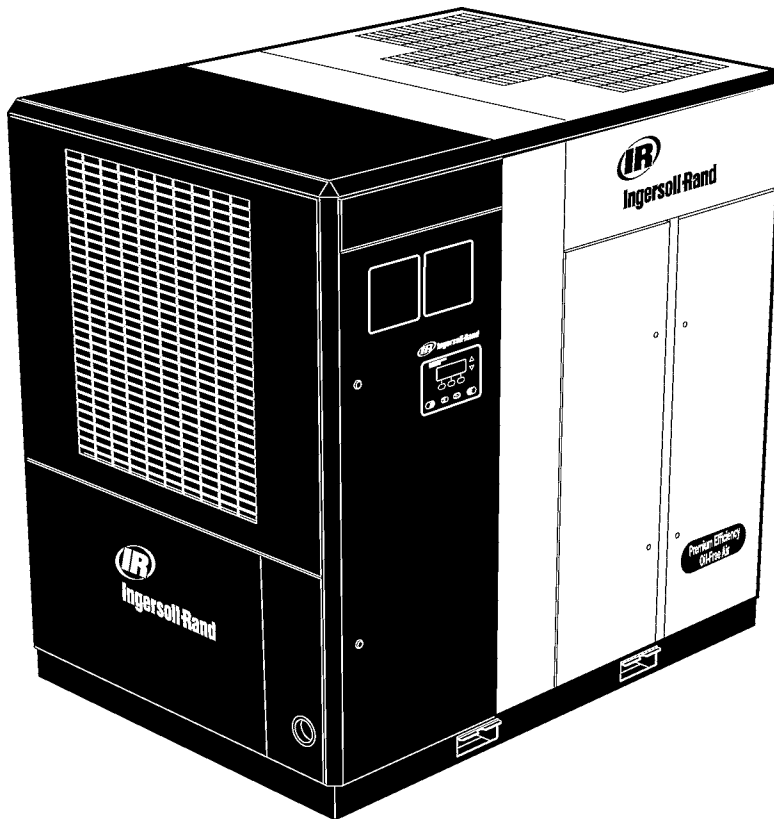




Ingersoll Rand®

IRN37-160K-OF
IRN50-200H-OF

OPERATION AND MAINTENANCE MANUAL



TM



Ensure that the operator reads and *understands* the decals and consults the manuals before maintenance or operation.

Ensure that the Operation and Maintenance manual is not removed permanently from the machine.

Ensure that maintenance personnel are adequately trained, competent and have read the Maintenance Manuals.

C.C.N. : 22310387
DATE : AUGUST 2005
REV. : D

Machine models represented in this manual may be used in various locations world-wide. Machines sold and shipped into European Union Territories require that the machine display the EC Mark and conform to various directives. In such cases, the design specification of this machine has been certified as complying with EC directives. Any modification to any part is absolutely prohibited and would result in the CE Certification and marking being rendered invalid. A declaration of that conformity follows:



EC DECLARATION OF CONFORMITY WITH EC DIRECTIVES

98/37/EC, 93/68/EEC, 89/336/EEC

WE,

**INGERSOLL-RAND COMPANY LIMITED
SWAN LANE
HINDLEY GREEN
WIGAN WN2 4EZ
UNITED KINGDOM**

DECLARE THAT, UNDER OUR SOLE RESPONSIBILITY FOR MANUFACTURE AND SUPPLY,
THE PRODUCT(S)

**IRN37K-OF IRN45K-OF IRN55K-OF IRN75K-OF
IRN90K-OF IRN110K-OF IRN132K-OF IRN160K-OF**

TO WHICH THIS DECLARATION RELATES, IS (ARE) IN CONFORMITY WITH THE PROVISIONS
OF THE ABOVE DIRECTIVES USING THE FOLLOWING PRINCIPAL STANDARDS.

EN29001, EN292, EN60204-1, EN1012-1, EN61000-6

ISSUED AT HINDLEY GREEN ON 01/01/2005 BY H.SEDDON, QUALITY ASSURANCE
MANAGER.


H. SEDDON

EC Pressure Equipment Directive and Related Regulations

We declare that this product has been assessed according to the Pressure Equipment Directive (97/23/EC) and, in accordance with the terms of this Directive, has been excluded from the scope of this Directive.

It may carry "CE" marking in compliance with other applicable EC Directives.

AIR COMPRESSOR GROUP BONDED WARRANTY & REGISTERED START UP

Warranty

The Company warrants that the equipment manufactured by it and delivered hereunder will be free of defects in material and workmanship for a period of twenty four months from the date of placing the Equipment in operation or thirty months from the date of shipment from the factory, whichever shall first occur (see extended airtend warranty). The Purchaser shall be obligated to promptly report any failure to conform to this warranty, in writing to the Company in said period, whereupon the Company shall, at its option, correct such nonconformity, by suitable repair to such equipment or, furnish a replacement part F.O.B. point of shipment, provided the Purchaser has stored, installed, maintained and operated such Equipment in accordance with good industry practices and has complied with specific recommendations of the Company. Accessories or equipment furnished by the Company, but manufactured by others, shall carry whatever warranty the manufacturers have conveyed to the Company and which can be passed on to the Purchaser. The Company shall not be liable for any repairs, replacements, or adjustments to the Equipment or any costs of labor performed by the Purchaser or others without Company's prior written approval.

The effects of corrosion, erosion and normal wear and tear are specifically excluded. Performance warranties are limited to those specifically stated within the Company's proposal. Unless responsibility for meeting such performance warranties are limited to specified tests, the Company's obligation shall be to correct in the manner and for the period of time provided above.

THE COMPANY MAKES NO OTHER WARRANTY OR REPRESENTATION OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED.

Correction by the Company of nonconformities whether patent or latent, in the manner and for the period of time provided above, shall constitute fulfillment of all liabilities of the Company for such nonconformities whether based on contract, warranty negligence, indemnity, strict liability or otherwise with respect to or arising out of such Equipment.

The purchaser shall not operate Equipment which is considered to be defective, without first notifying the Company in writing of its intention to do so. Any such use of Equipment will be at Purchaser's sole risk and liability.

Note that this is Ingersoll-Rand standard warranty. Any warranty in force at the time of purchase of the compressor or negotiated as part of the purchase order may take precedence over this warranty.

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2.0 FOREWORD

Machine models represented in this manual may be used in various locations worldwide. Machines sold and shipped into European community countries requires that the machine display the EC Mark and conform to various directives. In such cases, the design specification of this machine has been certified as complying with EC directives. Any modification to any part is absolutely prohibited and would result in the CE certification and marking being rendered invalid.

The contents of this manual are considered to be proprietary and confidential to Ingersoll-Rand and should not be reproduced without the prior written permission of Ingersoll-Rand.

Nothing contained in this document is intended to extend any promise, warranty or representation, expressed or implied, regarding the Ingersoll-Rand products described herein. Any such warranties or other terms and conditions of sale of products shall be in accordance with the standard terms and conditions of sale for such products, which are available upon request.

This manual contains instructions and technical data to cover all routine operation and scheduled maintenance tasks by operation and maintenance staff. **Major overhauls are outside the scope of this manual and should be referred to an authorized Ingersoll-Rand service department.**

All components, accessories, pipes and connectors added to the compressed air system should be:

- . of good quality, procured from a reputable manufacturer and, wherever possible, be of a type approved by Ingersoll-Rand.
- . clearly rated for a pressure at least equal to the machine maximum allowable working pressure.
- . compatible with the compressor oil.
- . accompanied with instructions for safe installation, operation and maintenance.

Ingersoll-Rand reserves the right to make changes and improvements to products without notice and without incurring any obligation to make such changes or add such improvements to products sold previously.

Details of approved equipment are available from Ingersoll-Rand Service departments.

This machine has been designed and supplied for use only in the following specified conditions and applications:

- . Compression of normal ambient air containing no known or detectable additional gases, vapors or particles
- . Operation within the ambient temperature range specified in the *GENERAL INFORMATION* section of this manual.

IF IN DOUBT CONSULT SUPERVISION.

The company accepts no responsibility for errors in translation of this manual from the original English version.

The design of this Compressor package and certain features within it are covered by patents held by Ingersoll-Rand and patents pending

SSR ULTRA COOLANT is a registered trademark of Ingersoll-Rand Company USA.

INTELLISYS is a registered trademark of Ingersoll-Rand Company USA.

HPM™, HYBRID PERMANENT MAGNET™ and HPM Logo are trade marks registered by MOTEURS LEROY-SOMER

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INGERSOLL-RAND COMPANY**

2.0 FOREWORD

WARNING

The use of the machine in any of the situation types listed in table 1:-
a) Is not approved by Ingersoll-Rand,
b) May impair the safety of users and other persons, and
c) May prejudice any claims made against Ingersoll-Rand.

TABLE 1

WARNING – NOT PERMITTED

Use of the machine to produce compressed air for:
a) direct human consumption
b) indirect human consumption.

Use of the machine outside the ambient temperature range specified in the *GENERAL INFORMATION SECTION* of this manual.

Use of the machine where there is any actual or foreseeable risk of hazardous levels of flammable gases or vapors.

THIS MACHINE IS NOT INTENDED AND MUST NOT BE USED IN POTENTIALLY EXPLOSIVE ATMOSPHERES, INCLUDING SITUATIONS WHERE FLAMMABLE GASES OR VAPOURS MAY BE PRESENT.

Use of the machine fitted with *non Ingersoll-Rand approved components*.

Use of the machine with safety or control components missing or disabled.

Connection to an electrical supply of incorrect voltage and/or frequency.

WARNING

The use of repair parts other than those included within the Ingersoll-Rand approved parts list may create hazardous conditions over which Ingersoll-Rand has no control. Therefore Ingersoll-Rand cannot be held responsible for equipment in which non-approved repair parts are installed.

WARNING

The motor rotor contains a powerful magnetic field. This field can effect the operation of digital devices such as watches, mobile phones etc. Assembly or handling of the rotor should not be attempted by personnel with cardiac pacemakers, defibrillators or other implanted electronic medical device.

WARNING

This compressor contains a variable frequency drive. When it is switched off and the motor is stopped, the internal capacitors store a potentially lethal high voltage. **DO NOT REMOVE THE DRIVE COVER** or attempt any work on the drive unless trained. There are no user serviceable items behind the cover.

NOTICE

The manual is intended for worldwide use and contains both metric and imperial data where required.

3.0 ABBREVIATIONS & SYMBOLS

Contact Ingersoll–Rand for serial number

->#### Up to Serial No.

####-> From Serial No.

***** Not illustrated

† Option

NR Not required

AR As required

SM Sitemaster/Sitepack

HA High ambient machine

WC Watercooled machine

AC Aircooled machine

ERS Energy recovery system

T.E.F.C. Totally enclosed fan cooled motor (IP54)

O.D.P. Open drip proof (motor)

ppm parts per million

cs Czech

da Danish

de German

el Greek

en English

es Spanish

et Estonian

fi Finnish

fr French

hu Hungarian

it Italian

lt Lithuanian

lv Latvian, Lettish

mt Maltese

nl Dutch

no Norwegian

pl Polish

pt Portuguese

sk Slovak

sl Slovenian

sv Swedish

zh Chinese

4.0 PURCHASE ORDER DETAILS

ROTARY SCREW AIR COMPRESSOR

This unit was purchased from

Ingersoll-Rand Company reserves the right to make changes or add improvements without notice and without incurring any obligation to make such changes or add such improvements to products sold previously.

No. of units on order: _____

Customer Order No: _____

Ingersoll-Rand Co. Order No.: _____

For ready reference:

Record the serial number and model number of your unit here.

Serial Number: _____

Model Number: _____

5.0 SAFETY

5.1 SAFETY INSTRUCTIONS

Safety instructions in the operators manual are bold-faced for emphasis. The signal words DANGER, WARNING and CAUTION are used to indicate hazard seriousness levels as follows.

Ensure that the operator reads and *understands* the decals and consults the manuals before maintenance or operation.

Ensure that the Operation and Maintenance manual, and the manual holder, are not permanently removed from the machine.

Ensure that maintenance personnel are adequately trained, competent and have read the Maintenance Manuals.

DANGER

Indicates the presence of a hazard which **WILL** cause serious injury, death or property damage, if ignored.

WARNING

Indicates the presence of a hazard which **CAN** cause serious injury, death or property damage, if ignored.

CAUTION

Indicates the presence of a hazard which **WILL** or can cause injury or property damage, if ignored.

NOTICE

Indicates important set-up, operating or maintenance information.

5.2 SAFETY PRECAUTIONS

General Information

Compressed air and electricity can be dangerous. Before undertaking any work on the compressor, ensure that the electrical supply has been isolated, locked off, tagged and the compressor has been relieved of all pressure.

Make sure that all protective covers are in place and that the canopy/doors are closed during operation.

Installation of this compressor must be in accordance with recognized electrical codes and any local Health and Safety Codes.

Use only safety solvent for cleaning the compressor and auxiliary equipment.

Compressed air

Ensure that the machine is operating at the rated pressure and that the rated pressure is known to all relevant personnel.

All air pressure equipment installed in or connected to the machine must have safe working pressure ratings of at least the machine rated pressure.

If more than one compressor is connected to one common downstream plant, effective check valves and isolation valves must be fitted and controlled by work procedures, so that one machine cannot accidentally be pressurized / over pressurized by another.

If a safety valve is installed between the isolation valve and the compressor, it must have sufficient capacity to relieve the full capacity of the compressor(s).

If the discharged air is to be ultimately released into a confined space, adequate ventilation must be provided.

The use of plastic bowls on line filters without metal guards can be hazardous. Their safety can be affected by either synthetic lubricants, or the additives used in mineral oils. Metal bowls should be used on a pressurized system.

When using compressed air always use appropriate personal protective equipment.

5.0 SAFETY

All pressure containing parts, especially flexible hoses and their couplings, must be regularly inspected, be free from defects and be replaced according to the Manual instructions.

Compressed air can be dangerous if incorrectly handled. Before doing any work on the unit, ensure that all pressure is vented from the system and that the machine cannot be started accidentally.

Avoid bodily contact with compressed air.

The safety valve located in the interstage and aftercooler must be checked periodically for correct operation.

Whenever pressure is released through the pressure relief valve, it is due to excessive pressure in the system. The cause for the excessive pressure should be investigated immediately.

Materials

The following substances are used in the manufacture of this machine and *may* be hazardous to health if used incorrectly:

- preservative grease
- rust preventative
- compressor oil

⚠ WARNING
AVOID INGESTION, SKIN CONTACT AND INHALATION OF FUMES

For further information, request and consult the coolant Material Data Sheet (UK ACGP 011/96 –ULTRA COOLANT ACGP 029/90–food grade coolant. For USA served areas, use MSDS sheet APDD 236) from your local IR office, Distributor or Air Center.

Should compressor oil come into contact with the eyes, then irrigate with water for at least 5 minutes.

Should compressor oil come into contact with the skin, then wash off immediately.

Consult a physician if large amounts of compressor oil are ingested.

Consult a physician if compressor oil is inhaled.

Never give fluids or induce vomiting if the patient is unconscious or having convulsions.

The above information contains data supplied in support of United Kingdom *Control of Substances Hazardous to Health* (C.O.S.H.H.) regulations

Transport

When loading or transporting machines ensure that the specified lifting and tie down points are used.

It is recommended that the machine be moved using the fork lift slots in the machine base.

Refer to section 8 for reference information.

Electrical

The compressor has high and dangerous voltage in the motor starter and control box. All installations must be in accordance with recognized electrical codes. Before working on the electrical system, be sure to remove voltage from the system by using a manual disconnect switch. A circuit breaker or fuse safety switch must be provided in the electrical supply line leading to the compressor.

Those responsible for installation of this equipment must provide suitable grounds, maintenance clearance and lightning arrestors for all electrical components in accordance with National and Local code requirements.

Keep all parts of the body and any hand-held tools or other conductive objects, away from exposed live parts of the compressor electrical system. Maintain dry footing, stand on insulating surfaces and do not contact any other portion of the compressor when making adjustments or repairs to exposed live parts of the compressor electrical system.

Close and lock all access doors when the compressor is left unattended.

Do not use extinguishers intended for Class A or Class B fires on electrical fires. Use only extinguishers suitable for class *BC* or class *ABC* fires.

Attempt repairs only in clean, dry, well lighted and ventilated areas.

Connect the compressor only to electrical systems that are compatible with its electrical characteristics and that are within its rated capacity.

Condensate disposal

As waste water regulations vary by country and region it is the responsibility of the user to establish the limitations and regulations in their particular area. Ingersoll-Rand and its associated distributors are happy to advise and assist in these matters.

Oil disposal

Steps to be taken in the case of spillage: Soak up with a suitable absorbent material, then sweep into a plastic bag for disposal.

Burn in an approved incinerator, or according to local area or country regulations.

For further information, consult ULTRA COOLANT Material Data Sheets ACGP 011/96 or APDD 236.

5.0 SAFETY

WARNING

This compressor contains a variable frequency drive. When it is switched off and the motor is stopped, the internal capacitors store a potentially lethal high voltage. **DO NOT REMOVE THE DRIVE COVER** or attempt any work on the drive unless trained. There are no user serviceable items behind the cover.

WARNING

There is a high discharge air temperature shutdown function built into each compressor. It is factory preset. Refer to the operation section for shutdown temperatures. This function should be checked at regular intervals for proper operation, once a month is recommended. Refer to maintenance section.

Failure to adhere to these recommendations can result in mechanical failure, property damage and serious injury or death.

- All air and water inlet, and air and water discharge pipework to and from the inlet and discharge port connections must take into account vibration, pulsations, temperature, maximum pressure applied, corrosion and chemical resistance.
- For the foregoing reasons, the use of plastic piping, soldered copper fittings and rubber hose as discharge piping is not recommended. In addition, flexible joints and/or flex lines can only be considered for such purposes if their specifications fit the operating parameters of the system.
- It is the responsibility of the installer and owner to provide the appropriate service pipework to and from the machine.

WARNING

“Ingersoll-Rand air compressors are not designed, intended, or approved for breathing air applications. Ingersoll-Rand does not approve specialized equipment for breathing air application and assumes no responsibility or liability for compressors used for breathing air services.”

WARNING

No portable communication devices emitting more than 7.5 volts per metre in the frequency range from 250 MHz to 280 MHz should be operated within 5m (16.5ft) of the unit.

WARNING

The motor rotor contains a powerful magnetic field. This field can effect the operation of digital devices such as watches, mobile phones etc. Assembly or handling of the rotor should not be attempted by personnel with cardiac pacemakers, defibrillators or other implanted electronic medical device.

WARNING

The specification of this machine is such that the machine is not suitable for use in flammable gas risk areas. If such an application is required then all local regulations, codes of practice and site rules must be observed. To ensure that the machine can operate in a safe and reliable manner, additional equipment such as gas detection and intake (*shut-off*) valves may be required, dependant on local regulations or the degree of risk involved.

5.0 SAFETY

Depending on point of manufacture and point of use, the compressor and this manual will show symbols from the following sections. Compressors for use within the European Community must be equipped with symbols from section 5.4. Read and understand thoroughly. Heed warnings and follow instructions. If you do not understand, inform your supervisor.

5.3 TEXT DECALS

NOTICE

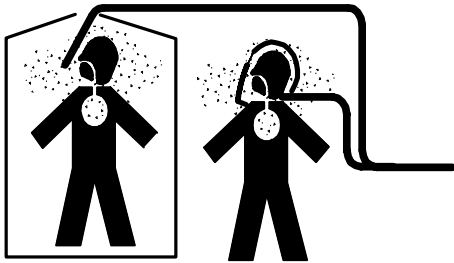
To obtain satisfactory compressor operation and maintenance a minimum of 3 feet clearance on 3 sides is required, 3-1/2 feet is required in front of the control panel (or minimum required by latest National Electrical code or applicable local codes).

Refer to the Instruction / Operators Manual before performing any maintenance.

IR Ingersoll-Rand.



DANGER



**Discharge air.
Can contain carbon monoxide or other
contaminants. Will cause severe injury or death.**

Do not breathe this air.

IR Ingersoll-Rand.



WARNING



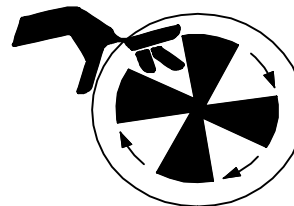
Hazardous voltage. Can cause severe injury or death.

Disconnect power before servicing.
Lockout/Tagout machine.

IR Ingersoll-Rand.



WARNING




**Rotating fan blade.
Can cause severe injury.**

Do not operate without guard in place
Disconnect power before servicing
Lockout/Tagout machine

IR Ingersoll-Rand.

5.0 SAFETY

 **CAUTION**

Incorrect lifting of machine can cause injury or property damage.

Lift only from base channels

 **Ingersoll Rand.**

 **CAUTION**

Use of incorrect coolant can cause system contamination.

Use only SSR ULTRA COOLANT

 **Ingersoll Rand.**

 **WARNING**



High pressure air.
Can cause severe injury or death.

Relieve pressure before removing filter plugs/caps, fittings or covers.

 **Ingersoll Rand.**

39540240 Rev.04

NOTICE


Air discharge


 **Ingersoll Rand.**

NOTICE

Lift here

 **Ingersoll Rand.**

 **WARNING**

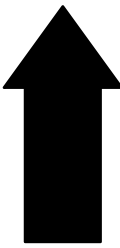


Hot surface.
Can cause severe injury.

Do not touch. Allow to cool before servicing.

 **Ingersoll Rand.**

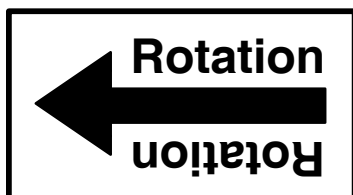
NOTICE



Rotation

 **Ingersoll Rand.**

5.0 SAFETY



Air Discharge



39540257 Rev. 04

Condensate drain.



39541081 Rev. 04

Electrical power inlet.



39541354 Rev. 03

730Vdc

15 mins.

0Vdc

<p>▲ WARNING</p> <p>Variable frequency drive to be serviced by trained personnel only. After switching off the machine at its local isolator, WAIT AT LEAST 15 MINUTES for the capacitors to fully discharge before removing the drive cover. With caution, verify DC bus voltage is zero before servicing. Proceed with caution.</p>	<p>▲ ADVERTÊNCIA</p> <p>O módulo conversor de frequência somente deve ser mantido por um técnico capacitado. Depois de desligar o equipamento no seu disjuntor local, ESPERE PELO MENOS 15 MINUTOS para que se descarreguem completamente os capacitores antes da remoção das portas de proteção do módulo. Antes da manutenção, verifique com cautela se a tensão DC bus está em zero. Prosiga com prudência.</p>	<p>▲ ADVERTENCIA</p> <p>El módulo conversor de frecuencia deberá solamente ser mantenido por un técnico capacitado. Después de desconectar el equipo en su aislador local, ESPERE 15 MINUTOS COMO MÍNIMO para que se descarguen por completo los condensadores antes de quitar la cubierta protectora del módulo. Antes de proveer mantenimiento, verifique con precaución se el voltage DC Bus está en zero. Prosiga con prudencia.</p>
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22066302 Rev. D

▲ WARNING – HIGH VOLTAGE

- Do not attempt any work.
- Read manual.
- Trained service personnel only.
- Remove electrical supply.
- Wait 15 minutes.
- Check for zero voltage.
- Proceed with caution.

WARNING

Hazardous voltage. Can cause severe injury or death.

Only use factory supplied inlet for incoming power. See Operators / Instruction Manual.



39543764 Rev. 03

WARNING

Moving parts. Can cause severe injury.

Do not operate with covers removed.
Service only with machine blocked to prevent turn over.



39540224 Rev. 04

NOTICE


To obtain satisfactory compressor operation and maintenance, a minimum of 3 feet clearance on 3 sides is required. 3 1/2 feet is required in front of the control panel (or minimum required by latest National Electrical code or applicable local codes.)

Refer to the Instruction / Operators Manual before performing any maintenance.




39540158 Rev.05

5.0 SAFETY




Use 75°C copper wire only.
Nur 75°C kupferdraht verwenden.
Utilisez 75°C uniquement fil de cuivre.
Usar solamente cable de cobre para 75°C.
Usare 75°C solamente cavi di rame.
Use somente fio de cobre de 75°C.


 39492384 Rev. 03

Use 75°C copper wire only.

IMPORTANT



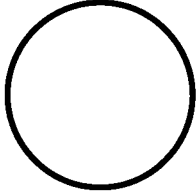
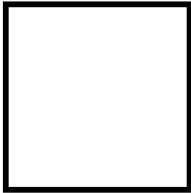







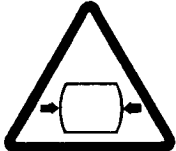



Before starting this air compressor unit the shipping brace(s) must be removed. Save the brace(s) for future use. Refer to Operators/Instruction Manual.

 39481130 Rev. 02

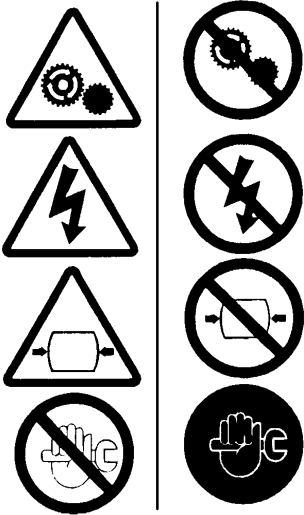
IMPORTANT
Before starting this air compressor unit the shipping brace(s) must be removed. Save the brace(s) for future use. Refer to Operators / Instruction Manual.

5.0 SAFETY

5.4 GRAPHIC FORM AND MEANING OF ISO SYMBOLS

		
Prohibition / Mandatory	Information / Instructions	Warning
 WARNING: Electrical shock risk.	 WARNING – Pressurized component or system.	 WARNING – Hot surface.
 WARNING – Pressure control.	 WARNING – Corrosion risk.	 WARNING – Air/gas flow or Air discharge.
 WARNING – Pressurized vessel.	 Do not remove the Operating and Maintenance manual from this machine.	 WARNING – Flammable liquid.
	 WARNING – Rotor magnetic field can affect pacemakers.	

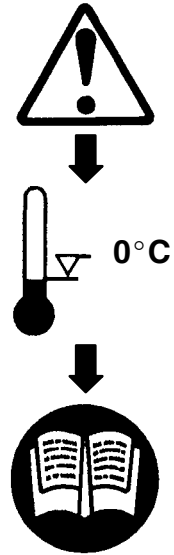
5.0 SAFETY



WARNING – Do not undertake any maintenance on this machine until the electrical supply is disconnected and the air pressure is totally relieved.



WARNING – Consult the Operation and Maintenance manual before commencing any maintenance.



WARNING – For operating temperature below 0°C, consult the Operation and Maintenance manual.



Read the Operation and Maintenance manual before operation or maintenance of this machine is undertaken.



Do not stack.



Do not operate the machine without the guard being in place.



Do not stand on any service valve or other parts of the pressure system.



Do not operate with the doors or enclosure open.



Do not use fork lift truck from this side.



Do not breathe the compressed air from this machine.


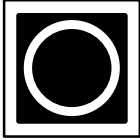



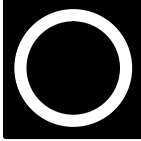

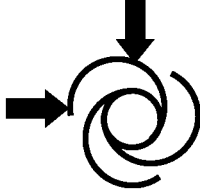
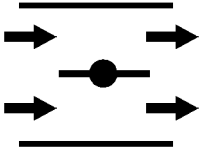


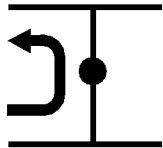
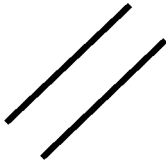
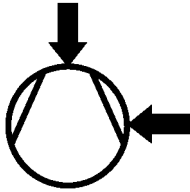
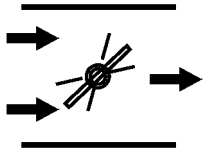




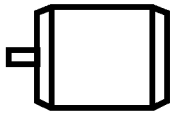



No naked lights.

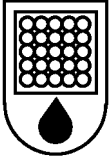

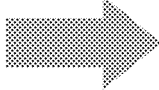
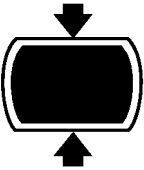

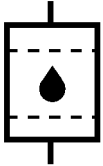

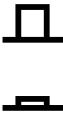
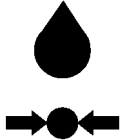

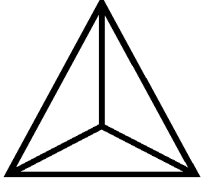
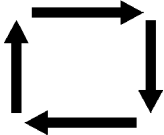

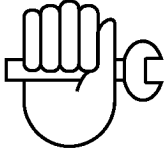

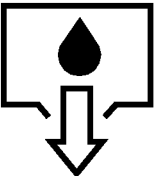
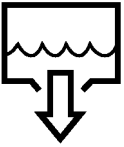
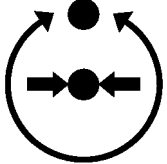


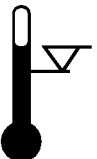


Do not open the service valve before the air hose is attached.

