

Hot Cell RotoSystem



**Grinding/Polishing
machines for
materialographic
preparation of
radioactive material
in Hot Cells**

Preparation by Remote Control

To meet the growing demand for equipment specially designed for the preparation of radioactive materials, Struers can now introduce the "Hot Cell RotoSystem". The system consists of special models of the well known RotoPol grinding/polishing machines, and the specimen mover, RotoForce-1

Features:

- Highest degree of reproducibility
- Minimal waste
- Easy handling of specimens and equipment
- Short preparation time
- Radiation resistant construction
- Easy maintenance
- Stores more than 100 preparation methods
- Sturdy, reliable design
- Motor and belt can easily be changed
- With the MD-System, no changing of grinding/polishing discs



Though based on standard designs, both RotoPol and RotoForce are made specifically for use in a radioactive environment. RotoPol-11 (2 speeds) or RotoPol-15 (continuous variable speed) equipped with a RotoForce-1 specimen mover, placed in a hot cell and with a Multidoser dosing unit outside the cell, will handle from 1 to 3 single specimens at a time.

With the RotoCom memory and control unit, also placed outside the cell, up to 100 preparation methods can be stored, ensuring the highest degree of reproducibility. RotoCom can work as an independent unit or with a PC.

The use of the MD-System, magnetic fixation of grinding papers, grinding discs and polishing cloths, significantly simplifies the manipulation in the hot cell (see special brochure on the MD-System).

RotoPol-11 for hot cell use

RotoPol-11 has a single 200 mm (8") grinding/polishing disc and two speeds, 150/300 rpm, using an A.C. motor. The machine is split into an "inside the hot cell" part and an "outside the hot cell" part. The "inside the hot cell" part has a cabinet made of stainless steel mounted with screws which are easy to remove in case you need to change the driving belt or motor. The cabinet is glass blown and appears with a mat surface. All electric parts, except the motor, are placed outside the cell. Only a cable, supplying the power for the motor, needs to be led into the cell. The electric parts are mounted in an open control box with the normal touch pad front plate. This box is made for rack mounting, in that way encapsulating the electric parts. A totally closed box, not to



The RotoPol polisher/grinder inside the hot cell



The front panels of RotoPol-15 and RotoForce-1 (above, over the cell) are placed outside the hot cell together with the Multidoser dosing unit (on the table)

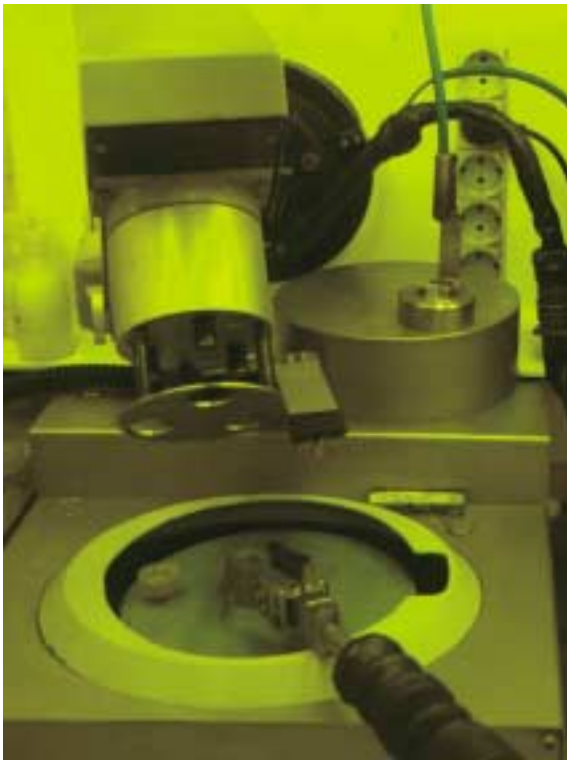
be rack mounted, can be supplied upon special request.

The machine is supplied without a water tap and tubes for water. Lubrication takes place through the Multidoser. The drain surrounding the disc and the drain pipe are

made of acid resistant stainless steel. The drain pipe is taken through the side of the machine, draining into a container to be placed alongside the machine. The splash ring, which protects against splashing from the rotating disc and specimen mover, is made of ABS, and the opening can be adapted to match the shape of the manipulator, reducing splashing to a minimum. The splash ring can easily be discarded, if the plastic deteriorates after long use.



The use of the magnetic grinding discs from the MD-System simplifies the preparation process. (Photographed through observation window)



*The splash ring can be adapted to match the shape of the manipulator.
(Photographed through observation window)*



Multidoser, supplying liquid into the cell

Changing the rubber belt

The bottom of the cabinet is open, so that the belt easily can be changed by placing the machine on its side.

Changing the motor

The whole cabinet is removed (6 screws) and the motor (4 screws). The motor has a short cable with a male plug, connecting to a female plug on the supply cable.

For further information: See the brochure for RotoPol grinding/polishing machines.

RotoPol-15 for hot cell use

RotoPol-15 has a single 200 mm (8") grinding/polishing disc and continuous variable speed from 40 to 600 rpm, using a D.C. motor. All electric parts, except the motor, are outside the cell, as mentioned earlier. The D.C. motor gives the advantage of variable speed, but is slightly less maintenance free than the A.C. motor in RotoPol-11. The cabinet of the machine, the changing of parts etc., are as described under RotoPol-11.

