Installation and maintenance manual
Manuel d'installation et de maintenance
Installations- und Wartungshandbuch
Manuale di installazione e di manutenzione
Manual de instalación y de mantenimiento

HAN
13 ÷ 31

English | Français | Deutsch | Italiano | Español

13.0 ↓ 31.0 kW

12.1 ↓ 30.5 kW

2640 ↓ 5530 m³/h

R410A

Roof-mouted air conditioning unit
Unite d'air conditionne de toiture
Dachklimagerät
Unità d'aria condizionata da tetto
Unidad da aire acondicionado de tejado

IOM PRODUIT-N-6GB
Part number / Code / Teil Nummer / Codice / Código : **3990513GB**
Supersedes / Annule et remplace / Annulliert und ersetzt /
Annulla e sostituisce / Anula y sustituye : **IOM PRODUIT-N-5GB**

CE

INSTALLATION INSTRUCTION

NOTICE D'INSTALLATION

INSTALLATIONSHANDBUCH

ISTRUZIONI INSTALLAZIONE

INSTRUCCIONES DE INSTALACIÓN

English

Français

Deutsch

Italiano

Español

English

CONTENTS

POWER SUPPLY MUST BE SWITCHED OFF BEFORE STARTING TO WORK IN THE ELECTRIC CONTROL BOX

1. GENERAL RECOMMENDATIONS

Please read the following safety precautions very carefully before installing the unit.

1.1. SAFETY DIRECTIONS

Follow the safety rules in forces when you are working on your appliance.

The installation, commissioning and maintenance of these units should be performed by qualified personnel having a good knowledge of standards and local regulations, as well as experience of this type of equipment.

Given the requirements of pressurising the system and the high current draws involved, this roof-mounted air conditioning should only be installed by qualified personnel.

The unit should be handled using lifting and handling equipment appropriate to the unit's size and weight.

Given the high refrigerant temperatures present at certain points in the cooling circuit, access to the area protected by the panels is strictly reserved for qualified personnel only.

Any wiring produced on site must comply with the corresponding national electrical regulations.

Make sure that the power supply and its frequency are adapted to the required electric current of operation, taking into account specific conditions of the location and the current required for any other appliance connected to the same circuit.

The unit must be EARTHED to avoid any risks caused by insulation defects.

It is forbidden to start any work on the electrical components if water or high humidity is present on the installation site.

1.2. WARNING

Cutoff power supply before starting to work on the appliance.

The manufacturer declines any responsibility and the warrantly becomes void if these instructions are not respected.

If you meet a problem, please call the Technical Department of your area.

If possible, assemble the compulsory or optional accessories before placing the appliance on its final location. (see instructions provided with each accessory).

In order to become fully familiar with the appliance, we suggest to read also our Technical Instructions.

-The informations contained in these Instructions are subject to modification without advance notice.

1.3. EQUIPMENT SAFETY DATA

Safety Data	R410A
Toxicity	Low
In contact with skin	Skin contact with the rapidly evaporating liquid may cause tissue chilblains. In case of skin contact with the liquid, warm the frozen tissue with water and call a doctor. Remove contaminated clothing and footwear. Wash the clothing prior to re-use.
In contact with eyes	Vapours have no effect. Liquid splashes or sprays may cause freeze burns. In these cases rinse your eyes with running water or with a solution for eye lavages for at least 10 minutes. Immediately apply to a doctor.
Ingestion	In this case, burns may result. Do not attempt to make the patient vomit. If the patient is conscious, rinse the mouth with water. Call a doctor immediately.
Inhalation	In case of inhalation, move the patient to an area with fresh air and provide oxygen if necessary. Perform artificial respiration if the patient has stopped breathing or lacks air. In case of cardiac arrest, perform external cardiac massage. Call a doctor immediately.
Further Medical Advice	Exposure to high concentrations can be dangerous for individuals with cardiac problems, as the presence of catecholamines such as adrenalin in the bloodstream may lead to increased arrhythmia and possible cardiac arrest.
Occupational exposure limits	R410A: Recommended limits: 1,000 ppm v/v 8 hours TWA.
Stability	Stable product
Conditions to avoid	Increased pressure due to high temperatures may cause the container to explode. Keep out of the sun and do not expose to a temperature >50°C.
Hazardous reactions	Possibility of dangerous reactions in case of fire due to the presence of F and/or Cl radicals
General precautions	Avoid the inhalation of high concentrations of vapours. The concentration in the atmosphere shall be kept at the minimum value and anyway below the occupational limits. Since vapours are heavier than air and they tend to stagnate and to build up in closed areas, any opening for ventilation shall be made at the lowest level.
Breathing protection	In case of doubt about the actual concentration, wear breathing apparatus. It should be self-contained and approved by the bodies for safety protection.
Storage Preservation	Refrigerant containers shall be stored in a cool place, away from fire risk, direct sunlight and all heat sources, such as radiators. The maximum temperature shall never exceed 50°C in the storage place.
Protection clothes	Wear boots, safety gloves and glasses or masks for facial protection.
Behaviour in case of leaks or escapes	Never forget to wear protection clothes and brething apparatus. Isolate the source of the leakage, provided that this operation may be performed in safety conditions. Any small quantity of refrigerant which may have escaped in its liquid state may evaporate provided that the room is well ventilated. In case of a large leakage, ventilate the room immediately. Stop the leakage with sand, earth or any suitable absorbing material. Prevent the liquid refrigerant from flowing into drains, sewers, foundations or absorbing wells since its vapours may create an asphyxiating atmosphere.
Disposal	The best procedure involves recovery and recycle. If this is not possible, the refrigerant shall be given to a plant which is well equipped to destroy and neutralise any acid and toxic by-product which may derive from its disposal.
Combustibility features	R410A: Non-inflammable at ambient temperatures and atmospheric pressures.
Containers	If they are exposed to the fire, they shall be constantly cooled down by water sprays. Containers may explode if they are overheated.
Behaviour in case of fire	In case of fire wear protection clothes and self-contained breathing apparatus.

2. INSPECTION AND STORAGE

At the time of receiving the equipment carefully cross check all the elements against the shipping documents in order to ensure that all the crates and boxes have been received. Confirmation of the type of unit ordered can be obtained by reading the maker's plate.

Inspect the units for any visible or hidden damage.

In the event of shipping damage, write precise details of the damage on the shipper's delivery note and send immediately a registered letter to the shipper within 48 hours, clearly stating the damage caused. Forward a copy of this letter to the manufacturer or their representative.

Never store or transport the unit upside down. Protect unit at the job side from domages made by others. When unit is stored on the ground, avoid mud store unit leveled.

3. WARRANTY

The appliances are delivered fully assembled, factory tested and ready to operate.

Any modification to the units without the manufacturer's prior approval, shall automatically render the warranty null and void.

The following conditions must be respected in order to maintain the validity of the warranty:

- Commissioning shall be performed by specialised technicians from technical services approved by the manufacturer.
- Maintenance shall be performed by technicians trained for this purpose.
- Only Original Equipment spare parts shall be used.
- All the operations listed in the present manual shall be performed within the prescribed schedule.

THE WARRANTY SHALL BE NULL AND VOID IN THE EVENT OF NON-COMPLIANCE WITH ANY OF THE ABOVE CONDITIONS.

4. CONTENTS OF PACKAGE

1 **HAN**

1 Installation and maintenance manual

1 Control manual

5. PRESENTATION

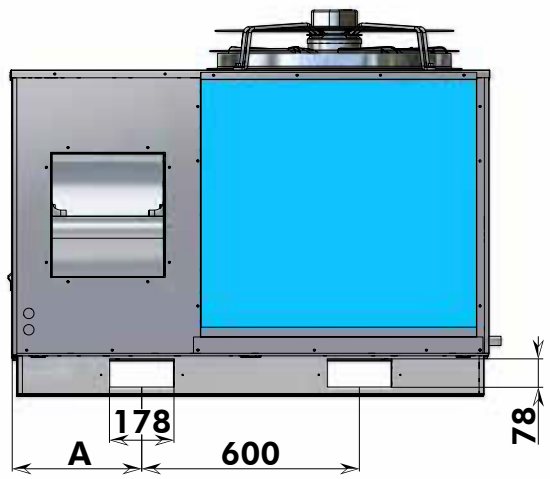
The machine has been designed for an outdoor application, ensuring perfectly weatherproof circulation of the air in the air treating compartments.

The **HAN** features a compact design and has an optimal foot print/weight ratio. All units are charged and tested at the factory and are supplied ready to start for quick and easy installation.

6. DIMENSIONS

SEE APPENDIX

7. HANDLING



	13-15-17-19	25-31
A	360	425

The unit can also be lifted by using slings.

A spreader must be used to avoid damaging the casing of the machine.

7.1. NET WEIGHT

		13	15	17	19	25	31
Weight	Kg	219	223	223	243	320	343

8. TECHNICAL SPECIFICATIONS

8.1. REFIGERATION SPECIFICATIONS

		13	15	17	19	25	31
Compressor type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Compressor quantity		1	1	1	1	1	1
Number of circuit		1	1	1	1	1	1
Refrigerant		R410A					
Charge of circuit	kg	SEE NAME PLATE					

Units are supplied pre-charged with refrigerant fluid.

This equipment contains fluorinated gas with greenhouse gas effects covered by the Kyoto agreement.

8.2. ELECTRICAL SPECIFICATIONS

		13	15	17	19	25	31
Power supply		400V / 3~N /50Hz					
Maximum current	A	16	17	20	21	29	30
Starting current	A	70	69	79	107	119	126
Fuse rating FFG aM	A	16	20	20	25	32	32

IMPORTANT

A main fuse must mandatorily be provided on the power supply.

- Fuses not supplied
- Cables not supplied

8.3. AERAULIC SPECIFICATIONS

		13	15	17	19	25	31
Indoor fan							
Number of fan		1	1	1	1	1	1
Type		Centrifugal					
Drive type		Direct	Belt / variable pitch pulley				
Motor nominal power input	kW	0.60	0.75	0.75	1.10	1.10	1.50
Power supply	V/Ph/Hz	230V/1~/50Hz	400V / 3~N /50Hz				
Nominal airflow	m^3/h	2640	2940	3190	3860	4780	5530
Available static pressure (1)	Pa	100	170	160	210	240	250
Outdoor fan							
Number of fan		1	1	1	1	1	1
Type		Propeller					
Number of blades		3	3	3	3	5	5
Fan diameter	mm	610	610	610	610	710	710
Drive type		Direct					
Nominal airflow	m^3/h	9000	9000	9000	9000	12000	12000
Motor nominal power input	kW	0.49	0.49	0.49	0.49	0.90	0.90
Power supply	V/Ph/Hz	230V/1~/50Hz					

(1) At nominal air flow and at maximum fan speed without air filter

8.4. OPERATING LIMITS

		13	15	17	19	25	31
Cooling mode							
Outside temperature min. for standard version	°C	15	15	15	15	15	15
Outside temperature min. with all seasons kit	°C	-10	-10	-10	-10	-10	-10
Inside temperature min. DB/WB	°C	21 / 15	21 / 15	21 / 15	21 / 15	21 / 15	21 / 15
Outside temperature max..	°C	50	50	50	50	50	50
Inside temperature max. DB/WB	°C	32 / 23	32 / 23	32 / 23	32 / 23	32 / 23	32 / 23
Heating mode							
Outside temperature min.	°C	-10	-10	-10	-10	-10	-10
Outside temperature max. DB	°C	24	24	24	24	16	24
Inside temperature max. DB	°C	27	27	27	27	27	27

The All Seasons kits modulates the outdoor fan speed to enable the machine to operate in Cooling mode at outdoor ambient temperatures as low as -10°C.

