



Air Control Industries

ACI SPIRAL DRYER

Installation, Operation & Maintenance Instruction Manual

Air Control Industries
Ref: ACM-0105 Issue 2

Table of Contents:

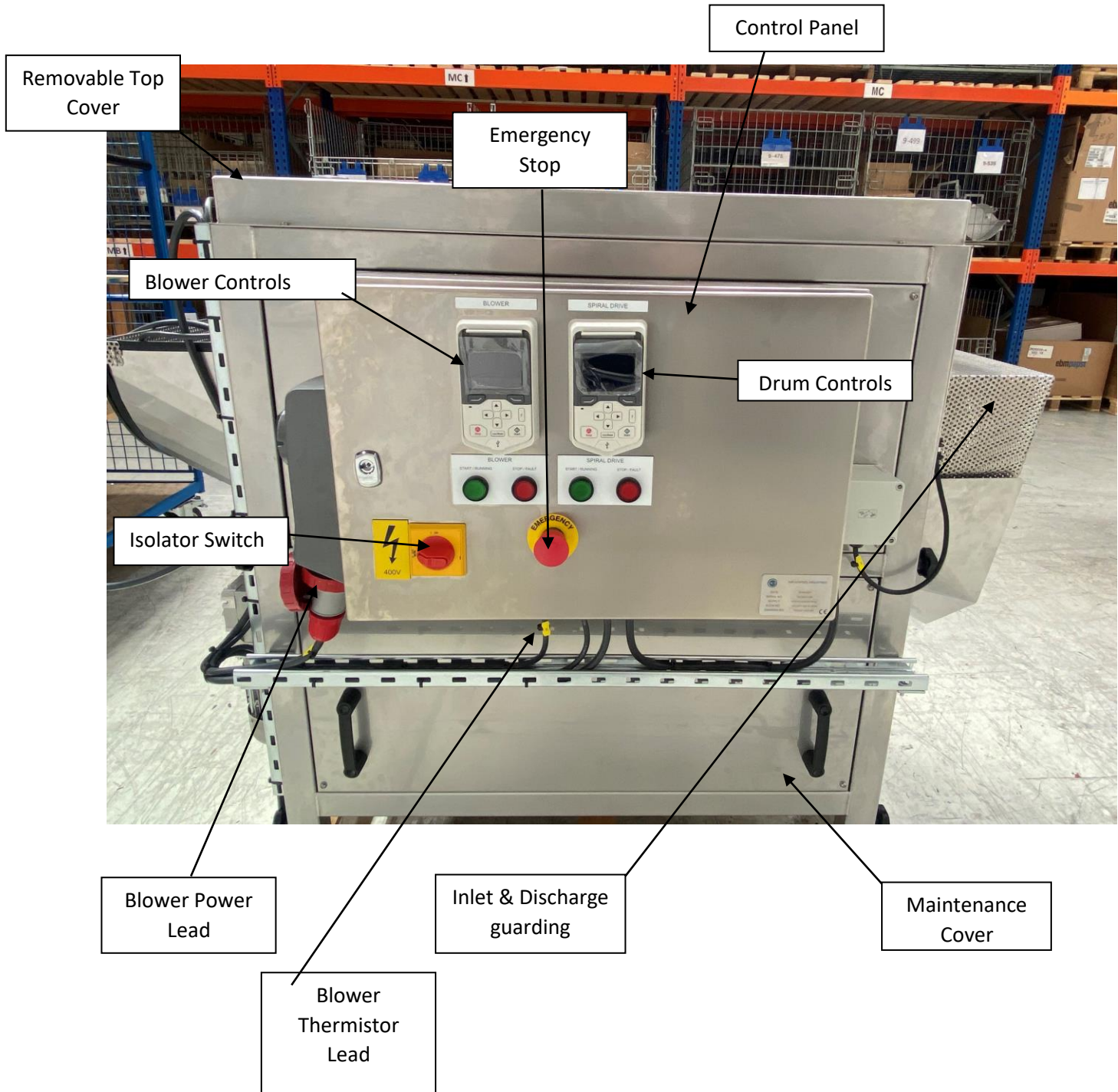
INSTALLATION

- 1. GENERAL INSTRUCTONS**
- 2. GENERAL SAFETY INSTRUCTIONS**
- 3. INSTALLATION**
- 4. OPERATIING INSTRUCTIONS**
- 5. KEY MAINTENANCE TASKS**
- 6. TROUBLESHOOTING**
- 7. GENERAL OPERATIONAL INFORMATION**
- 8. TYPICAL OPERATIONAL DATA**
- 9. WARRANTY**
- 10. WEEE**
- 11. MANUFACTURERS SERVICE ADDRESS**
- 12. DECLARATION OF CONFORMITY**

1. GENERAL INSTRUCTIONS

- a. Unpack the Spiral Dryer & remove from the carriage pallet. Check off all components against the provided delivery notes. Suitable lifting equipment must be used by a competent and qualified operator. Ensure that the drip tray is removed before lifting the spiral dryer.
- b. Check for damage on arrival. Please check for any transit damage and report it to ACI immediately.
- c. Follow installation procedures, outlined in this manual.

