Worthington Creyssensac

Instruction Manual EN

Compressors

ROLLAIR®

Type 15 (X-XT), 20-25-30 (M-X-MT-XT)

40 (ME-XE-MET-XET), 20-30 (V-VT)

62 305 052 12 ed00

ROLLAIR® 30M

ROLLAIR® 30XT

GUARANTEE

The ROLLAIR® compressor is guaranteed for 12 months from date of commissioning or a maximum of 18 months from date of manufacture (which ever occurs first).

The guarantee will only be applicable subject to strict observation of the installation conditions and the maintenance operations specified in these operating instructions.

The guarantee is limited to replacing parts that are recognised as defective by our services.

NOTE

This instructions manual complies with the stipulation of European 98/37/EC concerning machine safety and is valid for machines carrying the CE label.

The ROLLAIR® should never be operated beyond its capabilities or in any way which does not comply with the instructions contained in this operating and maintenance guide.

Worthington-Creyssensac will decline any responsibility if these instructions are not respected.

This equipment has been factory tested and satisfies normal operating conditions: they must not be exceeded as this would place the machine under abnormal stress and effort.

INSTALLATION INSTRUCTIONS

For the guarantee to be valid, the unit must be assembled in covered premises with temperatures not exceeding :

Mini: + 4 °C (frost free)

Maxi: + 40 °C

You must also have:

1 meter space around the compressor

-

low ventilation (fresh air) proportionate to the ventilation flow necessary for the machine and protected from any infiltration of humidity (splashes of water during bad weather) and all pollution

-

top insulation or extraction to ensure reversal of the flow of warm air and evacuation of the heat to outside the equipment room

-

a link from the condensation water evacuation pipe to the drain discharger

-

in dusty environment, pre-filtering the room's air intake and a special filter on the machine's ventilation inlets

TECHNICAL CHARACTERISTICS STANDARD MACHINES

ROLLAIR®		**15**	**20**	**25**	**30**	**40**
Nominal pressure at full capacity	bar	7.5 10 13	7.5 10 13	7.5 10 13	7.5 10 13	7.5 10 13
Nominal pressure at full capacity with integrated dryer	bar	7.25 9.75 12.75	7.25 9.75 12.75	7.25 9.75 12.75	7.25 9.75 12.75	7.25 9.75 12.75
Real flow* (as per ISO 1217 ed 1996)	m^3/h	116 91 72	166 132 109	200 162 139	234 194 169	278 256 225
Motor power	kW-ch	11/15	15/20	18.5/25	22/30	30/40
Ø Pressure outlet (F)	Pouce	1"	1"	1"	1"	1"
Oil reservoir capacity	liter	10	10	10	11	11
Residual quantity of oil	ppm	3	3	3	3	3
Noise level at 1m (according to PNEUROP PN 8 NT C2)	dB(A)	61	62	63	64	65
* Suction pressure : 1 bar absolute - Relative humidity : 0 % - Ambient temperature : 20 °C - Effective delivery pressure : 7 bar, 9,5 bar or 12,5 bar (effective)						
Dimensions (mm)	L x l x h	1250x780x1465	1250x780x1465	1250x780x1465	1250x780x1465	1250x780x1465
Weight without dryer	kg	450	450	465	485	550
Weight with dryer	kg	500	500	515	547 515 515	612

ROLLAIR® Type	15	20	25	30	40
Motor power (kW)	11	15	18.5	22	30
Mains voltage 220/230/240 Volt / 3 / 50 Hz					
Nominal intensity (230V)	47	64	78	92	115
Power supply cable H 07	4 x 6	4 x 10	4 x 16	4 x 25	4 x 35
Section mm^2 (L=10m maximum)					
Upstream fuses (Type aM)	63	100	100	125	160
Mains voltage 380/400/415 Volt / 3 / 50 Hz					
Nominal intensity (400V)	27	37	45	53	66
Power supply cable H 07	4 x 6	4 x 6	4 x 10	4 x 10	4 x 16
Section mm^2 (L=10m maximum)					
Upstream fuses (Type aM)	40	50	63	80	80

TECHNICAL CHARACTERISTICS VARIABLE SPEED MACHINES

ROLLAIR®		20V			30V		
Nominal pressure at full capacity	bar	4	7	9.5	4	7	9.5
Nominal pressure at full capacity with integrated dryer	bar	3.75	6.75	9.25	3.75	6.75	9.25
Real flow* (as per ISO 1217 ed 1996)	m^3/h	190	169	145	235	234	209
Motor power	kW-ch	15-20			22-30		
Ø Pressure outlet (F)	Pouce	1"			1"		
Oil reservoir capacity	liter	10			10		
Residual quantity of oil	ppm	3			3		
Noise level at 1m (according to PNEUROP PN 8 NT C2)	dB(A)	from 58 to 68 (from 16 to 80Hz)			from 58 to 68 (from 12 to 70Hz)		
* Suction pressure : 1 bar absolute - Relative humidity : 0 % - Ambient temperature : 20 °C - Effective delivery pressure : 7 bar, 9,5 bar or 12,5 bar (effective)							
Dimensions (mm)	L x l x h	1250x780x1645			1250x780x1645		
Weight without dryer	kg	470			530		
Weight with dryer	kg	520			592		

Connection of the electric plate to an external control box

- Install an RC filter on the KM1 coil.
- Install an RC filter on the KM2 coil.
- All connections between external parts and the compressor must be carried out using a shielded cable, which must be earthed at one of its ends. **WARNING: the operation connection cables between the different elements must never follow the same path as the existing power cords. A separate installation from the power cords must be carried out.**
- Install an RC filter on all the relay coils of the external operation units.

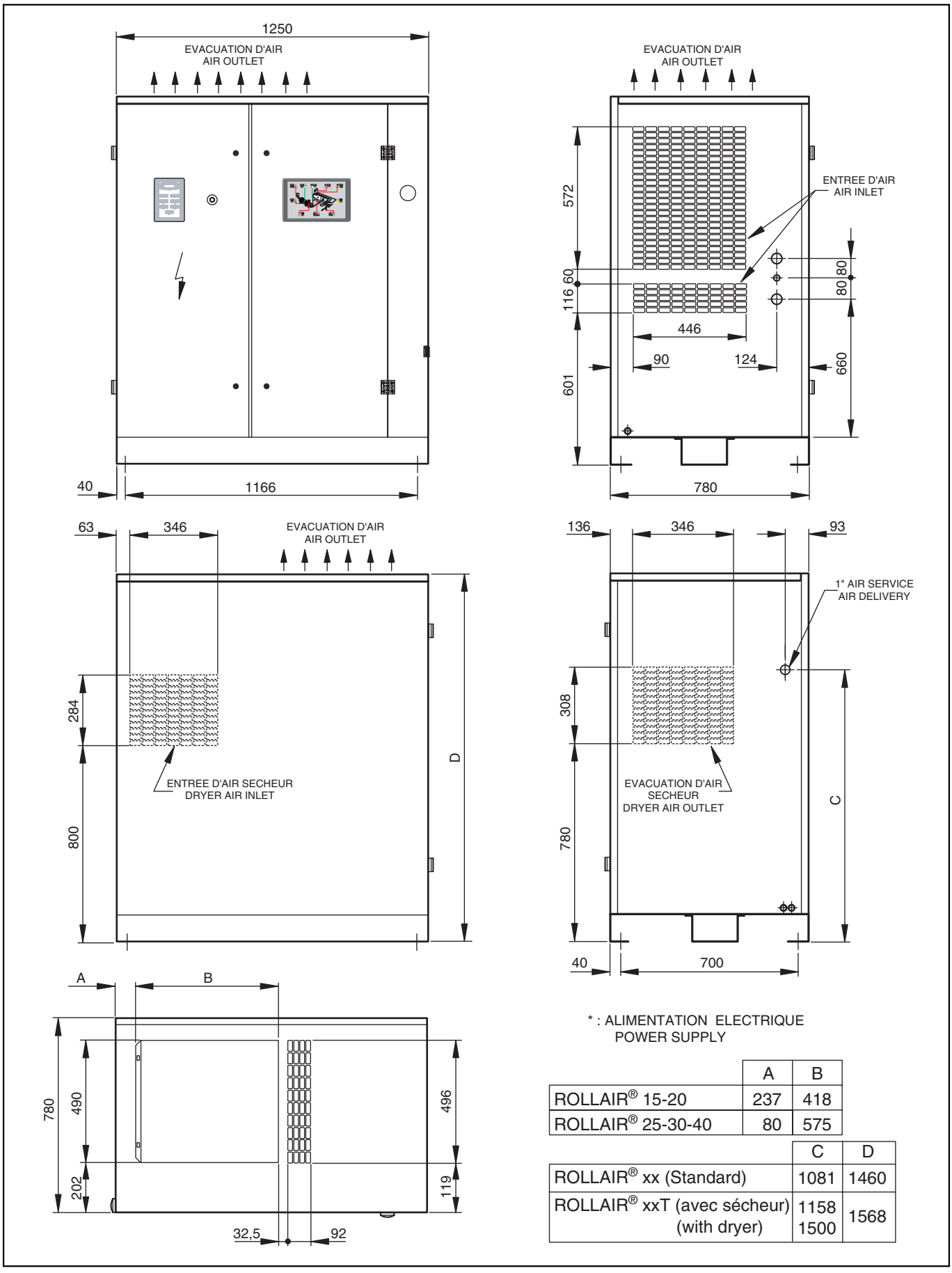
CONTENTS

CONTENTS

Space requirement and installation diagram : ROLLAIR® 15 (X-XT), 20-25-30 (M-X-MT-XT)
40 (ME-XE-MET-XET), 20V-30V

(see **page 2** - installation instructions)

Fig. 1



* : ALIMENTATION ELECTRIQUE
POWER SUPPLY

	A	B
ROLLAIR® 15-20	237	418
ROLLAIR® 25-30-40	80	575

	C	D
ROLLAIR® xx (Standard)	1081	1460
ROLLAIR® xxT (avec sécheur) (with dryer)	1158 1500	1568

Section 1 - Description

A - General

The Worthington-Creyssensac "ROLLAIR®" compressor comprises a compressed air unit in the form of a self contained, complete and fully tested assembly, driven by an electric motor and enclosed in an acoustic casing, necessary for proper cooling of the assembly.

It is an oil-cooled, single stage, helical screw-type compressor. There is a transversally mounted reservoir for pre-separating and storing oil and air. The air is then de-oiled by means of a de-oiling cartridge.

Both the compressor and the motor are directly fixed on the frame by anti-vibration mounts.

B - Respect of the environment and prevention of pollution

1 - Maintenance of the machine

Make sure that the used components of the machine (waste oil, oil and air filters, oil separators, etc...) are disposed of according to national and local regulations.

2 - Condensate bleed pipe

Make sure that the condensates (water, oil) are drained and treated according to national and local regulations.

3 - End of life of the machine

Make sure that the machine as a whole is disposed of according to national and local regulations **(See E Chap. 7 and J Chap. 8).**

C - Standard equipment

In its standard version, the covered unit includes:

- Operating components:

1. A twin-screw compressor.
2. An electric motor: 3,000 rpm, short-circuit rotor, voltage 230/400 V or 400/690 V according to type.
3. Star-delta starting.
4. A direct drive or gearbox drive .
5. An air / oil reservoir complying to current legislation (European Directive for simple pressure vessels no. 87/404) which was standardised by an approved regulatory body and bearing the CE mark.
6. "start - stop" flow rate control by suction closing.
7. A lubrication system using the differential pressure of the circuit, which avoids the need for an oil pump.
8. An oil separation system by means of a de-oiling cartridge.
9. A calorie draining system : oil and compressed air radiator with forced ventilation.
10. A dry-type air filter.
11. An oil filter.
12. A command and control electronic board.

- Safety devices:

1. A safety valve mounted on the oil reservoir.
2. An thermal protection device for the motor, situated in the starting box, to protect the motor from excessive over-load.
3. An air temperature sensor that stops the compressor when the temperature rises abnormally or during an oil cooling defect.
4. A pressure sensor that stops the compressor in the event of an excessive rise in pressure (X and V).