DB: Dry Bulb temperature

WB: Wet bulb temperature

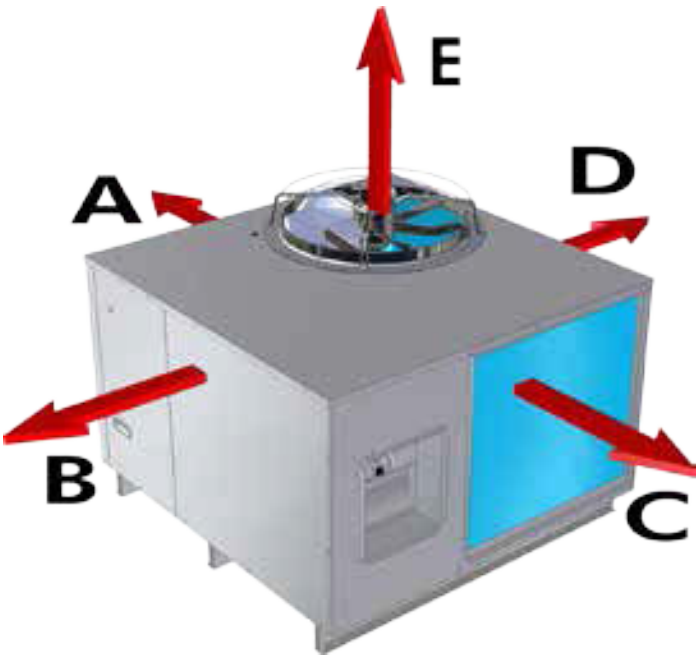
9. INSTALLATION

The unit is not designed to withstand weights or stresses from adjacent equipment, pipe work or constructions. Any foreign weight or stress on the unit structure could lead to a malfunction or a collapse with dangerous consequences for personnel and property. In such an event, the warranty shall be null and avoid.

9.1. PLACE OF INSTALLATION AND REQUIREMENTS

- The building structure must be capable to carrying the weight of the unit during operation.
- The place of installation must not be subject to flooding.
- The **HAN** should be installed on a flat, clean surface without any obstacles. The surface area must be sufficient to spread the weight of the unit over the building structure.
- Ensure that the recommended free clearances around the unit are maintained to avoid any risk of malfunctions.
- Ensure that there are no obstructions around the condenser or the air outlet to avoid any risk of recycling old air.
- In addition to the service clearances stated on the dimensions sheet, it is imperative to provide a safe and appropriate access to the unit for repairs and servicing.
- The installer is responsible for providing the weaterproof seal between the building and the **HAN**. The installer must be fully versed in the practice of roof mounted equipments and must comply with the recommendations and rules detailed in the Technical Directives.
- In order to avoid risk of condensation and energy losses, all outdoor ducting and piping must be insulated.

9.2. CLEARANCE

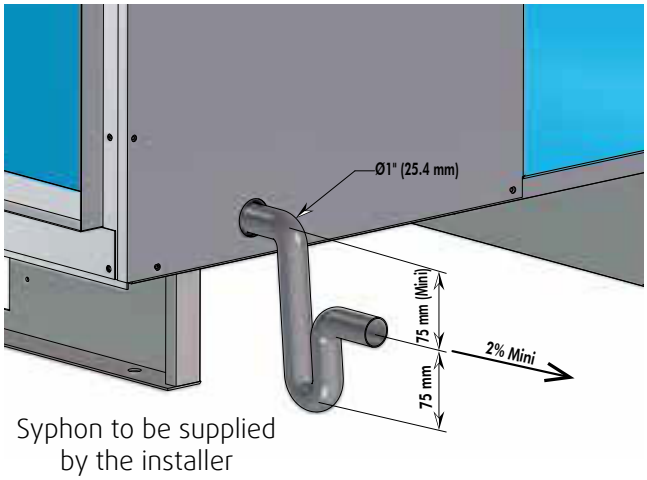


		13-15-17-19	25-31
A	mm	800	800
B	mm	800	800
C	mm	800	800
D	mm	850	1000
E	mm	3000	3000

9.3. ATTACHMENT TO THE GROUND

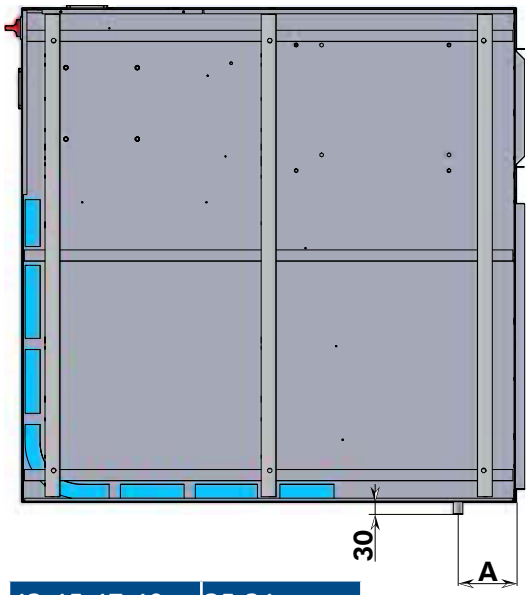
SEE APPENDIX

9.4. CONDENSATE DRAIN PAIN



Syphon to be supplied by the installer

The installer must imperatively initiate thte syphon action.



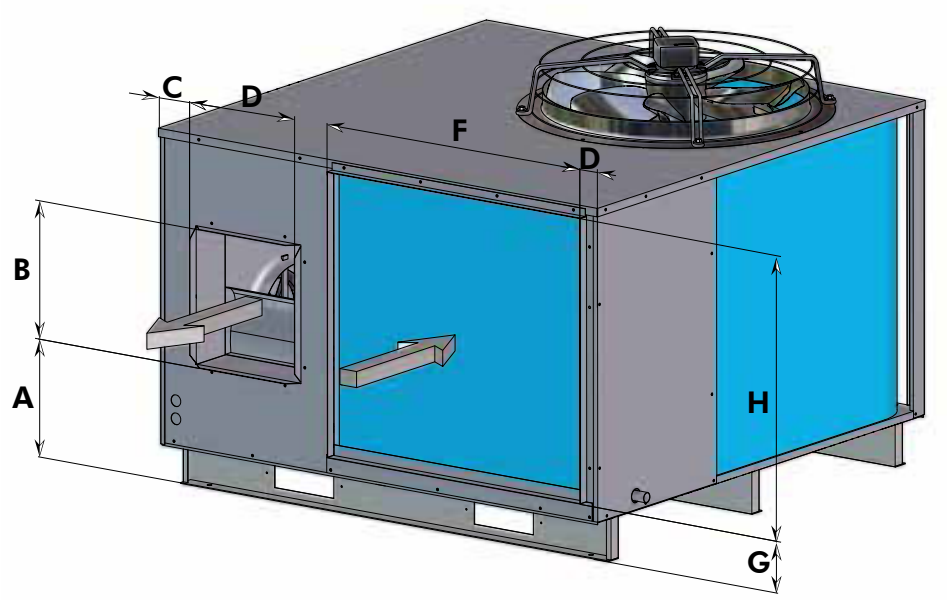
	13-15-17-19	25-31
A	156	156

CAUTION

For Heat pump models, where the outdoor temperature is likely to fall below +1°C, provide a system to prevent the syphon from freezing (e.g. heating cord).

9.5. AERAULIC CONNECTIONS

9.5.1. AIR INTAKE AND BLOWING DUCT OUTLET DIMENSIONS



	A	B	C	D	E	F	G	H
13	290	295	110	272	35	765	155	712
15-17-19	320	345	110	316	35	765	155	712
25	320	345	137	316	35	860	155	1030
31	320	345	85	405	35	860	155	1030

The **HAN** roof-mounted units are designed for ducted applications. In the event of an application without a duct network on the blowing side ("free" blowing) it is necessary to create an artificial pressure loss on the blowing side to avoid damage to the fan motor due to an abnormally high current draw. This pressure loss can be created for example by adding a perforated plate that will also have the effect of improving blown air distribution.

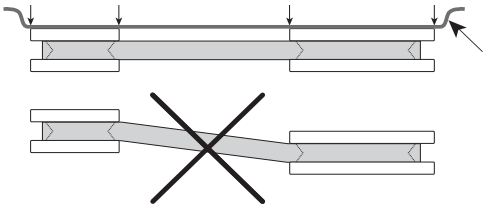
To achieve optimal performance, this plate should be of an adequate size and suitably positioned to ensure that the airflow is close to the unit's nominal airflow.

9.5.2. AIR FLOW / PRESSION ADJUSTMENT

The **HAN** models 13 are equipped with direct drive centrifugal compressors.

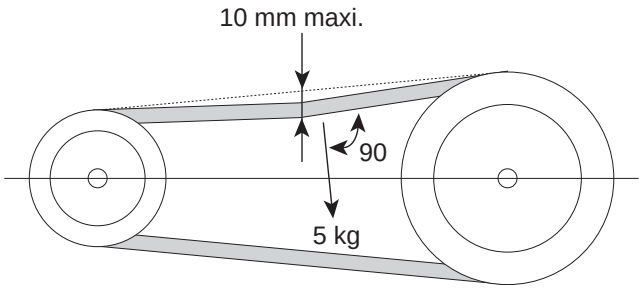
From **HAN** model 15 upwards, air flow / static pressure is adjusted via a variable pulley. When adjusting this pulley it is important to ensure that the drive belt is positioned correctly. The latter must not move out of its groove or be located at the bottom of the groove. The pulley/drive belt assembly must be perfectly aligned and the belt must be properly tightened in accordance with specifications.

Belt alignment



For a quick check, make sure that the small rope touch each end of the pulleys as shown on drawing above.

Belt tensioning



SEE TO APPENDED AERAULIC CHARACTERISTICS

10. ELECTRIC HEAT

If the unit is to be equipped with an electric heating kit, the latter must be installed on the blown air duct inside the building.

Safety devices (automatic and manual reset thermostats) protect the appliance against any possible risks of overheating due to insufficient flow around the shielded elements.

The electric heating kit power supply must be separated from the **HAN** unit's power supply. Only the electric heating control functions are managed by the **HAN** unit (refer to appended wiring diagrams).

11. WIRING DIAGRAM AND LEGEND

11.1. WIRING DIAGRAM

SEE APPENDIX

11.2. LEGEND

N771

SE 3676	**HAN** 13	400V/3N~/50Hz +/- 10%
SE 3678	**HAN** 15/17/19	400V/3N~/50Hz +/- 10%
SE 3679	**HAN** 25/31	400V/3N~/50Hz +/- 10%

11.2.1. POWER SUPPLY

This supply is protected upstream by an FFG general supply fuse holder, to be provided by the installer, in accordance with "ELECTRICAL SPECIFICATIONS".

The electrical installation and the wiring of this unit shall comply with local electrical installation standards.

➢ Three phase 400 V~ + Neutral + Ground:

On terminals PE, N, L1, L2, L3 on the Q1 mains supply circuit switch.

On the ground screw for the earth cable.

11.2.2. WIRING DIAGRAM KEY DESCRIPTIONS

11.2.2.1. COOLING / SAFETY

FFG : Protective fuses (not supplied)
Q1 : Mains supply circuit switch
K1 : M1 compressor power circuit contactor
KA1 : Three-phase network control relay (phase sequence and cut-out)
HP1 : Automatic reset high-pressure pressostats
LP1 : Automatic reset low-pressure pressostats
M1 : Compressor
R1 : M1 compressor crankcase heater
RV1 : Cycle inversion valve (option)

11.2.2.2. VENTILATION

MO1 : Outdoor fan motor
C01 : Outdoor fan motor condenser
F01 : MO1 motor internal protection
MI3 : Indoor fan motor
K3 : MI3 contactor.
FT3: MI3 thermal relay.

11.2.2.3. CONTROL AND REGULATION

RT : Ambient temperature probe (option)

ICT : Indoor exchanger temperature probe

OCT : Outdoor exchanger temperature probe

SM1 : Remote ON/OFF switch (not supplied) (remove the "SHM" shunt on the circuit board)

11.2.2.4. ELECTRIC HEATING KIT

K5/6 : Heating elements power contactors

FM5/6 : Heating manual reset safety thermostat

FA5/6 : Heating automatic reset safety thermostat

11.2.3. RANGE AND SETTINGS OF THEMAL PROTECTION / NOMINAL INTENSITY OF THE CONTACTORS (CLASSE AC3)

		13	15	17	19	25	31
Thermal relay							
FT3	Range	/	1.8-2.6A	1.8-2.6A	1.8-2.6A	2.6-3.7A	2.6-3.7A
	Adjustment	/	1.9A	1.9A	2.5A	2.6A	3.4A
Contactor AC3							
K1		12A	18A	18A	18A	25A	25A
K3		/	9A	9A	9A	9A	9A

11.2.4. COMPRESSOR CRANKCASE HEATER

		13	15	17	19	25	31
Power	w	70	70	70	70	90	90

11.2.5. PRESSOSTATS SETTING

LP1 : Factory low pressure adjustment 2bars (29PSI)

HP1 : Factory high pressure adjustment 42bars (609.16PSI)a

11.2.6. COLOUR CODE

BK :	Black	OG :	Orange	GNYE :	Green/Yellow
BN :	Brown	WH :	White	RD :	Red
BU :	Blue	GY :	Grey	VT :	Violet
YE :	Yellow				

12. ELECTRICAL CONNECTIONS

WARNING

BEFORE CARRYING OUT ANY WORK ON THE EQUIPMENT, MAKE SURE THAT THE ELECTRICAL POWER SUPPLY IS DISCONNECTED AND THAT THERE IS NO POSSIBILITY OF THE UNIT BEING STARTED INADVERTENTLY.

