Oil-injected rotary screw compressors

QSI 50, QSI 60 (Fixed Speed)

QGV 40, QGV 50, QGV 60 (VSD)

Instruction book

Revision Number: 01

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Performance You Demand. Reliability You Trust.

Quincy

Oil-injected rotary screw compressors

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Instruction Book

Original instructions

No. 2012 2039 28

www.quincycompressor.com

Quincy COMPRESSOR

PREFACE

Please read the following instructions carefully before start up or performing maintenance in your compressor.

This manual contains important safety information and should be made available to all personnel who operate and/or maintain this product. Always keep the manual available near the machine.

In all correspondence always mention the compressor type and serial number, shown on the data plate.

The company reserves the right to make changes without prior notice.

Updated instructions books can be found at www.quincycompressor.com/

Royal Blue Warranty

Seller warrants products of its own manufacture against defects in workmanship and materials under normal use and service, as follows:

Packaged Compressors - Twelve (12) months from date of start-up or eighteen (18) months from date of shipment from the factory, whichever occurs first.

Airend on Packaged Compressors (for service at full-load pressure at or below 150 psig) - Ten years (120 months) from date of start up (not to exceed 126 months from date of shipment from the factory).

Airend on Packaged Compressors (for service at full-load pressure above 150 psig) – Twelve (12) months from date of start-up or twenty- four (24) months from date of shipment from the factory, whichever occurs first. Five (5) and ten (10) year Extended Airend Warranties are available on 150 psig full-load pressure airends.

Air/Fluid Reservoir Tanks - Five years (60 months) from date of start up (not to exceed 66 months from date of shipment), including parts and labor. In the event of a reservoir tank failure, the parts and labor coverage is limited to the reservoir tank itself and does not cover the separator element(s) or loss of fluid.

Air and Fluid Heat Exchangers - Five years (60 months) from date of start up (not to exceed 66 months from date of shipment), including parts and labor for the first twelve (12) months, parts only after twelve (12) months. In the event of a heat exchanger failure, the parts and labor coverage is limited to the heat exchanger itself and does not cover the loss of fluid.

Drive Motors - Five years (60 months) from date of start up (not to exceed 66 months from date of shipment), including parts and labor. Royal Blue warranty does not cover medium voltage (above 575 volt, 3 phase) or customer specified motors. Before any motor repairs or replacements are performed, the factory must be contacted at the time of failure in order to approve any further action.

Drive Coupling Elements - Five years (60 months) from date of start up (not to exceed 66 months from date of shipment), including parts and labor. (Machine must be installed and operated in accordance with the Operator's Manual.)

Variable Speed Drives (if applicable) - Five years (60 months) from date of start up (not to exceed 66 months from date of shipment), including parts & labor for the first year (12 months), parts only for the remainder of the warranty period. Unit must be installed indoors in a well ventilated environment.

Remanufactured Airend - Twelve (12) months from date of shipment from the factory.

Parts - Ninety (90) days from date of Distributor sale or one (1) year from date of factory shipment.

With respect to products not manufactured by Seller, Seller will, if practical, pass along the warranty of the original manufacturer.

The terms of coverage for the Royal Blue Warranty are listed below. Failure to follow the terms will invalidate the Royal Blue Warranty.

AUTHORIZED START-UP REQUIRED:

A properly completed start-up report and the Royal Blue Warranty registration form must be submitted by an authorized Quincy distributor to the Quincy Compressor Bay Minette office within thirty (30) days of start-up. Start-up reports must be submitted on QuincyHQ.com.

GENUINE PARTS AND FLUIDS:

The compressor must be maintained with QuinSyn-PG (8,000 hours maximum), QuinSyn- XP (12,000 hours maximum), QuinSyn-Plus (8,000 hours maximum) or QuinSyn-F fluid (6,000 hours maximum). Maximum fluid change intervals are noted per fluid. Actual fluid change interval is to be determined by fluid sampling report, not to exceed maximum fluid change interval. Fluid samples must be taken every 2,000 hours or as directed by the analysis report.

Only genuine Quincy Compressor maintenance and replacement parts may be used.

Normal rules of warranty apply regardless of coverage length. Inlet valves, fluid pumps and shaft seals are covered by the standard (1 year) warranty terms and are not included in the Royal Blue Warranty program. The Royal Blue Warranty is non- transferable.

The customer and/or Quincy Distributor must keep copies of all maintenance records, parts purchases and sampling reports. The following records will be required for warranty airend replacement and/or warranty claim consideration and should be submitted to the Quincy Compressor Customer Service Department:

- A completed Airend Failure Information form.
- A copy of the Royal Blue Warranty Registration/ Agreement form.
- Copies of all maintenance logs for the unit.
- Proof of purchase of genuine Quincy parts and fluids.
- Copies of all fluid analysis reports.

Notice of the alleged defect must be given to Seller in writing with all identifying details including serial number, model number, type of equipment and date of purchase, within thirty (30) days of the discovery of same during the warranty period.

Seller's sole obligation on this warranty shall be, at its option, to repair, replace or refund the purchase price of any product or part thereof which proves to be defective. If requested by Seller, such product or part thereof must be promptly returned to Seller, freight collect for inspection.

Seller warrants factory repaired or replaced parts of its own manufacture against defects in material and workmanship under normal use and service for ninety (90) days or for the remainder of the warranty on the product being repaired, whichever is longer.

This warranty shall not apply and Seller shall not be responsible nor liable for:

a) Consequential, collateral or special losses or damages;
b) Equipment conditions caused by fair wear and tear, abnormal conditions of use, accident, neglect or misuse of equipment, improper storage or damages resulting during shipment;
c) Deviation from operating instructions, specifications, or other special terms of sales;
d) Labor charges, loss or damage resulting from improper operation, maintenance or repairs made by person(s) other than Seller or Seller's authorized service station.
e) Improper application of product.

In no event shall Seller be liable for any claims, whether arising from breach of contract or warranty of claims of negligence or negligent manufacture, in excess of the purchase price.

	Quincy Compressor reserves the right to modify or withdraw this Royal Blue Warranty program at any time on units not already covered by this ROYAL BLUE WARRANTY program.

Table of contents

1 Safety Precautions

1.1 Safety icons

Explanation

	Danger for life
	Warning
	Important note

1.2 Safety precautions, general

General precautions

1. The operator must employ safe working practices and observe all related work safety requirements and regulations.
2. If any of the following statements does not comply with the applicable legislation, the stricter of the two shall apply.
3. Installation, operation, maintenance and repair work must only be performed by authorized, trained, specialized personnel. The personnel should apply safe working practices by use of personal protection equipment, appropriate tools and defined procedures.
4. The compressor is not considered capable of producing air of breathing quality. For air of breathing quality, the compressed air must be adequately purified according to the applicable legislation and standards.
5. Prior any maintenance, repair work, adjustment or any other non-routine checks:
   - Stop the compressor.
   - Press the emergency stop button.
   - Switch off the voltage.
   - Depressurize the compressor.
   - Lock Out – Tag Out (LOTO):
     - Open the power isolating switch and lock it with a personal lock.
     - Tag the power isolating switch with the name of the service technician.
   - On unit powered by frequency converter, wait 10 min before starting any electrical repair.
   - Never rely on indicator lamps or electrical door locks before maintenance work, always disconnect and check with measuring device.

	If the machine is equipped with an automatic restart after voltage failure function and if this function is active, be aware that the machine will restart automatically when the power is restored if it was running when the power was interrupted!

6. Never play with compressed air. Do not apply the air to your skin or direct an air stream at people. Never use the air to clean dirt from your clothes. When using the air to clean equipment, do so with extreme caution and wear eye protection.
7. The owner is responsible for maintaining the unit in safe operating condition. Parts and accessories shall be replaced if unsuitable for safe operation.
8. It is prohibited to walk or stand on the unit or on its components.

1.3 Safety precautions during installation

	All responsibility for any damage or injury resulting from neglecting these precautions, or non-observance of the normal caution and care required for installation, operation, maintenance and repair, even if not expressly stated, will be disclaimed by the manufacturer.

Precautions during installation

1. The machine must only be lifted using suitable equipment in accordance with the applicable safety regulations. Loose or pivoting parts must be securely fastened before lifting. It is strictly forbidden to dwell or stay in the risk zone under a lifted load. Lifting acceleration and deceleration must be kept within safe limits. Wear a safety helmet when working in the area of overhead or lifting equipment.
2. The unit is designed for indoor use. If the unit is installed outdoors, special precautions must be taken; consult your supplier.
3. In case the device is a compressor, place the machine where the ambient air is as cool and clean as possible. If necessary, install a suction duct. Never obstruct the air inlet. Care must be taken to minimize the entry of moisture at the inlet air.
4. Any blanking flanges, plugs, caps and desiccant bags must be removed before connecting the pipes.
5. Air hoses must be of correct size and suitable for the working pressure. Never use frayed, damaged or worn hoses. Distribution pipes and connections must be of the correct size and suitable for the working pressure.
6. In case the device is a compressor, the aspirated air must be free of flammable fumes, vapours and particles, e.g. paint solvents that can lead to internal fire or explosion.
7. In case the device is a compressor, arrange the air intake so that loose clothing worn by people cannot be drawn in.
8. Ensure that the discharge pipe from the compressor to the aftercooler or air net is free to expand under heat and that it is not in contact with or close to flammable materials.
9. No external force may be exerted on the air outlet valve; the connected pipe must be free of strain.
10. If remote control is installed, the machine must bear a clear sign stating: DANGER: This machine is remotely controlled and may start without warning.

    The operator has to make sure that the machine is stopped and depressurized and that the electrical isolating switch is open, locked and labelled with a temporary warning before any maintenance or repair. As a further safeguard, persons switching on or off remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the start equipment.
11. Air-cooled machines must be installed in such a way that an adequate flow of cooling air is available and that the exhausted air does not recirculate to the compressor air inlet or cooling air inlet.
12. The electrical connections must correspond to the applicable codes. The machines must be earthed and protected against short circuits by fuses in all phases. A lockable power isolating switch must be installed near the compressor.
13. In multiple compressor systems, manual valves must be installed to isolate each compressor. Non- return valves (check valves) must not be relied upon for isolating pressure systems.

14. Never remove or tamper with the safety devices, guards or insulation fitted on the machine. Every pressure vessel or auxiliary installed outside the machine to contain air above atmospheric pressure must be protected by a pressure relieving device or devices as required.
15. Piping or other parts with a temperature in excess of 70˚C (158˚F) and which may be accidentally touched by personnel in normal operation must be guarded or insulated. Other high temperature piping must be clearly marked.
16. For water-cooled machines, the cooling water system installed outside the machine has to be protected by a safety device with set pressure according to the maximum cooling water inlet pressure.
17. If the ground is not level or can be subject to variable inclination, consult the manufacturer.

	Also consult following safety precautions: Safety precautions during operation and Safety precautions during maintenance. These precautions apply to machinery processing or consuming air or inert gas. Processing of any other gas requires additional safety precautions typical to the application which are not included herein. Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your machine.

1.4 Safety precautions during operation

	All responsibility for any damage or injury resulting from neglecting these precautions, or non-observance of the normal caution and care required for installation, operation, maintenance and repair, even if not expressly stated, will be disclaimed by the manufacturer

Precautions during operation

1. Never touch any piping or components of the machine during operation.
2. Use only the correct type and size of hose end fittings and connections. When blowing through a hose or air line, ensure that the open end is held securely. A free end will whip and may cause injury. Make sure that a hose is fully depressurized before disconnecting it.
3. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start equipment.
4. Never operate the machine when there is a possibility of taking in flammable or toxic fumes, vapors or particles.
5. Never operate the machine below or in excess of its limit ratings.
6. Keep all bodywork doors shut during operation. The doors may be opened for short periods only, e.g. to carry out routine checks. Wear ear protectors when opening a door.
7. People staying in environments or rooms where the sound pressure level reaches or exceeds 80 dB(A) shall wear ear protectors
8. Periodically check that
   - All guards are in place and securely fastened
   - All hoses and/or pipes inside the machine are in good condition, secure and not rubbing
   - No leaks occur
   - All fasteners are tight
   - All electrical leads are secure and in good order
   - Safety valves and other pressure relief devices are not obstructed by dirt or paint

- Air outlet valve and air net, i.e. pipes, couplings, manifolds, valves, hoses, etc. are in good repair, free of wear or abuse.
- Air cooling filters of the electrical cabinet are not clogged

9. On water-cooled compressors using open circuit cooling towers, protective measures must be taken to avoid the growth of harmful bacteria such as Legionella pneumophila bacteria.
10. Do not remove any of, or tamper with, the sound-damping material.
11. Never remove or tamper with the safety devices, guards or insulations fitted on the machine. Every pressure vessel or auxiliary installed outside the machine to contain air above atmospheric pressure shall be protected by a pressure relieving device or devices as required.
12. Yearly inspect the reservoir. Minimum wall thickness as specified in the instruction book must be respected. Local regulations remain applicable if they are more strict.

	Also consult following safety precautions: Safety precautions during installation and Safety precautions during maintenance. These precautions apply to machinery processing or consuming air or inert gas. Processing of any other gas requires additional safety precautions typical to the application which are not included herein. Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your machine.

1.5 Safety precautions during maintenance or repair

	All responsibility for any damage or injury resulting from neglecting these precautions, or non-observance of the normal caution and care required for installation, operation, maintenance and repair, even if not expressly stated, will be disclaimed by the manufacturer.

Precautions during maintenance or repair

1. Always use the correct safety equipment (such as safety glasses, gloves, safety shoes, etc.).
2. Use only the correct tools for maintenance and repair work.
3. Use only genuine spare parts for maintenance or repair. The manufacturer will disclaim all damage or injuries caused by the use of non-genuine spare parts.
4. All maintenance work shall only be undertaken when the machine has cooled down.
5. A warning sign bearing a legend such as "Work in progress; do not start" shall be attached to the starting equipment.
6. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start equipment.
7. Close the compressor air outlet valve and depressurize the compressor before connecting or disconnecting a pipe.
8. Before removing any pressurized component, effectively isolate the machine from all sources of pressure and relieve the entire system of pressure.
9. Never use flammable solvents or carbon tetrachloride for cleaning parts. Take safety precautions against toxic vapors of cleaning liquids.
10. Scrupulously observe cleanliness during maintenance and repair. Keep dirt away by covering the parts and exposed openings with a clean cloth, paper or tape.

11. Never weld or perform any operation involving heat near the fluid system. Fluid tanks must be completely purged, e.g. by steam cleaning, before carrying out such operations. Never weld on, or in any way modify, pressure vessels.
12. Whenever there is an indication or any suspicion that an internal part of a machine is overheated, the machine shall be stopped but no inspection covers shall be opened before sufficient cooling time has elapsed; this to avoid the risk of spontaneous ignition of the oil vapor when air is admitted.
13. Never use a light source with open flame for inspecting the interior of a machine, pressure vessel, etc.
14. Make sure that no tools, loose parts or rags are left in or on the machine.
15. All regulating and safety devices shall be maintained with due care to ensure that they function properly. They may not be put out of action.
16. Before clearing the machine for use after maintenance or overhaul, check that operating pressures, temperatures and time settings are correct. Check that all control and shut-down devices are fitted and that they function correctly. If removed, check that the coupling guard of the compressor drive shaft has been reinstalled.
17. Every time the separator element is renewed, examine the discharge pipe and the inside of the oil separator vessel for carbon deposits; if excessive, the deposits should be removed.
18. Protect the motor, air filter, electrical and regulating components, etc. to prevent moisture from entering them, e.g. when steam cleaning.
19. Make sure that all sound-damping material and vibration dampers, e.g. damping material on the bodywork and in the air inlet and outlet systems of the compressor, is in good condition. If damaged, replace it by genuine material from the manufacturer to prevent the sound pressure level from increasing.
20. Never use caustic solvents which can damage materials of the air net, e.g. polycarbonate bowls.
21. The drive in this unit contains capacitors that will maintain a high voltage charge after power is removed. Before performing any maintenance on the compressor package allow at least 5 minutes for the capacitors to discharge after removing power to the package. Verify that there are no indicator lights or displays on the drive that are in an on state indicating power is still in the drive before working on the unit. Remember to always lock out and tag out the power source to the package per OSHA regulations.

	Also consult following safety precautions: Safety precautions during installation and Safety precautions during operation. These precautions apply to machinery processing or consuming air or inert gas. Processing of any other gas requires additional safety precautions typical to the application which are not included herein. Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your machine.

2 General Description

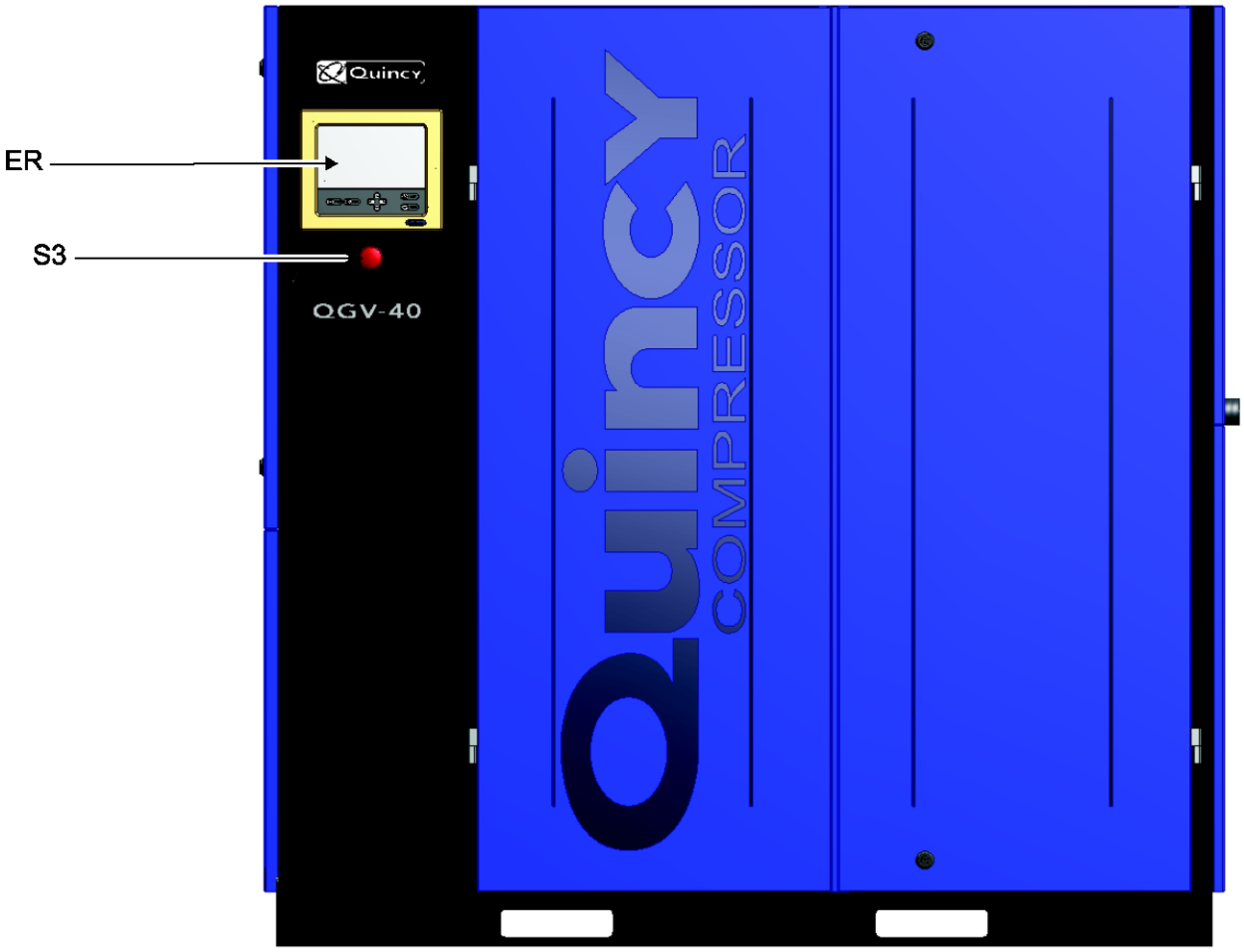
2.1 Introduction

General

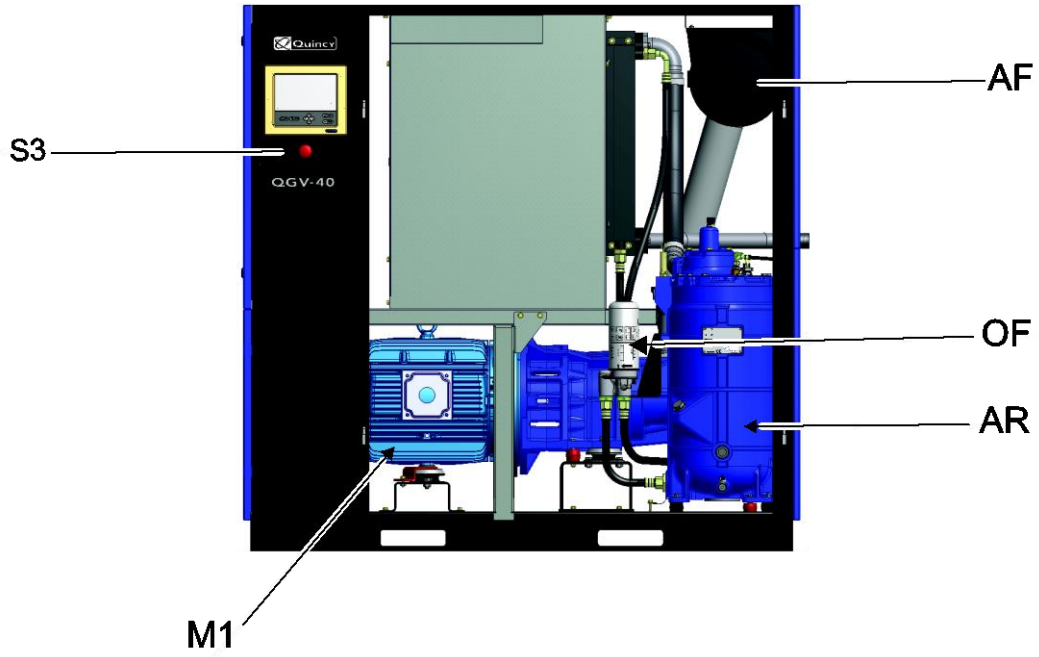
QGV 40 up to QGV 60 and QSI 50-60 are single-stage, oil-flooded screw compressors, gearbox driven by an electric motor. The compressors are available in air-cooled and water-cooled (as factory option) versions. The compressors are enclosed in sound- insulated bodywork.

The compressors are controlled by Q control.

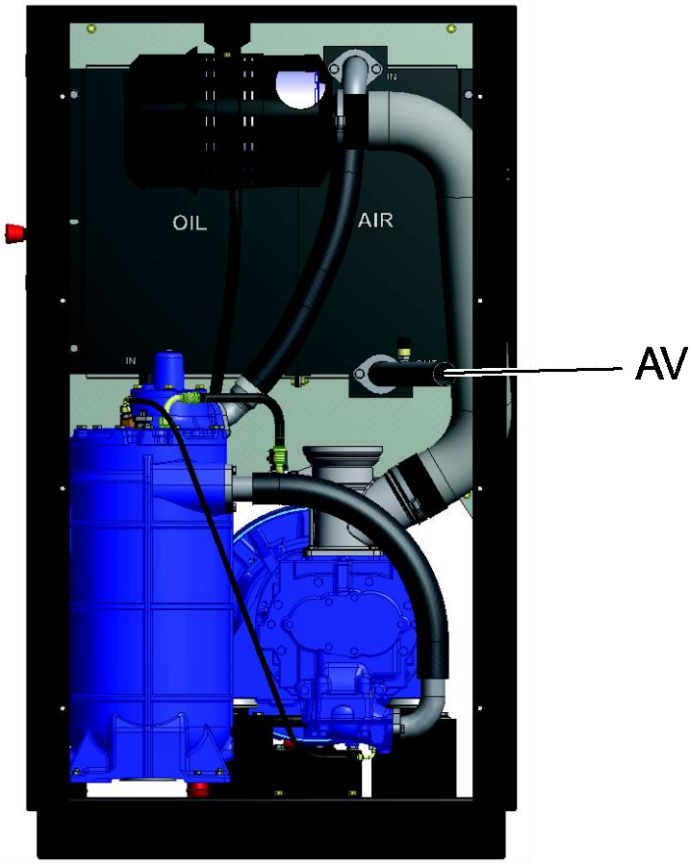
The Q control and emergency stop button are integrated in the side panel of the electric cubicle. The motor starters are located inside the Electrical Enclosure.



Front view



Main components



Main components

Reference	Name
AF	Air filter
AR	Oil separator
AV	Location of outlet pipe
Ca	Air cooler
Co	Oil cooler
ER	Control panel
M1	Drive motor
OF	Oil filter
S3	Emergency stop button

Fluid Sample Valve
QGV models are equipped with a fluid sample valve located at the discharge of the fluid filter.

