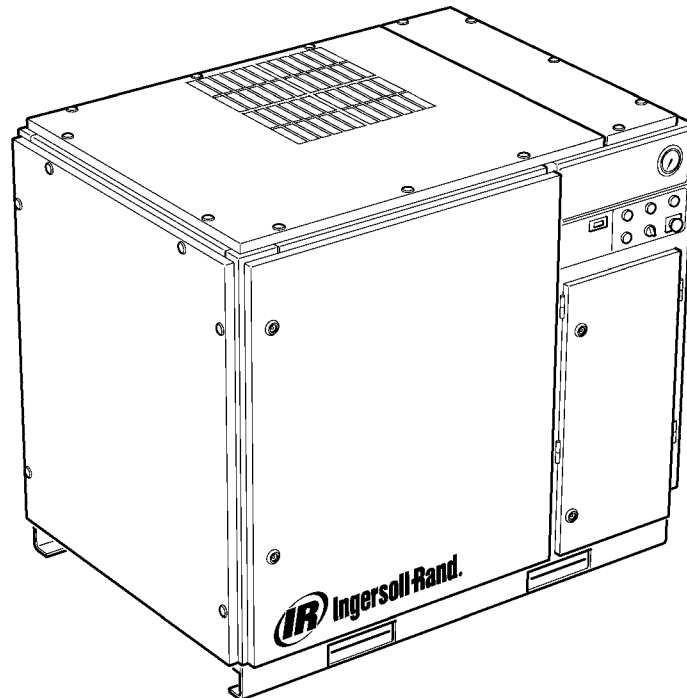




# Ingersoll-Rand®

## SSR UP6 15, UP6 20, UP6 25, UP6 30 60Hz

### OPERATION AND MAINTENANCE MANUAL



**This manual contains important safety information and must be made available to personnel who operate and maintain this machine.**

**SERIAL No : 0110190126 →**

**C.C.N. : 22083729 US  
DATE : MARCH 2002**

## 2 CONTENTS & ABBREVIATIONS

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### ABBREVIATIONS & SYMBOLS

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####	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)
BR	Brazilian
CA	Canadian French
CN	Chinese
DE	German
DK	Danish
ES	Spanish
FI	Finnish
FR	French
GB	English
GR	Greek
IT	Italian
MX	Mexican
NL	Dutch
NO	Norwegian
PT	Portuguese
SE	Swedish
US	English (USA)

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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 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 authorised Ingersoll–Rand service department.

The design specification of this machine has been certified as complying with E.C. directives. Any modification to any part is absolutely prohibited and would result in the CE certification and marking being rendered invalid.

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 lubricant/coolant.
- accompanied with instructions for safe installation, operation and maintenance.

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

The use of non–genuine spare 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 does not accept any liability for losses caused by equipment in which non–approved repair parts are installed. Standard warranty conditions may be affected.

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.

The intended uses of this machine are outlined below and examples of unapproved usage are also given, however Ingersoll–Rand cannot anticipate every application or work situation that may arise.

#### **IF IN DOUBT CONSULT SUPERVISION.**

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, vapours, or particles
- Operation within the ambient temperature range specified in the *GENERAL INFORMATION* section of this manual.

**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**

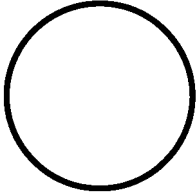
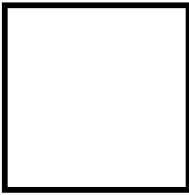


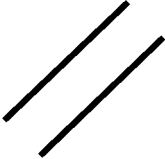

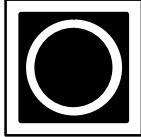


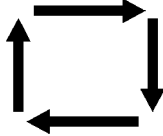
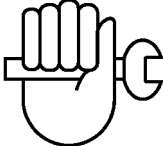



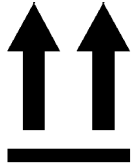



Use of the machine to produce compressed air for: a) direct human consumption b) indirect human consumption, without suitable filtration and purity checks.
Use of the machine outside the ambient temperature range specified in the <i>GENERAL INFORMATION SECTION</i> of this manual.
Use of the machine where there is any actual or foreseeable risk of hazardous levels of flammable gases or vapours.
Use of the machine fitted with <i>non Ingersoll–Rand approved components</i> .
Use of the machine with safety or control components missing or disabled.

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

***SSR ULTRA PLUS COOLANT is a registered trademark of Ingersoll–Rand Company USA.***

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INGERSOLL–RAND COMPANY

**ISO SYMBOLS****GRAPHIC FORM AND MEANING OF ISO SYMBOLS**

		
Prohibition / Mandatory	Information / Instructions	Warning
 <p>Use fork lift truck from this side only.</p>	 <p>RESET</p>	 <p>Do not use fork lift truck from this side.</p>
 <p>Emergency stop.</p>	 <p>On (power).</p>	 <p>Off (power).</p>
 <p>AUTOMATIC RESTART</p>	 <p>MAINTENANCE</p>	 <p>MAINTENANCE PROHIBITED</p>
 <p>FRAGILE</p>	 <p>KEEP DRY</p>	 <p>THIS WAY UP</p>
 <p>USE NO HOOKS</p>	 <p>NO SIDE CLAMPS</p>	 <p>HOURS</p>



Use ULTRA-Plus Coolant only

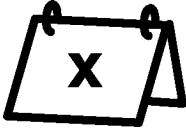
Failure to use the specified coolant may result in damage to the machine



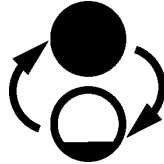
POWER



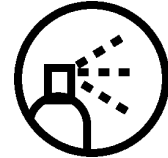
INSPECT



Every X months, if sooner than required by operating hours



CHANGE / REPLACE



CLEAN

**ANSI SYMBOLS****GRAPHIC FORM AND MEANING OF ANSI SYMBOLS****DANGER**

**INTAKE AIR.** Can contain carbon monoxide or other contaminants. Will cause serious injury or death. Ingersoll-Rand air compressors are not designed, intended or approved for breathing air. Compressed air should not be used for breathing air applications unless treated in accordance with all applicable codes and regulations.

**WARNING**

**HAZARDOUS VOLTAGE.** Can cause serious injury or death. Disconnect power and bleed pressure from tank before servicing. Lockout/Tagout machine. Compressor must be connected to properly grounded circuit. See Grounding Instructions in manual. Do not operate compressor in wet conditions. Store indoors.



**RISK OF FIRE OR EXPLOSION.** Electrical arcing from compressor components can ignite flammable liquids and vapors which can result in serious injury. Never operate the compressor near flammable liquids or vapors. If used to spray flammable materials, keep compressor at least 20ft away from the spray area.



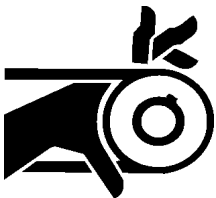
**HIGH PRESSURE AIR.** Rusted tanks can cause explosion and severe injury or death. Receiver under pressure. Operator should relieve tank pressure before performing maintenance. In addition to automatic drain, operate manual drain valve weekly. Manual drain valve located at bottom of the tank.



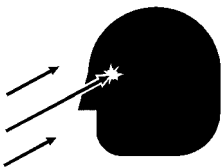
**MOVING PARTS.** Can cause serious injury. Do not operate with guards removed. Machine may start automatically. Disconnect power before servicing. Lockout/Tagout machine.



**HOT SURFACES.** Can cause serious injury. Do not touch. Allow to cool before servicing. Do not touch hot compressor or tubing.

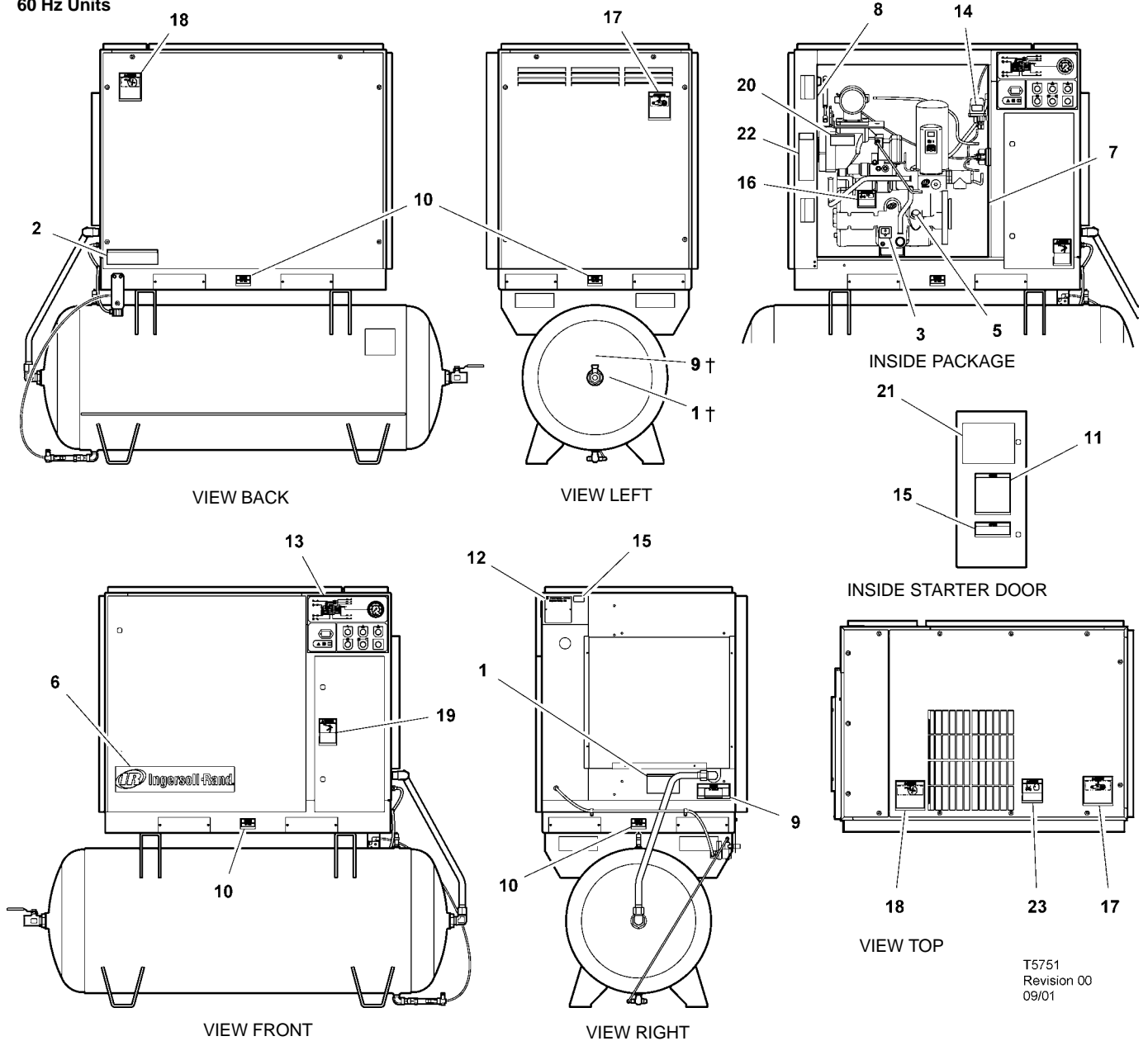


**EXPOSED MOVING BELTS AND SHEAVES.**  
Can cause severe injury or death.  
Do not operate without guard in place. Disconnect power before servicing.  
Lockout/Tagout machine.