NON-COMPLIANCE WITH THE ABOVE INSTRUCTIONS CAN LEAD TO INJURY OR DEATH BY ELECTROCUTION.

The electrical installation must be performed by a fully qualified electrician, and in accordance with local electrical standards and the wiring diagram corresponding to the unit model.

Any modification performed without our prior authorisation may result in the unit's warranty being declared null and void.

The power supply cable section must be sufficient to provide the appropriate amperage to the unit's main power terminals, at start-up and under full load operating conditions.

The power supply cable shall be selected in accordance with the following criteria:

1. Power supply cable length.
2. Maximum unit starting current draw – the cables shall supply the appropriate amperage to the unit terminals for starting.
3. Power supply cables' installation mode. (do not leave cable weight hang on connecting lugs)
4. Cables' capacity to transport the total system current draw.

Short circuit protection shall be provided by others. This protection shall comprise fuses or circuit breakers with high breaking capacity, mounted on the distribution board. The distribution board must support the intensity of the whole of the machines installed.

VERY IMPORTANT:

3N~400V-50Hz + ⏚

The outdoor unit is equipped as standard with a phase sequence and cut-out controller located in the electrical box.

THIS PRODUCT IS EQUIPPED WITH A PHASE SEQUENCE CONTROLLER. THE LED's INDICATE THE FOLLOWING CONDITIONS:

Green LED = 1

Yellow LED =1

Low voltage supply

The compressor rotation direction is correct

Green LED = 1

Yellow LED =0

Phase inversion or phase absent (L1)

The compressor and the fans do not start.

Green LED = 0

Yellow LED =0

Phase absent (L2 or L3)

the compressor and the fans do not start.

These units are equipped with a local switch used as general terminal board.

The proximity switch can be mounted at two different locations:

The switch can be padlocked.

A circuit breaker or fuse holder (not supplied) must be installed on the main power supply of the unit in accordance with the circuit diagram; for the raitings, refer to the electrical specifications.

3N~400V

Use a pozidrive M3.5 screwdriver, Form Z, to make the connections.

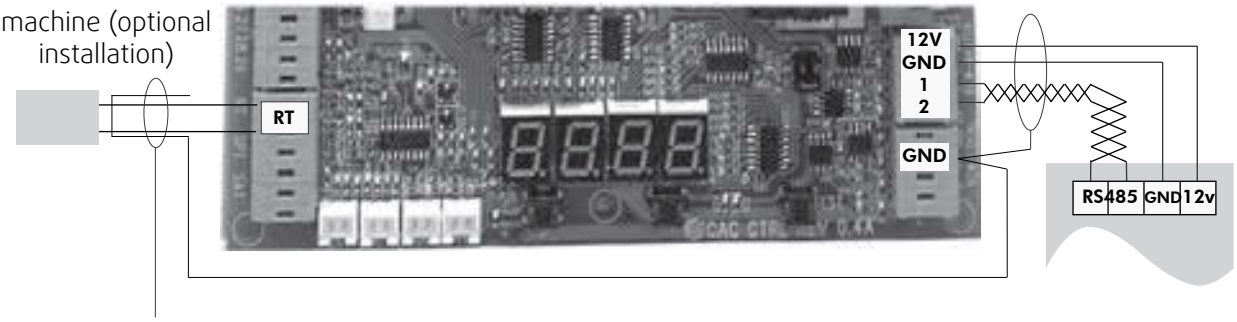
12.1. CONNECTION OF RCW2 AND REMOTE ROOM TEMPERATURE

1000 m MAXI

Shielded 2 twisted pairs cable with setting with terminal GND.

0,12 à 0,3 mm²

Remote room temperature sensor delivred with the machine (optional installation)



100 m MAXI

1 mm² MAXI

Shielded cable

IF the RT sensor is not used, the RCW2 must be configured in Zone 1 with the local temperature function activated.

13. COMMISSIONING

13.1. PRE-START CHECK LIST

13.1.1. ELECTRICAL CHECK

1. Electrical installation has been carried out according to unit wiring diagram and the Supply Authority Regulations.
2. size fuses or circuit breaker has been installed at the main switchboard.
3. Supply voltages as specified on unit wiring diagram.
4. All cables are properly identified and tight connected at the unit.
5. That the wiring is not in contact with surfaces subject to high temperatures or sharp angles, or is protected against such risks.

13.1.2. VISUAL CHECK

1. Clearances around unit including outdoor air entry and discharge openings and service accesses.
2. Unit mounted as specified.
3. For loose or missing bolts or screws.
4. For refrigerant leaks in connections and components.
5. All panels are in place and secured.
6. The unit is clean and free of any extraneous installation materials.

13.1.3. DUCTING

1. Connections flexible type, secure and detachable for service access.
2. Fan drive from HAN model 15 upwards
   Correct variable diameter pulley adjustment guaranteeing the intended air quantity and static pressure (see § "AIR FLOW / PRESSURE ADJUSTMENT").
3. Check that the fan shaft and motor pulleys are mounted correctly and turn true.
4. Ensure that both pulley grooves are correctly aligned. Improper alignment of the pulleys and belt may cause vibration in the blower drive and result in premature wear and noise.

13.2. OPERATING CHECK LIST

13.2.1. GENERAL

Cheek for any unusual noises or vibration in the running components, particularly at the main blower.

13.2.2. PHASE ROTATION PROTECTION

If the phase at the power supply are not correct, the phase rotation protection device will prevent the machine from starting.

13.2.3. ELECTRICAL

13.2.3.1. OPERATING VOLTAGE:

Recheck voltage at unit supply terminals.

13.2.3.2. CONTROL

1. Operate system and thermostat switches.
2. Check unit is wired for correct control of blower, cooling and heating modes.
3. Verify all sensor signal, using the controller display.

13.2.4. AIR BALANCING

This section applies to all **HAN** from model 15.

A variable pulley is fitted to the motor shaft in order to adjust the blower performance to the pressure drop at the duct work. The pulley must be adjusted when the measured external static pressure and air volume (motor current draw) differ from the nominal values at the unit. As a default setting, the variable diameter pulley is open by 2 turns.

13.2.4.1. CASE N°1:

The measured air flow is higher than the nominal air flow. You must reduce the fan rotation speed by opening the variable diameter pulley. It is imperative to adjust the pulley, otherwise the motor's internal protection will trigger because of overheating taking the entire unit out of operation.

13.2.4.2. CASE N°2:

The measured air flow is lower than the nominal air flow. You must increase the fan rotation speed by closing the variable diameter pulley.

13.2.5. COMPRESSOR AND REFRIGERATION SYSTEM

1. If outdoor air temperature is below 0°C make sure that the compressor crankcase heater has been on for at least one hour before starting compressor.
2. Running check: Start the compressor. Check for any unusual noise or vibration.
3. Operating Pressures: Operate the unit for at last 20 minutes and ensure that the refrigerant pressures are stabilised, and cheek that they are within the normal operating ranges.
4. Operating Temperature: Check discharge, suction and liquid temperatures.
5. Compressor output temperature in cooling mode should not normally exceed 105° C.
6. Compressor intake air superheating must be between 5° K and 12° K.

14. FINAL TASKS

Operate the air conditioner in the presence of the user and explain all functions.

As required, demonstrate filter removal, cleaning and replacement.

15. IN CASE OF WARRANTY - MATERIAL RETURN PROCEDURE

Material must not be returned without permission of our After Sales Department.

To return the material, contact your nearest sales office and ask for a "return form". The return form shall be sent with the returned material and shall contain all necessary information concerning the problem encountered.

The return of the part is not an order for replacement. Therefore, a purchase order must be entered through your nearest distributor or regional sales office. The order should include part name, part number, model number and serial number of the unit involved.

Following our personal inspection of the returned part, and if it is determined that the failure is due to faulty material or workmanship, and in warranty, credit will be issued on customer's purchase order. All parts shall be returned to our factory, transportation charges prepaid.

16. ORDERING SERVICE AND SPARE PARTS ORDER

The part number, the order confirmation and the unit serial number indicated on the name plate must be provided whenever service works or spare parts are ordered.

For any spare part order, indicate the date of unit installation and date of failure. Use the part number provided by our service spare parts, if it not available, provide full description of the part required.

17. MAINTENANCE

The user is responsible for ensuring that it is in a proper working condition and that technical installation as well as the regular maintenance operations are performed by properly trained technicians and in accordance with the instructions contained in this manual.

17.1. REGULAR MAINTENANCE

These units have been designed to require only minimal servicing, thanks to the use of a maximum number of lubricated-for-life components. Nevertheless, certain regular servicing operations are necessary to guarantee optimal system operation.

Servicing must be performed by experienced and qualified personnel only.

WARNING : Isolate unit from main power supply before working on unit.

CAUTION

BEFORE CARRYING OUT ANY OPERATION ON THE EQUIPMENT, CHECK THAT THE ELECTRICAL POWER SUPPLY IS SWITCHED OFF AND THAT IT CANNOT BE SWITCHED ON INADVERTENTLY.

IT IS RECOMMENDED THAT THE DISCONNECT SWITCH BE PADLOCKED

17.2. GENERAL INSPECTION

Carry out a visual inspection of the complete installation in service.

Check the general cleanness of the installation, and check if the condensate evacuations is not blocked, specialy on the indoor coil, before the cooling season.

Check the condition of the condesate tray by pulling it out of the casing.

17.3. OPENING OF ACCESS PANELS

All access panels are removable by unscrewing the self tapping retaining screws.

17.4. BLOWER DRIVE SYSTEM

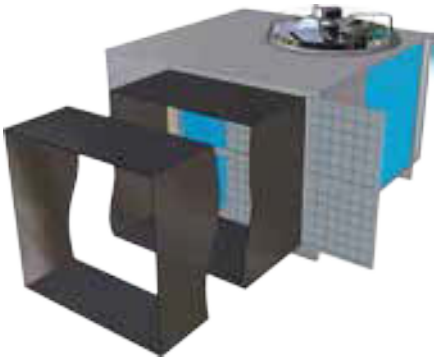
blower shaft and motor bearings are of permanently lubricated, sealed type and require no regular maintenance other than a check on their general condition. The blower belt tension should be checked regularly and belt surfaces inspected for cracks or excessive wear.

17.5. COILS

The refrigeration system is hermetically sealed and should require no regular maintenance. However, it is recommended to leak test the refrigerant system and check the general operating conditions and control devices on a regular basis. The operating pressures should be checked particularly as they are an excellent guide for maintenance. This equipment must be subjected to regular tightness checks conducted by qualified personnel. Please refer to national requirements to determine the frequency of these checks. After any intervention requiring the opening of the refrigerant circuit, the system must be completely vacuum drained by using the pressure tap installed for this purpose (Refer to the appended refrigerant circuit diagram).

Clean the heat exchanger using a special product for aluminium-copper heat exchangers, and rinse with water. Do not use hot water or steam, as this could cause the pressure of the refrigerant to rise.

Check that the surface of the aluminium fins of the heat exchanger is not damaged by impacts or scratches, and clean with an appropriate tool if necessary.



If necessary, the air filter located on the air intake must be cleaned or replaced at regular intervals to ensure that unit operate properly.

A clogged filter causes a reduction in the airflow across the heat exchanger and this reduces the performance output.

The filters are located on slide rails upstream of the evaporator.

A system of sliding rails enables you to remove the filters without having to remove the aeraulic duct.

17.6. ELECTRICAL SECTION

The contact surfaces of relays and contactors should be inspected regularly by an electrician and replaced as judged necessary.

On these occasions the control box should be blown out with compressed air to remove any gathwing of dust.

Check that the main power supply cable is not damaged or altered in such a way as to affect the insulation.

Check the earth grounding connection.

