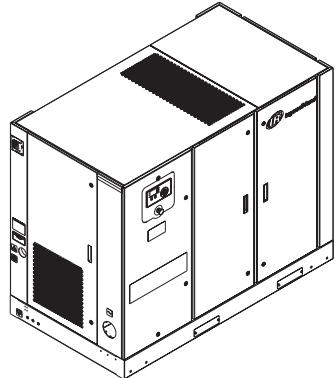




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Revision E  
May 2018

## Contact-Cooled Rotary Screw Air Compressor

### RS30i, RS30n, RS37i, RS37n



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## Product Maintenance Information



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## ABOUT THIS MANUAL

The purpose of this manual is to provide maintenance and troubleshooting guidelines for the compressor.

For supporting documentation refer to Table 1.

**Table 1: Product Manuals**

<b>Publication</b>	<b>Product</b>	<b>Part/Document Number by Region</b>		
		<b>Americas</b>	<b>EMEA *</b>	<b>Asia Pacific</b>
Product Safety Information Manual	All	80446313	80446156	80446321
Product Information Manual	RS30-37i,n	49136104	49136120	49136146
Product Parts Information Manual	RS30-37i,n		49128143	

\* Europe, Middle East and Africa

Product specification sheets and reference drawings are also available.

## PERSONNEL

Proper use, inspections and maintenance increases the life and usefulness of the compressor. It is extremely important that anyone involved with maintaining the compressor be familiar with the servicing procedures of these compressors and be physically capable of conducting the procedures. These personnel shall have skills that include:

1. Proper and safe use and application of mechanics common hand tools as well as special **Ingersoll Rand** or recommended tools.
2. Safety procedures, precautions and work habits established by accepted industry standards.

Some maintenance procedures are technical in nature and require specialized tools, equipment, training and experience to accomplish correctly. In such situations, only allow **Ingersoll Rand** trained technicians to perform maintenance on this compressor. Service or inspections beyond the procedures given in this manual shall not be attempted by operating personnel.

For additional information contact the **Ingersoll Rand** factory or the nearest service provider.

## SAFETY

Before undertaking any work on the compressor, ensure that the electrical supply has been isolated and remote start/stop function is not enabled, locked off, tagged and the compressor has been relieved of all pressure. Ensure the compressor is electrically isolated for at least 15 minutes before commencing any maintenance work. See the Product Safety Information manual for additional information.

**Ingersoll Rand** cannot know of or provide all the procedures by which repairs may be conducted and the hazards and/or results of each method. If maintenance procedures not specifically recommended by the manufacturer

are conducted, ensure that safety is not endangered by the actions taken.

If you are unsure of a maintenance procedure or step, place the compressor in a safe condition before consulting technical assistance.

The use of other than genuine **Ingersoll Rand** replacement parts may result in safety hazards, decreased performance and increased maintenance and may invalidate all warranties.

For additional information contact the **Ingersoll Rand** factory or the nearest service provider.

## AIR COMPRESSOR MAINTENANCE

### ■ Maintenance Prompts

The service warning and flashing LED will appear at intervals dependent on the service level selected. Refer to the Product Information manual for information about service level settings.

### ■ Maintenance Chart

Maintenance should be performed per the recommendations below in the following priority: (1) Perform maintenance when indicated by the controller; (2) Perform maintenance through either hourly intervals or scheduled maintenance intervals, or (3) Annually.

**Table 2: Maintenance Chart (RS30-37i,n)**

PERIOD	ACTION	MAINTENANCE ITEM
When indicated by controller	Replace	Air filter element
	Replace	Coolant filter element
	Replace	Separator element
Daily	Check	Connections and hoses for leaks
	Check	Coolant level
	Check	Condensate drain operation
	Check	Controller for service indicators
	Check	Package pre-filter for blockage
	Check	Air filter indicator condition to ensure air filter operation
Monthly	Inspect	Air-cooled cooling system for blockage
	Inspect	Starter box power drive module filter element
Every 1000 hours	Analysis	Food-grade Lubricant (Ultra FG)
Every 2000 hours or annually (whichever occurs first)	Inspect	Starter box power drive filter element
	Replace	Food-grade Filter Module
	Analysis	Shock pulse bearing
	Analysis	Premium Coolant (Ultra/Ultra EL)
	Grease	All motors (as required)
Every 4000 hours or annually (whichever occurs first)	Replace	Air filter element
	Replace	Coolant filter
	Replace	Separator cartridges
	Inspect	Scavenge screen for blockage
	Replace	Starter box power drive filter element
	Replace	Package pre-filter element
	Clean	Air-cooled cooling system
Every 8000 hours or annually	Calibrate	Pressure transducers
	Replace	No-loss condensate drain service module
	Replace	Premium Coolant (Ultra / Ultra FG) [8000 hours or every 2 years]
	Service	Minimum pressure check valve (MPCV) service kit
	Clean	Drains with all their components (Timed Drains only)
16000 hours	Service	Inlet valve service kit
	Replace	Coolant hoses
	Replace	Contact tips
	Replace	Extended-life Premium Coolant (Ultra EL) [16000 hours or every 3 years]

### NOTICE

Inspect and replace coolant filter elements and separator elements more frequently in dirty operating environments.