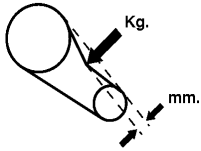
5.0 SAFETY

 Use fork lift truck from this side only.	 Emergency stop.	 Tie down point
 Lifting point.	 On (power).	 Off (power).
 SET	 SEQUENCER STATUS	 LOAD
 SEQUENCER (AUTOMATIC CONTROL)	 COMPRESSOR	 OFF LOAD (UNLOADED)
 RESET	 COMPRESSOR STATUS	 MODULATE
 MALFUNCTION	 POWER	 FOULED FILTER
 POWER INLET	 ELECTRIC MOTOR	 HOURS

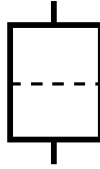
5.0 SAFETY

 <p>OIL SEPARATOR</p>	 <p>PRESSURE</p>	 <p>AIR DISCHARGE</p>
 <p>PRESSURIZED TANK</p>	 <p>ON / OFF CYCLE</p>	 <p>OIL FILTER</p>
 <p>AIR FILTER</p>	 <p>ON / OFF PUSH BUTTON</p>	 <p>OIL PRESSURE</p>
 <p>AIR PRESSURE</p>	 <p>STAR DELTA IEC 617-7</p>	 <p>AUTOMATIC RESTART</p>
 <p>HEAT EXCHANGER</p>	 <p>MAINTENANCE</p>	 <p>MAINTENANCE PROHIBITED</p>
 <p>OIL DRAIN</p>	 <p>CONDENSATE DRAIN</p>	 <p>PRESSURE CONTROL</p>
 <p>MANUAL (SELECT)</p>	 <p>TEMPERATURE</p>	 <p>HIGH TEMPERATURE</p>

5.0 SAFETY



BELT TENSION



FILTER



MOTOR LUBRICATION



FRAGILE



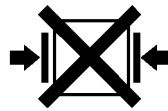
KEEP DRY



THIS WAY UP



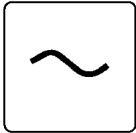
USE NO HOOKS



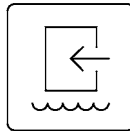
NO SIDE CLAMPS



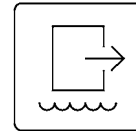
ROTATION



POWER INLET (AC)



WATER IN



WATER OUT



**TRAINED SERVICE
PERSONNEL**



15 mins.

WAIT TIME



CHECK ZERO VOLTS

6.0 RECEIPT / HANDLING

6.1 RECEIPT

When you receive the compressor please inspect it closely. Any indication of careless handling by the carrier should be noted on the delivery receipt especially if the compressor will not be immediately unpacked. Obtaining the delivery persons signed agreement to any noted damages will facilitate any future insurance claims.

IMPORTANT READ THIS LOST OR DAMAGED GOODS

THOROUGHLY INSPECT THIS SHIPMENT IMMEDIATELY UPON ARRIVAL

**OUR RESPONSIBILITY FOR THIS SHIPMENT CEASED WHEN THE CARRIER SIGNED
BILL OF LADING**

If goods are received short or in damaged condition, it is important that you notify the carrier and insist on a notation of the loss or damage across the face of the freight bill. Otherwise no claim can be enforced against the transportation company.

If concealed loss or damage is discovered, notify your carrier at once and request an inspection. This is absolutely necessary. Unless you do this the carrier will not entertain any claim for loss or damage. The agent will make an inspection and grant a concealed damage notation. If you give the transportation company a clear receipt for goods that have been damaged or lost in transit, you do so at your own risk and expense.

WE, AT IR, ARE WILLING TO ASSIST YOU IN EVERY POSSIBLE MANNER TO COLLECT CLAIMS FOR LOSS OR DAMAGE, BUT THE WILLINGNESS ON OUR PART DOES NOT MAKE US RESPONSIBLE FOR COLLECTION OF CLAIMS OR REPLACEMENT OF MATERIAL. THE ACTUAL FILING AND PROCESSING OF THE CLAIM IS YOUR RESPONSIBILITY.

Ingersoll-Rand Company

6.2 UNPACKING AND HANDLING

The compressor will normally be delivered with a polyethylene or other cover. If a knife has to be used to remove this cover, ensure that the exterior paintwork of the compressor is not damaged.

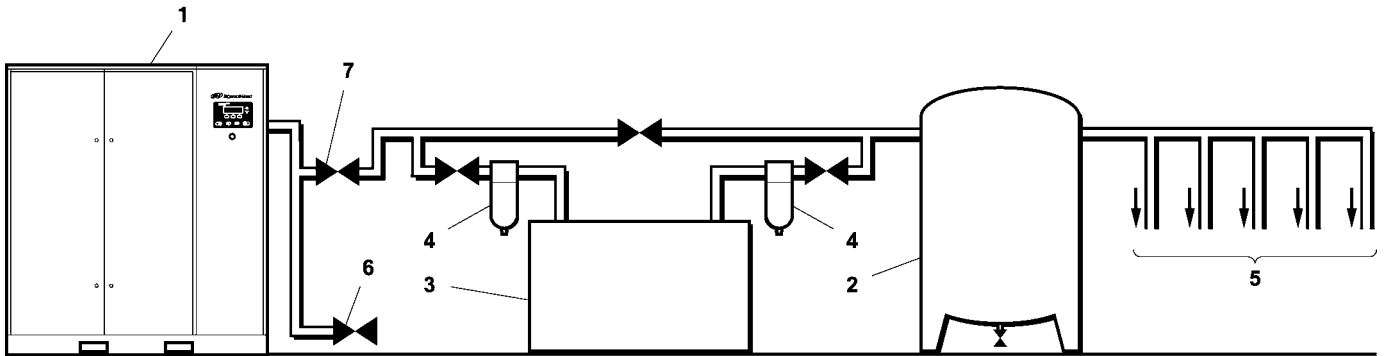
Incorporated within the base of the compressor are slots to enable a fork lift truck to move the machine. Ensure truck forks are fully engaged on both sides. Alternatively a special lifting frame can be utilized to enable a crane or hoist to move the compressor. Use only marked lifting points.

Once the packaging and pallet are discarded and the unit is in its final position, remove the transit brackets from the resilient mounts and store for future use or discard.

7.0 INSTALLATION

For technical information see section 8.0.

7.1 LOCATION IN PLANT



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Ensure that the correct tie down points are used.

For major overhaul (i.e. motor removal) position the machine to obtain lifting access e.g. fork lift truck.

See diagram in reference section for minimum space requirements for normal operation and maintenance.

Ambient temperatures higher than 46°C (115°F) must be avoided as well as areas of high humidity.

Consider also the environment surrounding or near the compressor. The area selected for the location of the compressor should be free of dust, chemicals, metal filings, paint fumes and overspray.

Hard surfaces may reflect noise with an apparent increase in the decibel level. When sound transmission is important, a sheet of rubber or cork can be installed beneath the machine to reduce noise. Flexible piping may be required.

It is recommended that provision be made for lifting heavy components during major overhaul. Use only lifting points provided.

Minimum space in front of control panel door as required by National or Local codes must be maintained.

The compressor can be installed on any level floor capable of supporting it. A dry, well ventilated area where the atmosphere is as clean as possible is recommended.

Sufficient space all round and above the compressor must be allowed, to enable the effective removal of the cooling air which, in turn, will reduce the risk of recirculating the cooling air back through the compressor.

CAUTION

A minimum of 1 m (3.3ft) all round the compressor is recommended. If headroom is restricted, then the exhaust should be ducted or deflected away from the machine.

Screw type compressors [1] should not be installed in air systems with reciprocating compressors without means of isolation such as a common receiver tank. It is recommended that both types of compressor be piped to a common receiver using individual air lines.

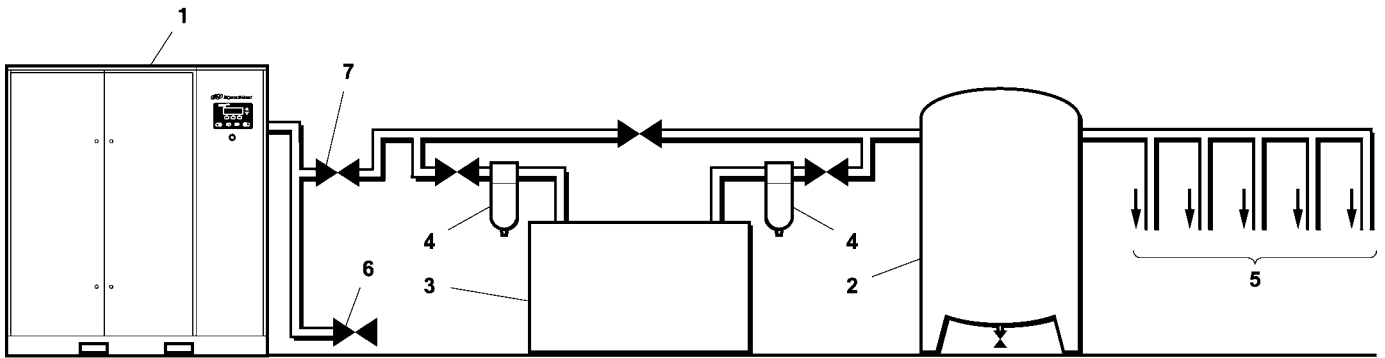
The machine is shipped with the shipping restraints in place. Ensure that these are removed to allow free movement of the drive assembly during operation. Each restraint is painted yellow.

NOTICE

If ducting is fitted to the machine, the sump breather needs to be piped outside the enclosure to avoid back pressure into the compression module.

7.0 INSTALLATION

7.2 DISCHARGE AND CONDENSATE PIPING



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07/04

It is essential when installing a new compressor [1], to review the total air system. This is to ensure a safe and effective total system. One item which should be considered is liquid carryover. Installation of air dryers [3] is always good practice since properly selected and installed they can reduce any liquid carryover to zero.

A receiver [2], installed before the feeder lines [5], may be necessary to ensure that the total system volume is not less than 2.0 U.S.Gallons per rated delivery C.F.M

Discharge piping should be at least as large as the discharge connection of the compressor. All piping and fittings should be suitably rated for the discharge pressure.

It is important to install an isolation valve [7] within 3 feet (1 meter) of the compressor.

It is good practice to install line filters [4].

Include a means [6] to vent the discharge pipework downstream from the machine's check valve and upstream of the first system isolation valve [7].

When two rotary units are operated in parallel, provide an isolation valve and drain trap for each compressor before the common receiver.

The built-in intercooler and aftercooler reduce the discharge air temperature below the dew point (for most ambient conditions), therefore, considerable water vapor is condensed. To remove this condensation, each compressor with built-in aftercooler is furnished with two moisture separator/solenoid valve combinations. Since these solenoid valves discharge at different pressures, it is extremely important that they are piped separately into an open drain.

A dripleg assembly and isolation valve should be mounted near the compressor discharge. A drain line should be connected to the condensate drain in the base.

IMPORTANT: The drain line must slope downward from the base to work properly. For ease of inspection of the automatic drain trap operation, the drain piping should include an open funnel.

NOTICE

For low volume systems, compressor response time may need adjusting. Contact your local IR service agent.

CAUTION

The use of plastic bowls on line filters and other plastic air line components without metal guards can be hazardous. Their safety can be affected by either synthetic oils or the additives used in mineral oils. From a safety standpoint, metal bowls should be used on any pressurized system.

NOTICE

Do not use the compressor to support the discharge pipe.

7.0 INSTALLATION

7.3 ELECTRICAL

CAUTION

This procedure should only be carried out by a qualified electrician, electrical contractor or your local Ingersoll–Rand Distributor or Air Center.

The compressor and drive should be properly grounded / earthed in accordance with Local and National Code requirements.

Installation of this compressor must be in accordance with recognized electrical codes and any local Health and Safety Codes.

The compressor must have its own isolator situated adjacent to it. The fuse protecting the circuit and the compressor must be selected in accordance with local and national code requirements on the basis of the data provided in the general information section

Feeder cables should be sized by the customer/electrical contractor to ensure that the circuit is balanced and not overloaded by other electrical equipment. The length of wiring from a suitable electrical feed point is critical as voltage drops may impair the performance of the compressor.

Cable sizes may vary considerably so the mains terminals will accept up to 50mm² (1 AWG) (37/45k & 50/60H) and up to 90mm² (3/0 AWG) (55/75k & 75/100H) cable. The N75K–160K and N100H–200H machines mains terminals will accept 2 x 120mm² (4/0 AWG) cables.

Feeder cable connections to incoming terminals L1–L2–L3 should be tight and clean.

The applied voltage must be compatible with the motor and compressor data plate ratings.

The control circuit transformer has different voltage tapings. Ensure that these are set for the specific applied voltage prior to starting.

A hole is provided for incoming power connection. If it is necessary to make a hole in the control box in a different location, care should be taken to not allow metal shavings to enter the starter and other electrical components within the box. If another hole is used, the original hole must be blocked off.

The feeder cable must be suitably glanded into the power drive module (P.D.M.) electrical box to ensure that dirty air does not by-pass the filter pads or degrade the cooling air flow.

On completion of electrical installation, check that both the main blower motor and heat sink blower motor rotations are correct.

This machine is designed for use in heavy industrial environments, where the electricity supply is separated from nearby residential and commercial areas. If the machine is to be used in the light industrial, residential or commercial environment where the local supply network is shared, further radio frequency (RF) screening measures may be required. Consult your local distributor/supplier for details of the optional RF filter.

The compressor has a anti-condensation heater and thermostat in the electrical box. This circuit can be connected to an independent electrical supply of either 110V or 230V single phase, dependant on the country of installation. The supply should be suitable fused and an independent isolator installed adjacent to the compressor.

This should be done in accordance with local and national codes. It is good practice and sometimes mandatory, to display suitable signs warning that the machine has two separate electrical supplies which both must be isolated before any work is attempted.

Alternately it can be supplied from the 110V tapping of the control transformer and connected as shown on schematic wiring diagram.

7.0 INSTALLATION

⚠ CAUTION

VERY IMPORTANT

Supply voltage must be kept to a maximum imbalance of 2% on 50Hz and 3% on 60Hz applications. Voltage imbalances greater than these levels can cause permanent damage to the drive.

Compressor must not be subjected to any voltage spikes or surges in excess of 575V. Exposure to spikes/surges in excess of 575V can permanently damage the drive. If the possibility of such exists it is recommended that adequate surge protection is fitted such as an Ingersoll–Rand line reactor. See your local Ingersoll–Rand representative.

Failure of the drive due to voltage spikes, line notching, harmonics or other power quality related problems, will not be covered by the standard compressor warranty.

The correct type and rating of line input fuse MUST BE fitted onto the customers isolator or breaker close to the compressor. For Amp rating see technical information in Section 8.1.

⚠ CAUTION

This procedure should only be carried out by a qualified electrician, electrical contractor or your local Ingersoll–Rand Distributor or Air Centre.

The compressor installation must be properly installed in accordance with recognized Local and National electrical equipment installation codes and any other related local Health and Safety Codes.

The compressor input power supply (branch circuit) protection shall be made by utilizing an Isolator switch (Disconnect switch). The input power supply branch circuit **shall only be protected using “FAST ACTING (FAST BLOWING)” fuses** as defined below, and NOT using “Time Delay” (slow acting or dual element type) fuses.

Fuse Type ^{1,2}	Fuse Selection Criteria ³
<p>Class – J, Class – T, or Semiconductor fuses</p> <p>Note:</p> <ol style="list-style-type: none"> Fuse must be Fast acting, current limiting with interrupt rating of 200,000 amps RMS SYM Alternate fuse type may be used if the time vs. current characteristics are faster than fuse types recommended 	<p>Fuse size \geq 150% Total Package Amps ⁴ Fuse size \leq 175% Total Package Amps ⁴</p> <p>Note:</p> <ol style="list-style-type: none"> This is only a recommendation and installer must follow local and/or national codes prior to installation Total package current (amps) can be obtained from IR Sales Library (Engineering data sheets) for any pre–install inquiries, and from actual Compressor Nameplate (contact your local IR Distributor for more information)

CIRCUIT BREAKERS are NOT recommended for branch circuit protection, due to their slow response, resulting into inadequate protection in event of a fault.

Example of voltage imbalance calculation

$$U \rightarrow V \quad 462\text{v}$$

$$V \rightarrow W \quad 459\text{v}$$

$$W \rightarrow U \quad 453\text{v}$$

$$V(m) = (462 + 459 + 453) / 3 = 458\text{v}$$

$$V\Delta \text{ max} = 462 - 453 = 9\text{v}$$

$$\therefore = (9 / 458) \times 100 = 1.97\%$$

7.0 INSTALLATION

7.4 WATERCOOLED UNITS

Cooling Water Piping

Water piping to and from the compressor package must be at least the size of the water connections on the machine. Refer to the installation drawing section for this size. Isolation valves with side drains should be installed on both the inlet and outlet lines. Also a strainer of 2mm-mesh size should be installed on the inlet line. Strainers are available from Ingersoll-Rand. The strainers will connect to the water manifold on all units, but also requires a pipe nipple. The list below shows the required parts for each unit.

IRN37-45K-OF & IRN50-60H-OF:

Strainer – CCN 39157433

Nipple – CCN 95946117

IRN55-75K-OF & IRN75-100H-OF:

Strainer – CCN 39116389

Nipple – CCN 95928032

IRN90-160K-OF & IRN125-200H-OF:

Strainer – CCN 39116397

Nipple – CCN 95960662

Note: KW rated units will be supplied with an NPT to BSPT adaptor

Carefully inspect your water system before installing the compressor package. Ensure that the piping is free of scale and deposits that may restrict water flow to the compressor package.

Proper operation of your compressor requires that the water flow listed in Section 8.1 be provided at a maximum supply temperature of 46°C (115°F).

Water temperature and pressure gauges should be installed in the water piping for use in any fault finding of the water system. Water pressure should ideally be between 3 and 5 bar (43.5 and 72.5 psi) but must not be above 10 Bar (145 psi)

Water cleanliness is also extremely important. Cleaning of coolers as a result of fouling is a customer responsibility. Therefore, it is highly recommended that proper water quality must meet the requirements listed in WATER QUALITY RECOMMENDATIONS later in this section.

Venting the water system

At the initial installation or for start-up after draining the water system proceed to vent the system as follows.

- 1 Locate the water system vent cocks on top of the intercooler, aftercooler, and oil cooler.
- 2 Open the water valve(s) allowing water to flow to the package.
- 3 Open the vent cocks and allow all air to escape from the system. When water is observed at the vent cocks, close them.

The system is now vented.

Draining the water system

Should it become necessary to completely drain the water system, proceed as follows.

- 1 Disconnect the inlet and discharge water lines from the connections located at the rear of the unit.
- 2 Locate the intercooler, aftercooler, and oil coolers. Disconnect the water inlet connections to drain each cooler. Also, drain any piping between the coolers and the water shut off solenoid valve (it is normally closed).

7.0 INSTALLATION

Water quality recommendations

Water quality is often overlooked when the cooling system of a water-cooled air compressor is examined. Water quality determines how effective the heat transfer rate, as well as the flow rate will remain during the life of the unit. It should be noted that the quality of water used in any cooling system does not remain constant during the operation of the system. Evaporation, corrosion, chemical and temperature changes, aeration, scale and biological formations effect the water makeup. Most problems in a cooling system show up first in a reduction in the heat transfer rate, then in a reduced flow rate and finally with damage to the system.

Scale: Scale formation inhibits effective heat transfer, yet it does help prevent corrosion. Therefore, a thin uniform coating of calcium carbonate is desired on the inner surface. Perhaps the largest contributor to scale formation is the precipitation of calcium carbonate out of the water. This is dependent on temperature and pH. The higher the pH value, the greater the chance of scale formation. Scale can be controlled with water treatment.

Corrosion: In contrast to scale formation is the problem of corrosion. Chlorides cause problems because of their size and conductivity. Low pH levels promote corrosion, as well as high levels of dissolved oxygen.

Fouling: Biological and organic substances (slime) can also cause problems, but in elevated temperature environments such as cooling processes they are not a major concern. If they create problems with clogging, commercial shock treatment are available.

To ensure good operation life and performance of the compressor cooling system, the recommended acceptable ranges for different water constituents are included below:

Cooling Water Analysis Chart

Substances	Test interval	Acceptable concentration
Corrosivity (Hardness, pH, Total Dissolved Solids, Temperature at inlet Alkalinity)	Monthly — if stable for 3 to 4 months, analyse quarterly.	Langelier Index 0 to 1
Iron	Monthly	<2 ppm
Sulphate	Monthly	<50 ppm
Chloride	Monthly	<50 ppm
Nitrate	Monthly	<2 ppm
Silica	Monthly	< 100 ppm
Desolated Oxygen	Daily — if stable, analyse weekly	0 ppm (as low as possible)
Oil & Grease	Monthly	<5 ppm
Ammonia	Monthly	<1 ppm

7.0 INSTALLATION

7.6 OUTDOOR SHELTERED INSTALLATION

Nirvana compressors are not suitable for outdoor installation.

Installing a Nirvana compressor outside voids the warranty of the compressor.

8.0 GENERAL INFORMATION

8.1 TECHNICAL INFORMATION

	N37K	N45K	N50H	N60H
General				
Sound pressure level dB(A) – AC ⁽³⁾	65–74	65–74	65–74	65–74
Sound pressure level dB(A) – WC ⁽³⁾	63–69	63–69	63–69	63–69
Maximum ambient temperature °C (°F)	46 (115)	46 (115)	46 (115)	46 (115)
Minimum ambient temperature °C (°F)	1.7 (35)	1.7 (35)	1.7 (35)	1.7 (35)
Weight Kg (lbs) – AC	3482	3482	3482	3482
Weight Kg (lbs) – WC	3580	3580	3580	3580
Maximum pressure barg (psig)	10.3 (150)	10.3 (150)	10.3 (150)	10.3 (150)
Minimum pressure barg (psig)	4.5 (65)	4.5 (65)	4.5 (65)	4.5 (65)
Coolant capacity litres (US gal)	53 (14)	53 (14)	53 (14)	53 (14)
Performance⁽¹⁾				
Flow at 7.5 Barg (m ³ /min)	5.5	6.5	5.5	6.5
Flow at 8.5 Barg (m ³ /min)	5.1	6.2	5.1	6.2
Flow at 10 Barg (m ³ /min)	4.6	5.7	4.6	5.7
Flow at 100 psig (cfm)	200	237	200	237
Flow at 125 psig (cfm)	179	219	179	219
Flow at 150 psig (cfm)	159	198	159	198
Air Cooling System				
Cooling air flow m ³ /min (cfm)	184 (6500)	184 (6500)	184 (6500)	184 (6500)
Maximum ΔP in air ducts Pa (inch WG)	124 (0.5)	124 (0.5)	124 (0.5)	124 (0.5)
Compressed air outlet ΔT °C (°F) ⁽²⁾	11 (20)	11 (20)	11 (20)	11 (20)
Water Cooling System				
Cooling (clean) water flow l/min (US gallon/min)	53 (14)	64 (17)	53 (14)	64 (17)
Cooling air flow m ³ /min (cfm)	76 (2700)	76 (2700)	76 (2700)	76 (2700)
Maximum ΔP in air ducts Pa (inch WG)	125 (0.5)	125 (0.5)	125 (0.5)	125 (0.5)
Compressed air outlet ΔT °C (°F) ⁽²⁾	8 (15)	8 (15)	8 (15)	8 (15)
Main Power Circuit AC (WC)				
Package full load current at 200V (A) ⁽¹⁾	150 (145)	179 (173)	150 (145)	179 (173)
Package full load current at 220V (A) ⁽¹⁾	137 (132)	162 (157)	137 (132)	162 (157)
Package full load current at 230V (A) ⁽¹⁾	131 (126)	155 (151)	131 (126)	155 (151)
Package full load current at 380V (A) ⁽¹⁾	79 (76)	94 (91)	79 (76)	94 (91)
Package full load current at 415V (A) ⁽¹⁾	72 (70)	86 (83)	72 (70)	86 (83)
Package full load current at 460V (A) ⁽¹⁾	65 (63)	78 (75)	65 (63)	78 (75)
Package full load current at 575V (A) ⁽¹⁾	52 (50)	62 (60)	52 (50)	62 (60)
Fuse type ⁽⁴⁾	Fast acting class J, T or semiconductor type, current limiting interrupt rating 200, 000 Amps RMS SYM.			
Heater Circuit				
110V Single Phase Rating (A)	0.4	0.4	0.4	0.4
230V Single Phase Rating (A)	0.2	0.2	0.2	0.2
Fuse type	General purpose			

(1) FAD (Free Air Delivery) is actual flow rate at the compressor inlet measured at the discharge terminal point of the package in accordance with ISO1217 Annex C.

(2) CTD (Cold Temperature Difference) based on 100°F/38°C inlet air at 40% relative humidity.

(3) Sound levels are “free field conditions” per Pneurop PN8NTC2.3, +/- 3dB(A).

(4) Always apply local electrical codes for sizing cables and fusing. In the absence of local codes the minimum cable size should be calculated on basis of mean package full load current X1.25 (i.e. 25% margin)

8.0 GENERAL INFORMATION

	N75H	N100H	N55K	N75K
General				
Sound pressure level dB(A) – AC ⁽³⁾	73–84	73–84	73–84	73–84
Sound pressure level dB(A) – WC ⁽³⁾	73–84	73–84	73–84	73–84
Maximum ambient temperature °C (°F)	46 (115)	46 (115)	46 (115)	46 (115)
Minimum ambient temperature °C (°F)	2 (35)	2 (35)	2 (35)	2 (35)
Weight Kg (lbs)	2041 (4500)	2041 (4500)	2041 (4500)	2041 (4500)
Maximum pressure barg (psig)	10.7 (155)	10.7 (155)	10.7 (155)	10.7 (155)
Minimum pressure barg (psig)	4.5 (65)	4.5 (65)	4.5 (65)	4.5 (65)
Coolant capacity litres (US gal)	53 (14)	53 (14)	53 (14)	53 (14)
Performance ⁽¹⁾				
Flow at 7.5 Barg (m ³ /min)	–	–	12.9	16.1
Flow at 8.5 Barg (m ³ /min)	–	–	12.9	16.1
Flow at 10 Barg (m ³ /min)	–	–	7.6	10.4
Flow at 100 psig (cfm)	331	435	–	–
Flow at 125 psig (cfm)	299	400	–	–
Flow at 150 psig (cfm)	269	368	–	–
Air Cooling System				
Cooling air flow m ³ /min (cfm)	241 (8500)	241 (8500)	241 (8500)	241 (8500)
Maximum ΔP in air ducts Pa (inch WG)	125 (0.5)	125 (0.5)	125 (0.5)	125 (0.5)
Compressed air outlet ΔT °C (°F) ⁽²⁾	11 (20)	11 (20)	11 (20)	11 (20)
Water Cooling System				
Cooling (clean) water flow l/min (US gallon/min)	71.9 (19)	90.8 (24)	71.9 (19)	90.8 (24)
Cooling air flow m ³ /min (cfm)	76 (2700)	76 (2700)	76 (2700)	76 (2700)
Maximum ΔP in air ducts Pa (inch WG)	125 (0.5)	125 (0.5)	125 (0.5)	125 (0.5)
Compressed air outlet ΔT °C (°F) ⁽²⁾	8 (15)	8 (15)	8 (15)	8 (15)
Main Power Circuit AC (WC)				
Package full load current at 380V (A) ⁽¹⁾	122 (117)	161 (157)	122 (117)	161 (157)
Package full load current at 415V (A) ⁽¹⁾	111 (107)	147 (143)	111 (107)	147 (143)
Package full load current at 460V (A) ⁽¹⁾	100 (96)	132 (129)	100 (96)	132 (129)
Package full load current at 575V (A) ⁽¹⁾	79 (77)	105 (103)	79 (77)	105 (103)
Fuse type ⁽⁴⁾	Fast acting class J, T or semiconductor type, current limiting interrupt rating 200, 000 Amps RMS SYM.			
Heater Circuit				
110V Single Phase Rating (A)	0.4	0.4	0.4	0.4
230V Single Phase Rating (A)	0.2	0.2	0.2	0.2
Fuse type	General purpose			

⁽¹⁾ FAD (Free Air Delivery) is actual flow rate at the compressor inlet measured at the discharge terminal point of the package in accordance with ISO1217 Annex C.

⁽²⁾ CTD (Cold Temperature Difference) based on 100°F/38°C inlet air at 40% relative humidity.

⁽³⁾ Sound levels are “free field conditions” per Pneurop PN8NTC2.3, +/- 3dB(A).

