

171 Tosca Drive, Stoughton, MA 02072

(781) 341-7240 phone, (781) 341-7241 fax, www.essential-life.net

ISOKROM – OWNER’S MANUAL IK COLUMNS

Assemblage

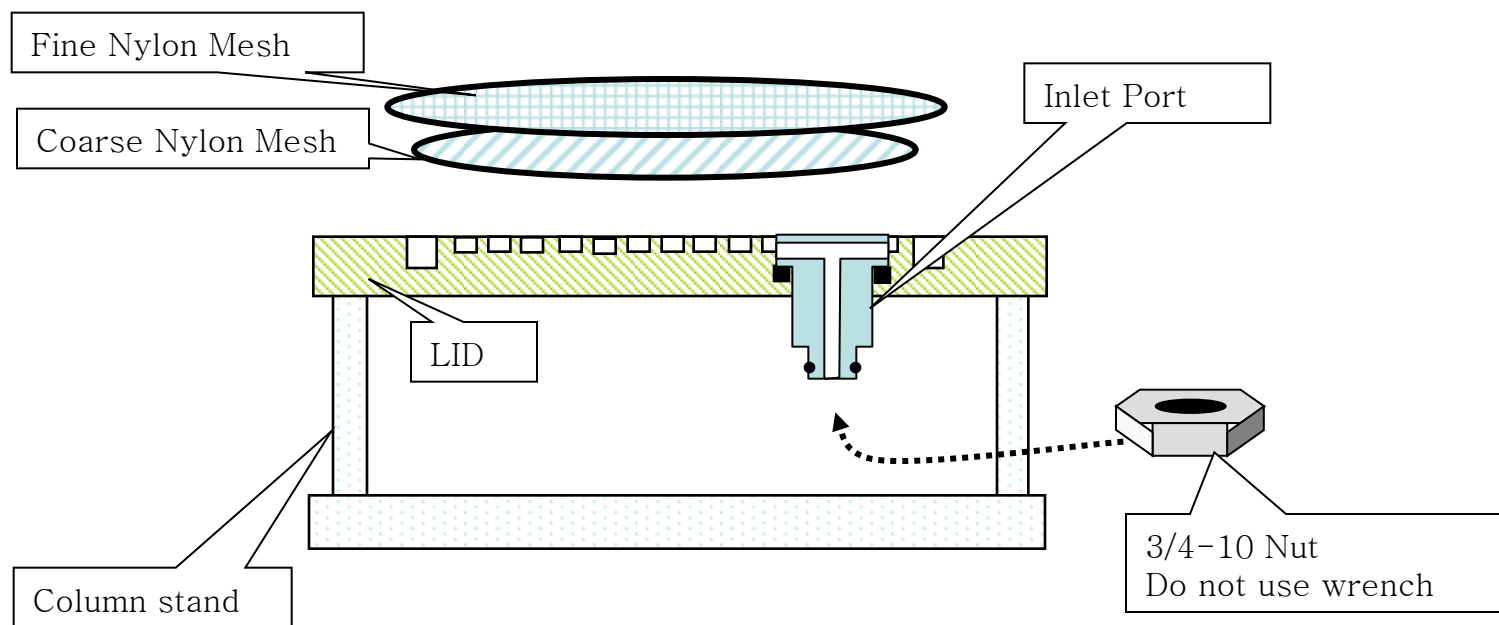
Packing/Unpacking

Cleaning

Chemical Compatibility

ASSEMBLY of IK COLUMNS

- ❑ Install the Inlet Port into the Lid.
 - Inlet Port serves as a jet-breaker and has 2 standard O-rings: small O-ring #011 (5/16 x 7/16) and inside, a large #116 O-ring (3/4" x 15/16"), as shown. The Inlet Port adopts Female MPC series Quick-disconnect fittings from Colder including MPC to 3/4" and 1.5" sanitary coupling as well as MPC to barb fittings
 - Do not use wrench to tighten the Nut (3/4"-10) on the outside surface of the Lid