Fluid Sample Valve

Reference	Name
1	Fluid sample valve

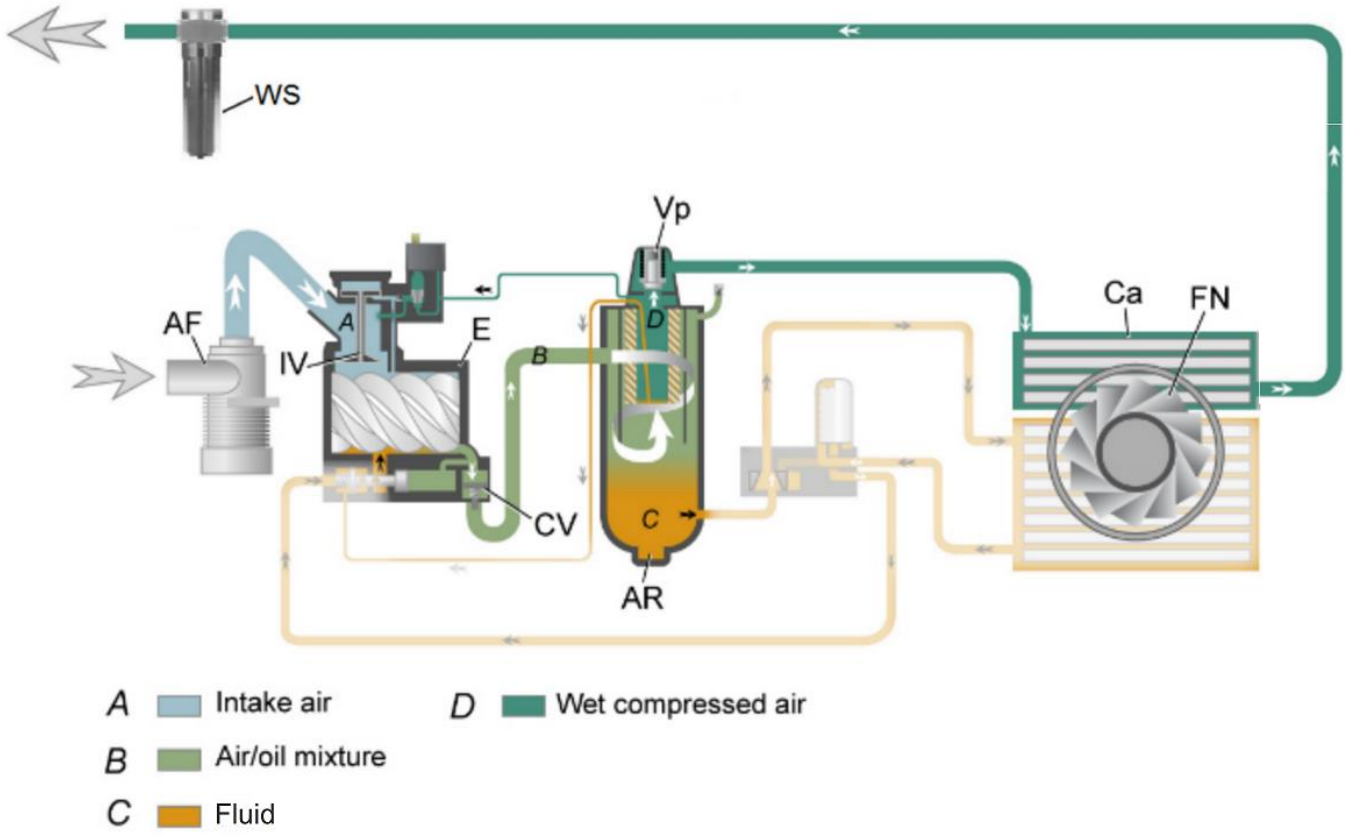
Fluid samples should be taken from the sample valve while the compressor is running at normal operating temperature. For Fluid Analysis Program, refer the section “7.8 - Fluid Analysis Program - General”

Serial/Model Identification Plate

A model/serial number plate is located on the frame or in the upper right corner of the control panel door.

2.2 Air and oil/fluid circuit

Air circuit



Flow diagram, air circuit

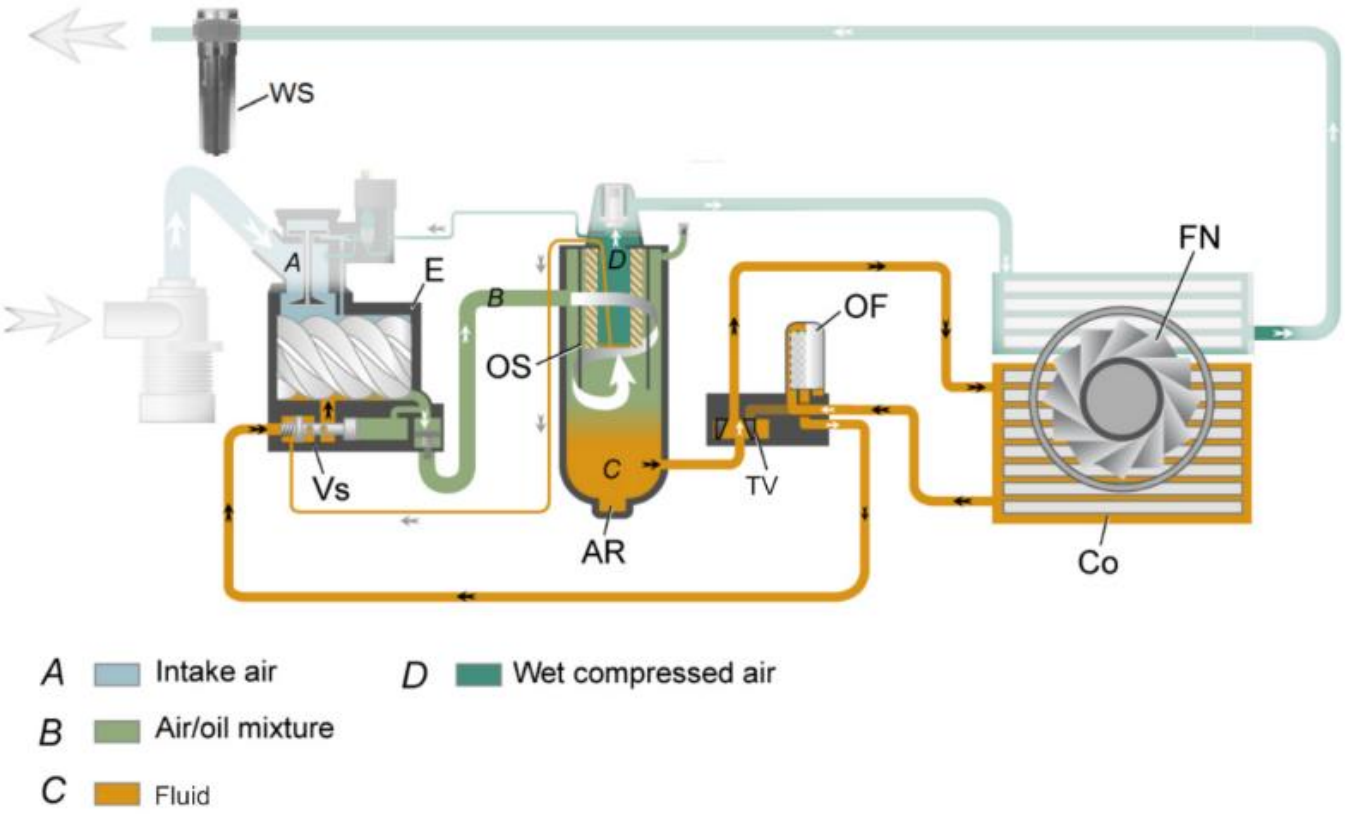
Reference	Description
A	Intake air
B	Air/oil (fluid) mixture
C	Fluid
D	Wet compressed air

Description

Air drawn through filter (AF) and open inlet valve (IV) into Airend (E) is compressed. A mix of compressed air and fluid flows into the reservoir (AR) via check valve (CV). The air is discharged through outlet (AV) via minimum pressure valve (Vp) and air cooler (Ca).

During loaded operation, minimum pressure valve (Vp) keeps the pressure in the separator tank (AR) above a minimum value, required for lubrication. An integrated check valve prevents the compressed air downstream the valve from being vented to atmosphere during unloaded operation. When the compressor is stopped, check valve (CV) and inlet valve (IV) close, preventing compressed air (and oil) to be vented into the air filter.

Oil/fluid circuit



Flow diagram, oil/fluid circuit

Description

In oil separator (AR), most of the fluid is removed from the air/oil mixture by centrifugal action. The remaining fluid is removed by oil separator (OS). The oil collects in the lower part of oil separator (AR), which serves as a fluid tank.

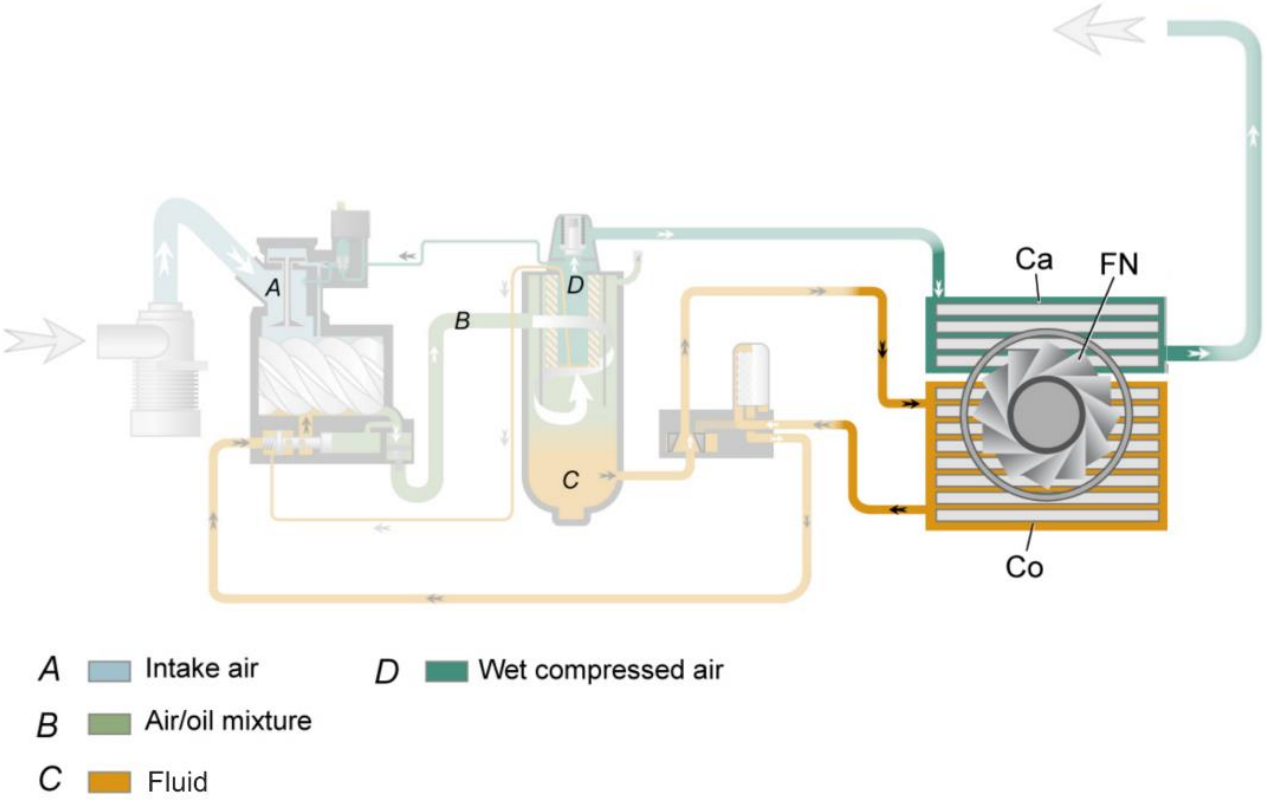
The oil system is provided with a thermostatic valve (TV). When the oil temperature is below its set point, thermostatic valve (TV) shuts off the supply to oil cooler (Co) and the oil cooler is bypassed.

Air pressure forces the fluid from oil separator (AR) through oil filter (OF) and oil stop valve (Vs) to Airend (AE).

Thermostatic valve (TV) starts opening the supply from cooler (Co) when the fluid temperature has increased to the set point. At approx. 15 ˚C (27 ˚F) above the set point, all the fluid flows through the oil cooler

Oil stop valve (Vs) prevents the airend (AE) from flooding with fluid when the compressor is stopped. The valve is opened by airend outlet pressure when the compressor is started.

Cooling system



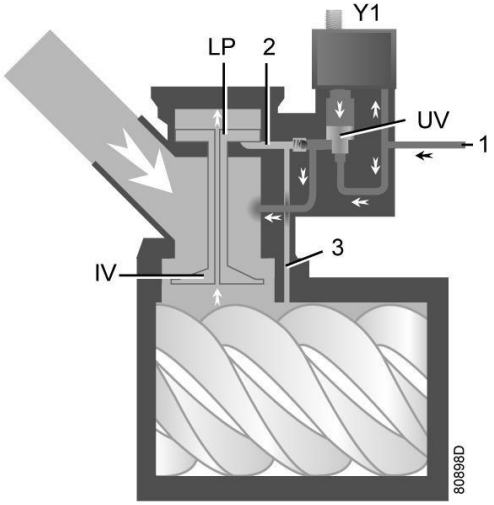
Cooling system air-cooled compressors

The cooling system comprises air cooler (Ca) and oil cooler (Co)

On air-cooled compressors, the cooling air flow is generated by a fan (FN).

2.3 Regulating Circuit

Load/unload regulating system



Regulating system (loaded condition)

Loading

When the net pressure is below the loading pressure, solenoid valve (Y1) is energised. Results

- The space above unloading valve/blow-off valve (UV) is connected with the reservoir pressure (1) via the solenoid valve.
- Unloading valve/blow-off valve (UV) moves downwards, closing off the connection to channels (2) and (3).
- Under pressure from the airend (AE) causes loading plunger (LP) to move downwards and inlet valve (IV) to open fully

Air delivery is 100%, the compressor runs loaded

Unloading

If the air consumption is less than the air output of the compressor, the net pressure increases. When the net pressure reaches the unloading pressure, solenoid valve (Y1) is de-energised. Results

- The pressure above unloading valve/blow-off valve (UV) is released to atmosphere and the space above valve (UV) is no longer in connection with the oil separator tank pressure (1).
- Unloading valve/blow-off valve (UV) moves upwards, connecting the reservoir pressure (1) with channels (2) and (3).
- The pressure in channel (2) causes the loading plunger (LP) to move upwards, causing inlet valve (IV) to close, while the pressure is gradually released to atmosphere.
- The pressure in the separator tank stabilises at low value. A small amount of air is kept drawn in to guarantee a minimal pressure, required for lubrication during unloaded operation.

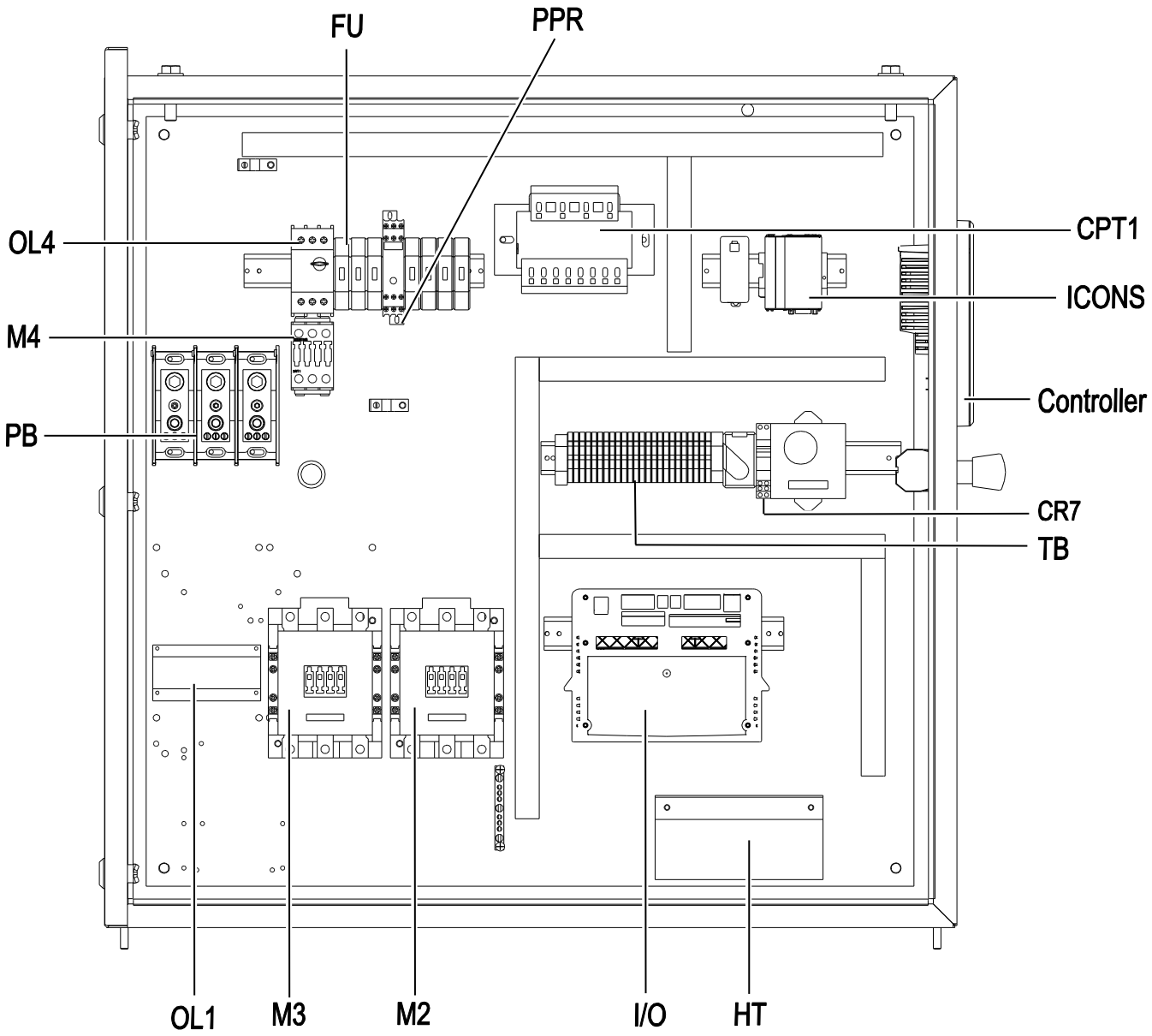
Air output is stopped, the compressor runs unloaded.

2.4 Electrical system

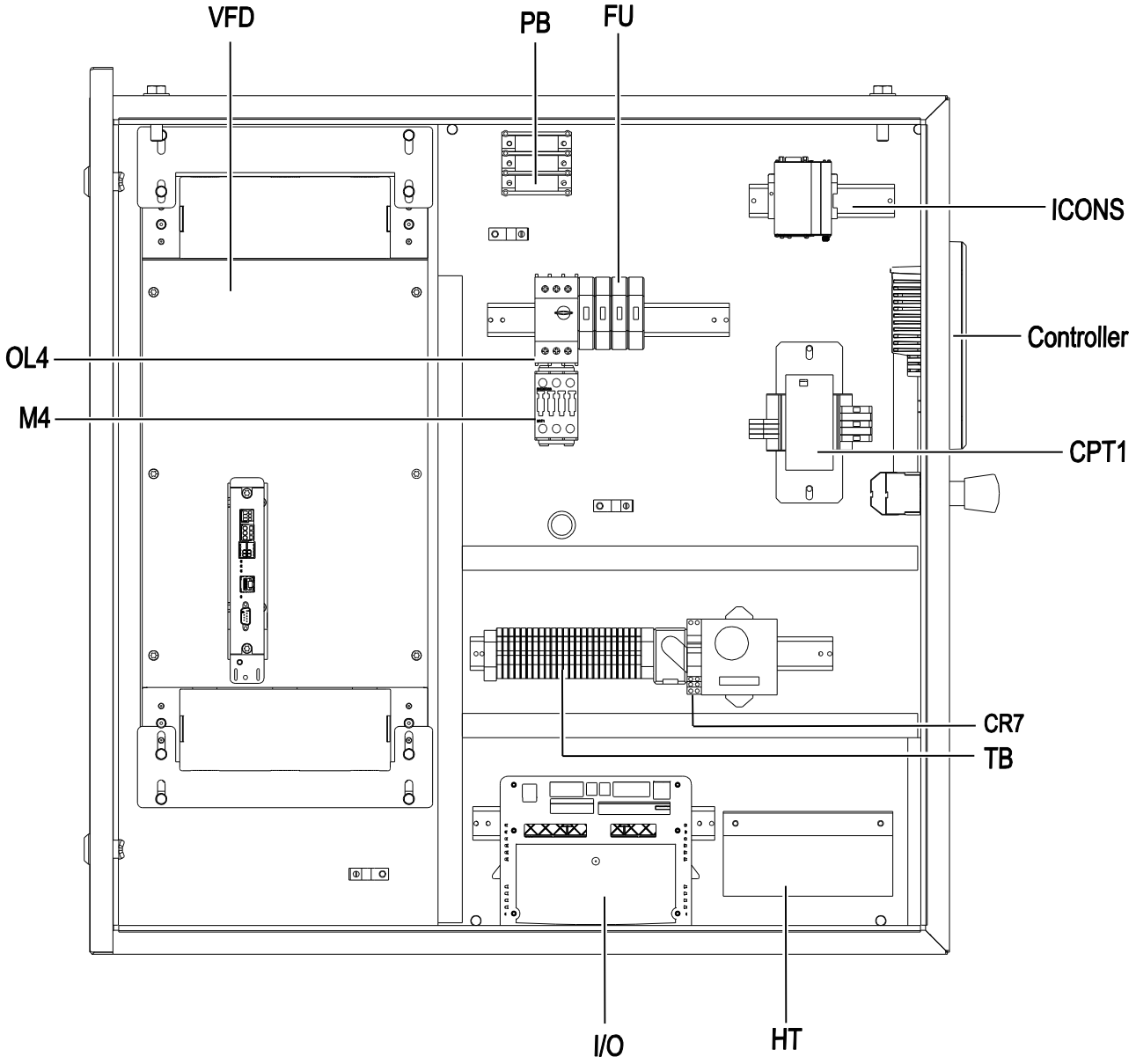
General

Electrical components

The electrical system comprises following components:



Electric cubicle layout, fixed speed



Electric cubicle layout, Variable speed

Reference	Description
VFD	Variable Frequency Drive
OL4	Overload Disconnect(Fan Motor)
M4	Fan Motor Contactor
FU	Fuses(Both Primary and Secondary)
SPD	Surge Protection Device
CPT1	Control Power Transformer
TB	Terminal Block
CR7	Control Relay
Controller	Q-Control

Reference	Description
I/O	I/O Module
ICONS	ICONS(cell phone modem)
PB	Power Block
OL1	Overload Relay(Drive Motor)
PPR	Phase Protection Relay
M2	Delta Contactor(For Y-D start)
M3	Wye Contactor(For Y-D start)
SST	Solid State Starter (For Solid State across the line start)

Electrical diagram

Drawing number	Type of drive
2012203856	Fixed speed Wye-Delta QSI50-125
2012203857	Fixed Speed Solid State Start QSI50-125
2012203908	Variable speed QGV40-125
2012203913	Fixed speed GAUGE Wye-Delta QSI50-125

A diagram of the electrical system is shown in the parts manual sent with the compressor. A wiring diagram is also included in the control panel on all Quincy compressors.

Rotation direction indicator - Phase controller

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

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.

3 Q control

3.1 Prior to Starting

	Provisions should be made to have the instruction manual readily available to the operator and maintenance personnel. If, for any reason, any parts of the manual become illegible or if the manual is lost, have it replaced immediately. The instruction manual should be read periodically to refresh one's memory. This may prevent a serious accident.

Before starting the compressor, ensure that all installation requirements have been met and that the purpose and use of the controls are thoroughly understood.

Before placing the compressor into operation, do the following:

- Remove all loose items and tools from around the compressor.
- Check fluid level in the air/fluid reservoir.
- Check the fan and fan mounting for tightness.
- Check all pressure connections for tightness.
- Check to make sure all relief valves are in place.
- Check to make sure all panels and guards are in place and securely mounted.
- Check fuses, circuit breakers and thermal overloads for proper size. Reset overloads, if needed.
- Close the main power disconnect switch and jog the starter switch button to check the rotational direction of the compressor.
- Check the fan rotation (air flows through the coolers).
- Water-cooled models - Check inlet and discharge water piping for proper connections.

3.2 Starting the Compressor

- Secure all enclosure panels on compressor.
- Open the service valve to the plant air distribution system.
- Select the mode of operation and start the compressor.
- Watch for excessive vibration, unusual noises or air/fluid leaks. If anything unusual develops, stop the compressor immediately and correct the condition.
- Control settings have been adjusted at the factory; however, they should be checked during start-up and readjusted, if necessary. Some applications may require a slightly different setting than those provided by the factory. Never increase air pressure settings beyond factory specifications.
- Observe compressor operation closely for the first hour of operation and frequently for the next seven hours. Stop and correct any noted problems.