- Control devices:

1. A minimum pressure valve located at the oil tank outlet, just beyond the oil separator, which guarantees minimum pressure in the lubrication circuit.
2. Automatic draining allowing the unit to be exposed to the atmosphere when stopping to thus ensure empty start up which relieves the motor,
3. An oil level gauge on the front panel (see **fig. 19**),
4. An electronic controller including:
   – a control keyboard,
   – the main safety and control indications.
5. The compressed air output is regulated by a pressure sensor or pressure switch

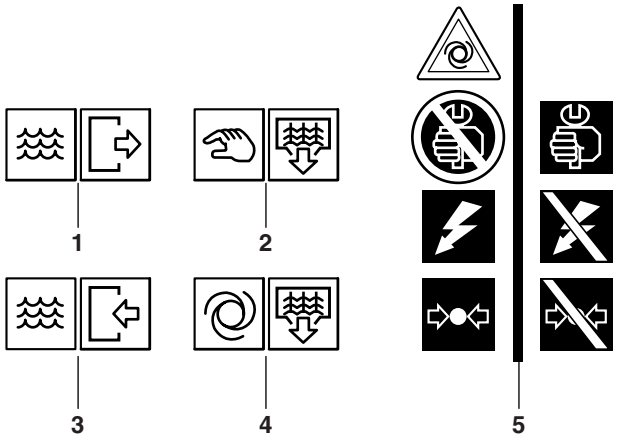
The ROLLAIR® compressed air unit has been designed, produced and tested in accordance with the following recommendations, codes and standards :

- machine safety: European Directive 98/37/CE, 91/368/CEE and 93/68/CEE.
- pressure vessels: European Directive for simple pressure vessels n° 87/404/CEE.
- electrical equipment:
  - electrical equipment: European Directive Low tension 73/23/CEE.
  - electromagnetic compatibility European Directive: 89/336/CEE, 92/31/CEE.
- performance levels: ISO 1217 : 1996.
- noise level : PNEUROP PN 8 NT C2.
- European Directive 97/23/EC " Pressure Equipment Directive ".

D - Definition of the pictograms

Typical examples of pictograms valid for ROLLAIR® compressors:

1. Water outlet
2. Manual condensation water draining
3. Water inlet
4. Automatic condensation water draining
5. Unplug and decompress the compressor before maintenance



E - Electronic board (M-X)

See the specific instructions for a description of the electronic plate, together with operating instructions:

- for version M, MCI01 notice N° 62 205 959 xx
- for version X, PCI07 notice N° 62 205 827 xx

Chapter 2 - Installation

A - Handling

The ROLLAIR® must always be handled with care. It may be lifted either with a forklift truck or by means of a travelling crane. In the latter case, precautions must be taken so as not to damage the unit's cowling.

B - Room

The ROLLAIR® is designed to operate in a frost-free environment, supplied with air at a temperature of no more than 40° C. The premises must be well-aired and as close as possible to the place where the compressed air is used. A space must be left around the unit, for cleaning and maintenance purposes. It is very important for the compressor to have an abundant supply of fresh air.
(see **page 2**).

If operating the compressor causes the ambient temperature to rise above 40 °C, the warm air leaving the radiator must be discharge outside.

COMMENT
When the atmosphere is contaminated by organic or mineral dust or by corrosive chemical emanations the following precautions must be taken:

1. Provide another air intake as close as possible to the suction source of the compressor (this recommendation applies if the only room available is excessively humid).
2. Use an additional filter for the unit's air supply **(See Options Chapter).**

C - Assembly

Put the unit on a stable surface. The ROLLAIR® does not need foundations. Any flat surface that can support its weight will be sufficient (industrial floor).

D - Air discharge piping

The diameter of the piping for the air network must at least be equal to 1" of the gas piping. Current legislation requires the installation of a valve which can be locked in a closed position at the outlet of the compressor and connected to the compressor by a pipe union or flexible hose so as to isolate it during servicing.

E - Condensate drain pipes

A separator may be included inside the unit (**See Chapter 5 - K**) to eliminate condensates in the final cooler outlet and stop condensates in pipelines from returning to the compressor. Connect the exhaust pipe to a condensate collector.

Version X and T : a separator with automatic draining by electro-valve is placed inside the unit to eliminate condensation water leaving the final cooler and stop condensation water from returning from the piping to the compressor.

F - Electric cabling

Each ROLLAIR® supplied is cabled for 220/230/240 V or 380/400/415 V .

NEVER OPERATE THE ROLLAIR® ON A VOLTAGE OTHER THAN THAT SHOWN ON THE ELECTRIC CABINET.

The electric current supply to the ROLLAIR® must comply with the following table :

Type of cable to be used : H07 RNF
Power cable size
(for a maximum 10-metre length)

ROLLAIR® Type	VOLTAGE	
	220/230/240 V	380/400/415 V
15	4 x 6 mm^2	4 x 6 mm^2
20	4 x 10 mm^2	4 x 6 mm^2
25	4 x 16 mm^2	4 x 10 mm^2
30	4 x 25 mm^2	4 x 10 mm^2
40	4 x 35 mm^2	4 x 16 mm^2

SAFETY REGULATIONS

It should be remembered that safety regulations require :

- An earth socket to be used.
- A manual isolating switch, cutting all three phases ; this switch must be clearly visible near the ROLLAIR® unit.
- The electric current must be cut whenever maintenance work is carried out on the machine (except for pressurized oil change).

ROLLAIR® Type	Fuses to be used for the isolating switch (AM type)	
	220/230/240 V	380/400/415 V
15	63	40
20	80	50
25	100	63
30	125	80
40	160	80

Section 3 - Initial setup

A - Preparation for start-up

Before starting up the unit for the first time, the operator must be familiar with the different parts of the machine. The main parts which should be examined are indicated in the diagrams.

IMPORTANT
Before start up, make sure that transport red wedges have been effectively removed.

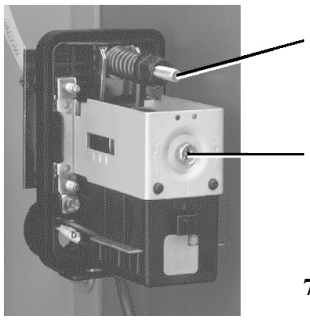
ATTENTION
Le circuit de puissance devra être coupé pour tout réglage exécuté sur l'équipement électrique ou pour éviter tout démarrage accidentel.

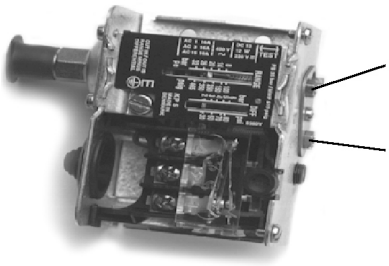
Before start-up, check the following points :

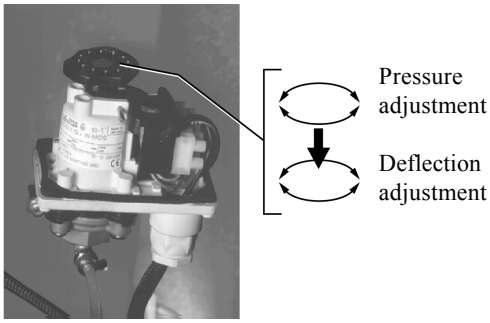
1 - Make sure that the unit is properly earthed.
2 - Check the oil level in the tank.
NOTE : the tank has been filled with suitable oil in the factory. See **Chapter 5 - A** for the quality of oil to be used or for oil renewal conditions.
3 - Make sure the oil change valve is properly closed.

ATTENTION
The oil filler cap, the oil change valve and plugs must always remain closed during operation and never be opened before the system has been completely vented to atmospheric pressure (except pressurized oil change : see **Chapter 5 -A**).

Fig. 2
Delivery pressure gauge



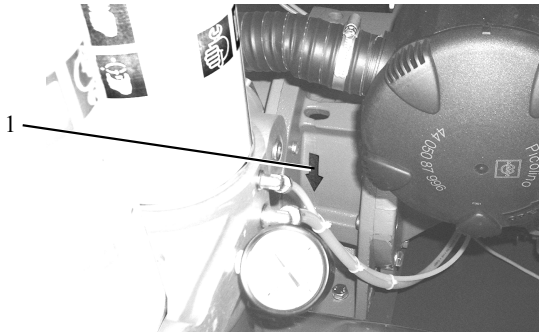




B - First start-up

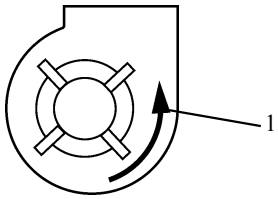
Check the voltage between the three phases before using the unit for the first time.
Check the direction of rotation (following the arrow on the coupling housing **(item. 1 - Fig. 3**)) by pressing the "Start" button, followed immediately by the emergency stop. If it does not spin in the right direction reverse two stages of the power cord. When it rotates in the correct direction, the oil level (**Fig.19**) should drop after 4 or 5 seconds of operation.

Fig. 3



It is very important to remember to check the direction of rotation of the fan (shown by an arrow on the fan **(item. 1 - Fig. 4**)).

Fig. 4



1 - Press the ON button, the motor starts up.
2 - Leave it running for a few minutes with the discharge valve slightly open to observe the compressor under load. Ensure that there are no leaks. Reblock the connectors if necessary.
3. Press the STOP button. The motor stops and the unit is automatically placed at atmospheric pressure.

C - Delivery pressure adjustment

The group is adjusted in the factory for MAXIMUM pressure (at full flow when leaving the central unit) of 7.5, 10 or 13 bar (7.25, 9.75, 12.75 bar for versions T with a built-in dryer) depending on the type of device. To adjust the surge pressure settings, close the valve, but not completely and engage the pressure switch by unscrewing the setting screw to lower the pressure and by screwing it to make it go up **(Fig. 2).**

D - Adjustment for in parallel operation with other compressors

If the ROLLAIR® has to operate in parallel with other ROLLAIRS®, or similar compressors, the discharge pipes can be connected together.

If the ROLLAIR® has to operate in parallel with one or several alternative compressors, an air tank common to the alternative compressors is essential. The impulses emitted by the alternative compressors would seriously damage the non-return valve, the ROLLAIR® deoiling element and disturb system regulation. When the rotary compressor operates in parallel with an alternative compressor, the adjustments on the latter will have to be adjusted so that the rotary compressor carries the basic load. This will result in more economic operation.

E - Safety

The oil used for cooling the machine is a liquid combustible under the effect of strong heat. In case of fire in the machine, it is essential to respect the regulatory measures on the compressor. The type of fire in a compressor is defined as "class B" and in presence of a live electrical conductor, it is recommended to use a CO2 extinguisher functioning by "smothering" (starvation of oxygen) while observing the user instructions applicable to the model.

Chapter 4 - Operation

A - Air and oil circuits

1 - Air circuits (see Fig. 5)

The air is sucked into the compressor through a filter (**item. 23**). This air passes through the compression element where it is mixed with oil injected during compression. Inside the tank, the compressed air is de-oiled by shocks and then flows through the oil separator (**item. 49**). It then passes through the Minimum pressure valve (**item. 34**) forming a check valve, the final cooler (**item. 51A**), condensate separator and finally the outlet valve (not supplied) to which the distribution pipes are connected.