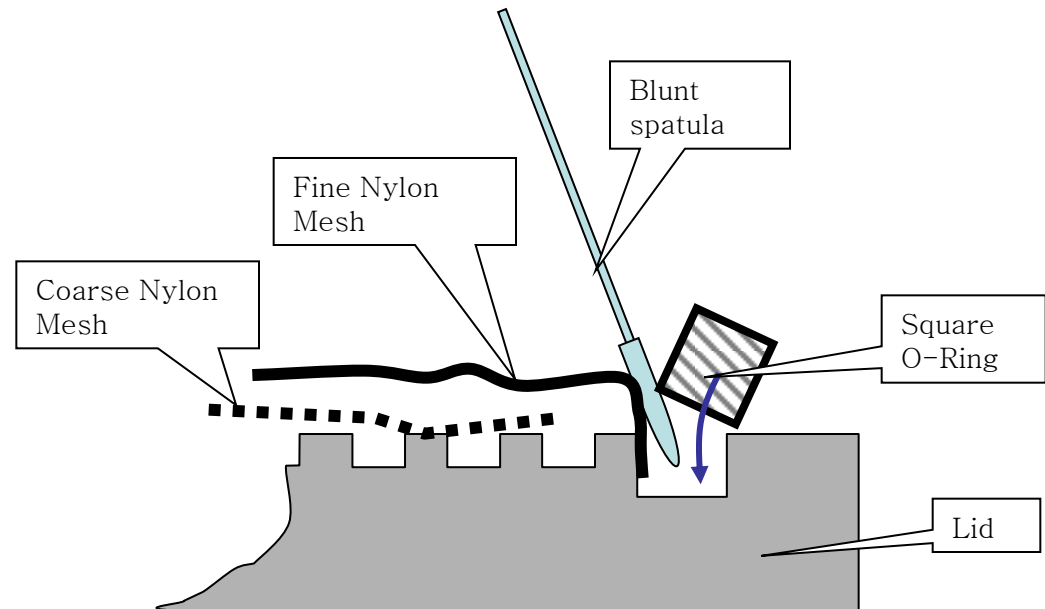


Install Nylon mesh

- ❑ Lay the Coarse Nylon Mesh flat in the middle of the Lid. The Coarse Nylon Mesh is smaller diameter than the Fine Nylon Mesh
- ❑ Tuck the Fine Nylon Mesh under the O-ring in 2 opposing ends of the Lid. A blunt spatula can help in this process. Avoid mesh protrusion under the O-ring to the outside the column as it will cause leaks