Air flow exhaust may contain flying debris.  
Safety protection should be worn at all times.

60 Hz Units

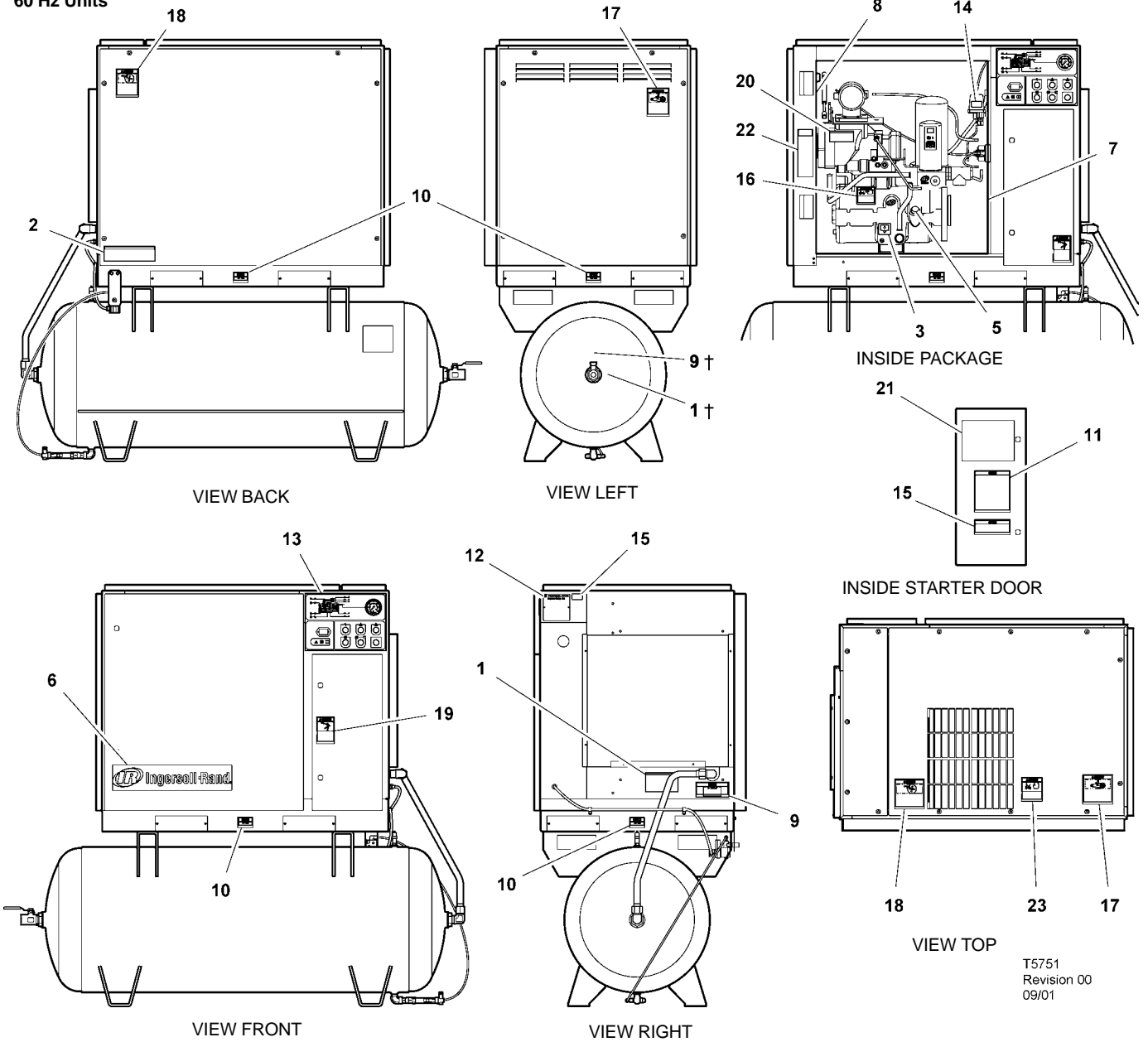


T5751  
Revision 00  
09/01

Item	ccn	Qty.	Description	Item	ccn	Qty.	Description
1	32343519	1	Decal, warning contaminated air Located near air discharge port of receiver tank on tank mounted units	9	32343543	1	Decal, notice air discharge Located near air discharge port of receiver tank on tank mounted units
2	32343576	1	Decal, air receiver auto-drain	10	93171262	4	Decal, notice lift here
3	93166460	1	Decal, coolant drain	11	32343493	1	Decal, overload setting IEC starter
4	-			12	SPEC	1	Specifications, compressor package
5	32343071	1	Decal, filler cap ultra plus	13	32342669	1	Decal, starter box
6	54499306	1	Decal, Ingersoll-Rand signature	14	32017469	1	Decal, voltage 120/1/60
7	32343063	1	Decal, maintenance parts			†	Optional position
8	30286686	1	Decal, notice rotation				

# 8 DECALS

60 Hz Units



T5751  
Revision 00  
09/01

Item	ccn	Qty.	Description	Item	ccn	Qty.	Description
15	32017436	1	Decal, voltage 230/3/60	19	32343568	1	Decal, warning hazardous voltage
	32018475	1	Decal, voltage 200/3/60	20	32343584	1	Decal, warning hot surface
	32236481	1	Decal, voltage 380/3/60	21	32343634	1	Decal, wiring schematic DOL 60Hz
	32017444	1	Decal, voltage 460/3/60		32343642	1	Decal, wiring schematic Star Delta 60Hz
	32177305	1	Decal, voltage 575/3/60	22	32343907	1	Decal, lock and tag out
16	32343527	1	Decal, warning high pressure	23	32343899	1	Decal, warning flying debris
17	32343535	1	Decal, warning moving belts				
18	32343550	1	Decal, warning exposed fan				† Optional position



**DANGER!**

Hazard that **WILL** cause **DEATH, SEVERE INJURY** or substantial property damage if ignored. Instructions must be followed precisely to avoid injury or death.

**WARNING!**

Hazard that **CAN** cause **DEATH, SEVERE INJURY** or substantial property damage if ignored. Instructions which must be followed precisely to avoid injury or death.

**CAUTIONS!**

Caution call attention to instructions which must be followed precisely to avoid damaging the product, process or its surroundings.

**NOTES**

Notes are used for supplementary information.

**BREATHING AIR PRECAUTION**

Ingersoll–Rand air compressors are not designed, intended or approved for breathing air. Compressed air should not be used for breathing air applications unless treated in accordance with all applicable codes and regulations.

**General Information**

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.

Do not point air nozzles or sprayers toward anyone.

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

Wear eye protection when operating or servicing compressor.

All persons positioned near to operating machinery should be equipped with hearing protection and given instructions on its use in accordance with workplace safety legislation.

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

The specification of this machine is such that the machine is not suitable for use in flammable gas risk areas.

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

The use of plastic bowls on line filters can be hazardous. Their safety can be affected by either synthetic lubricants, or the additives used in mineral oils. Ingersoll –Rand recommends that only filters with metal bowls should be used on a pressurised system.

**Compressed air**

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 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 isolation valves must be fitted and controlled by work procedures, so that one machine cannot accidentally be pressurised / over pressurised by another.

Compressed air must not be used for a direct feed to any form of breathing apparatus or mask.

The discharged air contains a very small percentage of compressor lubricant and care should be taken to ensure that downstream equipment is compatible.

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

When using compressed air always use appropriate personal protective equipment.

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.

All safety valves located in the separator tank must be checked periodically for correct operation.

Do not over–pressurize the receiver tank or similar vessels beyond design limits.

Do not use a receiver tank or similar vessels that fail to meet the design requirements of the compressor. Contact your distributor for assistance.

Do not drill into, weld or otherwise alter the receiver tank or similar vessels.

**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 coolant

**AVOID INGESTION, SKIN CONTACT AND INHALATION OF FUMES****Transport**

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

Lifting equipment must be properly rated for the weight of the compressor.

Do not work on or walk under the compressor while it is suspended.

**Electrical**

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.

**WARNING**

**Any electrical connections or adjustments should only be made by a suitably qualified electrician**

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.