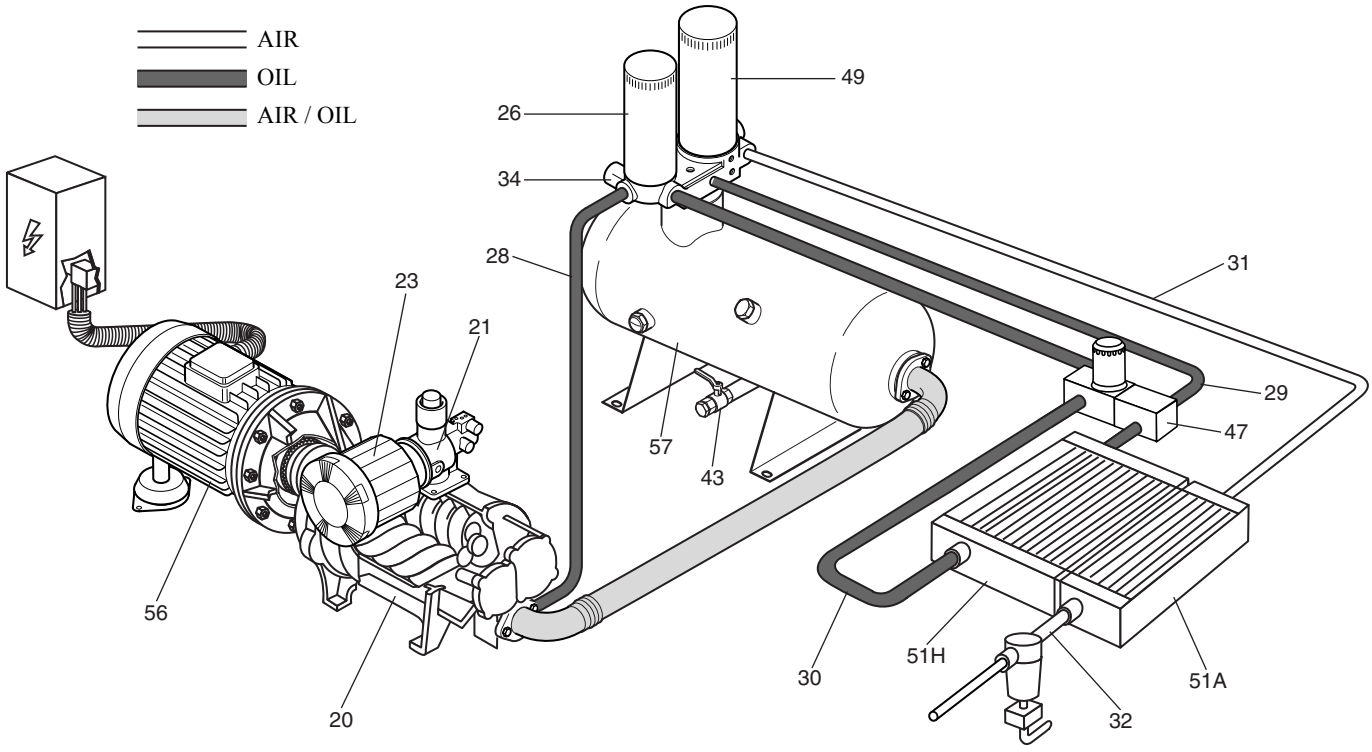
2 - Oil circuit (see Fig. 5)

The oil, under discharge pressure, flows from the bottom of the tank through the cooler (**item. 51H**), the oil filter (**item. 26**) which retains solid impurities, and then into the compressor (**item. 20**). At each cold start, the thermostat valve (**item. 47**) short circuits the oil radiator, thus enabling the optimum operating temperature to be attained quickly. When it leaves the compressor, the oil returns to the tank. Part of the oil remains suspended in the air as mist. This mist passes through the oil separator. (**item. 49**). A fraction of this oil agglomerates in large droplets which return to the tank through the force of gravity. The remaining oil, which is separated by the last stage of the oil separator, is drawn up by a dip tube and dispatched to the compressor.

Key Fig. 5

20.	Compressor
21.	Suction housing
23.	Air filter
26.	Oil filter
28/29/30.	Flexible oil hose
31/32.	Flexible air hose
34.	Minimum pressure valve / Filter support
43.	Drain valve
47.	Thermostatic valve (built in filter support)
49.	Oil separator
51 A.	Air radiator
51 H.	Oil radiator
56.	Motor
57.	Oil tank

Fig. 5 - Air / oil circuit



B - Regulation principles

1 - "On off Load" regulation (see Fig. 6)

Models, all versions

The ROLLAIR® 15-20-25-30-40 units are fitted with an automatic regulation system, enabling the machine to be stopped after it has run unladen for a given (adjustable) period of time. This period of unladen running is necessary to avoid excessively close start-ups in highly varied periods of compressed air consumption.

When the compressor reaches the maximum pressure the pressure switch (**item. 36**) or the pressure sensor (version X) closes the solenoid valve (**item. 35**). The compressed air, pushing on the suction box piston (**item. 21**) and draining piston, (**item. 38**) is released into the atmosphere ; the box closes and the pressure is released from the reservoir.

The compressor draws in air via a by-pass valve (**item. 25**).

The low pressure obtained in the oil tank enables the compressor to be lubricated and cooled during the whole unladen running period.

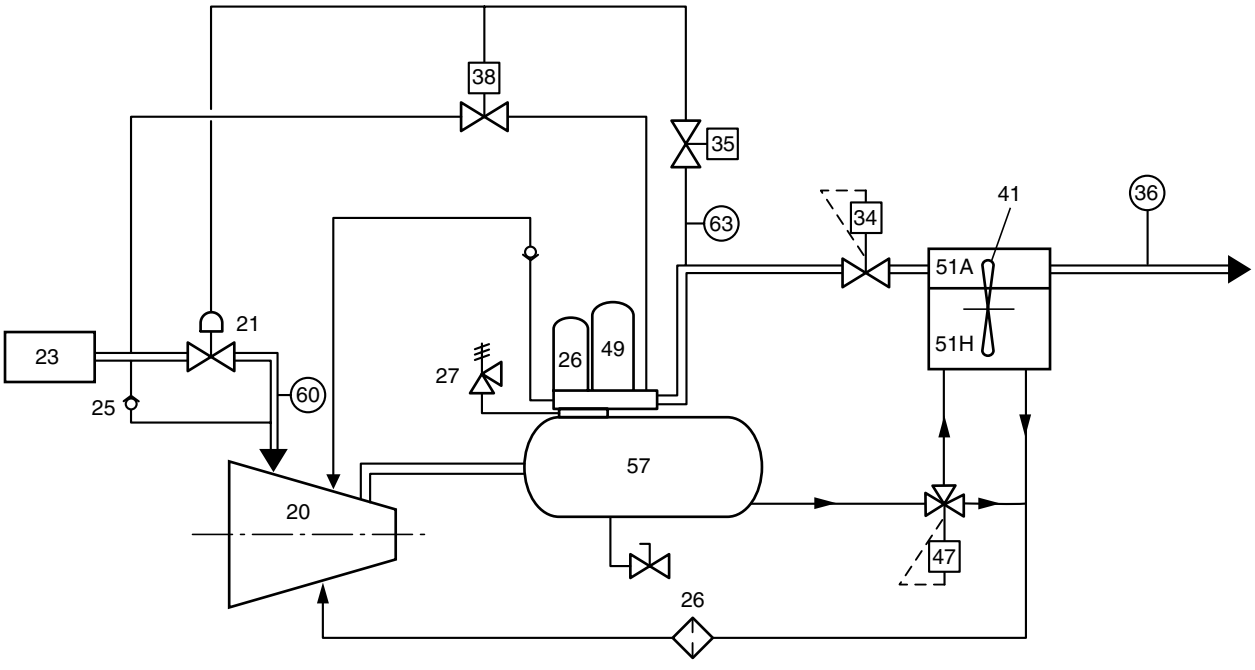
If the compressed air pressure in the user network reaches the minimum cutting-in value before the end of the no load operation time out the solenoid valve (**item. 35**) is actuated causing the suction valve to open and the vent to close. The compressor then operates at full output rate.

When the compressor stops, the electrovalve (**item. 35**) is no longer powered and closes; the suction housing closes and the oil tank is evacuated. The reservoir is thus brought back to atmospheric pressure for the next start-up.

Key Fig. 6

20.	Compressor
21.	Suction housing
23.	Air filter
25.	By-pass valve
26.	Oil filter
27.	Safety valve
34.	Minimum pressure valve / Filter support
35.	Electro-valve
36.	Pressure adjustment switch / Pressure sensor
38.	Pneumatic vacuum piston
41.	Ventilation
47.	Thermostatic valve (built in filter support)
49	Oil separator
51 A	Air radiator
51 H	Oil radiator
57.	Oil reservoir
60.	Temperature sensor
63.	Manometer

Fig. 6 - "On off Load" regulation



Chapter 5 - Options

A - Level detection bleed valve (Fig. 7)

1 - DESCRIPTION

The BEKOMAT type level detection bleed valve allows all air consumption to be avoided while the compressor is not running.

For machines with a built-in dryer, two bleeds may be provided, one upline from the dryer and the other on the dryer bleed

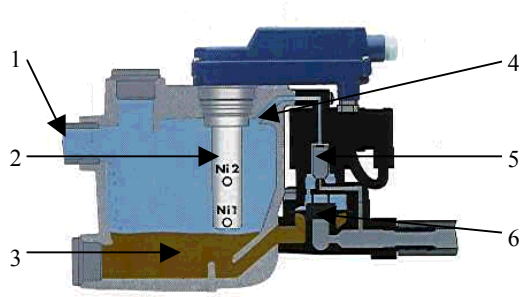
2 - Option overview

- There is no air consumption due to the level detection system : an inductive sensor detects the level of condensation and thus controls the opening of the electric bleed valve. A low level of condensation is also detected in order to close the electric bleed valve and to prevent compressed air from being wasted.

- This type of purge valve does not require any maintenance. The purge valve does not require the use of the metallic intake filter that is usually installed on electronic purge valves to protect the solenoid valve. The solenoid valve will not be damaged.

- Condensate discharge facilitated as condensates are not discharged under pressure facilitating separation of the condensate oil and water phases.

Fig. 7



1 - Condensation intake
2 - Capacitive sensor
3 - Reservoir
4 - Main duct
5 - Electric valve
6 - Membrane

3 - Technical features

Maximum capacity of the compressor : 20 m3/min
Working pressure : 0.8 / 16 bar
Operating pressure : + 1 / + 60°C
Electric power supply : 230 / 110 / 24/ …
AC socket in the compressor electric cabinet.

B - Advanced filtration to the compression air inlet

For all information, contact your local Worthington-Creyssensac

C - Pre-filtration panels

1 - Description

Installing air filtration panels on the ventilation intakes (**machine and built-in dryer**) guarantees protection of the compressor's internal components and an increase in air sucked into the compression assembly. This option is recommended if the forced filtration option is installed (**see § B**).

2 - Option overview

The pre-filtration panels eliminate 90% of the particles normally admitted inside the compressor and considerably decrease internal contamination of the machine.

The high quality of the ventilation air is also essential for protecting internal components of the compressor and, more specifically, the motor and the air / air and air / oil exchangers. Clogging in the exchangers creates an increase in temperature, deterioration of the lubricant and the motor becomes overloaded thus increasing the energy consumed.

The quality of the air drawn in by a compressor is essential. Low quality air results in the following :

- Fast pollution of the oil thus an increase in oil change cycles.
- Increased pollution of the air and oil filtering components that increases the deterioration of the mechanical components in the compressor, screw block, ...
- Binding of the air / oil separator before 4000 Hours thus an increase in maintenance cycles and maintenance costs.

Access to the filtering medium is allowed by removal that does not require any particular tool. The panel frame can be unlocked manually in order to clean the medium.

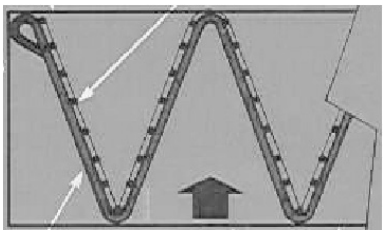
Exceptional longevity of the medium that is quick to take apart. The medium can be scoured by blowing compressed air in thus increasing the usage term for the filtering medium.

Galvanised steel covered frame.

Non-flammable medium (belonging to fire protection class M1) made of polyester fibres.