- ❑ Tuck the Fine Nylon Mesh under O-ring in the middle of remaining arcs; continue this step until all mesh is installed. Avoid over-stretching the mesh; the mesh does not have to be wrinkle-free for all practical purposes.

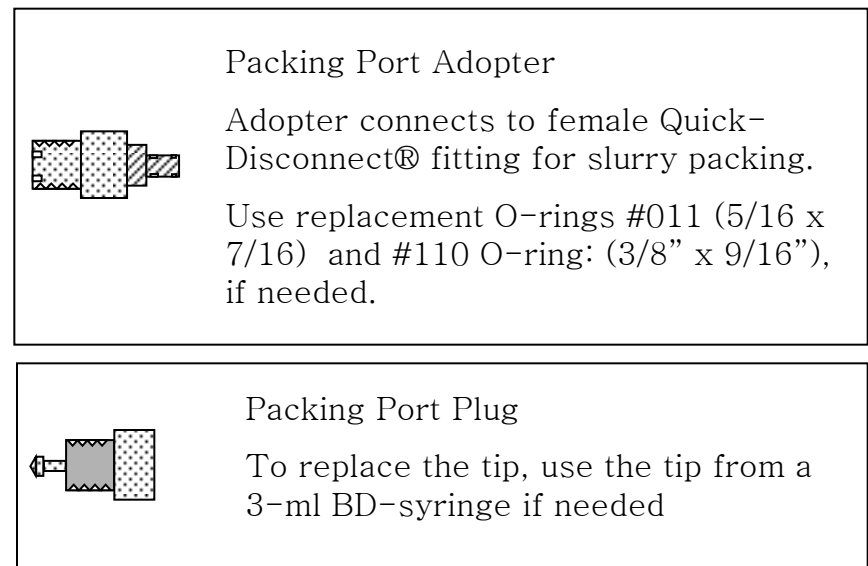
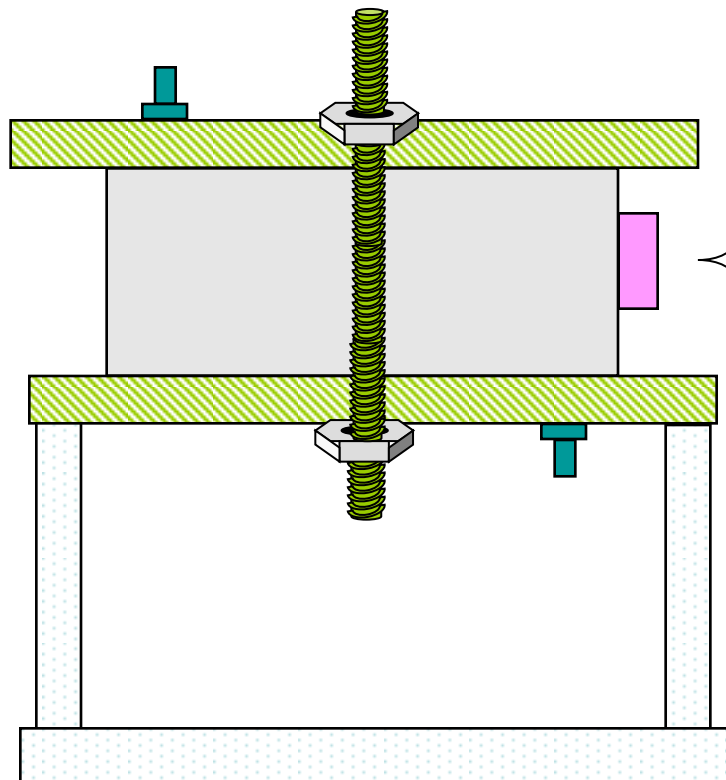
NOTES