⁽⁴⁾ Always apply local electrical codes for sizing cables and fusing. In the absence of local codes the minimum cable size should be calculated on basis of mean package full load current X1.25 (i.e. 25% margin)

8.0 GENERAL INFORMATION

	N90K	N110K	N132K	N160K
General				
Sound pressure level dB(A) – AC ⁽³⁾	72–79	72–79	72–79	72–79
Sound pressure level dB(A) – WC ⁽³⁾	69–73	69–73	69–78	69–78
Maximum ambient temperature °C (°F)	46 (115)	46 (115)	46 (115)	46 (115)
Minimum ambient temperature °C (°F)	1.7 (35)	1.7 (35)	1.7 (35)	1.7 (35)
Weight Kg (lbs)	7088	7088	7088	7088
Maximum pressure barg (psig)	10.3 (150)	10.3 (150)	10.3 (150)	10.3 (150)
Minimum pressure barg (psig)	4.5 (65)	4.5 (65)	4.5 (65)	4.5 (65)
Coolant capacity litres (US gal)	64.4 (17)	64.4 (17)	64.4 (17)	64.4 (17)
Performance ⁽¹⁾				
Flow at 7.5 Barg (m ³ /min)	14.8	18.2	21.6	25.2
Flow at 8.5 Barg (m ³ /min)	13.9	17.2	20.6	24.5
Flow at 10 Barg (m ³ /min)	12.4	15.7	19.0	23.1
Flow at 100 psig (cfm)	545	664	787	903
Flow at 125 psig (cfm)	486	604	722	862
Flow at 150 psig (cfm)	426	543	658	805
Air Cooling System				
Cooling air flow m ³ /min (cfm)	411 (14500)	411 (14500)	411 (14500)	411 (14500)
Maximum ΔP in air ducts Pa (inch WG)	124 (0.5)	124 (0.5)	124 (0.5)	124 (0.5)
Compressed air outlet ΔT °C (°F) ⁽²⁾	11 (20)	11 (20)	11 (20)	11 (20)
Water Cooling System				
Cooling (clean) water flow l/min (US gallon/min)	125 (33)	144 (38)	182 (48)	193 (51)
Cooling air flow m ³ /min (cfm)	113 (4000)	113 (4000)	113 (4000)	113 (4000)
Maximum ΔP in air ducts Pa (inch WG)	62 (0.25)	62 (0.25)	62 (0.25)	62 (0.25)
Compressed air outlet ΔT °C (°F) ⁽²⁾	8 (15)	8 (15)	8 (15)	8 (15)
Main Power Circuit AC (WC)				
Package full load current at 380V (A) ⁽¹⁾	193 (188)	232 (222)	271 (262)	324 (314)
Package full load current at 415V (A) ⁽¹⁾	183 (179)	221 (211)	257 (249)	308 (298)
Package full load current at 460V (A) ⁽¹⁾	159 (156)	192 (184)	224 (216)	268 (259)
Package full load current at 575V (A) ⁽¹⁾	127 (124)	154 (147)	179 (173)	214 (207)
Fuse type ⁽⁴⁾	Fast acting class J, T or semiconductor type, current limiting interrupt rating 200, 000 Amps RMS SYM.			
Heater Circuit				
110V Single Phase Rating (A)	1.2	1.2	1.2	1.2
230V Single Phase Rating (A)	0.6	0.6	0.6	0.6
Fuse type	General purpose			

⁽¹⁾ FAD (Free Air Delivery) is actual flow rate at the compressor inlet measured at the discharge terminal point of the package in accordance with ISO1217 Annex C.

⁽²⁾ CTD (Cold Temperature Difference) based on 100°F/38°C inlet air at 40% relative humidity.

⁽³⁾ Sound levels are “free field conditions” per Pneurop PN8NTC2.3, +/- 3dB(A).

⁽⁴⁾ Always apply local electrical codes for sizing cables and fusing. In the absence of local codes the minimum cable size should be calculated on basis of mean package full load current X1.25 (i.e. 25% margin)

8.0 GENERAL INFORMATION

	N125H	N150H	N200H
General			
Sound pressure level dB(A) – AC ⁽³⁾	72–79	72–79	72–79
Sound pressure level dB(A) – WC ⁽³⁾	69–73	69–73	69–78
Maximum ambient temperature °C (°F)	46 (115)	46 (115)	46 (115)
Minimum ambient temperature °C (°F)	1.7 (35)	1.7 (35)	1.7 (35)
Weight Kg (lbs)	7088	7088	7088
Maximum pressure barg (psig)	10.3 (150)	10.3 (150)	10.3 (150)
Minimum pressure barg (psig)	4.5 (65)	4.5 (65)	4.5 (65)
Coolant capacity litres (US gal)	64.4 (17)	64.4 (17)	64.4 (17)
Performance ⁽¹⁾			
Flow at 7.5 Barg (m ³ /min)	15.4	18.5	24.3
Flow at 8.5 Barg (m ³ /min)	14.4	17.5	23.2
Flow at 10 Barg (m ³ /min)	12.9	16.1	21.6
Flow at 100 psig (cfm)	563	676	881
Flow at 125 psig (cfm)	504	616	816
Flow at 150 psig (cfm)	444	555	751
Air Cooling System			
Cooling air flow m ³ /min (cfm)	411 (14500)	411 (14500)	411 (14500)
Maximum ΔP in air ducts Pa (inch WG)	124 (0.5)	124 (0.5)	124 (0.5)
Compressed air outlet ΔT °C (°F) ⁽²⁾	11 (20)	11 (20)	11 (20)
Water Cooling System			
Cooling (clean) water flow l/min (US gallon/min)	125 (33)	144 (38)	182 (48)
Cooling air flow m ³ /min (cfm)	113 (4000)	113 (4000)	113 (4000)
Maximum ΔP in air ducts Pa (inch WG)	62 (0.25)	62 (0.25)	62 (0.25)
Compressed air outlet ΔT °C (°F) ⁽²⁾	8 (15)	8 (15)	8 (15)
Main Power Circuit AC (WC)			
Package full load current at 400V (A) ⁽¹⁾	198 (194)	231 (227)	297 (294)
Package full load current at 460V (A) ⁽¹⁾	164 (160)	191 (188)	245 (243)
Package full load current at 575V (A) ⁽¹⁾	131 (128)	153 (150)	196 (194)
Fuse type ⁽⁴⁾	Fast acting class J, T or semiconductor type, current limiting interrupt rating 200, 000 Amps RMS SYM.		
Heater Circuit			
110V Single Phase Rating (A)	1.2	1.2	1.2
230V Single Phase Rating (A)	0.6	0.6	0.6
Fuse type	General purpose		

⁽¹⁾ FAD (Free Air Delivery) is actual flow rate at the compressor inlet measured at the discharge terminal point of the package in accordance with ISO1217 Annex C.

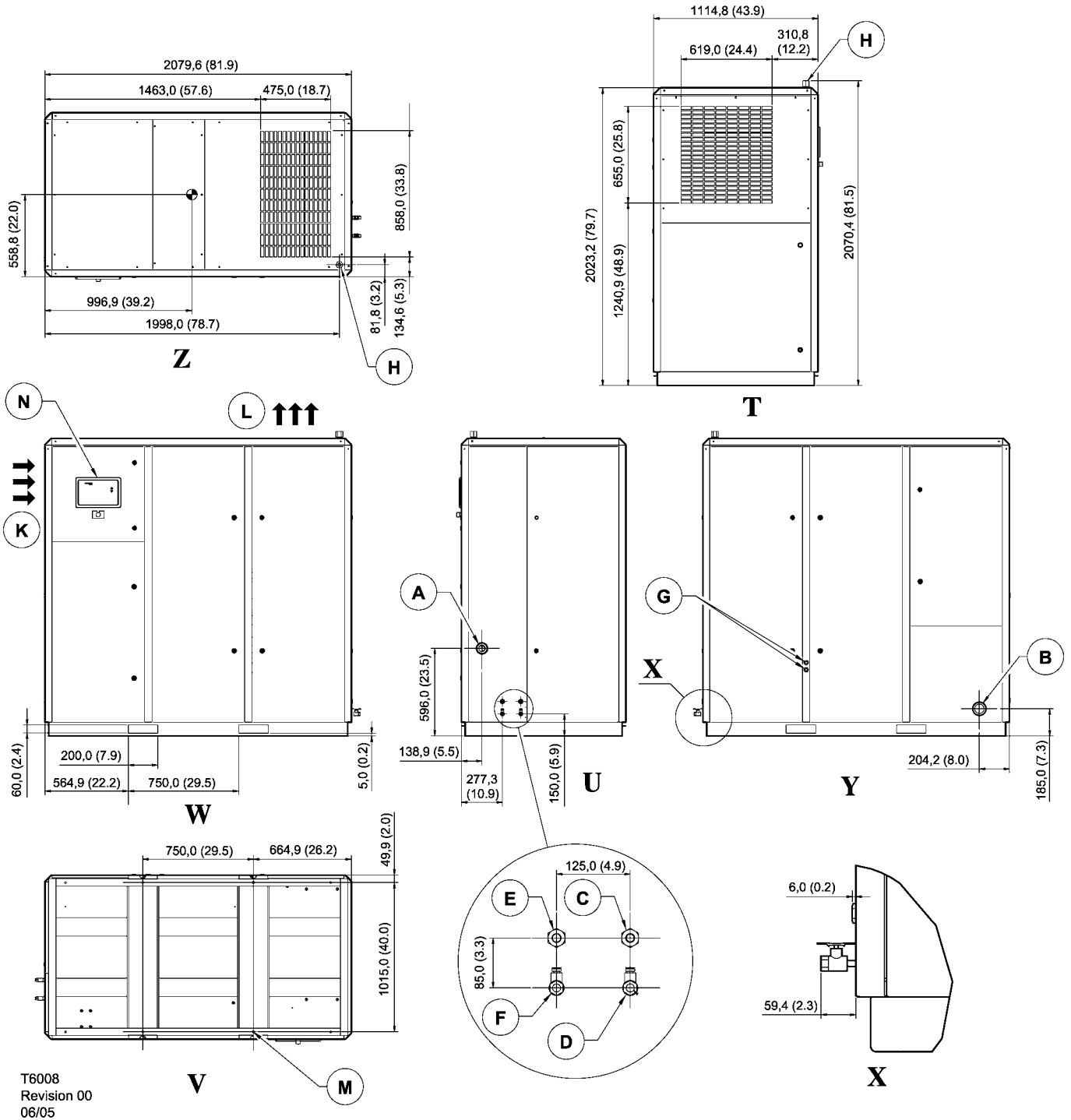
⁽²⁾ CTD (Cold Temperature Difference) based on 100°F/38°C inlet air at 40% relative humidity.

⁽³⁾ Sound levels are “free field conditions” per Pneurop PN8NTC2.3, +/- 3dB(A).

⁽⁴⁾ Always apply local electrical codes for sizing cables and fusing. In the absence of local codes the minimum cable size should be calculated on basis of mean package full load current X1.25 (i.e. 25% margin)

8.0 GENERAL INFORMATION

8.2 INSTALLATION DRAWING – N37/45k OIL FREE AIR COOLED




8.0 GENERAL INFORMATION

KEY

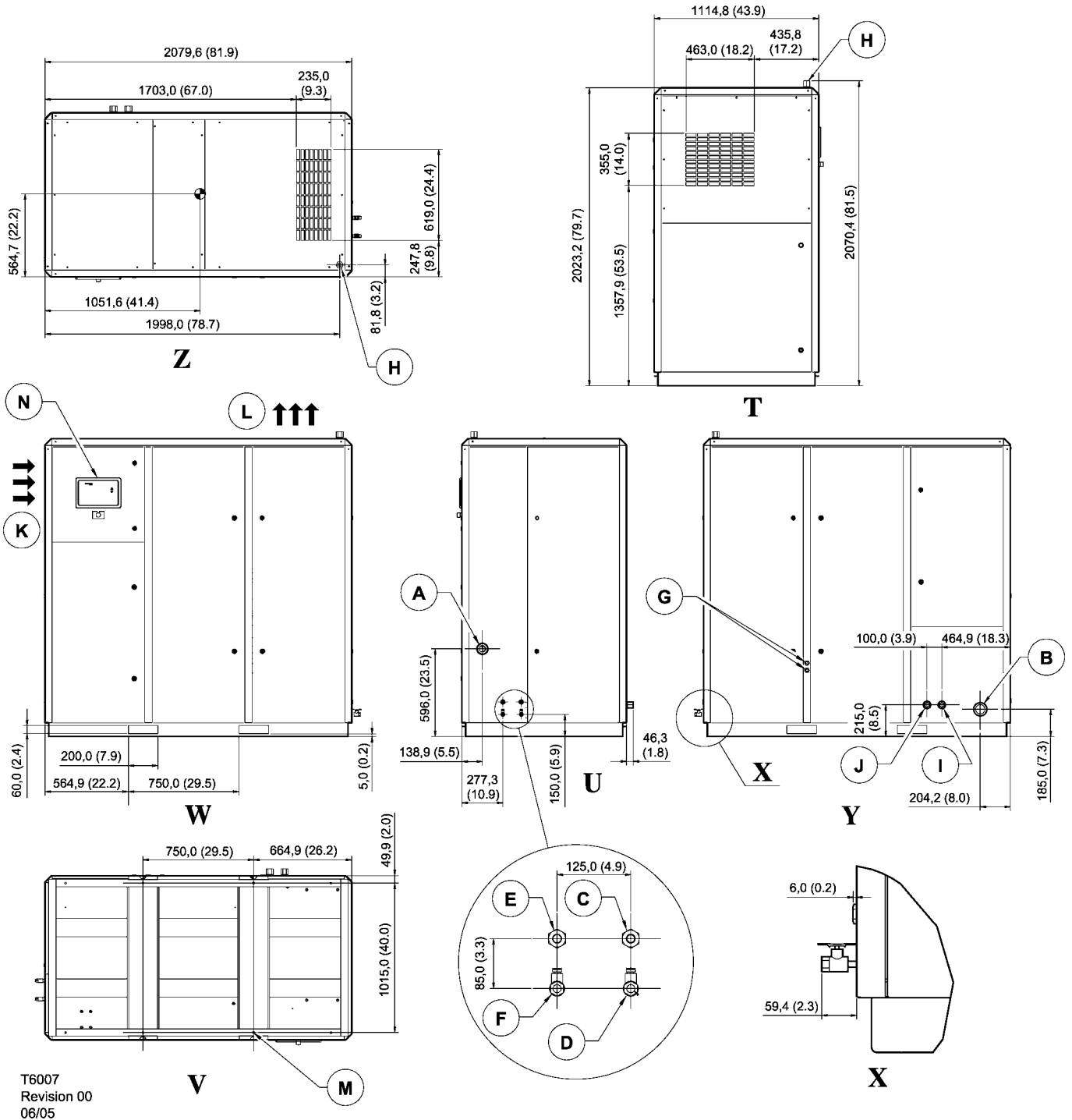
- A** Air discharge
1.5" N.P.T. – 60Hz
1.5" B.S.P.T. – 50Hz
- B** Power inlet location for conduit
Ø 63mm (2.48")
- C** Aftercooler solenoid condensate drain
0.38" N.P.T. – 60Hz
0.38" B.S.P.T. – 50Hz
- D** Aftercooler manual condensate drain
0.38" N.P.T. – 60Hz
0.38" B.S.P.T. – 50Hz
- E** Intercooler solenoid condensate drain
0.38" N.P.T. – 60Hz
0.38" B.S.P.T. – 50Hz
- F** Intercooler manual condensate drain
0.38" N.P.T. – 60Hz
0.38" B.S.P.T. – 50Hz
- G** Seal vent opening – do not plug
- H** Breather piping connection
1" N.P.T. – 60Hz
1" B.S.P.T. – 50Hz
- K** Air intake
- L** Cooling air exhaust
- M** 4 x Ø13.00mm (0.5")
- N** Controller, INTELLISYS
- T** Left hand
- U** Right hand
- V** Bottom
- W** Front
- X** Detail
- Y** Rear
- Z** Plan view

Notes:

- 1 Weight approximate: 1579 kg (3482 lbs)
- 2 Cooling air flow: 184 m³/min – 6500 CFM.
- 3 Pipe condensate drain lines separately to an open drain due to difference in drain pressures. Check local regulations.
- 4 Lube oil fill quantity: 53 litres (14 US gallons) approximately.
- 5 All dimensions in millimeters (inches).
- 6 Tolerance on all dimensions: ±6 mm (± .25 inch).
- 7 Recommended clearance on three sides 915mm (36 inches). Side with electrical box 1067mm (42 inches) or minimum as required by latest national electrical code or applicable local codes.
- 8 External piping shall not exert any unresolved moments or forces on unit. Use pipe size as large or larger at discharge location.
- 9 There should be no plastic or PVC piping attached to this unit or used for any lines downstream.
- 10 Remove the three isolation mount restraints before the initial start. The restraints can be discarded.
- 11 Field installed ducting to and from compressor cannot add more than 12mm (0.5 inches) of water total air resistance. Gear box breather must be piped external.
- 12 Unit has internal discharge check valve. External check valve not required. Isolation valve is required within 915mm (36 inches) of the compressor discharge.
- 13 Compressor should be bolted to the floor with four M12 (0.50 inch) bolts located as shown. Seal base to floor with cork or rubber.
- 14 Do not pipe into a common header with a reciprocating compressor, unless reciprocating compressor utilizes a discharge pulsation dampener.
- 15  Denotes center of gravity.
- 16 Sizing of electrical components not supplied by Ingersoll–Rand is the responsibility of the customer and should be done in accordance with the information on the compressor data plate, National and local electrical codes.
- 17 A 63mm (2.48 inches) diameter electrical power inlet connection hole is provided in side of electrical box as indicated. Size and positioning can be changed by customer in accordance with note 16.
- 18 When installed indoors or under a shelter, the cooling air inlet or exhaust must be ducted away from the unit to prevent recirculation of hot exhaust air.
- 19 The 550–575 volt option requires an externally mounted transformer. The Transformer General Arrangement is I–R part number 22585103.


8.0 GENERAL INFORMATION

8.2 INSTALLATION DRAWING – N37/45k OIL FREE WATER COOLED



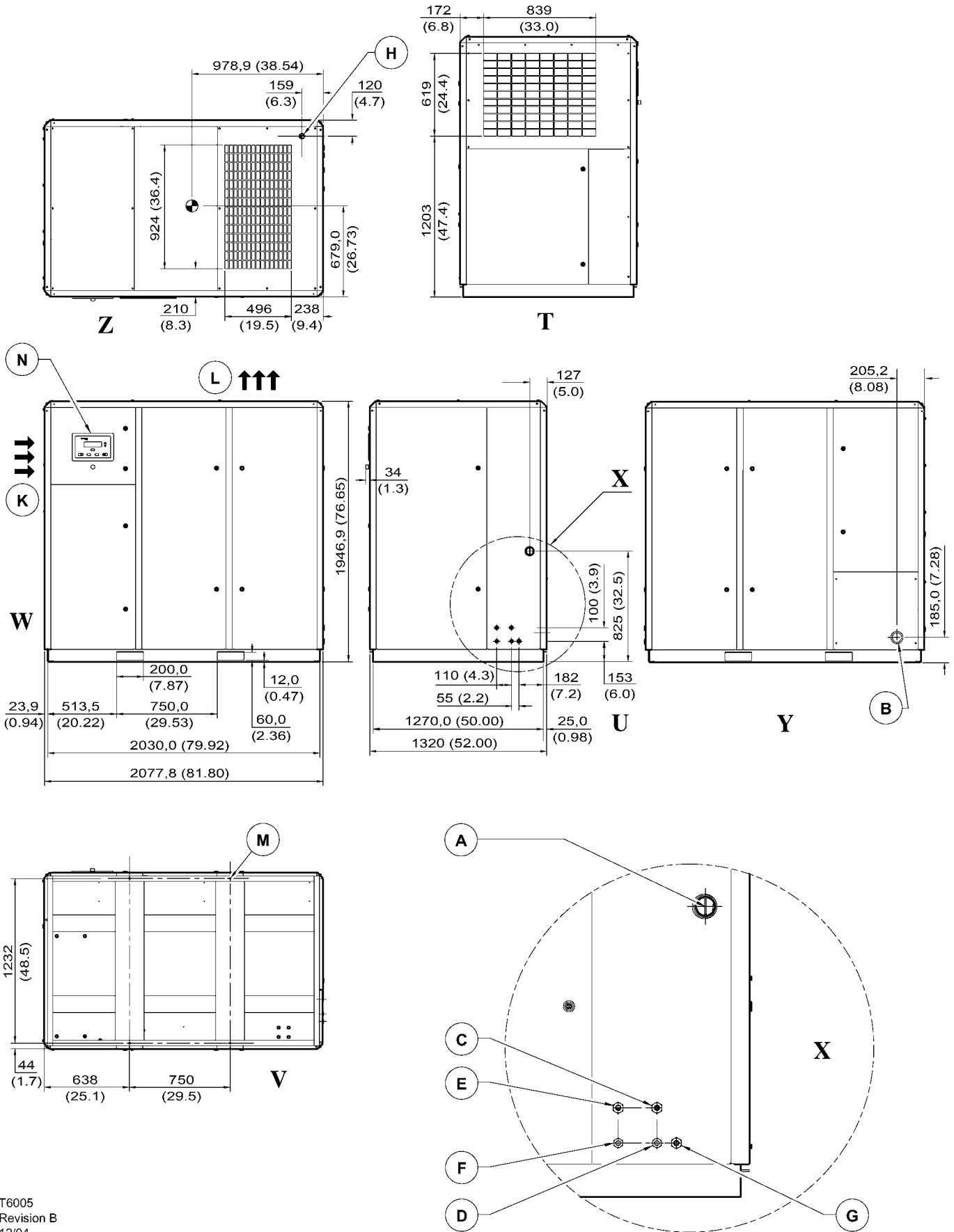
8.0 GENERAL INFORMATION

KEY

- A** Air discharge
1.5" N.P.T. – 60Hz
1.5" B.S.P.T. – 50Hz
- B** Power inlet location for conduit
Ø 63mm (2.48")
- C** Aftercooler solenoid condensate drain
0.38" N.P.T. – 60Hz
0.38" B.S.P.T. – 50Hz
- D** Aftercooler manual condensate drain
0.38" N.P.T. – 60Hz
0.38" B.S.P.T. – 50Hz
- E** Intercooler solenoid condensate drain
0.38" N.P.T. – 60Hz
0.38" B.S.P.T. – 50Hz
- F** Intercooler manual condensate drain
0.38" N.P.T. – 60Hz
0.38" B.S.P.T. – 50Hz
- G** Seal vent opening – do not plug
- H** Breather piping connection
1" N.P.T. – 60Hz
1" B.S.P.T. – 50Hz
- I** Water cooled in
1" N.P.T. – 60Hz
1" B.S.P.T. – 50Hz
- J** Water cooled out
1" N.P.T. – 60Hz
1" B.S.P.T. – 50Hz
- K** Air intake
- L** Cooling air exhaust
- M** 4 x Ø13.00mm (0.51")
- N** Controller, INTELLISYS
- T** Left hand
- U** Right hand
- V** Bottom
- W** Front
- X** Detail
- Y** Rear
- Z** Plan view
- Notes:**
- 1 Weight approximate: 1628 kg (3590 lbs)
 - 2 Cooling air flow: 76,5 m³/min – 2700 CFM.
- 3 Pipe condensate drain lines separately to an open drain due to difference in drain pressures. Check local regulations.
- 4 Lube oil fill quantity: 53 litres (14 US gallons) approximately.
- 5 All dimensions in millimeters (inches).
- 6 Tolerance on all dimensions: ±6 mm (± .25 inch).
- 7 Recommended clearance on three sides 915mm (36 inches). Side with electrical box 1067mm (42 inches) or minimum as required by latest national electrical code or applicable local codes.
- 8 External piping shall not exert any unresolved moments or forces on unit. Use pipe size as large or larger at discharge location.
- 9 There should be no plastic or PVC piping attached to this unit or used for any lines downstream.
- 10 Remove the three isolation mount restraints before the initial start. The restraints can be discarded.
- 11 Field installed ducting to and from compressor cannot add more than 12mm (0.5 inches) of water total air resistance. Gear box breather must be piped external.
- 12 Unit has internal discharge check valve. External check valve not required. Isolation valve is required within 915mm (36 inches) of the compressor discharge.
- 13 Compressor should be bolted to the floor with four M12 (0.50 inch) bolts located as shown. Seal base to floor with cork or rubber.
- 14 Do not pipe into a common header with a reciprocating compressor, unless reciprocating compressor utilizes a discharge pulsation dampener.
- 15  Denotes center of gravity.
- 16 Sizing of electrical components not supplied by Ingersoll–Rand is the responsibility of the customer and should be done in accordance with the information on the compressor data plate, National and local electrical codes.
- 17 A 63mm (2.48 inches) diameter electrical power inlet connection hole is provided in side of electrical box as indicated. Size and positioning can be changed by customer in accordance with note 16.
- 18 When installed indoors or under a shelter, the cooling air inlet or exhaust must be ducted away from the unit to prevent recirculation of hot exhaust air.
- 19 The 550–575 volt option requires an externally mounted transformer. The Transformer General Arrangement is I–R part number 22585103.

8.0 GENERAL INFORMATION

8.2 INSTALLATION DRAWING – N55/75K OIL FREE AIR COOLED




T6005
Revision B
12/04

8.0 GENERAL INFORMATION

KEY

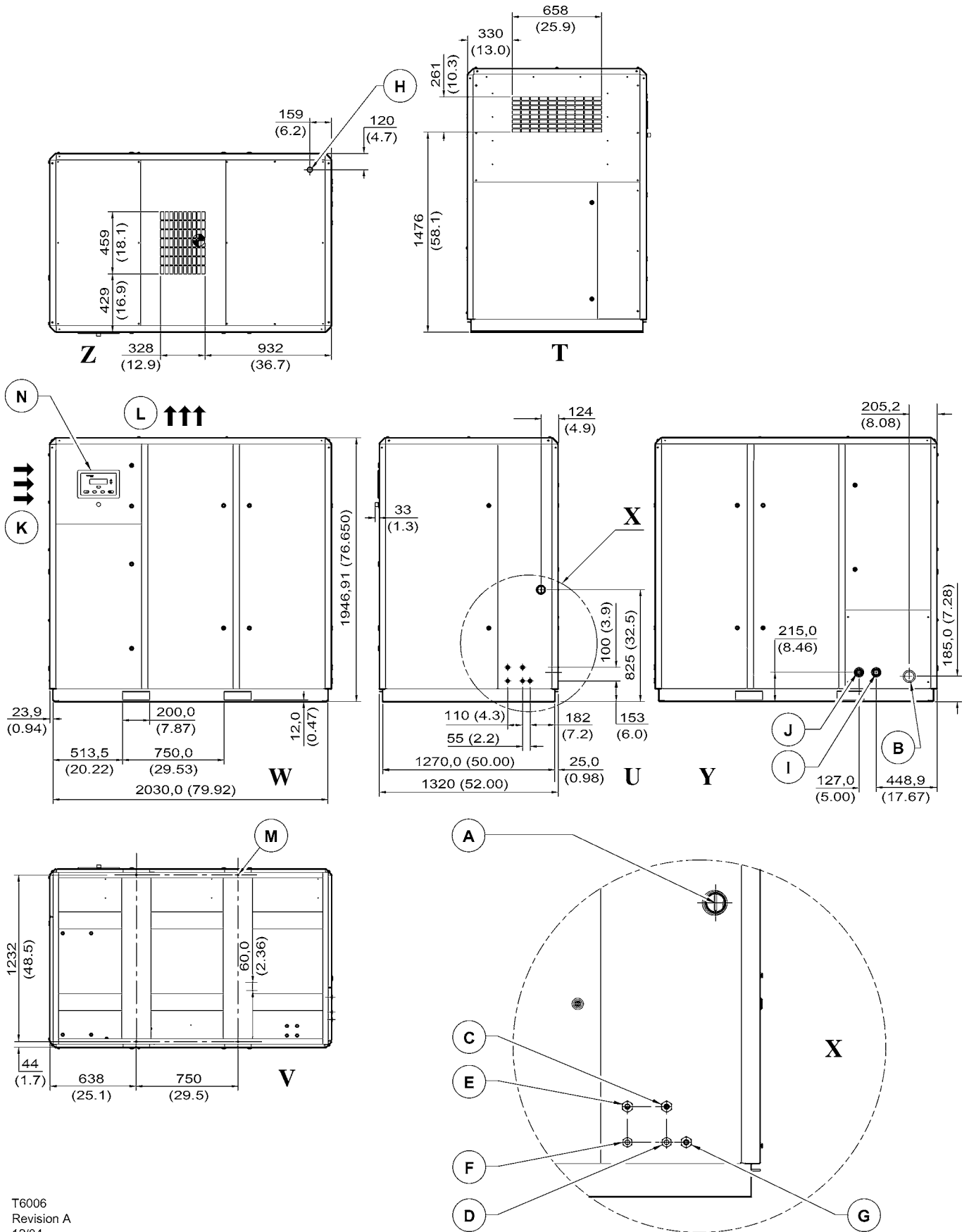
- A** Air discharge
1.5" N.P.T. – 60Hz
1.5" B.S.P.T. – 50Hz
- B** Power inlet location for conduit
Ø 63mm (2.48")
- C** Aftercooler solenoid condensate drain
0.38" N.P.T.
- D** Aftercooler manual condensate drain
0.38" N.P.T.
- E** Intercooler solenoid condensate drain
0.38" N.P.T.
- F** Intercooler manual condensate drain
0.38" N.P.T.
- G** Seal vent opening – do not plug
- H** Breather piping connection
1" N.P.T. – 60Hz
1" B.S.P.T. – 50Hz
- K** Air intake
- L** Cooling air exhaust
- M** 4 x Ø13.00mm (0.51")
- N** Controller, INTELLISYS
- T** Left hand
- U** Right hand
- V** Bottom
- W** Front
- X** Detail
- Y** Rear
- Z** Plan view

Notes:

- 1 Weight approximate: 2042 kg (4500 lbs)
- 2 Cooling air flow: 241 m³/min – 8500 CFM.
- 3 Pipe condensate drain lines separately to an open drain due to difference in drain pressures. Check local regulations.
- 4 Lube oil fill quantity: 53 litres (14 US gallons) approximately.
- 5 All dimensions in millimeters (inches).
- 6 Tolerance on all dimensions: ±6 mm (± .25 inch).
- 7 Recommended clearance on three sides 915mm (36 inches). Side with electrical box 1067mm (42 inches) or minimum as required by latest national electrical code or applicable local codes.
- 8 External piping shall not exert any unresolved moments or forces on unit. Use pipe size as large or larger at discharge location.
- 9 There should be no plastic or PVC piping attached to this unit or used for any lines downstream.
- 10 Remove the isolation mount restraints before the initial start. The two restraints can be discarded.
- 11 Field installed ducting to and from compressor cannot add more than 6mm (0.25 inches) of water total air resistance. Gear box breather must be piped external.
- 12 Unit has internal discharge check valve. External check valve not required. Isolation valve is required within 915mm (36 inches) of the compressor discharge.
- 13 Compressor should be bolted to the floor with four M10 (0.38 inch) bolts located as shown. Seal base to floor with cork or rubber.
- 14 Do not pipe into a common header with a reciprocating compressor, unless reciprocating compressor utilizes a discharge pulsation dampener.
- 15  Denotes center of gravity.
- 16 Sizing of electrical components not supplied by Ingersoll–Rand is the responsibility of the customer and should be done in accordance with the information on the compressor data plate, National and local electrical codes.
- 17 A 63mm (2.48 inches) diameter electrical power inlet connection hole is provided in side of electrical box as indicated. Size and positioning can be changed by customer in accordance with note 16.
- 18 When installed indoors or under a shelter, the cooling air inlet or exhaust must be ducted away from the unit to prevent recirculation of hot exhaust air.
- 19 The 550–575 volt option requires an externally mounted transformer. The Transformer General Arrangement is I–R part number 22585103.
The 200–230 volt option requires an externally mounted transformer. The Transformer General Arrangement is I–R part number 22637581.