Stopping the Compressor

Normal Operation

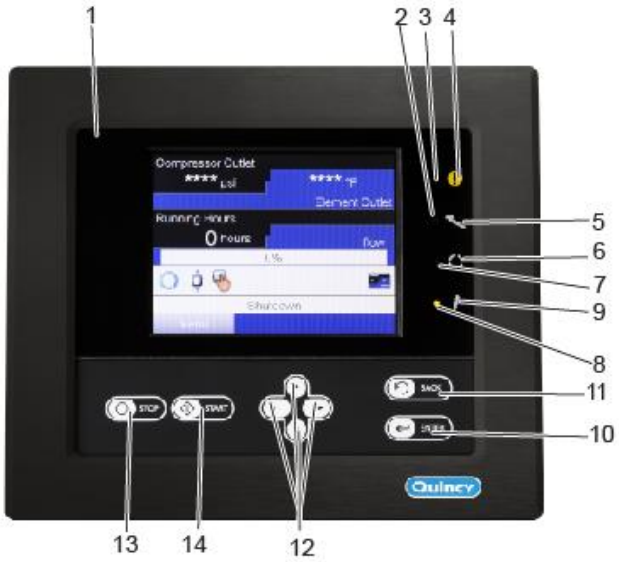
Close the service valve to the plant air distribution system. Allow the pressure to build within the reservoir and the compressor to fully unload. Press the stop button or remove power at the main disconnect switch or panel.

	Close the service valve when the compressor is not being used to prevent the system's air pressure from leaking back into the compressor if the check valve leaks or fails.

Emergency

Press the emergency stop button or cut the power at the main disconnect switch or panel.

3.3 Control panel



Q control

Parts and functions

Reference	Designation	Function
1	Display	Shows the compressor operating condition and a number of icons to navigate through the menu.
2	Service LED	Lights up if service is needed
3	General alarm LED	Flashes if a shut-down warning condition exists
4	Pictograph	General alarm
5	Pictograph	Service
6	Pictograph	Automatic operation
7	Automatic operation LED	Indicates that the regulator is automatically controlling the compressor.
8	Voltage on LED	Indicates that the voltage is switched on.
9	Pictograph	Voltage on
10	Enter key	Key to select the parameter indicated by the horizontal arrow. Only the parameters followed by an arrow pointing to the right can be modified.

Reference	Designation	Function
11	Back key	To go to previous screen or to end the current action
12	Scroll keys	Keys to scroll through the menu.
13	Stop button	Button to stop the compressor. LED (7) goes out.
14	Start button	Button to start the compressor. LED (7) lights up indicating that the Q-Control regulator is operative.

3.4 Icon used

Status icons

Name	Icon	Description
Stopped / Running		When the compressor is stopped, the icon stands still. When the compressor is running, the icon is rotates.
Compressor status		Motor stopped
		Running unloaded
		Running loaded
Machine control mode		Local control
		Remote start / stop
		Network control
Automatic restart after voltage failure		Automatic restart after voltage failure is active
Week timer		Week timer is active
Active protection functions		Emergency stop
		Shutdown

Name	Icon	Description
		Warning
Service		Service required
Display Preference		Value Lines (displays 2 or 4 elements on the main screen)
		Chart (low, medium and high resolution available and will show pressure vs. time)
		ECO (shows the present state of all the six compressor slots)

Input icons

Icon	Description
	Pressure
	Temperature
	Digital input
	Special protection

System icons

Icon	Description
	Airend (LP, HP, ...)
	Frequency converter
	Drain
	Filter

Icon	Description
	Motor
	Failure expansion module
	Network problem
	General alarm

Input icons

Icon	Description
	Inputs
	Outputs
	Alarms (Warnings, shutdowns)
	Counters
	Test
	Settings
	Service
	Event history (saved data)
	Access key / User password
	Network
	Setpoint

Icon	Description
	Info
	Converters

Navigation arrows

Icon	Description
	Up
	Down
	Left
	Right

3.5 Main screen

Control panel

Text on figure

(1)	Scroll keys
(2)	Enter key
(3)	Back key

Function

The Main screen shows the status of the compressor operation and is the gateway to all functions implemented in the controller.

The Main screen is shown automatically when the voltage is switched on and one of the keys is pushed. It is switched off automatically after a few minutes when no keys are pushed.

Typical Main screen, compressors with frequency converter (running loaded)

Text on figure

Reference	Designation
(1)	Compressor Outlet(Package Pressure)
(2)	Airend Outlet(Temperature)
(3)	Running Hours
(4)	Flow in % (Variable Speed only)
(5)	Load(text varies upon the compressors actual condition)
(6)	Menu

- **Section A** shows information regarding the compressor operation (e.g. the outlet pressure (1), the temperature at the compressor outlet (2) and compressor running hours (3). On compressors with a frequency converter, the load degree (4) is given in % of the maximum flow.
- **Section B** shows Status icons. Following icon types are shown in this field:
  - Fixed icons

    These icons are always shown in the main screen and some of them cannot be selected by the cursor (e.g. Compressor stopped or running, Compressor status (running, running unloaded or motor stopped). Selectable ones are Network Control and display preference.
  - Optional icons

    These icons are only shown if their corresponding function is activated (e.g. week timer, automatic restart after voltage failure , etc.)
  - Pop up icons

    These icons pop up if a machine failure occurs (warnings, shutdowns, service)

  To call up more information about the icons shown, select the icon using the scroll keys and press the enter key.
- **Section C** is called the Status bar

  This bar shows the text that corresponds to the selected icon.

- **Section D** shows the Action buttons. These buttons are used:
  - To call-up or program settings
  - To reset a motor overload, service message or emergency stop
  - To have access to all data collected by the regulator

The function of the buttons depends on the displayed menu. The most common functions are:

Designation	Function
Menu	To go to the menu
Modify	To modify programmable settings
Reset	To reset a timer or message
Unload	To unload from the compressor running loaded

To activate an action button, highlight the button by using the Scroll keys and press the Enter key.
To go back to the previous menu, press the Back key.

3.6 Calling up menus

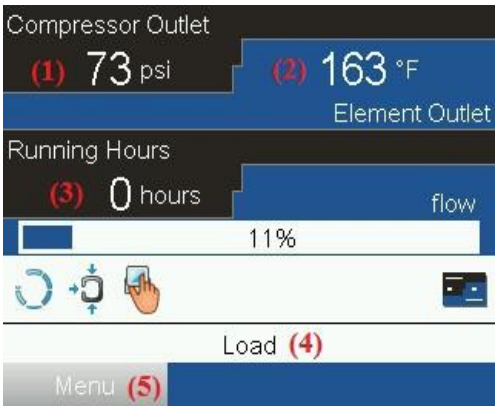
Control panel

Text on figure

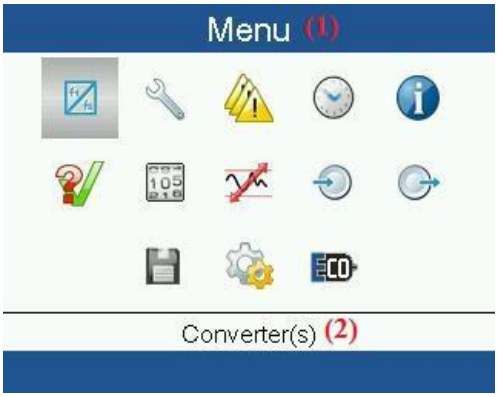
Reference	Designation
(1)	Scroll keys
(2)	Enter key
(3)	Back key

Description

When the voltage is switched on, the main screen is shown automatically (see section Main screen):



- To go to the Menu screen, highlight the Menu button (5), using the Scroll keys.
- Press the Enter key to select the menu. Following screen appears:



- The screen shows a number of icons. Each icon indicates a menu item.
- By default, the Pressure Settings (Regulation) icon is selected. The status bar shows the name of the menu that corresponds with the selected icon.
- Use the Scroll keys to select an icon.
- Press the Back key to return to the Main screen.

3.7 Inputs menu

Control panel

Text on figure

Reference	Designation
(1)	Scroll keys
(2)	Enter key
(3)	Back key

Menu icon, Inputs

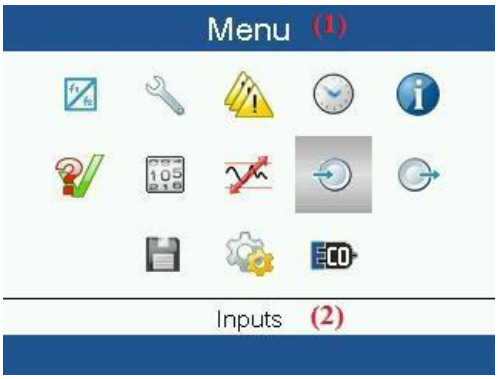
Function

To call up information regarding the actually measured data and the status of some inputs such as the emergency stop switch.

Procedure

Starting from the main screen (see Main screen),

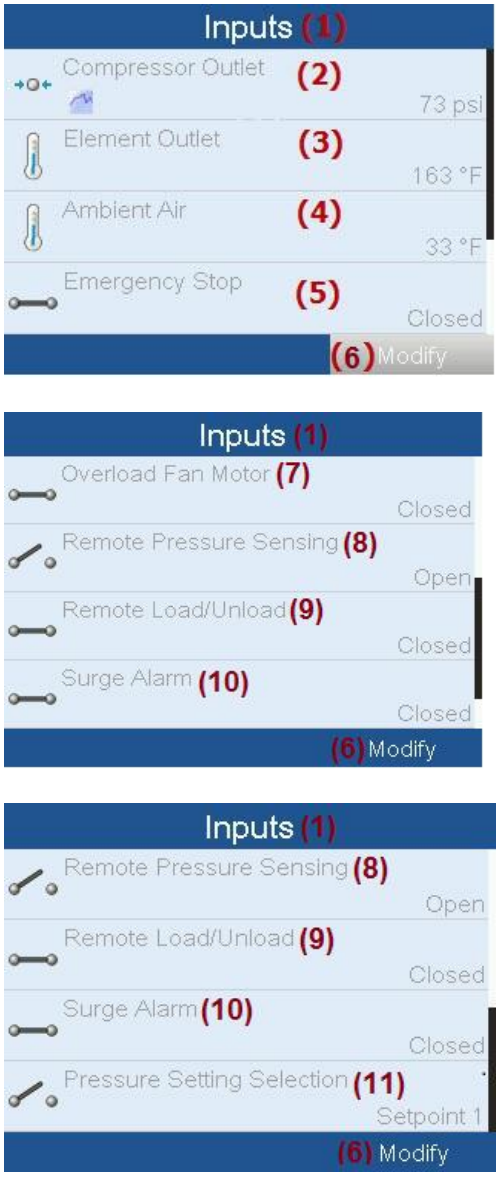
Move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on figure

Reference	Designation
(1)	Menu
(2)	Regulation

- Using the Scroll keys, move the cursor to the Inputs icon (see above, section Menu icon).
- Press the Enter key. A screen similar to the one appears below:



Text on figures

Reference	Designation
(1)	Inputs
(2)	Compressor Outlet
(3)	Airend Outlet
(4)	Ambient Air (Variable Speed only)
(5)	Emergency Stop
(6)	Modify
(7)	Overload Fan motor
(8)	Remote pressure sensing
(9)	Remote Load/Unload
(10)	Surge Alarm (Variable Speed only)
(11)	Pressure setting selection

- The screen shows a list of all inputs with their corresponding icons and readings.
- If an input is in warning or shutdown, the original icon is replaced by the warning or shutdown icon respectively (i.e. the Stop icon and the Warning icon in the screen shown above).

3.8 Outputs menu

Control panel

Text on figure

Reference	Designation
(1)	Scroll keys
(2)	Enter key
(3)	Back key

Menu icon, Outputs

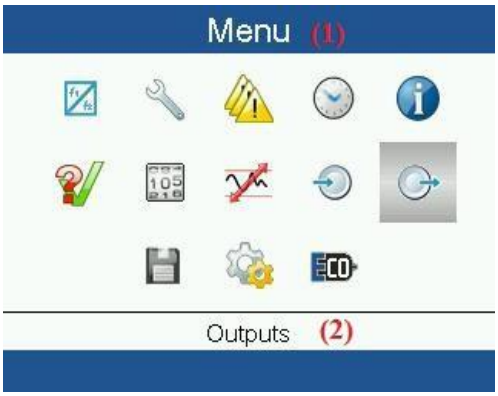
Function

To call up information regarding the actual status of some outputs such as the condition of the Fan overload contact (on air cooled compressors), the Emergency stop contact, etc.

Procedure

Starting from the Main screen (see Main screen),

- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on figure

Reference	Designation
(1)	Menu
(2)	Regulation

- Move the cursor to the Outputs icon (see above, section Menu icon, using the Scroll keys.
- Press the Enter key. A screen similar to the one appears below:

Text on figure

Reference	Designation
(1)	Outputs
(2)	Fan Motor
(3)	Load/Unload
(4)	General Shutdown
(5)	Automatic Operation
(6)	General Warning
(7)	Run Enable Main Motor

- The screen shows a list of all outputs with their corresponding icons and readings.
- If an input is in warning or shutdown, the original icon is replaced by the warning or shutdown icon respectively.

3.9 Counters

Control panel

Text on figure

Reference	Designation
(1)	Scroll keys
(2)	Enter key
(3)	Back key

Menu icon, Counters

Function

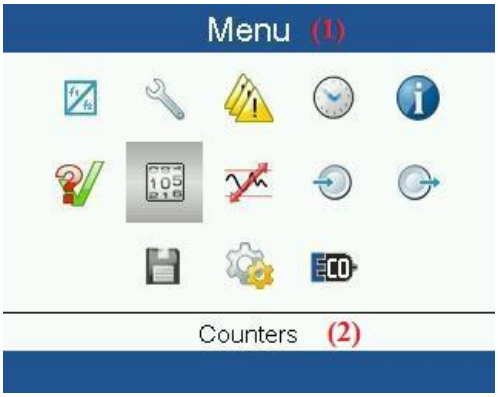
To call up:

- The running hours
- The loaded hours.
- The number of motor starts.
- The number of hours that the regulator has been powered.
- The number of load cycles.

Procedure

Starting from the Main screen (see Main screen),

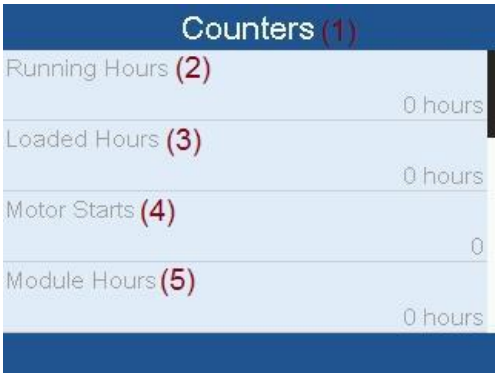
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:

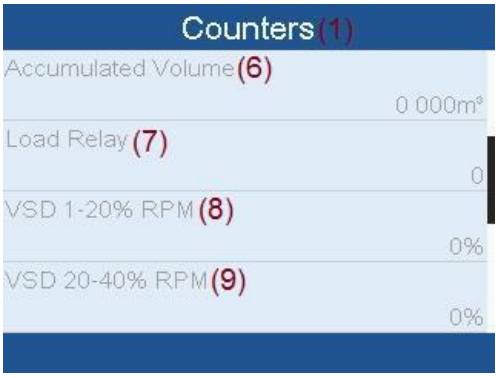


Text on figure

Reference	Designation
(1)	Menu
(2)	Regulation

- Using the Scroll keys, move the cursor to the Counters icon (see above, section Menu icon).
- Press the Enter key. Following screen appears:





The screen shows a list of all counters with their actual readings

Text on figure

Reference	Designation
(1)	Counters
(2)	Running Hours
(3)	Loaded Hours
(4)	Motor Starts
(5)	Module Hours
(6)	Accumulative Volume
(7)	Load replay
(8)	VSD 1-20% RPM
(9)	VSD 20-40% RPM
(10)	VSD 40-60% RPM
(11)	VSD 60-80% RPM
(12)	VSD 80-100% RPM
(13)	Running Hours Dryer
(14)	Fan Starts

3.10 Service menu

Control panel

Text on figure

Reference	Designation
(1)	Scroll keys
(2)	Enter key
(3)	Back key

Menu icon, Service

Function

- To reset the service plans which are carried out.
- To check when the next service plans are to be carried out.
- To find out which service plans were carried out in the past.
- To modify the programmed service intervals.

Procedure

- Starting from the Main screen (see Main screen),
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:

- Using the Scroll keys, move the cursor to the Service icon (see above, section Menu icon).
- Press the Enter key. Following screen appears:

Text on figure

Reference	Designation
(1)	Service
(2)	Overview
(3)	Service plan
(4)	Next service
(5)	History

- Scroll through the items to select the desired item and press the Enter key to see the details as explained below.

Overview

Text on figure

Reference	Designation
(1)	Overview
(2)	Running Hours (blue)
(3)	Real Time hours (black)
(4)	Reset

Example for service level (A):

The figures at the left are the programmed service intervals. For Service interval A, the programmed number of running hours is 4000 hours (upper row, blue) and the programmed number of real time hours is 8760 hours, which corresponds to one year (second row, black). This means that the controller will launch a service warning when either 4000 running hours or 8760 real hours are reached, whichever comes first.

Note that the real time hours counter keeps counting, also when the controller is not powered.

The figures within the bars are the number of hours to go till the next service intervention. In the example above, the compressor has been running for an hour and so it has 3999 more running hours or 8759 more real time hours to go before the next Service intervention.

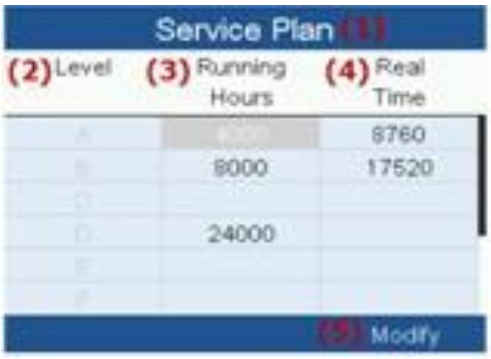
Service plans

A number of service operations are grouped (called Level A, Level B, etc...). Each level stands for a number of service actions to be carried out at the time intervals programmed in the Q-Control.

When a service plan interval is reached, a message will appear on the screen.

After carrying out the service actions related to the indicated levels, the timers must be reset.

From the Service menu above, select Service plan (3) and press Enter. Following screen appears:



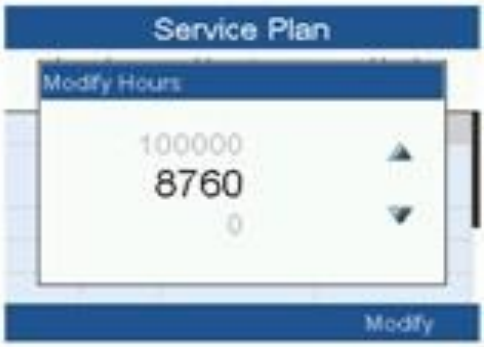
Text on figure

Reference	Designation
(1)	Service plan
(2)	Level
(3)	Running hours
(4)	Real time
(5)	Modify

Modifying a service plan

Dependant on the operating conditions, it might be necessary to modify the service intervals. To do so, use the Scroll keys to select the value to be modified. A screen similar to the one below appears:

Press the Enter key. Following screen appears:



Modify the value as required using the ↑ or ↓ scroll key and press the Enter key to confirm.

	Both running and real time hours can be modified in steps of 100 hours.

Next Service

Text on figure

Reference	Designation
(1)	Next service
(2)	Level
(3)	Running hours
(4)	Actual

In the example above, the A Service level is programmed at 4000 running hours, of which 1 hours have passed.

History

The History screen shows a list of all service actions done in the past, sorted by date.

The date at the top is the most recent service action. To see the details of a completed service action (e.g. Service level, Running hours or Real time hours), use the Scroll keys to select the desired action and press the Enter key.

3.11 Setpoint menu

Control panel

Text on figure

Reference	Designation
(1)	Scroll keys
(2)	Enter key
(3)	Back key

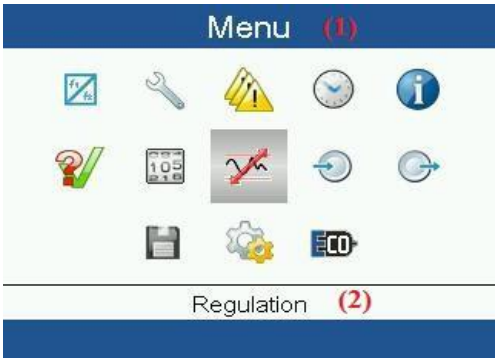
Menu icon, Regulation

Function

On fixed speed compressors, the operator can program two different pressure bands. This menu is also used to select the active pressure band.

Procedure

Starting from the Main screen (see Main screen),

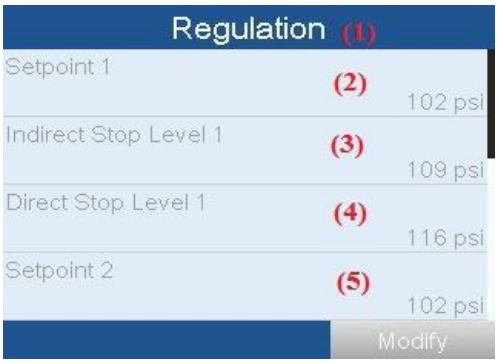


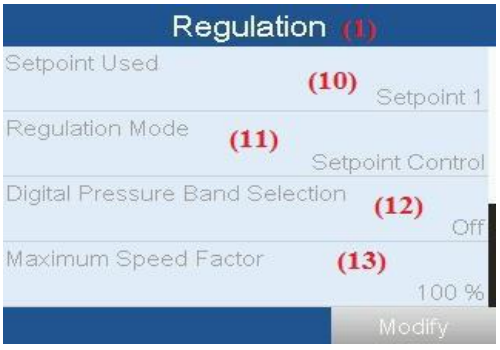
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:

Text on figure

Reference	Designation
(1)	Menu
(2)	Regulation

- Move the cursor to the Setpoint icon (see above, section menu icon) using the Scroll keys.
- Press the Enter key. Following screen appears:



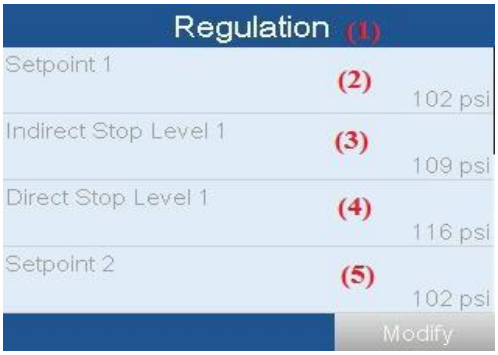


Text on figure

Reference	Designation – VSD	Designation – Fixed Speed
(1)	Regulation	Regulation
(2)	Setpoint 1	Loading Pressure 1
(3)	Indirect stop level 1	Not applicable
(4)	Direct stop level 1	Not applicable
(5)	Setpoint 2	Loading Pressure 2
(6)	Indirect stop level 2	Unloading Pressure 2
(7)	Direct stop level 2	Not applicable
(8)	Setpoint used	Pressure Band used
(9)	Regulation mode	Not applicable
(10)	Setpoint used	Not applicable
(11)	Regulation mode	Not applicable
(12)	Digital pressure band selection	Digital pressure band selection
(13)	Maximum speed factor	Not applicable

- The screen shows the actual unloading and loading pressure settings for both pressure bands

To modify the settings, move the cursor to the action button Modify and press the Enter key. Following screen appears:



- The first line of the screen is highlighted in gray. Use the Scroll keys to highlight the setting to be modified and press the Enter key. Following screen appears:

- The upper and lower limit of the setting is shown in gray, the actual setting is shown in black. Use the ↑ or ↓ key of the Scroll keys to modify the settings as required and press the Enter key to accept.

If necessary, change the other settings as required in the same way as described above.

3.12 Event history menu

Control panel

Text on figure

Reference	Designation
(1)	Scroll keys
(2)	Enter key
(3)	Back key

Menu icon, Event History

Function

To call up the last shut-down and last emergency stop data.

Procedure

Starting from the Main screen (see Main screen),

- Move the cursor to the action button Menu and press the Enter key. Then using scroll keys move the cursor over Event History and then press Enter key. Following screen appears:

- Using the Scroll keys, move the cursor to the Event History icon (see above, section Menu icon)
- The list of last shut-down and emergency stop cases is shown.
- Press the Enter key to find the date, time and other data reflecting the status of the compressor when that shut-down or emergency stop occurred.
- Scroll through the items to select the desired shut-down or emergency stop event.