### NOTICE

Read the motor data plate(s) or call the motor manufacturer(s) to determine specific greasing requirements. For motors that require greasing, grease them more frequently in harsh environments or higher ambient conditions.

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## ■ Routine Maintenance

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

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

### ■ Checking Coolant Level

A coolant level sight glass is located on the side of the separator tank. While the compressor is running under load, coolant should always be visible in the sight glass. The normal position is half way. The compressor should be running for at least 40 seconds for this check.

Stop the compressor, ensure the sump pressure is 0 psig and ensure the coolant is still visible in the sight glass.

### ■ Adding Coolant

Run the compressor for a minimum of 40 seconds. The coolant level should be visible in the sight glass. If not:

1. Stop the compressor.
2. Isolate the compressor from the external air system.
3. Press the emergency stop to vent the separator tank and airend. Fixed speed compressors can take more than two minutes to fully de-pressurize once stopped.
4. Slowly unscrew the coolant fill plug to verify all pressure has been released.
5. Add coolant.
6. Replace the coolant fill plug and restart the compressor.
7. Recheck the coolant level.
8. Repeat the above steps until the coolant level is visible in the sight glass with the compressor both running and stopped.

#### NOTICE

**Do not add coolant through the intake of the compressor, as this can result in overfilling, saturation of the separator filter element, and coolant carry-over downstream.**

### ■ Draining Coolant

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

See Figure 1.

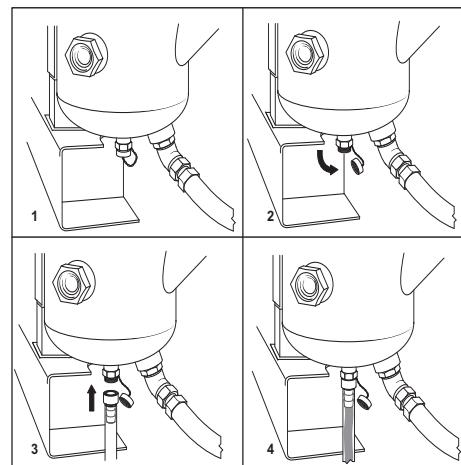
1. Place the straight end of the drain hose in a suitable container. Install the other end of the drain hose in the drain valve. The coolant flows through the drain hose automatically.
2. After drainage, remove the hose and close the valve.

#### NOTICE

**On air cooled compressors, you may also drain coolant from the coolant cooler by removing the plug.**

**You should also drain additional coolant from the airend by removing the plug in the airend discharge elbow.**

**Figure 1: Coolant Drain**



3. Dispose of waste coolant in accordance with local and governmental regulations.

#### NOTICE

**Shorter coolant change intervals may be necessary if the compressor is operated in adverse conditions.**

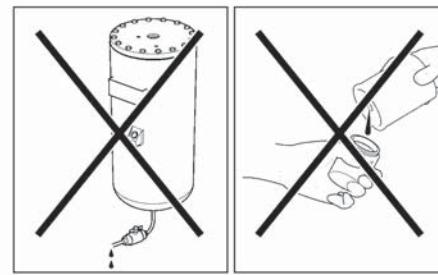
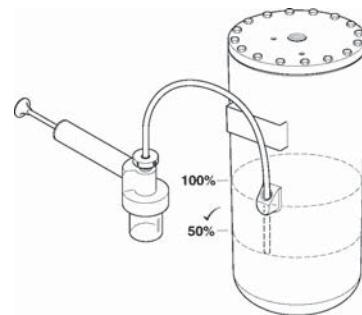
### ■ Sampling Coolant for Analysis

1. Bring the compressor up to operating temperature.
2. Stop the compressor.
3. Isolate the compressor from the external air system.
4. Press the emergency stop to vent the separator tank and airend. Fixed speed compressors can take more than two minutes to fully de-pressurize once stopped.
5. Draw a sample from the separator tank port using a pump kit. DO NOT draw a sample from the drain port or oil filter.

