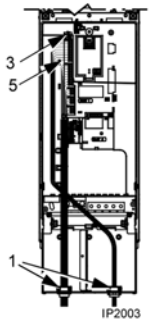
Modulstørrelse R6



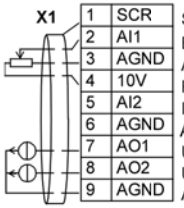
9. Installer kabelforskruninger for styrekable(er). (Forskruninger for net/ motorkabler er ikke vist.)



Styrekabler



1. Afisoler styrekabelkappen og sno kobberskærmen.
2. Træk styrekabel(-er) gennem forskruningen(-erne) og stram dem.
3. Forbind de digitale og analoge I/O-kablers snoede skærme til X1-1.
4. Forbind RS485 kablernes snoede skærme til X1-28 eller X1-32.
5. Afisoler og forbind de enkelte styrekabler til drevterminalerne. Der henvises til afsnittet "Tilslutning af styrekabler" i Brugermanualen for yderigere oplysninger eller andre konfigurationer..



X1	1	SCR	Signalkabelskærm
	2	AI1	Eks. frekv. ref. 1: 0…10 V
	3	AGND	Analog input GND
	4	10V	Ref.spænding 10 VDC
	5	AI2	Ikke anvendt
	6	AGND	Analog input GND
	7	AO1	Udg.frekv..: 0…20 mA
	8	AO2	Udg.strøm: 0…20 mA
	9	AGND	Analog output GND
	10	24V	Hjælpespændingsudg. +24 VDC
	11	GND	Hjælpespænding GND
	12	DCOM	Digital input GND (for alle)
	13	DI1	Start/Stop: Aktiv = start
	14	DI2	Reversering aktiv = baglæns
	15	DI3	Konstant hastighedsvalg[2]
	16	DI4	Konstant hastighedsvalg[2]
	17	DI5	Rampepar: Aktiv = 2. rampepar.
	18	DI6	Ikke anvendt
	19	RO1C	Relæudgang 1
	20	RO1A	Normal indstilling:
	21	RO1B	Driftklar = 19/21 forbundet
	22	RO2C	Relæudgang 2
	23	RO2A	Normal indstilling:
	24	RO2B	Drift = 22/24 forbundet
	25	RO3C	Relæudgang 3
	26	RO3A	Normal indstilling:
	27	RO3B	Fejl(-1) =25/27 forbundet (Fejl => 25/26 forbundet)

Note 1. Jumperindstilling:

AI1: 0…10 V
AI2: 0(4)…20 mA

Note 2. Kode: 0 = åben, 1 = forbundet.

DI3	DI4	Udgang
0	0	Reference via AI1
1	0	KONST. HAST. 1 (1202)
0	1	KONST. HAST. 2 (1203)
1	1	KONST. HAST. 3 (1204)

6. Monter dækslet til kabelboksen (1 skrue).

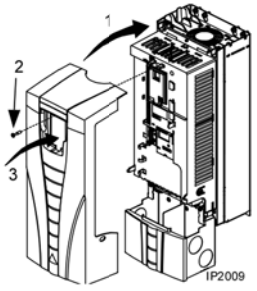
Kontroller installationen

Inden spændingen indkobles, skal følgende punkter kontrolleres.

✓	Kontroller
	Miljøet passer til specifikationerne.
	Drevet er monteret sikkert.
	Tilstrækkelig afkølingsplads rundt om drevet.
	Motor og arbejdsmaskine er klar til start.
	Isoleret net: Internt RFI filter frakoblet.
	Drevet er tilstrækkeligt jordet.
	Ingangsspænding passer til drevets nominelle indgangsspænding.
	Netklemmer, U1, V1, W1, er forbundet og strammet som specificeret.
	Netsikringer / hovedafbryder er installeret.
	Motorklemmerne, U2, V2, W2, er forbundet og strammet som specificeret.
	Motorkablet er trukket væk fra andre kabler.
	Der er IKKE forbundet effektfaktor-kompenserende kondensatorer til motorkablet.
	Styreklemmer er monteret og strammet som specificeret
	Der er IKKE værktøj eller andre løse objekter indvendigt i drevet (som f.eks. borespåner).
	Der er IKKE forbundet alternative effektkilder til motoren - der er ikke sat indgangsspænding til drevets udgang.