18. TROUBLE SHOOTING

Problem	Probable cause	Solution
Unit operates continuously but without performing	Insufficient refrigerant charge.	Top up the refrigerant fluid charge.
	Reduced output	Check the 4 way valve on the compressor and replace the valve if necessary.
Frozen suction line	The overheating setting on the thermostatic expansion valve is too low.	Increase the setting.
	Insufficient refrigerant charge	Add refrigerant charge.
Evaporator freezing	Filters clogged	Replace filters
	Insufficient charge	Add refrigerant charge.
Excessive noise	Vibrating pipe work	Attach the pipe work correctly. Check the pipe work attachments.
	Whistling noise from the thermostatic expansion valve	Add refrigerant charge.
	Noisy compressor	Check the pressure difference of the 4-ways valves.
	No pressure increase / mechanical damage to the compressor	Contact an approved Service Centre.
Low oil level in the compressor	Presence of one or several oil or gas leaks in the circuit	Locate and repair the leaks and add oil
	Mechanical compressor damage.	Contact an approved Service Centre.
	Crankcase oil heater resistance fault.	Check the electrical circuit and the condition of the resistance. Replace defective parts if necessary.
compressor do not operate.	No power at compressor	Check the electrical circuit and seek out any grounding and/or short- -circuits. Check the fuses.
	High pressure pressostat activated.	Check for dirty condenser coil or defective fan
	Control circuit fuse blown.	Check the control circuit and look for any grounding and/or short-circuits. Replace the fuses.
	Connection problem	Check the tightness of all the electrical connection terminals.
	Electrical circuits thermal protection cuts in.	Check the operation of the control and safety devices.
	Incorrect wiring.	Check the wiring of the control and safety devices.
	Mains voltage too low.	Check the power line.If the problem is due to the network, inform the Electricity Company.
	Compressor motor short–circuited.	Check the continuity of the motor winding.
	Compressor seized	Replace the compressor.
Low pressure pressostat being activated.	Presence of a leak.	Identify and repair the leak.
	Insufficient refrigerant fluid charge.	Add refrigerant charge.
	Low air volume on evaporator	check the blower and duct
High pressure pressostat being activated.	Incorrect operation of the high pressure pressostat.	Check the operation of the pressostat. Replace it if required.
	Outlet valve partially closed.	Open the valve. Replace it if required.
	Non-condensable particles in the circuit.	Bleed the circuit
	Condenser fan not operating.	Check the wiring and the motors. Repair and replace if required.
Liquid line too hot	Insufficient refrigerant charge.	Locate and eliminate the causes of charge losses and top up the refrigerant fluid charge.
Fans do not operate.	Electrical circuit problems.	Check the connections.
	Internal circuit thermal cut-out activated.	Contact an approved Service Centre.
Fan surging	Duct network pressure too low.	Generate an additional pressure loss (refer to aeraulic curves)
Reduced output in both Heating and Cooling mode	Compressor operating fault	Contact an approved Service Centre.
	Outdoor coil dirty	Clean the coil.
	Insufficient refrigerant charge.	Add refrigerant charge.
	Lack of air flow	Clean the battery Replace the filter Check the air flow / pressure settings