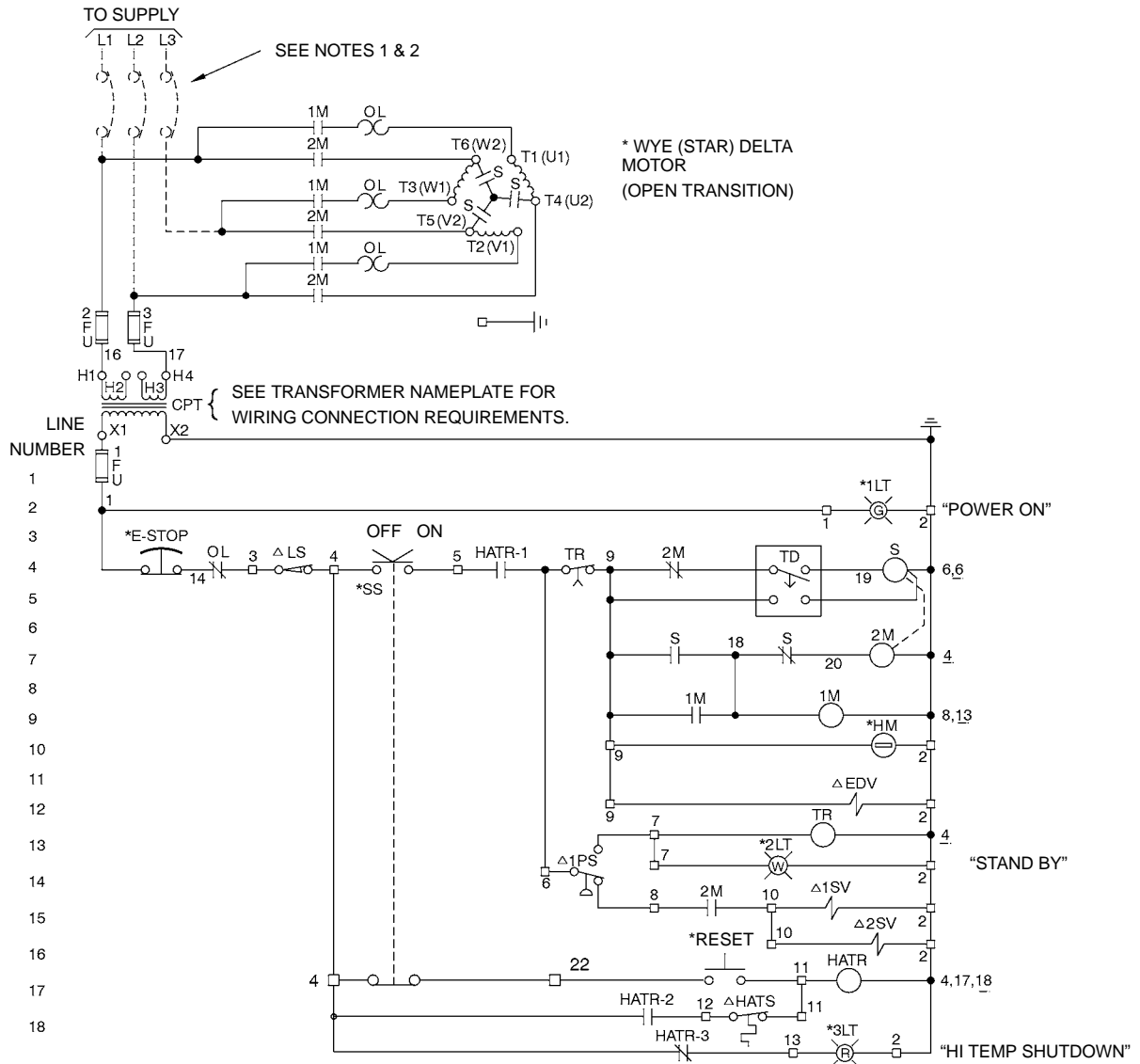
Connect the compressor only to electrical systems that are compatible with its electrical characteristics and that are within its rated capacity.

**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.

For further information, consult Material Data Sheets APDD 772 for ULTRA–Plus Coolant.

# 10 GENERAL INFORMATION



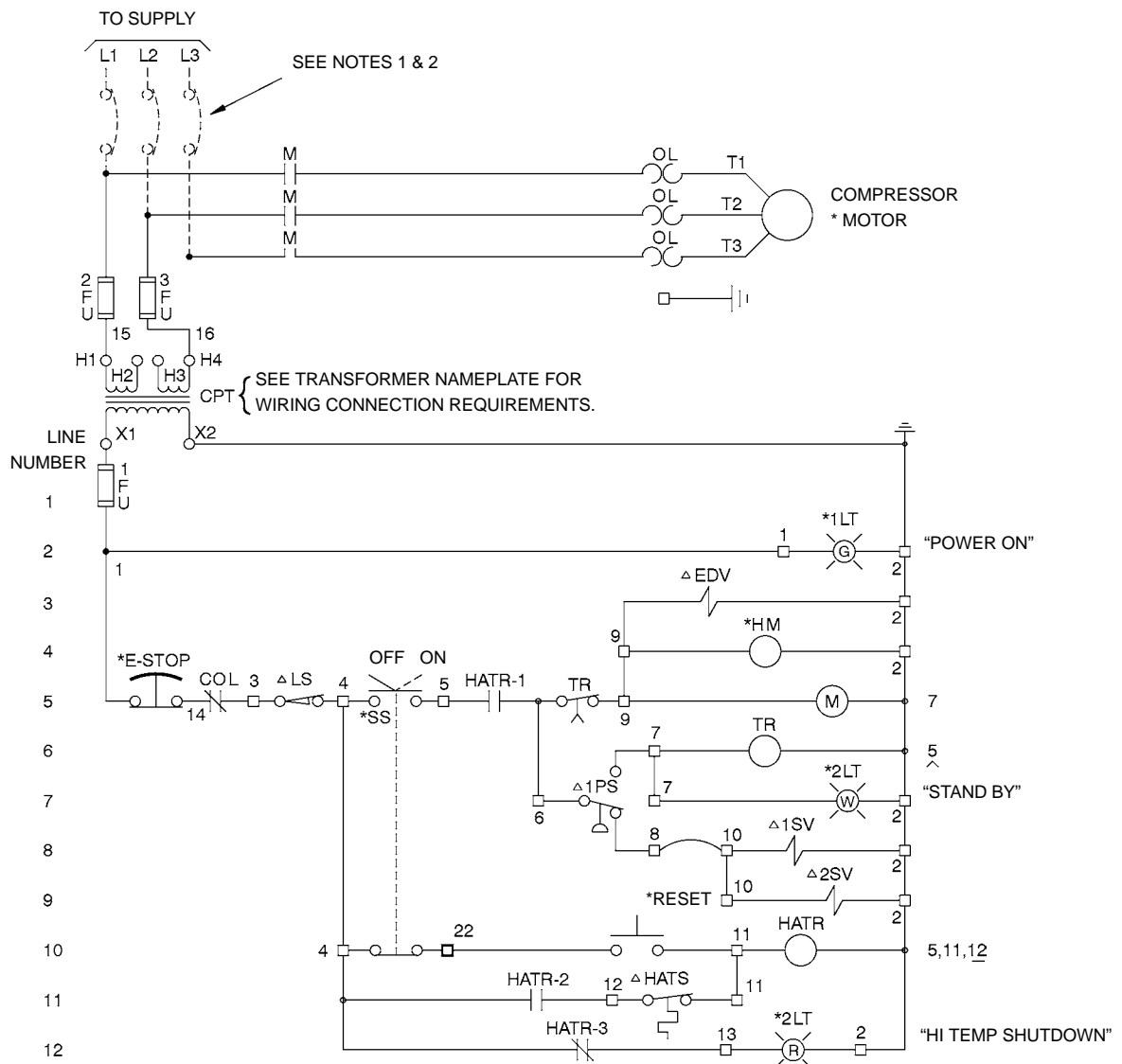
85583417  
Rev. B

## LEGEND

CPT	Transformer, control	TD	Relay, Delta starting
Δ EDV	Valve, electric drain	TR	Relay, auto restart time delay (6 min)
* E-STOP	Button, emergency stop	□	Terminal points
FU	Fuse	* ⦿	Light, transformer type
* HM	Hourmeter		
HATR	Relay, high air temperature		
Δ HATS	Switch, high air temperature		
Δ LS	Switch, belt tension		
M	Coil, motor starter		
OL	Overload, motor starter		
Δ PS	Switch, pressure		
* SS	Switch, selector		
S	Coil, second motor starting		
Δ SV1	Valve, load solenoid N.C.		
Δ SV2	Valve, blow down solenoid N.O.		

## NOTES

1. Approved fused disconnect or circuit breaker per code requirements must be provided by customer.
2. Dashed lines represent wiring by customer.
3. 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 and local electrical codes.
4. Unit will not restart automatically after power outage.
5. Circuit shown in normal position de-energized.
6. All wiring to be in accordance with local codes.



85583409  
Rev. B

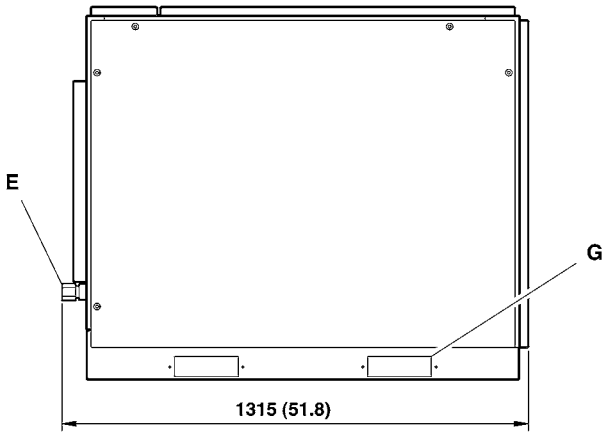
**LEGEND**

CPT	Transformer, control	TR	Relay, time delay (6 min)
△ EDV	Valve, electric drain	—□—	Terminal points
* E-STOP	Button, emergency stop	* ⓧ	Light, transformer type
FU	Fuse		
* HM	Hourmeter		
HATR	Relay, high air temperature		
△ HATS	Switch, high air temperature		
△ LS	Switch, belt tension		
M	Coil, motor starter		
OL	Overload, motor starter		
△ PS	Switch, pressure		
* SS	Switch, selector		
△ SV1	Valve, load solenoid N.O.		
△ SV2	Valve, blow down solenoid N.O.		