3.13 Modifying general settings

Control panel

Text on figure

Reference	Designation
(1)	Scroll keys
(2)	Enter key
(3)	Back key

Menu icon, Settings

Function

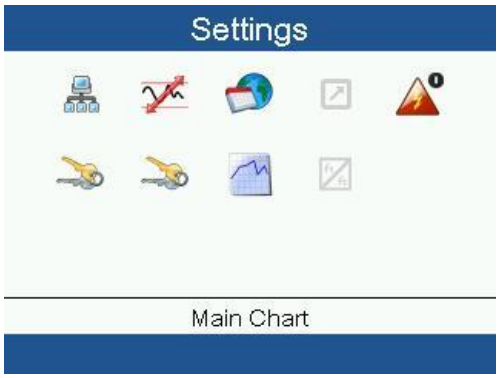
To display and modify a number of general settings (e.g. Time, Date, Date format, Language, units) and also the optional settings (e.g. Power Sync, Network)

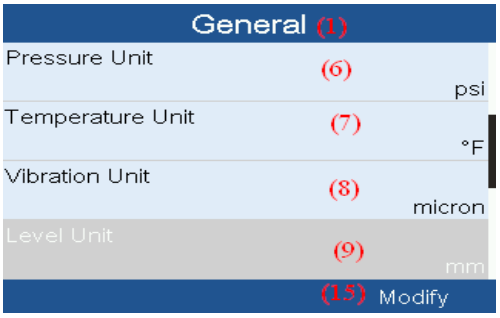
Procedure

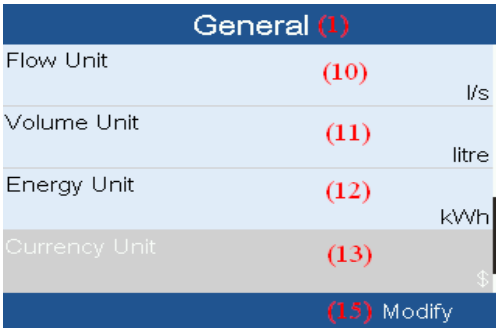
Starting from the Main screen (see Main screen),

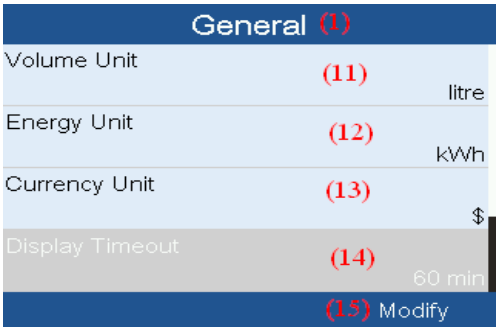
- Move the cursor to the action button Menu and press the Enter key. Following screen appears:

- Using the Scroll keys, move the cursor to the Settings icon (see above, section menu icon).
- Press the Enter key. Move your cursor to “General” and press Enter key. The screen below on the right should appears:









Text on figure

Reference	Designation
(1)	General
(2)	Language in use

Reference	Designation
(3)	Time
(4)	Date
(5)	Date format
(6)	Pressure unit
(7)	Temperature unit
(8)	Vibration unit
(9)	Level unit
(10)	Flow unit
(11)	Volume unit
(12)	Energy unit
(13)	Currency unit
(14)	Display timeout
(15)	Modify

- To modify, select the Modify button using the Scroll keys and press the Enter key.
- A screen similar to the one above is shown, a gray selection bar is covering the first item (Language). Use the ↓ key of the Scroll keys to select the setting to be modified and press the Enter key.
- A pop-up screen appears. Use the ↑ or ↓ key to select the required parameter and press the Enter key to confirm.

Sub Menu icon (Under Settings Icon), Password

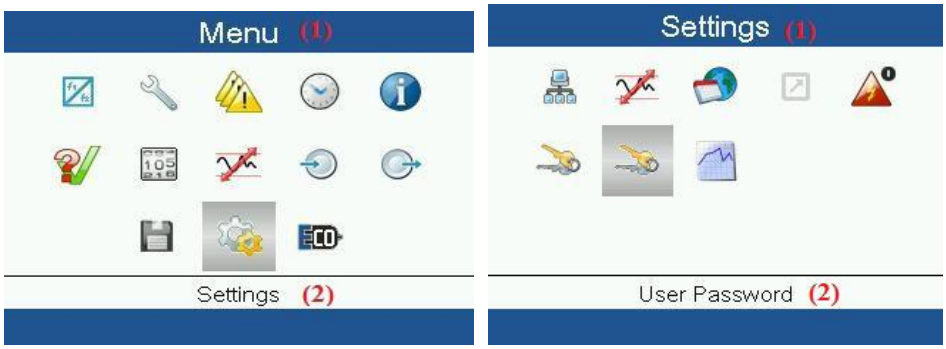
Function

If the password option is activated, it is impossible for non-authorized persons to modify any setting

Procedure

Starting from the Main screen (see Main screen),

- Move the cursor to the action button Menu and press the Enter key. In the Menu screen, move the cursor to settings and press Enter key again. Following screen appears



- Using the Scroll keys, move the cursor to the Password icon (see above, section Menu icon)
- Press the Enter key.
- Select the Modify button using the Scroll keys and press the Enter key. Next, modify the password as required.

Sub Menu Icon (Under Settings Icon), access Key

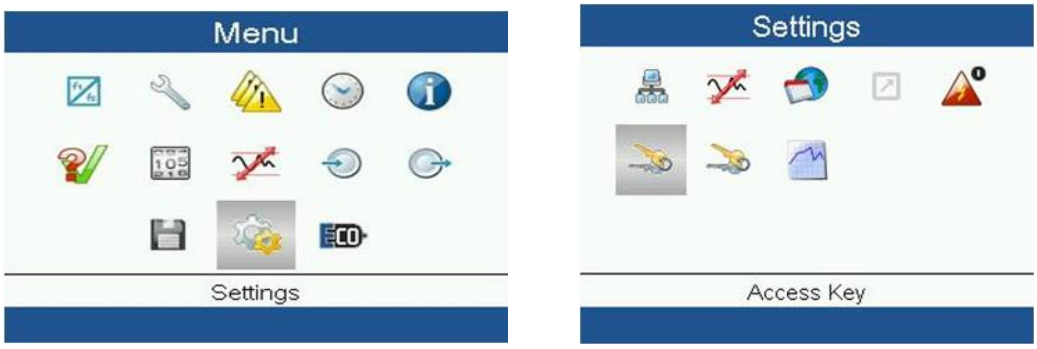
Function

With this, access to different end-user levels can be defined using the designated numbers for those user levels.

Procedure

Starting from the Main screen (see Main screen),

- Move the cursor to the action button Menu and press the Enter Key. In the Menu screen, move the cursor to settings and press Enter key again. Following screen appears:



- Using the scroll keys, move the cursor to the Password icon(see above, section menu icon)
- Press the Enter key
- Select the modify button using the Scroll keys and press Enter key. Next, modify the access key as required

Menu Icon, Network

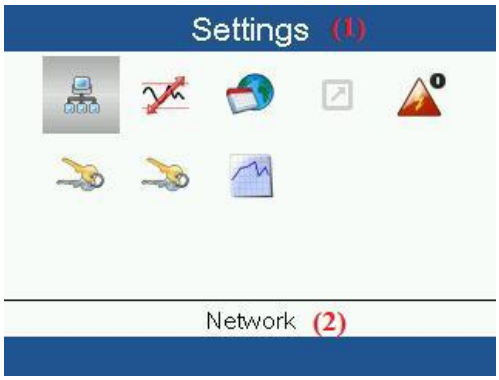
Function

To connect multiple controllers into the same network and also aids connecting through Ethernet. At most 6 compressors can be connected.

Procedure

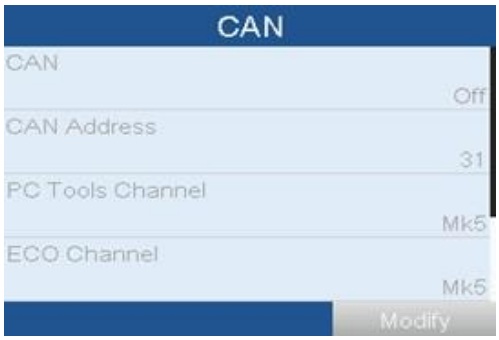
Starting from the Main screen (see Main screen),

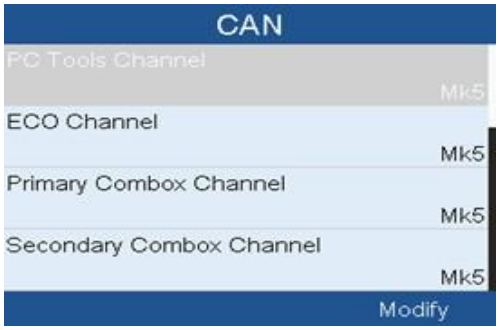
- Move the cursor to the action button Menu and press the Enter key. In the Menu screen, move the cursor to settings and press Enter key again. Following screen appears:



- Using the scroll keys, move the cursor to the Network icon (see above, section Menu Icon).
- Press the Enter key. Following screen appears which is Network screen,

- Using scroll keys, select CAN (highlighted in gray) by pressing the Enter key. Following screen will appear. Modify any necessary settings by selecting Modify (7) and then pressing the Enter key. To go back press back key.





- Using scroll keys, the submenus can be modified.

- Again go back to the “Network screen” and select Ethernet. Press Enter key and following screen will appear,

- Modify any necessary settings by selecting Modify (7) and then pressing the Enter key. To go back press back key.

Sub Menu Icon (Under Settings Icon), Main Chart

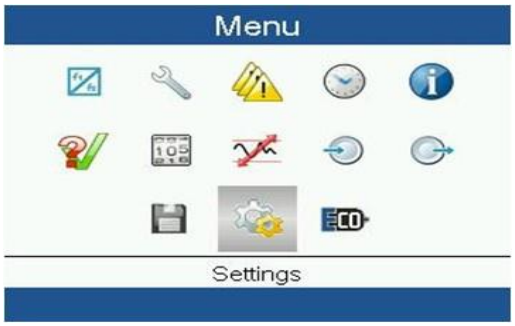
Function

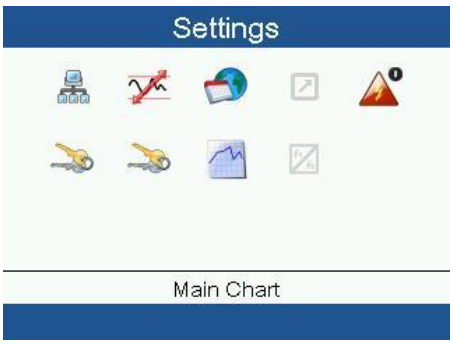
To setup the graph of pressure vs. hours, this submenu is selected. Here, a low and a high value of pressure can be chosen, to form the graph. From 0 PSI to the maximum pressure setpoint, any value can be set according to the user needs.

Procedure

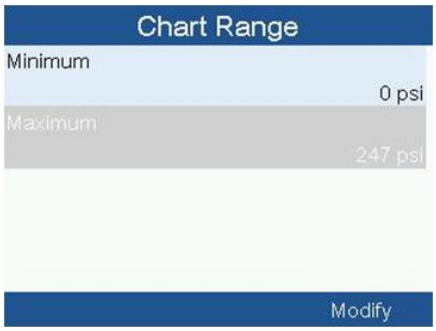
Starting from the Main screen (see Main screen),

- Move the cursor to the action button Menu and press the Enter Key. In the Menu screen, move the cursor to settings and press Enter key again. Following screen appears:





- Using the scroll keys, move the cursor to the Main chart icon(see above, section menu icon)
- Press the Enter key
- Select the modify button using the Scroll keys and press Enter key. Next, modify the options as required.



3.14 Info menu

Control panel

Text on figure

Reference	Designation
(1)	Scroll keys
(2)	Enter key
(3)	Back key

Menu icon, Info

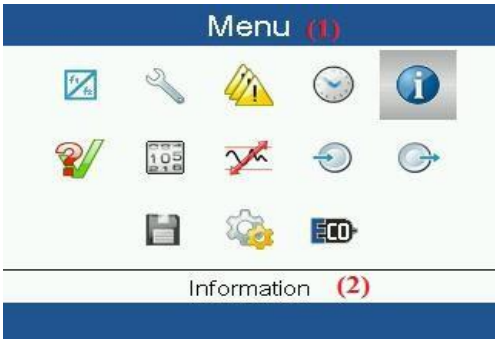
Function

To show the Quincy compressors internet address and also the IP configuration of the controller.

Procedure

Starting from the Main screen (see Main screen),

- Move the cursor to the action button Menu and press the Enter key. Following screen appears:



Text on figures

Reference	Designation
(1)	Information
(2)	MAC Address
(3)	Expansion Module
(4)	Application Software
(5)	Operating System
(6)	Operating System

(7)	Boot Software
(8)	Licence ECO

- Using the Scroll keys, move the cursor to the Info icon (see above, section Menu icon).
- Press the Enter key. The Quincy compressors internet address appears on the screen.

3.15 Week timer menu

Control panel

Text on figure

Reference	Designation
(1)	Scroll keys
(2)	Enter key
(3)	Back key

Menu icon, Week timer

Function

- To program time-based start/stop commands for the compressor
- To program time-based change-over commands for the net pressure band
- Four different week schemes can be programmed.
- A week cycle can be programmed, a week cycle is a sequence of 10 weeks. For each week in the cycle, one of the four programmed week schemes can be chosen.

Procedure

Starting from the Main screen (see Main screen),

- Move the cursor to the action button Menu and press the Enter key. Use the Scroll buttons to select the Timer icon.

Text on figure

Reference	Designation
(1)	Menu
(2)	Regulation

- Press the Enter key on the controller. Following screen appears:

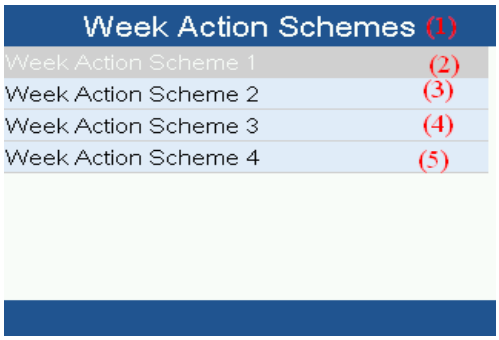
Text on figure

Reference	Designation
(1)	Week timer
(2)	Week action schemes
(3)	week cycle
(4)	Status
(5)	Week timer inactive
(6)	Remaining running time

The first item in this list is highlighted in gray. Select the item requested and press the Enter key on the controller to modify.

Programming week schemes

- Select Week action schemes and press Enter. A new window opens. The first item in the list is highlighted in red. Press the Enter key on the controller to modify Week Action Scheme 1.



Text on figure

Reference	Designation
(1)	Week Action Schemes
(2)	Week Action Scheme 1
(3)	Week Action Scheme 2
(4)	Week Action Scheme 3
(5)	Week Action Scheme 4

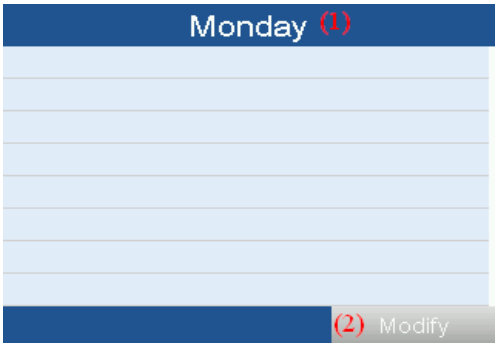
- A weekly list is shown. Monday is automatically selected and highlighted in gray. Press the Enter key on the controller to set an action for this day.

Text on figure

Reference	Designation
(1)	Week Action Scheme 1
(2)	Monday
(3)	Tuesday
(4)	Wednesday
(5)	Thursday

Reference	Designation
(6)	Friday
(7)	Saturday
(8)	Sunday

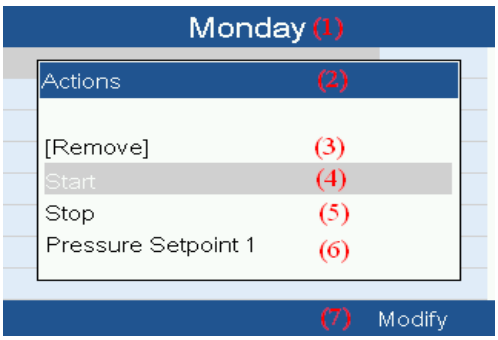
- A new window opens. The Modify action button is selected. Press the enter button on the controller to create an action.



Text on figure

Reference	Designation
(1)	Monday
(2)	Modify

- A new pop-up window opens. Select an action from this list by using the Scroll keys on the controller.
- When ready press the Enter key to confirm.

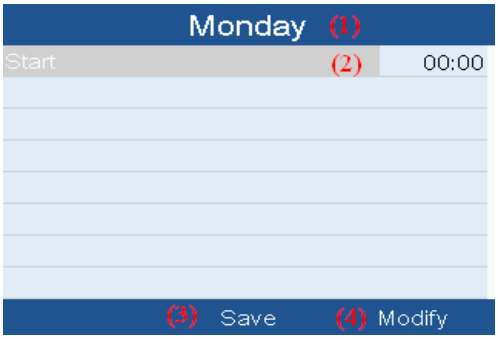


Text on figure

Reference	Designation
(1)	Monday
(2)	Actions
(3)	Remove
(4)	Start

Reference	Designation
(5)	Stop
(6)	Pressure Setpoint 1
(7)	Modify

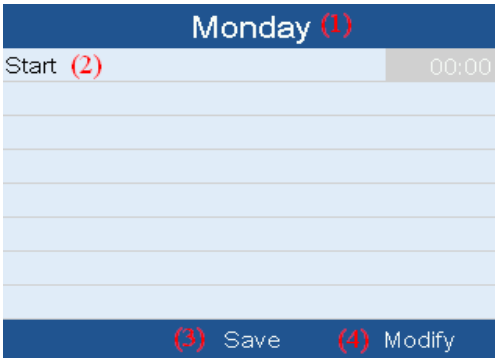
- A new window opens. The action is now visible in the first day of the week.



Text on figure

Reference	Designation
(1)	Monday
(2)	Start
(3)	Save
(4)	Modify

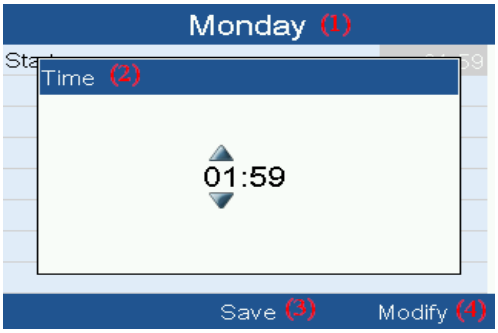
- To adjust the time, use the Scroll keys on the controller and press the Enter key to confirm.



Text on figure

Reference	Designation
(1)	Monday
(2)	Start
(3)	Save
(4)	Modify

- A pop-up window opens. Use the ↑ or ↓ key of Scroll keys to modify the values of the hours. Use the ← or → Scroll keys to modify the minutes. After selecting the time, press Enter key and the new time should be shown.



Text on figure

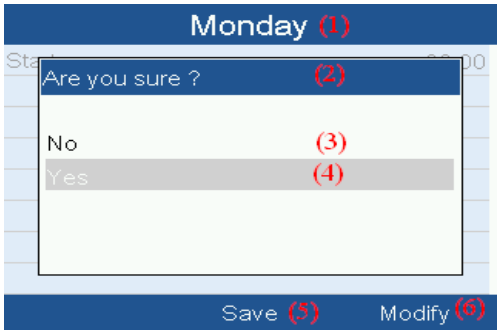
Reference	Designation
(1)	Monday
(2)	Time
(3)	Save
(4)	Modify

- Press the Back key on the controller. The action button Modify is selected. Use the Scroll keys to select the action Save

Text on figure

Reference	Designation
(1)	Monday
(2)	Start
(3)	Save
(4)	Modify

- A new pop-up window opens. Use the Scroll keys on the controller to select the correct actions. Press the Enter key to confirm.

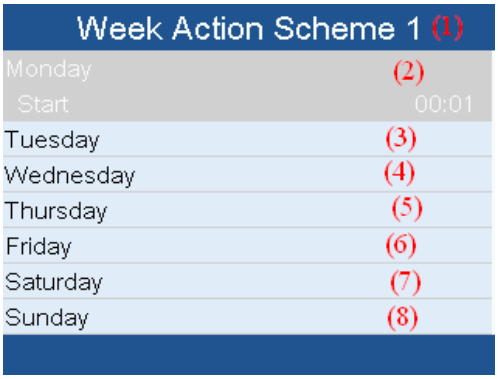


Text on figure

Reference	Designation
(1)	Monday
(3)	Are you sure?
(4)	No
(5)	Yes
(6)	Save
(7)	Modify

Press the Back key to leave this window.

- The action shown below is the day the action is planned.



Text on figure

Reference	Designation
(1)	Week Action Scheme 1
(2)	Monday - Start
(3)	Tuesday
(4)	Wednesday
(5)	Thursday
(6)	Friday

Reference	Designation
(7)	Saturday
(8)	Sunday

Press the Back key on the controller to leave this screen.

Programming the week cycle

A week cycle is a sequence of 10 weeks. For each week in the cycle, one of the four programmed week schemes can be chosen.

- Select Week Cycle from the Week Timer menu list.

Text on figure

Reference	Designation
(1)	Week Timer
(2)	Week Action Schemes
(3)	Week Cycle
(4)	Status
(5)	Week Timer Inactive
(6)	Remaining Running Time

- A list of 10 weeks is shown.

Text on figure

Reference	Designation
(1)	Week Cycle
(2)	Week 1
(3)	Week 2
(4)	Week 3
(5)	Week 4
(6)	Modify

Press twice the Enter key on the controller to modify the first week.

- A new window opens. Select the action, example: Week Action Scheme 1

Text on figure

Reference	Designation
(1)	Week Cycle
(2)	Week 1
(3)	Off
(4)	Week Action Scheme 1
(5)	Week Action Scheme 2
(6)	Week Action Scheme 3
(7)	Week Action Scheme 4
(8)	Modify

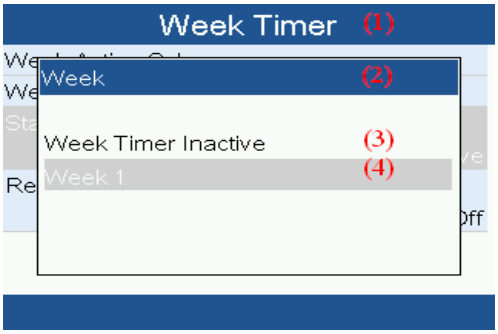
- Check the status of the Week Timer

Use the Back key on the controller to go back to the Week Timer menu. Select the status of the Week Timer.

Text on figure

Reference	Designation
(1)	Week Timer
(2)	Week Action Schemes
(3)	Week Cycle
(4)	Status
(5)	Week Timer Inactive
(6)	Remaining Running Time

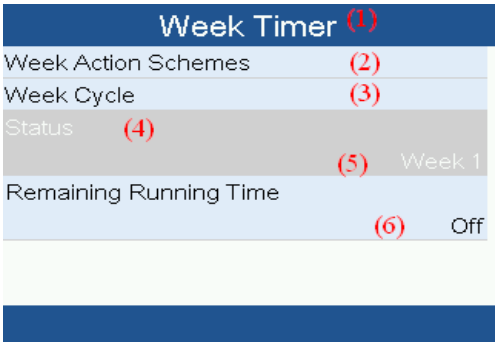
- A new window opens. Select Week 1 to set the Week Timer active.



Text on figure

Reference	Designation
(1)	Week Timer
(2)	Week
(3)	Week Timer Inactive
(4)	Week 1

- Press the Back key on the controller to leave this window. The status shows that week 1 is active.



Text on figure

Reference	Designation
(1)	Week Timer
(2)	Week Action Schemes
(3)	Week Cycle
(4)	Status
(5)	Week 1
(6)	Remaining Running Time

- Press the Back key on the controller to go to the Week Timer menu. Select Remaining Running Time from the list and press the Enter key on the controller to Modify.

Text on figure

Reference	Designation
(1)	Week Timer
(2)	Week Action Schemes
(3)	Week Cycle
(4)	Status
(5)	Remaining Running Time

- This timer is used when the week timer is set and for certain reasons the compressor must continue working, for example, 1 hour, it can be set in this screen. This timer is prior to the Week Timer action.

Text on figure

Reference	Designation
(1)	Week Timer
(2)	Remaining Running Time

Menu Icon, Converter(s) (In case of VSD only)

Function

To display the current Motor speed, amount of current and temperature at the VSD (Variable Speed Drive).

Procedure

Starting from the Main screen (see main screen),

- Move the cursor to the action button Menu and press the Enter key. In the Menu screen, move the cursor to converter(s) and press Enter key again. Following screen appears:

The Main Motor screen will show the current motor speed and current. It is possible to see the temperature if information based on that has been provided into the drive.

Menu Icon, ECOi

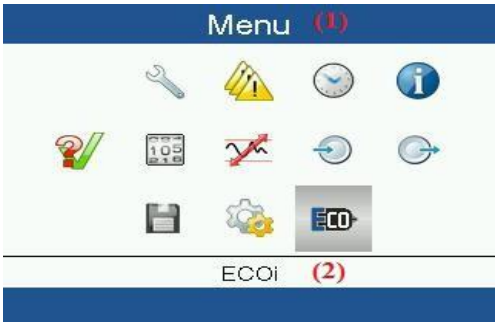
Function

To determine the master-slave configuration for controllers running in a network mode and also defines how the compressor will run based on the master-slave setting.

Procedure

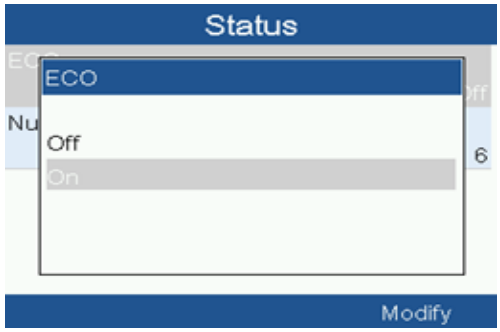
Starting from the Main screen (see Main screen),

- Move the cursor to the action button Menu and press the Enter key. In the Menu screen, move the cursor to ECOi and press Enter key again. Following screen appears:



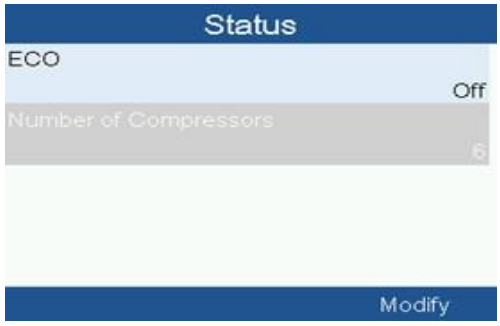
- Using the scroll keys, move the cursor to the Status icon (see above, section Master Icon).