Use a new hose on the pump for each sample. Failure to do this can give false readings.

See Figure 2.

**Figure 2: Coolant Sampling**



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## ■ **Changing Coolant Filter**

1. Remove drain plug from bottom of filter housing and drain coolant.
2. Loosen the filter housing.
3. Remove the element from the housing.
4. Place the old element in a sealed bag and dispose of in a safe way.
5. Remove the new replacement element from its protective package.
6. Apply a small amount of coolant to the element seal.
7. Install new replacement element into the filter housing.
8. Screw the housing to the filter head and tighten to the torque specified on the housing.
9. Reinstall drain plug.
10. Start the compressor, check for leaks and check the coolant level.

## ■ **Checking Separator Element**

With the compressor running on load, check the separator differential pressure via the controller. It will be necessary to change the element if the differential pressure equals zero or exceeds 1 bar (15 psig).

## ■ **Changing Separator Element**

For RS30-37 i,n, separator cartridges change procedure is as follows:

1. Stop the machine, electrically isolate and vent all trapped pressure.
2. Loosen separator cartridges with the correct tool.
3. Remove the cartridges from the housing; place in a sealed bag and dispose of safely.
4. Clean the mating faces of the housing.
5. Remove the new Ingersoll Rand replacement cartridges from protective package.
6. Apply a small amount of lubricant to the cartridge seal.
7. Screw the new cartridges down until the seal makes contact with the housing, then hand tighten a further half turn.
8. Start the compressor and check for leaks.

## ■ **Inspecting Separator Tank/Pressure System**

Inspect the external surfaces of the airend and separator tank, including all fittings, for visible signs of impact damage, excessive corrosion and abrasions. When changing the separator element, inspect the internal components and surfaces. Any suspect parts shall be replaced before the compressor is put back into service.

The separator tank should also be tested and inspected in accordance with any national or local codes that may exist.

## ■ **Cleaning/ Checking Scavenge Screen**

The screen/orifice assemblies are similar in appearance to a straight tubing connector and will be located between two pieces of 6 mm (0.25 in) O.D. scavenge line tubing.

The main body is made from 17 mm hexagon shaped metal and the diameter of the orifice and a direction-of-flow arrow is stamped in flat areas of the hexagon.

A removable screen and orifice will require clearing as outlined in the maintenance chart.

To remove the screen/orifice:

1. Disconnect the scavenge line tubing from each end.
2. Hold the center section firmly and use a pair of pliers to gently grasp the exit end of the assembly that seals against the scavenge line tubing. The exit end is the end toward which the arrow is pointing.
3. Pull the end out of the center section while using care to prevent damage to the screen or sealing surfaces.
4. Clean and inspect all parts prior to reinstallation.

5. When the assembly is installed, confirm the direction of flow to be correct. Observe the small arrow stamped in the center section and ensure the direction flow to be from the separator tank to the airend.

## ■ **Replacing Coolant Hoses**

The flexible hoses that carry coolant through the cooling system may become brittle with age and will require replacement. Replace them as needed or every four years.

1. Depending on the location of the hose, it may contain compressor coolant. It is recommended to drain the coolant into a clean container. Cover the container to prevent contamination. If the coolant is contaminated, replace with new coolant.
2. Remove the hose.
3. Install the new hose and refill the compressor with coolant.
4. Start the compressor, check for leaks and check coolant level. Refill as necessary.

## ■ **Checking Minimum Pressure Check Valve (MPCV)**

The minimum pressure check valve (MPCV) shall be frequently tested and regularly maintained. Remove it from the compressor for testing. If operating conditions are particularly severe, the frequency of testing and maintenance shall be increased accordingly. The user shall establish the frequency of such tests as it is influenced by such factors as the severity of the operating environment. For RS30-37 i,n, the MPCV is installed as part of combination block.

The minimum pressure check valve (MPCV) should be tested and re-calibrated in accordance with any national or local codes that may exist. If no code exists, **Ingersoll Rand** recommends that the valve is recalibrated at intervals of one year by a licensed contractor or qualified service personnel.

## ■ **Changing Air Filter**

1. Check the retaining cap for dirt and debris and wipe clean.
2. Unclip the retaining cap and withdraw the old element.
3. Fit the new element and refit the retaining cap.

## ■ **Regreasing Motor**

The blower motor contains pre-greased, sealed bearings. They cannot be re-greased and do not require re-greasing. For the main motor, consult the motor manufacturer to confirm that the motor may be greased and to obtain instructions for regreasing.