- Replacement mesh and the O-rings can be ordered from Essential Life Solutions. However in emergency situations, surgical-grade Nylon mesh can be rush-ordered from many vendors and cut in-house to fit to the outer diameter of the O-ring groove on the Lid.
- Similarly in emergency, O-ring cord can be rush-ordered. Use a slot on the column Stand to flat-cut the 1/4" square stock of the desired length. Glue the ends of the cord flush together in the same slot with Loctite® or any "Super" glue.

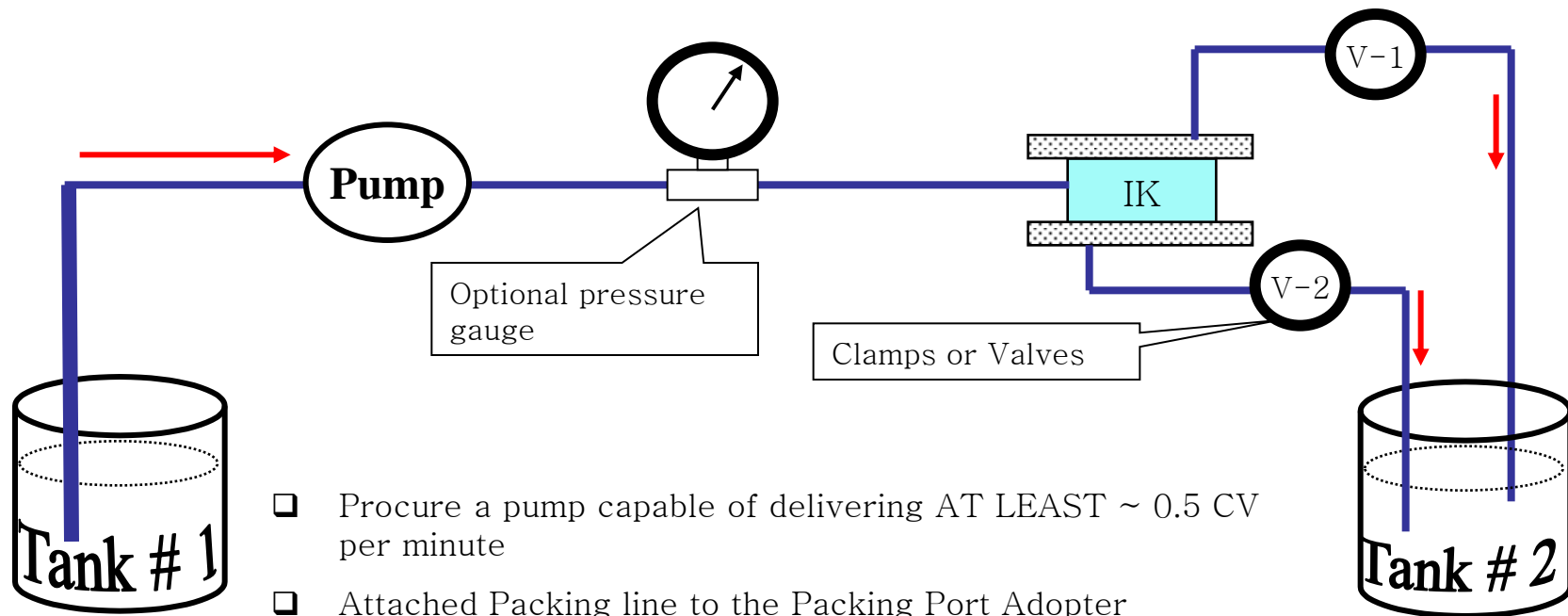


ASSEMBLAGE of IK COLUMNS

- ❑ Place the Barrel on the Lower Lid so that its Side Packing Port is located between the stud holes on the Lids. Make sure that the Barrel covers the O-ring on the Lower Lid
- ❑ Place the Upper Lid so that the Inlet ports are located at the opposite sides of the column perimeter, as shown. Make sure that the Barrel covers the O-ring on the Upper Lid as well
- ❑ Install (3/8"–16) threaded studs/nuts
- ❑ Tighten the lids together by working around the column perimeter and gradually increasing the torque.



Recommended Setup for Slurry-Packing of the IK Columns



- ❑ Procure a pump capable of delivering AT LEAST ~ 0.5 CV per minute
- ❑ Attached Packing line to the Packing Port Adopter
- ❑ Install other tubing and Valves as shown. For improved process control, use Pressure gauge, e.g. in a 0-30 PSI (2 bar) range.
- ❑ Tank #1: ensure that the intake tubing is SUBMERGED, e.g. use a rigid intake rod.
- ❑ Tank #2: SUBMERGE both tubing or position their tips on the same horizontal level in order to prevent column draining dry.

Recommended Slurry-Packing Procedure for IK Columns

1. Fill the column with your PACKING BUFFER in order to verify leak-tight assemblage. Note: in most cases WATER can be used as a PACKING BUFFER. Tilting the column and reversing the pump flow can be used to replace all air out of the column. However, any residual air bubbles are usually squeezed out by the sorbent bed at the final stages of packing.
2. Place the sorbent into the Tank#1 and let it sediment in the Packing Buffer. Decant to remove fines and suspended air bubbles. Gently re-suspend to a homogenous 50-75% slurry.
3. Pump the slurry at a flow rate ~ 2.5-fold or faster than the projected operational flow of the column. Note: the back-pressure might be a limiting factor for packing of very soft sorbents (e.g. of a 4% non cross-linked Agarose).
4. IMPORTANT: once the sorbent bed fills the column, the back-pressure starts rising ABRUPTLY and the flow stalls. Shut down the pump
5. Close Valves V-1 and V-2 (see Picture above). Next, relax the peristaltic pump to relieve the residual pressure in the packing line*.
6. Replace the Packing Port Adopter with the Packing Port Plug. Avoid trapping in air.
7. Connect the column to the chromatography skid. Verify proper packing by running HETP and peak asymmetry test.