Genmonter dækslet

1. Ret dækslet op og skub det på plads.
2. Stram skruen.
3. Geninstaller betjenings-panelet..



Spændingen indkobles

Frontdækslet skal altid genmonteres, før spændingen indkobles.

Advarsel! ACS550 starter automatisk, hvis eksternt startsignal er aktivt.

1. Spændingen indkobles.
   Når spændingen er tilsluttet ACS550 enheden, lyser den grønne LED.

Note! Kontroller at motoren kører i rigtig omløbsretning, inden hastigheden forøges.

Opstart

Ved opstart registreres motordata (indhentet tidligere), og om nødvendigt indstilles de parametre, som definerer, hvordan drevet virker og kommunikerer.

Assistentstyrepanel

Opstartsassistenten starter automatisk og går igennem de typiske opstartsvalg. Gør som neden for beskrevet, når opstartsassistenten skal anvendes på et andet tidspunkt.

1. Anvend MENU-tasten for at få adgang til menulisten.
2. Vælg assistenter.
3. Vælg opstartassistent.
4. Følg anvisningerne på skærmen for at konfigurere systemet.

Note! Ved fælles parametre og menupositioner anvendes hjælpetasten (?) for at vise beskrivelser.
Hvis der opstår alarmer eller fejl, anvendes hjælpetasten, som henviser til diagnoseafsnittet i Brugermanualen.