APPENDIX
ANNEXE
ANLAGE
ALLEGATO
ANEXO

APPENDIX

ANNEXE

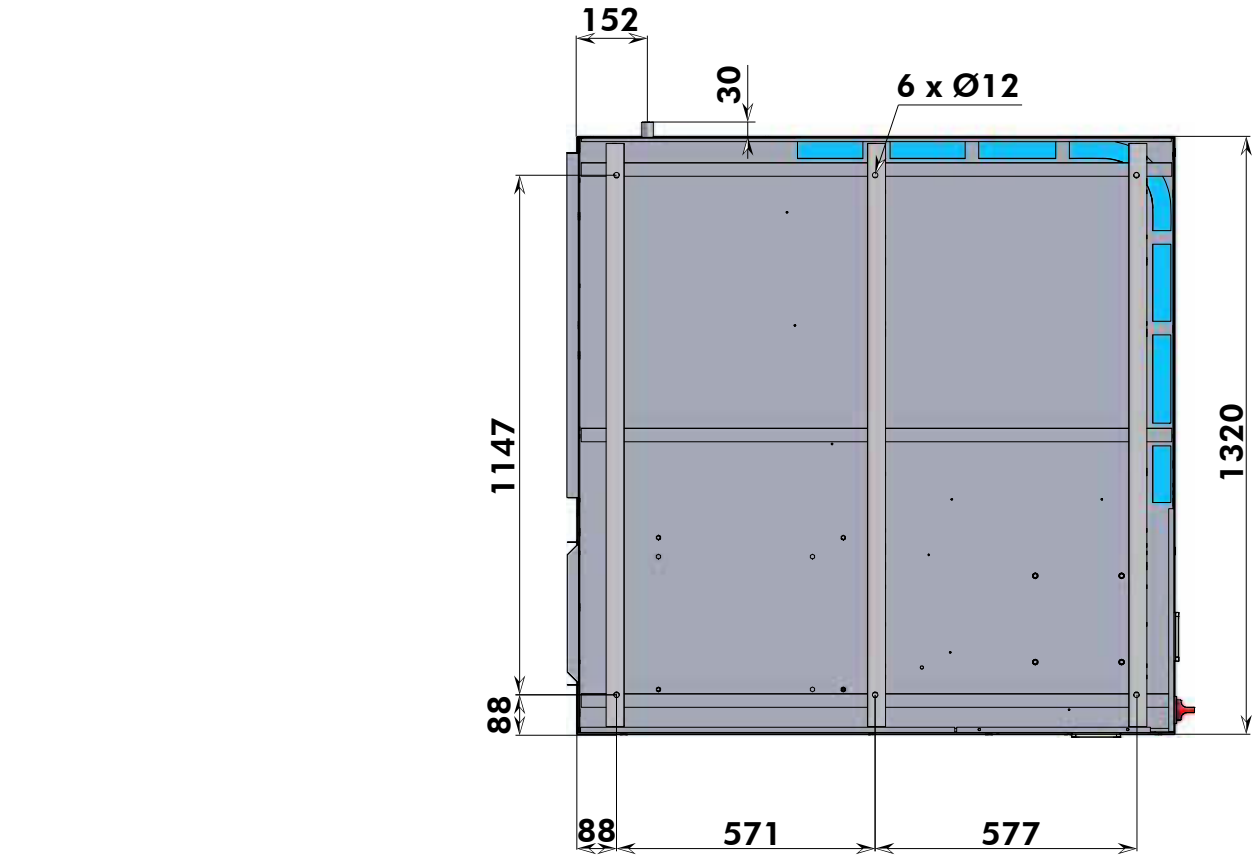
ANLAGE

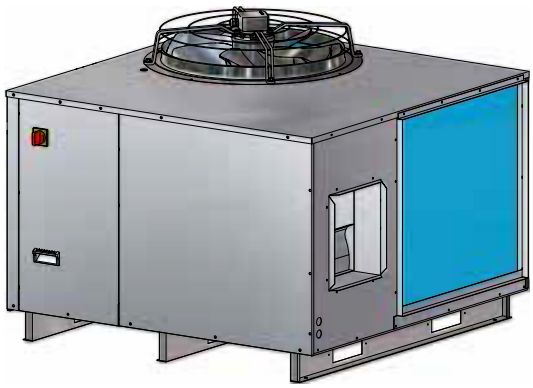
ALLEGATO

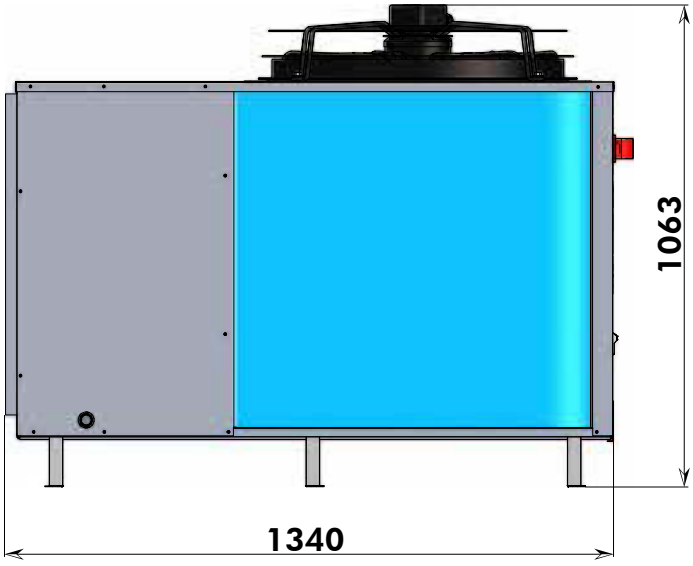
ANEXO

DIMENSIONS
DIMENSIONS
ABMESSUNGEN
DIMENSIONI
DIMENSIONES

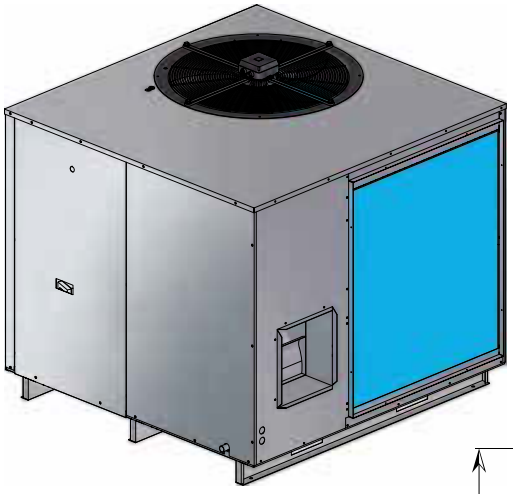
HAN 13 / 15 / 17 / 19

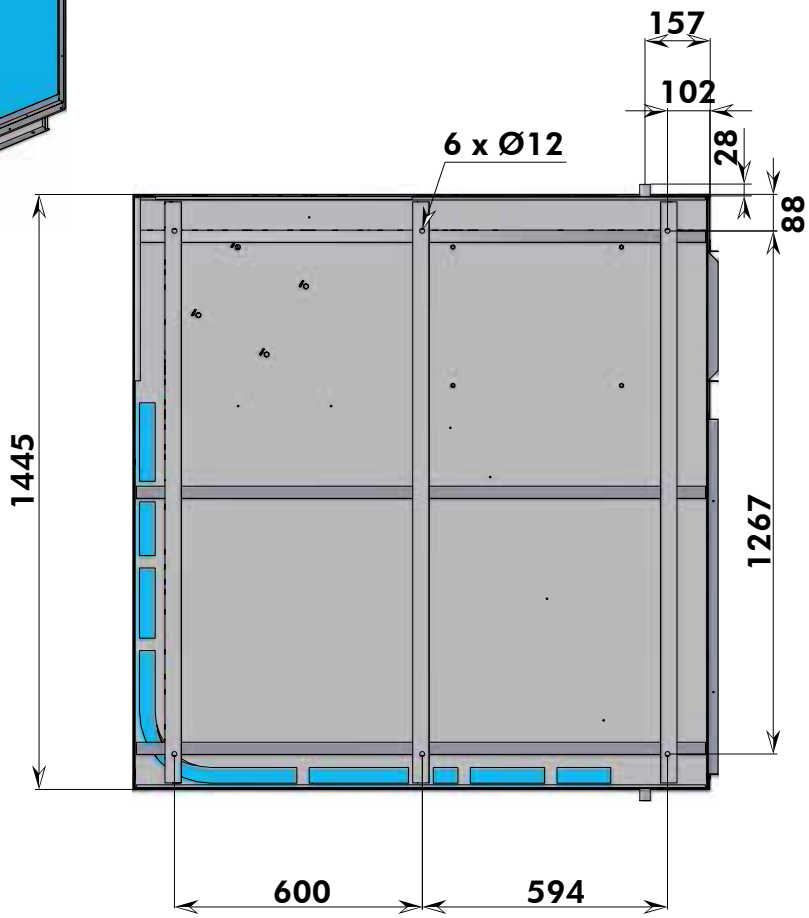


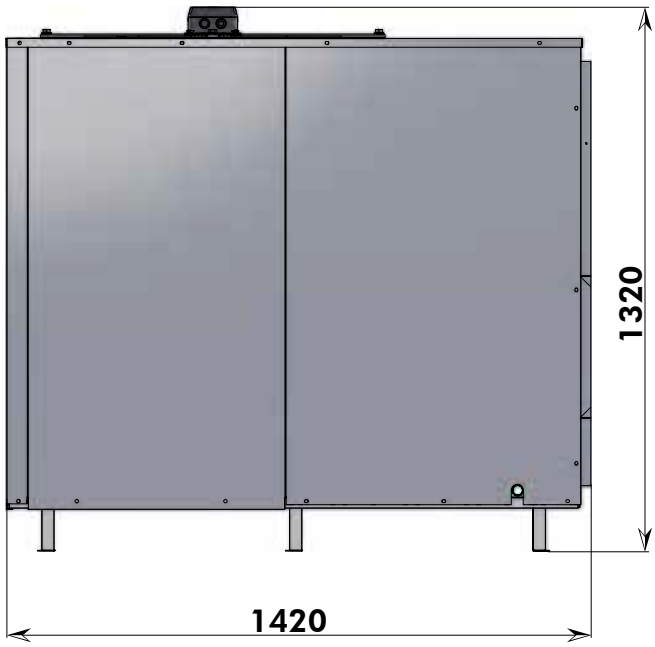




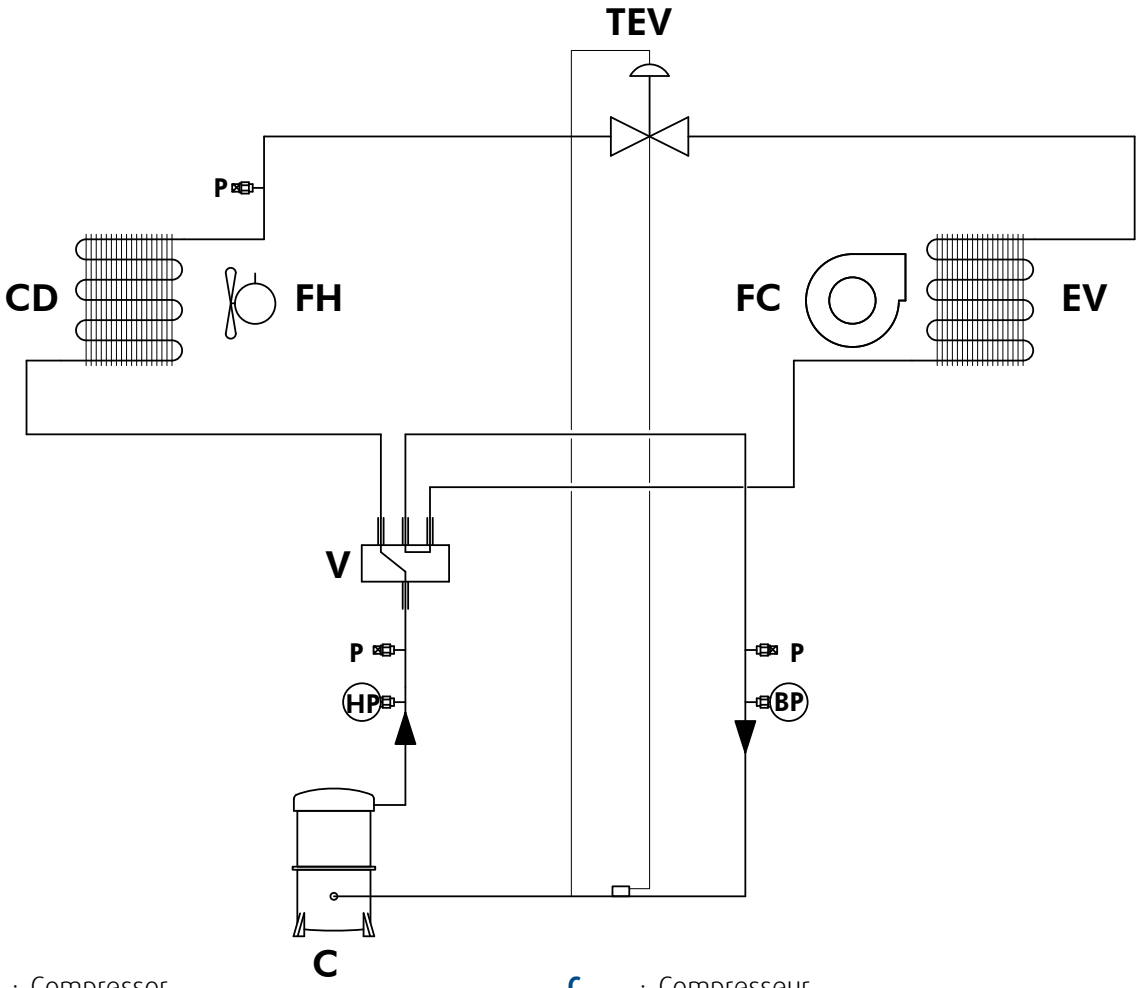
HAN 25 / 31







REFRIGERANT CIRCUIT DIAGRAM
SCHEMA DU CIRCUIT FRIGORIFIQUE
KÄLTEKREISLAUFDIAGRAMM
SCHEMA DEL CIRCUITO REFRIGERANTE
ESQUEMA DEL CIRCUITO FRIGORIFÍCO



C : Compressor
CD : Condenser
EV : Evaporator
FC : Centrifugal fan
FH : Propellor fan
HP : Condensing pressure switch
BP : Evaporator pressure switch
P : Pressure Tap
TEV : Thermodynamic Expansion Valve
V : 4 way valve

C : Compresseur
CD : Condenseur
EV : Evaporateur
FC : Ventilateur centrifuge
FH : Ventilateur hélicoïde
HP : Pressostat HP
BP : Pressostat BP
P : Prise de pression
TEV : Détendeur thermostatique
V : Vanne d'inversion

C : Kompressor
CD : Verflüssiger
EV : Verdampfer
FC : Zentrifugalventilator
FH : Axialventilator
HP : Druckschalter Hochdruck
BP : Druckschalter Niederdruck
P : Druckanschlussstelle
TEV : Thermostatisches Druckminderventil
V : Umkehrventil

C : Compressore
CD : Condensatore
EV : Evaporatore
FC : Centrifugo ventilatore
FH : Elicoidale ventilatore
HP : Pressostato HP
BP : Pressostato BP
P : Presa di pressione
TEV : Regolatore di pressione termostatico
V : Valvola di inversione

C : Compresor
CD : Condensador
EV : Evaporador
FC : Centrifugo ventilator
FH : Helicoidal ventilator
HP : Presostato AP
BP : Presostato BP
P : Toma de presión
TEV : Reductor de presión termostático
V : Válvula de inversión

WIRING DIAGRAM
SCHEMAS ELECTRIQUES
STROMLAUFPLANS
SCHEMA ELETRICO
ESQUEMA ELECTRICO

TAKE CARE!

These wiring diagrams are correct at the time of publication. Manufacturing changes can lead to modifications. Always refer to the diagram supplied with the product.

ATTENTION

Ces schémas sont corrects au moment de la publication. Les variantes en fabrication peuvent entraîner des modifications. Reportez-vous toujours au schéma livré avec le produit.

ACHTUNG!

Diese Stromlaufplans sind zum Zeitpunkt der Veröffentlichung gültig. In Herstellung befindliche Varianten können Änderungen mit sich bringen. In jedem Fall den mit dem Produkt gelieferten Stromlaufplan hinzuziehen.

ATTENZIONE !

Questi schemi sono corretti al momento della pubblicazione. Le varianti apportate nel corso della fabbricazione possono comportare modifiche. Far sempre riferimento allo schema fornito con il prodotto.

ATENCIÓN !

Esto esquemas son correctos en el momento de la publicación. Pero las variantes en la fabricación pueden ser motivo de modificaciones. Remítase siempre al esquema entregado con el producto.

POWER SUPPLY MUST BE SWITCHED OFF BEFORE STARTING TO WORK IN THE ELECTRIC CONTROL BOXES!

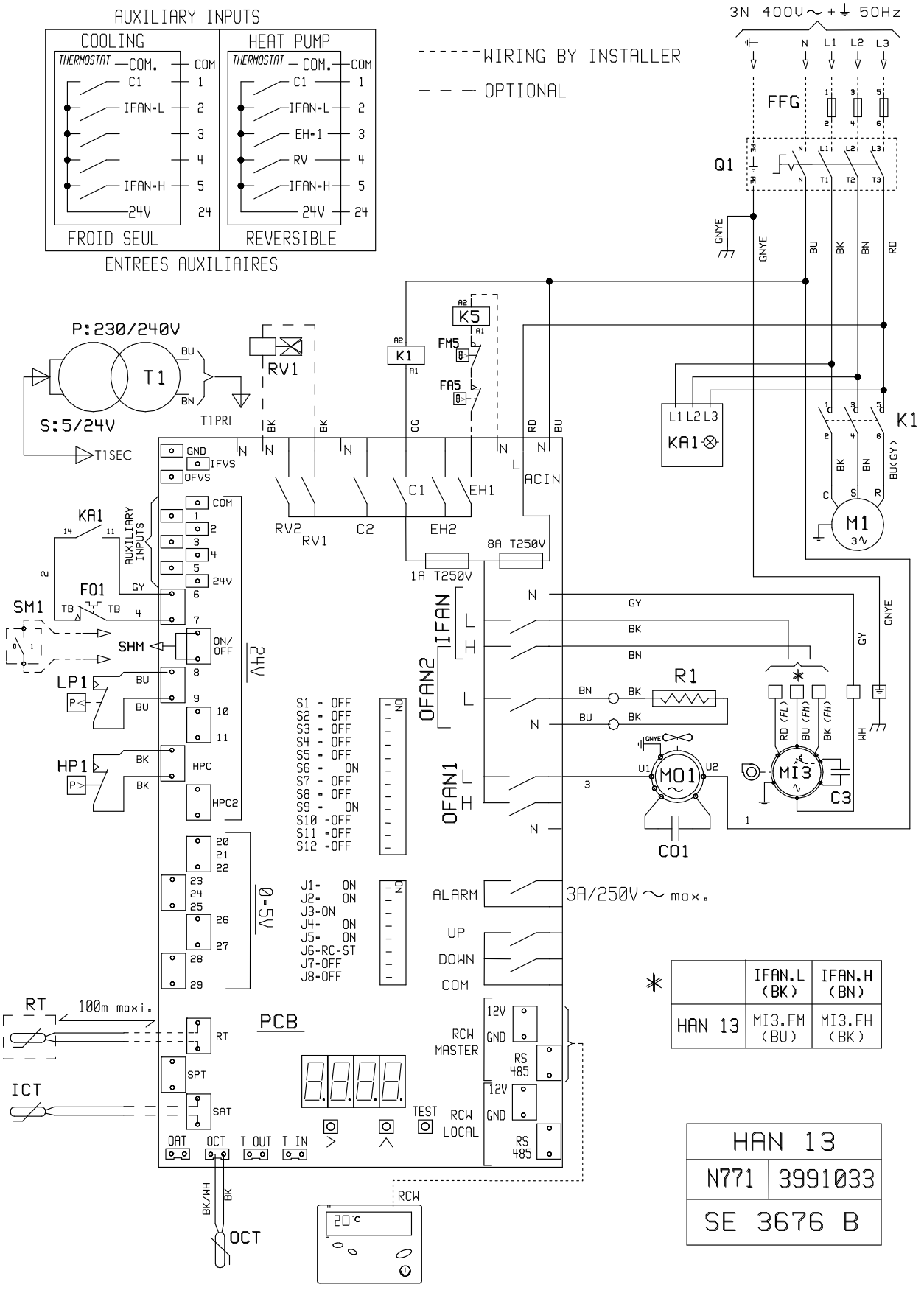
MISE HORS TENSION OBLIGATOIRE AVANT TOUTE INTERVENTION DANS LES BOITIERS ELECTRIQUES.

VOR JEDEM EINGRIFF AN DEN ANSCHLUßKÄSTEN UNBEDINGT DAS GERÄT ABSCHALTEN!

PRIMA DI OGNI INTERVENTO SULLE CASSETTE ELETTRICHE ESCLUDERE TASSATIVAMENTE L'ALIMENTAZIONE !

PUESTA FUERA DE TNESIÓN OBLIGATORIA ANTES DE CUALQUIER INTERVENCIÓN EN LAS CAJAS ELÉCTRICAS!