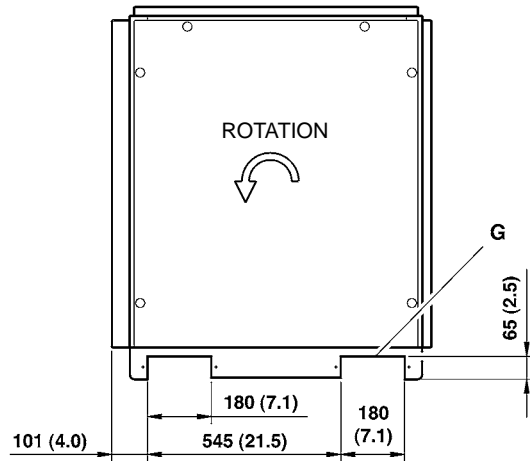
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  3. Sizing of electrical components not supplied by Ingersoll-Rand is the responsibility of the customer and should be done in accordance with the information on the compressor data plate and local electrical codes.
  4. Unit will not restart automatically after power outage.
  5. Circuit shown in normal position de-energized.
  6. All wiring to be in accordance with local codes.

# 12 INSTALLATION / HANDLING

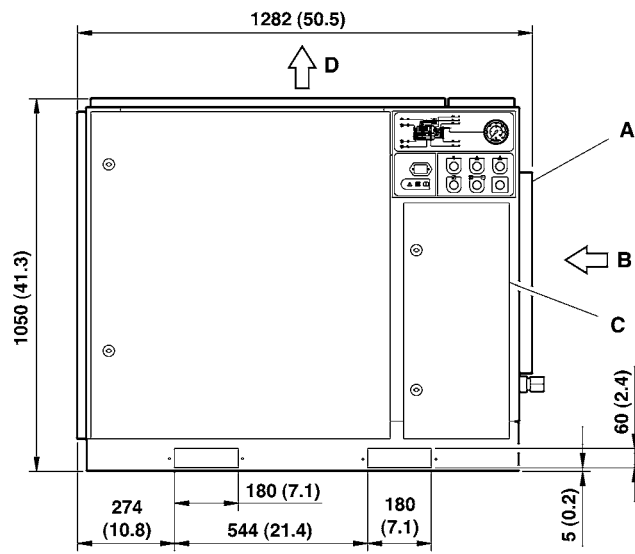
## BASE MOUNTED UNITS



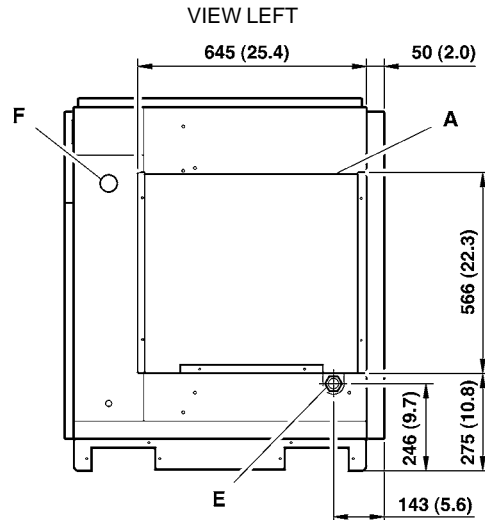
VIEW REAR



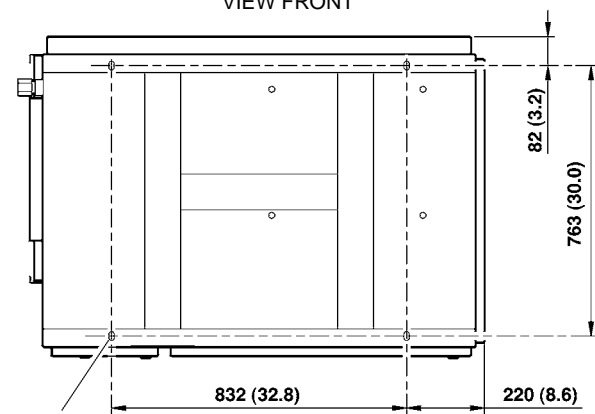
VIEW LEFT



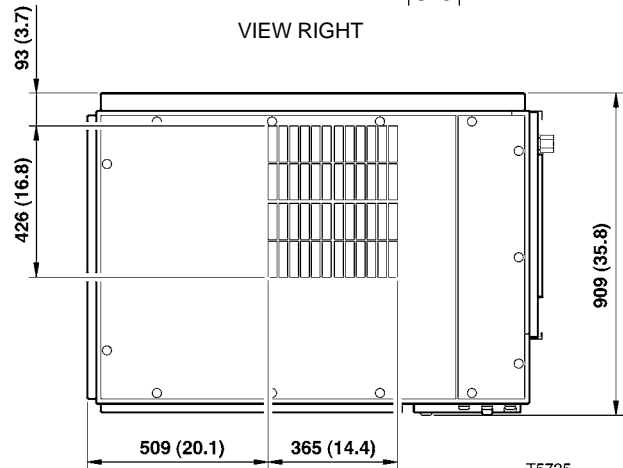
VIEW FRONT



VIEW RIGHT



VIEW BOTTOM



VIEW TOP

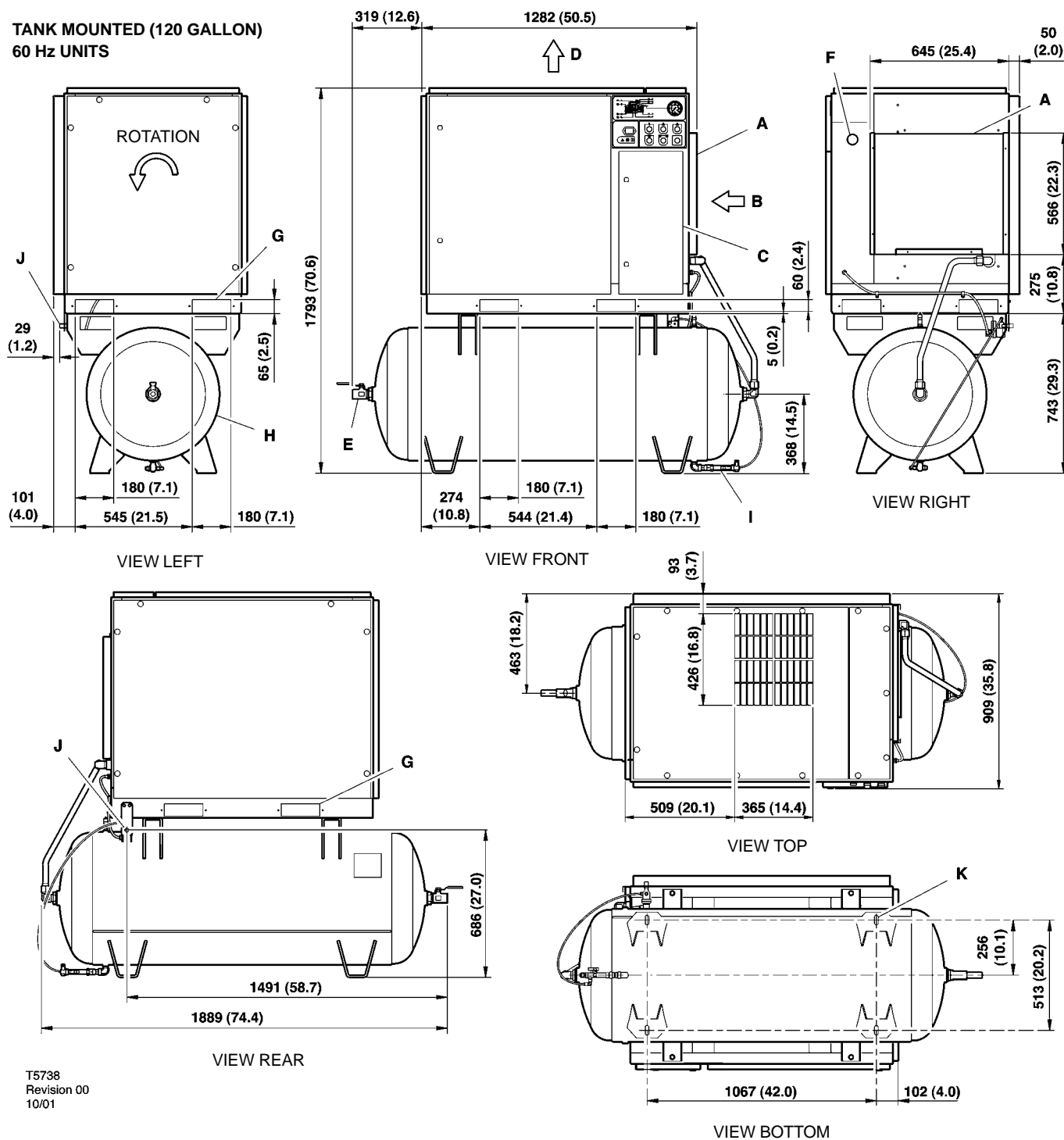
T5735  
Revision 00  
10/01

### KEY

- |   |  |
|---|--|
| <p>A Pre filter</p> <p>B Compressor and cooling air intake</p> <p>C Starter box</p> <p>D Cooling air exhaust</p> <p>E 1.00" NPT air discharge</p> <p>F Customer power inlet</p> | <p>G Fork lift openings</p> <p>Fork lift hole covers must be installed after unit is in place to reduce noise and ensure proper cooling of package)</p> <p>H 4 slots 15 (0.6) x 25 (1.0)</p> |
|---|--|