Image 1: Main features of the Spiral Dryer



2. GENERAL SAFETY INSTRUCTIONS



DANGER!

This machinery is for use at the rating plate duty only. Unauthorised removal of the necessary covers, improper use, incorrect operations or insufficient maintenance could lead to severe personal injury or damage of the unit.

The drying systems are not to be installed near operators. If operators are present during operation, then please guard appropriately'. Pay particular care to the inlet & outlet chutes when ensuring location suitability.

**All moving items should be safeguarded to an emergency stop system if necessary
Static build up is a possibility as the drum runs on rubber wheels, please earth appropriately**

Those responsible for the safety of the installation must ensure that:

- Always install in an area that has been risk assessed
- Loose air hoses can pose a serious hazard, please site joints away from personnel if possible. If personnel regularly access the area where duct joint are present, then consider using two hose clips per joint
- Only qualified personnel are entrusted to work on the unit.
- These persons always have at their disposal the operating instructions and other product documentation supplied when they do such work, and that they undertake to follow consistently any such instructions.
- Qualified personnel are persons who, on account of their training, experience and knowledge of relevant standards, specifications, accident prevention regulations and operating conditions, have been authorised by those responsible for the safety of the plant to carry out the necessary work and who can recognise and avoid possible dangers. IEE and other relevant regulations should also be observed. The proper use of tools, lifting equipment and safety regulations (PUWER & LOLER) may also be applicable.

It is assumed that the basic planning work for the installation and all work concerning transport, assembly, commissioning, maintenance and repair is done by qualified personnel or checked by responsible skilled personnel. Particular note must be taken on the following:

- Technical data and information on permissible use (assembly and connection summaries, operating conditions etc.) which are contained in the operating instructions and motor rating plates.
- General building, installing, machine fixing and safety regulations.
- The use of personal protective equipment.
- No covers should be removed before the unit is electrically isolated at source. All covers require a tool to be used to remove.
- **Lock-off the electrical supply before any installation or maintenance work is undertaken. The drum can rotate on machine re-start so fit all guards & panels before re-starting.**

These instructions cannot claim to cover all details of possible equipment variations, nor can they provide for every possible example of installation, operation or maintenance.

The specified maintenance and inspection measures must be carried out regularly by trained service personnel in order to avoid any interruptions or breakdowns. Deviations from 'normal' performance (i.e. higher temperatures or vibrations) indicate that there is likely to be a malfunction of the unit. In order to avoid faults the responsible maintenance personnel must be notified immediately.



Danger
electric
shock risk

Danger by electric shock.

If the connecting cable to the motor is damaged, there is a risk of death due to an electric shock. Such defects must be eliminated immediately.

3. INSTALLATION.

a. Installation site demands.

Upon delivery of the unit to its place of installation, all safety precautions must be followed. Forklift trucks, elevators or cranes with enough carrying capacity and stability should be used, and the transport and installation should only be carried out by qualified personnel.

b. Transport and Mounting

- Unpack the Spiral Dryer.
- Locate the unit in the required working area, ensuring a reasonable clearance between the unit and any fixed walls, panels etc. which may restrict airflow around the unit.
- Fit the castors to the mounting plates on the bottom of the Spiral Dryer and the surrounding frame and ensure that the braked castors are locked.
- Connect unit to suitable fuse protected electricity supply, please see the machine rating plate for full details.

d. Demands of the installation site.

If no other special equipment is supplied, the following requirements should apply to the installation site.

The Spiral Dryer is designed for operation at an ambient temperature of -10 degrees to max. +40 degrees C and an installation height of up to 1000m above sea level.

The unit is designed for use inside closed production rooms protected against any weather conditions. The unit is not designed for use outside.