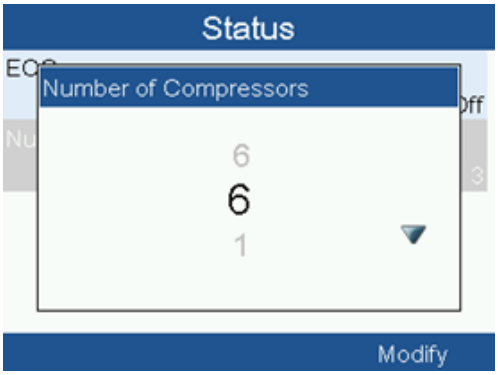
- The Status Icon represents the status of the Compressor running in a network. Up to 6 compressors can be added to one particular network. To turn this setting On, press Enter key when the cursor is on the Status Icon and the following screen appears:



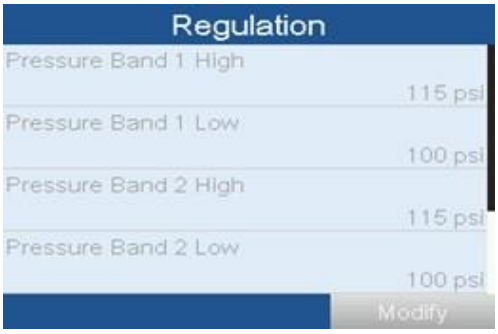
	Only change the ECO to On in the control that is on the Master compressor in the network. There can only be one Master control in a network.

Using the scroll keys, move the cursor to the Modify option and press Enter key. Now, the ECO option should be highlighted (Grey represents current selection). Press enter key again. A new window will open where the option ECO can be turned on. Move the cursor and select option “on”, press Enter key and ECO should be on. Remember that, once ECO is on, it is not possible to change the number of compressors. To change the number of compressor, first select the “number of compressors” option and then select the desired number using the scroll keys. Then, following the above instructions, turn ECO on.





The next item under the Master Icon is “Regulation” . Using scroll keys select regulation, press the Enter key and six options would be seen (two different pressure bands, in use pressure band and digital pressure band selection) on the regulation screen. These options can be modified per user choice but they should follow the general compressor pressure range.



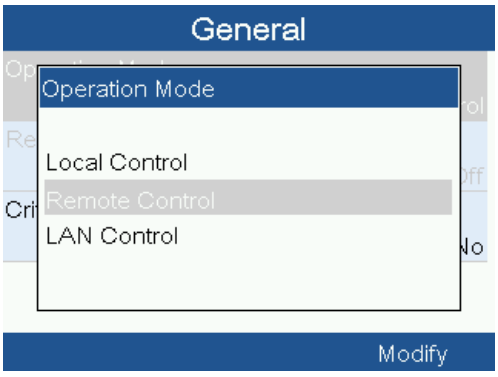
The next item is “General”. Using scroll keys select general and press the Enter key. Following window appears:

Here, under “operation mode”, there are three options. They are Local, Remote and LAN control.

If only one compressor is needed to run in a different way than the others connected in a network then Local control should be chosen as the operation mode for that respective compressor. The Master control in the network has to be set to Local Control.

If “LAN control” is chosen then all the slave compressors will follow the master settings.

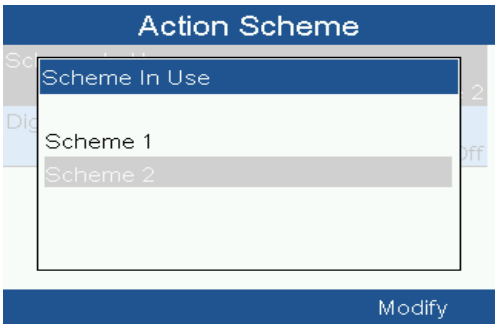
For “Remote control” it’s similar to LAN control but to activate Remote start/stop, we need to run the compressors at Remote control.



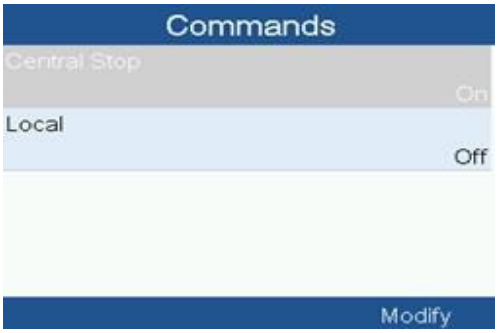
Remote start/stop under “General” section can only be selected if that option was chosen before installing the software in the Q-Control and needs the machine to be running in the Remote control mode. The last option is ‘’Critical Application” and this one is not going to be used on our standard products.

Next item is “Action Scheme”. Using scroll keys select action scheme and press the Enter key. Following window appears:

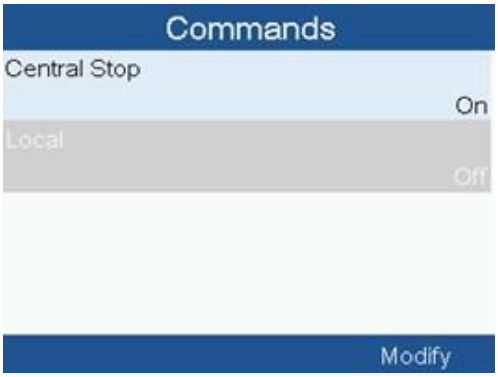
Here, two schemes 1 or 2 can be chosen depending on the customer settings where different group sequences have been already saved.



Fifth item is “Commands”. Using scroll keys select commands and press the Enter key. Following window appears:

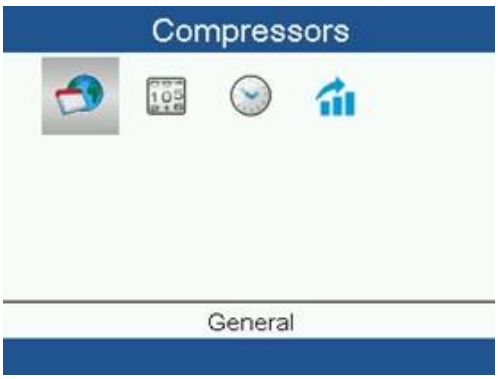


Here, two options are available, “Central Stop” and “Local”. If command central stop is on then all the compressors will turn off under the same network when the Stop button is pressed. The “local” option allows the compressor to follow its own installed settings and not the Master settings. Below are the screen shots:



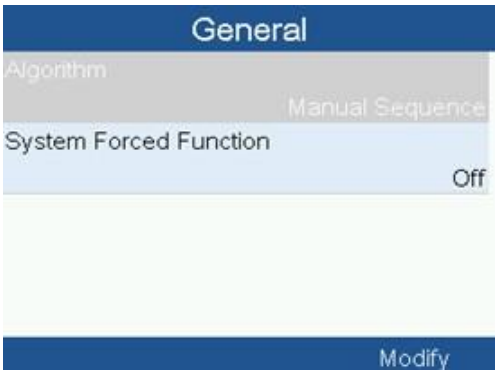
The next item is “Automatic Restart”. This option restarts the compressor at its previous state if the power down time is less than the maximum power down time. To get it activated, use scroll keys to select automatic restart and press the Enter key. Following window appears.

- The final option available here is “Compressors”. It has four more sub options and they are all based on how the slave compressors would react to master settings. To select this, use scroll keys to select compressors and press the Enter key. Following window appears.



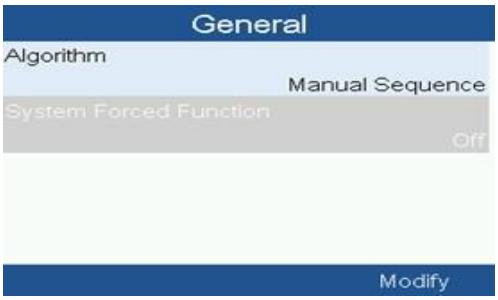
- Using scroll keys select “General” and press the Enter key. Two options would be seen and the first one is Algorithm. Under Algorithm, there are again two options which are, Equal Wear and Manual sequence.
    - Equal wear means, within the group of compressors that have the same priority, the available compressor with the least running hours will be started first, compressors with the most running hours will be stopped first. However, this is not applicable when the priority group contains the control VSD compressor. The other VSD compressor(s) will run as fixed speed compressor(s).

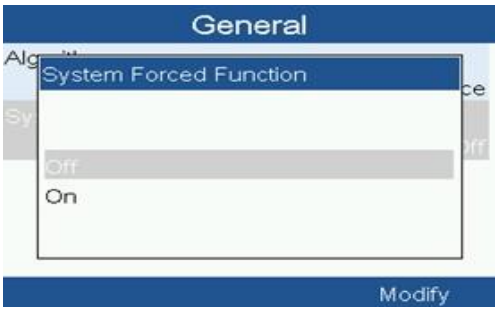
      Equal Wear will automatically run machines based on hours to reach equal hours on all of the compressors in the network.



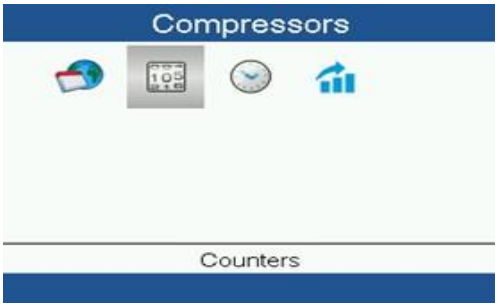
- On the other hand, the Manual Sequence represents a pre-set sequence set as per customer needs. Using scroll keys and Modify option the desired sequence can be chosen.

- Another option is “System Forced Function” which allows forcing a compressor start to prevent a certain compressor in the system would remain inactive during a long time.

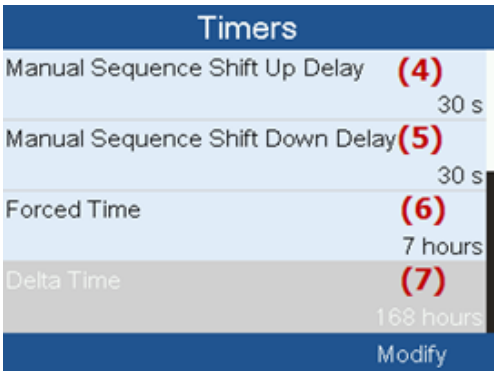




- Next is “Counters”. This option shows the running hours for different compressors in the same network. Also, it is possible to edit these running hours if necessary and that would increase/decrease in an increment of 100. To do these steps, use scroll key and move cursor to counters. Press Enter key and using scroll keys select modify and then again using scroll keys the hours can be changed. These are the hours that Equal Wear will use to determine how much to run a unit.



- Third option is “Timers”. This has some specific timing based programs and they can be changed as desired. To use this, first using scroll keys move cursor to counters and then press Enter key. Following window appears:

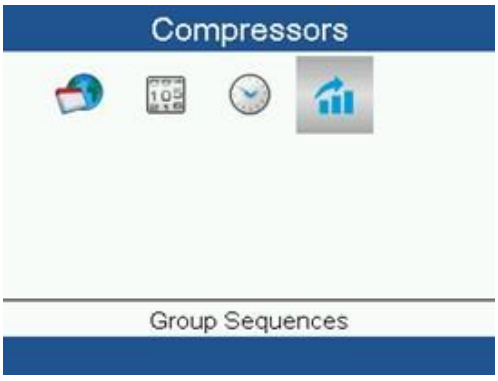


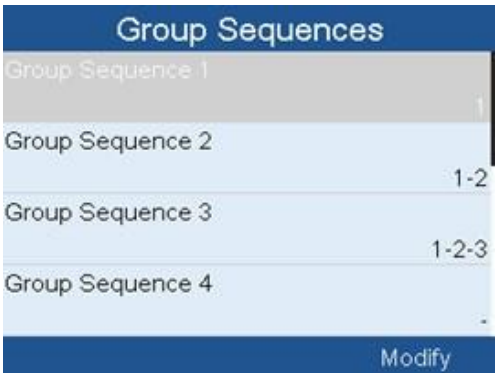
Text on figures

Number	Timers	Description
1	Remote To Local Time	Time between two remote – local requests.
2	Start/Load Time	Time between two start - load requests.
3	Unload/Load Time	Time between two unload-load requests.
4	Manual seq. Shift Up Delay	The delay due to increase in pressure to start loading the next compressor.
5	Manual seq. Shift Down Delay	The delay due to decrease in pressure to start unloading the next compressor.
6	Forced Time	Setting used to decide to start a stopped compressor irrespective of the pressure algorithm.
7	Delta time	Setting used to decide to load an unloaded compressor or to start a stopped compressor.

- All the timer options can be changed to a unit of 1 incremental. The manual sequence shift up/down delay cannot be changed once compressor starts running in the ECO mode.

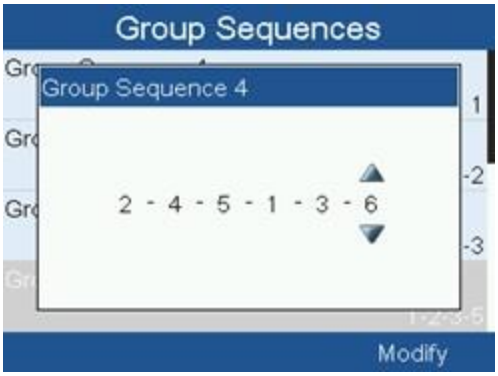
- Final option under compressors is “Group sequences” . Here, the group sequences are created for the manual sequence mode. As only six compressors can be connected at one particular network, so six groups can be defined at a maximum. To use this, first using scroll keys move cursor to group sequences and then press Enter key. Following window appears





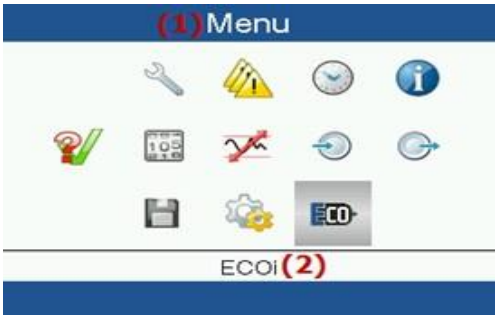
- To assign these groups, first group sequence has to be just 1. Then, the next group sequence would be 1-2 and so on. However, it's possible to break the serial and set the sequence randomly depending on the customer needs. As an example, it is possible to assign 2-4-5-1-3 and so forth.

.

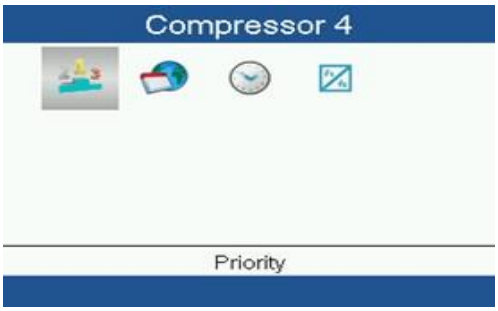


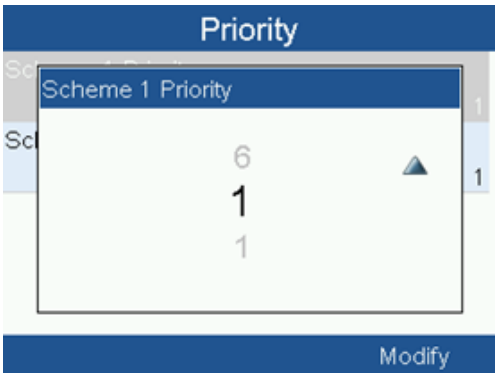
Slave Compressor Menu

- Each of the slaves has a few of their own settings. To check on those, first use the scroll keys to select ECO from the Menu section. Press Enter key. With the Master option, slave options would be also available depending on the number of pre-set slaves. Following screen appears:

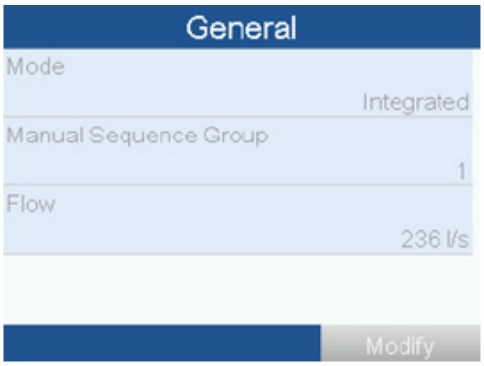


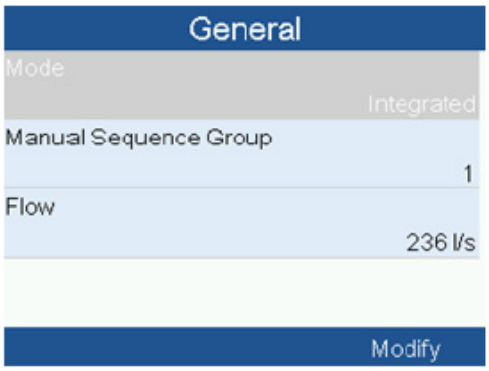
- Under the slave/compressor (no), there are four menus. First one is “Priority”. Under priority there are two schemes. In each Priority scheme a Priority Level can be set per compressor. The lower the priority level the higher the priority. Compressors with the same Priority Level will have the same Priority. By default all priorities in both schemes are set to 1. Since two Priority schemes are available, a switch over from one to the other Priority Scheme is possible (by Digital Input, Week Timer or via Display Menu). Using scroll keys and selecting modify, the appropriate scheme is chosen.

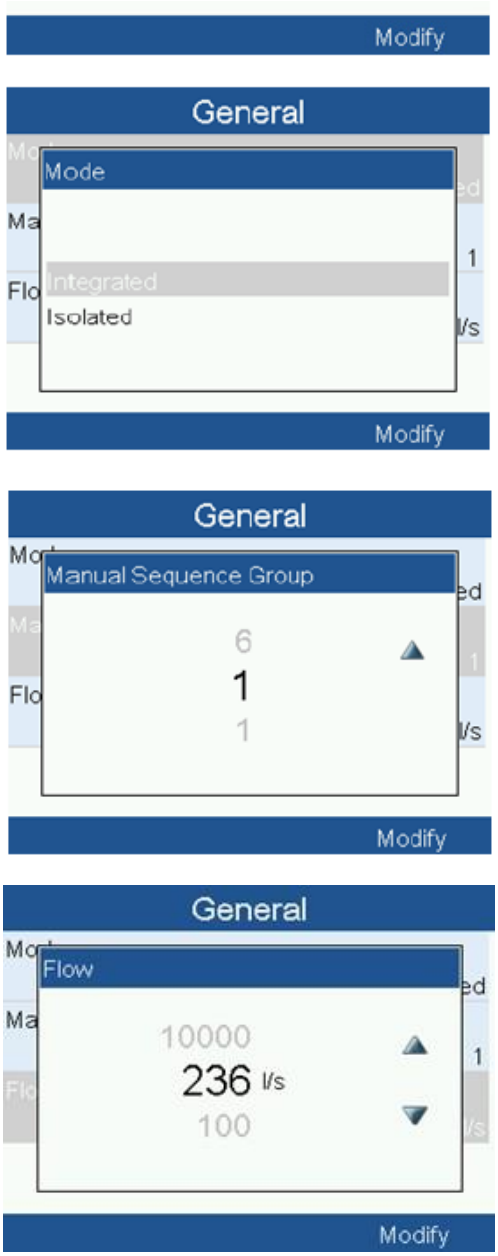




- Second menu item under compressor (no) is “General”  . Here, separating the slave from master setting, selecting sequence group and flow can be changed. Using scroll keys and selecting modify, the following screen appears:







Setting flow will establish the size of the unit in the network.

Next item is “Timers”. Using scroll keys, move cursor to timers and press Enter key. Following screen will appear:

Text on figures

Number	Timers	Description
1	Start/Load Reaction Time	Maximum time for the compressor to reply to a Start / Load command.
2	Load Reaction Time	Maximum time for the compressor to reply to a Load command.
3	Unload Reaction Time	Maximum Time for the compressor to reply to an Unload command.
4	Stop Reaction Time	Maximum Time for the compressor to reply to a Stop command.
5	Unload Time	Time between two unload requests.

- All these timers can be changed to the desired value using scroll keys and selecting modify.

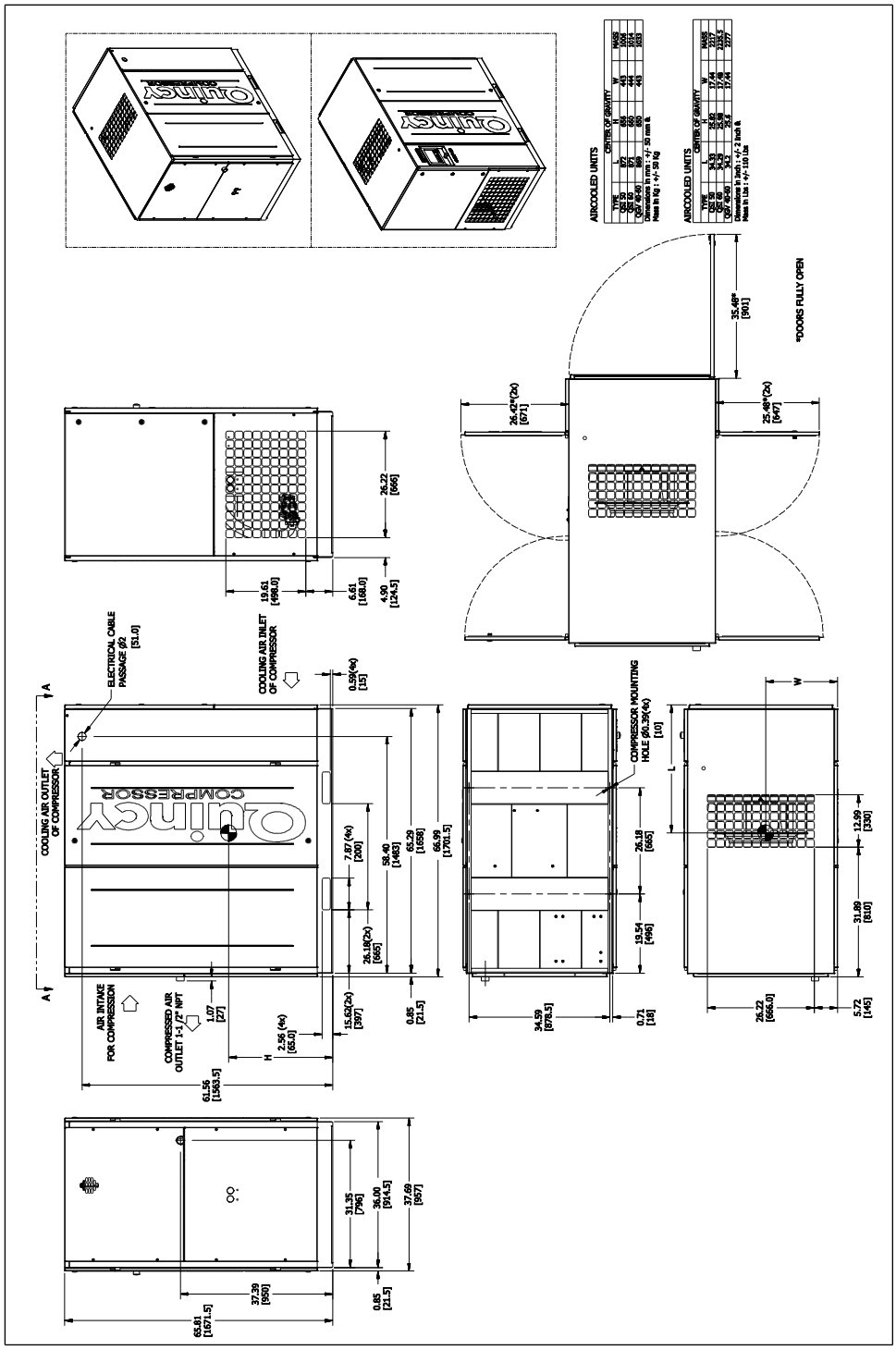
- The final item is “VSD” . This option is for any slave compressor which is running on VSD. When they are running as slaves, they would be seen as fixed speed compressors. To check its settings, Use scroll keys and move cursor to VSD and press Enter key. Following screen will appear:

Text on figures

Number	Timers	Description
1	VSD Maximum Starts Per Day	The second up to sixth VSD compressor will be seen as a Fixed Speed compressor running at optimal/ maximum speed. Since these VSD's are seen as fixed speed compressors, a 'Number of starts per day' is required for the regulation.
2	VSD Maximum RPM Factor	Percentage of Control VSD Speed; required for the decision to start/load/unload and stop fixed speed and maximum speed VSD's.
3	VSD Minimum RPM Factor	Percentage of Control VSD Speed; required for the decision to start/load/unload and stop fixed speed and maximum speed VSD's.
4	VSD Zero RPM Band Factor	Percentage multiplied with the 'Minimum Speed' to decide that the Control VSD can be considered as stopped.

4 Installation

4.1 Dimension Drawings



Dimension drawing, QSI 50-60 and QGV 40-60

Official Drawing can be found at https://www.quincyhq.com/.