Fig. 9

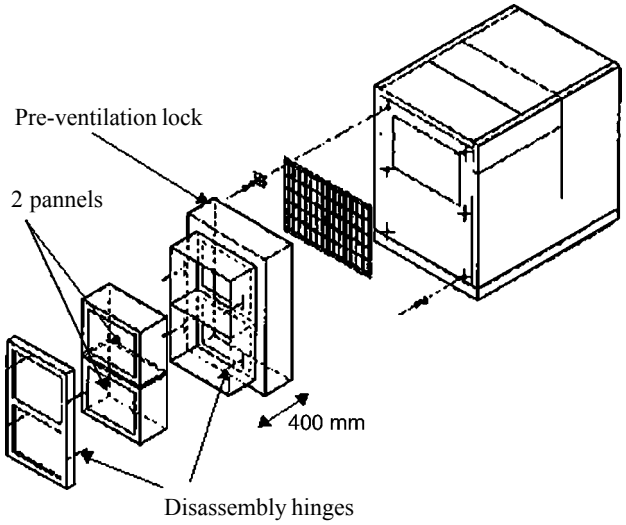
Easy to disassemble for rapid cleaning



Pleated medium on support grid placed downwards in the direction of the airflow.

Support grid

Fig. 10



3 - Technical features

FILTER MEDIUM :

Degree of filtration : 90% of the dust emitted is filtered.

Total nominal flow :		6 000 m^3/h
Filter panel number :		2
Initial charge loss :		75 Pa
Dimensions :	Width :	500 mm
	Length :	500 mm
	Thickness :	200 mm

This option may be fitted to a compressor already installed.

D - Automatic restarting

1 - Description

This management system enables the compressor to be restarted automatically after a power outage.

2 - Option overview

Not available as a standard option in order to prevent any incidents during maintenance operations carried out by an unskilled person, this option is proposed in the case when the production of compressed air must only be submitted to a minimum of stops.

The standard microcut time accepted by **MCI 01** is approximately 40 ms, the time of **PCI07** is 250 ms.
However, certain electrical fittings create longer micro cut-offs that will cause a compressor shut down, then a manual restart.

Automatic compressor restarting enables immediate air production after a power outage and thus avoids the time lapse required for manual compressor restarting that would mean a fall in pressure in the air circuit.
Particularly used for industries where air production should not be subject to shut downs that waste the products manufactured or damage the production equipment.

THIS OPERATION REQUIRES THE CONFIGURATION OF THE ELECTRONIC BOARD MENUS ACCESS LIMITED TO TECHNICIANS AUTHORISED BY WORTHINGTON-CREYSSENSAC.

AN INFORMATIVE INSERT MUST BE PLACED ON THE ELECTRIC CABINET TO WARN THE USER OF THE RISK THAT THE COMPRESSOR MAY AUTOMATICALLY RESTART AT ANY TIME.

3 - Technical features

This option requires configuration of the electronic plate and installation of an informative insert on the door of the compressor electric cabinet.

Whenever the compressor is shut down, the emergency push-button must be pressed or the electricity isolating switch thrown.

E - Remote starting and stopping

This option allows the compressor to be remotely started and stopped. However, in all cases, stopping the compressor at the machine itself is essential. If the compressor is shut down from a distance, it may be restarted from a distance as well. On the other hand, if the compressor is stopped at the machine itself, it cannot be restarted from a distance.Before carrying out any work on the machine you must check that the machine is switched off locally to comply with safety requirements (See Notices **MCI01, PCI07, D Chapter 1**)

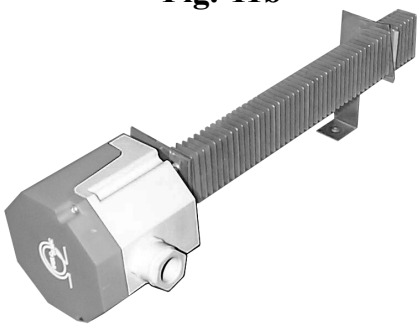
F - Oil re-heating

1 - Description

This re-heating system is installed in the compressor enclosure in order to pre-heat the compressor while it operates under low temperature conditions (in particular, winter).

Fig. 11a

Fig. 11b



2 - Option overview

It avoids any cold starting of the compressor and ensures that the oil injection is carried out under optimum temperature conditions no matter what the exterior conditions may be.

The temperature thermostat regulates the compressor's interior atmosphere that allows a standard re-heating of all the compressor's internal components (**Fig. 11a**).

Thermostat controlled resistance is automatically regulated and is activated to maintain a minimum temperature of 5°C inside the compressor (**Fig. 11b**). This requires no intervention from the user.

Starting - Stopping the heating resistance is carried out from the compressor's supply.

This start-up is carried out simultaneously with the shut down of the compressor, preventing energy from being wasted while the compressor is not being used.

3 - Technical features

RESISTANCE:

Power consumed:	500 Watts
Start-up temperature:	4 to 10°C

G - Rotation direction indicator - Phase controller

1 - Description

The phase controller option enables permanent and easier verification of the rotation direction of the machine by means of a diode. This option prevents any risk of physical damage by stopping compressor start up in case of phase reversal or if a phase is disconnected and indicates a machine fault.

2 - Option overview

Marking on the motor of the standard machine version identifies the motor fan rotation direction during the start up phase. Work on the electric network or the machine may change the rotation direction and damage the compressor which must be detected quickly.

H - 4000 hour oil

1 - Description

This is synthetic oil that allows more time between oil changes.

Note : Selecting this option after using a machine that has been operated with standard oil requires flushing and an oil change and the filters should be replaced after 2000 hours of operation.

2 - Option overview

This oil's qualities enable an oil change and oil filter change to be carried out every 4000 Hours (compared to 2000 Hours) by carrying out the de-oiler change every 4000 hours.

As a result, maintenance work is carried out less frequently which leads to operational cost savings for the compressor.

I - "PROGRESSIVE" regulation (see Fig. 12)

(Only available with version X)

This method of control can be used to adjust the compressor flow to the compressed air demand, with very little variation of the pressure in the user network.

Nevertheless, it is less economic than the On/Off method, particularly during periods of low compressed air consump-tion.

The compressor operates at full flow (suction box valve (**item. 21**) fully open) as long as the pressure remains below the back pressure regulator pressure (**item. 62**). If compressed air draw is less than the compressor flow at the back pressure regulator pressure, the pressure builds up, the back pressure regulator begins to open and controls part closure of the suction box valve (**item. 21**), so that the compressor flow is equal to the drawn air flow and the pressure remains constant as long as the air consumption does not change.IOn changes in air consumption, the overflow pro-gressively controls movement of the suction box valve in or-der to maintain a constantly equal flow at the end user.

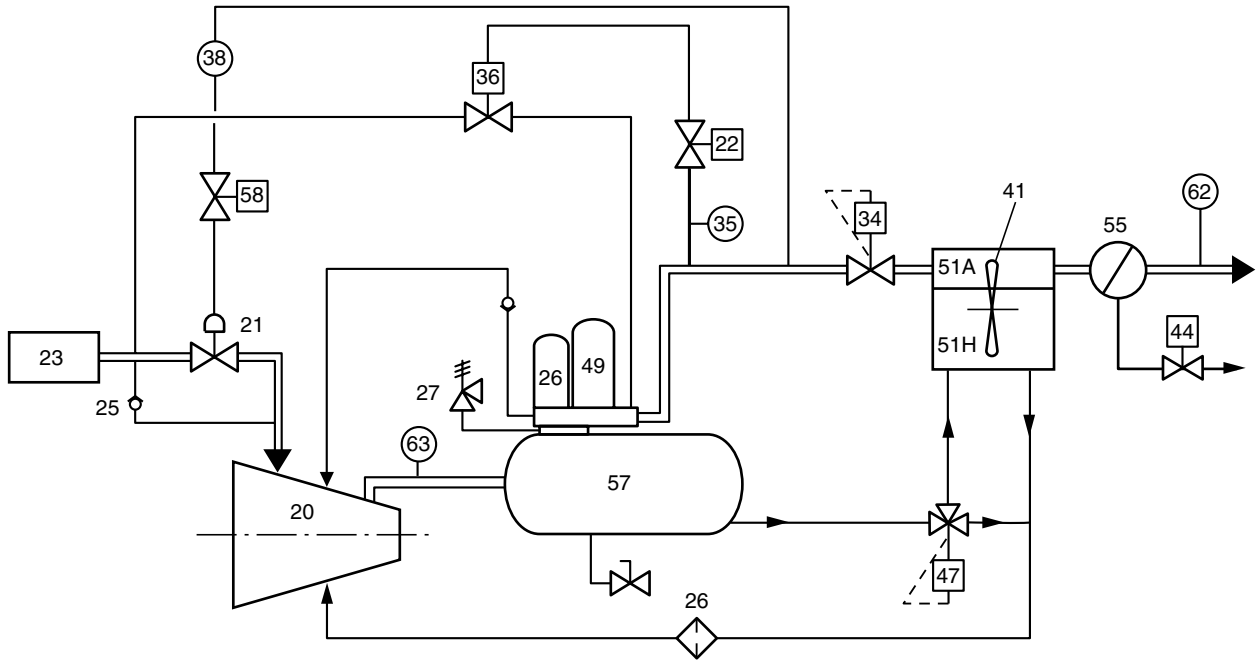
In order to limit the power draw on very low compressed air requirements, pressure switch (**item. 36**) is set in order to operate with no load (nil flow and low pressure in the oil tank) when the compressed air draw is less than around 30% of the compressor max. flow.

To do this, tripping the pressure switch (**item. 36**) controls opening of the solenoid valve (**item. 35** and **item. 58**), which trips, on the one hand on total closure of the suction valve and on vacuumizing (**item. 38**) of the oil tank, in the same way as On/Off regulation.

Key Fig. 12

20.	Compressor
21.	Suction housing
23.	Air filter
25.	By-pass valve
26.	Oil filter
27.	Safety valve
34.	Minimum pressure valve
35/58.	Electro-valve
36.	Pressure adjustment switch
38.	Pneumatic vacuum piston
41.	Ventilation
44.	Drain solenoid valve
47.	Thermostat valve
49	Oil separator
51 A	Air radiator
51 H	Oil radiator
55.	Air / water separator
57.	Oil reservoir
60.	Temperature sensor
62.	Discharger
63.	Manometer

Fig. 12 - "PROGRESSIVE " regulation (version X)



J - High sensitivity pressure switch

(Only available with version M)

1 - Description

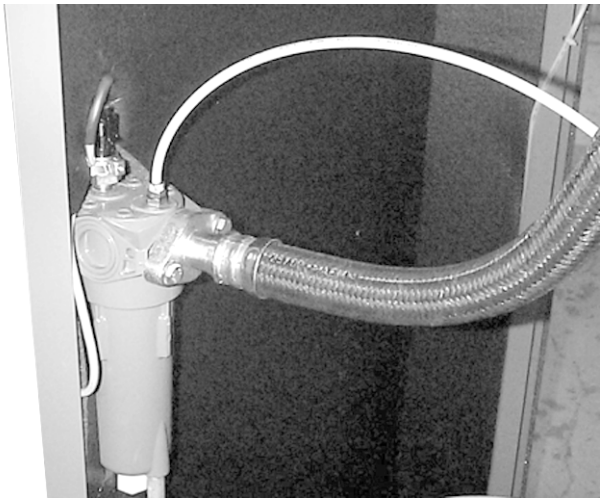
This pressure switch is an accessory of the highest sensitivity that allows it to react to lower pressure differences than the one mounted on the standard version.

2 - Option overview

This pressure switch allows energy to be saved by more precisely measuring the pressure in order to initiate draining the machine to a value that is closer to the maximum pressure required.

K - Centrifugal separator

Fig. 13



Note : This option is required if an integrated dryer is used.

1 - Description

This device enables bleed of condensates formed in the air cooler.

2 - Option overview

Compressed air cooling makes it possible to dry sucked-in air and therefore remove the dampness which, after condensation in the final cooler, accumulates at the bottom of the separator. Removal of condensate from the separator is by means of a float bleed or a level detection bleed, if this option is installed.

Chapter 6 - Specific information for ROLLAIR® 20V-30V

Refer also to the chapters concerning the standard machine.

"ROLLAIR® V" machines are compliant with the Electromagnetic compatibility in industrial environments Standards 50081-2 and 50082-2

A - Description (cf Chap. 1)

Standard equipment

A electronic frequency adjusting device replaces the star-delta starter.
A fuse holder section switch completes ROLLAIR® standard's safety devices.