HAN 13


AUXILIARY INPUTS
COOLING
HEAT PUMP
THERMOSTAT
COM.
C1
IFAN-L
IFAN-H
EH-1
RV
24V
FROID SEUL
REVERSIBLE
ENTREES AUXILIAIRES
------WIRING BY INSTALLER
– – – OPTIONAL
3N 400V~ + ⏚ 50Hz
FFG
Q1
K5
K1
FM5
FA5
KA1
P:230/240V
S:5/24V
T1
T1PRI
T1SEC
RV1
RV2
C2
EH2
C1
EH1
ACIN
8A T250V
1A T250V
M1
3~
KA1
FO1
SM1
SHM
LP1
HP1
HPC
HPC2
ON/OFF
24V
0-5V
IFAN
OFAN2
OFAN1
R1
MO1
MI3
C3
CO1
S1 - OFF
S2 - OFF
S3 - OFF
S4 - OFF
S5 - OFF
S6 - ON
S7 - OFF
S8 - OFF
S9 - ON
S10 -OFF
S11 -OFF
S12 -OFF
J1- ON
J2- ON
J3-ON
J4- ON
J5- ON
J6-RC-ST
J7-OFF
J8-OFF
ALARM
3A/250V~ max.
UP
DOWN
COM
RCW MASTER
RCW LOCAL
RS 485
TEST
RT
100m maxi.
SPT
SAT
ICT
OCT
OAT
T OUT
T IN
PCB
RCW
20°C
IFAN.L (BK)
IFAN.H (BN)
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MI3.FM (BU)
MI3.FH (BK)
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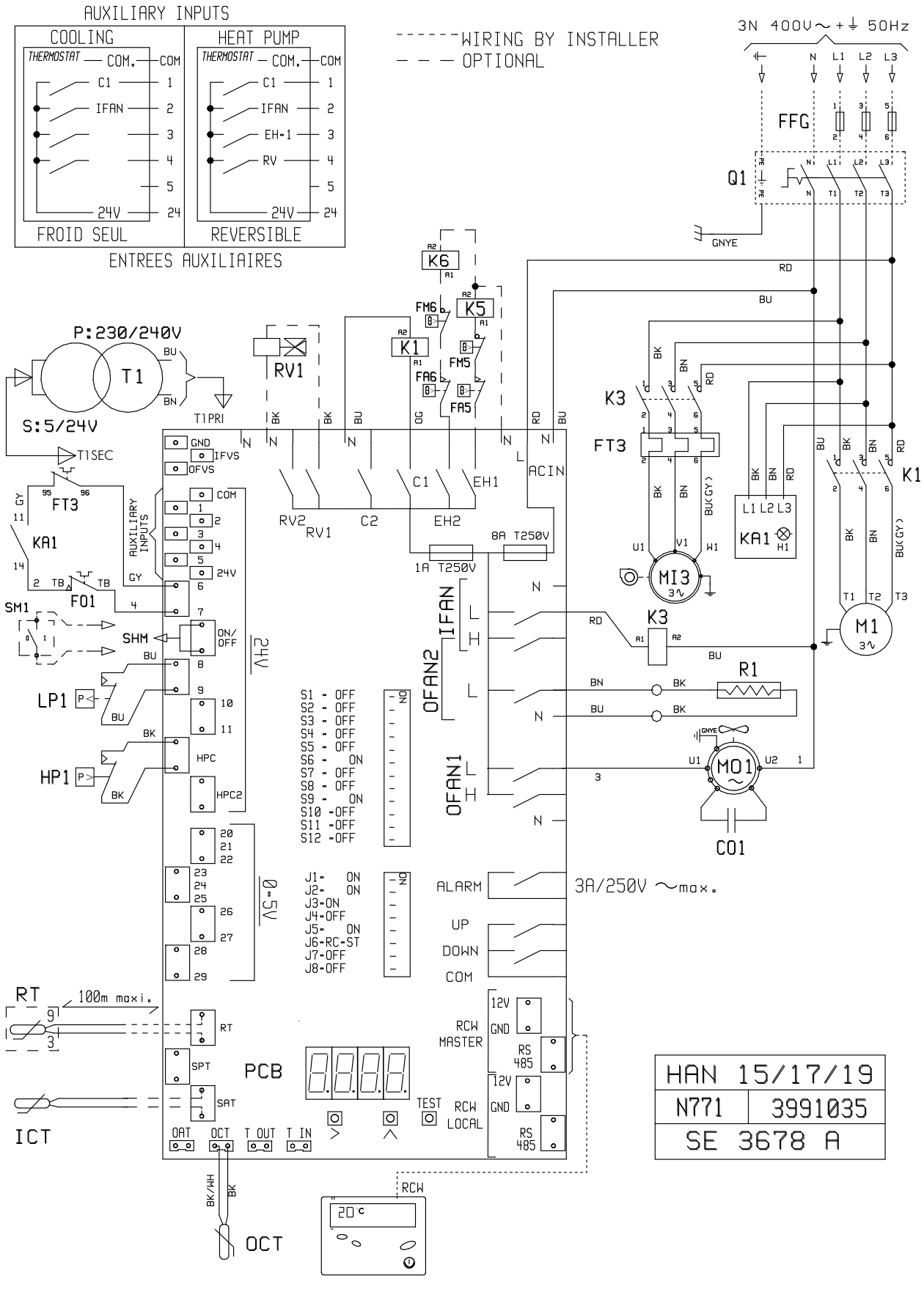
HAN 15 / 17 / 19


AUXILIARY INPUTS
COOLING
HEAT PUMP
THERMOSTAT
COM.
C1
IFAN
EH-1
RV
24V
FROID SEUL
REVERSIBLE
ENTREES AUXILIAIRES
WIRING BY INSTALLER
OPTIONAL
3N 400V~ + ⏚ 50Hz
FFG
Q1
GNYE
K6
K5
K1
FM6
FM5
FA6
FA5
RV1
P:230/240V
T1
S:5/24V
T1SEC
T1PRI
K3
FT3
K1
KA1
FO1
SM1
SHM
LP1
HP1
HPC
HPC2
AUXILIARY INPUTS
ON/OFF
2HV
0-5V
RV2
C2
EH2
C1
EH1
ACIN
8A T250V
1A T250V
IFAN
OFAN2
OFAN1
R1
MI3
MO1
M1
CO1
S1 - OFF
S2 - OFF
S3 - OFF
S4 - OFF
S5 - OFF
S6 - ON
S7 - OFF
S8 - OFF
S9 - ON
S10 -OFF
S11 -OFF
S12 -OFF
J1- ON
J2- ON
J3-ON
J4-OFF
J5- ON
J6-RC-ST
J7-OFF
J8-OFF
ALARM
UP
DOWN
COM
3A/250V ~max.
RT
100m maxi.
SPT
SAT
ICT
PCB
RCW MASTER
RCW LOCAL
TEST
OAT
OCT
T OUT
T IN
OCT
RCW
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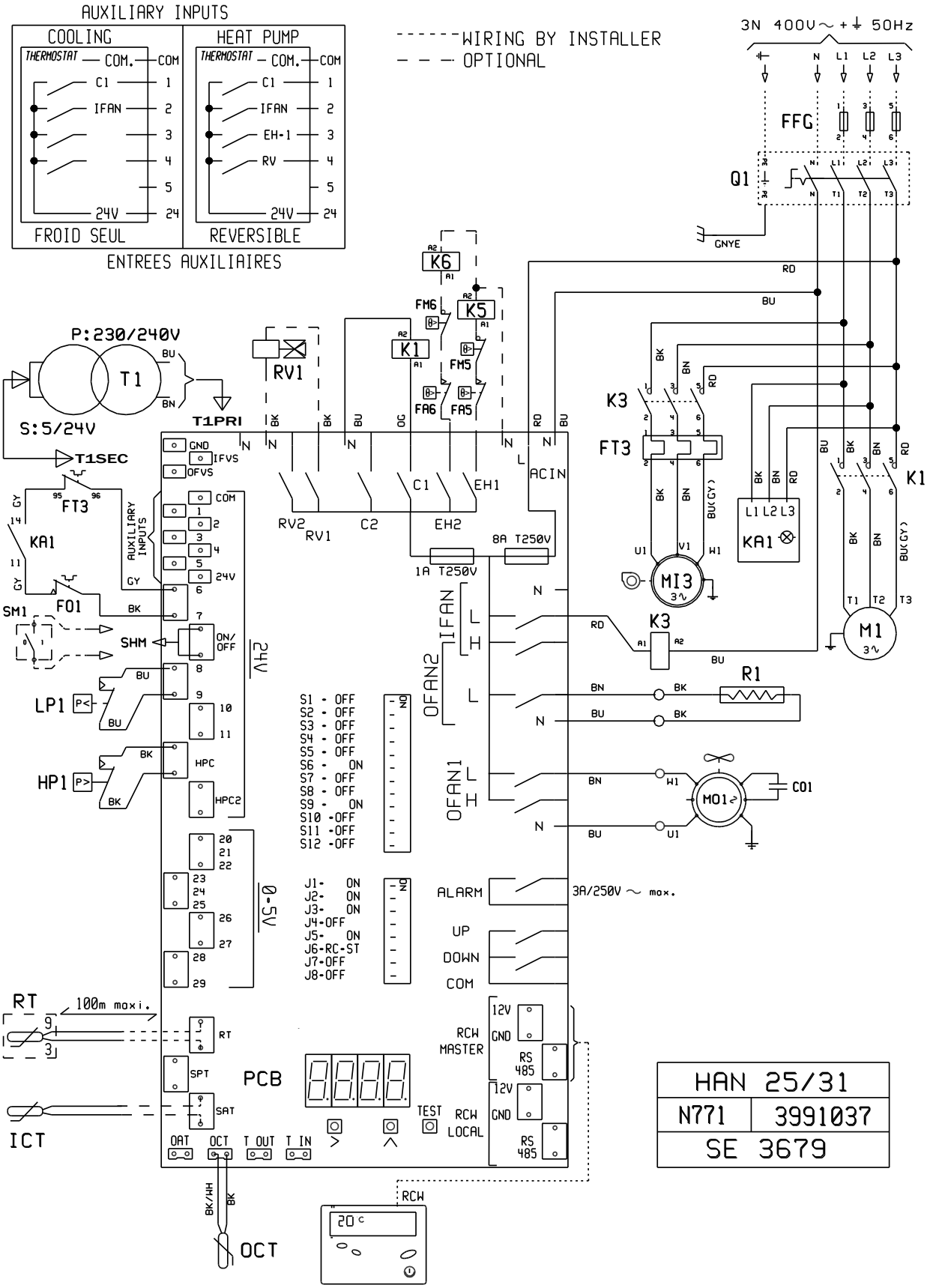
HAN 25 / 31


AUXILIARY INPUTS
COOLING
HEAT PUMP
THERMOSTAT
COM.
C1
IFAN
EH-1
RV
24V
FROID SEUL
REVERSIBLE
ENTREES AUXILIAIRES
WIRING BY INSTALLER
OPTIONAL
3N 400V~ + ⏚ 50Hz
FFG
Q1
GNYE
K6
K5
K1
FM6
FM5
FA6
FA5
P:230/240V
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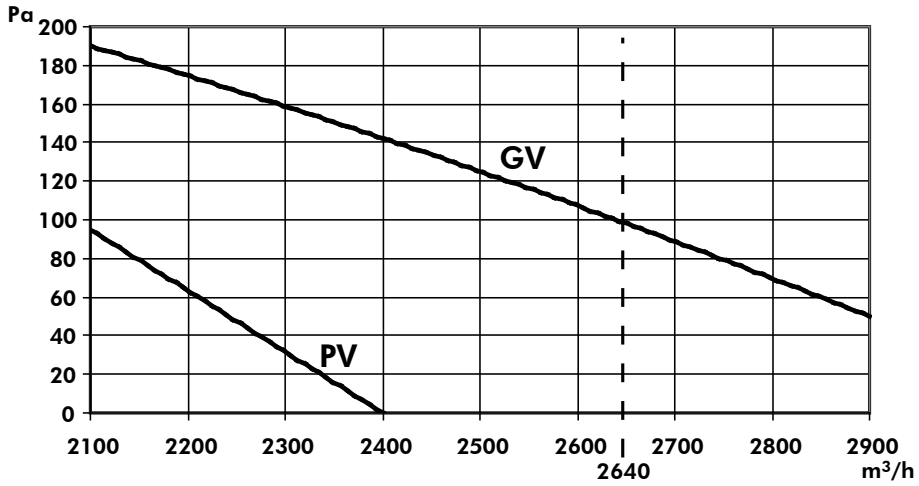
S:5/24V
T1PRI
T1SEC
RV1
RV2
C2
EH2
ACIN
8A T250V
1A T250V
FT3
KA1
SM1
F01
SHM
LP1
HP1
HPC
HPC2
ON/OFF
24V
0-5V
S1 - OFF
S2 - OFF
S3 - OFF
S4 - OFF
S5 - OFF
S6 - ON
S7 - OFF
S8 - OFF
S9 - ON
S10 -OFF
S11 -OFF
S12 -OFF
J1- ON
J2- ON
J3- ON
J4-OFF
J5- ON
J6-RC-ST
J7-OFF
J8-OFF
OFAN2
OFAN1
IFAN
R1
K3
FT3
MI3
MO1
CO1
M1
ALARM
3A/250V ~ max.
UP
DOWN
COM
RCW MASTER
RCW LOCAL
RS 485
TEST
RT
100m maxi.
SPT
SAT
PCB
OAT
OCT
T OUT
T IN
ICT
OCT
RCW
20 c
HAN 25/31
N771 3991037
SE 3679