4.2 Installation proposal

Receiving

	Upon receipt, immediately inspect the compressor for any visible damage that may have occurred during shipment. If visible damage is found, the delivering carrier should make a notation on the freight bill and the customer should request a damage report. If the shipment is accepted and damage is found later, it is classified as concealed damage. Concealed damage should be reported to the delivering carrier within 15 days of delivery. The delivering carrier must prepare a damage report. Itemized supporting papers are essential to filing a claim. Read the compressor nameplate to be sure the compressor is the model and size ordered and that optionally ordered items are included. Check the reservoir and pressure relief valves to be sure they are adequate for the pressure at which you intend to operate.

Outdoor/altitude operation

	The compressor is not designed for installation outdoors. Also, if the ambient temperature can fall down below 0 ˚C (32 ˚F), and if operating above 1000 m (3300 ft) precautions must be taken. In this case, consult your supplier.

Moving/lifting

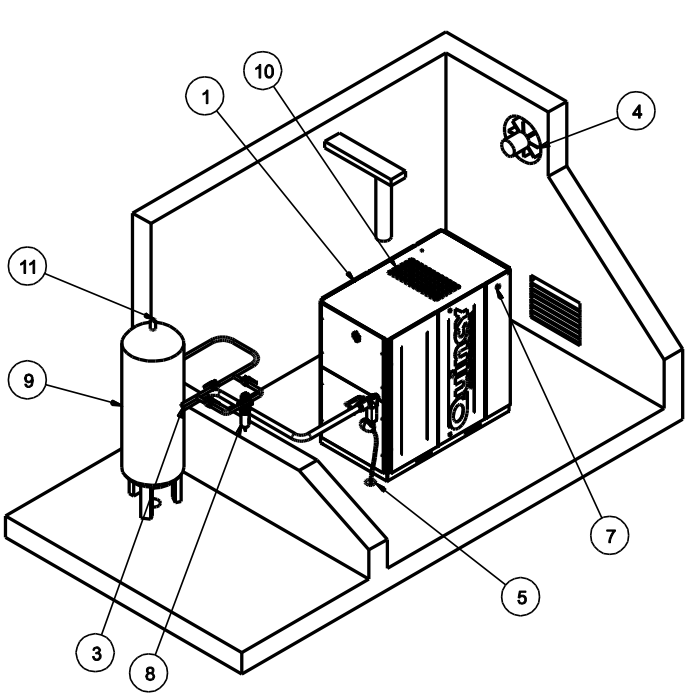
	The compressor can be moved by a lift truck using the slots in the frame. Take care not to damage the bodywork during lifting or transport. Make sure that the forks protrude from the other side of the frame. The compressor can also be lifted after inserting beams in the slots. Make sure that the beams cannot slide and that they protrude from the frame equally. The chains must be held parallel to the bodywork by chain spreaders in order not to damage the compressor. The lifting equipment must be placed in such a way that the compressor is lifted perpendicularly. Lift gently and avoid twisting.

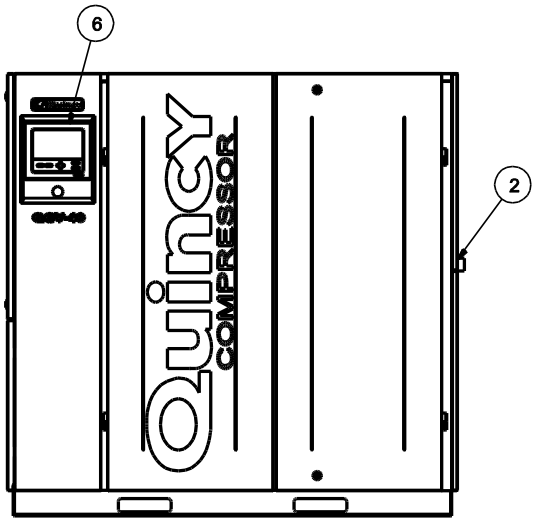
Important Requirements for New Installation

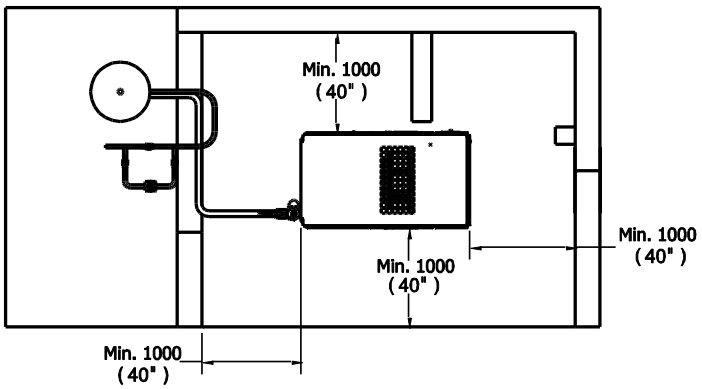
To insure a safe installation of the equipment it is important to make sure final inspection checks of the equipment are made before running for the first time.

- With all electrical power removed from the equipment and per OSHA requirements for lock-out and tag-out you can safely make the following inspection checks.
- The electrical installation must be done by qualified personnel.
- Inspect all electrical connections to verify there are no loose connections and all electrical connections are tight.
- Verify that the power requirement for the package has been provided for by referencing the package power label on the inside of the electrical cabinet door on the package.
- The branch circuit protection and supply cable size for the compressor must be sized to meet the package power requirement per local electrical codes. Also verify that the package is correctly grounded using the proper size wire connected to a tested earth ground. An improper electrical installation can result in damage to or failure of the equipment. This could also result in a fire and fatalities.
- The piping installation must be done by qualified personnel. Inspect all piping sizes and pressure ratings to insure the proper pipe has been used for the compressor package being installed.

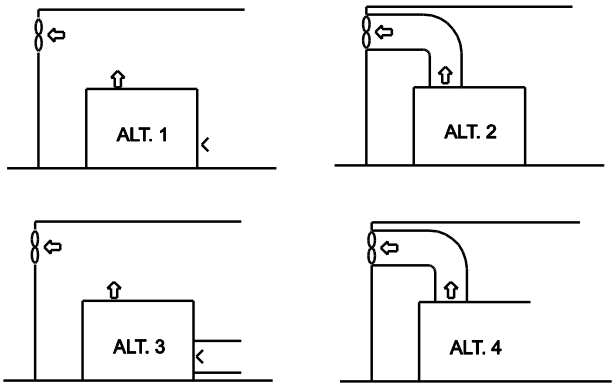
- Undersized pipe or poor routing of pipe will degrade the performance of the compressor package. Inspect all connections to insure they are tight, sealed, and secured.
- A shut-off valve must be installed at the package discharge to insure that the compressor package can be isolated from the system air pressure for safe maintenance of the equipment. You cannot rely on a check valve to provide safe isolation of the compressor package.
- A check valve in the air piping from the compressor can interfere with the proper operation of the compressor controls.
- Compressor package metal or nylon tubing must be checked. Visually inspect these tubes located in the compressor package.
- Tubes can come loose or get damaged in shipping so look for loose or damaged tubes. Verify the flexibility of the nylon tubes while inspecting for any damage.
- Verify that all tubes are secure in their tube fittings to insure that none of the tubing might leak at or come loose from there fittings when the compressor is in operation. Damaged or loose tubes can result in lubricant being sprayed on hot surfaces when the compressor is in operation and result in damage to the compressor or a fire.
- After the installed compressor package has been inspected you can restore power to the package. With the proper power applied to the package you can verify proper rotation of the compressor and the cooling fan.







Minimum free area to be reserved for the compressor installation (2)



Ventilation proposals (1)

The direction of the cooling flows may never be inverted

Installation proposal, QSI/QGV 40-60

Text on drawing

Reference	Designation
(1)	Ventilation proposals
(2)	Minimum free area to be reserved for the compressor installation

	All piping to be connected stress free to the compressor.

Installation guidelines

1. Compressor unit: The unit should be installed on a level floor capable of taking the weight of the compressor.
2. Compressed air outlet pipe.
3. Delivery pipe :

   The maximum total pipe length (including interconnecting piping between compressor and receiver) can be calculated as follows:

$$L = \frac{\Sigma P \times d^{5} \times P}{450 \times Qc^{1.85}}$$

   Where,
   In Metric units

   L = length of the pipe (m)
   Σp = pressure drop (recommended maximum = 0.1 bar)
   D = inner diameter of the pipe (mm)
   P = absolute pressure at compressor outlet (bar(a))
   Qc = Free air delivery of the compressor (l/s)

   In Imperial units,

   L = length of the pipe (in)
   Σp = pressure drop (recommended maximum = 1.5 psi)
   D = inner diameter of the pipe (in)
   P = absolute pressure at compressor outlet (psi(a))
   Qc = Free air delivery of the compressor (cfm)

4. Ventilation :

   The inlet grid(s) and ventilation fan should be installed in such a way that any recirculation of cooling air to the inlet grating of the compressor/ dryer is avoided.

   The air velocity to the grid(s) has to be limited to 5m/s (16.4 Ft/s). The maximum air temperature at compressor intake opening is 46°C (115°F), (minimum 0°C / 32°F)

   Ventilation alternative 1 and 3 : The required ventilation to limit compressor room temperature can be calculated from :

$$Qv = 1.06\ N / \Sigma T$$

   Where,
   In Metric units,

   Qv = Required cooling air flow (m^3/s)
   N = Nominal motor power of compressor (kW)
   ΣT = Temperature increase in compressor room. (°C)

   In Imperial units,

   Qv = Required cooling air flow (m^3/s or cfm)
   N = Nominal motor power of compressor (kW or hp)
   ΣT = Temperature increase in compressor room. (°C or °F)

   Ventilation alternative 2 and 4 : The fan capacity should match the compressor - fan capacity at a pressure head equal to the pressure drop caused by cooling air ducts.

   Max. allowable pressure drop in ducting before or after the compressor = 30 Pa (0.00435 psi).

5. Drain pipes to drain collector must not dip into the water. For draining of pure condensate water, install an oil separator. Consult Quincy.

   Drain pipes of different compressors may not be interconnected before the (atmospheric) collector. Interconnecting drain pipes of different compressors can damage the electronic drains of the compressor.
6. Control cubicle with monitoring panel.
7. Power supply cable to be sized and installed by a qualified electrician. In case of IT network, consult Quincy. To preserve the protection degree of the electric cubicle and to protect its components from dust from the environment, it is absolutely necessary to use a proper cable gland when connecting the supply cable to the compressor.
8. Filter type DD for general purpose filtration (particle removal down to 1 micron with a maximum oil carry over of 0.5 ppm). A high efficiency PD filter may be installed downstream the DD filter (particle removal down to 0.01 micron and max. oil carry over of 0.01ppm) Should oil vapours and odor be undesirable, a QD active carbon filter should be installed after the PD filter.

   It is recommended to install by-pass pipes over each filter together with ball valves in order to isolate the filters during service operations, without interrupting the compressed air delivery.
9. The air receiver (optional) should be installed in a frost-free room on a solid level floor. For normal air consumption, the volume of the air net (receiver and piping) can be calculated as follows:

   $$V=(0.25 \times Qc \times P1 \times To)/(fmax \times \Sigma P \times T1)$$

   Where,
   In Metric units,

   V = volume of the air net in l

   Qc = free air delivery of the compressor in l/s

   P1= compressor air inlet pressure in bar absolute

   fmax = cycle frequency=1 cycle/30s

   $\Sigma P = P_{unload} - P_{load}$ in bar / psi

   T1 = compressor air inlet temperature in K

   T0 = air receiver temperature K

   In Imperial units,

   V = volume of the air net in gallon

   Qc = free air delivery of the compressor in cfm

   P1= compressor air inlet pressure in psi absolute

   fmax = cycle frequency=1 cycle/30s

   $\Sigma P = P_{unload} - P_{load}$ in psi

   T1 = compressor air inlet temperature in °F

   T0 = air receiver temperature °F

10. To prevent feedback of exhaust air to the cooling inlet, sufficient space should be foreseen above the unit to evacuate the exhaust air. Otherwise a ducting for the exhaust air should be foreseen.

    See ALT.1 to ALT.4
11. Safety valve.

Shell/Tube Heat Exchanger Installation

The satisfactory use of the heat exchanger equipment is depend upon precautions which must be taken at the time of the installation.

1. Connect and circulate the hot fluid in the shell side (over small tubes) and the cooling water in the tube side (inside the small tubes). Note piping diagrams.
2. If an automatic water regulating valve is used, place it on the INLET connection of the cooler. Arrange the water outlet piping so that the exchanger remains flooded with water, but at little or no pressure. The temperature probe is placed in the hydraulic reservoir to sense a system temperature rise. Write the factory for water regulating valve recommendations.
3. There are normally no restrictions as to how this cooler may be mounted. The only limitation regarding the mounting of this equipment is the possibility of having to drain either the water or the fluid chambers after the cooler has been installed. Both fluid drain plugs should be located on the bottom of the cooler to accomplish the draining of the fluids. Drains are on most models.
4. It is possible to protect your cooler from high flow and pressure surges of hot fluid by installing a fast-acting relief valve in the inlet line to the cooler.
5. It is recommended that water strainers be installed ahead of this cooler when the source of cooling water is from other than a municipal water supply. Dirt and debris can plug the water passages very quickly, rendering the cooler ineffective. Write the factory for water strainer recommendation.
6. Fixed bundle heat exchangers are generally not recommended for steam service. For steam applications, a floating bundle exchanger is required.

	When installing floating bundle unit, secure one end firmly and opposite end loosely to allow bundle to expand and contract. Consult factory for selection assistance.

7. Piping must be properly supported to prevent excess strain on the heat exchanger ports. If excessive vibration is present, the use of shock absorbing mounts and flexible connectors is recommended.

5 Operating instructions

5.1 Initial start-up

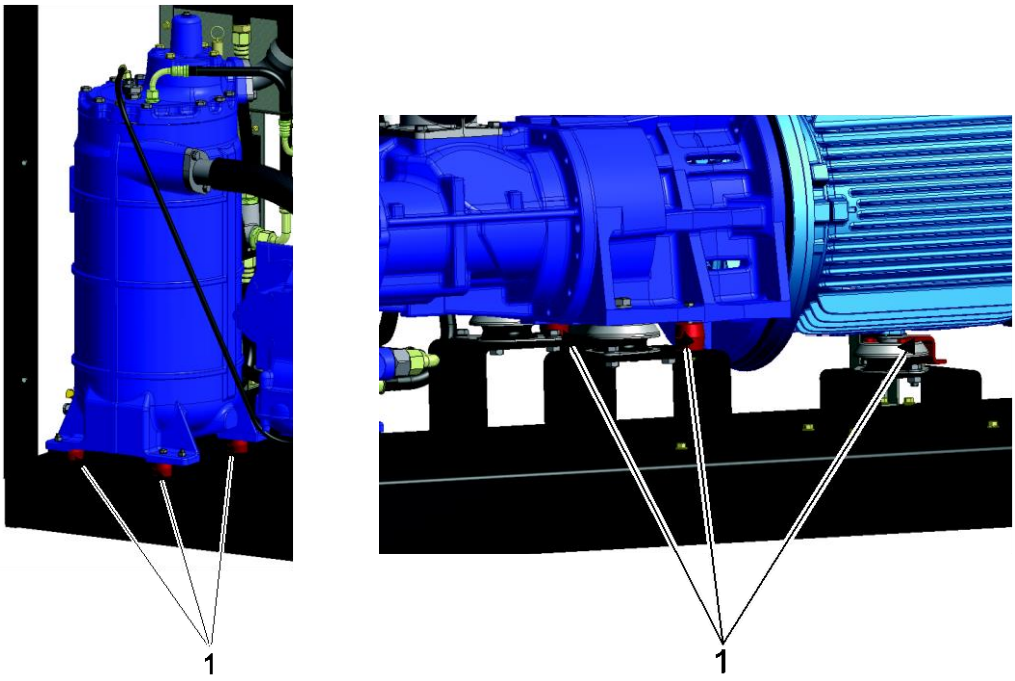
Safety

	The operator must apply all relevant Safety precautions.

Procedure

	For the position of the air outlet and the drain connections, see sections Introduction.

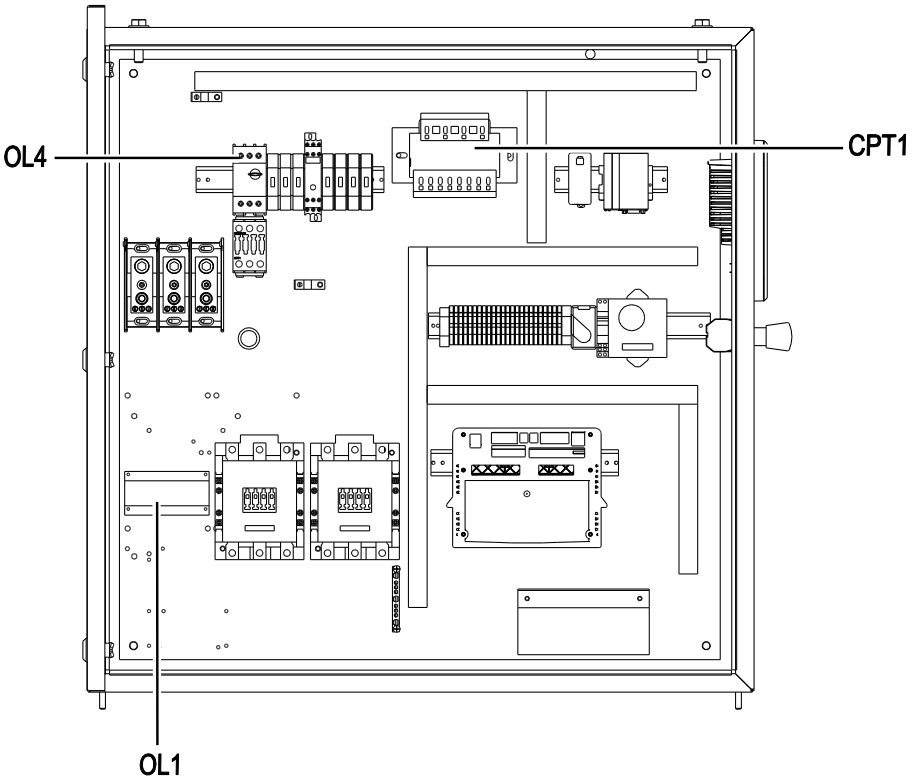
1. Consult the sections Electric cable size, Installation proposal and Dimension drawings
2. The following transport fixtures (1), painted red, must be removed:



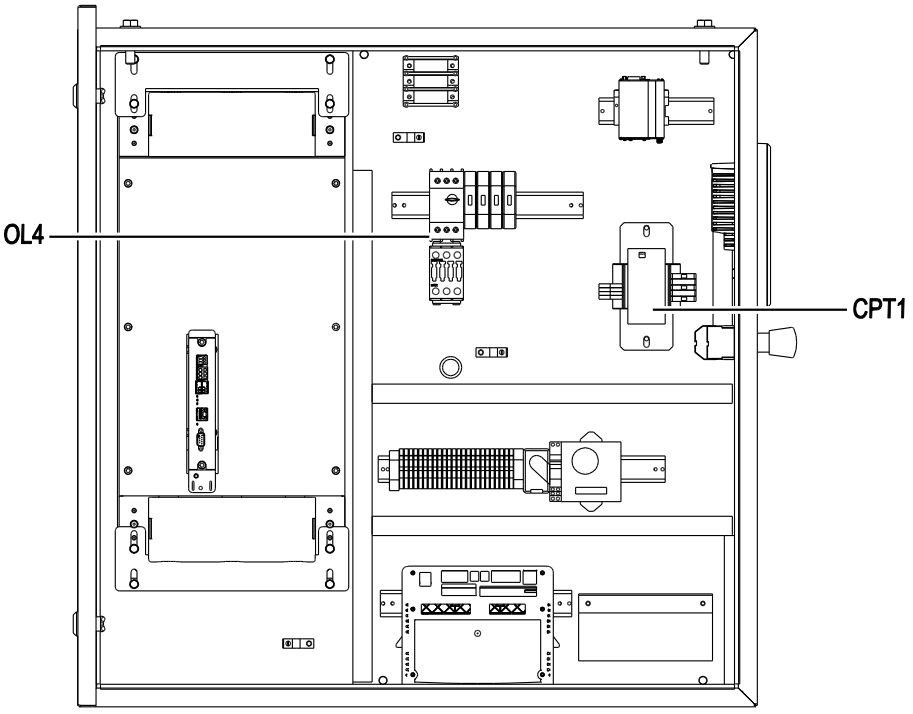
Transport fixtures

3. Check that the electrical connections correspond to the local codes and that all wires are clamped tight to their terminals.

   The installation must be earthed and protected against short circuits by fuses of the inert type in all phases. An isolating switch must be installed near the compressor.
4. Check transformer for correct connection (CPT1). Check the settings of drive motor overload relay (OL1).



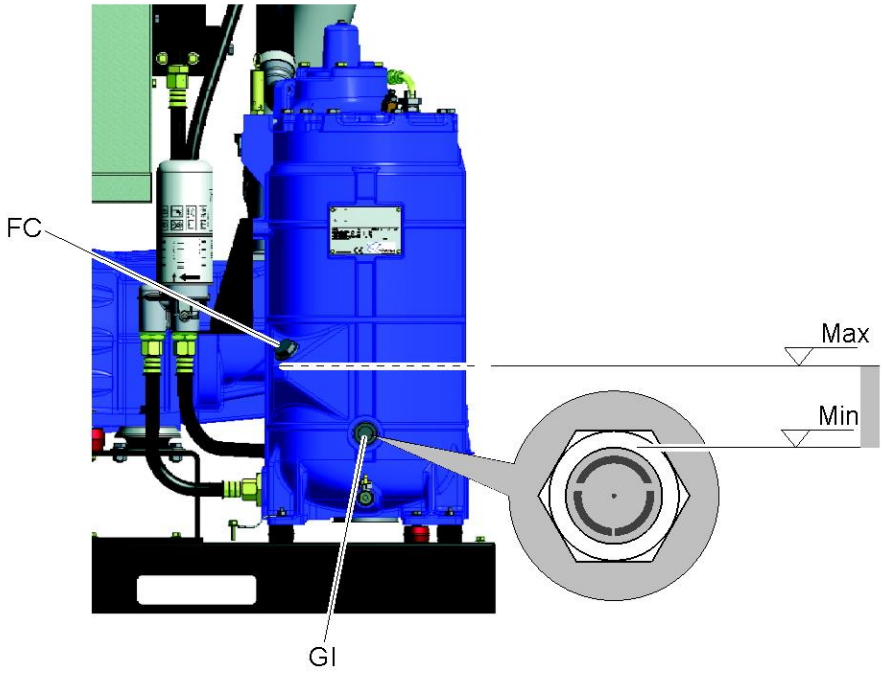
Electric cubicle layout, fixed speed



Electric cubicle layout, Variable speed

Reference	Description
OL1	Overload Relay (Drive Motor)
OL4	Overload Disconnect (Fan Motor)
CPT1	Control Power Transformer

5. Fit the air outlet (AV); see section Introduction for the position of the valve. Close the valve
   Connect the air net to the valve.
6. Check the fluid level.
   3 to 5 minutes after stopping, the fluid level should be between the top of the sight glass (GI) and the filling point (FC).



Position of oil level sight-glass

7. **If applicable: provide labels, warning the operator that**:
   - The compressor may automatically restart after voltage failure.
8. Check the voltage between the three phases before using the unit for the first time

Motor direction arrow

Check the direction of rotation (a sticker is provided on the motor non-drive side indicting the rotation direction). Press the "Start" button, followed immediately by the emergency stop button.

If it does not spin in the right direction reverse two mains cables. When it rotates in the correct direction, the fluid level should drop after 4 or 5 seconds of operation.

⚠	Incorrect rotation of the drive motor can cause damage to the compressor.

5.2 Before starting

Remarks

⚠	If the compressor has not run for the past 6 months, it is strongly recommended to improve the lubrication of the airend (AE) at starting. Disconnect the inlet hose, remove the unloader (UA) and pour 0.75 l (0.20 US gal, 0.17 Imp gal) of fluid into the airend (AE). Reinstall the unloader and reconnect the inlet hose. Make sure that all connections are tight.

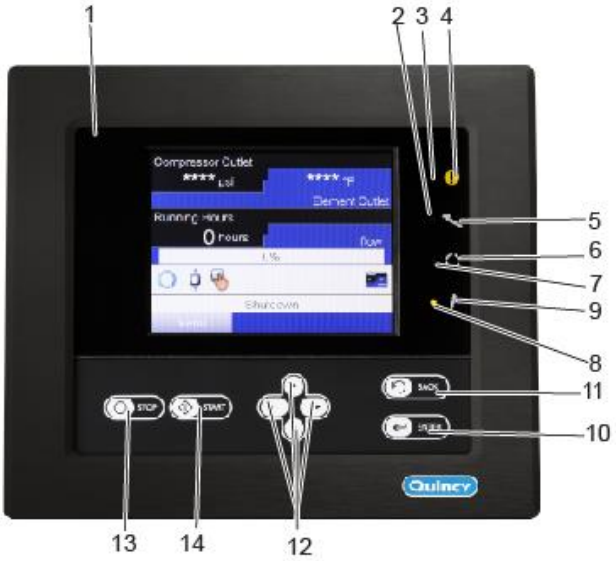
Procedure

-	Check the luid level, top up if necessary. See section Initial start-up

5.3 Starting

Procedure

	For the position of the air outlet and the drain connections, see sections Introduction.