For further information: See the brochure for RotoPol grinding/polishing machines

RotoForce-1 for use in hot cells

RotoForce-1 is a relatively simple

specimen mover, which is mounted on a RotoPol-11/-15 machine. 1, 2 or 3 specimens can be prepared at the same time. The specimen diameter can be from 25 mm (1") to 40 mm (1½"), and the holes in the specimen mover plate, matching the specimen diameters, can be made according to customer specification.

RotoForce-1 is also divided into a "inside the hot cell" part and an "outside the hot cell part". The cabinet of the part in the hot cell is made of glass blown stainless steel. The transmission from motor to the shaft of the specimen holder plate is two gearwheels made of bronze, which need no lubrication. The force on each specimen is established with compressed air, taken into the cell through a tube. The pressure is controlled from outside the cell with touch pad controls placed on the front plate of the control box. The force and other data are shown on a display. All electric parts, except the motor, are placed outside the cell in the control box for rack mounting, as described under RotoPol-11. The motor is controlled from the front plate with touch pad controls, and the only cable going into the cell is the supply cable for the motor.

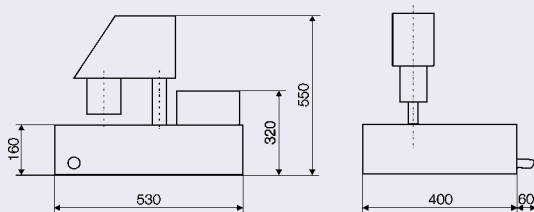
For further information on RotoForce-1: See the brochure on RotoForce.

Adding abrasives and lubricants

The abrasive suspensions and lubricants are controlled by the dosing unit Multidoser. The liquids are taken into the cell through 6 plastic tubes: 3-4 diamond suspensions, 1-2 lubricants and 1 for water. The tubes (silicone and PVC) are placed in an outer flexible plastic spiral hose for protection. The 6 tubes are connected to a nozzle block with 6 nozzles adding the liquids to the grinding/polishing disc. The block is placed on an arm mounted on the side of RotoForce-1 and can easily be exchanged if the 6 tubes are to be replaced. Once in the hot cell, the liquids cannot return through the tubes.

Multidoser

Multidoser is a unit for dosing up to 6 liquids. A special version of Multidoser is available for use in connection with hot cells. Normally the peristaltic pumps, supplying the liquids, are able to operate in both directions, either pumping the liquid or taking it back into the bottle. On the model for hot cells, the control of the pumps is changed, so that the pumps can only



Overall measurements in mm of RotoPol-11/-15 with mounted RotoForce-1 for operation inside a hot cell

rotate in one direction, supplying liquid into the cell. Also the hot cell model is able to supply water as one of the liquids. Colloidal silica, is not recommended for hot cell use.

The nozzle block (see above) with arm and tubes are part of the Multidoser unit.

For further information:
See the Multidoser brochure

RotoCom

The RotoCom memory and control unit is placed outside the hot cell; thus the standard version can be used. With RotoCom all parameters for different methods for a number of materials and purposes, can be stored, and all directions for a given process are transferred to RotoPol, RotoForce and Multidoser. This ensures highly reproducible preparation results.

For further information:
See the RotoSystem brochure

Specification

Code

RotoPol-11 for use in Hot Cells

Grinding/polishing machine for

200 mm disc and 2 speeds, 150/300 rpm, for placing in hot cell. Complete with splash ring and control box with electric parts and controls for rack mounting outside the hot cell. Disc and lid are ordered separately.

Specify voltage version and length of supply cable when ordering ROH11

RotoPol-15 for use in Hot Cells

Grinding/polishing machine for 200 mm disc and variable speed, 40-600 rpm, for placing in hot cell. Complete with splash ring and control box with electric parts and controls for rack mounting outside the hot cell. Disc and lid are ordered separately.

Specify voltage version and length of supply cable when ordering ROH15

RotoForce-1 for use in Hot Cells

Automatic specimen mover for grinding and polishing of 1-3 specimens in a hot cell. Complete with control box with electric parts and controls for rack mounting outside the hot cell. Specimen mover plates are ordered separately.

Specify voltage version and length of supply cable and tube for compressed air when ordering ROHF1

Multidoser for use in Hot Cells

For automatic dosing of up to 6 liquids (1-5 suspensions, 0-4 lubricants and 1 water) in a hot cell. Complete with nozzle block and arm for mounting on RotoForce-1 and 6 tubes. The peristaltic pumps cannot reverse.

Multidoser is placed outside the hot cell.

Specify length of tubes when ordering MULHO

Rotocom

Memory unit for storing up to 100 preparation methods. Standard product placed outside the hot cell ROCOM

Accessories

Code

RotoPol/RotoForce-1 for Hot Cells (Standard Items)

MD-Disc, 200 mm (8") dia., magnetic disc DEMLA

Polishing Disc, 200 mm (8") dia., aluminium PAMLA

Lid for RotoPol-11/-15 LALID

Specimen mover plates for RotoForce-1

For 3 specimens, 25 mm or 1" dia. ROFIN

For 1 to 3 specimens, 30 mm dia. ROFTH

For 1 to 3 specimens, 40 mm dia. ROFYF

For 1 to 3 specimens, 1.25" dia. ROFQU

For 1 to 3 specimens, 1.5" dia. ROFHA

Without holes, holes to be made according to customer specification ROFNO

Struers' products are subject to constant product development. Therefore, we reserve the right to introduce changes in our products without notice



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