The unit must only be installed on level, bump free ground.

e. Commissioning

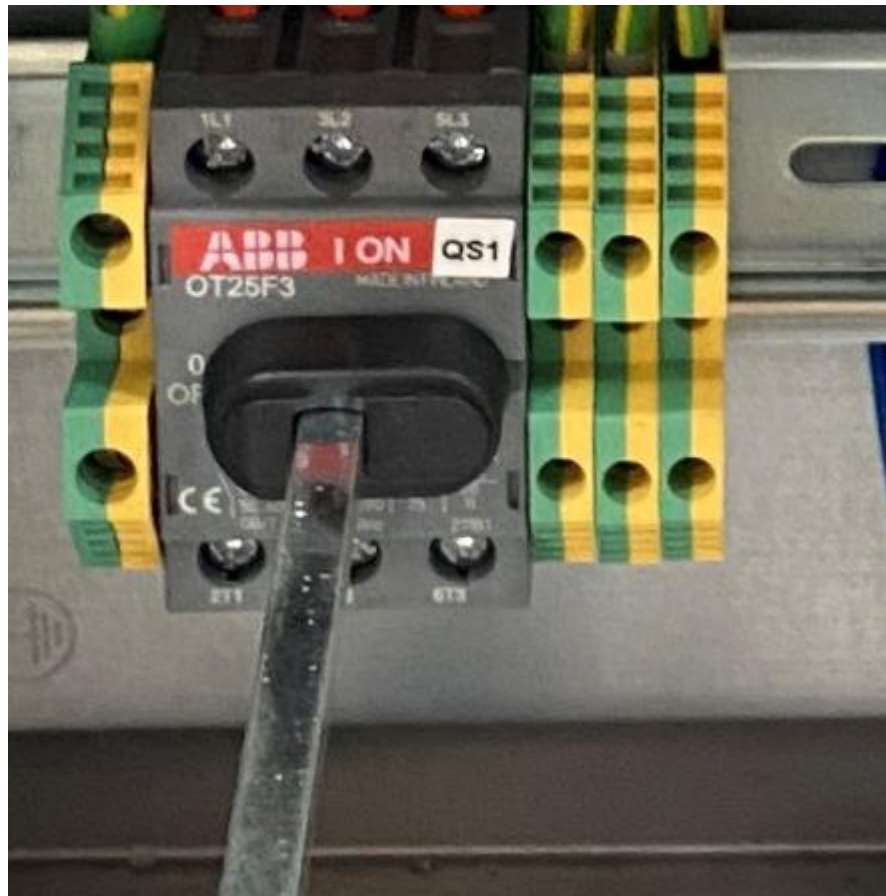
ACI recommend employing experienced staff for the installation, assembly and start-up of the unit. ACI cannot be held responsible for damage or defects caused by self-directed poor installation, assembly or start-up of the unit.

Installation and commissioning procedures should be carried out by an expert in compliance with local accident prevention regulations.

**DO NOT PROCESS HAZARDOUS MATERIALS THROUGH THIS DRYING PRODUCT.
DO NOT MANUALLY LOAD THIS DRYING PRODUCT.**

4. OPERATING INSTRUCTIONS

- Ensure castors are locked.
- The Dryer is fitted with a control panel on the front face of the unit. open the control panel door and connect the dryer to a suitable electricity supply to the isolator terminals (3PH + Earth).
- Before energising the system visually check that no external cables are damaged, this must also be included in the user working procedure for the machine.
- NOTE: The Spiral dryer must be also externally earthed using one of the external studs on the body.



- The control panel is fitted with an Isolator, a separate start button with running illumination for the blower and the drum drive, a separate stop button with fault illumination for the blower and the drum drive, an emergency stop and individual control interfaces for the integral inverters.
- To power up the unit, turn the Isolator to On.
- To start rotation of the drum, press the “Start” button on the inverter interface named “SPIRAL DRIVE”
- To speed up or slow down the drum use the up and down arrow buttons on the control interface labelled “SPIRAL DRIVE” This changes the speed by moderating the frequency output of the inverter.
- To stop the drum in normal operation, press the “Stop” button. The drum will ramp down to zero.
- To start the blower that supplies the internal Airknife, press the “Start” button on the inverter interface named “BLOWER”

- To increase or decrease the pressure at the Airknife use the up and down arrow buttons on the control interface labelled “BLOWER” This changes the speed by moderating the frequency output of the inverter.
- To stop the drum and/or blower in an Emergency, press the red Emergency Stop button. The drum will stop immediately. Note – if the drum has been stopped by using the Emergency stop it will not re-start unless the Emergency stop has been re-set by turning the button through 45 degrees. The button will pop out and the unit can now be started as above.
- To power down after use, turn the Isolator to Off.
- If the guard on the discharge chute is lifted during operation both the blower and the drum rotation will stop and will have to be manually started again.
- To separate the blower enclosure stand and the dryer, first isolate and lock out tag out all power supplies, next remove the blower power and thermistor cables from their cable trays and unplug them. Following this remove the joining brackets, then the blower enclosure can be wheeled away.
- To re-join the blower enclosure stand and the dryer, first check all power supplies are still isolated and locked and tagged out, then wheel the stand over the dryer until the end bracket studs are in line with each other, then fit the brackets. Next plug in the blower power cable and thermistor cable to the panel and secure into their cable trays. Check all cables visually for any signs of wear or damage.