## ■ **Cleaning Air-Cooled Cooling System**

Air compressor operating temperatures will be higher than normal if the external passages between the fins of the cooler cores become restricted with foreign material. Regular cleaning of the cooler surfaces will support the reliable operation of the air compressor system, improve the life of the compressor coolant and improve overall compressor efficiency. When performed frequently as determined by site conditions and airborne contamination, more significant cleaning or replacement may not be necessary.

1. Stop the compressor.
2. Isolate the compressor from the system.
3. Press the emergency stop to vent the separator tank and airend. Fixed speed compressors can take more than two minutes to fully de-pressurize once stopped.
4. Ensure that the main power disconnect switch is locked off and tagged.

### **NOTICE**

**For any required lifting of air compressor parts or required tools, always use the proper certified lifting equipment, and employ sound working principles.**

5. Visually check the outside of the cooler cores to determine the appropriate cleaning method detailed as follows:
  - a. For loose dirt, dust and other light foreign material, open the access panel on the cooler plenum. For RS30-37 i,n, gently blow compressed air across the cooler surface. Repeat the process until the coolers are sufficiently clean. Replace the access panels before returning the compressor to service.
  - b. For thick, packed dirt, coolant or grease, or other heavy material, the coolers will need to be removed from the compressor for pressure washing. **Ingersoll Rand** does NOT support pressure washing coolers when they are installed in the compressor due to the dangers of spraying water in or around potential electrical power sources. Follow the steps below for cooler removal.
5. Carefully place the cooler in its proper location and install the three sets of lower nuts and bolts tightly.
6. Install the three sets of upper side nuts and bolts, finger tight + 1/4 turn. Next, add the second nut to each tightly. This second nut is used to lock the first in place. It is important the first nut is not too tight so it can allow the cooler to expand and contract without stressing the cooler's brazed joints.
7. Re-attach all hoses and pipes, and properly torque according to the Parts Information manual.
8. Replace the access panels on the side of the cooler plenum.
9. Refill the compressor with coolant to the proper level, following the process outlined in the "Adding Coolant" procedure.

### ■ Removing/ Installing Air-Cooled Cooler (combination cooler for RS30-37 i,n)

To remove:

1. Stop the compressor.
2. Isolate the compressor from the system.
3. Press the emergency stop to vent the separator tank and airend. Fixed speed compressors can take more than two minutes to fully de-pressure once stopped.
4. Ensure that the main power disconnect switch is locked off and tagged.
5. Drain the coolant from the coolant cooler by removing the hex plug located at the lower side of the coolant cooler.
6. Remove all hoses, pipes, and sensors from the coolers.
7. Remove the external sheet metal panels.
8. Properly secure the coolant cooler and remove the six nuts from the three bolts at the upper side of the cooler.
9. Remove the nuts from the bolts at the bottom of the cooler.
10. Re-install the coolant drain plug to 65 N m (48 ft lb).

To install:

1. Stop the compressor.
2. Isolate the compressor from the system.
3. Press the emergency stop to vent the separator tank and airend. Fixed speed compressors can take more than two minutes to fully de-pressure once stopped.
4. Ensure that the main power disconnect switch is locked off and tagged.

### ■ Checking High Airend Temperature Sensor

It is recommended that the discharge temperature sensor (2ATT) is checked regularly as follows:

- a. For air cooled compressors, stop the cooling blower by opening the blower / fan motor circuit breaker.
- b. For water cooled compressors, shut off the cooling water.

The compressor should trip at 109 °C (228 °F). A trip warning will appear on the controller display.

### ■ Cleaning Motor Cowls

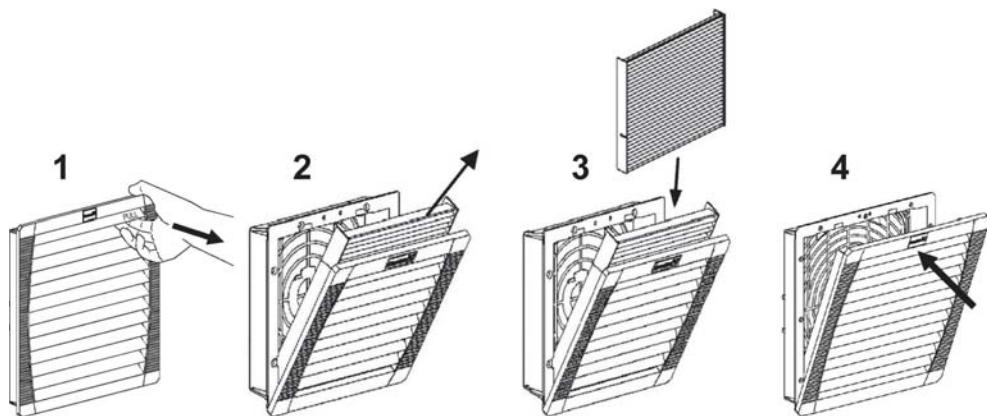
1. Ensure the compressor is electrically isolated for at least 15 minutes before commencing any maintenance work.
2. Remove the panels from the compressor.
3. Using a clean dry cloth, remove dust from the surface of the motor cowls and ensure all ventilation slots are free of obstructions.
4. Replace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

### ■ Removing/ Replacing Starter Box Power Drive Module (PDM) Filter Element (for VSD only)

See Figure 3.