See notes – Page 15

TANK MOUNTED (120 GALLON)  
60 Hz UNITS



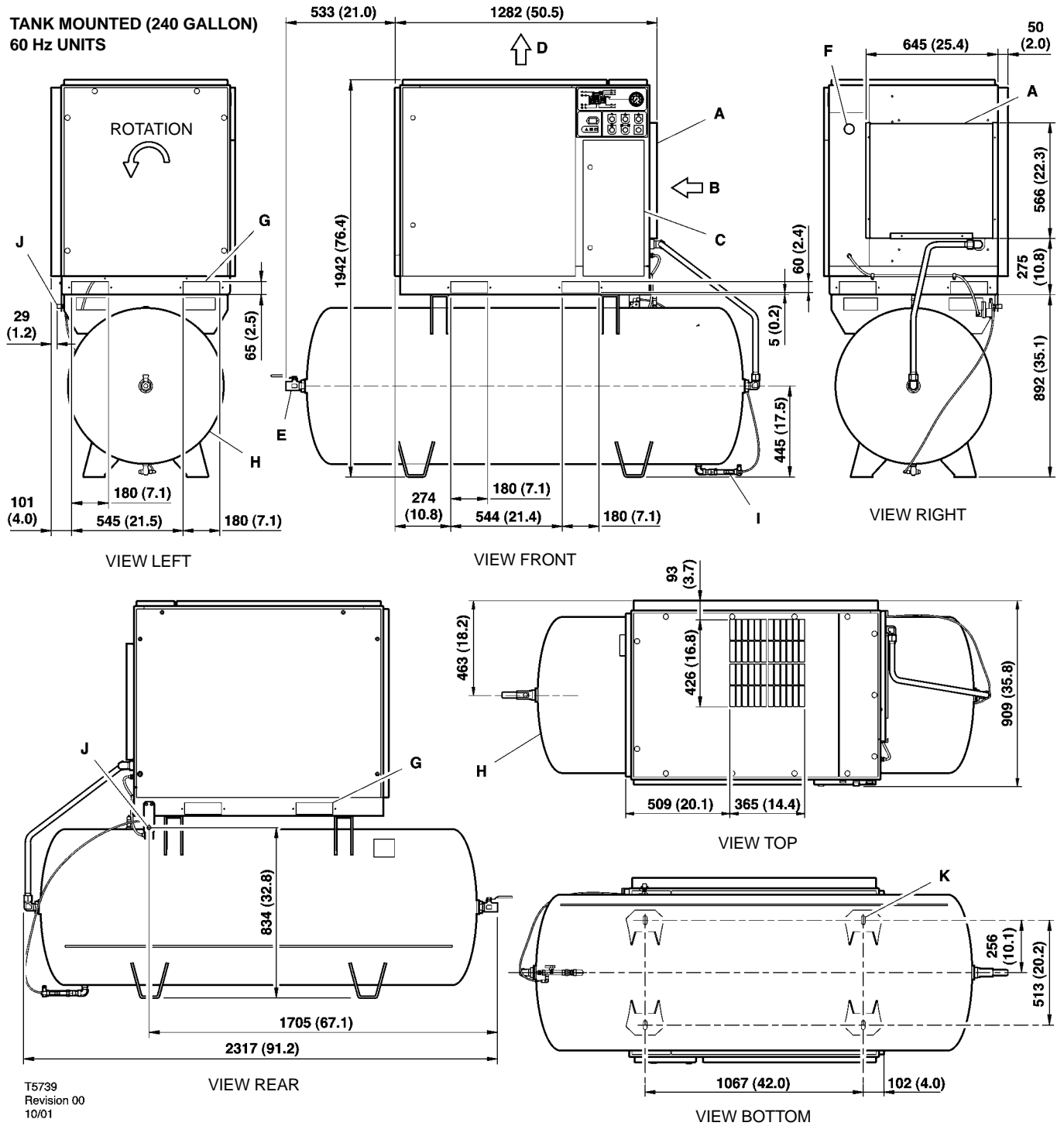
T5738  
Revision 00  
10/01

KEY

- |                                     |                               |
|-------------------------------------|-------------------------------|
| A Pre filter                        | H Air receiver (120 gallons)  |
| B Compressor and cooling air intake | I Automatic drain valve       |
| C Starter box                       | J 0.25 inch condensate drain  |
| D Cooling air exhaust               | K 4 slots 17 (0.7) x 44 (1.8) |
| E 1.00" NPT air discharge           |                               |
| F Customer power inlet              |                               |
| G Fork lift openings                |                               |

See notes – Page 15

TANK MOUNTED (240 GALLON)  
60 Hz UNITS



T5739  
Revision 00  
10/01

KEY

- |                                     |                               |
|-------------------------------------|-------------------------------|
| A Pre filter                        | H Air receiver (240 gallons)  |
| B Compressor and cooling air intake | I Automatic drain valve       |
| C Starter box                       | J 0.25 inch condensate drain  |
| D Cooling air exhaust               | K 4 slots 17 (0.7) x 44 (1.8) |
| E 1.00" NPT air discharge           |                               |
| F Customer power inlet              |                               |
| G Fork lift openings                |                               |

See notes – Page 15

**NOTES**

1. Coolant (lubricant) fill quantity (approximate) 13 litres (3.4 gallons).
2. Recommended clearance in front of control panel door 1067 mm (42 inches) or minimum as required by the latest national electrical codes (NEC) or applicable local codes.
3. Recommended clearances on left and right sides 914mm (36 inches).
4. Minimum recommended clearance for the rear of the compressor is to be 152mm (6 inches).
5. External piping shall not exert any unresolved moments or forces on the unit. Use pipe size as large or larger at discharge connection.
6. There should be no plastic or pvc piping attached to this unit or used for any lines downstream.
7. Any field installed ducting to and from the compressor cannot add more than 12.5mm( 1/2") water gauge total air resistance.
8. Do not pipe into a common header with a reciprocating compressor, unless the reciprocating compressor utilizes a discharge pulsation damper.
9. 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 and national and local electrical codes.

**NOTE**

All dimensions are in millimetres (inches) unless otherwise stated.

Ensure that the correct fork lift truck slots or marked lifting points are used whenever the machine is lifted or transported.

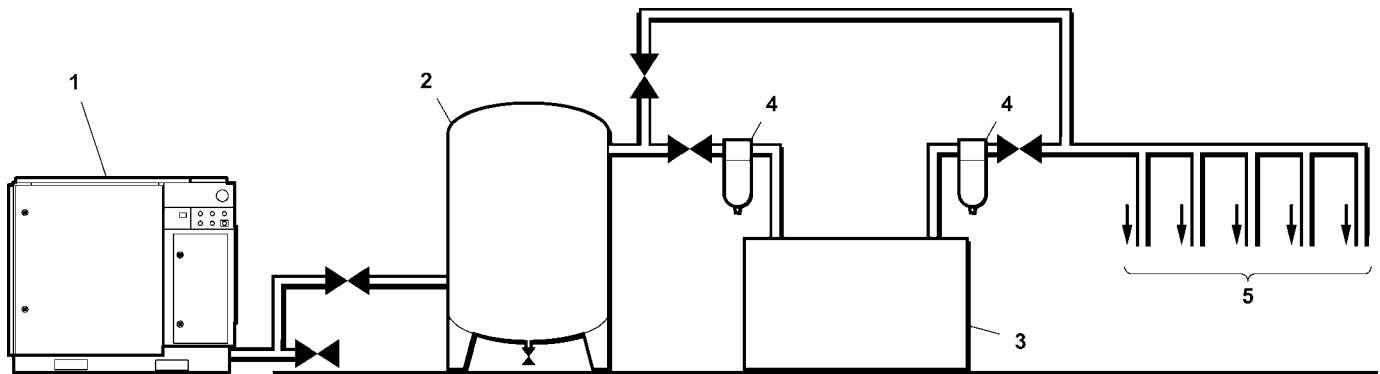
**UNPACKING**

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

Ensure that all transport and packing materials are discarded in a manner prescribed by local codes.

**NOTE**

Units are shipped with transit locking bolt in place. Prior to running the unit the shipping bolt must be removed and the belt tension checked. Loosen, remove and discard 10mm shipping bolt. For belt tensioning procedure refer to Maintenance section.



T5750  
Revision 00  
08/01

#### KEY

1. Compressor
2. Air Receiver
3. Air Dryer
4. Compressed air filters
5. System demand points

#### NOTE

Items [2] to [5] are optional or may be existing items of plant. Refer to your Ingersoll-Rand distributor / representative for specific recommendations.

#### LOCATION IN THE PLANT

The compressor can be installed on any level floor capable of supporting it. A dry, well ventilated area where the atmosphere is clean is recommended. A minimum of 150mm (6 inches) should be left at the rear and 1m (3ft) at the sides of the machine for adequate service access and ventilation.

Adequate clearance needs to be allowed around and above the machine to permit safe access for specified maintenance tasks.

Ensure that the machine is positioned securely and on a stable foundation. Any risk of movement should be removed by suitable means, especially to avoid strain on any rigid discharge piping.

#### CAUTION

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.

#### CAUTION

The use of plastic bowls on line filters and other plastic air line components can be hazardous. Their safety can be affected by either synthetic coolants or the additives used in mineral oils. Ingersoll-Rand recommends that only filters with metal bowls should be used on any pressurised system.

#### CAUTION

Before starting machine remove shipping bolt and discard

#### CAUTION

The standard compressor unit is not suitable for operation in temperatures liable to cause freezing as Condensate water is liable to be produced in the after cooler and receiver where fitted.

Refer to your Ingersoll-Rand distributor for further information

#### DISCHARGE PIPING

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 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.

It is good practice to locate an isolation valve close to the compressor and to install line filters [4].

It is a requirement for air dryers covered under Aircare that correctly sized Ingersoll-Rand pre and afterfilters are installed.