8.0 GENERAL INFORMATION

8.2 INSTALLATION DRAWING – N55/75K OIL FREE WATER COOLED



T6006
Revision A
12/04


8.0 GENERAL INFORMATION

KEY

- A** Air discharge
1.5" N.P.T. – 60Hz
1.5" B.S.P.T. – 50Hz
- B** Power inlet location for conduit
Ø 63mm (2.48")
- C** Aftercooler solenoid condensate drain
0.38" N.P.T.
- D** Aftercooler manual condensate drain
0.38" N.P.T.
- E** Intercooler solenoid condensate drain
0.38" N.P.T.
- F** Intercooler manual condensate drain
0.38" N.P.T.
- G** Seal vent opening – do not plug
- H** Breather piping connection
1" N.P.T. – 60Hz
1" B.S.P.T. – 50Hz
- I** Water cooled in
1.5" N.P.T. – 60Hz
1.5" B.S.P.T. – 50Hz
- J** Water cooled out
1.5" N.P.T. – 60Hz
1.5" B.S.P.T. – 50Hz
- K** Air intake
- L** Cooling air exhaust
- M** 4 x Ø13.00mm (0.51")
- N** Controller, INTELLISYS
- T** Left hand
- U** Right hand
- V** Bottom
- W** Front
- X** Detail
- Y** Rear
- Z** Plan view

Notes:

- 1 Weight approximate: 1579 kg (3482 lbs)
- 2 Cooling air flow: 184 m³/min – 6500 CFM.
- 3 Pipe condensate drain lines separately to an open drain due to difference in drain pressures. Check local regulations.
- 4 Lube oil fill quantity: 53 litres (14 US gallons) approximately.

- 5 All dimensions in millimeters (inches).
- 6 Tolerance on all dimensions: ±6 mm (± .25 inch).
- 7 Recommended clearance on three sides 915mm (36 inches). Side with electrical box 1067mm (42 inches) or minimum as required by latest national electrical code or applicable local codes.
- 8 External piping shall not exert any unresolved moments or forces on unit. Use pipe size as large or larger at discharge location.
- 9 There should be no plastic or PVC piping attached to this unit or used for any lines downstream.
- 10 Remove the isolation mount restraints before the initial start. The two restraints can be discarded.
- 11 Field installed ducting to and from compressor cannot add more than 6mm (0.25 inches) of water total air resistance. Gear box breather must be piped external.
- 12 Unit has internal discharge check valve. External check valve not required. Isolation valve is required within 915mm (36 inches) of the compressor discharge.
- 13 Compressor should be bolted to the floor with four M10 (0.38 inch) bolts located as shown. Seal base to floor with cork or rubber.
- 14 Do not pipe into a common header with a reciprocating compressor, unless reciprocating compressor utilizes a discharge pulsation dampener.
- 15  Denotes center of gravity.
- 16 Sizing of electrical components not supplied by Ingersoll–Rand is the responsibility of the customer and should be done in accordance with the information on the compressor data plate, National and local electrical codes.
- 17 A 63mm (2.48 inches) diameter electrical power inlet connection hole is provided in side of electrical box as indicated. Size and positioning can be changed by customer in accordance with note 16.

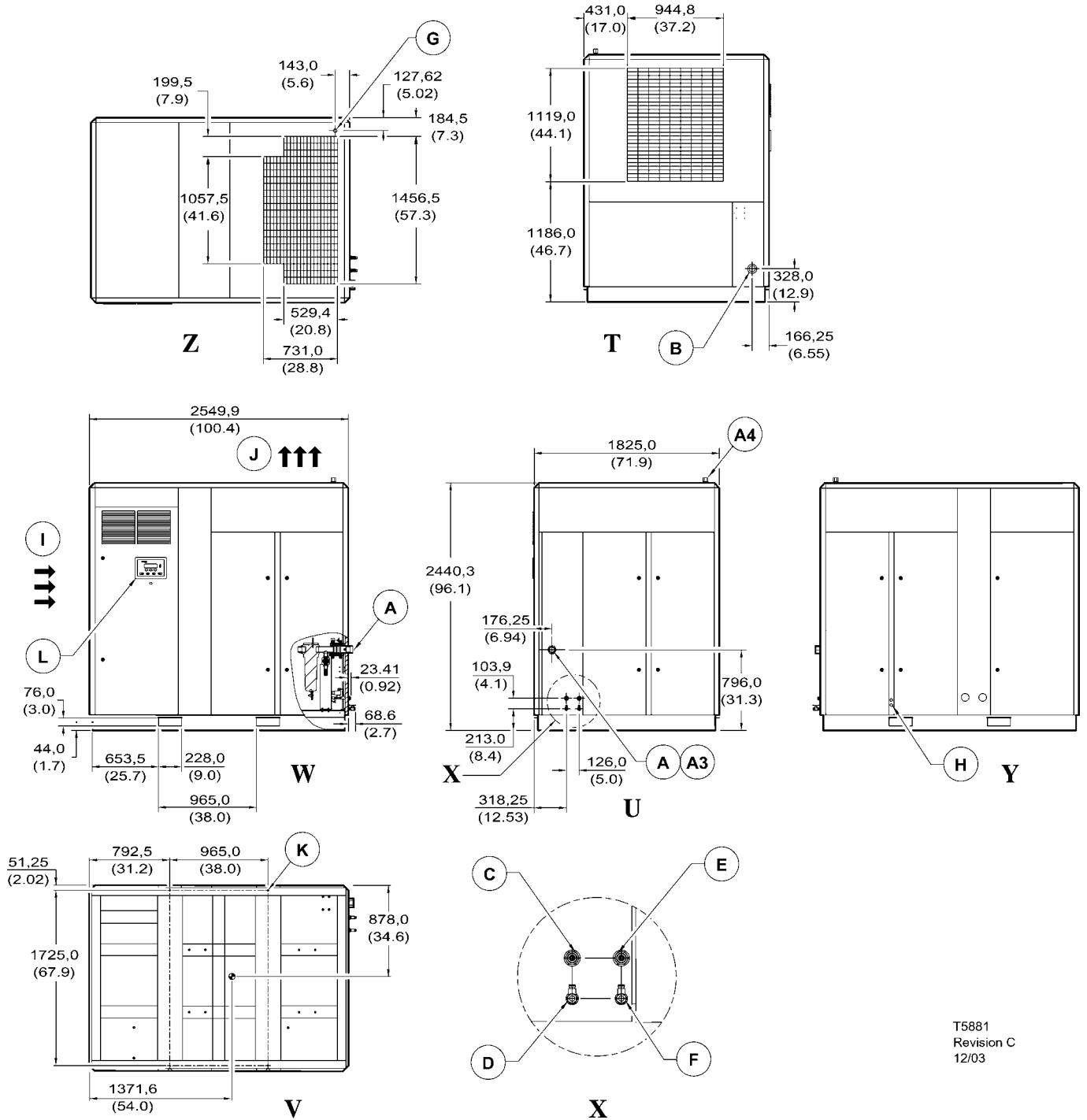
18 When installed indoors or under a shelter, the cooling air inlet or exhaust must be ducted away from the unit to prevent recirculation of hot exhaust air.

19 The 550–575 volt option requires an externally mounted transformer. The Transformer General Arrangement is I–R part number 22585103.

The 200–230 volt option requires an externally mounted transformer. The Transformer General Arrangement is I–R part number 22637581.

8.0 GENERAL INFORMATION

8.2 INSTALLATION DRAWING – N90/160K, N125/200H OIL FREE AIR COOLED




T5881
Revision C
12/03

8.0 GENERAL INFORMATION

KEY

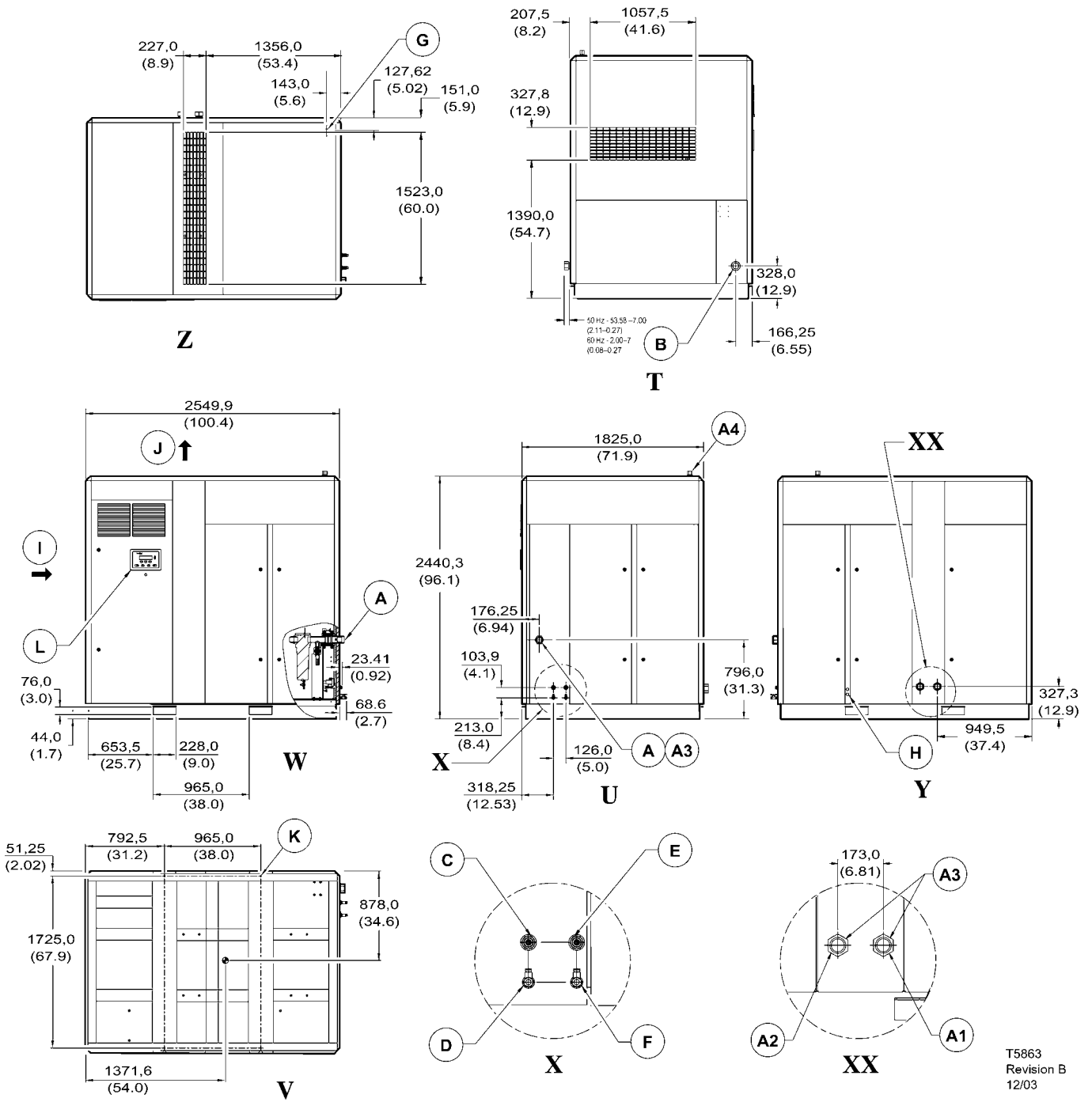
- A** Air discharge
2" N.P.T. – 60Hz
2" B.S.P.T. – 50Hz
- B** Power inlet location for conduit
Ø 75mm (3")
- C** Intercooler solenoid condensate drain
0.38" N.P.T.
- D** Intercooler manual condensate drain
0.25" N.P.T.
- E** Aftercooler solenoid condensate drain
0.38" N.P.T.
- F** Aftercooler manual condensate drain
0.25" N.P.T.
- G** Breather piping connection
1" N.P.T. – 60Hz
1" B.S.P.T. – 50Hz
- H** Seal vent opening – do not plug
- I** Air intake
- J** Cooling air exhaust
- K** 4 x Ø13.00mm (0.51")
- L** Controller, INTELLISYS
- T** Left hand
- U** Right hand
- V** Bottom
- W** Front
- X** Detail
- Y** Rear
- Z** Plan view
- A3** Bushing 2" BSPT 50Hz only (Ship loose)
- A4** Bushing 1" BSPT 50Hz only (Ship loose)

Notes:

- 1 Weight approximate: 3215 kg (7088 lbs)
- 2 Cooling air flow: 411 m³/min – 14500 CFM.
- 3 Pipe condensate drain lines separately to an open drain due to difference in drain pressures. Check local regulations.
- 4 Lube oil fill quantity: 64 litres (17 US gallons) approximately.
- 5 All dimensions in millimeters (inches).
- 6 Tolerance on all dimensions: ±6 mm (± .25 inch).
- 7 Recommended clearance on three sides 915mm (36 inches). Side with electrical box 1067mm (42 inches) or minimum as required by latest national electrical code or applicable local codes.
- 8 External piping shall not exert any unresolved moments or forces on unit. Use pipe size as large or larger at discharge location.
- 9 There should be no plastic or PVC piping attached to this unit or used for any lines downstream.
- 10 Remove the isolation mount restraints before the initial start. The two restraints can be discarded.
- 11 Field installed ducting to and from compressor cannot add more than 12mm (0.5 inches) of water total air resistance. Gear box breather must be piped external.
- 12 Unit has internal discharge check valve. External check valve not required. Isolation valve is required within 915mm (36inches) of the compressor discharge.
- 13 Compressor should be bolted to the floor with four M12 (1/2 inch) bolts located as shown. Seal base to floor with cork or rubber.
- 14 Do not pipe into a common header with a reciprocating compressor, unless reciprocating compressor utilizes a discharge pulsation dampener.
- 15  Denotes center of gravity.
- 16 Sizing of electrical components not supplied by Ingersoll–Rand is the responsibility of the customer and should be done in accordance with the information on the compressor data plate, National and local electrical codes.
- 17 A 75mm (3 inches) diameter electrical power inlet connection hole is provided in side of electrical box as indicated. Size and positioning can be changed by customer in accordance with note 16.
- 18 When installed indoors or under a shelter, the cooling air inlet or exhaust must be ducted away from the unit to prevent recirculation of hot exhaust air.
- 19 The 550–575 volt option requires an externally mounted transformer. The Transformer General Arrangement is I–R part number 22585103.

8.0 GENERAL INFORMATION


8.2 INSTALLATION DRAWING – N90/160K, N125/200H OIL FREE WATER COOLED



T5863
Revision B
12/03

8.0 GENERAL INFORMATION

KEY

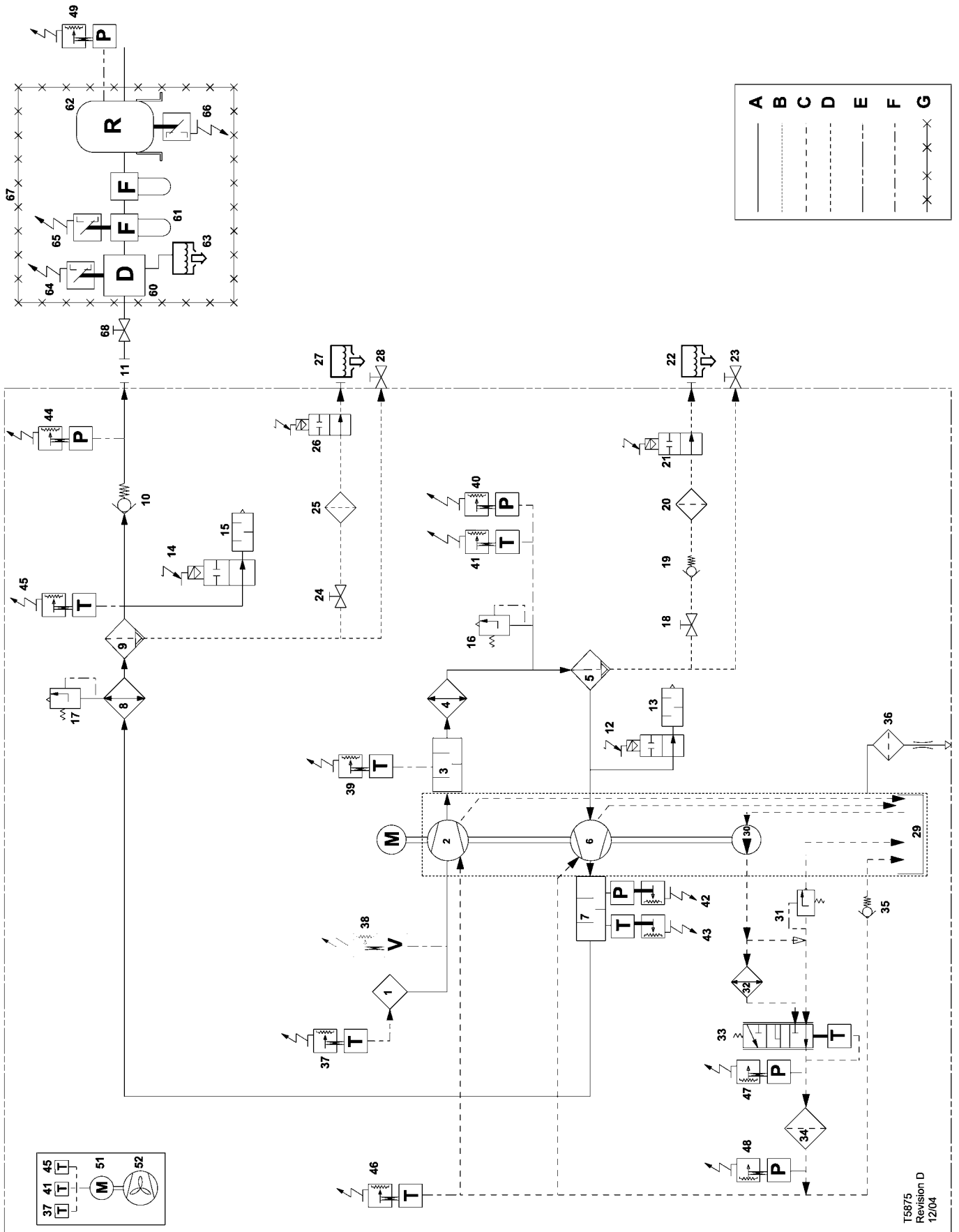
- A** Air discharge
2" N.P.T. – 60Hz
2" B.S.P.T. – 50Hz
- B** Power inlet location for conduit
Ø 75mm (3")
- C** Intercooler solenoid condensate drain
0.38" N.P.T.
- D** Intercooler manual condensate drain
0.25" N.P.T.
- E** Aftercooler solenoid condensate drain
0.38" N.P.T.
- F** Aftercooler manual condensate drain
0.25" N.P.T.
- G** Breather piping connection
1" N.P.T. – 60Hz
1" B.S.P.T. – 50Hz
- H** Seal vent opening – do not plug
- I** Air intake
- J** Cooling air exhaust
- K** 4 x Ø13.00mm (0.51")
- L** Controller, INTELLISYS
- T** Left hand
- U** Right hand
- V** Bottom
- W** Front
- X** Detail
- XX** Detail
- Y** Rear
- Z** Plan view
- A1** Water in:
2" NPT – 60Hz
2" BSPT – 50Hz
- A2** Water out:
2" NPT – 60Hz
2" BSPT – 50Hz
- A3** Bushing 2" BSPT 50Hz only (Ship loose)
- A4** Bushing 1" BSPT 50Hz only (Ship loose)
- 3** Pipe condensate drain lines separately to an open drain due to difference in drain pressures. Check local regulations.
- 4** Lube oil fill quantity: 64 litres (17 US gallons) approximately.
- 5** All dimensions in millimeters (inches).
- 6** Tolerance on all dimensions: ±6 mm (± .25 inch).
- 7** Recommended clearance on three sides 915mm (36 inches). Side with electrical box 1067mm (42 inches) or minimum as required by latest national electrical code or applicable local codes.
- 8** External piping shall not exert any unresolved moments or forces on unit. Use pipe size as large or larger at discharge location.
- 9** There should be no plastic or PVC piping attached to this unit or used for any lines downstream.
- 10** Remove the isolation mount restraints before the initial start. The two restraints can be discarded.
- 11** Field installed ducting to and from compressor cannot add more than 6mm (0.25 inches) of water total air resistance. Gear box breather must be piped external.
- 12** Unit has internal discharge check valve. External check valve not required. Isolation valve is required within 915mm (36inches) of the compressor discharge.
- 13** Compressor should be bolted to the floor with four M12 (1/2 inch) bolts located as shown. Seal base to floor with cork or rubber.
- 14** Do not pipe into a common header with a reciprocating compressor, unless reciprocating compressor utilizes a discharge pulsation dampener.
- 15**  Denotes center of gravity.
- 16** Sizing of electrical components not supplied by Ingersoll-Rand is the responsibility of the customer and should be done in accordance with the information on the compressor data plate, National and local electrical codes.
- 17** A 75mm (3 inches) diameter electrical power inlet connection hole is provided in side of electrical box as indicated. Size and positioning can be changed by customer in accordance with note 16.
- 18** When installed indoors or under a shelter, the cooling air inlet or exhaust must be ducted away from the unit to prevent recirculation of hot exhaust air.
- 19** The 550–575 volt option requires an externally mounted transformer. The Transformer General Arrangement is I–R part number 22585103.

Notes:

- 1 Weight approximate: 3215 kg (7088 lbs)
- 2 Cooling air flow: 113 m³/min – (4,000cfm).

8.0 GENERAL INFORMATION

8.3 PROCESS AND INSTRUMENTATION DIAGRAM N37/160K & N50/200H AIR COOLED



8.0 GENERAL INFORMATION

KEY

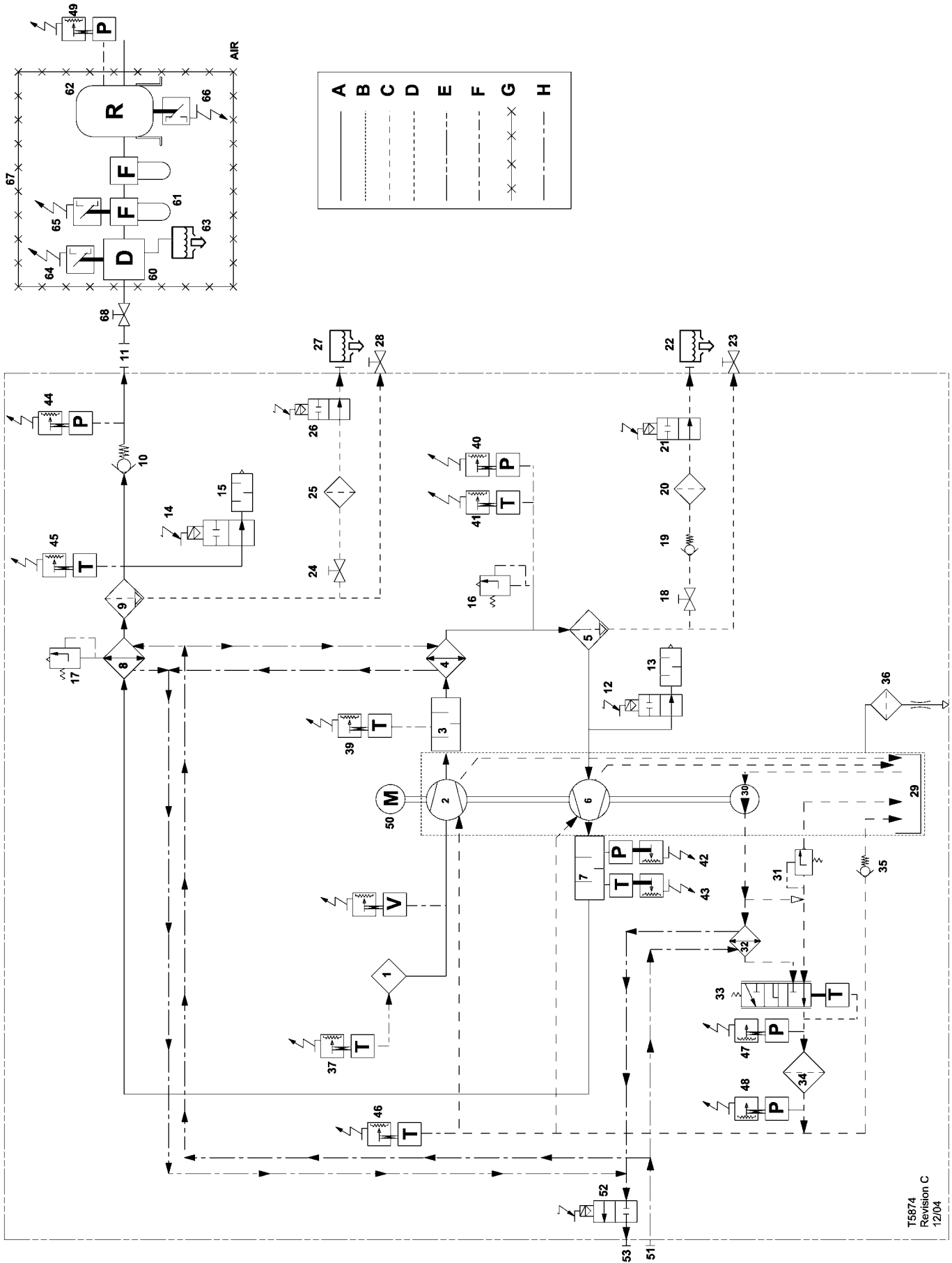
- | | | | |
|----|--|----|--|
| 1 | Air filter | 35 | Oil bypass check valve – 25 PSIG |
| 2 | LP Airend | 36 | Gear case breather |
| 3 | LP Discharge silencer | 37 | 1ATT–LP Inlet temperature thermistor |
| 4 | Intercooler | 38 | 1AVPT–LP Inlet vacuum transducer |
| 5 | Interstage moisture separator | 39 | 2ATT–LP Discharge temperature RTD |
| 6 | HP Airend | 40 | 2APT–HP Inlet pressure transducer |
| 7 | HP Discharge silencer | 41 | 3ATT–HP Inlet temperature thermistor |
| 8 | Aftercooler | 42 | 3APT–HP Discharge pressure transducer |
| 9 | Moisture separator | 43 | 4ATT–HP Discharge temperature RTD |
| 10 | Check valve | 44 | 4APT Compressor discharge pressure transducer |
| 11 | Air discharge (customer connection) | 45 | 7ATT Compressor discharge temperature thermistor |
| 12 | Interstage blowdown solenoid valve 5SV | 46 | 50TT Oil manifold temperature thermistor |
| 13 | Blowdown silencer | 47 | 50PT Oil filter inlet pressure transducer |
| 14 | Blowdown solenoid valve 3SV | 48 | 60PT Oil filter out pressure transducer |
| 15 | Blowdown silencer | 49 | 9APT Remote air pressure transducer |
| 16 | Interstage pressure relief valve – 50 PSIG | 50 | Drive motor – variable speed |
| 17 | Pressure relief valve – 165 PSIG | 51 | Blower motor – variable speed |
| 18 | Interstage ball valve (bypass condensate solenoid) | 52 | Blower cooling air |
| 19 | Interstage condensate check valve | 60 | Dryer (customer equipment) |
| 20 | Interstage condensate strainer | 61 | Line filters (customer equipment) |
| 21 | Interstage timed condensate solenoid 6SV | 62 | Receivers (customer equipment) |
| 22 | Interstage condensate discharge (customer connection) | 63 | Dryer condensate discharge (customer equipment) |
| 23 | Interstage condensate ball valve (shipped loose) | 64 | Dryer AUX warning |
| 24 | Package discharge ball valve (bypass condensate solenoid) | 65 | Line filter AUX warning |
| 25 | Package discharge condensate strainer | 66 | Receiver trap AUX warning |
| 26 | Package discharge timed condensate solenoid 9SV | 67 | Typical customer downstream air treatment |
| 27 | Package discharge condensate discharge (customer connection) | 68 | Isolation valve |
| 28 | Package discharge condensate ball valve (shipped loose) | | |
| 29 | Oil sump | | |
| 30 | Oil pump | | |
| 31 | Oil bypass valve – 35 PSIG | | |
| 32 | Oil cooler | | |
| 33 | Oil temperature control valve | | |
| 34 | Oil filter | | |

