

# Service of VirTis Genesis, Ultra and VirTual series Freeze Dryers

Carried out by Biopharma's expert engineers, a two-day planned service covers a comprehensive series of points across all of your machine's systems. As well as general maintenance like oil changes or refrigerant charges, potentially serious problems can be spotted early and preventative action taken.

**Keep your equipment running smoothly with regular maintenance.**

## General Inspection

- Visual inspection of condition of:
  - Exterior condition
  - Doors and hinges
  - Access panels and panel fasteners
  - Process and condenser chambers
  - Control panel
  - All connection points for electrical, air, vacuum pumps etc.

## Vacuum System

- Inspection of pump for leaks
- Refilling with new oil
- Inspection of vacuum system, including all pipe work, valves and fittings
- Replacement of seals and tubing where necessary
- Exhaust Filter element replacement as necessary

## Refrigerant System

- Visual inspection of refrigerant system, including:
  - Inspection of insulation, components and fittings
  - Condition of heat exchanger
  - Condition of condenser cooling fans
  - Condition of accessible pipe work
  - Check for refrigerant leaks.
  - Check of static pressures in compressors
  - Refrigerant charge replenished to optimum levels

## Control Panel

- Functional check of manual operation for all modes of operation.
- Check of all control settings
- Check of control output for machine functions where necessary

## Electrical System

- Inspection of electrical system, including
  - Checking security of connections
  - Signs of overheating, arcing etc
  - Inspection of all accessible wiring
  - Inspection of security of any fixings for cable looms
  - Safety check of electrical systems

## Telemetry

- Check and adjustment of temperature telemetry loop and vacuum telemetry loop.

Note: Calibration is conducted with UKAS certified equipment. Equipment calibration certificates supplied with final report.

## Performance Tests

- Comprehensive series of tests, including:
  - Shelf heating and cooling where applicable
  - Condenser cooling
  - Chamber evacuation
  - A short lyophilisation cycle, where necessary.

## Faults

- Any faults declared or found as part of the service will be rectified, providing the work can be completed within the planned service duration and parts are

## Reports

- A detailed report is supplied after the service, detailing:
  - Inspections and tests carried out
  - Data for trials conducted
  - Repair work with materials used
  - Recommendations

# Service of VirTis "BTK" and AdVantage Freeze Dryers

Carried out by Biopharma's trained engineers, a one-day planned service covers a comprehensive series of points across all of your machine's systems. Designed according to regular feedback, our service plan will ensure your machine is maintained at its optimum operating condition. Together with general maintenance there is also the opportunity for our expert engineers to remedy highlighted problems and also advise of potential issues before more critical attention is required.

**Keep your equipment running smoothly with regular maintenance.**

## General inspection of the machine

- Condition of door
- Condition of exterior
- Condition of process and condenser chambers
- Condition of control panel
- Condition of connection points for services including electrical, air, vacuum pump.

## Inspection of vacuum system

- Flushing and cleaning oil sump and pump stages
- Refilling with new oil
- Replacement of internal seals, if required
- Condition of pipework
- Condition of valves
- Condition of fittings
- Leak test

## Inspection and Test of Refrigeration System

- Check for leaks
  - Check of static pressures of refrigerants in compressors
  - Refrigerant charged to optimum levels
- Note: for an effective check, the machine needs to be stopped at least 16 hours prior to service

## Inspection of Electrical System

- Security of connections
- Check for signs of overheating, arcing, etc
- Insulation and earth continuity test of power cable

## Performance Tests

- A short series of tests to establish the correct operation of the machine, including\*:
    - Shelf cooling
    - Condenser cooling
    - Chamber evacuation
- Check of calibration instruments using UKAS certified test equipment
- \*as applicable to machine type

## Faults

Any faults declared or found as part of the service will be rectified, providing the work can be completed within the planned service duration and parts are available.

## Report

On completion of the service programme a report will be issued in generic format listing all appropriate checks completed, including remedial works undertaken and recommendations to ensure continued optimum performance is maintained.