60Hz	UP6 20			UP6 25			UP6 30		
<b>COMPRESSOR</b>	125	150	200	125	150	200	125	150	200
Maximum operating pressure PSIG (bar)	125 (8.62)	150 (10.34)	200 (13.79)	125 (8.62)	150 (10.34)	200 (13.79)	125 (8.62)	150 (10.34)	200 (13.79)
Factory set reload pressure PSIG (bar)	115 (7.93)	140 (9.66)	190 (13.10)	115 (7.93)	140 (9.66)	190 (13.10)	115 (7.93)	140 (9.66)	190 (13.10)
Flow rate CFM (m <sup>3</sup> /MIN)	83 (2.35)	75 (2.12)	58 (1.64)	102 (2.89)	92 (2.61)	75 (2.12)	125 (3.54)	112 (3.17)	92 (2.61)

Max. airend discharge temp.	228°F (109°C)
Ambient operating temperature min. → max.	35°F(+2°C) → 104°F(+40°C)

<b>MOTOR</b>						
Motor enclosure	ODP		TEFC		TEFC	
Nominal power	20HP		25HP		30HP	
Speed	1760 RPM	1770 RPM	1760 RPM	1770 RPM	1770 RPM	1770 RPM
Frame	256TZ	160 L	284TZ	180 M	286TZ	180 L
Insulation class	F					

<b>COOLING SYSTEM</b>			
<b>Air cooled</b>			
Cooling air flow	2100 ft <sup>3</sup> /min		
Maximum ΔP in air ducts	1/2 inWg (12.7mmH <sub>2</sub> O)		
Compressed air outlet ΔT	12°F (7°C)	18°F (10°C)	26°F (14.5°C)
Cooling air outlet ΔT	24°F (13.5°C)	31°F (17°C)	36°F (20°C)

<b>GENERAL DATA</b>			
Residual coolant content	3ppm (3 mg/m <sup>3</sup> )		
Separator vessel capacity	4.5 gallons (17 liters)		
Coolant capacity	3.4 gallons (13 liters)		
Sound pressure level to CAGI-PNEUROP	68 dB(A)	69 dB(A)	69 dB(A)
Weight – base mount unit	1183 lbs (538 kg)	1203 lbs (547 kg)	1290 lbs (586 kg)
Weight – 120 gallon Receiver mounted	1510 lbs (685 kg)	1530 lbs (694 kg)	1616 lbs (733 kg)
Weight – 240 gallon Receiver mounted	1779 lbs (807 kg)	1799 lbs (816 kg)	1885 lbs (855 kg)

**CAUTION**

230/460 Dual voltage machines are fitted with a decal to advise the correct voltage as connected from the factory.

There is a decal fitted to the starter door describing the procedure to change the connections for the alternative voltage

Rewiring should only be effected by a competent Electrician.

# 18 INSTALLATION / HANDLING

ELECTRICAL DATA – ALL UNITS SSR UP6–20								
Standard voltage	200V		230V		460V		575V	
<b>Drive motor</b>								
Motor enclosure	ODP	TEFC	ODP	TEFC	ODP	TEFC	ODP	TEFC
Power	20HP							
Full load current (maximum)	65A	63.1A	56.4A	54.8A	28.2A	27.5A	22.6A	22A
Starting current DOL (STAR)	336 (150)		292 (130)		146 (65)		117 (52)	
Starting time DOL (Star Delta)	3–5 Sec ( 7–10 Sec)							
Starts per hour (maximum)	6							
<b>ELECTRICAL DATA DOL / Star Delta</b>								
Control voltage	120VAC							
Minimum fuse rating See note 1	90A		80A		40A		35A	
Minimum wire size AWG See note 2	4		4		10		10	

ELECTRICAL DATA – ALL UNITS SSR UP6–25								
Standard voltage	200V		230V		460V		575V	
<b>Drive motor</b>								
Motor enclosure	ODP	TEFC	ODP	TEFC	ODP	TEFC	ODP	TEFC
Power	25HP							
Full load current (maximum)	76.6A	76.5A	66.6A	66.5A	33.3A	33.3A	26.6A	26.6A
Starting current DOL (STAR)	411.7 (182.2)		358 (158.4)		179 (79.2)		143.2 (63.4)	
Starting time DOL (Star Delta)	3–5 Sec ( 7–10 Sec)							
Starts per hour (maximum)	6							
<b>ELECTRICAL DATA DOL / Star Delta</b>								
Control voltage	120VAC							
Minimum fuse rating See note 1	125A		100A		50A		40A	
Minimum wire size AWG See note 2	3		3		8		10	

ELECTRICAL DATA – ALL UNITS SSR UP6–30								
Standard voltage	200V		230V		460V		575V	
<b>Drive motor</b>								
Motor enclosure	ODP	TEFC	ODP	TEFC	ODP	TEFC	ODP	TEFC
Power	30HP							
Full load current (maximum)	91.3A	91.9A	79.3A	79.9A	39.7A	40A	31.7A	32A
Starting current DOL (STAR)	500 (216.7)		434 (188.4)		217 (94.2)		169 (75.4)	
Starting time DOL (Star Delta)	3–5 Sec ( 7–10 Sec)							
Starts per hour (maximum)	6							
<b>ELECTRICAL DATA DOL / Star Delta</b>								
Control voltage	120VAC							
Minimum fuse rating See note 1	150A		125A		60A		50A	
Minimum wire size AWG See note 2	1		2		6		8	

1. If a circuit breaker is selected it should only be a magnetic trip type, set above the anticipated starting current of the machine, but below the maximum prospective fault current for the circuit. The circuit breaker or fuseable disconnect must be capable of breaking the prospective fault current at its terminals.

2. PVC/PVC Type Calculated using the following conditions:

- i) PVC insulated cable, armoured, copper conductors.
- ii) Cable clipped to a wall, in free air.
- iii) Ambient temperature of 40°C (104°F).
- iv) 20m (65ft) cable run.
- v) Volt drop limited to –10% during starting, –4% during normal running.
- vi) Protected by the circuit breaker listed above.

If there are any deviations from the above, or special regulations apply, the installation must be planned by a competent, qualified engineer.

**NOTE**  
All data applies to standard product only.

#### ELECTRICAL DATA

An independent electrical isolator or disconnect should be installed adjacent to the compressor.

Feeder cables/wires 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.

Feeder cables / wires connections to isolator or disconnect 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.

#### CAUTION

Never test the insulation resistance of any part of the machines electrical circuits, including the motor without completely disconnecting the electronic controller (where fitted).

#### CAUTION

Ensure that the motor rotates in the correct direction as indicated by direction arrows, and on drawing.

# 20 OPERATING INSTRUCTIONS

## GENERAL OPERATION

The compressor is an electric motor driven, single stage screw compressor, complete with accessories 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 2°C to 40°C (35.6°F – 104°F) with a special option package available to operate in ambient temperatures ranges from 2°C up to 50°C (35.6°F up to 124°F). The maximum temperature is applicable to either version up to a maximum elevation of 1000m (3280ft) above sea level. Above this altitude significant reduction in maximum allowable ambient temperature is required.

Compression in the screw type air compressor is created by the meshing of two (male & female) helical rotors.

The air/coolant mixture discharges from the compressor into the separation system. This system removes all but a few PPM of the coolant from the discharge air. The coolant is returned to the cooling system and the air passes through the aftercooler and out of the compressor.

Cooling air is moved through the coolers by the cooling fan and discharged from the machine.

### CAUTION

Cooling air is drawn in at the end of the machine package passing through the filter and cooler before being discharged from the top of the machine. Care should be taken to avoid blocking the airflow, or causing any restriction in excess of the maximum backpressure allowed for ducting.

Do not direct the airflow at face or eyes.

The power transmission from the drive motor to the airend male rotor is by pulley and belts. The constant auto tensioning system, using airend mass torque and gas arm, ensures that the belts are always under the correct tension, eliminating the need for adjustment and maximizing the life of the belts.

By cooling the discharge air, much of the water vapour naturally contained in the air is condensed and may be drained from the downstream piping and equipment.

The coolant system consists of a sump, cooler, thermostatic valve and a filter. When the unit is operating, the coolant is pressurized and forced to the compressor bearings.

The compressor load control system is automatic **on-off line**. The compressor will operate to maintain a set discharge line pressure and is provided with an auto restart system for use in plants where the air demand varies sufficiently to allow a compressor to shut down and save power. Significant system volume will assist this and is recommended.

### WARNING

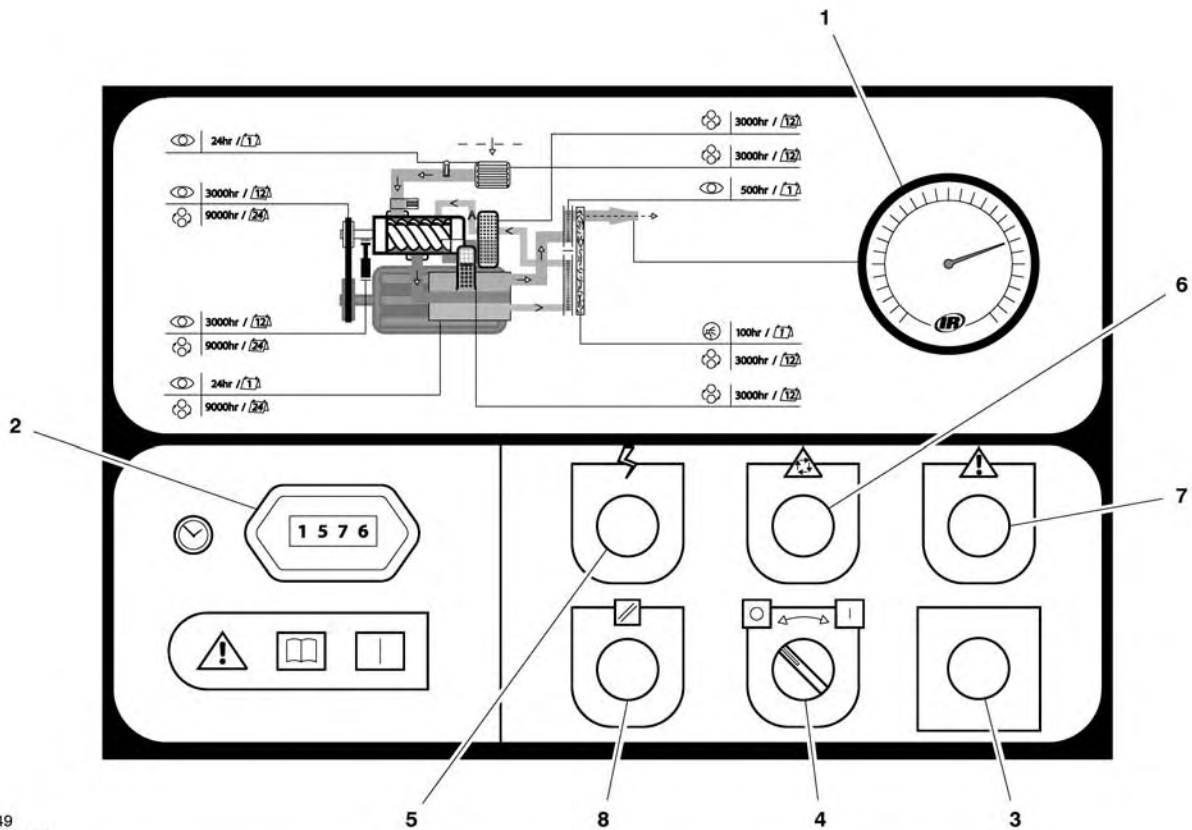
When the unit stops running as the result of low air demand, normally indicated by auto restart light, it may restart and return to load at any time.