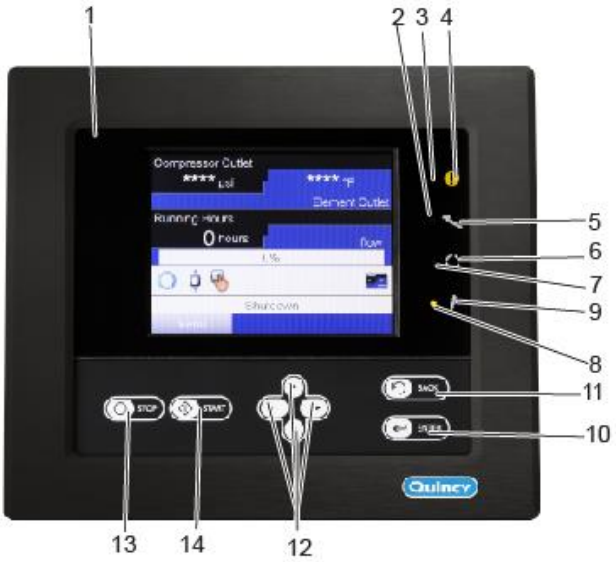
Control panel

1. Open the air outlet valve.
2. Switch on the voltage. Check that voltage on LED (8) lights up.
3. Press start button (14) on the control panel. The compressor starts running and the automatic operation LED (7) lights up. After the start-up cycle, the compressor starts running loaded.

5.4 During operation

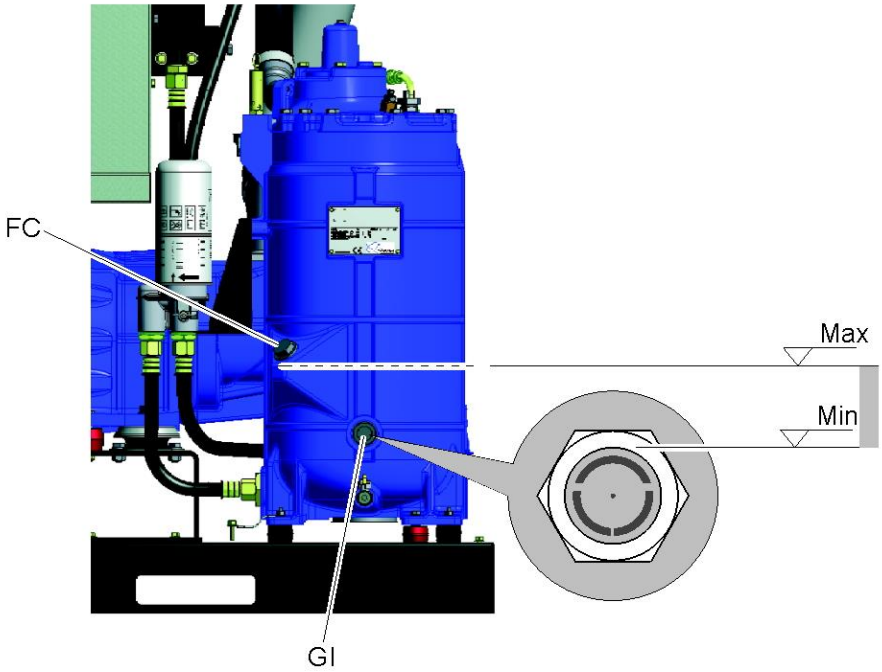
	The operator must apply all relevant Safety precautions. Also consult section Problem solving.
	Keep the doors closed during operation; they may be opened for short periods only to carry out checks
	When the motors are stopped and LED (7) (automatic operation) is a light, the motors may start automatically

Regulator



Q control panel

Checking the fluid level



Position of oil level sight-glass

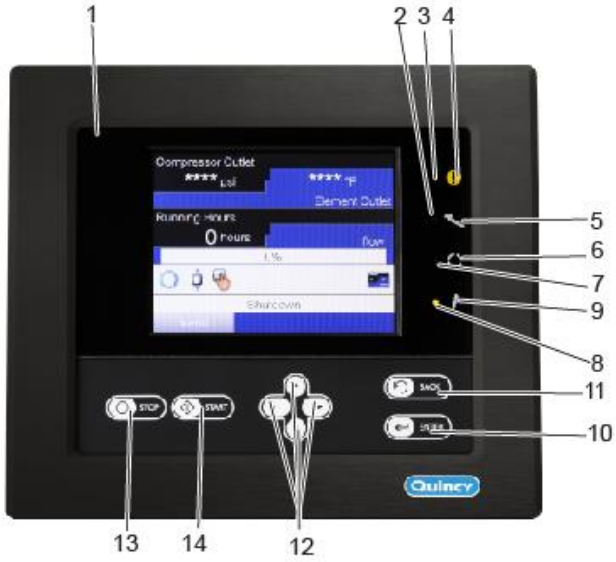
Regularly check the fluid level. To do so

1. Press stop button (13).
2. A few minutes after stopping, the fluid level should be between the oil filler neck (FC) and the top of the sight glass (GI).
3. If the fluid level is too low, push the emergency stop button to avoid the compressor to start unexpectedly.

4. Unscrew fluid filler plug (FC) one turn to permit any pressure left in the system to escape. Wait a few minutes.
5. Remove the plug and add fluid until the level reaches the filler opening.
6. Fit and tighten the plug (FC).
7. Unlock the emergency stop button and press the "Reset key" on the controller before restarting.

5.5 Stopping

Regulator



Q control panel

Procedure

Step	Action
-	Press stop button (13). Automatic operation LED (7) goes out and the compressor stops after 30 seconds of unloaded operation.
-	**To stop the compressor in the event of an emergency,** press emergency stop button. Alarm LED flashes (3). • Remedy the problem cause and unlock the button by pulling it out. • Navigate to the Stop icon on the display by means of the navigation keys (12) and press the Select key. • Press reset. **Do not use emergency stop button for normal stopping!**
-	Close the air outlet valve (AV).
-	Press the test button on the top of the electronic water drain(s) until the air system between the air system receiver and the outlet valve is fully depressurised. Switch off the voltage.
-	If available, open the condensate drain valve of the compressor to drain the water trap completely.

5.6 Taking out of operation

Procedure

Step	Action
-	Stop the compressor and close the air outlet valve.
-	Switch off the voltage and disconnect the compressor from the mains.
-	If available, open the condensate drain valve(s) (Dm).
-	Shut off and depressurise the part of the air net which is connected to the outlet valve. Disconnect the compressor air outlet pipe from the air net.
-	Drain the oil.
-	Drain the condensate circuit and disconnect the condensate piping from the condensate net.

6 Maintenance

6.1 Preventive maintenance schedule

Warning

	**Before carrying out any maintenance, repair work or adjustments, proceed as follows:** • Stop the compressor. • Press the emergency stop button. • Switch off the voltage. • Close the air outlet valve and open, if provided, the manual condensate drain valve. • Depressurise the compressor. For detailed instructions, see section Problem solving. The operator must apply all relevant Safety precautions

	Before lifting the electric motor, all build-on parts shall be removed.

Service kits

For overhauling or carrying out preventive maintenance, service kits are available (see section Service kits).
Service contracts
QUINCY offers several types of service contracts, relieving you of all preventive maintenance work. Consult your Customer Centre.

General

When servicing, replace all removed gaskets, O-rings and washers.

Intervals

The local Customer Center may overrule the maintenance schedule, especially the service intervals, depending on the environmental and working conditions of the compressor.
The longer interval actions and checks must also include the shorter interval actions and checks.

■OPERATIONS THAT MAY BE CARRIED OUT BY THE USER
■■ OPERATIONS THAT REQUIRE SKILLED PERSONNEL

Interval operations

First 500 hours	■■ Oil Fluid Sample ■■ SPM measurement ■ Tighten the screws fixing the electric cables
Every 2000 hours	■■ Oil Fluid Sample ■■ SPM Measurements ■ Re-tighten all power cable connections
Every 4000 hours	■■ Replace the Oil filter ■■ Replace the Air filter ■■ Re-grease motor bearings
Every 8000 hours	■■ Oil Separator kit & Scavenge Line Kit ■■ Unloader Kit ■■ Oil Stop and Check Valves Kits ■■ Minimum Pressure Valve Kit ■■ Thermostatic Valve Kit ■■ Change the Fluid (*See note below)

* The compressor must be maintained with QuinSyn-Plus (8,000 hour maximum), QuinSyn-XP (12,000 hour maximum) or QuinSyn-F food grade (6,000 hour maximum). Maximum fluid change intervals are noted per fluid. Actual fluid change interval is to be determined by fluid sampling report, not to exceed maximum fluid change interval. Fluid samples must be taken every 2,000 hours or as directed by the analysis report. For light usage units, a fluid sample must be taken a minimum, of every six (6) months, beginning at start-up.

	• Always consult your supplier if a service timer setting has to be changed. • For the change interval of fluid and oil filter in extreme conditions, consult your Customer Centre. • Any leakage should be attended to immediately. Damaged hoses or flexible joints must be replaced.

6.2 Storage after installation

Service kits

Run the compressor regularly, e.g. twice a week, until warm. Load and unload the compressor a few times.

	If the compressor is going to be stored without running from time to time, protective measures must be taken. Consult your supplier.

6.3 Service kits

Service kits:

For overhauling and for preventive maintenance, a wide range of service kits is available. Service kits comprise all parts required for servicing the component and offer the benefits of genuine parts while keeping the maintenance budget low

Consult the Spare Parts List for part numbers.

Spare Parts Ordering Information

Quincy Compressor maintains replacement parts for Quincy compressors and accessories. A repair parts list is shipped with all new machines. Order parts from your Authorized Quincy distributor. Use only genuine Quincy replacement parts. Failure to do so may void warranty.

6.4 Disposal of used material

Used filters or any other used material (e.g. desiccant, lubricants, cleaning rags, machine parts, etc.) must be disposed of in an environmentally friendly and safe manner, and in line with the local recommendations and environmental legislation.

Electronic components must not be disposed of at a municipal waste collection point. Refer to local regulations for directions on how to dispose of this product in an environmental friendly manner.

7 Adjustments and servicing procedures

7.1 Air filter

Warning

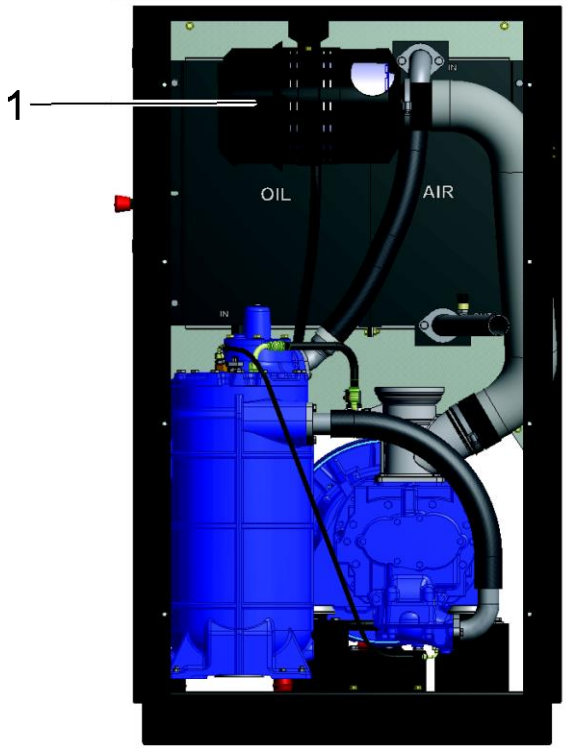
	If you do not replace the filtering element when needed, permanent dirt build-up will result. This reduces the air inflow to the compressor and could damage the oil separator and the compressor

Precautions

1. Never remove the element while the compressor is running.
2. For minimum downtime, replace the dirty element by a new one.
3. Discard the element when damaged.

Procedure

1. Stop the compressor. Switch off the voltage.
2. Release the snap clips of air filter (1) and remove the dust trap and the air filter element. Clean the trap. Discard the filter element.



Position of air filter

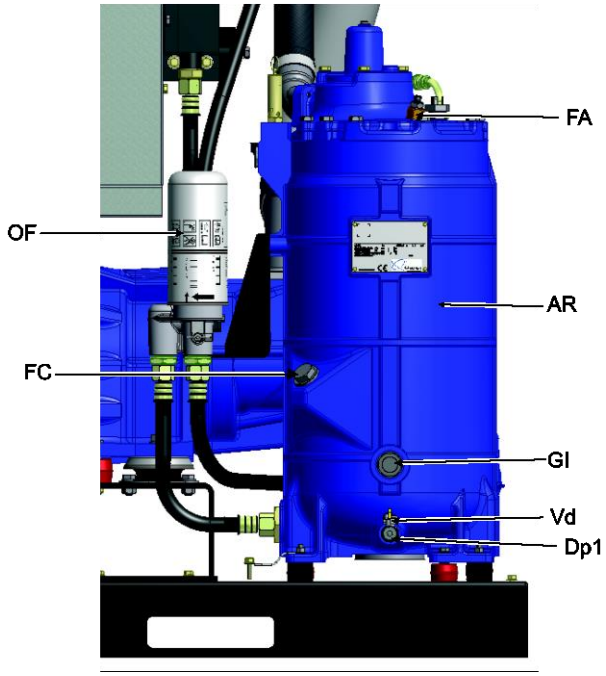
3. Fit the new element and the cover.
4. Reset the air filter service warning.

7.2 Fluid and oil filter change

Warning

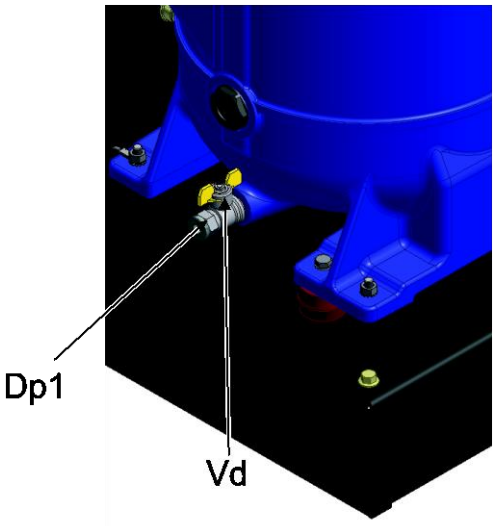
⚠	The operator must apply all relevant Safety precautions. Always drain the compressor fluid at all drain points. Used fluid left in the compressor can contaminate the oil system and can shorten the lifetime of the new fluid. Never mix lubricants of different brands or types as they may not be compatible and the fluid mix will have inferior properties. A label, indicating the type of fluid filled ex-factory, is stuck on the oil tank.

Procedure



Oil system components

1. Run the compressor until warm. Stop the compressor. Close the air outlet valve and switch off the voltage. Depressurise the compressor by opening manual d rain valve(s) (if available). Wait a few minutes and depressurise the oil tank (AR) by unscrewing fluid filler plug (FC) just one turn to permit any pressure in the system to escape. Also depressurize the air pipe by unscrewing the air vent plug (Fa) with one turn.
2. Loosen the vent plug of the oil cooler and wait for 5 minutes.
3. Remove fluid drain plug (DP1). Drain the fluid by opening valve (Vd). Close the valve and fit the plug after draining.



Fluid drain plugs

4. Collect the fluid and deliver it to the local collection service. Refit and tighten the drain and vent plugs after draining.

   Re-tighten the top connection of the oil cooler.
5. Remove the oil filter (OF). Clean the seat on the manifold. Oil the gasket of the new filter and screw it into place. Tighten firmly by hand.
6. Remove filler plug (FC).

   Fill the oil tank (AR) with fluid until the level reaches the filler neck. Take care that no dirt drops into the system. Refit and tighten filler plug (FC).
7. Run the compressor loaded for a few minutes. Stop the compressor and wait a few minutes to allow the fluid to settle.
8. Depressurise the system by unscrewing filler plug (FC) just one turn to permit any pressure in the system to escape. Remove the plug.

   Add fluid, the fluid level should be between the top of the sight glass (GI) and the filling point (FC). Tighten the filler plug.
9. Reset the service warning after carrying out all service actions in the relevant Service Plan: see Service menu.

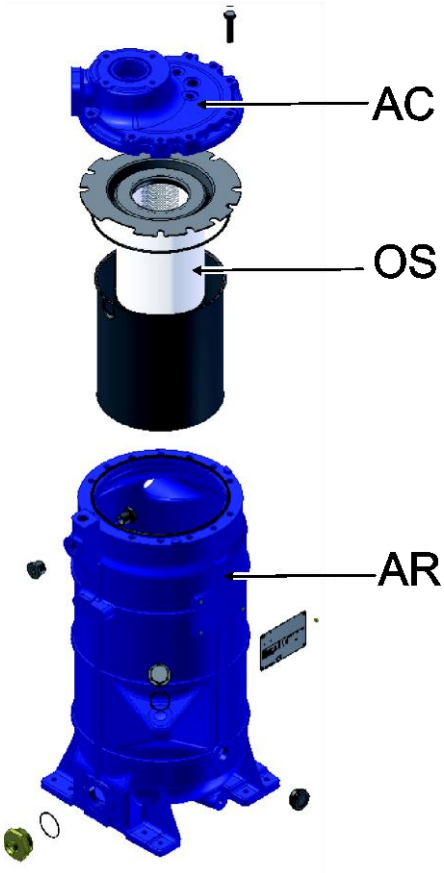
7.3 Oil separator change

Warning

	The operator must apply all relevant Safety precautions.

Procedure

1. Run the compressor until warm. Stop the compressor, close the air outlet valve and switch off the voltage. Wait a few minutes and depressurize by unscrewing filler plug (FC) just one turn to permit any pressure in the system to escape.
2. Remove the cover (Ac) from the oil tank (AR) by unscrewing the bolts



Oil separator components

3. Remove the oil separator (OS).
4. Clean the seat on oil tank (AR).
   Place the new separator into the oil tank and replace the vessel cover (Ac) with the bolts. Take care that no dirt drops into the system. Refit and tighten filler plug (FC).
5. Remove filler plug (FC).
   Fill the oil tank (AR) with fluid until the level reaches the middle of sight-glass (GI).

6. Run the compressor loaded for a few minutes. Stop the compressor and wait a few minutes to allow the fluid to settle.
7. Depressurise the system by unscrewing filler plug (FC) just one turn to permit any pressure in the system to escape. Remove the plug.

   Fill the oil tank with fluid. The fluid level should be between the top of the sight glass (GI) and the filling point (FC). Tighten the filler plug.
8. Reset the service timer: see Service menu.

7.4 Coolers

General

Keep the coolers clean to maintain their efficiency

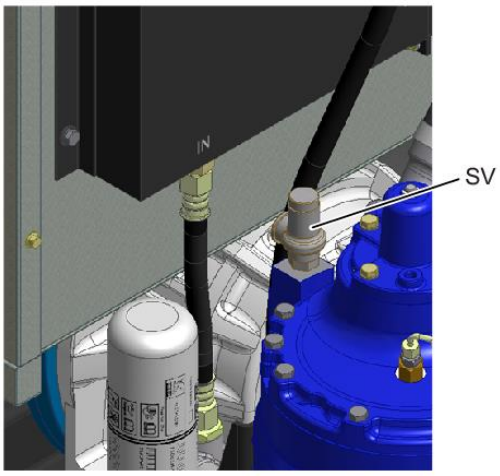
⚠	Never use a high pressure water jet to clean the compressor

Instructions for air-cooled compressors

1. Stop the compressor, close the air outlet valve and switch off the voltage.
2. Remove any dirt from the coolers with a fibre brush. Never use a wire brush or metal objects.
3. Cover all parts under the coolers.
4. Next, clean with an air jet in the reverse direction to normal flow. Use low pressure air. If necessary, the pressure may be increased up to 6 bar(e) (87 psig)

7.5 Safety valves

Location of safety valve



Reference	Name
SV	Safety valve

Operating

Operate the safety valve by unscrewing the cap one or two turns and retighten it

Testing

Before removing the valve, depressurise the compressor.

See section Problem solving.

Valve (SV) can be tested on a separate airline. If the valve does not open at the set pressure stamped on the valve, it needs to be replaced.

Warning

No adjustments are allowed. Never run the compressor without safety valve.

7.6 Shaft seal

Compressor shaft seals are wear items that may eventually have to be replaced. Special tools and a complete understanding of the installation procedure are required for a successful seal replacement. Ask your Quincy distributor for complete illustrated instructions (available as a Service Alert) at the time you order the seal and special tools, if you decide to replace the seal yourself. If your distributor does not have a copy of these instructions, they can be ordered from Quincy Compressor at no charge.

QGV compressors incorporate a fluid scavenge system to complement the use of a double lip seal assembly. Any complaint of shaft seal leakage requires that the scavenge system be inspected for proper operation prior to the replacement of the shaft seal. Proper inspection consists of the following

- Assure that the scavenge line itself is not plugged.
- Inspect the performance of the scavenge line check valve by removing the piston located on the valve attached to the inlet valve. Inspect the O-rings and replace if required. Remove the check ball and inspect for wear. If the check valve is stuck open, fluid can backflush from the airend into the seal cavity and appear as a leak. If the check valve is stuck closed the seal cavity will not scavenge. Replace, if necessary.
- Remove the coupling guards and coupling halves.
- Remove the drive coupling hub and key from the compressor shaft.
- Remove the drive motor.
- Remove the four bolts securing the seal adapter to the suction housing
- Insert two of the seal adapter retaining bolts into the seal adapter jack holes and turn clockwise (pushing the seal adapter away from the suction housing).
- After the seal adapter outer O-ring has cleared the seal adapter bore, remove the adapter for inspection.
- Disassemble the seal adapter as Follows:
  a) With the face of the seal adapter up, insert two small, flat screwdrivers under the outer lip of the fluid slinger and pop the slinger from the seal adapter bore.
  b) Using a brass drift, tap the shaft seal assembly from the seal bore.
  c) Inspect both seal lips for excessive wear, lip flaws or damage.
  d) Inspect the outer O-ring on the fluid slinger for cuts or nicks.
  e) Inspect the outer O-ring on the seal adapter for cuts and nicks.
  f) Slide the wear sleeve removal tool over the end of the shaft and allow the jaws of the tool to snap on the backside of the wear sleeve. Tighten the outer shell of the tool down over the inner jaws.
  g) Using a ratchet and socket, turn the puller jack screw clockwise in against the end of the compressor shaft to remove the seal wear sleeve.

Preparation for New Seal Installation

- Inspect the compressor shaft for burrs or deep scratches at the wear sleeve area. Using a 100-grit emery cloth, lightly sand horizontally any rust or Loctite™ on the shaft. Using a fine file or emery cloth, deburr the key area of the rotor shaft. Cover the keyway with masking tape to prevent damage to the new seal during installation.
- Clean the seal adapter with fast drying solvent. Assure that the scavenge drain in the seal adapter is clean and open. Place the outer face of the seal adapter on a flat, hard surface.
- Remove the new triple lip seal from the package and inspect for damage or imperfections on the seal lips.
- Apply a thin coat of Loctite™ 290 to the outer steel case of the seal and position the seal in the seal adapter bore.
- Insert the proper seal driver over the seal. Insert the proper wear sleeve driver in the seal driver and tap the new seal into the bore with a medium sized hammer.
- Preheat the wear sleeve (in a small oven) to 350°F. Do not preheat in warm oil.
- Apply a thin film of Loctite™ to the inner diameter of the wear sleeve and immediately install on the compressor shaft using the proper wear sleeve driver. Drive the wear sleeve on the shaft until the driver bottoms on the shaft shoulder.

Seal Installation

- Apply a thin coat of compressor fluid to the outer face of the wear sleeve and seal lip.
- Slide the proper seal installation sleeve against the wear sleeve with the taper toward the end of the rotor shaft.
- Install a new O-ring on the seal adapter and lubricate with compressor fluid.
- Install a new O-ring around the scavenge port (use petroleum jelly to hold the O-ring on the seal adapter face during installation).
- Carefully slide the seal adapter with the new seal installed over the end of the rotor shaft and up against the adapter bore.
- Using care not to damage the O-ring, evenly draw the adapter into the bore, install the four retaining bolts and tighten to the specified torque.
- Remove the installation sleeve.
- Apply a thin film of compressor fluid to the O-ring and seal lip of the outer fluid slinger.
- Install the outer slinger over the end of the rotor shaft and push into the scavenge bore using both thumbs.
- Reinstall drive motor, and coupling.
- Reinstall the coupling guards before starting the compressor.

7.7 Shell/Tube Heat Exchanger

Shell/Tube Heat Exchanger service recommendations

Each heat exchanger has been cleaned at the factory and should not require further treatment. It may be well to inspect the unit to be sure that dirt or foreign matter has not entered the unit during shipment. The heat exchanger should be mounted firmly in place with pipe connections tight.

	If sealant tape is used on pipe threads, the degree of resistance between mating parts is less, and there is a greater chance for cracking the heat exchanger castings. Do not over tighten. When storing the unit, be sure to keep the fluid and water ports sealed. If storage continues into cold winter months, the water chamber must be drained to prevent damage by freezing.
	Performance information should be noted and recorded on newly installed units so that any reduction in effectiveness can be detected. Any loss in efficiency can normally be traced to an accumulation of fluid sludge, or water scale.

Recommendations:

Replace gaskets when removing end castings. It is recommended that gaskets be soaked in oil to prevent corrosion and ensure a tight seal.

Salt water should not be used in standard models. Use salt water in special models having 90/10 copper-nickel tubes, tube sheets (available on C/CA Series models only), bronze bonnets and zinc anodes on the tube side. Brackish water or other corrosive fluids may require special materials of construction.