1. Ensure compressor is electrically isolated for at least 15 minutes before commencing any maintenance work.
2. Unclip the front grill of the starter box filter housing.
3. Remove the filter element from the housing and replace with a new filter element.
4. Replace the front grill.

**Figure 3: Starter Box Power Drive Module (PDM) Filter Element Replacement**



### ■ **Cleaning/Checking Condensate Drain**

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

### ■ **Cleaning/Installing Package Pre-Filter**

1. Unlatch the two 1/4 turn latches and open the intake panel (panel is hinged)
2. Remove the six wing nuts and flat washers.
3. Remove the filter grill.
4. Pull out the filter element.
5. Center the new element over the package intake opening. Also note that the filter is washable with mild detergent.
6. Push the filter over the grill studs so that the studs poke through the filter media.
7. Install the filter grill.
8. Install the six wing nuts and flat washers.
9. Close the intake panel and latch.

### ■ **Checking/Cleaning No Loss Drain Trap (where fitted)**

It is recommended to check the no loss drain trap daily to ensure that condensate is draining from the moisture separator system. To check for correct function:

1. Press the test button on the drain and listen for condensate / air passing through the drain.
2. If the drain is clogged, replace the no loss drain valve service module. The service module consists of the lower portion of the drain trap and is not serviceable.

Additionally, it is recommended to replace the service module every 8000 hours or once per year, whichever comes first.

### ■ **Monitoring Fluid and Performing Shock Pulse Bearing Analysis**

**Ingersoll Rand** recommends incorporating predictive maintenance, specifically the use of coolant and shock pulse bearing analysis, into all preventative maintenance programs. Contact **Ingersoll Rand** for details.

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## TROUBLESHOOTING

This section provides basic troubleshooting information. Determination of specific causes to problems are best identified by thorough inspections performed by personnel instructed in safety, operation and maintenance of this equipment. The chart below provides a brief guide to common symptoms, probable causes and remedies.

**Table 3: General Faults**

SYMPTOM	CAUSE	REMEDY
Compressor will not start.	No power supply to compressor.	Check supply is switched on. If so, contact a qualified electrician.
	Controller failure.	Check supply to controller. Replace controller.
	Starter failure.	Isolate supply, lock off and tag. Replace failed component or contact your local <b>Ingersoll Rand</b> representative.
Compressor stops and will not restart.	Drive controller has tripped.	See Tables 4 and 5.
	Controller has tripped the compressor.	See Tables 4 and 5.
	Maximum number of starts per hour exceeded.	See Tables 4 and 5.
Compressor is stopped and will not restart.	Controller has tripped the compressor and has not been reset.	See Tables 4 and 5.
	Emergency stop has been pressed and not released.	Identify reason why, repair fault, disengage button and reset controller.
	Emergency stop has been pressed and released but controller has not been reset.	Repair fault and reset controller.
Compressor will not meet pressure required by system.	Compressor not sized to meet system requirements or requirements have been changed.	Contact your local <b>Ingersoll Rand</b> representative.
	Air loss due to pipe, hose, joint or seal failure.	Repair or replace.
	Air loss due to blowdown valve stuck open.	Repair or replace.
	Air loss through pressure relief valve not seating or set incorrectly.	Repair or replace.
	Air loss due to moisture separator drain trap stuck open.	Repair or replace.
	Motor speed too low caused by drive incorrectly set.	Contact your local <b>Ingersoll Rand</b> representative.
	Motor speed too low caused by fault in drive settings.	See Table 5.
	Controller fault.	Repair or replace.
	Drive motor fault.	See Table 5.
	Pressure transducer faulty, incorrectly calibrated or EMF interference.	Recalibrate or replace.
	Incorrect controller settings.	Check and modify settings.
	Inlet grill or ducting is blocked.	Check and clean.
	Air filter dirty or collapsed.	Replace.
	Inlet valve not opening fully.	Repair or replace.
Compressor will not meet pressure required by system.	Separator element dirty or collapsed.	Replace.
	Pipe / Hoses blocked or collapsed.	Clean or replace.
	Cooler core blocked.	Clean or replace.
	Minimum pressure check valve not functioning correctly.	Repair or replace.
	Equipment between compressor and customer measuring point causing pressure drop / pressure loss.	Review system requirements.
	Controller set incorrectly.	Check and modify settings.
Pressure produced by compressor is too high due to speed not reducing as demand reduces.	Pressure transducer may be faulty, incorrectly calibrated or not receiving pressure signal.	Recalibrate or replace.
	Drive settings fault.	Contact your local <b>Ingersoll Rand</b> representative.
	High ambient temperature.	Review installation and system parameters.
Compressor discharge air too hot.	Insufficient cooling air.	Check ducting and cooling air path, check direction of blower rotation.
	Dirty, blocked aftercooler (cooling air side).	Clean or replace.