• Under no circumstances should the machine ever be manually loaded. The Spiral Dryer must only ever be machine loaded.

5. KEY MAINTENANCE TASKS – To be performed regularly

Always power off & electrically isolate the machine before conducting any maintenance

Activity Ref.	Description	Parts Required
1	Perform general cleaning, ensure operation of the unit is as per this document	None
2	Check and empty (if required) any receptacle located under the drip tray.	None
3	Check Airknife feed hose for air-leaks/damage	None
4	Check for excessive noise and vibration	None
5	NOTE – the drum has lifting rings with shackle holes if a more intensive drum clean is required. The top & end covers will need to be removed to lift the drum out vertically.	None
6	Approx. Every three months, remove bottom covers (both sides) and re-grease pillow block bearings with suitable grease.	Grease

6. TROUBLE SHOOTING

Always power off & electrically isolate the machine before investigating any troubleshooting issues

Malfunction	Possible Cause	Remedy
Low Airflow	Dirty or contaminated blower filter	This item MUST be changed regularly. ACI recommend the filter is changed every 3 months subject to operating conditions note, there is an external blower filter and also a secondary filter inside the blower enclosure
	Damaged hose	Replace damaged hose
	Blockage in air ducting	Check all ducting and air delivery devices for blockages/damage and replace as necessary
Irregular/Excessive Noise	Leak in air delivery ducting	Check and replace damaged hose and clips
	Excessive air noise over drum tumblers	Re-position Airknife at a slight angle
Drum not smooth in operation	Product/Debris trapped between drum and frame	Remove trapped product/debris from unit
Unit fails to operate	Unit not connected to supply	Connect unit to suitable electricity supply, please see the machine rating plate for full details
	Circuit breaker tripped	Check for cause of trip then reset if safe to do so.
	Operating switch is in "Off" position	Turn operating switch to "On" position

7. GENERAL OPERATION INFORMATION

a. General safety statement



If any maintenance/cleaning or overflow container is to be emptied - electrically isolate before commencing work.

When operating this equipment, always wear:

- § Eye protection
- § Ear protection
- § Safety footwear

Never:

- § Perform adjustments or maintenance on the unit unless it is isolated at the mains.
- § Obstruct stopping and/or starting devices, they should be kept free of obstructions for personnel safety.
- § Obstruct loading/unloading areas, these areas should be clear for personnel safety.
- § Change any of the safety characteristics of the unit or its guards.
- § Manually load the machine.

Always ensure:

- § Only trained personnel should use this equipment.
- § The power is isolated and/or locked off before commencing any adjustment, checks or maintenance on the system.
- § That the unit should only be used to clean/dry the elements it was designed for.
- § Before operating the system ensure that the unit is secured in position.
- § Check the unit for foreign objects that may have been left after any adjustment or maintenance.
- § Any access covers or guards have not been removed. These items should only be removed if the Unit has been isolated from the electrical supply.
- § Any spares or replacement parts must only be supplied or advised by ACI.

8. TYPICAL OPERATIONAL DATA

Through-put	Single item/part	30 secs @ 50Hz motor speed
	Single item/part	160 secs @ 13.5Hz motor speed
	10Kg parts	30 secs @ 50Hz motor speed
	10Kg parts	160secs @ 13.5Hz motor speed
	20Kg parts	30 secs @ 50Hz motor speed
	20Kg parts	45 secs @ 25Hz motor speed
Noise with pressure (Empty Drum)		73.3 dB(A) @ 13.0"Wg
		80 dB(A) @ 21.5"Wg
		86.0 dB(A) @ 41.8"Wg
Inner drum temperature with pressure at Airknife (Empty Drum)		37° @ 20"Wg
		42° @ 50"Wg
		48° @ 80"Wg

9. WARRANTY INFORMATION

<https://www.aircontrolindustries.com/terms-conditions/>

10. WEEE RECYCLING & MATERIALS DISPOSAL

<https://www.aircontrolindustries.com/about-us/certificates-approvals/>

11. MANUFACTURER SERVICE ADDRESS

Our products are manufactured in compliance with applicable international standards and regulations. If you have any queries regarding the use of our products, or if you are planning a special application, please contact the nearest ACI distributor or their main office:

Air Control Industries Ltd

Weycroft Avenue, Millwey Rise Industrial Est.

Axminster, EX13 5HU, UK

Tel: +44 (0)1297 529 242

Fax: +44 (0)1297 529 241

Email: sales@aircontrolindustries.com

Web: www.aircontrolindustries.com

Air Control Industries INC

76 Augusta Rockland Road, Windsor, Maine, USA

www.aircontrolindustries.com/us

inquiries@aircontrolindustries.com

Tel: 207-445-2518

12. DECLARATION

<https://www.aircontrolindustries.com/about-us/certificates-approvals/>