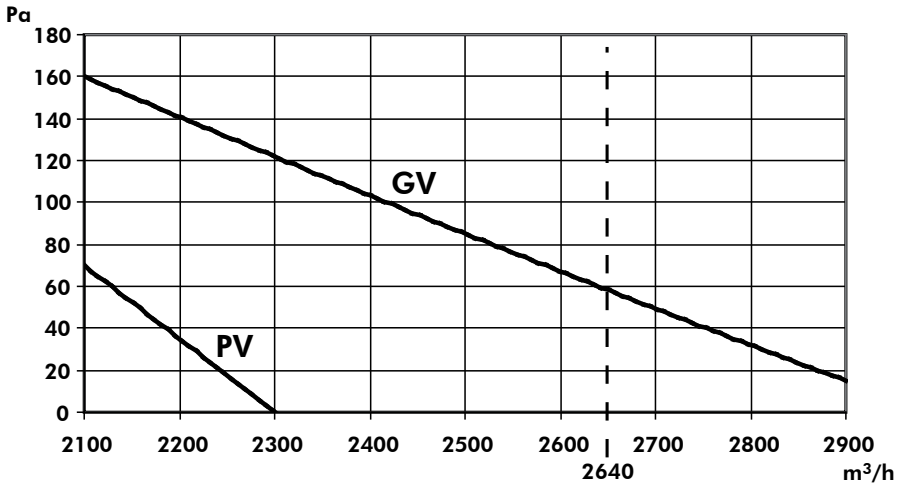
AERAULIC ADJUSTMENT
CARACTERITIQUES AERAULIQUES
REGELUNG DES LÜFTERSYSTEMS
REGOLAZIONE DEL SISTEMA DI TRATTAMENTO DELL'ARIA
AJUSTE DEL ISTEMA AEROLICO