**Table 3: General Faults (cont.)**

<b>SYMPTOM</b>	<b>CAUSE</b>	<b>REMEDY</b>
Compressor package produces excessive noise.	Panels or doors are not closed properly.	Rectify fault.
	Air leaks from internal pipework / components.	Repair or replace.
	Blower or blower motor bearings worn.	Repair or replace.
	Loose debris impacting on blower during rotation.	Remove and rectify any damage.
	Blowdown valve stuck open.	Repair or replace.
	Pressure relief valve not seating correctly.	Repair or replace.
	Vibration due to motor, airend or blower imbalance.	Repair or replace.
	Airend requires repair.	Contact your local <b>Ingersoll Rand</b> representative.
Discharge air is contaminated with coolant.	Scavenge pipe is blocked, broken or o-ring is not sealing.	Clean or replace.
	Separator element is punctured, or incorrect, or requires changing, or not sealing correctly.	Replace.
	Incorrect coolant has been added.	Drain system, check for damage. Clean, refill with correct coolant.
	System has been overfilled with coolant.	Check for damage, drain excess.
Discharge air is contaminated with condensate.	Aftercooler not functioning correctly.	Clean or replace.
	Moisture separator drain trap faulty.	Repair or replace.
	Continuous low speed / low ambient operation causing condensate build up.	Review system requirements and contact your local <b>Ingersoll Rand</b> representative.
Compressor package draws too much current.	Compressor operating above rated pressure.	Check and modify settings. Review system requirements and contact your local <b>Ingersoll Rand</b> representative.
	Separator filter element dirty or blocked.	Replace.
	Voltage supply is low or unbalanced.	Contact your local <b>Ingersoll Rand</b> representative or a qualified electrician.
	Airend is damaged.	Contact your local <b>Ingersoll Rand</b> representative.
Excessive coolant consumption.	Coolant system leak.	Repair or replace.
	See also 'discharge air is contaminated with coolant'.	See above.
High dewpoint.	Refrigeration compressor not supplied power.	Check incoming power supply.
		Check the dryer protection fuse.
		Check auxiliary contact on main motor contactor.
	Condensate system malfunction.	Check operation of drain valve.
		Check operation of condensate check valves.
	Condenser dirty.	Clean condenser and replace panel filter element.
Ice formation in dryer.	Low evaporator pressure.	Check hot gas valve setting.
Solenoid condensate valve will not close	Debris in solenoid valve prevents diaphragm from seating.	Remove solenoid valve, disassemble, clean and reassemble.
	Short in electrical component.	Check and replace power cord or timer as needed.