Piping legend

- A** Compressed Air
- B** Module
- C** Coolant
- D** Condensate
- E** Compressor enclosure
- F** Sensor connection
- G** Equipment downstream of compressor

8.0 GENERAL INFORMATION

8.3 PROCESS AND INSTRUMENTATION DIAGRAM N37/160K & N50/200H WATER COOLED



T5874
Revision C
12/04

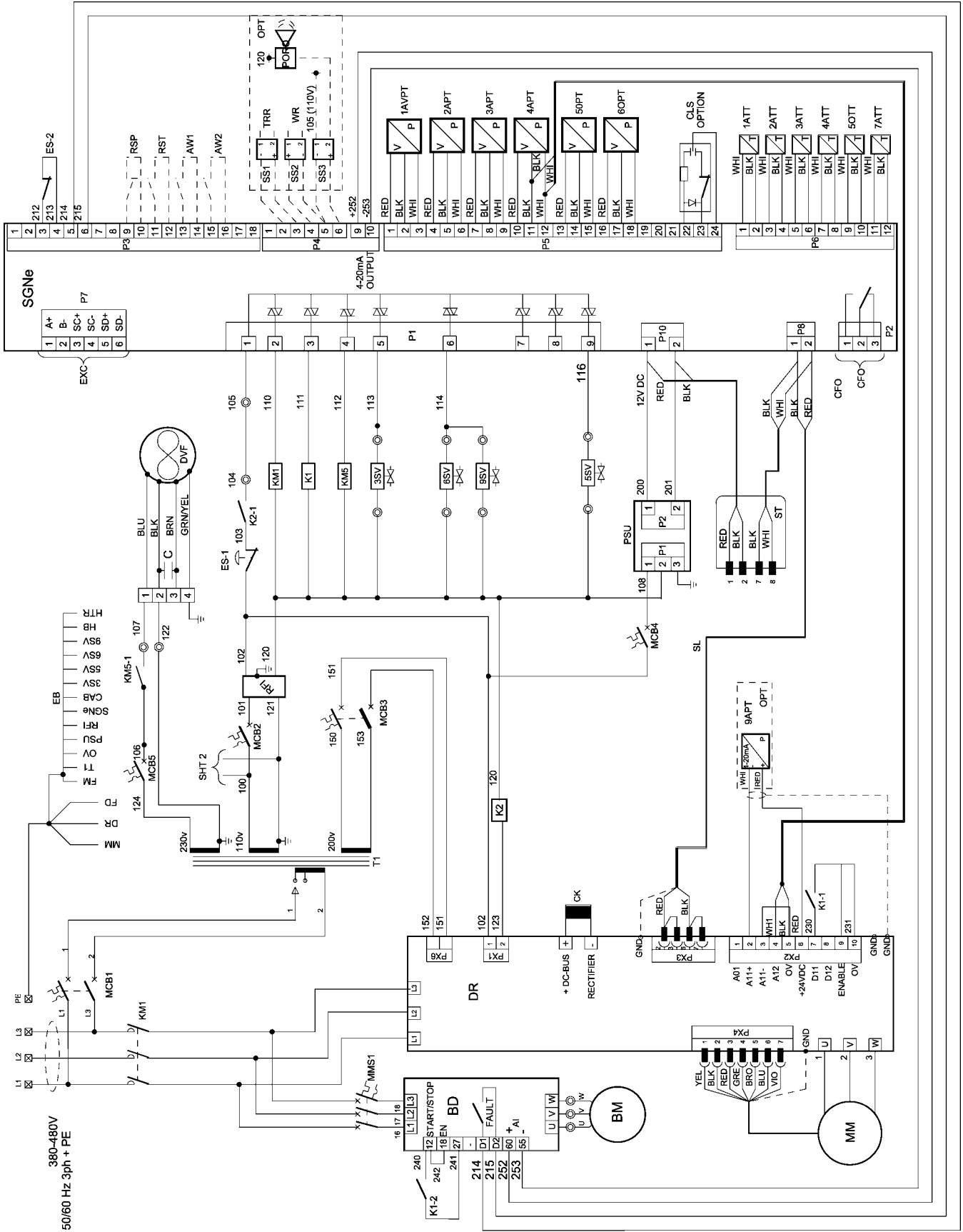
8.0 GENERAL INFORMATION

KEY

- | | | | |
|----|--|----|--|
| 1 | Air filter | 36 | Gear case breather |
| 2 | LP Airend | 37 | 1ATT–LP Inlet temperature thermistor |
| 3 | LP Discharge silencer | 38 | 1AVPT–LP Inlet vacuum transducer |
| 4 | Intercooler | 39 | 2ATT–LP Discharge temperature RTD |
| 5 | Interstage moisture separator | 40 | 2APT–HP Inlet pressure transducer |
| 6 | HP Airend | 41 | 3ATT–HP Inlet temperature thermistor |
| 7 | HP Discharge silencer | 42 | 3APT–HP Discharge pressure transducer |
| 8 | Aftercooler | 43 | 4ATT–HP Discharge temperature RTD |
| 9 | Moisture separator | 44 | 4APT Compressor discharge pressure transducer |
| 10 | Check valve | 45 | 7ATT Compressor discharge temperature thermistor |
| 11 | Air discharge (customer connection) | 46 | 50TT Oil manifold temperature thermistor |
| 12 | Interstage blowdown solenoid valve 5SV | 47 | 50PT Oil filter inlet pressure transducer |
| 13 | Blowdown silencer | 48 | 60PT Oil filter out pressure transducer |
| 14 | Blowdown solenoid valve 3SV | 49 | 9APT Remote air pressure transducer |
| 15 | Blowdown silencer | 50 | Drive motor – variable speed |
| 16 | Interstage pressure relief valve – 50 PSIG | 51 | Water inlet (customer connection) |
| 17 | Pressure relief valve – 165 PSIG | 52 | Water shut off valve 4SV |
| 18 | Interstage ball valve (bypass condensate solenoid) | 53 | Water outlet (customer connection) |
| 19 | Interstage condensate check valve | 60 | Dryer (customer equipment) |
| 20 | Interstage condensate strainer | 61 | Line filters (customer equipment) |
| 21 | Interstage timed condensate solenoid 6SV | 62 | Receivers (customer equipment) |
| 22 | Interstage condensate discharge (customer connection) | 63 | Dryer condensate discharge (customer equipment) |
| 23 | Interstage condensate ball valve (shipped loose) | 64 | Dryer AUX warning |
| 24 | Package discharge ball valve (bypass condensate solenoid) | 65 | Line filter AUX warning |
| 25 | Package discharge condensate strainer | 66 | Receiver trap AUX warning |
| 26 | Package discharge timed condensate solenoid 9SV | 67 | Typical customer downstream air treatment |
| 27 | Package discharge condensate discharge (customer connection) | 68 | Isolation valve |
| 28 | Package discharge condensate ball valve (shipped loose) | | |
| 29 | Oil sump | | |
| 30 | Oil pump | | |
| 31 | Oil bypass valve – 35 PSIG | | |
| 32 | Oil cooler | | |
| 33 | Oil temperature control valve | | |
| 34 | Oil filter | | |
| 35 | Oil bypass check valve – 25 PSIG | | |
-
- | | |
|----------------------|------------------------------------|
| Piping legend | |
| A | Compressed Air |
| B | Module |
| C | Coolant |
| D | Condensate |
| E | Compressor enclosure |
| F | Sensor connection |
| G | Equipment downstream of compressor |
| H | Cooling water |

8.0 GENERAL INFORMATION

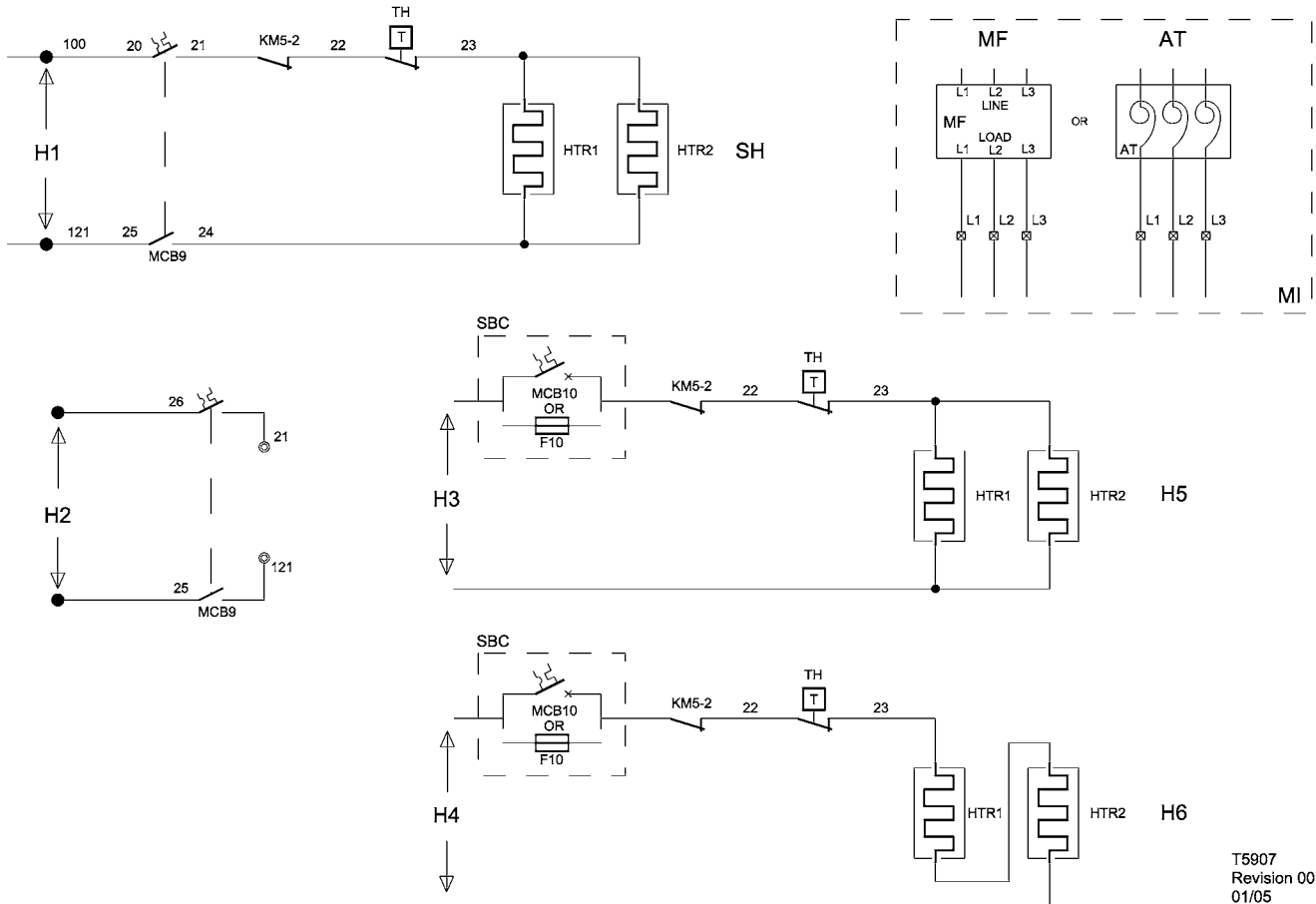
8.4 ELECTRICAL SCHEMATIC N37-75K, N50-100H AIR COOLED



T5905
Revision 00
01/05

8.0 GENERAL INFORMATION

HC



T5907
Revision 00
01/05

KEY

1ATT	Sensor, LP inlet temperature.	BD	Drive, blower.
1AVPT	Transducer, LP inlet vacuum.	BM	Motor, blower.
2APT	Transducer, interstage pressure.	BP	Backplate
2ATT	Sensor, LP discharge temperature.	CAB	Cabinet
3APT	Transducer, HP discharge pressure.	CFO	Common fault output
3ATT	Sensor, HP inlet temperature.	CK	Choke
3SV	Valve, package discharge blowdown solenoid.	DR	Drive
4APT	Transducer, package discharge pressure.	DVF	Fan, Drive box ventilation
4ATT	Sensor, HP discharge temperature.	EB	Earth bar
5OPT	Transducer, oil filter in pressure.	ES	Switch, emergency stop
5OTT	Sensor, bearing oil temperature.	EXC	External communications
5SV	Valve, interstage blowdown solenoid.	F10	Fuse, external heater supply
6OPT	Transducer, oil filter out pressure.	GND	Ground
6SV	Valve, interstage condensate drain/solenoid	H1	110/120V, 50/60Hz From SHT 1
7ATT	Sensor, package discharge temperature.	H2	110/120V, 50/60Hz From SHT 1
9ATP	Transmitter, remote air pressure (optional)	H3	110/120V, 50/60Hz External supply
9SV	Valve, package discharge condensate drain/solenoid.	H4	220/230V, 50/60Hz External supply
AT	Autotransformer (if fitted)	H5	Alternative heater connection for external 110/120V supply.
AW1	Auxiliary warning 1	H6	Alternative heater connection for external 220/230V supply.
AW2	Auxiliary warning 2	HB	Heatsink blower

8.0 GENERAL INFORMATION

HC	Heater circuit
HTR1	Heater 125 watts
HTR2	Heater 125 watts
K1	Relay, run
K2	Relay fault
KM1	Contactora, main motor
KM5	Contactora, heatsink blower
MCB1	Breaker, miniature circuit, transformer
MCB2	Breaker, miniature circuit, control circuit
MCB3	Breaker miniature circuit, drive
MCB4	Breaker, miniature circuit, PSU
MCB9	Breaker, miniature circuit, heater
MCB10	Breaker, miniature circuit, heater (external)
MF	Mains filter (if fitted)
MI	Main input terminals options
MM	Motor, main
MMS1	Breaker, fan motor
MMS2	Breaker, heatsink blower motor
OPT	Optional
OV	Zero voltage
PE	Protected earth
PORO	Power outage restart option (optional)
PSU	Power supply unit
RFI	Filter, radio frequency interference
RSP	Remote stop
RST	Remote start
SBC	Supplied by customer
SGN	Controller, Intellisys
SH	Standard heater connections as delivered
SL	Serial link

SS1-3	Relay, solid state
ST	Service tool
T1	Transformer, control
TH	Thermostat
TRR	True running relay
WR	General warning

Notes:

Alternatively the supply may be taken from an independent source: in that case, factory supplied connection must be disconnected.

Colors

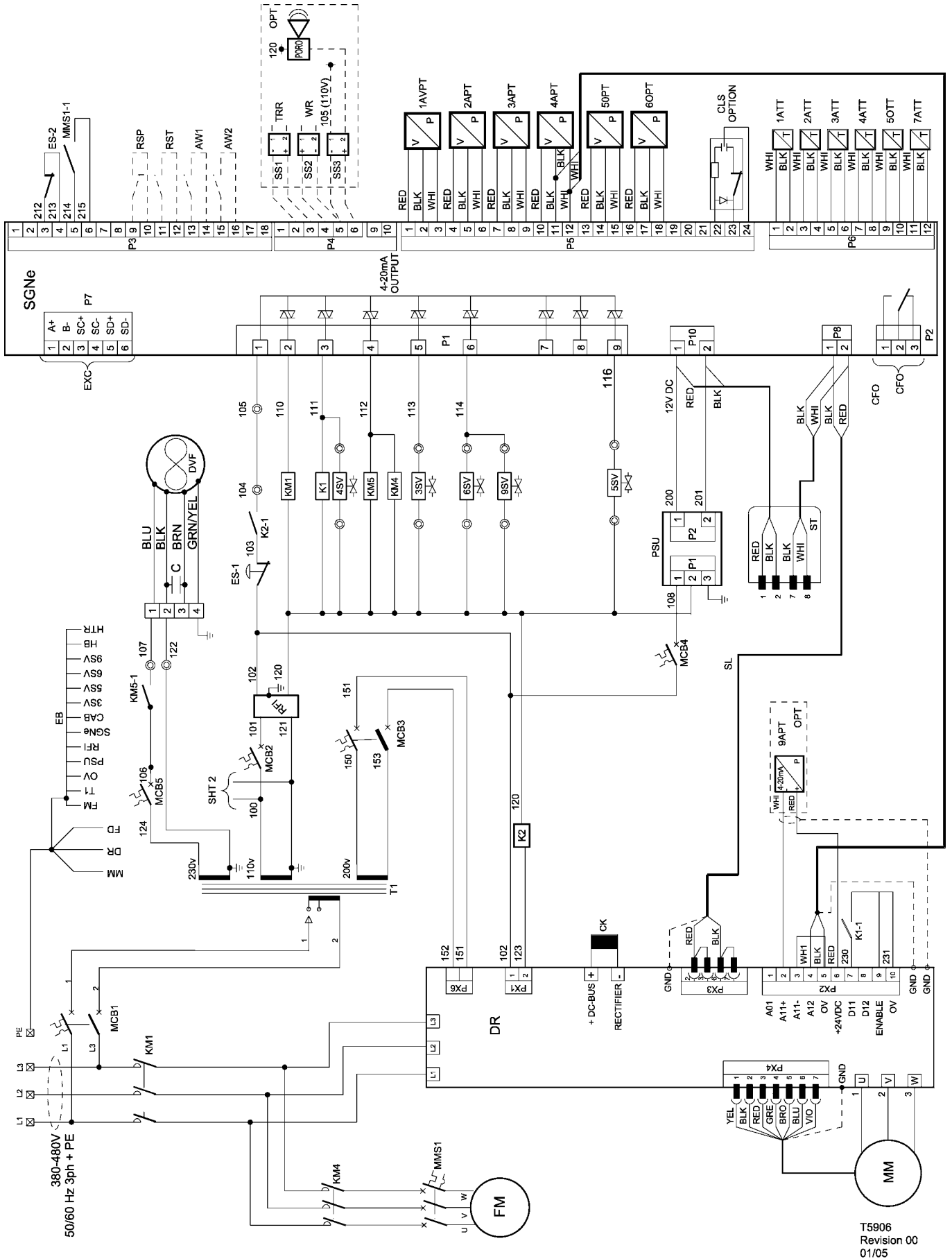
BLK	Black
BLU	Blue
BRO	Brown
GRE	Green
PIN	Pink
RED	Red
SCR	Screened
VIO	Violet
WHI	White
YEL	Yellow

Wires

Numbers	Function	Wire color
1-99	Power	Black
100-199	AC Control	Red
200-299	DC Control	Blue
300-399	Auxiliary	Orange

8.0 GENERAL INFORMATION

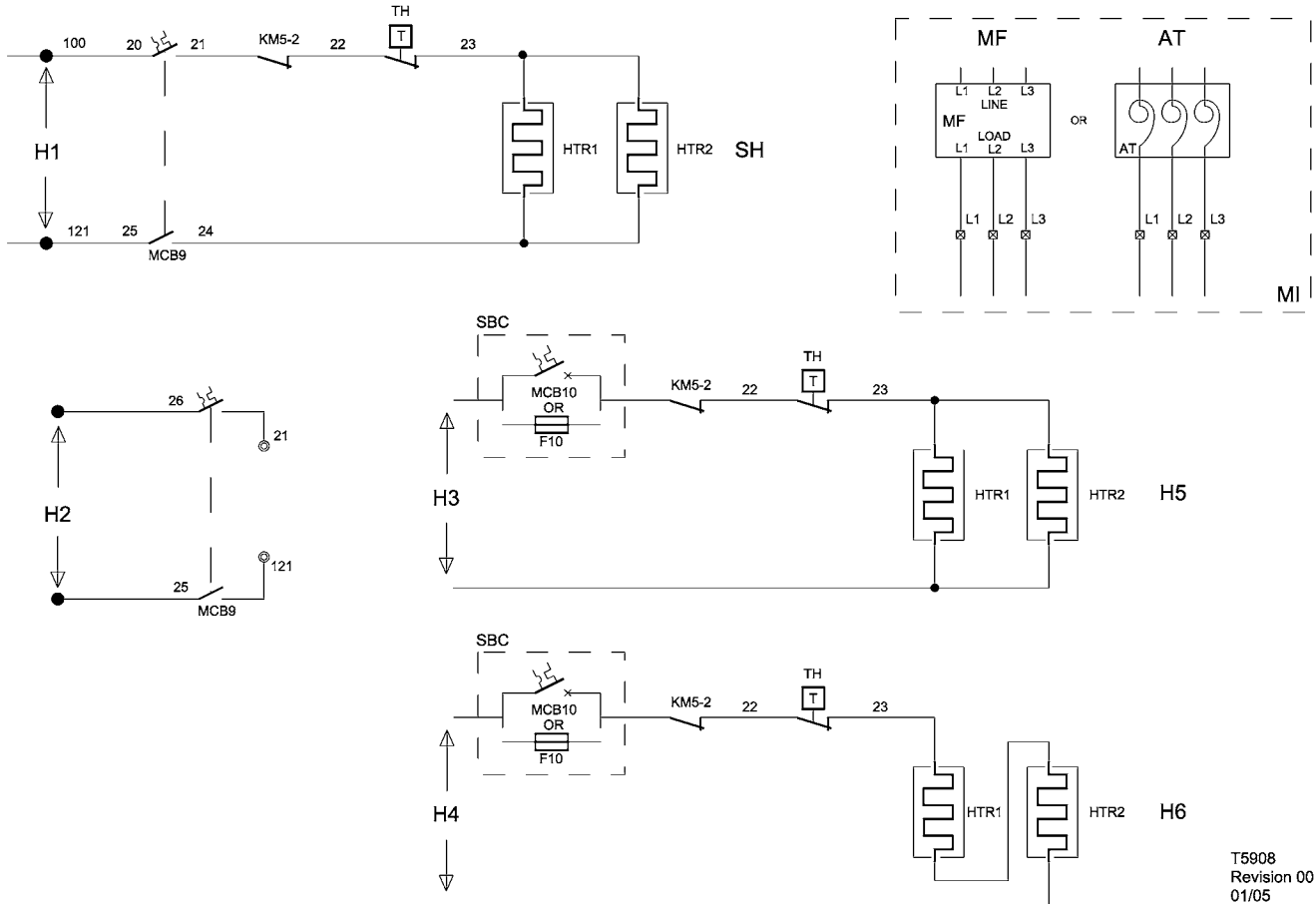
8.4 ELECTRICAL SCHEMATIC N37-75K, N50-100H WATER COOLED



T5906
Revision 00
01/05

8.0 GENERAL INFORMATION

HC



T5908
Revision 00
01/05

KEY

1ATT	Sensor, LP inlet temperature.	AW2	Auxiliary warning 2
1AVPT	Transducer, LP inlet vacuum.	BD	Drive, blower.
2APT	Transducer, interstage pressure.	BM	Motor, blower.
2ATT	Sensor, LP discharge temperature.	BP	Backplate
3APT	Transducer, HP discharge pressure.	CAB	Cabinet
3ATT	Sensor, HP inlet temperature.	CFO	Common fault output
3SV	Valve, package discharge blowdown solenoid.	CK	Choke
4APT	Transducer, package discharge pressure.	DR	Drive
4ATT	Sensor, HP discharge temperature.	DVF	Fan, Drive box ventilation
4SV	Valve, water solenoid.	EB	Earth bar
5OPT	Transducer, oil filter in pressure.	ES	Switch, emergency stop
5OTT	Sensor, bearing oil temperature.	EXC	External communications
5SV	Valve, interstage blowdown solenoid.	FM	Motor, fan.
6OPT	Transducer, oil filter out pressure.	F10	Fuse, external heater supply
6SV	Valve, interstage condensate drain/solenoid	GND	Ground
7ATT	Sensor, package discharge temperature.	H1	110/120V, 50/60Hz From SHT 1
9ATP	Transmitter, remote air pressure (optional)	H2	110/120V, 50/60Hz From SHT 1
9SV	Valve, package discharge condensate drain/solenoid.	H3	110/120V, 50/60Hz External supply
AT	Autotransformer (if fitted)	H4	220/230V, 50/60Hz External supply
AW1	Auxiliary warning 1	H5	Alternative heater connection for external 110/120V supply.

8.0 GENERAL INFORMATION

H6	Alternative heater connection for external 220/230V supply.
HB	Heatsink blower
HC	Heater circuit
HTR1	Heater 125 watts
HTR2	Heater 125 watts
K1	Relay, run
K2	Relay fault
KM1	Contactora, main motor
KM5	Contactora, heatsink blower
MCB1	Breaker, miniature circuit, transformer
MCB2	Breaker, miniature circuit, control circuit
MCB3	Breaker miniature circuit, drive
MCB4	Breaker, miniature circuit, PSU
MCB9	Breaker, miniature circuit, heater
MCB10	Breaker, miniature circuit, heater (external)
MF	Mains filter (if fitted)
MI	Main input terminals options
MM	Motor, main
MMS1	Breaker, fan motor
MMS2	Breaker, heatsink blower motor
OPT	Optional
OV	Zero voltage
PE	Protected earth
PORO	Power outage restart option (optional)
PSU	Power supply unit
RFI	Filter, radio frequency interference
RSP	Remote stop
RST	Remote start
SBC	Supplied by customer
SGN	Controller, Intellisys
SH	Standard heater connections as delivered

SL	Serial link
SS1-3	Relay, solid state
ST	Service tool
T1	Transformer, control
TH	Thermostat
TRR	True running relay
WR	General warning

Notes:

Alternatively the supply may be taken from an independent source: in that case, factory supplied connection must be disconnected.