Safety of operation is provided as the compressor will shut down if excessive temperatures or electrical overload conditions should occur.

### CAUTION

This unit is not designed or intended to operate when contaminated with silicone. Lubricants, greases or other items containing silicone should not be used on this unit.





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### 1. PRESSURE GAUGE

Indicates the system pressure.

#### WARNING

**DO NOT** operate the compressor at discharge pressures over the rated pressure.

### 2. HOURMETER

Records the total running time of the compressor.

### 3. EMERGENCY STOP

When depressed will stop the compressor immediately. The 'Power on' indicator will remain illuminated. The emergency stop button must be released before the compressor can be restarted.

### 4. START/STOP

When switched to the ON position will cause the unit to start and run in a loaded condition if there is a demand for air. If there is no demand, the machine will run unloaded before stopping automatically.

When switched to the OFF position, will unload and stop the unit if it is running. If the unit is in auto restart it will prevent the unit from re-starting when there is a demand for air.

### 5. POWER ON (Green)

Indicates the presence of control voltage at the controller.

### 6. AUTO RESTART (White)

Will illuminate when the machine has shut-down due to low air demand. The machine will restart and load automatically as soon as the demand for air returns.

### 7. FAULT / HIGH AIR TEMPERATURE ALARM (Red)

Turn off electrical Isolator or disconnect. Investigate cause of fault.

### 8. RESET BUTTON

Press button to reset the control system following compressor trip.

### PRIOR TO STARTING

1. Make visual check of the machine, ensure that all guards secure and that nothing is obstructing the proper ventilation of, or free access to the machine.
2. Check coolant level. Add if necessary.
3. Make sure main discharge valve is open.
4. Turn on electrical isolator or disconnect. The **Power on** (5) indicator will light, indicating that line and control voltages are available.
5. Check direction of rotation at initial start or following interruption in power supply.

#### WARNING

Make sure that all protective covers are in place.

Cooling air flow exhaust may contain flying debris. Safety Protection should be worn at all times to avoid injury.

### STARTING

1. Push the RESET button (8). The fault indicator (7) will extinguish. Switch the ON/OFF switch (4) to the ON position. The compressor will start and then load automatically.

**NORMAL/EMERGENCY STOPPING**

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1. Switch the ON/OFF switch (4) to the OFF position. The compressor will unload and stop.
2. Press **EMERGENCY STOP** button (3) and the compressor will stop immediately.
3. Turn off electrical isolator or disconnect.

**CAUTION**

After shutdown never allow unit to stand idle with pressure in receiver/separator system.

### SSR UP Series Maintenance Schedule

PERIOD	MAINTENANCE
Each 24 hours operation  Visual check of machine for any leaks, dust build up or unusual noise or vibration  When compressor is receiver mounted	Check the coolant level and replenish if necessary.  Report immediately, contact Ingersoll-Rand authorized distributor for assistance if in doubt  Drain air receiver of condensate, or check that automatic drain is operating
Visual check condition of package pre-filter	Blow clean if needed
If the air filter indicator shows red before the 3000 hour/1 year change out period	Check the Condition of filter. Change the air filter if needed. Dusty environments require more frequent replacement or, optional high dust filter
First 150 hours	Change the coolant filter.
Each month or 100 hours	Remove and clean package pre-filter, replace if needed  Check the cooler(s) for build up of foreign matter. Clean if necessary by blowing out with air or by pressure washing.
Each year or 3000 hours	Check the operation of the high temperature protection switch (109°C).  Change the coolant filter.  Change the separator cartridge.  Change the Air Filter element.  Change the package pre-filter.  Visual Check of Drive Belts and tensioning gas spring.  Remove the safety valve from the compressor, inspect and re-calibrate.
Pressure vessel inspection frequency may be otherwise defined by local or national legislation.	<i>Separator vessel and air receiver when fitted.</i> Fully inspect all external surfaces, and fittings. Report any excessive corrosion, mechanical or impact damage, leakage or other deterioration.
Every two years or 9000 hours	Change drive belt and gas spring.  Replace the <i>Ultra Plus Coolant</i> at whichever interval occurs first.  Check and replace all items included within 3000 hour service  Fit the following reconditioning parts as appropriate:  Solenoid valve kit Inlet valve kit Minimum Pressure valve kit
Every 4 years or 18000 hours	Replace all hoses.  Strip, clean and re-Grease motor bearings of ODP motors.  Replace sealed bearing on IP55 motors.  Fit replacement electrical contactor tips.
6 years/18000 hours or as defined by local or national legislation.	<i>Separator tank.</i> Remove the cover plate and any necessary fittings. Clean the interior thoroughly and inspect all internal surfaces.

### ROUTINE MAINTENANCE

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

It should be noted that the intervals between service requirement may be significantly reduced as a consequence of poor operating environment. This would include effects of atmospheric contamination and extremes of temperature.

The *SERVICE/MAINTENANCE CHART* indicates the various components' descriptions and the intervals when maintenance has to take place. Oil capacities, etc., can be found in the *GENERAL INFORMATION* section of this manual.

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.

**CAUTION:** Before beginning any work on the compressor, open, lock and tag the main electrical disconnect and close the isolation valve on the compressor discharge. Vent pressure from the unit by slowly unscrewing the coolant fill cap one turn. Unscrewing the fill cap opens a vent hole, drilled in the cap, allowing pressure to release to atmosphere. Do not remove the fill cap until all pressure has vented from the unit. Also vent piping by slightly opening the drain valve. When opening the drain valve or the coolant fill cap, stand clear of the valve discharge and wear appropriate eye protection.

Ensure that maintenance personnel are properly 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.

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.

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

**DANGER**

Only properly trained and competent persons should undertake any maintenance tasks with the compressor running or with electrical power connected.

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.



- . all hazards present are known (e.g. pressurised 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, jewellery, 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 and correctly working.
- . all panels are replaced, canopy and doors closed.
- . hazardous materials are effectively contained and disposed of.
- . hazardous materials are effectively contained and disposed of in a manner compliant with local or National environmental protection codes.

**WARNING**

Do not under any circumstances open any drain valve or remove components from the compressor without first ensuring that the compressor is FULLY SHUT– DOWN, power isolated and all air pressure relieved from the system.

**TOP UP COOLANT PROCEDURE**

The reservoir is designed to prevent overflow. With warm unit stopped in the normal way, the sight tube level should be within 15mm (0.6in) of the top of the green strip. The level should not drop beyond the bottom of the sight tube when running with a steady load.

**CAUTION**

Ensure that new SSR ULTRA–PLUS coolant is used. Failure to do so will void manufacturers warranty.

**COOLANT CHANGE PROCEDURE**

It is better to drain the coolant immediately after the compressor has been operating as the liquid will drain more easily and any contaminant will still be in suspension.

1. Stop the machine, electrically isolate and vent all trapped pressure.
2. Place a suitable container close to the drain valve.
3. Slowly remove fill/vent cap.
4. Remove plug from drain valve.
5. Open the drain valve and drain coolant into container.
6. Close the drain valve.
7. Replace plug in drain valve.

8. Refill the machine following the "top up coolant" procedure above. After initial fill, to purge any airlocks, the machine should be run for a few minutes cycling between load and no load, before checking that the level is correct.

9. Replace and tighten oil fill cap.

**COOLANT FILTER CHANGE PROCEDURE**

1. Stop the machine, electrically isolate and vent all trapped pressure.
2. Loosen filter with the correct tool.
3. Remove the filter from the housing.
4. Place the old filter in a sealed bag and dispose of in a safe way.
5. Clean the mating face of the housing taking care to avoid any particles entering the machine.
6. Remove the new Ingersoll–Rand replacement filter from its protective package.
7. Apply a small amount of lubricant to the filter seal.
8. Screw the new filter down until the seal makes contact with the housing, then hand tighten a further half turn.
9. Start the compressor and check for leaks.

**AIR FILTER ELEMENT CHANGE PROCEDURE**

1. Stop the machine, electrically isolate and vent all trapped pressure.
2. Unscrew the retaining cap and withdraw the old element.
3. Fit the new element.
4. Replace the retaining cap.

**SEPARATOR CARTRIDGE CHANGE PROCEDURE**

---

1. Stop the machine, electrically isolate and vent all trapped pressure.
2. Loosen separator cartridge with the correct tool.
3. Remove the cartridge from the housing; place it in a sealed bag and dispose of it safely.
4. Clean the mating face of the housing.
5. Remove the new Ingersoll–Rand replacement cartridge from its protective package.
6. Apply a small amount of lubricant to the cartridge seal.