**Table 4: Controller Faults (indicated on the controller)**

<b>FAULT</b>	<b>CAUSE</b>	<b>REMEDY</b>
Emergency stop.	Emergency stop button has been pressed.	Identify reason why, repair fault, disengage button and reset 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 <b>Ingersoll Rand</b> representative.
	Low coolant level.	Check for leaks. See also 'discharge air is contaminated with coolant'. Top up coolant.
	High ambient temperature.	Review installation and system parameters.
	Insufficient cooling air.	Check ducting and cooling air path.
	Dirty, blocked coolant cooler (cooling air side).	Clean or replace.
	Blower motor direction of rotation incorrect.	Wire correctly.
Check setpoints.	Controller software has been changed.	Recalibrate all sensors and check setpoints.
Remote start failure.	Remote start button is pressed after compressor 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 compressor is watercooled or sea 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.
Controller has tripped the compressor.	A fault has occurred.	Repair fault / reset controller.
Invalid calibration.	Calibration done with pressure in compressor.	Depressurize and re calibrate with pressure pipe to sensor disconnected. If fault still exists, replace pressure transducer.
Low sump pressure.	System leak.	Located and repair.
	Minimum pressure check valve faulty.	Repair with service kit.
	Blowdown valve faulty.	Repair with service kit.
	Loss of control power.	Check 110V circuit breaker. Check wiring. Check contactor KM1.
Check motor rotation.	Drive system fault.	Contact your local <b>Ingersoll Rand</b> representative.
VSD communication failure.	Communication wiring faulty.	Check and replace if required.
	Drive faulty.	Contact your local <b>Ingersoll Rand</b> representative.
	Controller faulty.	Contact your local <b>Ingersoll Rand</b> representative.
VSD initialization fault.	Communication wiring faulty.	Check and replace if required.
	Drive faulty.	Contact your local <b>Ingersoll Rand</b> representative.
	Controller faulty.	Contact your local <b>Ingersoll Rand</b> representative.
Change separator element and/or high sump pressure.	Faulty pressure transducer measurement.	Calibrate and validate the wet sump and package discharge transducers.
	Moisture separator condensate drain trap faulty.	Ensure condensate drain system is functioning properly, and condensate is being drained. See Table 4: Troubleshooting Chart.
	Separator element dirty or blocked.	Change separator element.
Change HE filter (integrated dryer models only).	Faulty pressure transducer measurement.	Calibrate and validate the after cooler discharge and package discharge transducers.
	Moisture separator condensate drain trap faulty.	Ensure condensate drain system is functioning properly, and condensate is being drained. See Table 3: Troubleshooting Chart.
	Blockage in dryer.	Ensure dryer blockage is not due to freeze up from refrigerant leaks.
	Dryer HE filter dirty or blocked.	Change HE filter.
Machine stops but no alarm message	Loss of outputs of control power.	Check controller outputs (110V AC) power supply (fuses/mini circuit breaker).

FAULT	CAUSE	REMEDY
Motor current fault (RS30-37 i,n only)	Loss of control power. Sump pressure too high. Faulty motor or Airend.	Check control power circuit and breaker. Check separator element pressure drop. Contact your local Ingersoll Rand representative.
CT failure	Fault CT, wiring or loss of control power.	Check wiring and control power circuit.

**Table 5: Drive Faults (indicated on the controller)**

The drive controller is directly linked to the controller. Faults in the drive controller will be displayed on the controller.

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

FAULT	NO.	CAUSE	ACTION
High VSD Ambient Temperature	-	VSD ambient temperature gets within 5% of the shutdown value (55°C)	Check machine ambient temperature. Check PDM filters, replace if necessary. Check drive cooling fan(s).
Chk Motor Rot	-	Main motor reverse rotation	Check main motor rotation Contact your local Ingersoll Rand representative.
VSD Comm Fail	-	Communication wiring faulty.	Check and replace if required.
	-	Drive faulty.	Contact your local Ingersoll Rand representative.
	-	Controller faulty.	Contact your local Ingersoll Rand representative.
Wrong VSD Type	-	Wrong VSD type	Contact your local Ingersoll Rand representative.
Stop Failure	-	Run relay or wiring fault	Check run relay Contact your local Ingersoll Rand representative.
	-	Communication wiring faulty.	Check and replace if required.
Drive Init Error	-	Drive faulty.	Contact your local Ingersoll Rand representative.
	-	Controller faulty.	Contact your local Ingersoll Rand representative.
VSD FAULT #			
Internal Fault	38	Drive faulty	Contact your local Ingersoll Rand representative.
24V Supply Low	47		
1.8V Supply Low	48		
Speed Limit	49		
Dangerous Fail	72		
DC link voltage high	5		
DC link voltage low	6		
DC over-voltage	7		
Phase U Missing	30		
Phase V Missing	31	Motor connection lost	Check drive/motor connection
Phase W Missing	32		
Mains phase loss	4		
Mains failure	36	Problem with incoming power network	Check incoming power leads, voltage
Phase imbalance	37		
DC under voltage	8		
Short Circuit	16	There is short-circuiting in the motor or motor wiring.	Check the motor, repair or change.
Internal Fan Fault	23	Drive fans not working properly	Check for proper fan operation.
External Fan Fault	24		
Motor Thermal Overload	10, 11	Motor overheated	Check ambient conditions, get the motor cooled down
Over Current	13	Compressor operating above rated pressure.	Check and modify settings. Review system requirements and contact your local Ingersoll Rand representative.
		Separator filter element dirty or blocked.	blocked. Replace.
		Voltage supply is low or unbalanced.	Contact your local Ingersoll Rand representative or a qualified electrician.
		Airend is damaged.	Contact your local Ingersoll Rand representative.
Ground Fault	14	Earth (ground) fault on start-up.	Check for proper earthing (grounding) and loose connections.