Colors

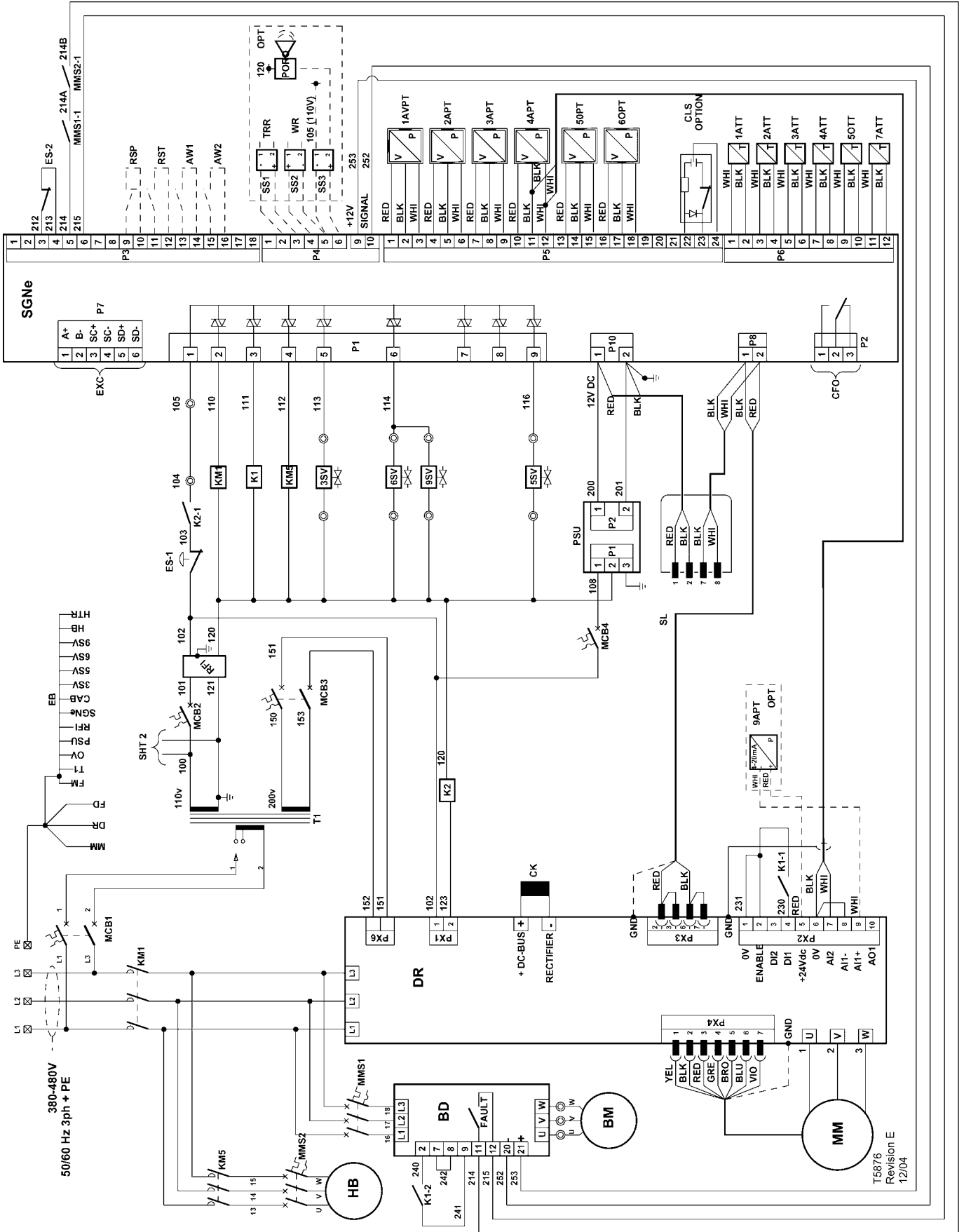
BLK	Black
BLU	Blue
BRO	Brown
GRE	Green
PIN	Pink
RED	Red
SCR	Screened
VIO	Violet
WHI	White
YEL	Yellow

Wires

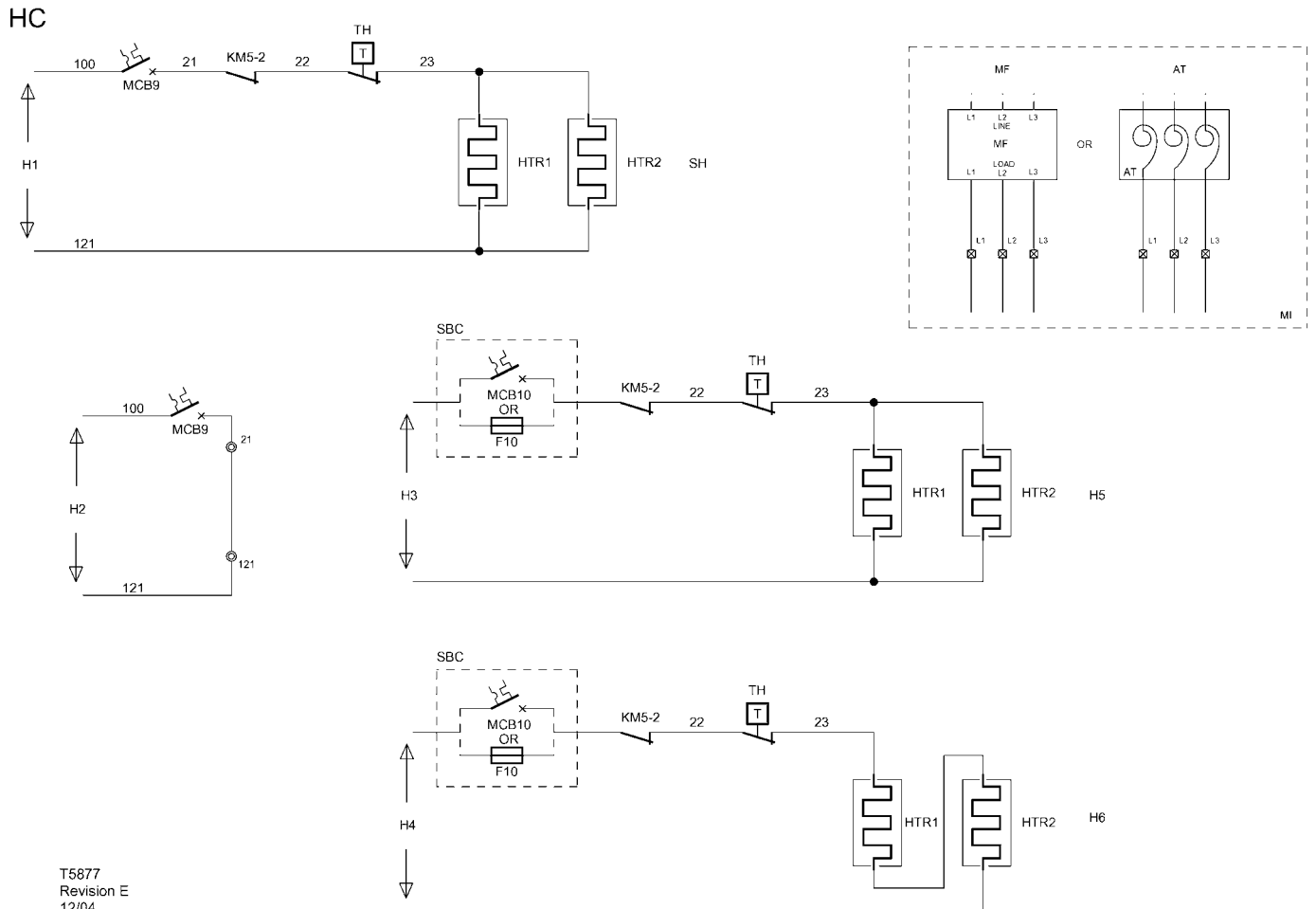
Numbers	Function	Wire color
1-99	Power	Black
100-199	AC Control	Red
200-299	DC Control	Blue
300-399	Auxiliary	Orange

8.0 GENERAL INFORMATION

8.4 ELECTRICAL SCHEMATIC N90-160K, N125-200H AIR COOLED



8.0 GENERAL INFORMATION



KEY

1ATT	Sensor, LP inlet temperature.	BD	Drive Blower
1AVPT	Transducer, LP inlet vacuum.	BM	Motor, Blower
2APT	Transducer, interstage pressure.	BP	Backplate
2ATT	Sensor, LP discharge temperature.	CAB	Cabinet
3APT	Transducer, HP discharge pressure.	CFO	Common fault output
3ATT	Sensor, HP inlet temperature.	CK	Choke
3SV	Valve, package discharge blowdown solenoid.	DR	Drive
4APT	Transducer, package discharge pressure.	EB	Earth bar
4ATT	Sensor, HP discharge temperature.	ES	Switch, emergency stop
5OPT	Transducer, oil filter in pressure.	EXC	External communications
5OTT	Sensor, bearing oil temperature.	F10	Fuse, external heater supply
5SV	Valve, interstage blowdown solenoid.	GND	Ground
6OPT	Transducer, oil filter out pressure.	H1	110/120V, 50/60Hz From SHT 1
6SV	Valve, interstage condensate drain/solenoid	H2	110/120V, 50/60Hz From SHT 1
7ATT	Sensor, package discharge temperature.	H3	110/120V, 50/60Hz External supply
9ATP	Transmitter, remote air pressure (optional)	H4	220/230V, 50/60Hz External supply
9SV	Valve, package discharge condensate drain/solenoid.	H5	Alternative heater connection for external 110/120V supply.
AT	Autotransformer (if fitted)	H6	Alternative heater connection for external 220/230V supply.
AW1	Auxiliary warning 1	HB	Heatsink blower
AW2	Auxiliary warning 2	HC	Heater circuit
		HTR1	Heater 125 watts

8.0 GENERAL INFORMATION

HTR2	Heater 125 watts
K1	Relay, run
K2	Relay fault
KM1	Contactora, main motor
KM5	Contactora, heatsink blower
MCB1	Breaker, miniature circuit, transformer
MCB2	Breaker, miniature circuit, control circuits
MCB3	Breaker miniature circuits, drive
MCB4	Breaker, miniature circuit, PSU
MCB9	Breaker, miniature circuit, heater
MCB10	Breaker, miniature circuit, heater (external)
MF	Mains filter (if fitted)
MI	Main input terminals options
MM	Motor, main
MMS1	Breaker, fan motor
MMS2	Breaker, heatsink blower motor
OPT	Optional
OV	Zero voltage
PE	Protected earth
PORO	Power outage restart option (optional)
PSU	Power supply unit
RFI	Filter, radio frequency interference
RSP	Remote stop
RST	Remote start
SBC	Supplied by customer
SGN	Controller, Intellisys
SH	Standard heater connections as delivered
SL	Serial link
SS1-3	Relay, solid state
ST	Service tool

T1	Transformer, control
TH	Thermostat
TRR	True running relay
WR	General warning

Notes:

Alternatively the supply may be taken from an independent source: in that case, factory supplied connection must be disconnected.

Colors

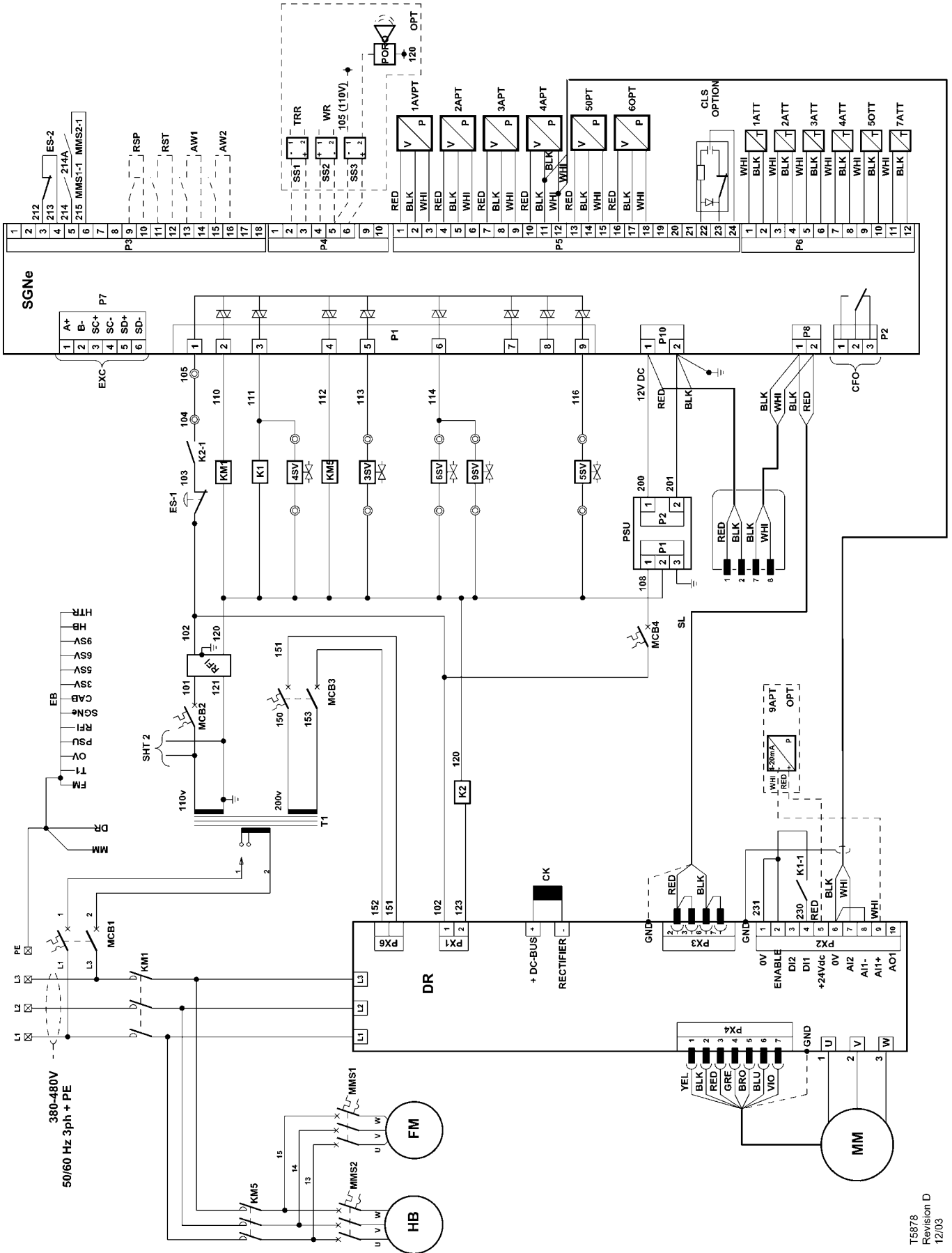
BLK	Black
BLU	Blue
BRO	Brown
GRE	Green
PIN	Pink
RED	Red
SCR	Screened
VIO	Violet
WHI	White
YEL	Yellow

Wires

Numbers	Function	Wire color
1-99	Power	Black
100-199	AC Control	Red
200-299	DC Control	Blue
300-399	Auxiliary	Orange

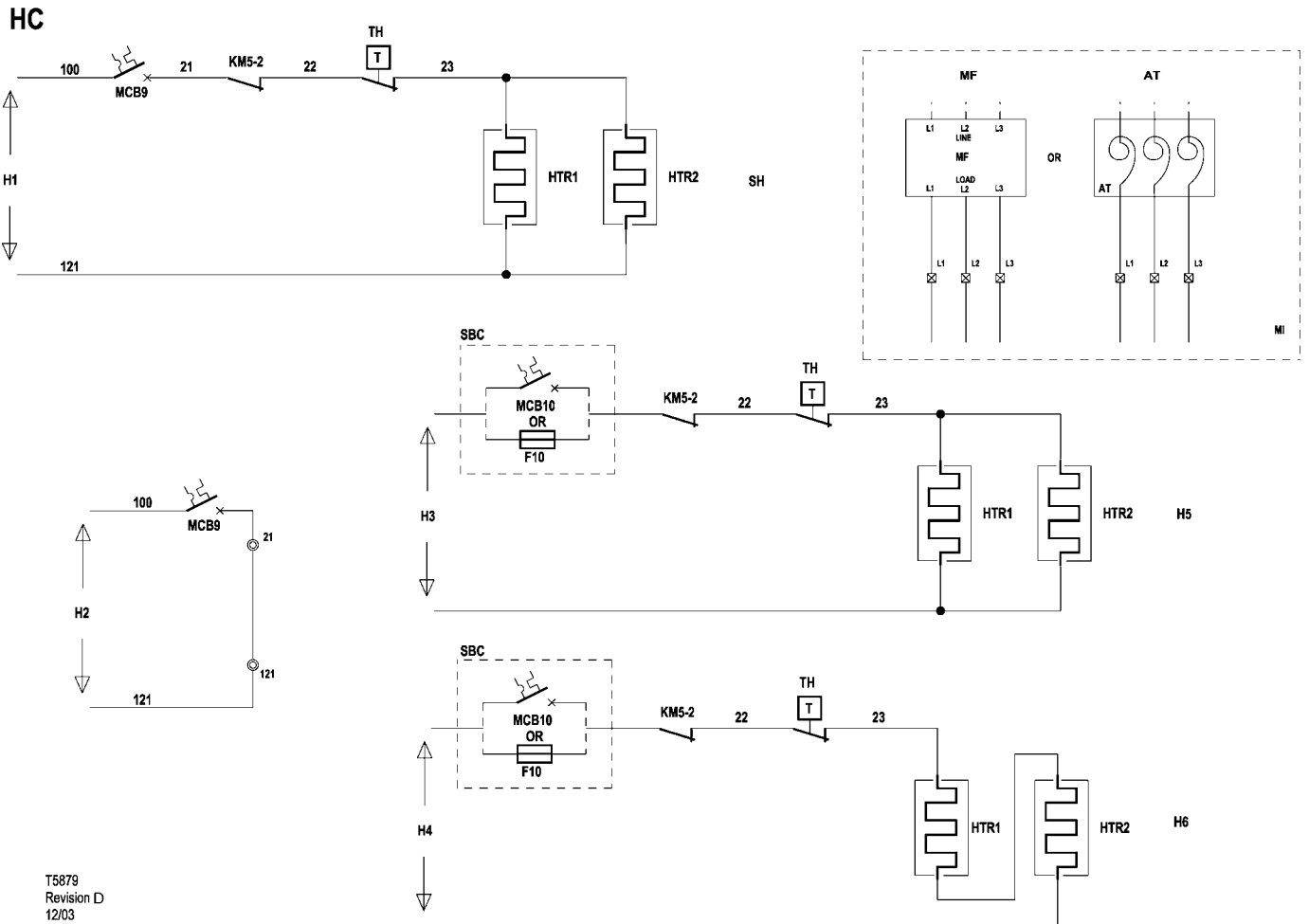
8.0 GENERAL INFORMATION

8.4 ELECTRICAL SCHEMATIC N90-160K, N125-200H WATER COOLED



T5878
Revision D
12/03

8.0 GENERAL INFORMATION



KEY

1ATT	Sensor, LP inlet temperature.	AW2	Auxiliary warning 2
1AVPT	Transducer, LP inlet vacuum.	BD	Drive, blower.
2APT	Transducer, interstage pressure.	BM	Motor, blower.
2ATT	Sensor, LP discharge temperature.	BP	Backplate
3APT	Transducer, HP discharge pressure.	CAB	Cabinet
3ATT	Sensor, HP inlet temperature.	CFO	Common fault output
3SV	Valve, package discharge blowdown solenoid.	CK	Choke
4APT	Transducer, package discharge pressure.	DR	Drive
4ATT	Sensor, HP discharge temperature.	EB	Earth bar
4SV	Valve, water solenoid.	ES	Switch, emergency stop
5OPT	Transducer, oil filter in pressure.	EXC	External communications
5OTT	Sensor, bearing oil temperature.	FM	Motor, fan.
5SV	Valve, interstage blowdown solenoid.	F10	Fuse, external heater supply
6OPT	Transducer, oil filter out pressure.	GND	Ground
6SV	Valve, interstage condensate drain/solenoid	H1	110/120V, 50/60Hz From SHT 1
7ATT	Sensor, package discharge temperature.	H2	110/120V, 50/60Hz From SHT 1
9ATP	Transmitter, remote air pressure (optional)	H3	110/120V, 50/60Hz External supply
9SV	Valve, package discharge condensate drain/solenoid.	H4	220/230V, 50/60Hz External supply
AT	Autotransformer (if fitted)	H5	Alternative heater connection for external 110/120V supply.
AW1	Auxiliary warning 1	H6	Alternative heater connection for external 220/230V supply.
		HB	Heatsink blower

8.0 GENERAL INFORMATION

HC	Heater circuit
HTR1	Heater 125 watts
HTR2	Heater 125 watts
K1	Relay, run
K2	Relay fault
KM1	Contactora, main motor
KM5	Contactora, heatsink blower
MCB1	Breaker, miniature circuit, transformer
MCB2	Breaker, miniature circuit, control circuit
MCB3	Breaker miniature circuit, drive
MCB4	Breaker, miniature circuit, PSU
MCB9	Breaker, miniature circuit, heater
MCB10	Breaker, miniature circuit, heater (external)
MF	Mains filter (if fitted)
MI	Main input terminals options
MM	Motor, main
MMS1	Breaker, fan motor
MMS2	Breaker, heatsink blower motor
OPT	Optional
OV	Zero voltage
PE	Protected earth
PORO	Power outage restart option (optional)
PSU	Power supply unit
RFI	Filter, radio frequency interference
RSP	Remote stop
RST	Remote start
SBC	Supplied by customer
SGN	Controller, Intellisys
SH	Standard heater connections as delivered
SL	Serial link

SS1-3	Relay, solid state
ST	Service tool
T1	Transformer, control
TH	Thermostat
TRR	True running relay
WR	General warning

Notes:

Alternatively the supply may be taken from an independent source: in that case, factory supplied connection must be disconnected.

Colors

BLK	Black
BLU	Blue
BRO	Brown
GRE	Green
PIN	Pink
RED	Red
SCR	Screened
VIO	Violet
WHI	White
YEL	Yellow

Wires

Numbers	Function	Wire color
1-99	Power	Black
100-199	AC Control	Red
200-299	DC Control	Blue
300-399	Auxiliary	Orange

8.0 GENERAL INFORMATION

8.5 GENERAL DESCRIPTION

The compressor is an electric motor driven, oil free, two stage screw compressor, complete with all necessary components piped, wired and baseplate mounted. It is a totally self contained air compressor package.

The standard compressor is designed to operate in an ambient range of 1.7°C to 46°C (35°F to 115°F). The standard maximum temperature of 46°C (115°F) is applicable up to an elevation of 1000m (3280ft) above sea level. Above this altitude significant reductions in ambient temperature are required if a standard motor is to be used. Some models have more strict limitations on the maximum altitude/ambient at higher operating pressures. Consult engineering or the engineering data pages for specific guidance.

The compressor is managed by the onboard electronic controller. The controller and drive system operate together to vary the speed of the compressor to deliver compressed air at the target pressure.

Panel instrumentation is provided to indicate the compressor operating conditions and general status.

Air is pulled into the machine by the cooling blower and through the heat exchangers (for air cooled).

By cooling the discharge air, much of the water vapor naturally contained in the air is condensed and is drained from the built-in moisture separators and drains.

The oil sump and pump are integral within the gearcase. The oil pump is a positive displacement gear-type pump, and is driven by the motor/bullgear shaft. The gearcase is vented to a mounted breather. The breather exhaust is piped to the top of the package.

The compressor is provided with temperature sensors which will shut the unit down in case of excessive oil or air temperatures.

Effective oil filtration is provided by the use of a screw on, heavy duty oil filter.

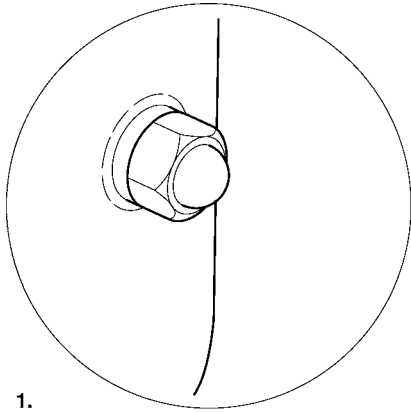
NOTICE

Nirvana air compressors are factory filled with SSR ULTRA COOLANT which is designed to operate for 8,000 hours or two years, whichever comes first.

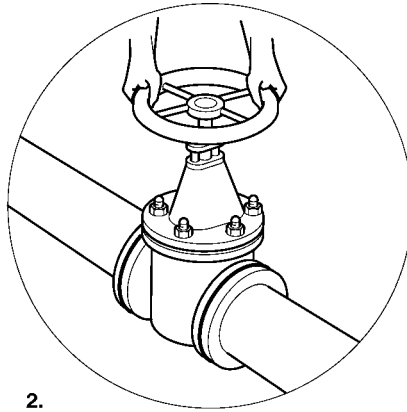
The oil must be changed at these intervals to avoid breakdown and equipment damage.

9.0 OPERATING INSTRUCTIONS

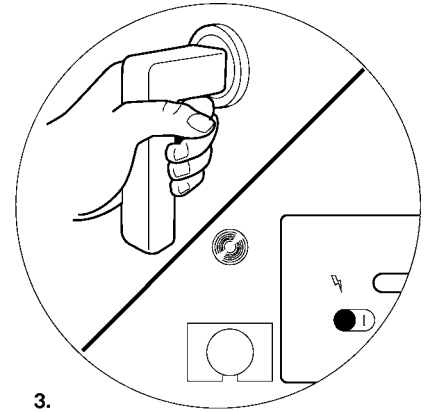
9.1 BASIC OPERATION



1.



2.



3.

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WARNING

Ensure that all protective covers/guards are in place before attempting to start the machine.

NOTICE

The language and units of measure displayed on the Intellisys controller will be pre-set before leaving the factory. If these are required to be changed, contact your local Ingersoll-Rand Service Department, Distributor or Air Center.

Prior to starting

Refer to diagram T5716 above

Check that the oil level is at least visible in the center of the sight glass, add oil if necessary. Refer to maintenance procedures for setting correct level.

Ensure that the discharge air isolation valve is open.

Switch on the main electrical isolation switch. The control panel will illuminate, indicating that the line and control voltages are available.

The contrast of the display may be adjusted by turning the small screw which is on the right hand side of the controller when accessed through the starter cabinet door.

Initial check sequence

The controller will perform an initial check sequence if the compressor (1) receives initial power to the controller or (2) has experienced an alarm reset. While the initial check sequence occurs, the controller will display a "Checking Machine" message.

During the initial check sequence, the controller will check the control system for proper operation. During this time, if any items are found inoperative an alarm will occur and the unit will not start.

After completion of the initial check sequence, the controller will then display "READY TO START". This process should be completed within 10 seconds.

9.0 OPERATING INSTRUCTIONS

Start sequence

The compressor will initially start by pressing the local start button or receiving a remote start command. The Intellisys will energize the start output to start the compressor. Both blowdown valves will de-energize to start the unit unloaded. The compressor will ramp up to its minimum speed. Once the minimum speed has been achieved, the Intellisys will energize the blowdown valves and the compressor will start to control pressure by using its speed regulation. When the system pressure approaches the target pressure, the motor will start to slow. If the system pressure rises to the immediate stop pressure set point, the Intellisys will perform its stop sequence immediately. If the Intellisys reaches its auto-stop pressure it will wait until the drive is running at minimum speed and if pressure is maintained above the auto-stop pressure, the Intellisys will perform its stop sequence. Immediate stop and auto-stop conditions will leave the compressor in an auto-start state where it will automatically start if the system pressure falls below the target pressure. This process will continue until the Intellisys receives a stop command or has an alarm

Stop sequence

The compressor has two stop sequences. If the emergency stop button is pressed or if a shutdown occurs as a result of an alarm, the start output will de-energize and the compressor will stop immediately. The emergency stop must be reset and the alarm must be cleared before the compressor can be restarted.

If the pressure reaches the automatic stop or immediate stop pressure or if the stop button (local or remote) is pressed, the compressor will de-energize the package discharge blowdown valve and de-energize the condensate solenoid valves. The compressor will then run for 10 seconds with the package discharge valve open. The compressor will stop after 10 seconds if the system pressure is greater than the target pressure and if the second stage discharge pressure is less than 55 psig. Immediate stop and autostop conditions leave the compressor in an auto-start state where it will automatically start if the system pressure falls below the target pressure. The compressor will not automatically restart if the local or remote stop button is pressed.

Blower control

The blower speed varies to minimize energy consumption while optimizing cooler performance. The blower motor has its own variable speed drive and will ramp up and down as the compressor starts and stops.

Stopping the machine in an emergency

If the machine has to be stopped in an emergency **DEPRESS THE EMERGENCY STOP BUTTON LOCATED UNDERNEATH THE INSTRUMENT PANEL.**

This will over-ride the normal unload/stop button and will immediately stop the machine.

Restarting after an emergency

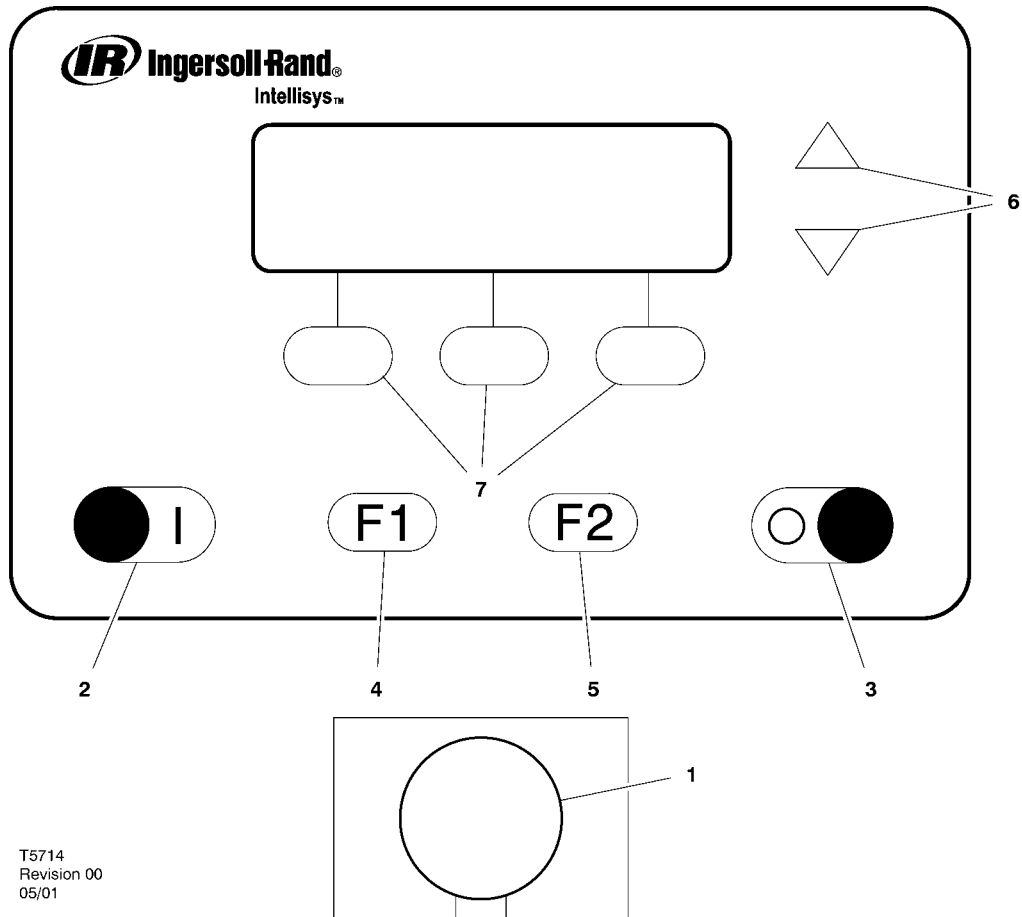
If the unit has been switched off because of a machine malfunction, identify and correct the fault before attempting to restart.