When zinc anodes are used for a particular application, they should be inspected two weeks after initial start-up and also anodes need to be checked once a month until a wear pattern is established for a given application/environment.

At this time, by visual inspection of the anode, determination of future inspection intervals can be made, based on the actual corrosion rate of the zinc metal.

The zinc anodes must be replaced when the zinc body is 75% depleted.

It may be necessary to drain the water chambers of the exchanger to protect it from damage by freezing temperatures. Drains are provided in most standard models.

The oil chamber of the exchanger may become filled with sludge accumulation and require cleaning. It is recommended that the unit be flooded with a commercial solvent and left to soak for one-half hour. Back flowing with the solvent or regular fluid will remove most sludge. Repeated soaking and back flowing may be required, depending on the degree of sludge build-up.

It may be necessary to clean the inside of the cooling tubes to remove any contamination and/or scale build up. It is recommended that a fifty-fifty percent solution of inhibited muriatic acid and water may be used. For severe problems, the use of a brush through the tubes may be of some help. Be sure to use a soft bristled brush to prevent scouring the tube surface causing accelerated corrosion. Upon completion of cleaning, be certain that all chemicals are removed from the shell side and the tube side before the heat exchanger is placed into service.

7.8 Fluid Analysis Program - General

Quincy's fluid analysis program is offered to all customers using QuinSyn fluids in Quincy Compressor Rotary Screw Compressors. This service provides optimum drain intervals for compressors operating on QuinSyn fluids. Monitoring of the total acid number (TAN), barium level and/or viscosity throughout the life of the fluid provides maximum protection to your machine, while best utilizing the extended life features of QuinSyn.

The fluid analysis provides historical information, detailing items such as hours on the fluid, viscosity and total acid number (TAN). Should results appear unusual or suspicious, a detailed analysis can pinpoint specific contaminants.

A detailed report is furnished to you, your Quincy Distributor and the Quincy Compressor factory upon completion of the fluid analysis.

Although QuinSyn fluids are rated by hours of life expectancy under normal operating conditions, it is recommended that fluid samples be taken every 500 to 2000 hours and sent to Quincy Compressor Fluid Analysis until a history of performance in a specific compressor application is established. Once the appropriate drain interval is established, the frequency of the fluid analysis can be reduced unless operating conditions change.

The depletion of antioxidants, change of viscosity, barium and acid levels all occur with time. It is extremely important to change QuinSyn before the antioxidants are completely depleted. If the fluid is left in the compressor beyond its useful life, removing all of the spent fluid is difficult. The oxidation products remaining can considerably shorten the life of the new fill of QuinSyn fluid.

All Quincy Compressor extended airend warranty programs require that fluid samples be sent to Quincy Compressor Fluid Analysis a minimum of every 2,000 hours.

Understanding the Analysis Report

Refer the "Appendix 1: Product Analysis Report" for a blank copy of analysis report.

a) REPORT DATE - The date that the fluid was analyzed.
b) REPORT NUMBER - The assigned number to this report.
c) CUSTOMER ADDRESS - The name and address of person that this report is being mailed to. This information is being taken from the sample bottle as it is received.
d) CUSTOMER - The owner of the unit that sample came from.
e) COMPRESSOR MANUFACTURER - Brand of compressor sample taken from.
f) FLUID TYPE
g) SERIAL NUMBER - The unit serial number of the Quincy compressor the fluid sample was taken from.
h) MODEL NUMBER - The model number of the Quincy compressor that the fluid sample was taken from.
i) HOURS ON FLUID - These are the actual hours that the QuinSyn fluid has been in the unit since the last fluid change
j) HOURS ON MACHINE - This is the total hours on the compressor hourmeter.
k) SAMPLE DATE - The date that the sample was taken from the compressor.

Items c) through k) are information provided by the service person supplying the fluid for analysis. Incomplete or incorrect information will affect the report's accuracy

l) EVALUATION - This is a brief statement made by the technician performing the actual fluid analysis. This statement addresses the condition of the fluid and filter. This statement will also note any problems that need attention.

m) PHYSICAL PROPERTIES RESULTS - Particle size is measured in microns. Refer the “Appendix 2: Fluid Parameters”.
n) SPECTROCHEMICAL ANALYSIS - Refer the “Appendix 2: Fluid Parameters”.

7.9 Fluid Sampling Procedure

Preferred sample location is the fluid filter. If unable to take sample from fluid filter procedure as follow:

1. Shutdown and lockout compressor.
2. Relieve pressure in reservoir.
3. Remove plug from reservoir drain line.
4. Drain water from reservoir and discard in approved manner.
5. Fill sample bottle with fluid.
6. Close valve and replace plug in drain line.
7. Return compressor to the service and check fluid level during operation. Service fluid as required.

Using fluid filter sample valve, proceed as follow:

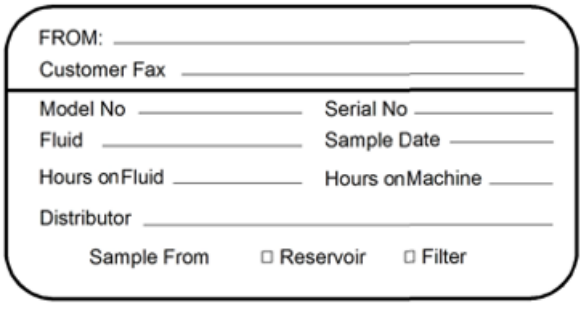
1. Open valve, drain 2-4 Ounce of fluid from filter and discard in the approved manner.
2. Fill sample bottle.
3. Close valve.

After collecting sample from other the above method:

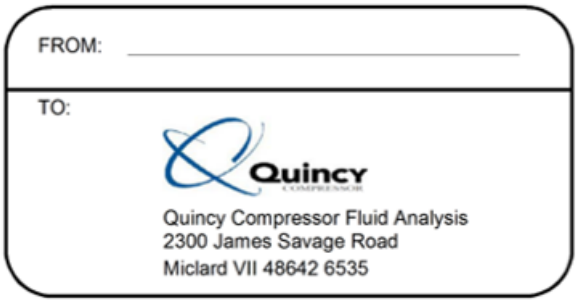
1. Fill out information label completely.

	Be certain to provide all information as to possible hazards related to a given sample. If hazards exist, the information must be clearly marked on the sample bottle label.

2. Attached sample bottle label and put bottle in Mailer.
3. Please shipping label on the outside of the Mailer and send it by UPS.



Sample Battle Label



Shipping label

	A fluid sample valve kit is available from Quincy compressor. Contact the service department ask for part number 2011020140.

8 Problem solving

	Before carrying out any maintenance, repair work or adjustment, press the stop button, wait until the compressor has stopped, press the emergency stop button and switch off the voltage. Close the air outlet valve and lock it, if necessary. Depressurise the compressor by opening the oil filler plug one turn.
	Open and lock the isolating switch. The operator must apply all relevant Safety precautions.

No.	Condition	Fault	Remedy
1	Compressor starts running, but does not load after a delay time	Solenoid valve out of order Inlet valve stuck in closed position	Replace valve Have valve checked
		Leak in control air flexible	Replace leaking flexible
		Minimum pressure valve leaking (when net is depressurized)	Have valve checked
2	Compressor does not unload, safety valve blows	Solenoid valve out of order	Replace valve
		Inlet valve does not close	Have valve checked
3	Compressor air output or pressure below normal	Air consumption exceeds air delivery of compressor	Check equipment connected
		Choked air filter element	Replace filter element
		Solenoid valve malfunctioning	Replace valve
		Leak in control air flexible	Replace leaking flexible
		Inlet valve does not fully open	Have valve checked
		Oil separator clogged Air leakage	Have element replaced Have leaks repaired
		Safety valve leaking	Have valve replaced
		Airend out of order	Consult your supplier
4	Excessive fluid consumption; fluid carry-over through discharge line	Fluid level too high	Check for overfilling. Release pressure and drain fluid to correct level
		Incorrect fluid causing foam	Change to correct oil
		Oil separator defective	Have element checked. Replace if necessary.
		Scavenge line clogged	Check and remedy
5	Excessive fluid flow through air inlet filter after stopping compressor	Check valve leaking or fluid stop valve jammed	Replace defective parts. Replace air filter element

No.	Condition	Fault	Remedy
6	Safety valve blows after loading	Inlet valve malfunctioning	Have valve checked
		Minimum pressure valve malfunctioning	Have valve checked
		Safety valve out of order	Have valve replaced
		Airend (AE) out of order	Consult your supplier
		Oil separator element clogged	Have element replaced
7	Airend outlet temperature or delivery air temperature above normal	Oil level too low	Check and correct
		On air-cooled compressors, insufficient cooling air or cooling air temperature too high	Check for cooling air restriction or improve ventilation of the compressor room. Avoid circulation of cooling air. If installed, check capacity of compressor room fan
		Oil cooler clogged	Have valve tested
		Thermostatic valve malfunctioning	Clean cooler
		Air cooler clogged	Consult your supplier
		Airend (AE) out of order	Replace
		Oil filter clogged	Have valve tested
8	Excessive Water Content in fluid	Water drain intervals	Drain water as needed. to reduce water content in fluid below 200 PPM
		Discharge temperature Too low	Check operation of thermostatic valve or water regulating valve. If condition continues, consult QUINCY service department.

Fault tracing on Q-Control

Code on Q Control		Description on Q Control	Explanation	Counter measure
Hexadecimal notation	Decimal notation			
0x1111	4369	Undervoltage	Main Power supply voltage too low or missing links in the control panel.	-Check if main supply voltage is within specs. Check Main fuses. -Check for loose connectors at the control unit of the inverter and Q Control. -Check for tripped fuses at the secondary of the transformer in the electrical panel
0x2312	8978	Motor overcurrent	Overcurrent detected at motor side	-Check if main supply voltage is within specs.
0x2314	8980			
0x2315	8981	Motor overcurrent	Short Circuit detected in U phase	-Try to reset the error -If error returns, contact service
0x2316	8982	Motor overcurrent	Short Circuit detected in V phase	
0x2317	8983	Motor overcurrent	Short Circuit detected in W phase	
0x3210	12816	Overvoltage	Overvoltage detected	-Check if main supply voltage is within specs. Check Main fuses.
0x3221	12833	Undervoltage	Main Power supply voltage too low.	
0x3223	12835	Undervoltage	Phase loss detected	
0x3224	12836	Overvoltage	Maximum allowable voltage of the DC-link exceeded; Threshold is lowered in case of higher temperature	Let drive cool off -Check for excessive ambient temperature -Clean Heatsink with compressed air -Clean inlet filter cubicle -Ensure proper flow of cooling air in compressor room -Check if supply voltage is within specs.
0x3225	12837	Undervoltage	Undervoltage detected	-Check if main supply voltage is within specs. Check main fuses.
0x3226	12838	Overvoltage	Overvoltage or overtemperature detected in IGBT (U phase)	Let drive cool off -Check for excessive ambient temperature -Clean Heatsink with compressed air -Clean inlet filter cubicle -Ensure proper flow of cooling air in compressor room -Check if supply voltage is within specs.
0x3227	12839	Overvoltage	Overvoltage or overtemperature detected in IGBT (V phase)	
0x3228	12840	Overvoltage	Overvoltage or overtemperature detected in IGBT (W phase)	

Code on Q Control		Description on Q Control	Explanation	Counter measure
Hexadecimal notation	**Decimal notation**			
0x4311	17169	Drive overtemperature	Overtemperature detected in an IGBT	Let drive cool off -Check for excessive ambient temperature -Clean Heatsink with compressed air -Clean inlet filter cubicle -Ensure proper flow of cooling air in compressor room.
0x4312	17170	Drive overtemperature	Overtemperature detected in the heatsink	
0x4314	17172	Drive overtemperature	Overtemperature detected in IGBT junction UH	
0x4315	17173	Drive overtemperature	Overtemperature detected in IGBT junction UL	
0x4316	17174	Drive overtemperature	Overtemperature detected in IGBT junction VH	
0x4317	17175	Drive overtemperature	Overtemperature detected in IGBT junction VL	
0x4318	17176	Drive overtemperature	Overtemperature detected in IGBT junction WH	
0x4319	17177	Drive overtemperature	Overtemperature detected in IGBT junction WL	
0x5020	20512	Emergency off (STO)	Emergency stop circuit opened	-Check emergency stop button -Check for loose connectors at the control unit of the inverter. -Check the temperature switch
0x5021	20513	Emergency off (STO)	Emergency stop circuit opened	
0x5022	20514	Emergency off (STO)	- Emergency stop circuit opened - Hardware fault detected	
0x5114	20756	Drive failure (hardware)	Internal power supply tripped	-Try to reset the error -If error returns, contact service
0x5115	20757	Drive failure (hardware)	Internal power supply tripped	
0x5401	21505	Drive failure (hardware)	General fault detected in power section	
0x5402	21506	Drive failure (hardware)	General fault detected in power section	
0x6101	24833	Drive failure (hardware)	- Eeprom read failed - Timeout communication	
0x6102	24834	Drive failure (hardware)	- Failed temperature reading of power board - Timeout communication at initialization	
0x6103	24835	Drive failure (hardware)	General fault detected	

Code on Q Control		Description on Q Control	Explanation	Counter measure
Hexadecimal notation	**Decimal notation**			
0x6104	24836	Drive failure (hardware)	Internal checksum error detected	
0x6105	24837	Drive failure (hardware)	Internal communication timeout	
0x6106	24838	Drive failure (hardware)	Internal checksum error detected	
0x6107	24839	Drive failure (hardware)	Internal communication timeout	
0x6108	24840	Drive failure (hardware)	Internal communication timeout	
0x6109	24841	Drive failure (hardware)	Internal checksum error detected	
0x610A	24842	Drive failure (hardware)	Internal communication overload	
0x610B	24843	Drive failure (hardware)	Internal control overload	
0x610C	24844	Drive failure (hardware)	CAN communication timeout	-Check CAN-cable connection between Q Control and inverter -Check position of the CAN termination switch at both sides of the CAN cable. Both should be 'OFF'.
0x610D	24845	Drive failure (hardware)	Firmware not compatible	-Try to reset the error -If error returns, contact service
0x610E	24846	Drive failure (hardware)	Not able to identify power board	
0x610F	24847	Drive failure (hardware)	Not able to identify IGBT module	
0x6110	24848	Drive failure (hardware)	Power board not compatible with IGBT modules	
0x6111	24849	Drive failure (software)	Internal CAN state machine fault	-Check CAN-cable connection between Q Control and inverter -Check position of the CAN termination switch at both sides of the CAN cable. Both should be 'OFF'.
0x6112	24850	Drive failure (software)	Requested command cannot be executed because of limited access level	-Try to reset the error -If error returns, contact service
0x6113	24851	Drive failure (software)	CAN communication overload	-Check CAN-cable connection between Q Control and inverter

Code on Q Control		Description on Q Control	Explanation	Counter measure
Hexadecimal notation	Decimal notation			
				-Check position of the CAN termination switch at both sides of the CAN cable. Both should be 'OFF'.
0x6114	24852	Drive failure (software)	The firmware version is not compatible with the parameter version	-Try to reset the error -If error returns, contact service
0x7130	28976	Motor overtemperature	Motor overtemperature detected	-Let motor cool off - Ensure main fan and air flow in and out compressor is not obstructed - Ensure proper flow of cool air in compressor room. -Check for loose connectors at the control unit of the inverter.
0x8401	33793	Overvoltage	Motor maximum speed exceeded	-Try to reset the error -If error returns, contact service
0x8402	33794	Overcurrent	Motor startup unsuccessful; requested speed not reached	-Wait until the vessel de-pressureizes by blow off. (by not resetting the fault immediately) -If the problem persists, contact service
0x9001	36865	Hardware run enable missing	Hardware enable signal missing	-Check for loose connectors at the control unit of the inverter and Q Control. -Check for tripped fuses at the secondary of the transformer T1 in the electrical panel
0x9065 to 91F4	36965 to 37364	Drive failure (software)	Failure on attempt to write parameter Pyyy out of range	-Try to reset the error -If error returns, contact service

9. Technical Data

9.1 Electric cable size and fuses

Important

- The voltage on the compressor terminals must not deviate more than 10% of the nominal voltage.
  It is however highly recommended to keep the voltage drop over the supply cables at nominal current below 5% of the nominal voltage (IEC 60204-1).
- If cables are grouped together with other power cables, it may be necessary to use cables of a larger size than those calculated for the standard operating conditions.
- Use the original cable entry. See section Dimension drawings.
  To preserve the protection degree of the electric cubicle and to protect its components from dust from the environment, it is mandatory to use a proper cable gland when connecting the supply cable to the compressor.
- Local regulations remain applicable if they are stricter than the values proposed below.
- Currents are calculated with the full service factor, but we suggest to add 10% due to over- and under-voltage. Fuses are maximum allowed values for full service factor and 10% over- and under-voltage.

- **Caution**
  - Always double check the fuse size versus the calculated cable size. If required, reduce the fuse size or enlarge the cable size
  - Cable length should not exceed the maximum length according to IEC60204 table 10.

Sizing per NEC

Compressor specification				Main Motor	Fan Motor	Package	Max Fuse	Max Fuse	Minimum copper wire size for
HP	Starter	V	Hz	OL Setting	OL setting	Amps	DETD	Class T	Package Power (THHN, THWN)
50	Y/D	200	60	80	5.5	159	300		250 kcmil
50	Y/D	230	60	69	4.2	138	250		4/0
50	Y/D	380	60	44	2.4	85	150		#1
50	Y/D	460	60	35	2.4	69	125		#2
50	Y/D	575	60	28	1.9	56	100		#4
60	Y/D	200	60	95	7.4	184	350		300 kcmil
60	Y/D	230	60	82	5.8	160	300		250 kcmil
60	Y/D	380	60	55	3.5	97	175		1/0
60	Y/D	460	60	41	3.2	79	150		#1
60	Y/D	575	60	33	2.6	64	125		#2
40	VFD	460	60	NA	3.2	62		200	#1
50	VFD	460	60	NA	3.2	74		200	#1
60	VFD	460	60	NA	3.2	89		200	#1
DETD = Duel Element Time Delay									

9.2 Reference conditions and limitations

Reference conditions

Air inlet pressure (absolute)	bar	1
Air inlet pressure (absolute)	psi	14.5
Air inlet temperature	˚C	20
Air inlet temperature	˚F	68
Relative humidity	%	0

Limits

Maximum working pressure		See section Compressor data
Minimum working pressure	bar(e)	5.17
Minimum working pressure	psig	75
Maximum air inlet temperature	˚C	46
Maximum air inlet temperature	˚F	115
Minimum ambient temperature	˚C	0
Minimum ambient temperature	˚F	32

9.3 Compressor data

Reference conditions

	All data specified below apply under reference conditions, see section Reference conditions and limitations

Flex gear coupling gearbox driven units

	Units	100 psi	125 psi	150 psi
Frequency	Hz	60	60	60
Nominal working pressure	bar(e)	6.9	8.6	10.3
	psig	100	125	150
Maximum working pressure	bar(e)	7.5	8.8	10.5
	psig	110	128	153
Loading pressure Maximum setting	bar(e)	6.8	8.5	10.27
	psig	99	124	149
Set point, thermostatic valve	˚C	83	83	83
	˚F	181	181	181

Appendix 1: Product Analysis Report

Quincy
Compressor Fluid Analysis
2300 James Savage Road, Midland, MI 48642

UNDENIABLY THE WORLD'S FINEST COMPRESSORS

PRODUCT ANALYSIS REPORT

(a)

(b)

Customer	(d)
Comp. Mfr.	(e)
Fluid Type	(f)
Serial Number	(g)
Model Number	(h)
Hrs. on Fluid	(i)
Hrs. on Machine	(j)
Sample Date	(k)
I.D. #	

(c)

Evaluation: (1)

Physical Properties* Results (m)

Water by Karl Fischer (ppm)	Viscosity 40° C (cSt)	TAN Total Acid #	Particle Count 5 um	10 um	15 um	20 um	25 um	30 um	35 um	40 um	ISO Code	Antioxidant Level

* Property values, not to be construed as specifications

Spectrochemical Analysis (n)

Sample Date (Fluid Hours)	Values below are in parts per million (ppm) Silver (Ag)	Alum. (Al)	Chrom (Cr)	Copp. (Cu)	Iron (Fe)	Nickel (Ni)	Lead (Pb)	Tin (Sn)	Titan (Ti)	Vanad (V)	Bari (Ba)	Calc. (Ca)	Mag. (Mg)	Mol. (Mo)	Sod. (Na)	Phos. (P)	Sili. (Si)	Zinc (Zn)

Thank you for this opportunity to provide technical assistance to your company. If you have any questions about this report please contact us at 1-800-637-8628 or fax 1-517-496-2313.

*means this parameter not tested

Accuracy of recommendations is dependant on representative fluid samples and complete correct data on both unit and fluid.

CC List

Appendix 2: Fluid Parameters

QuinSyn Plus, QuinSyn XP & QuinSyn PG

Property	Units	Test Method	Fluid Type	New Fluid	Marginal	Unacceptable
Viscosity 40°C	cSt	ASTM D-445	QuinSyn Plus	42-51	38, 56	<38, >56 (1)
			QuinSyn XP	58-75	50, 85	<50, >85 (1)
			QuinSyn PG	45-55	41,61	<41, >61 (1)
Acid No. (TAN)	mg KOH/gm	ASTM D-947	QuinSyn Plus	<0.2	1.7-1.9	>2.0 (1)
			QuinSyn XP	<0.2	3-4	>4 (1)
			QuinSyn PG	<0.2	0.7-0.9	>1 (1)
Additive Metals						
Barium	PPM	Plasma Emission	QuinSyn Plus	0	5-20	>20
			QuinSyn XP	0	5-20	>20
			QuinSyn PG	375-550	150	<10 (1)
Calcium	PPM	Plasma Emission	All	0	5-20	>20
Magnesium	PPM	Plasma Emission	All	0	5-20	>20
Molybdenum	PPM	Plasma Emission	All	0	5-20	>20
Sodium	PPM	Plasma Emission	QuinSyn Plus	0	5-20	>20
			QuinSyn XP	0	40-50	>100
			QuinSyn PG	0	40-50	>100
Phosphorus	PPM	Plasma Emission	QuinSyn Plus	0	5-20	>20
			QuinSyn XP	<50	5-20	0
			QuinSyn PG	0	5-20	>20
Zinc	PPM	Plasma Emission	All	0	100-200	>200
Wear Metals						
Silver	PPM	Plasma Emission	All	0	5-10	>10
Aluminum	PPM	Plasma Emission	All	0	5-10	>10
Chromium	PPM	Plasma Emission	All	0	5-10	>10
Copper	PPM	Plasma Emission	All	0	5-10	>10
Iron	PPM	Plasma Emission	All	0	5-10	>10
Nickel	PPM	Plasma Emission	All	0	5-10	>10
Lead	PPM	Plasma Emission	All	0	5-10	>10
Tin	PPM	Plasma Emission	All	0	5-10	>10
Titanium	PPM	Plasma Emission	All	0	5-10	>10
Vanadium	PPM	Plasma Emission	All	0	5-10	>10
Other						
Silicon	PPM	Plasma Emission	All	0	10-15	>15
Water	PPM	Karl Fisher	QuinSyn Plus	<800	NOT REPORTED	
			QuinSyn XP	<800	NOT REPORTED	
			QuinSyn PG	<2000	NOT REPORTED	
Antioxidant	%	HPCL	All	95% min.	NOT REPORTED	

(1) The fluid will be condemned based on these parameters.

QuinSyn & QuinSyn F

Property	Units	Test Method	Fluid Type	New Fluid	Marginal	Unacceptable
Viscosity 40°C	cSt	ASTM D-445	QuinSyn	40-48	38, 52	<38, >52 (1)
			QuinSyn F	41-51	39, 56	<39, >56 (1)
Acid No. (TAN)	mg KOH/gm	ASTM D-947	All	0.2	0.8-0.9	>1 (1)
Additive Metals						
Barium	PPM	Plasma Emission	All	0	5-20	>20
Calcium	PPM	Plasma Emission	All	0	5-20	>20
Magnesium	PPM	Plasma Emission	All	0	5-20	>20
Molybdenum	PPM	Plasma Emission	All	0	5-20	>20
Sodium	PPM	Plasma Emission	All	0	5-20	>20
Phosphorus	PPM	Plasma Emission	All	0	5-20	>20
Zinc	PPM	Plasma Emission	All	0	100-200	>200
Wear Metals						
Silver	PPM	Plasma Emission	All	0	5-10	>10
Aluminum	PPM	Plasma Emission	All	0	5-10	>10
Chromium	PPM	Plasma Emission	All	0	5-10	>10
Copper	PPM	Plasma Emission	All	0	5-10	>10
Iron	PPM	Plasma Emission	All	0	5-10	>10
Nickel	PPM	Plasma Emission	All	0	5-10	>10
Lead	PPM	Plasma Emission	All	0	5-10	>10
Tin	PPM	Plasma Emission	All	0	5-10	>10
Titanium	PPM	Plasma Emission	All	0	5-10	>10
Vanadium	PPM	Plasma Emission	All	0	5-10	>10
Other						
Silicon	PPM	Plasma Emission	All	0	10-15	>15
Water	PPM	Karl Fisher	All	<100	200	>200
Particle Count	Microns	Hiac Royco	All	ISO CODE X/20		
Antioxidant	%	Liquid Chromatography	All	95	NOT REPORTED	

(1) The fluid will be condemned based on these parameters.

Performance You Demand. Reliability You Trust.

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