B - Safety

For your safety, please respect the instructions carrying the warning symbols as given below:

SAFETY RULES

The safety rules require:

- The presence of an earth socket
- The existence of a manual switch cutting-off the three phases that should be placed visibly near the ROLLAIR®
- It is necessary to cut out the electric current before any intervention on the machine (except drainage under pressure).

 = Dangerous voltage

 = Attention

ELECTRICAL INSTALLATIONS MUST ONLY BE CARRIED OUT BY A SPECIALISED AND COMPETENT TECHNICIAN


1 - Warning

 **1** The internal components and the plates (except the electrically insulated I/O terminals) are at the mains voltage when the inverter is connected to the mains. This voltage is extremely dangerous and can cause severe injuries or even death in case of involuntary contact.

 **2** When the inverter is connected to the mains, the connection terminals U, V, W of the motor as well as +/- connectors of the braking resistors are under power even if the motor is not running.

 **3** The I/O control terminals are insulated from the mains, the relay outputs can nevertheless be under power even if the inverter is disconnected. This also applies to other I/O control terminals even if the X4 switch is in OFF position (Stop).

 **4** The inverter has a load circuit of thermally limited capacitors. Therefore, it is important to allow minimum 5 minutes between two successive power-ons. If this instruction is not respected, the switch and the resistor of the load circuit may be damaged.

2 - Safety instructions

 **1** No connection work is allowed when the inverter is under power.

 **2** No measurement work is allowed on the inverter when it is under power.

 **3** To undertake any work on the inverter, it is necessary to disconnect the equipment from the mains. Wait for the internal ventilation to stop and the indicators to be turned off. Then, wait 5 minutes before opening the cover.

 **4** No voltage or insulation verification test is allowed on the inverter components.

 **5** Disconnect the cables from the motor and the inverter before taking measurements on them.

 **6** Do not touch the integrated circuits, the electrostatic discharges may damage them.

 **7** Before connecting the inverter, make sure that its cover is properly closed.

 **8** Make sure that no compensation capacitor of cosine phi is connected to the motor cable.

C - Installation

The "ROLLAIR® V" must be installed away from a transformer or autotransformer.

(see **Chapter 2 et 3**).

The fuses for the built-in section switch are defined as follows

Mains voltage 380/400/415 Volt / 3 / 50 Hz		
	20V	30V
Nominal voltage (400V)	39A	52A
Power supply cable H 07	4 x 10	4 x 25
Section mm^2 L=10m maxi		
Upstream fuses (Type aM)	50A	63A

ATTENTION
Motors and drives can only be guaranteed where the supply voltage does not exceed the rated voltage by more than 10%.
The connection of the power supply to the section switch requires the use of properly insulated terminals.

D - Commissioning

1 - Preparation for start-up

(Voir **Chapter 3**).

ATTENTION
The power circuit will have to be cut off when adjusting the electrical equipment or if inadvertent start-up is to be avoided.

Before start-up, check the following points:
1 - Ensure that the unit has a suitable earth,
2 - Check the oil level in the compressor,

NOTE: the tank was filled in the factory with a suitable oil. See **Chapter 8 - A** for the quality of oil to be used and for the oil renewal conditions.
3 - Check that the drainage valve is properly closed.
4 - Make sure that the conveyor assembly's blocking lugs (compressor) have been removed from the compressor silentblocks.

ATTENTION
The oil filler plug, the valve and the drainage plugs have always to be closed during operation and must never be opened before the system has reached atmospheric pressure.

2 - Control of rotation direction on start up

This control must be implemented when the machine is put into operation for the first time, after any work has been carried out on the motor and after any changes to the mains supply.

IMPORTANT :

a) Motor - compression unit
- Check the direction of rotation (as per the arrow shown on the sump) by jogging over with the START button.
  If it is incorrect, swap over two of the motor's phase cables under the drive.
  When rotating in the right direction, the oil level (**fig. 19**) must drop after 4 to 5 seconds of operation.

b) Fan
- See **Chapter 3** - Initial setup, paragraph **B** - First start-up, **Figure 4** .

1 - Press the START button so that the motor starts.
2 - Allow to rotate for several seconds with the discharge valve slightly open to observe the compressor at load.
3 - Press the STOP button. The motor stops and the plant automatically returns to atmospheric pressure.

3 - Adjustment of the machine pressure settings

(See notice for the **VCI07** controller).

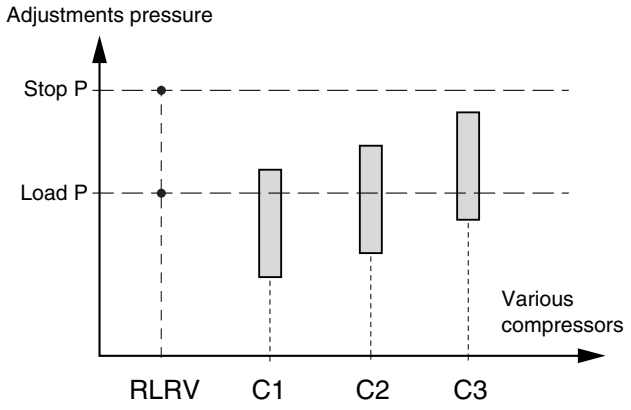
The unit is factory pre-set for a given delivery pressure. As an energy saving measure, it is strongly advised to reduce the pressure to the exact requirement by adjusting the "P charge" setting.

The stop pressure "P discharge" or "P stop" - used when running at less than the minimum flow-rate - must be set to 0.5 bar above that of the "P charge" setting. In this way, the current used by the compressor is minimised (see notice VCI07). (Where "P charge" is the delivery pressure and "P discharge" is the no-load pressure).

Do not set the stop pressure at a level beyond the machine's max P.

4 - Assembly and settings for parallel operation with other compressors

Pressure for the ROLLAIR® V compressor must be adjusted at a value within the range of adjustment values for the rest of the compressors.



5 - Regulating the pressure by changing the speed

This method of regulating the pressure allows precise adjustment of the compressor's flow-rate at the compressed air demand valve:

The accuracy is of the order of 0.1bar when pressure regulation is achieved by changing the speed, provided that the flow-rate lies between the maximum and minimum rates for the machine.

• The principle of the pressure regulation by changing the speed

The **VCI07** controls the motor and the compressor as a function of the system pressure as measured by an internal pressure sensor (**fig. 13a**).

- If the mains pressure is weaker than the pressure set point (user-defined parameter in the **VCI07**) the motor will accelerate and the pressure will increase (**fig. 13b**)
- - If the mains pressure is stronger than the pressure set point, the motor will slow down causing the pressure to drop. The **VCI07** provides the compressor control functions and also controls the whole pressure feedback loop. It therefore includes a device to compare the indicated pressure with that from the pressure sensor, associated with a compensating device, Proportional integral control PI (**fig. 13c**).

The drive, a result of the latest developments in power electronics, is one of the smallest in size on the market, thanks to its use of high cut-out frequencies with IGBT transistors.

At the same time, the motor control method known as "open loop vector flux control " provides good stability for the system against disruption.

In this way, the pressure feedback loop is more stable to sudden changes in consumption (changes in the flow-rate).

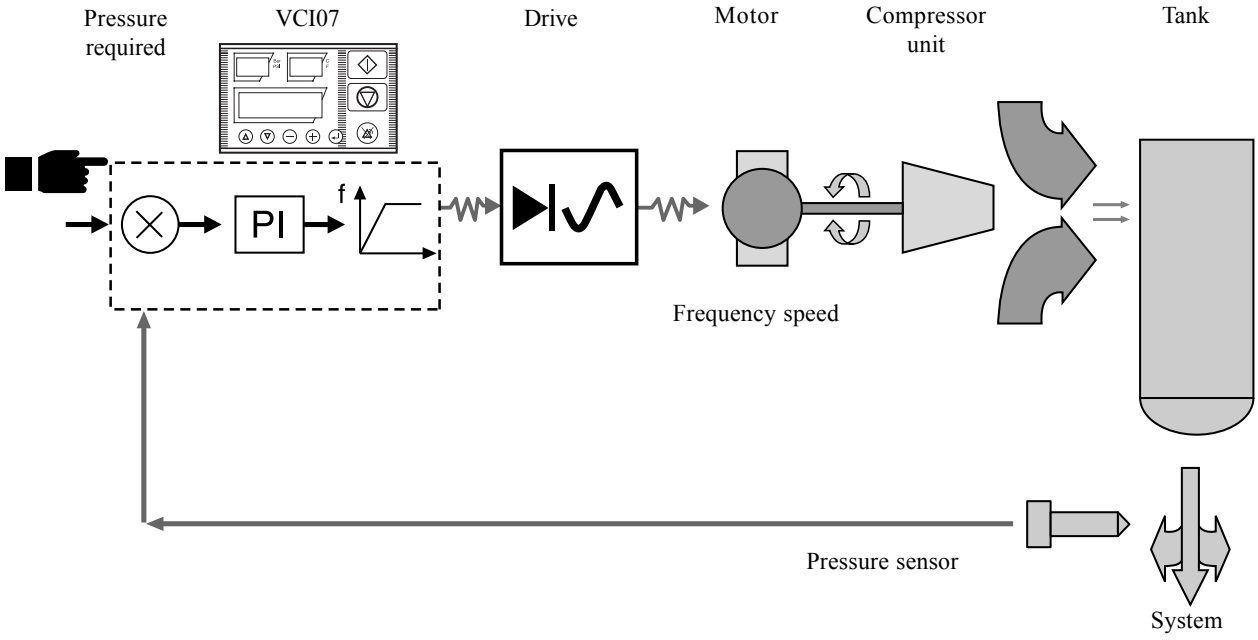
• Pressure regulation for low rates of flow

For an air consumption rate lower than the minimum rate of flow for the machine, the pressure is adjusted by the machine's time-delayed START/STOP controls.

Although the compressor unit cannot actually function below a certain speed (corresponding to the minimum flow-rate), the compressor continues to turn and compress at the minimum speed until the pressure drops to the no-load threshold known as "P discharge" or "P stop".

Once this threshold has been reached, the motor will stop, the machine will go into stand-by mode after a certain period of inactivity and the full drainage process will be carried out.

Fig. 13a
The principle of the pressure regulation by variable speed



The pressure then drops towards the indicated pressure and, at the end of the minimum time delay (since reaching the no-load pressure), the drive allows the motor to restart. The pressure then rises again and the cycle starts over (**fig. 13d**).

To avoid pumping the system - frequent stop / start - drainage time may be increased (see notice **VCI07**).