If the unit has been switched off for reasons of safety, ensure that the machine can be operated safely before restarting.

Refer to the *PRIOR TO STARTING* and *START SEQUENCE* instructions earlier in this section before restarting the machine.

9.0 OPERATING INSTRUCTIONS

9.2 INTELLISYS CONTROLS



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1. Emergency stop

Pressing this switch stops the compressor immediately. This switch should only be pressed in emergency situations. The discharge blowdown valve will open to vent pressure downstream of the check valve to atmosphere. Note: the system downstream of the check valve may still contain pressure. The compressors can not be restarted until the switch is manually reset. Turn the switch knob clockwise and press the reset button twice to reset.

On reset the controller will display a message, indicating that the compressor is ready to start.

2. Start

Pressing this button will activate the start sequence.

3. Stop

Pressing this button will activate the stop sequence.

4. F1

Not used.

5. F2

Not used.

6. Arrows

These up and down buttons have multiple functions relating to the right half of the display screen. When lists are presented, the buttons are used to move up or down through the items on the list. The small arrow(s) displayed in the upper right hand corner of the display screen indicate when you can move up (designated by arrow head pointing up) and/or down (designated by arrow head pointing down) through the list.

When the value of a specific machine operating parameter is highlighted on the display screen for the purpose of changing that value, the buttons are used to change the value itself.

7. Display buttons

The functions of the three buttons below the display screen change and are defined by the words immediately above them in the bottom line of the screen. Each function, such as MAIN MENU, STATUS, etc., is described in appropriate sections in this manual.

9.0 OPERATING INSTRUCTIONS

9.3 DISPLAY SCREEN

The display screen is divided into three functional areas, as seen in the typical CURRENT STATUS screen shown here.

The left side continuously shows the package discharge pressure in large numbers with the line directly below showing the running condition of the machine

<div style="border: 1px solid black; display: inline-block; padding: 5px; font-size: 24pt; margin-bottom: 5px;">100</div> PSI READY TO START	–CURRENT STATUS– PACKAGE DISCHARGE TEMP 102°F PACKAGE DISCHARGE PRESSURE 100 PSI
MAIN MENU	

The right side shows various items or lists such as the machine's CURRENT STATUS readings, the MAIN MENU, the OPERATOR SETPOINTS list, etc. Any of the lists can be moved up or down by pressing the arrow buttons to the right of the screen. The small arrow(s) displayed in the upper right corner of the screen indicate when you can move up and/or down through a list. The arrow buttons are also used to change an individual item's value. At certain times, items and/or their values are "highlighted". This means that they are displayed as light characters on a dark background.

The bottom of the screen is divided into thirds with the words in each small box showing the function of the button directly beneath it. The words will change in these boxes depending on what actions are permitted at any particular time. The action resulting from pressing each of these buttons is indicated in the Operator Panel Flow Diagram later in this section. This can be used as a quick reference of how to step the controller screen through any desired function.

9.0 OPERATING INSTRUCTIONS

9.4 CURRENT STATUS SCREEN

The CURRENT STATUS screen is considered to be the “normal” display that the controller shows.

The following items and their present values can be displayed on the right side of the screen by pressing the up and down arrow buttons.

The controller automatically returns the display to this CURRENT STATUS screen from other screens if no buttons are pressed within 30 seconds.

Use the UP and DOWN arrows to move between selections.

CURRENT STATUS items

- 1 % ENERGY SAVINGS
- 2 % CAPACITY
- 3 PACKAGE KW
- 4 PACKAGE DISCHARGE TEMP
- 5 PACKAGE DISCHARGE PRESSURE
- 6 INLET VACUUM
- 7 INLET FILTER
- 8 OIL FILTER PRESSURE DROP
- 9 FIRST STAGE INLET TEMP
- 10 FIRST STAGE AIREND DISCHARGE TEMP
- 11 SECOND STAGE AIREND INLET PRESS
- 12 SECOND STAGE AIREND INLET TEMP
- 13 SECOND STAGE AIREND DISCHARGE PRESS

- 14 SECOND STAGE AIREND DISCHARGE TEMP
- 15 BEARING OIL PRESS
- 16 BEARING OIL TEMP
- 17 MOTOR SPEED
- 18 MOTOR CURRENT
- 19 INPUT VOLTAGE
- 20 DC BUS VOLTAGE
- 21 TIME & DATE
- 22 PROGRAM NAME
- 23 VSD

When the CURRENT STATUS screen is displayed, pressing the ENERGY STATUS button will toggle the display to the ENERGY STATUS screen. Likewise, when the ENERGY STATUS screen is displayed, pressing the STATUS button will toggle the display to the CURRENT STATUS screen.

The ENERGY STATUS screen displays the following items.

ENERGY STATUS Items

- 1 Average Package kW-hr
- 2 Average % Capacity
- 3 Average Capacity
- 4 Energy Cost
- 5 Energy Savings
- 6 Lifetime Energy Savings

9.0 OPERATING INSTRUCTIONS

9.5 MAIN MENU

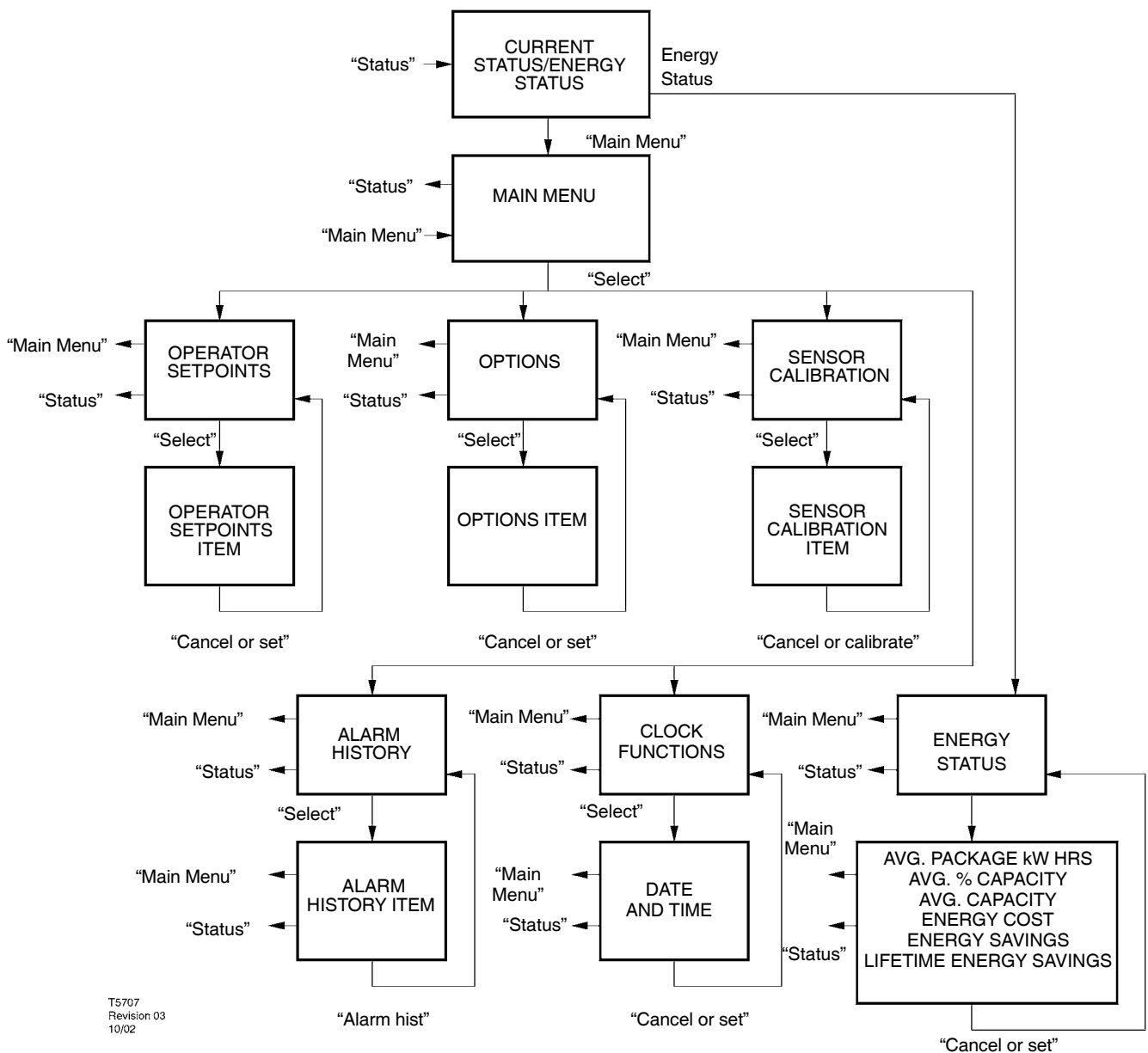
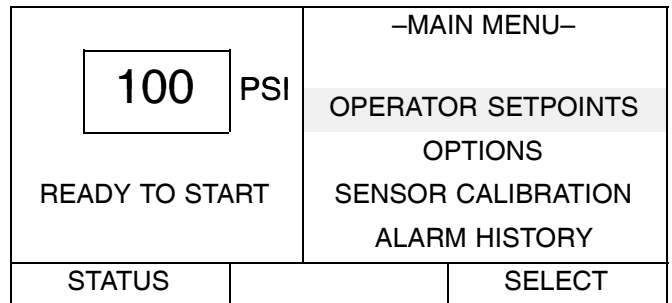
The MAIN MENU screen can be accessed from the CURRENT STATUS screen by pressing the MAIN MENU button, identified by the words "MAIN MENU" in the bottom line of the screen directly above the center button.

The MAIN MENU screen is the point from which various operator functions can be accessed. Refer to the Operator Panel Flow Diagram.

Each of the functions can be chosen by using the up and down arrows to highlight it on the screen.

The controller will go to the highlighted function if the SELECT button is pressed or will return to the CURRENT STATUS screen if the STATUS button is pressed.

The language and units of measure are pre-set prior to the compressor leaving the factory.



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9.0 OPERATING INSTRUCTIONS

9.6 OPERATOR SETPOINTS

Setpoints are user-adjustable variables in the controller logic that can be set using the OPERATOR SETPOINTS screen shown opposite.

The name and value of each of the setpoints listed can be seen on the screen by moving the list up and down using the arrow buttons.

Setpoints associated with options are described in the OPTIONS sections.

<div style="border: 1px solid black; padding: 5px; display: inline-block;">100</div> PSI READY TO START	–OPERATOR SETPOINTS– TARGET PRESSURE 105 psi	
STATUS	MAIN MENU	SELECT

FACTORY DEFAULTS

OPERATOR SETPOINTS	DEFAULT	MIN.	MAX.	STEP	UNIT
Target pressure	100	65	150	1	PSI
Automatic stop pressure	105	Target +1	Target +10	1	PSI
Immediate stop pressure	115	Auto	Auto +10	1	PSI
Condensate release	10	2	10	1	SEC.
Condensate interval	60	60	360	1	SEC.
Energy Rate	0	0	9999.999	–	–
Reset Avg.		–	–	–	Date
Service menu	1	1	25535	1	–

A setpoint's value can be changed by first highlighting the item and its value and pressing the SELECT button to highlight just the value. When the value line is highlighted by itself, the value can be adjusted using the up and down arrow buttons. The CANCEL and SET buttons appear at this time. Press the SET button to enter the new value or press the CANCEL button to return the value of the setpoint prior to using the arrows. The displayed value will flash twice to indicate that it has been entered into the setpoint and the pair of setpoint item and value display lines will again be highlighted together.

Operator setpoints can be exited by pressing the STATUS or MAIN MENU buttons. If no buttons are pressed within 30 seconds, the display will return to the CURRENT STATUS screen.

Target pressure

The compressor will try to operate at this pressure setting. The target pressure ranges and step sizes for each unit of measure are listed in the table below.

Unit	Min	Max (1S / 2S)	Step
PSI	65	150	1
BAR	4.4	10.3	0.1
kPa	440	1034	10
KGCM2	4.5	10.5	0.1

9.0 OPERATING INSTRUCTIONS

Automatic stop pressure

The compressor will unload once the system pressure rises to the automatic stop pressure and the compressor is operating at the minimum speed. The range for this set point will be target pressure + 1 psi to target pressure + 10 psi or 155 psi whichever is less

Immediate stop pressure

The compressor will unload if the system pressure rises to this pressure. The range for this set point will be the automatic stop pressure to automatic stop pressure + 5 psi or 160 psi – whichever is less. If the remote sensor is 'on', the maximum immediate stop pressure will always be automatic stop pressure + 5 psi.

Condensate Release

This is the number of seconds that the condensate solenoid will be open (de-energized) when blowing out the condensation.

Condensate Interval

This is the time interval between condensation blowdowns

Energy Rate

The energy cost and the energy savings items on the ENERGY STATUS screen will use this value for their calculations. It is intended to be a monetary value representing the user's power cost per kilowatt hour.

Reset Averaging

When this setpoint is selected and the SET button is pressed, the items on the ENERGY STATUS screen will be reset, and the date the reset occurred will be displayed in this setpoint. This selects the beginning of the time period over which the ENERGY STATUS information will be calculated. Note that the "Lifetime Energy Savings" item will not be reset.

Service Menu

For use by IR personnel only.

9.0 OPERATING INSTRUCTIONS

9.7 OPTIONS

Options are turned on or off and their associated values are set using the OPTION screen shown opposite.

Some options are purchased, they require additional machine hardware and must first be enabled by service personnel. The name and value of each of the following options can be seen by moving the list up and down using the arrow buttons

An Option item's value can be changed the same way that OPERATOR SETPOINTS values are changed.

100 PSI			-OPTIONS-		
READY TO START			REMOTE START/STOP ON		
			REMOTE START/STOP OFF		
STATUS	MAIN MENU	SELECT			

OPTIONS Items	SELECTION	MIN.	MAX.	Step	Unit	Installed Option Required
Remote Pressure Sensor	ON/OFF					No
Sequencer	ON/OFF					No
Remote Start/Stop	ON/OFF					Yes
Power Out Restart	ON/OFF					Yes
Power Out Restart Time		10	600	1	SEC	Yes
Scheduled Start Day		day	day	1	day	Yes
Scheduled Start		00:00	23:59	1	time	Yes
Scheduled Stop Day		day	day	1	day	Yes
Scheduled Stop		00:00	23:59	1	time	Yes
Modbus Protocol	ON/OFF/ICU					No
Modbus Address		1	247	1		No
Condensate Level Installed	Yes/No					No

Remote pressure sensor

If this setting is set to ON, the compressor will use a remote mounted pressure sensor for controlling system pressure by comparing it to the Target Pressure setting and the Auto Stop Pressure setting. The pressure measured by this sensor is shown in the CURRENT STATUS display as the Remote Pressure reading. The local sensor at the package discharge is still used for Immediate Stop, for certain Alarm conditions and for display on the left side of the screen.

Sequencer

If this setting is set to ON, the compressor will be able to start and stop by commands from a host device. When the Intellisys receives a load command from the host device, the compressor will start. When the Intellisys receives an unload command the compressor will respond as though executing an immediate stop.

Remote start/stop

If the remote start/stop option is installed and this setting is set to ON, the compressor can be started and stopped from a remote device.

Power out restart

If this setting is set to ON, the compressor will automatically restart when power is returned to the compressor if it was operating when power was removed.

Note:

A kit including instruction manual is required to install this option.

Power out restart time

If the power out restart setting is set to ON, this is the number of seconds from the time power is restored until the compressor starts. The power out restart horn will sound during this time.

Scheduled start day

This option is the selection for the day that a scheduled start will take place. The selections are Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Daily (Su - Sa), Weekdays (M - F), or Weekends. This option setpoint will work with the scheduled start setpoint.

9.0 OPERATING INSTRUCTIONS

Scheduled start

This option will cause the unit to start on the scheduled start day, at the time stored in this setpoint. To disable this option, set the value of scheduled start equal to the value of scheduled stop.

Scheduled stop day

This option is the selection for the day that a scheduled stop will take place. The selections are Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Daily (Su — Sa), Weekdays (M — F), or Weekends. This option setpoint will work with the scheduled stop setpoint.

Scheduled stop

This option will cause the unit to stop on the scheduled stop day, at the time stored in this setpoint. To disable this option, set the value of scheduled stop equal to the value of scheduled start.

Modbus protocol and address

See the Modbus manual.

9.8 SENSOR CALIBRATION

Pressure sensor calibration is done through the SENSOR CALIBRATION screen. Sensor calibration can only take place when the machine is stopped. Calibration needs to be done only after a sensor has been replaced or the Intellisys controller has been replaced.

<div style="border: 1px solid black; padding: 5px; display: inline-block;">100</div> PSI READY TO START		-SENSOR CALIBRATION- <div style="background-color: #e0e0e0; padding: 5px; margin: 5px 0;"> SENSOR 4APT CALIBRATE </div> SENSOR 3APT CALIBRATE
STATUS	MAIN MENU	SELECT

Each of the sensors listed below can be chosen by using the up and down arrow buttons to highlight it on the screen.

SENSOR CALIBRATION Items

- Sensor 1AVPT (LP Inlet Vacuum)
- Sensor 2APT (Interstage Pressure)
- Sensor 3APT (HP Discharge Pressure)
- Sensor 4APT (Package Discharge Pressure)
- Sensor 5OPT (Oil Filter In Pressure)
- Sensor 6OPT (Oil Filter Out Pressure)
- Sensor 9APT (Remote Sensor)

Select the highlighted sensor by pressing the SELECT button. Press the CALIBRATE button to start the automatic calibration procedure, or press the CANCEL button to not calibrate it and return to the sensor list.

The calibration screen can be exited by pressing either the STATUS or MAIN MENU buttons. If no buttons are pressed within 30 seconds, the display will return to the CURRENT STATUS screen.

9.0 OPERATING INSTRUCTIONS

9.9 ALARM HISTORY

Alarm History displays each of the Alarm messages for the last 15 Alarms experienced by the machine. It also gives access to displaying the machine operating conditions that existed at the time of each Alarm. The first one shown, "Alarm History 1", was the most recent Alarm to occur. Note that multiple, consecutive EMERGENCY STOP Alarms are not recorded as separate Alarms, only the first one will be shown.

<div style="border: 1px solid black; padding: 5px; display: inline-block;">100</div> PSI READY TO START		-ALARM HISTORY-
		ALARM HISTORY 1 BLOWER MOTOR OVERLOAD
		ALARM HISTORY 2 HIGH AIREND DISCH TEMP
STATUS	MAIN MENU	SELECT

Each of the last 15 Alarm messages can be seen by moving the Alarm History list up and down using the arrow buttons. Pressing the SELECT button when one of the Alarms is highlighted will display the list of machine values that existed at the time that particular Alarm occurred.

The name and value of each of the items can be seen by moving the list up and down using the arrow buttons. Pressing the ALARM HIST. button will return the display to the ALARM HISTORY screen.

Alarm histories can be exited by pressing either the STATUS or MAIN MENU buttons. If no buttons are pressed within 30 seconds, the display will return to the CURRENT STATUS screen.

9.10 CLOCK FUNCTIONS

<div style="border: 1px solid black; padding: 5px; display: inline-block;">100</div> PSI READY TO START		-CLOCK FUNCTIONS-
		Time 01:15
		Date Jan 01, 00
STATUS	MAIN MENU	SELECT

The date and time for the real time clock is set through the CLOCK FUNCTIONS screen. Use the up and down arrows to highlight either TIME or DATE. Select the highlighted setting by pressing SELECT.

If TIME is selected, first the hours will be highlighted. Adjust the hours (00–23 hour clock) by using the up and down arrows. Once the correct time is in the display, press SET to highlight the minutes. Adjust the minutes (00–59) and then press SET to complete setting the time.

If DATE is selected, first the month will be highlighted. Adjust the month by using the up and down arrows and then press SET to highlight the date. Once the correct date is displayed, press SET to highlight the year. Once the correct year is displayed, press SET to complete setting the date.

9.0 OPERATING INSTRUCTIONS

9.11 ENERGY STATUS MESSAGES

<div style="border: 1px solid black; display: inline-block; padding: 5px; margin-right: 10px;">100</div> PSI READY TO START		–ENERGY STATUS– AVERAGE PACKAGE kW HRS AVERAGE % CAPACITY– –AVERAGE CAPACITY
STATUS	MAIN MENU	SELECT

The Energy Status display can be selected by pressing the ENERGY STATUS button. The following items and their present values will be displayed on the right side of the screen by pressing the up and down arrows.

AVERAGE PACKAGE kW HOURS – This displays the average package kW per hour for the time period that was started by selecting the reset averaging setpoint. This value includes the blower power usage.

AVERAGE % CAPACITY – Displays the compressor's average percent capacity for the time period that was started by selecting the reset averaging setpoint. The value is determined by taking the average package kW per hour, removing the blower power usage and then dividing that number by the motor kW per hour for that size of compressor at 100% capacity.

AVERAGE CAPACITY – Displays the compressor's average capacity in cfm or m³ for the time period that was started by selecting the reset averaging setpoint.

ENERGY COST – Displays the energy cost of the compressor for the time period that was started by selecting the reset averaging setpoint. This is calculated by multiplying the kW hours of the motor and the blower by the energy rate.

ENERGY SAVINGS – Displays the energy savings of the compressor for the time period that was started by selecting the reset averaging setpoint as compared to a conventional compressor. This value is determined by calculating how much a conventional compressor motor would cost to operate at the same average capacity and then subtracting the motor energy cost of the Nirvana compressor from it. It is assumed that the blower cost is the same in both packages.

LIFETIME ENERGY SAVINGS – Displays the lifetime energy savings of the compressor at the existing energy rate and at the average percent capacity as compared to a conventional compressor.

9.0 OPERATING INSTRUCTIONS

9.12 WARNINGS

When a WARNING occurs, a large question mark will flash on the display screen.

If multiple WARNINGS exist, the small up/down arrows will appear in the upper right corner of the display screen. The multiple WARNINGS can be seen by pressing the up and down arrow buttons. Pressing the STATUS button will display the CURRENT STATUS screen with the WARNING button indicating that a WARNING still exists.

A WARNING will not cause the unit to shut down. The unit will continue to run in its normal operation and the WARNING will remain displayed until reset.

A Warning needs to be reset by the operator by pressing the RESET button twice.

The possible Warning messages are as follows;

1ST STAGE INLET TEMPERATURE – This warning will occur if the compressor inlet exceeds 115°F / 46°C.

CHANGE OIL FILTER – Will occur if 5OPT–6OPT is greater than 0.9 bar (13 psi) and 5OTT is greater than 120°F / 49°C.

CHANGE INLET FILTER – This will occur if the Inlet Vacuum is greater than 0.05 bar (0.7 psig).

SENSOR FAILURE – This will occur if a sensor is recognized as missing or broken.

HIGH DISCHARGE PRESS – Will occur if the unit is under the control of an external device, such as an ISC, and the discharge pressure is greater than the immediate stop pressure.

AUXILIARY WARNING 1 or 2 – Will occur if the auxiliary warning input closes.

REMOTE PRESSURE SENSOR FAILURE (option) – This will occur if the remote pressure sensor fails. If this happens, the Intellisys will start using the package discharge pressure sensor to measure system pressure.

FAILED CHECK VALVE – Will occur if the 2nd stage discharge pressure exceeds 55 psig when the compressor is running unloaded. If this happens, DO NOT hit the Emergency Stop button. The Intellisys disables the STOP button and operates unloaded until the warning is cleared. The warning can be cleared after the isolation valve is closed. The stop button will be enabled once the warning is cleared. Press the stop button to stop the compressor. DO NOT re-start the compressor without servicing the check valve.

9.13 SERVICE WARNINGS

SERVICE – Service warnings occur when the unit has operated a certain number of hours, based on the total hours, or has operated for a certain number of months, based on the real time clock. Service warnings can have multiple levels, depending on the service level selection.

This will be set prior to the compressor being shipped from the factory. When a service warning occurs, contact your local IR service representative.

9.14 INITIAL CHECK ALARMS:

The following alarms will only occur when the machine is not running. These alarms are related to high temperature, power loss, and sensor calibration. They will have the same display mode as other alarms.

CHECK SETPOINTS – Will occur if the controller has determined that some of the data stored in memory contains unacceptable values.

INVALID CALIBRATION – Will occur if the sensor zero value is –10% to +1% of its scale. See Sensor Calibration.

HIGH BEARING OIL TEMPERATURE – Will occur if 5OTT is greater than 95% of the high bearing oil temperature set point.

CONTROL POWER LOSS – Will occur if the controller detects a loss of the 120 VAC control power.

9.0 OPERATING INSTRUCTIONS

9.15 ALARMS

When an Alarm occurs, a large exclamation mark in a triangle will flash on the display screen. The display message will indicate what caused the Alarm.

The compressor will stop and cannot be re-started again until the alarm condition no longer exists and the alarm message reset.

Pressing the STATUS button will display the STATUS screen. The presence of the ALARM button indicates that an Alarm condition still exists. Alarm Status is the list of machine operating conditions that existed at the time of the Alarm.

The name and value of each of the items listed can be seen by moving the list up and down using the arrow buttons. Pressing the ALARM button will return the display to the Alarm screen and the RESET button.

The Alarm needs to be reset by the operator by pressing the RESET button twice. Any exceptions to this are explained in the alarm descriptions.

<div style="border: 1px solid black; padding: 5px; display: inline-block;">100</div> PSI STOPPED BY ALARM		-ALARM STATUS- PACKAGE DISCH PRESSURE 100 psi PACKAGE DISCHARGE TEMP 103°F
ALARM	MAIN MENU	

The possible Alarm messages are as follows;

BLOWER MOTOR OVERLOAD – Will occur if a blower motor overload relay contact opens.

REMOTE STOP FAILURE – Will occur if the REMOTE START/STOP option is enabled, the remote stop button remains open and either start button is pressed.

REMOTE START FAILURE – Will occur if the unit is started by the remote start button and the button stays closed for 7 seconds after the unit starts.

SENSOR FAILURE – Will occur when a sensor is recognized as missing or broken. The sensors affected by this alarm are 1AVPT, 2APT, 3APT, 4APT, 6OPT, 1ATT, 2ATT, 3ATT, 4ATT, 5OTT. The sensor should be displayed along with the sensor failure message. The sensor failure message shall follow the following format: SENSOR FAILURE 4APT.

EMERGENCY STOP – Will occur when the EMERGENCY STOP button is engaged.

VSD FAULT – The VSD fault is read from the drive. The Intellisys will read the status menu of the variable speed drive. If a fault condition is returned in the status information, the Intellisys will issue a VSD FAULT alarm and display the number of the fault condition.

CHECK MOTOR ROTATION – This will occur if the Intellisys reads a negative speed from the VSD when starting.

VSD COMMUNICATION FAILURE – This will occur if the Intellisys does not receive a response from the VSD when requesting information. This alarm will take about 8 seconds to occur.

VSD INITIALIZATION FAULT – Will occur if the Intellisys is unable to establish communications with the VSD after a power up.

HIGH I/C CONDENSATE – This will occur if COND LEVEL INSTALLED is YES and the High Condensate Level switch remains on for 1 minute.

HIGH INTERCOOLER PRESSURE – Will occur if 2APT is greater than 47 psig / 3,25 bar.

HIGH 2ND STAGE PRESSURE – Will occur if 3APT is greater than 10 psig / 0,7 barg greater than the immediate stop pressure

LOW BEARING OIL PRESSURE – This will occur if 6OPT is less than 17 psi / 1.2 bar and the unit is running.

HIGH 1ST STAGE TEMPERATURE – This will occur if 2ATT is greater than 482°F / 250°C.

HIGH 2ND STAGE TEMPERATURE – Will occur when 4ATT is greater than 520°F / 271°C.

The alarm for N37-45K-OF & N50-60H-OF will occur at 536°F / 280°C.

HIGH I/C AIR TEMPERATURE – This will occur if temperature sensor 3ATT is greater than 140°F / 60°C.

HIGH BEARING OIL TEMPERATURE – This will occur if temperature sensor 5OTT is greater than 170°F / 77°C.

2ND STAGE OVER RATIO – This alarm will occur if $(3APT+14.5psi)/(2APT + 14.5psi)$ is greater than 5.

9.0 OPERATING INSTRUCTIONS

INLET RESTRICTION – This will occur if the unit is running and 1AVPT is greater than 1.45 psi / 0.1 bar.

