

# Desorption Unit DJ-500



**This Desorption unit is used for water desorption from silica gel type of sorbents.**

**In obtained water sample, tritium presence can be analysed by liquid scintillation method in a laboratory.**

## Purpose

DJ-500 desorption unit complements VF Company's V3H14C series of products for tritium and carbon-14 monitoring in air releases of nuclear power plants or research reactor sites.

V3H14C series samplers capture the tritium (hydrogen isotope  $^3\text{H}$ ) bonded in water molecules ( $\text{H}_2\text{O}$ ) into a hydroscopic silica gel type of material.

DJ-500 is intended for desorption of water trapped in sorbents from V3H14C series samplers. Its advantage is the ability to desorb water from various types of silica gel. VF Company recommends using silica gel with colour indicator of water saturation.

For tritium detection and content analysis in the trapped water the liquid scintillation method (LSC) is used.

## Description

Basic principle of DJ-500 is to heat the silica gel so that water is released in a form of vapour. The water is then cooled rapidly, thus condensed, and trapped for further evaluation.

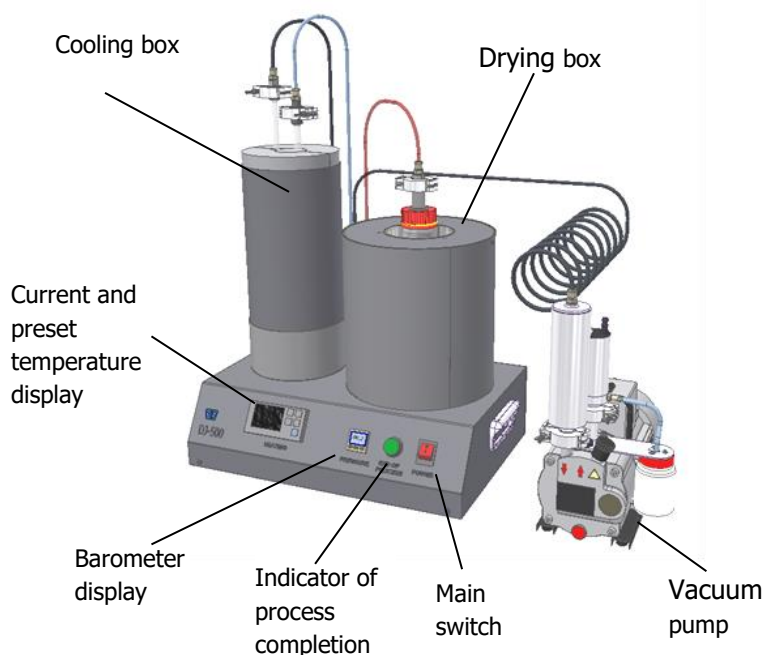
DJ-500 unit's advantage is the possibility to set a custom heating temperature and desorption time. When set optimally, it is possible to reuse selected silica gel types, thus saving operating expenses.

VF Company recommends using silica gel with orange indicator of water saturation (P/N 1-0303-00012). The unit's factory settings are optimized for this silica gel desorption (temperature 110 °C, desorption time 240 min).

## Main advantages

- Possibility of reusing the silica gel in V3H14C series samplers
- Possibility to desorb from various types of silica gels
- Unique combination of high temperature and vacuum ensures very high desorption efficiency
- Possibility to set a custom sorbent heating temperature and desorption time period

## Operation



Into the DJ-500's drying box, maximum of 1 litre of water saturated silica gel is placed. After the desired temperature is set, desorption time starts being measured.

During desorption, a vacuum pump is used to extract air, which removes the vapour released from the silica gel.

The vapour is then conducted into the cooling box, where it is cooled rapidly, thus condensed into water. As a coolant, dry ice or liquid nitrogen can be used.

The captured water from the cooling box can be subsequently analysed to determine the tritium content captured by a V3H14C series sampler.

DJ-500 also includes the vacuum pump.

## Specifications

Desorption time	adjustable 60 – 9 999 min
Heating temperature	adjustable 100 – 160 °C
Maximum desorption vacuum	-99,9 kPa
Silica gel desorption efficiency under optimal settings	> 99%
Sorbent vessel volume	1 dm <sup>3</sup>
Coolant volume (CO <sub>2</sub> )	1 dm <sup>3</sup>
Amount of trapped water	maximum 50 g
Dimensions (W x D x H)	445 x 300 x 700 mm
Weight	ca. 15 kg
Power supply	230 VAC, 50 Hz
Maximum energy consumption	1 000 VA

## Models and accessories

P/N	Description
K0223	Desorption unit DJ-500
<b>Related products</b>	
K0220-XX	V3H14C, V3H14Ca <sup>3</sup> H and <sup>14</sup> C Sampler (several models)
K0221-XX	V3H, V3Ha <sup>3</sup> H Sampler (several models)
<b>Accessories and consumables</b>	
1-0303-00012	Silica gel with orange indicator of water saturation
50-P-0012963	Condensing vessel for the cooling box



[www.vf.cz](http://www.vf.cz)

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