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<b>FAULT</b>	<b>NO.</b>	<b>CAUSE</b>	<b>ACTION</b>
Inrush Fault	33	Too many power ups	Let the unit cool down
Heatsink Temp	29	VSD heatsink temp too high	Check ambient temp PDM filters dirty or heatsink dirty Check VSD heatsink fan operation
Torque Limit Current Limit	12	Compressor operating above rated pressure. Airend is damaged.	Check and modify settings. Review system requirements and contact your local Ingersoll Rand representative. Contact your local Ingersoll Rand representative.
Heatsink Temp Low	66	The frequency converter is too cold to operate.	Check the ambient temp

## INTEGRATED DRYER MAINTENANCE

### **WARNING**

**Before accessing live electrical parts, disconnect the power supply to the dryer using the disconnect switch or disconnecting the cable connections.**

### ■ Maintenance Chart

For optimum performance from your dryer, follow the periodic maintenance schedule described below.

**Table 6: Maintenance Chart**

PERIOD	ACTION/ MAINTENANCE ITEM
<b>Weekly</b>	<b>Condensate Drains (Timed and No-loss Drains)</b> Verify that the condensate drains are operating correctly by pressing the TEST button.
<b>Every 4 months</b>	<b>Condenser</b> Remove any dust from the condenser fins.
<b>Every 6 months</b>	<b>Air Filter</b> Replace air filter element.
<b>Yearly</b>	<b>Timed Drains only</b> Completely disassemble the drains and clean all their components.

### ■ Cleaning Condensate Drains (Timed Drains Only)

Periodically clean the screen inside the valve to keep the drain functioning at maximum capacity. To do this, perform the following steps:

1. Close the strainer ball valve completely to isolate it from the air receiver tank.
2. Press the TEST button on the timer to vent the pressure remaining in the valve. Repeat until all pressure is removed.

### **WARNING**

**High pressure air can cause injury from flying debris. Ensure the strainer ball valve is completely closed and pressure is released from the valve prior to cleaning.**

3. Remove the plug from the strainer with a suitable wrench. If you hear air escaping from the cleaning port, STOP IMMEDIATELY and repeat steps 1 and 2.
4. Remove the stainless steel filter screen and clean it. Remove any debris that may be in the strainer body before replacing the filter screen.
5. Replace plug and tighten with wrench.
6. When putting the valve back into service, press the TEST button to confirm proper function.

### ■ Testing Condensate Drains (No-Loss Drains only)

Press the TEST button to confirm proper function.

### ■ Troubleshooting Condensate Drains (Electronic Drains only)

This section provides basic troubleshooting information. Determination of specific causes to problems are best identified by thorough inspections performed by personnel instructed in safety, operation and maintenance of this equipment. The chart below provides a brief guide to common symptoms, probable causes and remedies.

**Table 7: Condensate Drain Troubleshooting Chart**

TROUBLE	CAUSE	ACTION
<b>Solenoid condensate valve will not close.</b>	Debris in solenoid valve prevents diaphragm from seating.	Remove solenoid valve, disassemble, clean and reassemble.
	Short in electrical component.	Check and replace power cord or timer as needed.

### ■ Disassembling the Integrated Dryer

#### **NOTICE**

**The dryer shall be disassembled, charged or repaired by a refrigerant specialist.**

**Refrigerant liquid and lubricating oil inside the refrigeration circuit shall be recovered in compliance with current norms in the country where the dryer is installed.**

#### **NOTICE**

**Refrigerant leaks may be identified by tripping of the refrigeration overload protector.**

**If a leak is detected in the refrigerant circuit, seek technical assistance.**

**If a refrigerant leak occurs, thoroughly air the room before commencing work.**

#### **NOTICE**

**In normal temperature and pressure conditions, the R-404A refrigerant is a colorless, class A1/A1 gas with TVL value of 1000 ppm (ASHRAE classification).**

### ■ Decommissioning the Integrated Dryer

Decommission the dryer and the relevant packaging in compliance with the rules locally in force.

Pay particular attention to the refrigerant, as it contains part of the refrigerating compressor lubricating oil.

Contact a waste disposal and recycling utility.

**Table 8: Integrated Dryer Materials of Construction**

<b>RECYCLING DISASSEMBLY</b>	
Frame and panels	Steel/ epoxy resin polyester
Heat exchanger (cooler)	Stainless steel/ aluminum
Pipes	Copper
Insulation	Gum synthetic
Compressor	Steel/ copper/ aluminum/ oil
Condenser	Aluminum
Refrigerant	R-404A
Valve	Steel