7. Screw the new cartridge down until the seal makes contact with the housing, then hand tighten a further half turn.

8. Start the compressor and check for leaks.

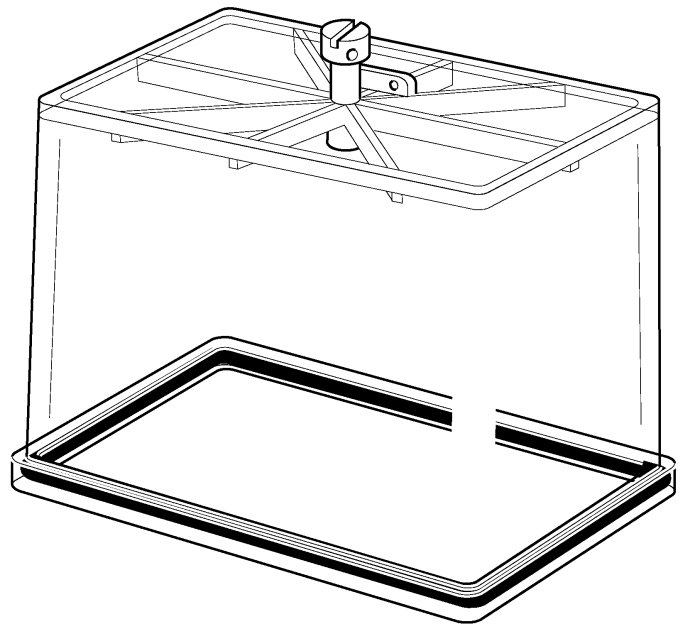
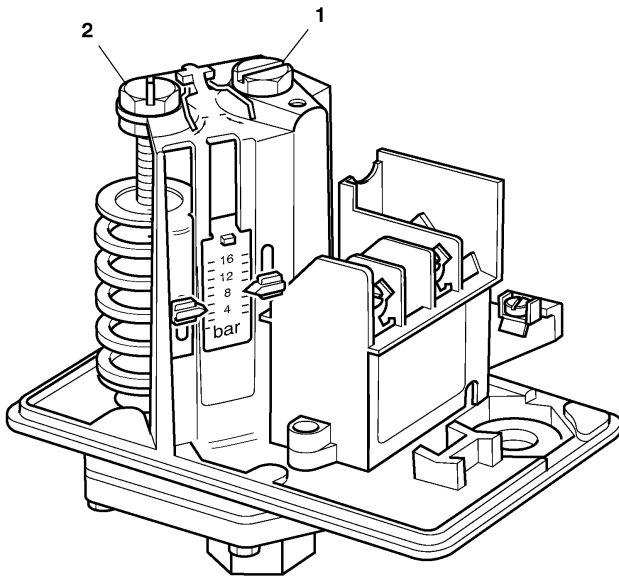
**CAUTION**

This unit is not designed or intended to operate when contaminated with silicone. Lubricants, greases or other items containing silicone should not be used on this unit.

**COOLER CLEANING PROCEDURE**

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1. Stop the machine, electrically isolate and vent all trapped pressure.
2. Remove the top cover to obtain access to the cooler.
3. Clean the cooler.
4. Rebuild in reverse order.



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**SETTING THE PRESSURE SWITCH (1PS)**

**TO CHECK THE MAXIMUM DISCHARGE PRESSURE**  
(Pressure switch upper trip point)

Slowly close the isolation valve located adjacent to the compressor. Observe the rise in pressure and ensure that the pressure switch opens (and unloads the compressor) at the correct Maximum discharge pressure.

The maximum discharge pressure is shown on the machine data plate.

DO NOT exceed these figures.

**TO CHECK THE LOWER SET POINT**

Observe the line pressure fall and note the point at which the pressure switch closes (and loads the compressor).

**TO ADJUST THE UPPER SET POINT**

Remove the transparent cover and turn the adjuster [1]. The red pointer will move. Turn the adjuster anti-clockwise to increase the set point or clockwise to decrease it.

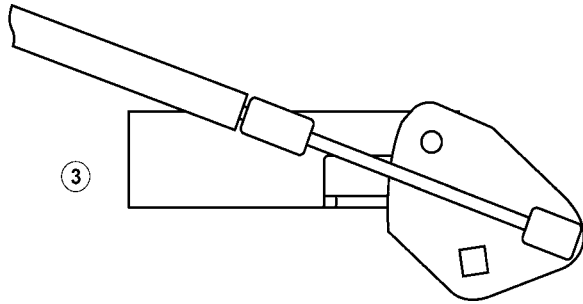
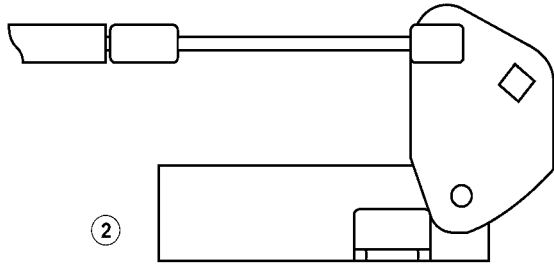
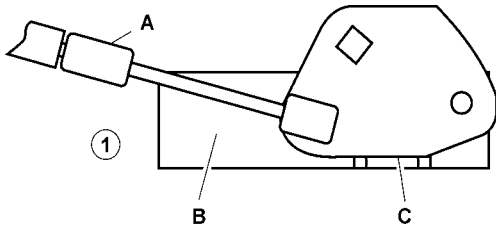
**TO ADJUST THE LOWER SET POINT**

Remove the transparent cover and turn the adjuster [2]. The green pointer will move. Turn the adjuster anti-clockwise to increase the set point or clockwise to decrease it.

**NOTE**

The pressure switch scale is a guide only. Use the machine pressure gauge to verify the upper and lower set points.

## BELT CHANGE / GAS STRUT CHANGE PROCEDURE



- A. Gas strut.  
 B. Support bracket (part of pivoted assembly).  
 C. Over-center linkage.

1. Stop the machine, electrically isolate and vent all trapped pressure.
2. Remove the side cover from the machine.
3. Fit a  $\frac{1}{2}$ " square drive wrench in the tension cam located above the airend (access from front door). Turn clockwise  $\frac{1}{4}$  turn to Position 2 to release gas strut tension on the belts.
4. Using a small screwdriver under the spring clip, ease the ball ends off the spherical studs at the ends of the gas strut.
5. Replace the gas strut and the studs at the same time by removing and replacing the studs then pushing the new gas strut firmly onto the studs until it clicks into place.
6. Turn the tension cam clockwise  $\frac{1}{4}$  turn to Position 3 to raise and support the airend. Place a block of wood or similar under the separator tank for support.
7. Replace the belts from the left side of the machine.
8. Turn the tension cam counter-clockwise  $\frac{1}{2}$  turn to position 1 to tension the gas strut.
9. Spin the drive to check alignment of the belt ribs on the pulleys (sheaves).

PROBLEM	CAUSE	REMEDY
<b>Compressor fails to start</b>	Mains power or Control voltage not available.	§ Check incoming power supply. § Check the control circuit fuse. § Check the transformer secondary windings for the control voltage.
	Defective Star / Delta timer.	§ Change Star / Delta timer.
<b>Machine shutdown periodically</b>	High airend temperature.	Top up coolant.
	Motor overload.	§ Set overload to correct value and switch to manual reset.
	Belt stretch protection (when fitted).	Change belt.
	Line voltage variation.	§ Ensure voltage does not drop below 10% on start up and 6% running.
<b>High current draw</b>	Compressor operating above rated pressure.	Set pressure to correct rating for machine.
	Separator cartridge contaminated.	Change air filter, and separator cartridge.
	Low voltage.	§ Ensure voltage does not drop below 10% on start up and 6% running.
	Unbalanced voltage.	Correct incoming supply voltage.
	Damaged airend.	† Change Airend.
<b>Low current draw</b>	Air filter contaminated.	Change air filter.
	Compressor operating unloaded.	Set pressure to correct rating for machine.
	High voltage.	Reduce site voltage to correct operating voltage.
	Defective inlet valve.	† Fit inlet valve service kit.
<b>High discharge pressure</b>	Defective or incorrect pressure switch setting.	Replace or set pressure to correct rating for machine.
	Load solenoid valve defective.	† Fit load solenoid service kit.
	Blowdown valve defective.	† Fit blowdown solenoid service kit.
	Inlet valve malfunction.	† Fit inlet valve service kit.
<b>Low system air pressure</b>	Separator cartridge contaminated.	Fit new Separator cartridge.
	Incorrect pressure switch setting.	Set pressure to correct rating for machine.
	Minimum pressure valve malfunction.	† Fit Minimum pressure valve service kit.
	Load solenoid valve defective.	† Fit load solenoid service kit.
	Blowdown valve defective.	† Fit blowdown solenoid service kit.
	Drive belt slipping.	Fit new belt and tensioner.
	Air system leaks.	† Fix leaks.
	Inlet valve malfunction.	† Fit inlet valve service kit.
System demand exceeds compressor delivery.	Reduce demand or install additional compressor.	

**NOTES:**

§ Must be carried out by a competent electrician.

† This work is recommended to be carried out only by an Ingersoll-Rand authorized service technician.

# 30 TROUBLE SHOOTING

PROBLEM	CAUSE	REMEDY
<b>Compressor trips due to over temperature</b>	Compressor operating above rated pressure.	Set pressure to correct rating for machine.
	Package pre-filter blocked.	Clean / replace package pre-filter.
	Cooler blocked.	Clean cooler.
	Missing or incorrectly fitted enclosure panels	Ensure that all enclosure panels are correctly fitted
	Low coolant level.	Top up coolant and check for leaks.
	High ambient temperature.	Re-site compressor.
	Restricted cooling air flow.	Ensure correct air flow to compressor.
<b>Excessive coolant consumption</b>	Separator cartridge leak.	Fit new Separator cartridge.
	Blocked separator cartridge drain.	† Remove fittings and clean.
	Compressor operating below rated pressure.	Set pressure to correct rating for machine.
	Coolant system leak.	† Fix leaks.
<b>Excessive noise level</b>	Air system leaks.	† Fix leaks.
	Airend defective.	† Change Airend.
	Belts Slipping.	Replace belt and tensioner.
	Motor defective.	† Replace motor.
	Loose components.	† Retighten loose items.
<b>Shaft seal leaking</b>	Defective shaft seal.	† Fit Airend shaft seal kit.
<b>Pressure relief valve opens</b>	Defective switch or incorrect pressure switch setting.	Replace or set pressure to correct rating for machine.
	Minimum pressure valve malfunction.	† Fit Minimum pressure valve service kit.
	Load solenoid valve defective.	† Fit load solenoid service kit.
	Blowdown valve defective.	† Fit blowdown solenoid service kit.
<b>Black residue on belt guard/cooler box</b>	Inlet valve malfunction.	† Fit inlet valve service kit.
	Drive belt slipping.	Replace belt and tensioner.
	Pulleys misaligned.	Re-align pulleys.
	Worn pulleys.	† Replace pulleys and belt.
	Gas strut failed.	Replace belt and tensioner.

## NOTES:

§ Must be carried out by a competent electrician.

† This work is recommended to be carried out only by an Ingersoll-Rand authorized service technician.