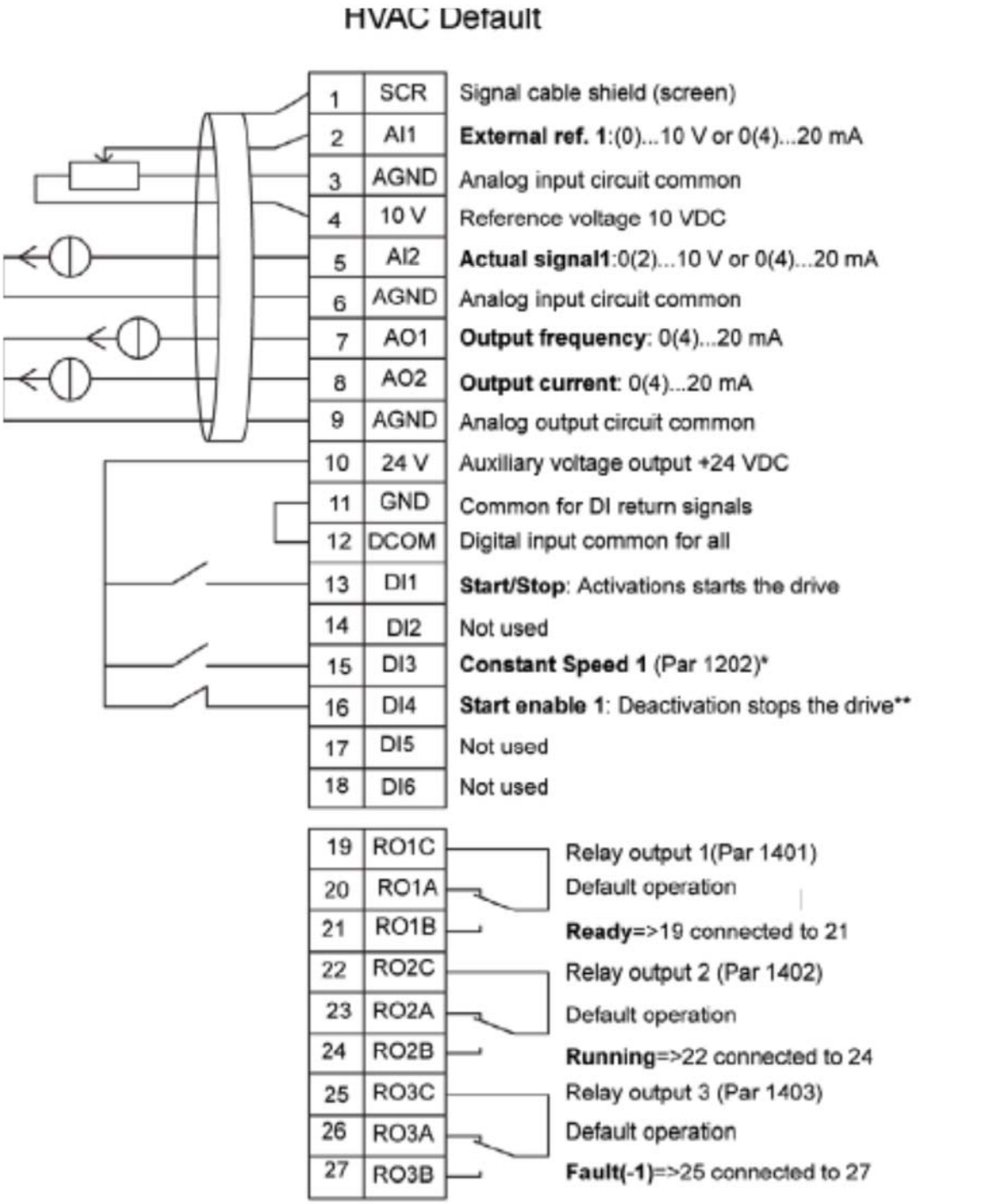
Basisstyrepanel

Basisstyrepanelet inkluderer ikke opstartassistenten. Der henvises til afsnittet om opstart i Bruger-manualen, og de valgte parameter-ændringer ændres manuelt.

Code: 3AFE 68243823 REV A / DA
Gældende fra: 9. september 2003
Erstatter: INGEN

External wiring :

- Klickson relay/bimetallic sensor from a fan or pump is connected over terminal 10 and 16
- .Start / Stop switch is connected over terminal 10 and 13.
- Terminals 10 and 15 must be bridged.



*Not available if PID is activated
** Disable/Enable with parameter 1608
Note! Drive starts only if possible protection functions (Run enable or Start enable 1 and 2) are activated from I/O or disabled with parameters.

Menu functions settings :

Press MENU – Choose PARAMETER – press ENTER

Start-up data :

- Group 99
  - 9901 is set for desired language
  - 9902 is set for HVAC default
  - 9904 is set for 3 = scalar speed
  - 9905 nominal motor voltage
  - 9906 nominal motor current (Amp)
  - 9907 nominal motor frequency (Hz)
  - 9908 nominal motor speed (rpm)
  - 9909 nominal motor power (kW)

Choose – Limits :

- Group 20
  - 2003 is set at nominal motor current + 10%
  - 2007 minimum frequency is set at 20Hz
  - 2008 maximum frequency is set at 60Hz

Choose – Constant speed :

- Group 12
  - 1202 is set at 60Hz

Press EXIT 2 times – Press AUTO button

12. Dismantling and recycling

When dismantling a unit, be sure to keep in mind the following important information:

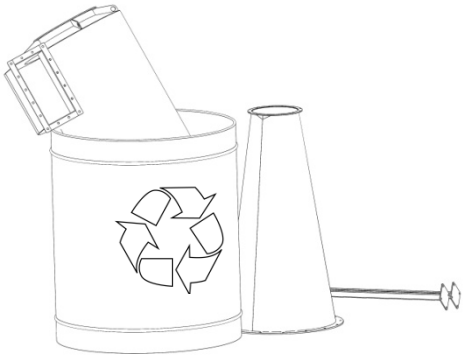
As the unit is dismantled, set aside all still functioning parts in order to re-use them on another unit.

You should always separate the different materials depending on their type : iron, rubber, oils, greases, etc…

Recyclable parts must be disposed of in the appropriate containers or brought to a local recycling company.

The rubbish must be collected in special containers with appropriate labels and disposed of in compliance with the national laws and/or local legislations in force.

CAUTION! It is strictly forbidden to dispose of toxic wastes in municipal sewerage and drain systems. This concerns all oils, greases, and other toxic materials in liquid or solid form.



13. Spare parts

For spare parts please contact Formula Air Group.

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SX 5741 Beek en Donk
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Tel: +31 (0) 492 45 15 45
Fax: +31 (0) 492 45 15 99

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