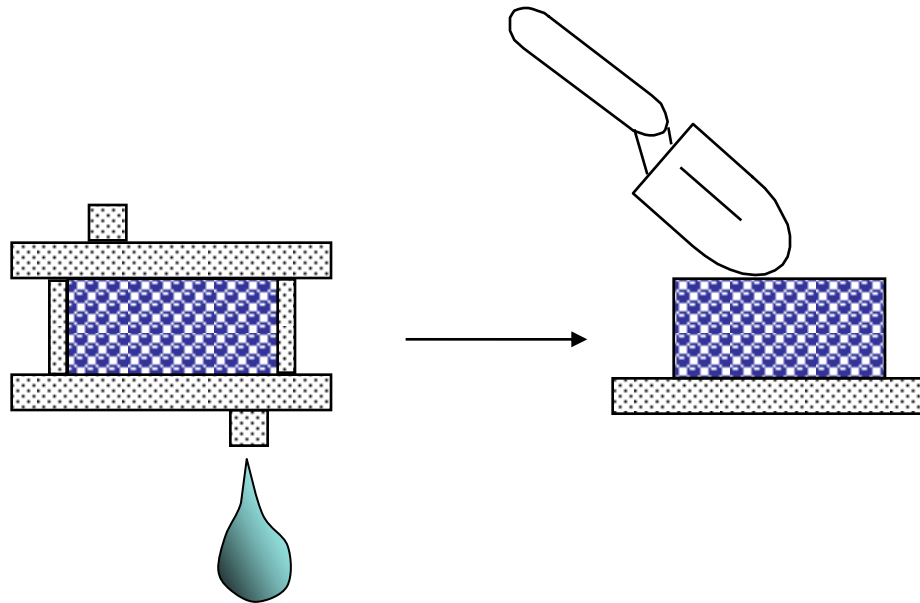
*Note: We suggest to either discard the tubing after the slurry packing or label it for future re-use with the same sorbent.

Un-Packing of IK Columns

Sorbent can be unpacked through the same packing port w/o disassembling the column. However, alternative procedure is much faster and consumes less buffer:

1. Let the column drain. Do not pump air into the column for safety reasons!

2. Remove the Upper Lid and the Barrel. Scoop out the “sorbent cake”.



Cleaning Procedures for IK COLUMNS



Cleaning In Place (CIP):

1. IK column is constructed from materials that withstand Sodium Hydroxide and other common CIP chemicals (see next page). Please make sure that the sorbent will tolerate your CIP condition as well – consult with sorbent manufacturer.
2. Cleaning-in-place of IK-columns is more thorough and faster as compared to the “piston” design columns. Diffusion time is proportional to the diffusion distance in the power of two and the IK design has reduced dead space distances,

Disassembled Column:

1. Single-layer monofilament Nylon mesh can be quickly and efficiently rinsed with a water jet. Nonetheless, we recommend replacing the mesh for each new project. At the same time, the O-rings can be replaced as well. In contrast to IK-columns, expensive multi-layer frits found in other columns designs act as a depth filter and often trap sorbent and other particles.
2. Though the Polypropylene Lids and Ports can withstand autoclaving, we do not recommend this procedure: a warping of these parts can occur due to possible “hot spots” in the autoclave.
3. Bleach solution can be used on the Polypropylene and Acrylic parts of the column. Nylon mesh and BunaN O-rings can be soaked in a 0.2% bleach solution only for a few minutes.
4. Pure Propanol or Ethanol can be sprayed onto acrylic Barrel for only a few brief seconds e.g. to remove marker lines or grease.. Wipe alcohol off the Acrylic immediately with a clean dry tissue. Nylon and Polypropylene parts can be soaked in alcohol.

CHEMICAL COMPATIBILITY

of ACRYLIC IK COLUMNS

R-resistant to prolonged exposure

L-limited exposure allowed, such as during CIP

N-not recommended

Acetic acid	<10%	R
Acetone	2%	L
EDTA	5%	R
Ethanol	<20%	R
Ethanol	70%	N
Hydrochloric Acid	0.1M	L
i-Propanol	<20%	L
Methanol	<10%	L
Peracetic Acid	300ppm	R
Phosphoric Acid	1M	L
Sodium Hydroxide	0.2M	R
Sodium Hydroxide	2M	L
Sodium Hypochlorite	0.2%	L
Sulfuric Acid	1M	L
Triton-X	1%	R
Urea	6M	R

ACRYLIC IK COLUMNS

Parts in Contact with the Mobile Phase:

1. Clear Cast Acrylic (Barrel)
2. Polypropylene (Inlet/Outlet Ports, Lids, Central Mesh Screw)
3. Nylon (mesh)
4. BunaN (O-rings)

Non-wetted Parts:

1. Stainless Steel 304 (Rods, Nuts)
2. Polyethylene (Stand)
3. PVC and Nylon (Wing Nuts, Nuts)

Thank you for your purchase of this equipment. If at any time you have any questions, need additional information or parts and services, please feel free to contact us:

171 Tosca Drive, Stoughton, MA 02072

(781) 341-7240 phone, (781) 341-7241 fax,

www.essential-life.net

dyukon@essential-life.net