1ST STAGE INLET TEMPERATURE – This will occur if the 1ATT EXCEEDS 125°F / 51.6°C

10.0 MAINTENANCE

10.1 MAINTENANCE PROMPTS

The service warning and flashing LED will appear at intervals, dependant on the service level selected. Refer to operating instructions.

The customer can only reset the warning for 24 hours by pressing the “set” button.

IR service engineers will master reset the warning after completing the service work.


The service warning will return each subsequent 2000 hours.

The machine will be master reset after service work conducted prior to the 2000 hour interval to prevent false indication.

10.0 MAINTENANCE

10.2 MAINTENANCE CHART

The *MAINTENANCE CHART* indicates the various components and the intervals when maintenance has to take place. Where a service interval is stated in both hours and months, it is the sooner of the two intervals that must be adhered to. Coolant capacities etc can be found in the *GENERAL INFORMATION* section of this manual. Note that any Local or National codes that require specific maintenance that exceeds the requirements of this section must be adhered to.

		Maintenance Schedule				
	Hours:	150 (1st time only)	500 1000 1500 2500 3000	2000 6000 10000 14000 18000	4000 12000 20000	8000 16000
		Daily				
Oil filter		Change				Change
Air filter **				Check pressure	Change	Change
ULTRA COOLANT*	Check			Sample	Sample	Change
Power Drive Module filter *			Check	Change	Change	Change
Hoses ***				Check / clean	Check / clean	Check / clean
Pressure relief valve				Check	Check	Check
Cooler Core(s)			Check / clean	Check / clean	Check / clean	Check / clean
Moisture separator			Check / clean	Check / clean	Check / clean	Check / clean
Motor cowl			Check / clean	Check / clean	Check / clean	Check / clean
Vibration Analysis				Analysis	Analysis	Analysis
Coolant Analysis				Analysis	Analysis	Analysis
Blower Motor (N90 – 160K / 125 – 200H Only)					Regrease	Regrease
Expansion joint bolt torque (if supplied)		Check		Check		
Condensate stainers		Clean		Clean	Clean	Clean
Check valve					Inspect	Replace
Blowdown valves					Inspect	Rebuild
Airend intake batts **					Check	
Breather				Check	Check	Check

If the compressor is run less than 4,000 hours per year,

* Maintain every 6 months

** Maintain every year

*** Maintain every 2 years

10.0 MAINTENANCE

10.3 MAINTENANCE PROCEDURES

CAUTION

Before beginning any work on the compressor, read and understand the safety instructions in this manual. Open, lock and tag the main electrical disconnect and close the isolation valve on the compressor discharge. Do not under any circumstances open any drain valve or remove components from the compressor until this has been carried out. Note that pipework downstream of the check valve may still contain pressure that must also be vented to atmosphere before beginning any work.

CAUTION

When using any form of liquid for cleaning, ensure that all electrical components are protected or covered to prevent ingress of liquid.

WARNING

This compressor contains a variable frequency drive. When it is switched off and the motor is stopped, the internal capacitors store a potentially lethal high voltage. **DO NOT REMOVE THE DRIVE COVER** or attempt any work on the drive unless trained. There are no user serviceable items behind the cover.

DANGER

This compressor contains a variable frequency drive. When it is switched off and the motor is stopped, the internal capacitors store a potentially lethal high voltage electric charge which gradually falls to zero over time. After switching off the machine at its local isolator **WAIT AT LEAST 15 MINUTES** for the capacitors to fully discharge before opening the power drive module doors.

WARNING

Use suitable equipment for lifting heavy items and ensure loose components are adequately supported to eliminate risk of dropping.

WARNING

The motor rotor contains a powerful magnetic field. This field can effect the operation of digital devices such as watches, mobile phones etc. Assembly or handling of the rotor should not be attempted by personnel with cardiac pacemakers, defibrillators or other implanted electronic medical device.

Compressed air can be dangerous if incorrectly handled. Before doing any work on the unit, ensure that all pressure is vented from the system and that the machine cannot be started accidentally.

Ensure that maintenance personnel are adequately trained, competent and have read the Maintenance Manuals.

Prior to attempting any maintenance work, ensure that:–

- all air pressure is fully discharged and isolated from the system. If the automatic blowdown valve is used for this purpose, then allow enough time for it to complete the operation.
- the machine cannot be started accidentally or otherwise, by posting warning signs and/or fitting appropriate anti-start devices.
- all residual electrical power sources (mains and battery) are isolated.

Prior to opening or removing panels or covers to work *inside* a machine, ensure that:–

- anyone entering the machine is aware of the reduced level of protection and the additional hazards, including hot surfaces and intermittently moving parts.
- the machine cannot be started accidentally or otherwise, by posting warning signs and/or fitting appropriate anti-start devices.

Prior to attempting any maintenance work on a *running* machine, ensure that:–

- the work carried out is limited to only those tasks which require the machine to run.
- the work carried out with safety protection devices disabled or removed is limited to only those tasks which require the machine to be running with safety protection devices disabled or removed.

10.0 MAINTENANCE

- all hazards present are known (e.g. pressurized components, electrically live components, removed panels, covers and guards, extreme temperatures, inflow and outflow of air, intermittently moving parts, safety valve discharge etc.).
- appropriate personal protective equipment is worn.
- loose clothing, jewelry, long hair etc. is made safe.
- warning signs indicating that *Maintenance Work is in Progress* are posted in a position that can be clearly seen.

Upon completion of maintenance tasks and prior to returning the machine into service, ensure that:–

- the machine is suitably tested.
- all guards and safety protection devices are refitted.
- all panels are replaced, canopy and doors closed.
- hazardous materials are effectively contained and disposed of.

10.4 ROUTINE MAINTENANCE

This section refers to the various components which require periodic maintenance and replacement.

For all other maintenance, contact your local Ingersoll–Rand office, Distributor or Air Center.

Refer to safety information and maintenance procedures prior to carrying out any of the maintenance in the following sections.

Prior to starting

Oil level checking procedure.

The oil level should be checked daily. The level sight glass is located on the oil sump. While the machine is running on load, oil should always be visible in the sight glass. The normal position is $\frac{1}{2}$ to $\frac{3}{4}$ full.

Stop the machine and ensure oil is still visible in the sight glass.

Adding oil

Run the compressor for a minimum of 40 seconds, the oil level should be $\frac{1}{2}$ to $\frac{3}{4}$ full as seen in the sight glass. If not, stop the compressor and slowly unscrew the oil fill plug. Add Ultra–Coolant and recheck the oil level. Repeat until the oil level is visible in the sight glass with the compressor running

OIL AND OIL FILTER

Change oil filter after every 8,000 hours or less as required (see checking procedure below). To check the condition of the oil filter, the compressor must be running and the oil temperature must be greater than 49°C (120°F). With these conditions met select “OIL FILTER PRESS DROP” from current status screen. If “OIL FILTER PRESS DROP” is less than 0,9 bar (13 psi) then the oil and filter do not need service. If the warning light is on and “CHANGE OIL FILTER” warning is displayed, then the oil should be drained and the filter replaced.

To change the oil and filter, the oil should be warm for more effective drainage. Remove the two enclosure panels at the rear of the machine. Remove the pipe plug from the oil drain connection in the rear of the baseplate. Place a suitable drain pan under the drain connection and open the valve.

Dispose of waste oil according to local regulations.

When the gearcase is empty, close the valve and replace the pipe plug. Position the empty drain pan under the oil filter. Remove the filter and allow the oil to drain from the oil cooler as well. Wipe the sealing surface of the filter adaptor with a clean, lint-free cloth. Remove the replacement filter from its protective package. Apply a small amount of clean oil on the rubber seal and install the element. Screw the element on until the seal makes contact with the seat on the adaptor head. Tighten the filter a further $\frac{1}{2}$ to $\frac{3}{4}$ of a turn.

Unscrew the oil fill plug and add oil until the level reaches the top of the gearcase sight glass. Replace the oil fill plug and tighten

WARNING

Under no circumstance should the compressor be operated with the oil fill plug removed

10.0 MAINTENANCE

Start the compressor and check the oil filter and oil drain valve for leaks. Select "BEARING OIL PRESS" from the current status screen to insure that adequate oil pressure has been attained. Inspect the gearcase sight glass, the correct oil level for the sump during operation is $\frac{3}{4}$ to $\frac{4}{4}$ full. Some amount of foaming in the sight glass is normal. The oil level is interpreted as the level in the sight glass below the top foam, where a line of separation can be seen. If additional oil is required, stop the compressor and add oil as needed.

Tools required

Wide-blade screwdriver or M10 wrench or M10 socket with ratchet
400mm adjustable wrench
600mm adjustable wrench
Oil filter wrench

Parts required

Oil filter element

Approximately 64 litre (17 U.S. gal) of Ultra Coolant for N90–160K, N125–200H

Approximately 53 litre (14 U.S. gal) of Ultra Coolant for N55–75K, N75, 100H

Approximately 53 litre (14 U.S. gal) of Ultra Coolant for N37–45K, N50–60H

Pressure system

At 2000 hour intervals, inspect the external surfaces of the airends and piping, including all fittings, for visible signs of impact damage, excessive corrosion and abrasions. Any suspect parts should be replaced before the compressor is put back into service.

Gearcase breather

To service the gearcase breather, remove the appropriate panel. Remove the breather cover by unscrewing the four retaining screws. Remove all of the breather media and clean with a suitable solvent. Allow the media to dry. Re-install the media, the cover, and the enclosure panel.

Condensate drain functionality

To verify the functionality of the condensate drains, simply observe the timed operation of each. Each drain should open at least every 3 minutes while the compressor is loaded. (The intercooler drain exhausts at a much lower pressure than the aftercooler).

Oil free condensate can be disposed of via a sewer drain.

Condensate strainers

In order to service the condensate strainers (both interstage and discharge), the strainer service valves preceding the strainers should be closed. Remove the screens from the strainers, while noting the direction. Clean any debris from the screens and reinstall. Open the strainer service valves.

Blower motor Re-Grease

(N75–160 Aircooled units)
6 Months or 4000 Hrs.

Apply high melting point grease into the blower motor bearings using a grease gun at the nipple provided.

Stop when excess grease is seen at the relief port.

Oil hoses

- The flexible hoses that carry oil through the cooling system may become brittle with age and will require replacement. Have your local Ingersoll–Rand Distributor or Air Center inspect them every 3 months and replace them as needed or every 2 years.

- Depending on the location of the hose, it may contain compressor oil. It is recommended to drain the oil into a clean container. Cover the container to prevent contamination. If the oil is contaminated, a new charge of oil must be used

- Remove the hose.

- Install the new hose and refill the unit with oil. Start the compressor, check for leaks and check coolant level. Refill as necessary.

- Replace the oil fill plug and tighten

Pressure relief valve check

The pressure relief valve must be frequently tested and regularly maintained. Remove from the machine and check for the correct operating pressure. Correct, replace as necessary. If operating conditions are particularly severe, the frequency of testing and maintenance must be increased accordingly. A pressure relief valve check must also be performed at the end of any non-service period. The user must establish the frequency of such tests as it is influenced by such factors as the severity of the operating environment.

CAUTION

High pressure air will discharge through the discharge ports of the valve during pressure relief valve check. Wear ample clothing, gloves, safety glasses and ear protection during valve testing.

Run the compressor for about 10 minutes by venting air from the system to let the unit warm up. With the unit running, test at or near the maximum operating pressure by opening the valve for the minimum period required to flush the valve seat free of debris. This can be accomplished by holding the test lever fully open or unscrewing the spring pressure retaining cap, depending on the type of valve installed. If there is no evidence of discharge or the valve does not fully close, discontinue use of equipment and contact a licensed contractor or qualified service personnel.

The pressure relief valve should also be tested and re-calibrated in accordance with any national or local codes that may exist. If no code exists, IR recommend that the pressure relief valve is recalibrated at intervals of one year.

10.0 MAINTENANCE

Air filter change procedure

Unclip (or unbolt) the retaining cover and remove the old element(s).

Fit new element(s) and refit the retaining cover.

Aircooled Cooler Cleaning

Ensure that the compressor is isolated from the compressed air system and is vented of all pressure. When undertaking any work on the compressor always use certified lifting equipment and employ sound working principles.

Ensure that the main power disconnect switch is locked off and tagged.

Visually check the outside of the cooler cores to be certain that a complete cleaning of the cooler is required. Frequently, dirt, dust or other foreign material may only need to be removed with a vacuum to remedy the problem.

When the cooler is covered with a combination of oil, grease or other heavy substances that may affect the unit's cooling, then it is recommended that the cooler cores be thoroughly cleaned on the outside.

If it is determined that the compressor operating temperature is higher than normal due to the external passages between the fins of the cooler cores being restricted with deposits of foreign material, then the cooler should be removed for cleaning.

WARNING

Strong cleaners can harm aluminium cooler parts. Follow cleaner manufacturers instructions for use. Wear appropriate safety equipment.

The coolers in these machines can either be cleaned by removing the complete cooler for off site cleaning or 'back flushing' in place using a high pressure hose and gaining access through the holes in the intermediate plenum.

Instructions for cleaning the coolers while installed in the compressor.

While cleaning coolers, great care must be taken to protect the rest of the machine from moisture and contamination by covering sensitive parts with plastic sheeting.

- Remove plenum sheet metal to gain access to the coolers from the blower side.
- Remove the screws securing the access panels on the cooling plenum and remove covers.
- Cover main drive motor, PDM Heat sink blower motor, drain valve, air filter, and cooling motor variable speed drive with plastic sheeting to prevent damage from entrance of cleaning solution.
- Cover inlet of blower wheel with plastic sheeting to prevent entrance of cleaning fluid.

- Cover the inlet grill of the intake panel with plastic sheeting to prevent cleaning solution from exiting the compressor.
- Remove enclosure intake batts
- Use an extended length nozzle and a mild cleaning solution to clean the coolers.

WARNING

Strong cleaners can harm aluminium cooler parts. Follow cleaner manufacturers instructions for use. Wear appropriate safety equipment.

- Cleaning fluid will collect on both sides of the cooler core. If required, periodically drain fluid from intake plenum and bucket to prevent them from over flowing.
- After cleaning is complete, dry off plenum, intake, and cooler core. Reassemble parts in reverse order.

Watercooled Cooler Cleaning

A periodic inspection and maintenance program should be implemented for watercooled heat exchangers. The following steps should be taken:

- Inspect filters in system and replace or clean as required.
- Carefully examine cooler shells for scale and clean if necessary. If a cleaning solution is used, be sure to wash out all chemicals thoroughly with clean water before returning the compressor to service. After cleaning, examine the cooler for erosion or corrosion.
- A qualified cleaning service should be used for the cleaning process. These organizations can evaluate the type of deposit to be removed and supply the appropriate solution and method for a complete cleaning job.
- When reinstalling bonnets to cooler shell, tighten bolts uniformly in a cross-pattern. Overtightening can result in cracking of the bonnet.
- Cleaning solutions must be compatible with the metallurgy of the cooler
- Care must be taken to avoid damaging tubes if mechanical cleaning procedures are used.

Airend bearings

Airend bearings are lubricated by the compressor oil and require no maintenance.

CAUTION

Under no circumstances should these discharge temperatures be exceeded. If the machine fails to trip A FAULT EXISTS. Investigate immediately.

Blower Motor Bearing Maintenance (Stored units)

- Prior to placing a unit in storage for extended intervals, rotate the blower motor several revolutions by hand in the direction of rotation.

10.0 MAINTENANCE

- On N90–160K, N125–200H aircooled units, whilst rotating the motor, pump grease into the bearing until grease is seen at the relief port.
- Thereafter rotate the motor as described above every three months until such time as the unit is placed in service.
- If the storage time is to exceed a total of nine (9) months duration, the compressor must be ordered for long term storage.

Motor cowl cleaning

- Ensure compressor is electrically isolated for at least 15 minutes before commencing any maintenance work.
- Remove panels from the compressor.
- Using a clean dry cloth, remove dust from the surface of the motor cowl and ensure all ventilation slots are free of obstructions.
- Replace panels to the compressor.

Drive Box Filter Removal/Replacement

- Ensure compressor is electrically isolated for at least 15 minutes before commencing any maintenance work.
- Unclip the front grill of the drive box filter.
- Remove the filter pad from the housing and replace with a new filter pad from Ingersoll–Rand.
- Replace front grill to the drive box filter.

Moisture Separator Check/Cleaning

- Ensure compressor is electrically isolated for at least 15 minutes, before commencing any maintenance work.
- Isolate the compressor from the system and fully discharge the compressed air within the unit.
- Remove plastic tube from the fitting located on the bottom of the moisture separator.
- Remove the bowl of the moisture trap, clean and replace.

Condensate (Moisture) Drain Valve / Trap

- Ensure compressor is electrically isolated for 15 minutes and all pressure is relieved from system.
- Remove all pipes going to and from the valve (or trap).
- Disconnect any electrical cables to the valve (or trap).
- Determine the type of condensate drain device and continue in the appropriate section below:–

Timed Solenoid Drain Valves Check / Cleaning

- Remove the central nut and then the electrical coil.
- Remove screws holding bonnet of valve and carefully split the valve. Clean and inspect all internal parts.
- Similarly check and clean the ball valve and needle valve.
- Replace any defective parts as identified in parts manual.
- Re-assemble and later, with machine running, check that condensate and air is expelled at frequency and duration set into the INTELLISYS controller (see section 9.6).

10.0 MAINTENANCE

Fluid and Vibration Monitoring

Ingersoll–Rand recommends incorporating predictive maintenance, specifically the use of oil and vibration analysis, into all Preventative Maintenance programs. Predictive Maintenance is designed to increase system reliability and prevent costly downtime. Through the use of sophisticated diagnostic tools, including fluid, vibration, and optional air analysis, IR Certified Service Technicians can identify and correct potential problems **BEFORE** they can cause expensive unscheduled downtime.

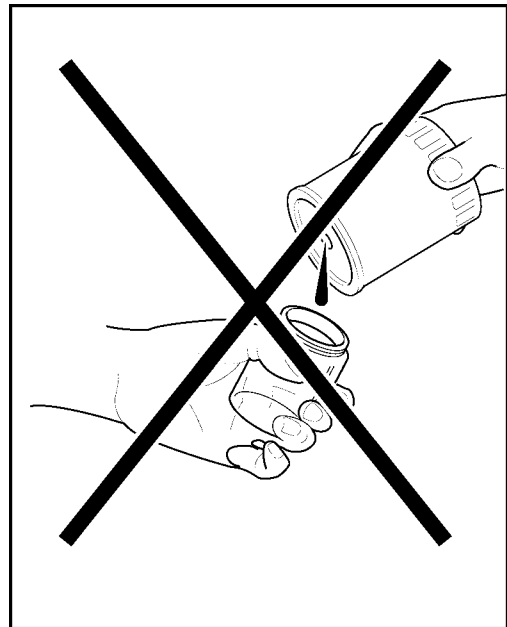
How does predictive analysis work? By establishing an initial baseline for normal operation, and then regularly monitoring fluid and vibration conditions, any sudden deviation or significant increase from this baseline can be identified and investigated to pinpoint the cause. More quickly diagnosing potential problems can directly save money by preventing costly failures and reducing or eliminating downtime. In addition, regular condition monitoring also helps to maximize the time between expensive preventative maintenance intervals, such as component rebuilds and oil changes.

Oil Sampling Procedure

With unit at sump oil temperature of 130 – 140 °F, stop the compressor. Wait 5 minutes, or sufficient time until oil in sight glass becomes clear, and any entrained air bubbles in the oil dissipate.

Remove oil fill cap from oil fill tube. Using oil sample pump kit, install a new hose on the pump. Insert the hose into the fill tube, and push the sample tube all the way to the bottom of the oil sump. You will feel the hose hit the bottom of the sump. Once the bottom is felt, pull the hose up about one inch. This prevents a sample from gathering any sediment that may be on the bottom of the sump. Extract the sample.

Remove the hose, remove the sample cup cap the cup, and reinstall the oil cap. Label and process the sample..



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11.0 FAULT FINDING

11.1 GENERAL FAULTS

WARNING

When attempting to identify and remedy any fault or failure, ensure it is only attempted by qualified personnel and that the safety and maintenance sections of this manual have been read and are fully understood and followed. Major overhauls should only be carried out by a qualified Ingersoll–Rand representative. Failures caused by fitting parts not recommended by Ingersoll–Rand or non–authorized Ingersoll–Rand personnel may not be covered by the terms of any warranty agreement

SYMPTOM	FAULT	REMEDY
Compressor will not start	No power supply to package	Check supply is switched on. If so, contact a qualified electrician.
	Intellisys controller failure	Check supply to unit. Replace unit.
	Starter failure	Isolate supply, lock off and tag. Replace failed component or contact your local Ingersoll–Rand representative
Compressor stops and will not restart	Drive controller has tripped	See section 11.2 & 11.3
	Intellisys controller has tripped the compressor	See section 11.2 & 11.3
Compressor is stopped and will not restart	Intellisys controller has tripped the compressor and has not been reset	See section 11.2 & 11.3
	Emergency stop has been pressed and not released	Identify reason why, repair fault, disengage button and reset Intellisys controller
	Emergency stop has been pressed and released but Intellisys controller has not been reset	Repair fault and reset Intellisys controller

11.0 FAULT FINDING

SYMPTOM	FAULT	REMEDY
Compressor will not meet pressure required by system	Compressor not sized to meet system requirements or requirements have been changed.	Contact your local IR representative
	Air loss due to pipe, hose, joint or seal failure	Overhaul or replace
	Air loss due to blowdown valve stuck open	Overhaul or replace
	Air loss through pressure relief valve not seating or set incorrectly	Overhaul or replace
	Air loss due to moisture separator drain trap stuck open	Overhaul or replace
	Motor speed too low caused by drive incorrectly set	Contact your local IR representative
	Motor speed too low caused by fault in drive settings	See section on drive faults
	Intellisys controller fault	Overhaul or replace
	Drive motor fault	See section on drive faults
	Pressure transducer faulty, incorrectly calibrated or EMF interference	Recalibrate or replace
	Incorrect Intellisys controller settings	Check and modify settings
	Inlet grill or ducting is blocked	Check and clean
	Air filter dirty or collapsed	Replace
	Pipe / Hoses blocked or collapsed	Clean or replace
	Cooler core blocked	Clean or replace
	Check valve not functioning correctly	Overhaul or replace
Equipment between compressor and customer measuring point causing pressure drop / pressure loss	Review system requirements	

11.0 FAULT FINDING

SYMPTOM	FAULT	REMEDY
Pressure produced by compressor is too high due to speed not reducing as demand reduces	Intellisys set incorrectly	Check and modify settings
	Pressure transducer may be faulty, incorrectly calibrated or not receiving pressure signal	Recalibrate or replace
	Drive settings fault	Contact your local IR representative
Compressor discharge air too hot	High ambient temperature	Review installation and system parameters
	Insufficient cooling air	Check ducting and cooling air path, check direction of blower rotation
	Blocked aftercooler matrix	Clean or replace
Compressor package produces excessive noise	Panels or doors are not closed properly	Rectify fault
	Air leaks from internal pipework / components	Overhaul or replace
	Blower or blower motor bearings worn	Overhaul or replace
	Loose debris impacting on blower during rotation	Remove and rectify any damage
	Blowdown valve stuck open	Overhaul or replace
	Pressure relief valve not seating correctly	Overhaul or replace
	Vibration due to motor, airend or blower imbalance	Overhaul or replace
	Airend requires overhaul	Contact your local IR representative

11.0 FAULT FINDING

SYMPTOM	FAULT	REMEDY
Discharge air is contaminated with condensate	Aftercooler not functioning correctly	Clean or replace
	Timed solenoids not set properly for environment.	Adjust the timed solenoid Interval and/or duration through the Operator Setpoints menu
	Moisture separator drain lines blocked.	Clean or replace
Compressor package draws too much current	Compressor operating above rated pressure	Check and modify settings. Review system requirements and contact your local IR representative
	Voltage supply is low or unbalanced	Contact your local IR representative or a qualified electrician
	Airend is damaged	Contact your local IR representative

11.2 INTELLISYS FAULTS (INDICATED ON THE INTELLISYS CONTROLLER)

FAULT	CAUSE	REMEDY
Emergency Stop	Emergency stop button has been pressed.	Identify reason why, repair fault, disengage button and reset Intellisys controller
Blower motor overload	Blower is blocked, damaged or blower motor is faulty.	Remove blockage, repair or replace damaged components
High airend discharge temperature	Compressor operating above rated pressure	Check and modify settings. Review system requirements and contact your local IR representative
	High ambient temperature	Review installation and system parameters
	Insufficient cooling air	Check ducting and cooling air path.
	Blocked cooler matrix	Clean or replace
	Blower motor direction of rotation incorrect	Wire correctly
Check setpoints	Controller software has been changed	Recalibrate all sensors and check setpoints

11.0 FAULT FINDING

FAULT	CAUSE	REMEDY
Remote start failure	Remote start button is pressed after machine is running or remote start button remains closed.	Check operation of buttons or operating procedures
Remote stop failure	Remote stop button remains open and either start button is pressed	Check operation of buttons or operating procedures
Sensor failure	Sensor is missing or faulty	Install, repair or replace faulty sensor
Compressor trips indicating a high compressor temperature.	Insufficient cooling taking place	If machine is watercooled, check that the cooling water is flowing. Check that there is no air in the water cooling system. Check that the strainer is not blocked.
Intellisys controller has tripped the compressor	A fault has occurred	Repair fault / reset Intellisys controller
Invalid Calibration	Calibration done with pressure in compressor.	Depressurise and recalibrate with pressure pipe to sensor disconnected. If fault still exists, replace pressure transducer.
Check motor rotation	This will occur if the Intellisys reads a negative speed from the VSD when starting.	Contact your local IR representative
VSD communication failure	Communication wiring faulty	Check and replace if required
	Drive faulty	Contact your local IR representative
	Intellisys faulty	Contact your local IR representative
VSD initialisation fault	Communication wiring faulty	Check and replace if required
	Drive faulty	Contact your local IR representative
	Intellisys faulty	Contact your local IR representative
High I/C condensate	This will occur if COND LEVEL INSTALLED is YES and the High Condensate Level switch remains on for 1 minute	Check operation of condensate removal system
High intercooler pressure	Air blockage, Airend damage	Check piping, contact IR representative
High 2nd stage pressure	3APT is greater than the rated discharge pressure plus 15 psi / 1 bar	Too high of pressure drop between 2nd stage discharge and package or remote pressure sensing, check piping

11.0 FAULT FINDING

FAULT	CAUSE	REMEDY
Low bearing oil pressure	This will occur if 6OPT is less than 17 psi / 1.2 bar and the unit is running.	Check oil level (between 3/4 and full in sightglass), oil leaks, oil filter dirty or plugged, oil relief valve leaking,
High 1st stage temperature	This will occur if 2ATT is greater than 482°F / 250°C.	Assure machine has adequate ventilation, ambient temperature is not above 115°F / 46°C, assure cooling blower is operating, coolers are clean, airend damage
High 2nd stage temperature	Will occur when 4ATT is greater than 520°F / 271°C (536°F / 280°C for N37-45K and N50-60H).	Assure machine has adequate ventilation, ambient temperature is not above 115°F / 46°C, assure cooling blower is operating, coolers are clean, airend damage
High I/C air temperature	This will occur if temperature sensor 3ATT is greater than 140°F / 60°C.	Assure machine has adequate ventilation, ambient temperature is not above 115°F / 46°C, assure cooling blower is operating, coolers are clean
High bearing oil temperature	This will occur if temperature sensor 5OTT is greater than 170°F / 77°C.	Assure machine has adequate ventilation, ambient temperature is not above 115°F / 46°C, assure cooling blower is operating, coolers are clean, thermal valve failure
2nd stage over ratio	This alarm will occur if $(3APT+14.5psi)/(2APT + 14.5psi)$ is greater than 5	Failed discharge check valve.
Inlet restriction	This will occur if the unit is running and 1AVPT is greater than 1.45 psi / 0.1 bar.	Dirty inlet air filter, intake duct blocked
FAILED CHECK VALVE	This warning will occur if the second stage discharge pressure exceeds 55 psig when the compressor is operating unloaded.	DO NOT hit the Emergency Stop Button. Close the isolation valve immediately to isolate the compressor from the system. Clear the warning and stop the compressor using the stop button on the Intellisys. Inspect the check valve and replace if necessary. Inspect the package discharge blowdown valve and replace if necessary.
		Failed discharge blowdown valve, 3SV.

11.0 FAULT FINDING

11.3 DRIVE FAULTS (INDICATED ON THE INTELLISYS CONTROLLER)

The drive controller is directly linked to the Intellisys controller. Faults in the drive controller will be displayed on the Intellisys controller as 'VSD fault 0, VSD fault 1' etc.

The following VSD faults may be investigated and remedied at source. For all other VSD faults, contact your local IR customer support representative.

FAULT	CAUSE	ACTION
VSD Fault 1	Over-current	Check cooler, pipework and moisture separator for blockages. Check operation of check valve.
VSD Fault 3	Drive temperature too high	Check drive filter, replace if necessary Check drive cooling fan circuit breaker Check wiring