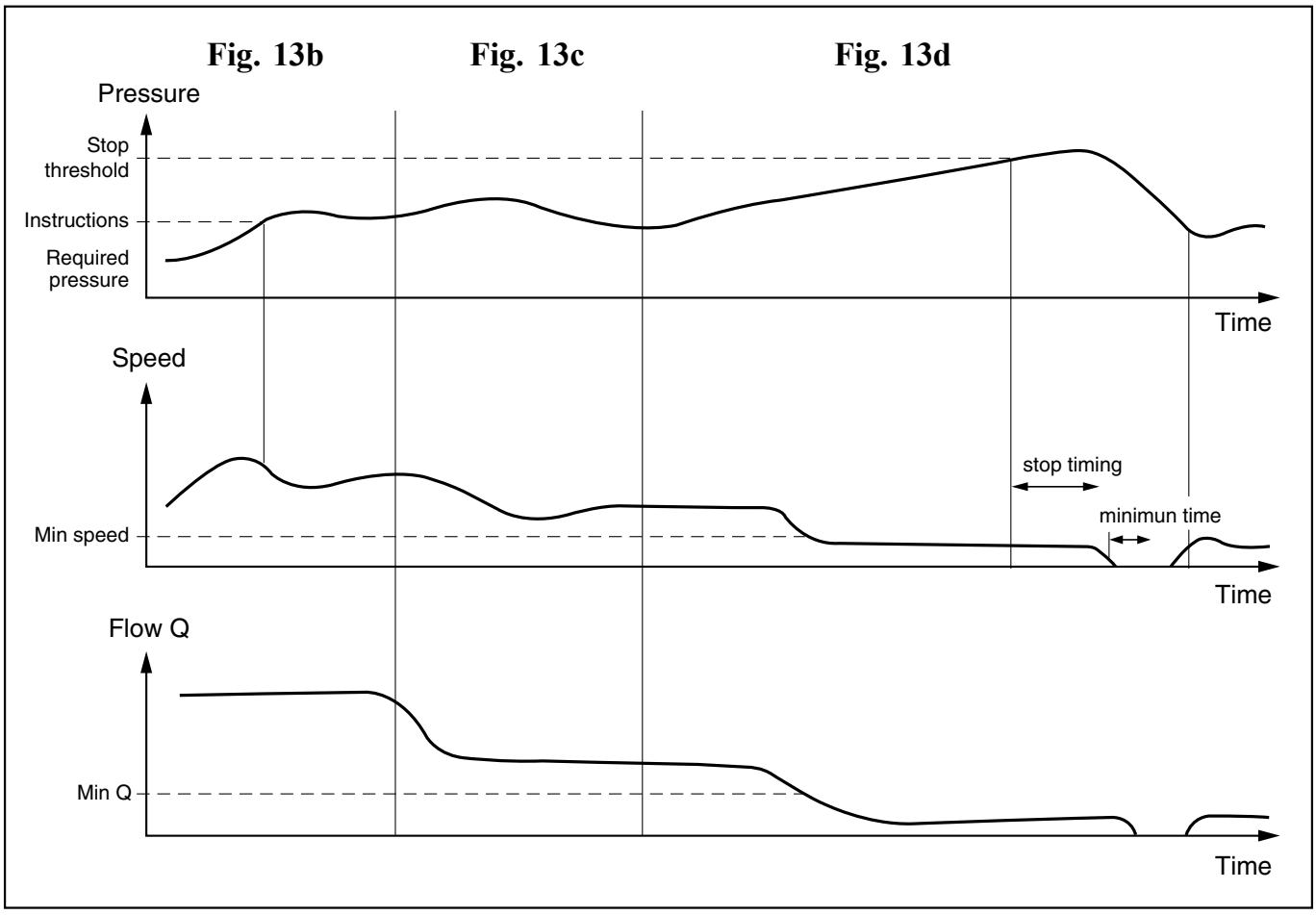
• Energy saving

For demand of compressed air within the machine's flow range - min flow to max flow, the frequency converter or the variable speed drive feed the motor in order to ensure that it turns at the speed required to supply air demand both for pressure and flow.

It is used to adjust the power supply to the motor (and thus the machine) to the exact power requirement for the compression of the air, without a drainage stage being necessary.

COMMENT:

Energy savings are increased if machine maintenance is carried out in accordance with the maintenance instructions and frequency.



E - Operating incidents

The staff in charge of maintenance of the ROLLAIR® compressor must become fully acquainted with this machine, in order to be able to easily diagnose any anomaly. Under normal operating conditions, the ROLLAIR® compressor must provide full satisfaction.

1 - Main incidents

The main incidents likely to occur are listed below, along with the remedies to be applied.
(see Notice **VCI07** 62 205 930 xx).

Observed defects	Possible causes	Solutions
1. FAULT SIGNAL DISPLAYED ON THE VCI07 CONTROLLER	a) Incident controller/machine. b) Incident motorisation.	a) See notice **VCI07**. b) See notice for the variable speed drive unit

ALSO SEE **Chapter 9**.

Chapter 7 - Integrated dryer

The ROLLAIR® 15-20-25-30-40 integrated dryer is a direct expansion refrigeration machine with a dry evaporator. The air to dry is conveyed to the exchanger in which the water vapor is condensed : the water from the condensation is collected in the separator and removed to the exterior.

A - Technical data

1 - Technical features

TYPE	MAX. WEIGHT Kg.	POWER SUPPLY V	COOLING LIQUID LOAD «R 404A» Kg		NOMINAL POWER W		NOMINAL POWER W		TOTAL POWER W		Intake POWER bars
			50 Hz	60Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	
ROLLAIR® 15-20-25-30 B,C	53	230 / 1Ph	0.65	0.65	711	776.5	82	95	793	871.5	13
ROLLAIR® 30A-400	65	230 / 1Ph.	0.65	0.65	996	1035	126	90	1122	1125	13

Reference conditions:

Room temperature: 25 °C
Air intake temperature: 35 °C
Service pressure: 7 bars
Dew point under pressure: 3 °C

Service conditions:

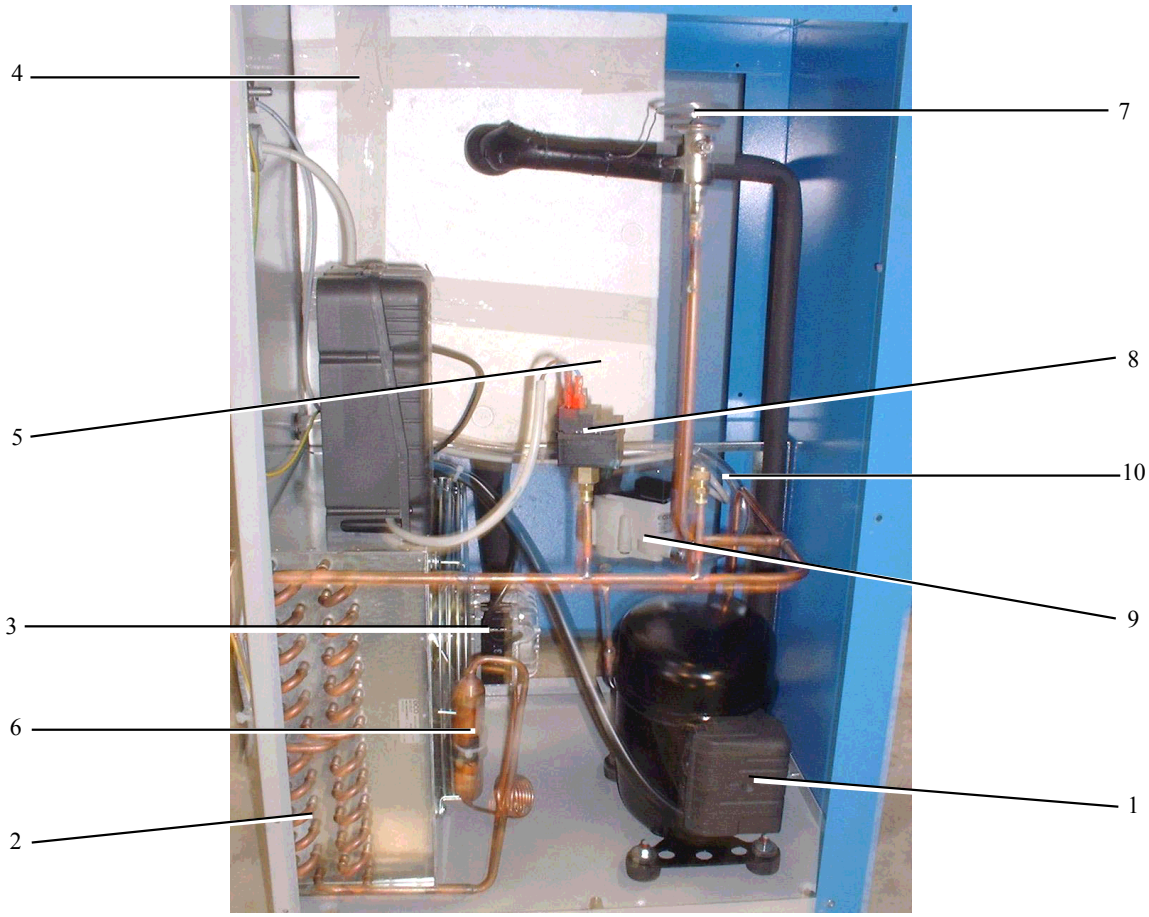
Maximum room temperature: 45°C
Minimum room temperature: 4°C
Maximum air intake temperature: 55°C
Maximum operational pressure: 13 bars

• Autotransformer option available to connect the dryer power supply directly to the machine.

Exploded views (fig. 14)
IW 21 - IW 27

TYPE	Air intake Ø	Air exhaust Ø	Water removal from condensation Ø
IW21/IW27	1"1/2 Gas F.	1"1/2 Gas F.	1/4"

Fig. 14



Reference	Description	Reference	Description
1	Cooling compressor	6	Coolant filter
2	Condenser	7	Hot gas by-pass valve
3	Fan	8	Pressure switch
4	Evaporator	9	Condensate bleed solenoid valve
5	Condensate separator	10	Condensate outlet pipe

B - Operation

1 - Operation principle (see Fig. 15)

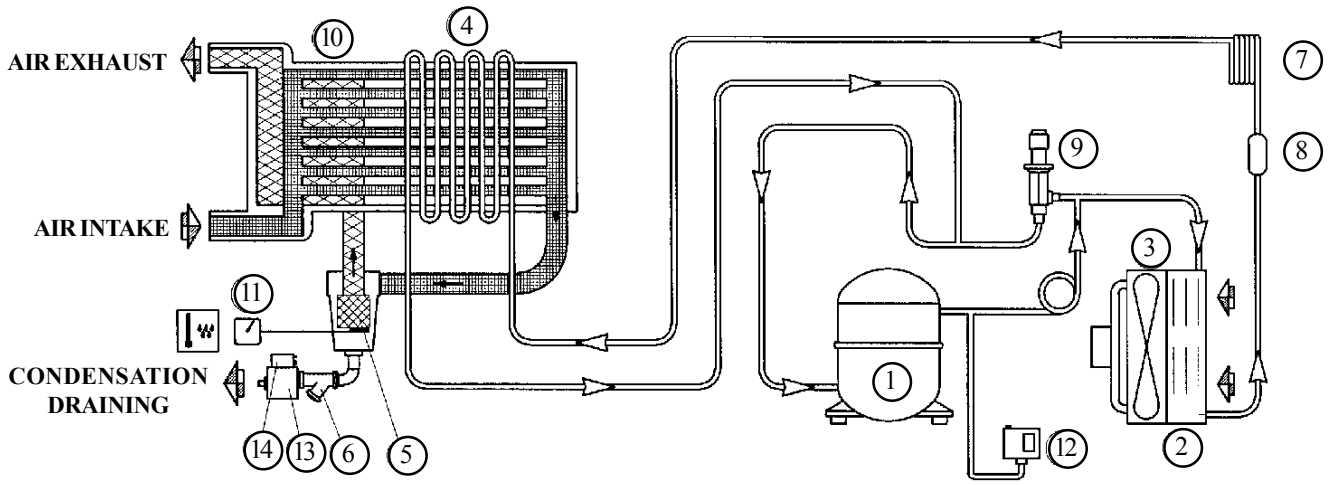
The gaseous cooling fluid coming from the evaporator (**4**) is aspirated by the cooling compressor (**1**) in order to be compressed and then cooled in the condenser (**2**): this enables its condensation, if necessary with the help of the ventilator (**3**); the condensed cooling fluid passes through the filter of cooling liquid (**8**), it expands through the capillary tube (**7**) and returns to the evaporator, where it produces a cooling effect.

Due to the thermal exchange with the compressed air passing through the evaporator against the flow while cooling, the cooling liquid evaporates and returns to the compressor to start a new cycle. The circuit is completed with a system that bypasses the cooling liquid and adapts the available cooling power to an effective thermal load. This operation is carried out by injecting hot gas under the valve control (**9**) maintaining the cooling liquid at a constant pressure in the evaporator and therefore the condensates at the same temperature, which never drops below zero celsius degrees in order to prevent the condensates from freezing in the evaporator. Operation of the dryer is completely automatic; the dryer is calibrated in the factory according to a reference dew point and therefore requires no additional calibration.

Key Fig. 15

1	Cooling compressor
2	Condenser
3	Electric ventilator
4	Evaporator
5	Condensate separator
6	Impurity collector
7	Capillary tube
8	Cooling liquid filter
9	Hot gas by-pass valve
10	Air-air heat exchanger
11	Dew point temperature probe
12	Ventilator control pressure switch
13	Automatic level bleed
14	Timer

Fig. 15 Operation principle IW 21 and 27



C - Installation

1 - Inspection

Upon receiving the machine, make sure it is intact by checking for any parts that may be visibly damaged. In case of doubt, do not use the machine and contact Worthington-Creyssensac's customer service department.