HAN 13

WITHOUT AIR FILTER
SANS FILTRE À AIR
OHNE LUFTFILTER
SENZA FILTRO AD ARIA
SIN FILTRO A AIRE

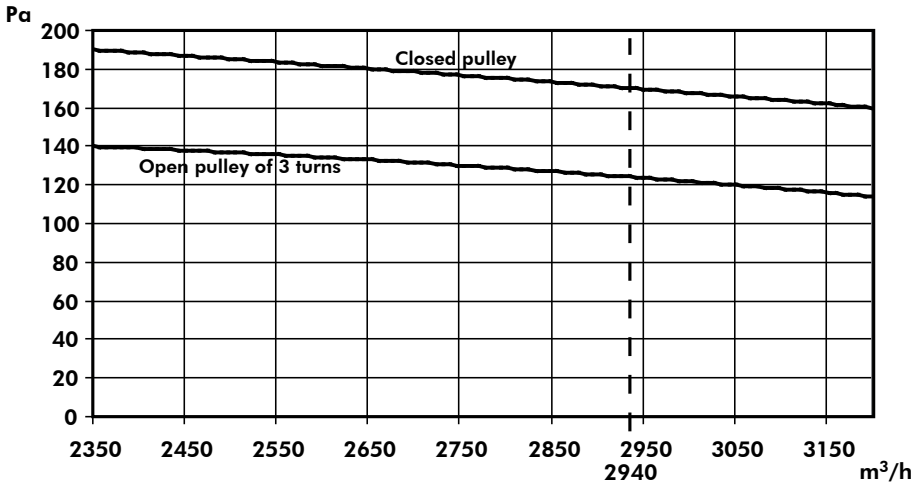


WITH AIR FILTER
AVEC FILTRE À AIR
MIT LUFTFILTER
CON FILTRO AD ARIA
CON FILTRO A AIRE

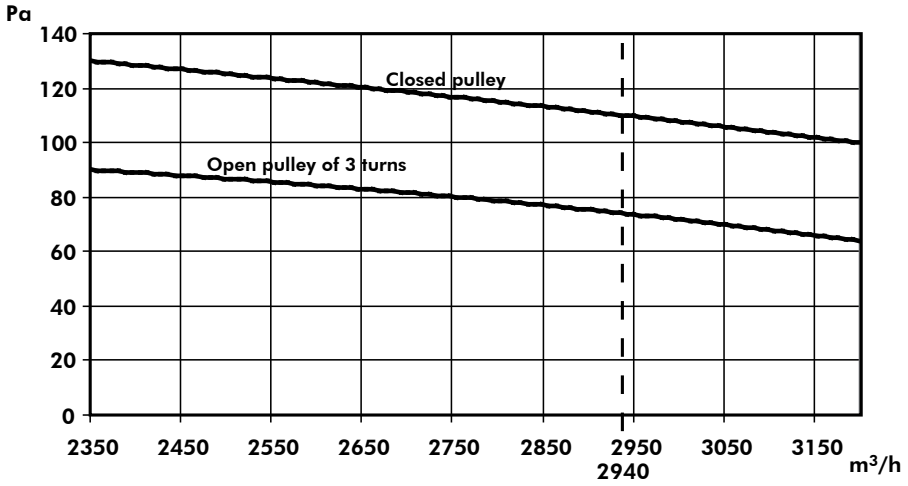


HAN 15

WITHOUT AIR FILTER
SANS FILTRE À AIR
OHNE LUFTFILTER
SENZA FILTRO AD ARIA
SIN FILTRO A AIRE

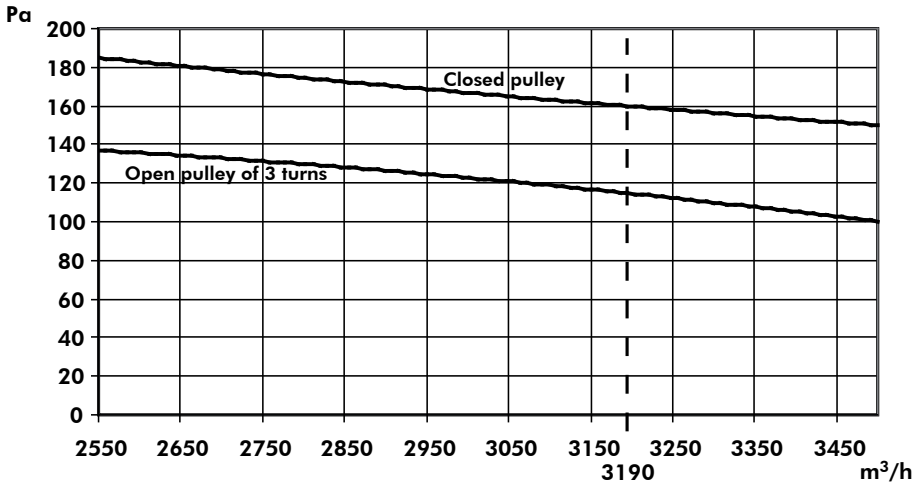


WITH AIR FILTER
AVEC FILTRE À AIR
MIT LUFTFILTER
CON FILTRO AD ARIA
CON FILTRO A AIRE

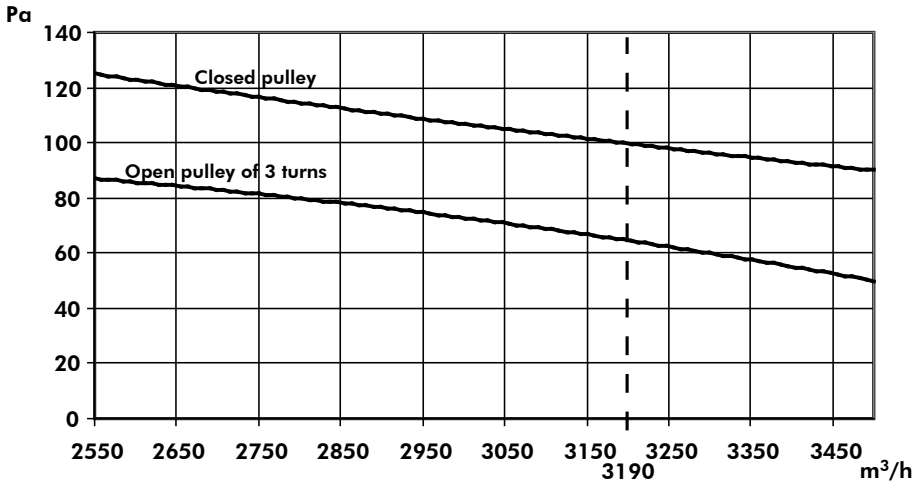


HAN 17

WITHOUT AIR FILTER
SANS FILTRE À AIR
OHNE LUFTFILTER
SENZA FILTRO AD ARIA
SIN FILTRO A AIRE

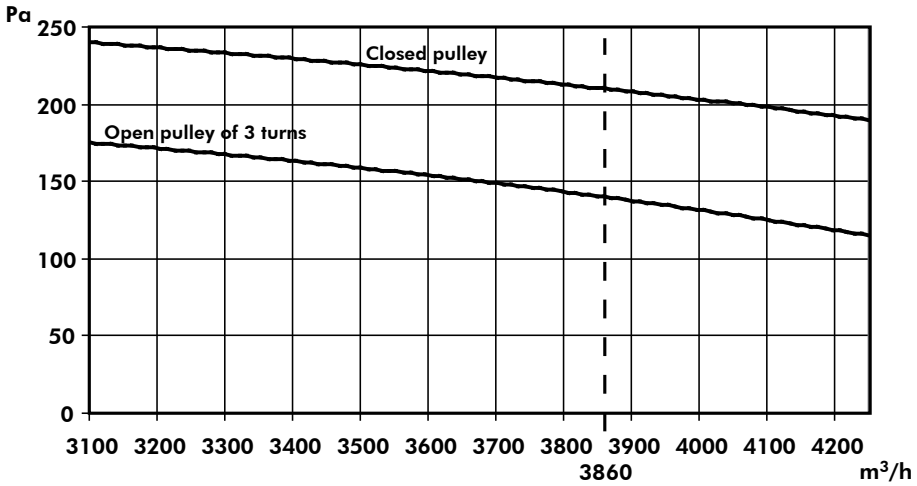


WITH AIR FILTER
AVEC FILTRE À AIR
MIT LUFTFILTER
CON FILTRO AD ARIA
CON FILTRO A AIRE

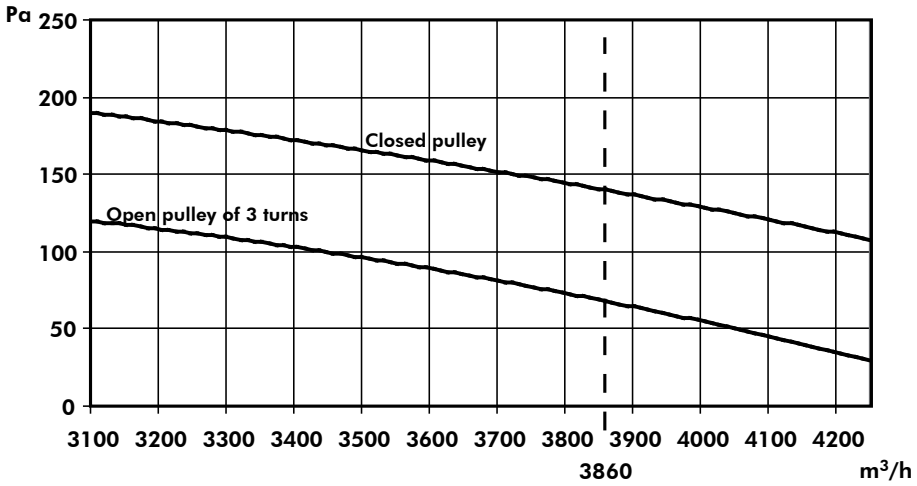


HAN 19

WITHOUT AIR FILTER
SANS FILTRE À AIR
OHNE LUFTFILTER
SENZA FILTRO AD ARIA
SIN FILTRO A AIRE

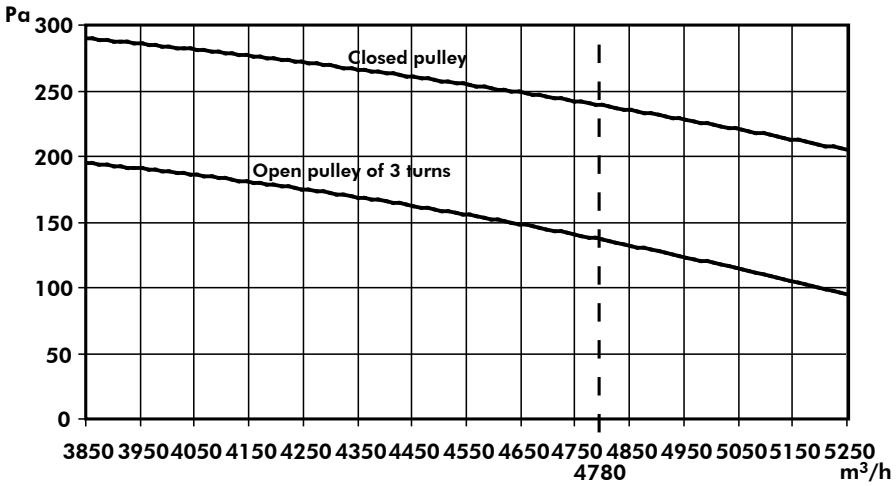


WITH AIR FILTER
AVEC FILTRE À AIR
MIT LUFTFILTER
CON FILTRO AD ARIA
CON FILTRO A AIRE

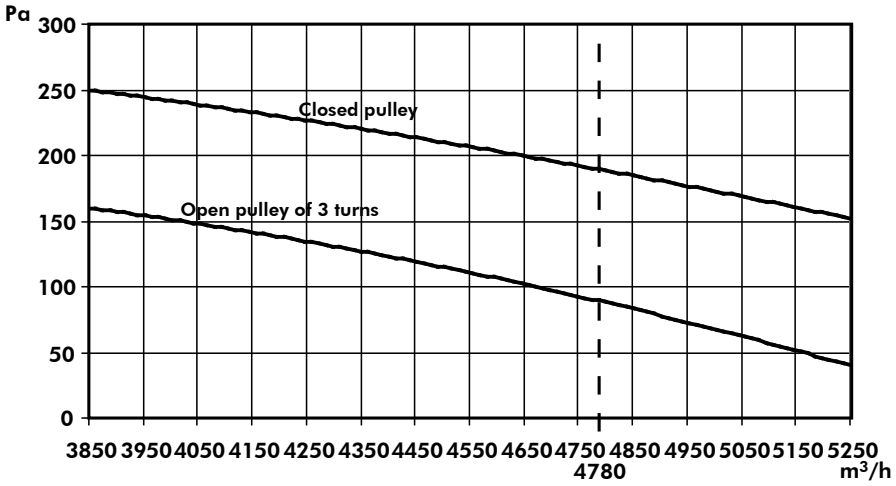


HAN 25

WITHOUT AIR FILTER
SANS FILTRE À AIR
OHNE LUFTFILTER
SENZA FILTRO AD ARIA
SIN FILTRO A AIRE

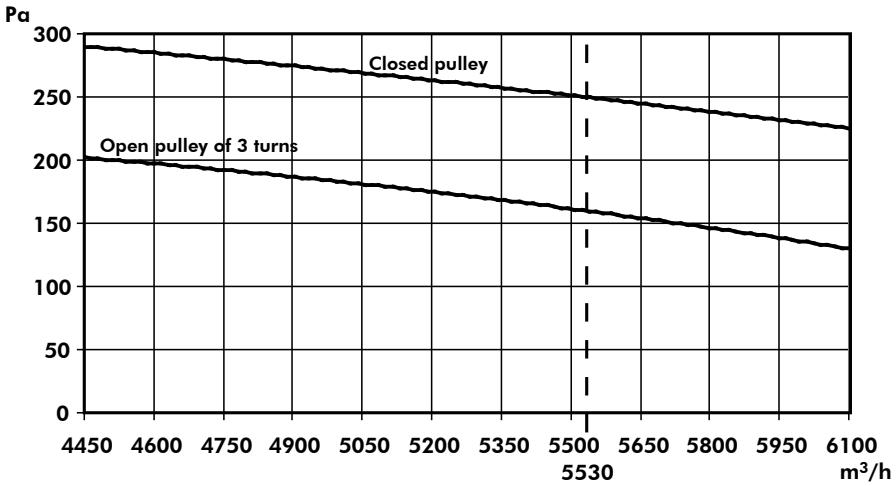


WITH AIR FILTER
AVEC FILTRE À AIR
MIT LUFTFILTER
CON FILTRO AD ARIA
CON FILTRO A AIRE

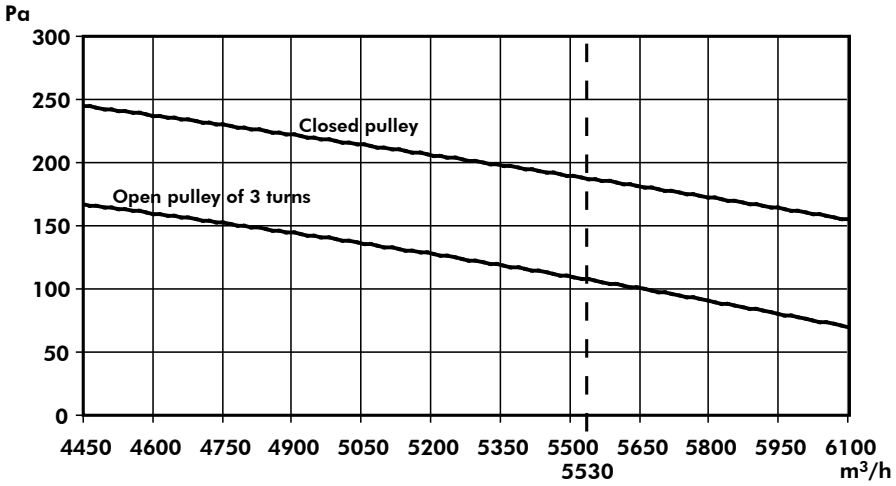


HAN 31

WITHOUT AIR FILTER
SANS FILTRE À AIR
OHNE LUFTFILTER
SENZA FILTRO AD ARIA
SIN FILTRO A AIRE



WITH AIR FILTER
AVEC FILTRE À AIR
MIT LUFTFILTER
CON FILTRO AD ARIA
CON FILTRO A AIRE



EC Compliance declaration

Under our own responsibility, we declare that the product designated in this manual comply with the provisions of the EEC directives listed hereafter and with the national legislation into which these directives have been transposed.

Déclaration CE de conformité

Nous déclarons sous notre responsabilité que les produits désignés dans la présente notice sont conformes aux dispositions des directives CEE énoncées ci- après et aux législations nationales les transposant.

EG-Konformitätserklärung

Wir erklarën in eigener Verantwortung, das die in der vorliegenden Beschreibung angegebenen Produkte den Bestimungen der nachstehend erwähnten EG-Richtlinien und den nationalen Gesetzesvorschriffen entsprechen, in denen diese Richtinien umgesetz sind.

Dichiarazione CE di conformità

Dichiariamo, assurmendone la responsasabilità, che i prodotti descritti nel presente manuale sono conformi alle disposizioni delle direttive CEE di cui sott e alle lagislazionni nazionali che li recepiscono

Declaración CE de conformidad

Declaramos, bajo nuestra responsabilidad, que los productos designados en este manual son conformes a las disposiciones de las directivas CEE enunuciadas a continuacion, asi como a las legislaciones nacionales que las contemplan.

HAN 13 - 15 - 17 - 19 - 25 -31

MACHINERY DIRECTIVE 98 / 37 / EEC
LOW VOLTAGE DIRECTIVE (DBT) 2006 / 95 / EEC
ELECTROMAGNETIC COMPATIBILITY DIRECTIVE 2004 / 108 / EEC
PRESSURISE EQUIPMENT DIRECTIVE (DESP) 97 / 23 / EEC
SUB-MODULE A CATEGORY I: HAN 13 - 15 - 17 - 19
SUB-MODULE A1 CATEGORY II: HAN 25 - 31
NOTIFIED BODY: TÜV RHEINLAND – 20 TER RUE DE BEZONS CS 60030 – 92415 COURBEVOIE CEDEX - FRANCE
THE PRODUCTS ARE PROVIDED WITH CE 0035 MARKING OF CONFORMITY

DIRECTIVE MACHINES 98 / 37 / C.E.E.
DIRECTIVE BASSE TENSION (DBT) 2006 / 95 / C.E.E.
DIRECTIVE COMPATIBILITE ELECTROMAGNETIQUE 2004 / 108 / C.E.E
DIRECTIVE DES EQUIPEMENTS SOUS PRESSION (DESP) 97 / 23 C.E.E.
SOUS-MODULE A CATEGORIE I : HAN 13 - 15 - 17 - 19
SOUS-MODULE A1 CATEGORIE II : HAN 25 - 31
AVEC SURVEILLANCE PAR LE TUV RHEINLAND 20 TER RUE DE BEZONS CS 60030 – 92415 COURBEVOIE CEDEX - FRANCE
LES PRODUITS SONT FOURNIS AVEC LE MARQUAGE DE CONFORMITE CE 0035

RICHTLINIE MASCHINEN 98 / 37 / EG
RICHTLINIE NIERDERSPANNUNG (DBT) 2006 / 95 / EG
RICHTLINIE ELEKTROMAGNETISHE VERTRÄGLICHKEIT 2004 / 108 / EG
RICHTLINIE FÜR AUSRÜSTUNGEN UNTER DRUCK (DESP) 97 / 23 / EG
UNTER MODUL A, KATEGORIE I : HAN 13 - 15 - 17 - 19
UNTER MODUL A1, KATEGORIE II : HAN 25 - 31
MIT KONTROLLE DURCH DEN TUV RHEINLAND 20 TER RUE DE BEZONS CS 60030 – 92415 COURBEVOIE CEDEX - FRANCE
DIE PRODUKTE WERDEN MIT DER MARKIERUNG CONFORMITE CE 0035 GELIEFERT.

DIRETTIVA MACHINE 98 / 37 / CEE
DIRETTIVA BASSA TENSIONE (DBT) 2006 / 95 / CEE
DIRETTIVA COMPATIBILITA ELETTROMAGNATICA 2004 / 108 / CEE
DIRETTIVA DEGLI IMPIANTI SOTTO PRESSIONE (DESP) 97 / 23 / CEE
SOTTOMODULO A, CATEGORIA I : HAN 13 - 15 - 17 - 19
SOTTOMODULO A1, CATEGORIA II : HAN 25 - 31
CON SUPERVISION POR EL TUV RHEINLAND 20 TER RUE DE BEZONS CS 60030 – 92415 COURBEVOIE CEDEX - FRANCE
I PRODOTTI SONO FORNITI CON LA MARCATURA DI CONFORMITE CE 0035.

DIRECTIVA MAQUIAS 98 / 37 / CEE
DIRECTIVA BAJA TENSION (DBT) 2006 / 95 / CEE
DIRECTIVA COMPATIBILIDAD ELECTROMAGNETICA 2004 / 108 / CEE
DIRECTIVA DE LOS EQUIPOS A PRESION (DESP) 97 / 23 / CEE
BAJA MODULO A, CATEGORIA I : HAN 13 - 15 - 17 - 19
BAJA MODULO A1, CATEGORIA II : HAN 25 - 31
CON SORVEGLIANZA DAL TUV RHEINLAND 20 TER RUE DE BEZONS CS 60030 – 92415 COURBEVOIE CEDEX - FRANCE
LOS PRODUCTOS SE PROPORCIONAN CON EL MARCADO DE CONFOR CE 0035.

And that the following paragraphs of the harmonised standards have been applied.
Et que les paragraphes suivants les normes harmonisées ont été appliqués.
Und dass die folgenden Paragraphen der vereinheitlichten Normen Angewandt wurden.
E che sono stati applicati i seguenti paragraphi delle norme armonnizzate.
Y que se han aplicado los siguientes apartados de las normas armonizadas.

EN 60 204
EN 61 000-6-3
EN 378
EN 60 335-1
EN 61 000-6-1
EN 60 335-2-40

A Tillières sur Avre
27570 - FRANCE
Le: 02/02/2015
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Systemair AC SAS

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3990513GB

CE

As part of our ongoing product improvement programme, our products are subject to change without prior notice. Non contractual photos.

Dans un souci d'amélioration constante, nos produits peuvent être modifiés sans préavis. Photos non contractuelles.

In dem Bemühen um ständige Verbesserung können unsere Erzeugnisse ohne vorherige Ankündigung geändert werden. Fotos nicht vertraglich bindend.

A causa della politica di continua miglioria posta in atto dal costruttore, questi prodotti sono soggetti a modifiche senza alcun obbligo di preavviso. Le foto pubblicate non danno luogo ad alcun vincolo contrattuale.

Con objeto de mejorar constantemente, nuestros productos pueden ser modificados sin previo aviso. Fotos no contractuales.