2 - Electrical connections

ACCESS TO THE ELECTRIC CABINET IS RESTRICTED TO PROFESSIONALLY QUALIFIED PERSONNEL ONLY. MAKE SURE ALL POWER SUPPLY TO THE UNIT IS DISCONNECTED BEFORE OPENING THE DOOR OF THE ELECTRIC CABINET. IT IS ESSENTIAL THAT YOU RESPECT THE REGULATIONS IN FORCE CONCERNING ELECTRICAL INSTALLATIONS FOR PERSONNEL SAFETY AND TO PROTECT THE MACHINE.

• Check that the mains voltage corresponds to the voltage specified on the insert.

• Check the condition of the conductors and make sure that there is efficient ground.

• Check, the upper part of the machine, for the automatic interruption device for overloads with a differential circuit breaker calibrated at 30 mA.

Transformer option for the dryer's internal electrical supply :

• If the dryer autotransformer option is installed, the related electrical power supply is through the general power supply of the compressor.

3 - Condensate bleed solenoid valve

The dryer is fitted with a condensate separator with an automatic release solenoid valve in order to get rid of the condensed water after cooling. Reconnect the drainpipes to the condensate collector (See page 18 **item. 15 Fig. 14a**).

D - Start up

1 - Preparing for start-up

After carrying out all the checks stipulated in **Chapter 3**, follow the instructions.

BEFORE ANY MAINTENANCE WORK IS CARRIED OUT, THE MACHINE AND THE DRYER MUST BE TURNED OFF, AND THE UNIT'S ELECTRICAL POWER SUPPLY MUST BE DISCONNECTED

2 - Stopping and starting

With Rollair 15-20-25-30-40, dryer start up is managed by the compressor control board. Compressor starting may be deferred in relation to dryer starting so that the dryer can reach the necessary dew point. Like this, there is no condensation in the compressed air network. This adjustment is made on the **MCI01** or **PCI07** control board (see **paragraph D Chapter 1**).

3 - Dew point display

• For **versions M**, display on **MCI01** (see **paragraph D Chapter 1**).

• For **versions X**, display on the separate display unit (**Item. 1 Fig. 16**) on front panel of the machine.

Fig. 16

DEPRESSURISATION PROCEDURE

Proceed in the following manner:
- Stop the unit
- Close the insulation valve at the unit's outlet.
- Open the door forwards and to the right
- Depressurise the unit by pressing the "ON" button to evacuate the condensates. This button can be found just above the timer (**item. 15 Fig. 14a**).

E - Maintenance

BEFORE CARRYING OUT ANY MAINTENANCE, MAKE SURE THAT THE MACHINE HAS BEEN TURNED OFF AND THE ELECTRIC SUPPLY HAS BEEN DISCONNECTED

1 - Periodic maintenance

These maintenance intervals are recommended for well-ventilated places with no dust.
For particularly dusty locations, double the maintenance frequency.

Weekly	Condensate release valve	Clean the filter of the condensate release valve
Monthly	Condenser	Clean the fins to eliminate any dust accumulation

2 - Cleaning the condenser Fig. 17a and 17b

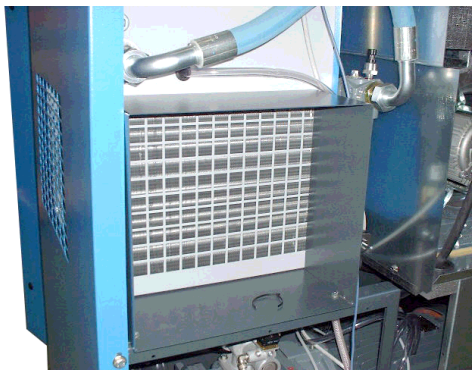
The condenser must be cleaned once a month.
Proceed as follows:
- Stop the unit.

- Cut off the mains supply

- Remove the rear panel (**Fig. 17a**).
- Clean the condenser vanes (**Fig. 17b**) with a jet of air.

Fig 17a

Fig 17b



DO NOT USE WATER OR SOLVENTS

3 - By-passing the dryer Fig. 17c

During a dryer malfunction after the depressurisation process, it is possible to isolate the dryer by bypassing it as shown in **Figure 18b** (see diagram in the list of replacement parts). This set up allows the machine to be used without the dryer.

Fig. 18a (UPLINE from the By-pass)

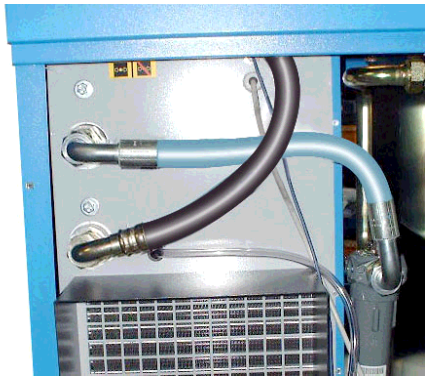


Fig. 18b (DOWNLINE from the By-pass)

4 - Shutting off the machine

If the machine is to remain idle for a long time:
- Stop the unit
- Disconnect the electrical supply from the unit
- Close the isolation gates
- Depressurise the unit

During the period of inactivity, the machine must be protected from atmospheric agents, dust and humidity, which could damage the motors and the electrical system.
To start it up again, consult Worthington-Creyssensac's after-sales service.

5 - Disposing of the unit

If the machine is dismantled, it must be separated into equal parts to be recycled or disposed of according to the standards that are currently in force.

WE STRONGLY RECOMMEND FOLLOWING THE STANDARDS THAT ARE CURRENTLY IN FORCE FOR RECYCLING USED OILS AND OTHER POLLUTANTS SUCH AS THE THERMAL INSULATION FOAM AND COOLANT GAS.

F - Troubles hooting and emergency solutions

N.B : THE OPERATIONS SIGNALLED BY ■ ■ MUST BE CARRIED OUT BY PROFESSIONALLY QUALIFIED PERSONNEL WHO ARE AUTHORISED BY WORTHINGTON-CREYSSENSAC.

Observed defects	Possible causes	Solutions
1. The air does not pass through to the dryer's outlet.	The interior tubes are blocked by frost.	■ ■ Check that the hot gas by-pass valve is correctly adjusted and in good working order.
2. There is condensed water in the circuit.	a) The operation of the water separator. b) The dryer is operating in bad condensation conditions.	■ ■ a) Check that the condensation separator bleed valve works properly. ■ ■ b) Check correct operation of the dryer and its fan.
3. Continuous leak of air and water from the condensation separator.	Defective automatic condensation bleeding system.	■ ■ Check the system.
4. The top of the dryer's compressor is very hot (> 55°C).	a) See 2b. b) The refrigeration circuit does not work with the correct amount of gas.	■ ■ Check all coolant gas leaks. ■ ■ Refill the coolant gas.
5. The motor works intermittently because of the protection thermostat.	See 2b. See 4.	
6. The dryer's motor groans but will not start.	a) Defective electrical connections. b) You have stopped and restarted the dryer without waiting for the pressure readjustment. c) The dryer motor starting system is defective.	a) Check the condition and tightness of the electrical connections. b) Wait a few minutes before restarting the dryer. ■ ■ c) Check the operation of the relay and the operation of the condensers and engine start up (possible).
7. The dryer has stopped and will not restart, even after a few minutes.	a) Fuses b) The thermostatic protection with manual starting has begun to operate. See case 2b and 4. c) The high-pressure switch has begun operation. d) The motor is out of order.	a) Check the fuses. b) Reload or wait for the head of the compressor to cool down. c) Reload the pressure switch. d) Check the integrity of the electrical connection and its insulation.
8. The dryer's compressor makes too much noise.	Problems with the internal mechanical organs or with the compressor valves.	
9. The condensation separator does not work.	Automatic condensation bleeding system is cleaned.	Bleed the unit by opening the manual bleed valve. Have the system checked.
10.Dew point under too much pressure.	a) Room temperature is too high. b) Lack of coolant. c) Cooling compressor does not work. d) Evaporator pressure is too high. e) Condenser pressure is too high.	a) Check and correct the cooling air inlet if required. ■ ■ b) Make sure the circuit is watertight, have it recharged. c) Check the dryer electricity supply. d) See 11. e) See 12.
11.Evaporator pressure is too high.	a) Maladjustment or breakdown of the by-pass valve of the hot coolant gas. b) Condenser pressure either too high or too low. c) Lack of coolant.	■ ■ a) Have the by-pass valve readjusted. b) See 12. ■ ■ c) Make sure the circuit is watertight, have it recharged.
12.Condenser pressure is too high.	a) Defective fan pressure switch. b) Defective fan. c) Room temperature is too high. d) Condenser is clogged on the outside.	■ ■ a) Carry out a replacement of the part. b) Check the fan. c) Check and correct the cooling air inlet if required. d) Clean the condenser fins.

Section 8 - Maintenance

The periodic maintenance is limited to a few essential operations. It is expressly recommended to disconnect the power supply when carrying out inspection or repair work on the machine.

The mimic diagram on the control panel shows, at a glance, the type of operations to be carried out and their frequency, to ensure the adequate operation of the compressor.

Parts	Operations to be carried out						Observations
	Daily	500 h	Every 150 h	Every 2 000 h (*)	Every 4 000 h	Every 6 000 h	
Draining cock	X						Drain the condensates from the cold oil circuit (Chapter 8 - G)
Oil level	X						Check and top up if necessary (Chap. 8 - A)
Air filter				X			Replace the filter
Oil tank, oil change		X		X			Oil change, oil refill with recommended oil (Chapter 8 - A)
Suction housing						X	Control, cleaning, greasing. Schedule replacement of the box every 12000 hours. Use the suction box kit.
Oil return pipe				X			Check the cleanliness of the oil return pipe and the state of the seal (Chapter 8 - F)
De-oiling cartridge					X		Exchange the cartridge following the instructions given in the specifications. (Chapter 8 - E)
Oil filter		X		X			Change the filter.
Oil radiator Final air cooler			X				Blow cooling elements. Clean.
Valve at minimum						X	Exchange the accessories supplied with the maintenance kit
Electric cabinet		X		X			Retighten power cable connections.
Safety temperature thermometer test (version M)				X			Check operation (Chapter 8 - I)

NOTE : maintenance kits are available (see spare parts list).

(*) or at least every year

A - Oil change and oil level (see B Chapter 1)

The oil recommended and used in the factory for the initial fill-up of the compressor is a mineral oil with the following specific properties:

- viscosity : 40 cSt à 40 °C (ISO 46),
- viscosity index : 90 minimum,
- antioxidizing additives,
- anticorrosive additives,
- antimoss additives.

This ROTAIR 2000 oil has been specifically studied by Worthington-Creyssensac and it guarantees the user an oil change interval of 2000 hours, with a replacement of the de-oiling cartridge after 4000 hours.

THE FIRST OIL CHANGE MUST BE CARRIED OUT AFTER THE FIRST 500 HOURS OF OPERATION.

Using a synthetic oil for compressors is also acceptable and means less frequent oil changes: please speak to us about the compatibility and oil change methodes.

The oil filter must be drained and replaced when indicated on the electronic controller and when the corresponding countdown timer reaches 0 (see electronic board manual, **Chapter1 D**).

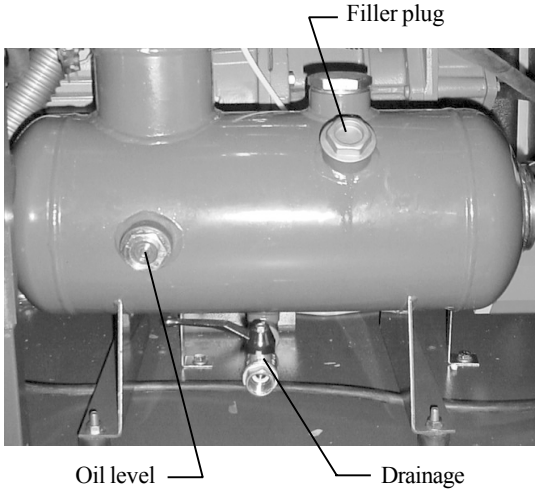
Drain the heat compressor. In order to do this, stop it and make sure you disconnect the electric supply. Depressurize the tank by loosening the filling plug by one turn. Open the bleeding valve and drain it. Do not forget to close the valve after it has been drained.

After maintenance, you must reinitialise the counter which will tell you the number of hours remaining before the next oil change see the specific notice on the electronic plate.

OIL LEVEL (fig. 19)

When stopped, the MAX level of oil is ¾ of the way up from the bottom of the indicator; the MINI level is at the lowest visible part of the indicator.

Fig. 19 - Oil level



THE OIL LEVEL HAS TO BE CHECKED AFTER HOT SHUTDOWN OF THE COMPRESSOR (THERMOSTATIC VALVE OPEN).

Pressurized drainage (X version only)
For fast and thorough draining, your ROLLAIR® is equipped with a system for maintaining a slight pressure on the oil circuit when shutdown. This pressure is shown on the pressure gauge placed on the tank.

Follow the following procedure:

• With the compressor hot, pressurized or, a soon as it begins no-load operation, stop the ROLLAIR® using STOP key (**7**) if the oil pressure circuit is above 3 bars or key (**4**) if the pressure is below 3 bars (if the ROLLAIR® is stopped by key (**7**), wait until the pressure in the oil circuit falls to 3 bars then operate key (**4**) in order to stop vacuumizing),

• Drain the oil by opening the drainage valve very gradually,

• When no pressure remains in the oil tank, change the oil filter cartridge,

• Is soon as oil no longer flows through the drainage port, close the valve and fill up with new oil,

• Reset the hour meter which warns of the time to run before the next drainage operation and the next oil filter change (see Document **PCI07**),

• Ensure filler plug tightness when reinstalling and check that all the ports have been properly closed,

• The machine can only be restarted after pressing on keyboard key 5 (R),

• After startup, check that there is no oil leak.

NOTE

If the oil is in poor condition: i.e. it gives off an acrid smell or contains particles of varnish or other solids, the system will have to be rinsed out: pour in around 50% of the normal clean oil contents, run the set for 3 hours and carefully drain. During rinsing, leave the former oil filter cartridge in place.

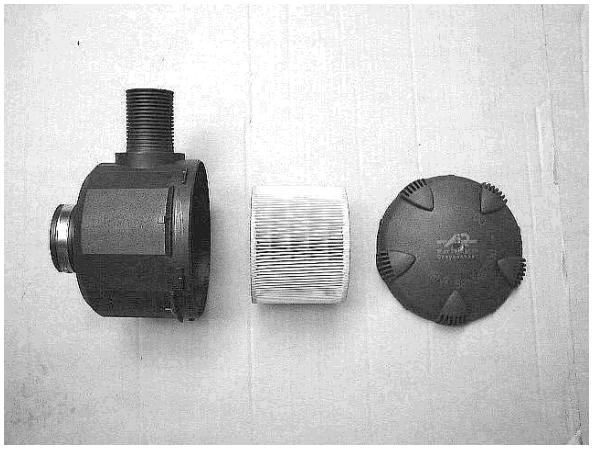
B - Air filter (see Fig. 20, see B Chapter 1)

The air filter is of the dry, encapsulated type. Change the cartridge every 2,000 hours. Check the cleanliness of the filter every week and change it if necessary.

IMPORTANT

If you do not replace the filtering element when needed, permanent dirt build-up will result. This reduces the air inflow to the compressor and could damage the oil separator and the compressor.

Fig. 20 - Air filter



C - Turbine

Replacement of the complete fan is recommended if one or more blades are deformed or broken If replaced, check the fan rotation direction reversal of the rotation direction will reduce machine cooling and damage the motor in time.

D - Oil and air cooler

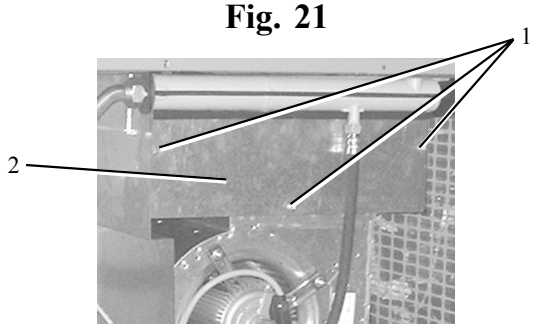
The aluminium oil and air cooler is a vital part in the ROLLAIR® system. Please take care of this element. To prevent the nest of tubes from being deformed or damaged, when assembling or disassembling the radiator unions and hoses, the radiator sleeves' must be kept rotating by means of a wrench. The outer surface of the nest of tubes must always be kept clean in order to enable proper heat transfer. In the event of a leak, the source of the leak must be detected. In order to do this:

- Stop the ROLLAIR®.
- Clean the greasy areas.
- Look for leaks using conventional means (soap solution, …).

NOTE

Remove 3 screws (**item. 1 - Fig. 21**) then the plate of the collector (**item. 2**) to facilitate access to the cooler.

Fig. 21



Version X: shutdown under pressure helps keep pressure in the machine circuit for a short time meaning that a leak may be more easily detected.

E - De-oiling cartridge (Fig. 22) (see B Chapter 1)

The useful life of the de-oiling cartridge will depend on how clean the intake air to the compressor is, regular oil filter cartridge changes, the quality of the oil used, the care taken when bleeding the condensation from the oil tank and on the room temperature.

The de-oiling cartridge (**item. 1 Fig. 22**) should be replaced when the warning light 2 "FLT" flashes and when the relevant hourly countdown counter reaches 0.

After replacing the de-oiling cartridge, restart the clock, which will let you know how much time is left before it needs to be changed again. See the specific **MCI01** instructions.

Excessive oil consumption

Excessive oil in the discharged air and a sudden drop in the level are signs that the de-oiling cartridge has probably deteriorated and must be changed. In the first place, the compressor must be checked to make sure that there are no oil leaks and that the oil return mechanism is working properly.

Fig. 22

1. De-oiling cartridge

F - Oil return pipe (see Fig. 23)

Placed under the compressor

- Dismantle the body of the anti-oil return pipe.
- Lift the anti-oil return pipe.
- Check the state of the o-ring (**item. 1 Fig. 23**).
- Reassemble.

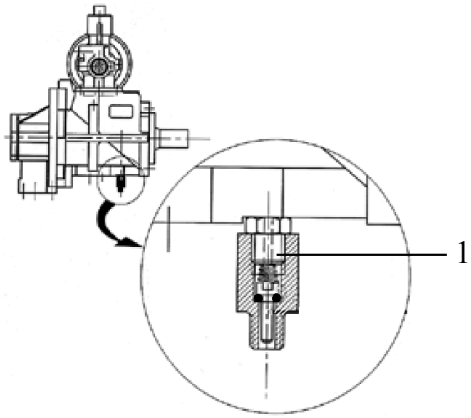
G - Draining condensation water (see B Chapter 1)

Condensation water prevents proper lubrication. The resulting substantial wear leads to a reduction in the lifespan of the ROLLAIR®. It is therefore essential to drain condensation water.

Draining of condensates in the oil circuit:

Draining will only take place at least 12 hours after the ROLLAIR® has been shut down. It can be carried out for example on the morning of the start-up.

Fig. 23 - Oil return pipe



To do this :

- Slowly open the oil change tap and let the water escape.
- When the oil appears, close the valve immediately to avoid any loss.
- Refill with oil if necessary.

H - Temperature safety tests

(See instructions electronic board).

IF THE SENSOR IS NOT WORKING, IT MUST BE CHANGED.

I - Refastening electric connections

A loosening of the electric power cables leads to the contactors ove-rheating which can lead to their destruction.

PERIODIC REFASTENING IS THEREFORE NECESSARY AT THE STAR AND TRIANGLE LINE CONTACTOR ARRIVALS AND DEPARTURES. (SEE MAINTENANCE TABLE).

All electric power supply to the machine must be cut off before opening the electric cabinet.

J - Decommissioning the compressor at the end of its useful life

1. Stop the compressor and close the air outlet valve.
2. Unplug the compressor from the electric supply.
3. Decompress the compressor : unplug the 4/6 piping on the oil separator cover.
4. Close and decompress the section of the air network which is linked to the exit valve. Disconnect from the compressed air exit pipe from the air network.
5. Empty the circuits of oil and condensates.
6. Disconnect the compressor condensate piping from the condensate draining system.

Section 9 - Operating incidents

The staff in charge of maintenance of the ROLLAIR® compressor must become fully acquainted with this machine, in order to be able to easily diagnose any anomaly. Under normal operating conditions, the ROLLAIR® compressor must provide full satisfaction.

A - Main incidents

The main incidents likely to occur are listed below, along with the remedies to be applied. The markers of the indicator lights relate to the control panel (**MCI01**).

Observed defects	Possible causes	Solutions
1. THE COMPRESSOR DOES NOT START	a) Main switch open. b) Phase missing. c) Fuse. d) Insufficient voltage at motor terminals. e) Compressor under pressure.	a) Close the switch. b) Check the circuits. c) Replace. d) Check the voltage and the connections. e) Check the vacuum device and change if necessary. Check the water-tightness of the minimum pressure valve.
2. THE COMPRESSOR OVERHEATS	a) Ambient temperature too high. b) Obstruction of the passage of cooling through the oil radiator. c) Oil level too low. d) Oil circuit blocked.	a) Make openings or install ducts to evacuate the hot air (**see Chapter 2**). b) Clean the radiator (**see Chapter 8 - D**). c) Check and top-up oil level. d) Check that the oil filter is clean. Drain. Replace the cartridge.
3. THE COMPRESSOR STOPS WHEN THE MOTOR PROTECTION UNIT TRIPS	a) Compressor motor overload. b) Phase unbalance	a) Check it is connected and the electric connections are tight. Check the pressure of the compressed air and the pressure switch settings. b) Check the phase intensities
4. OPENING OF SAFETY VALVE	a) To clean de-oiling cartridge. b) Valve of suction box out of use or not closed. c) Faulty pressure switch, sensor or solenoid valve. d) Working pressure too high	a) Change the de-oiling cartridge. b) Check valve, piston and joints of suction box. c) Check that the pressure switch and electrovalve and sensor pressure are in good working order. (**version X**)
5. EXCESSIVE OIL CONSUMPTION	a) Blocked oil retainer. b) Oil leaks in the ROLLAIR® compressor. c) Faulty oil separator element	a) Check the oil return pipes. b) Look for oil leaks and rectify. c) Replace the de-oiling cartridge. (**see Chapter 8-E**)
6. DELIVERY PRESSURE TOO LOW	a) Incorrect pressure settings. b) The desired output is higher than that of the compressor. c) Closed suction valve. d) Release nozzle incorrectly adjusted (progressive adjustment option).	a) Adjust the pressure (**see Chapter 3**). b) Check consumption and possible leaks. c) Check electrovalve, pressure switch, valve. d) Check setting.
7. COMPRESSED AIR OUTPUT TOO LOW	a) Blocked air filter. b) Adjusting electrovalve not working.	a) Clean filter. b) Check setting.
8. EXCESSIVE NOISE OF UNIT	a) Fixing bolts of compressor or motor have come loose. b) Soundproof panels incorrectly closed. c) Transport retainer blocks (red parts) not removed.	a) Tighten. b) Check that they are closed. c) Remove retainer blocks.
9. THE COMPRESSOR STOPS UNTIMELY OR CREATES NON-EXISTING FAULTS	a) Electromagnetic disturbance on the MCI01 controller.	a) Add an interference suppression kit (contact the after sales department)

CAUTION

When the compressed air cools, part of the moisture sucked in by the compressor condenses. In order to protect the dryer against the risk of an ice plug forming, it is essential to check regularly that the condensate drains are operating properly :

On the compressed air storage reservoir and on the filters :
• With a manual drain, drain regularly according to the moisture content of the ambient air.
• With an automatic drain, set the draining cycle accordingly and check that the drain is in good working condition.

This recommendation is also fundamental in a circuit comprising an adsorption dryer (risk of saturation of the alumina).

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