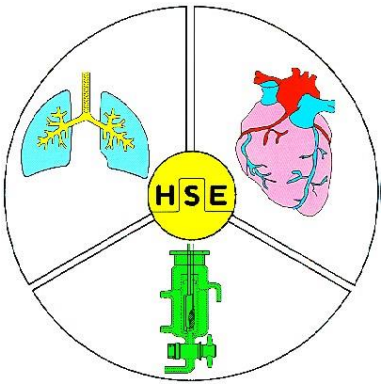
STEP BY STEP ASSEMBLING POCEDURES

FOR

LV-BALLOONS
FOR THE
ISOLATED PERFUSED MOUSE HEART



73-2787 MOUSE VENTRICULAR BALLOON ASSEMBLY KIT

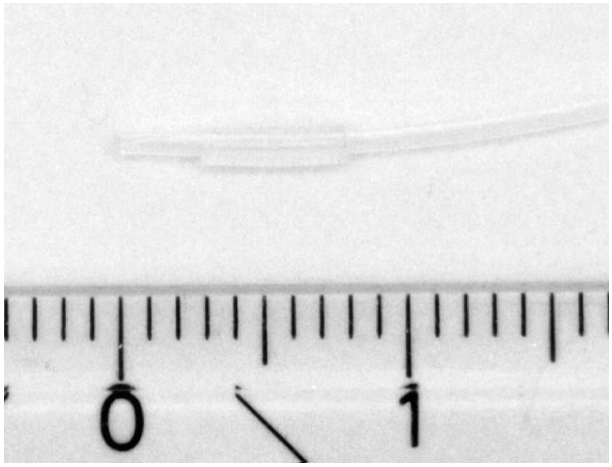
V3.0 August 2025 TB

HUGO SACHS ELEKTRONIK - HARVARD APPARATUS GmbH
Gruenstrasse 1 D-79232 March-Hugstetten Germany
Phone: +49 (0)7665-9200-0 Fax: +49 (0)7665-9200-90 eMail: sales@hugo-sachs.de Internet: www.hugo-sachs.de

I. The tools

Screwdriver:	for hexagonal socket size 3 SW, for preforming the cling film to a balloon
Plastic syringe:	1000µl size
Shortened needle:	73-4624 LUER stub needle, red
PE-tubing:	73-3689 pack of 10 PE catheters, OD 0.8mm, ID 0.4mm with silicone seal attached
Surgical silk:	2m Nonabsorbable surgical suture POLYVIOLENE (72-3293)
Mounting ring:	stainless steel ring OD 5mm, ID 4mm, length 5mm (18633)
Stand with crocodile clamps:	for holding the mounting ring and the syringe during ballon assembling
Cling film:	cling film, Mini-Stretch (19915)

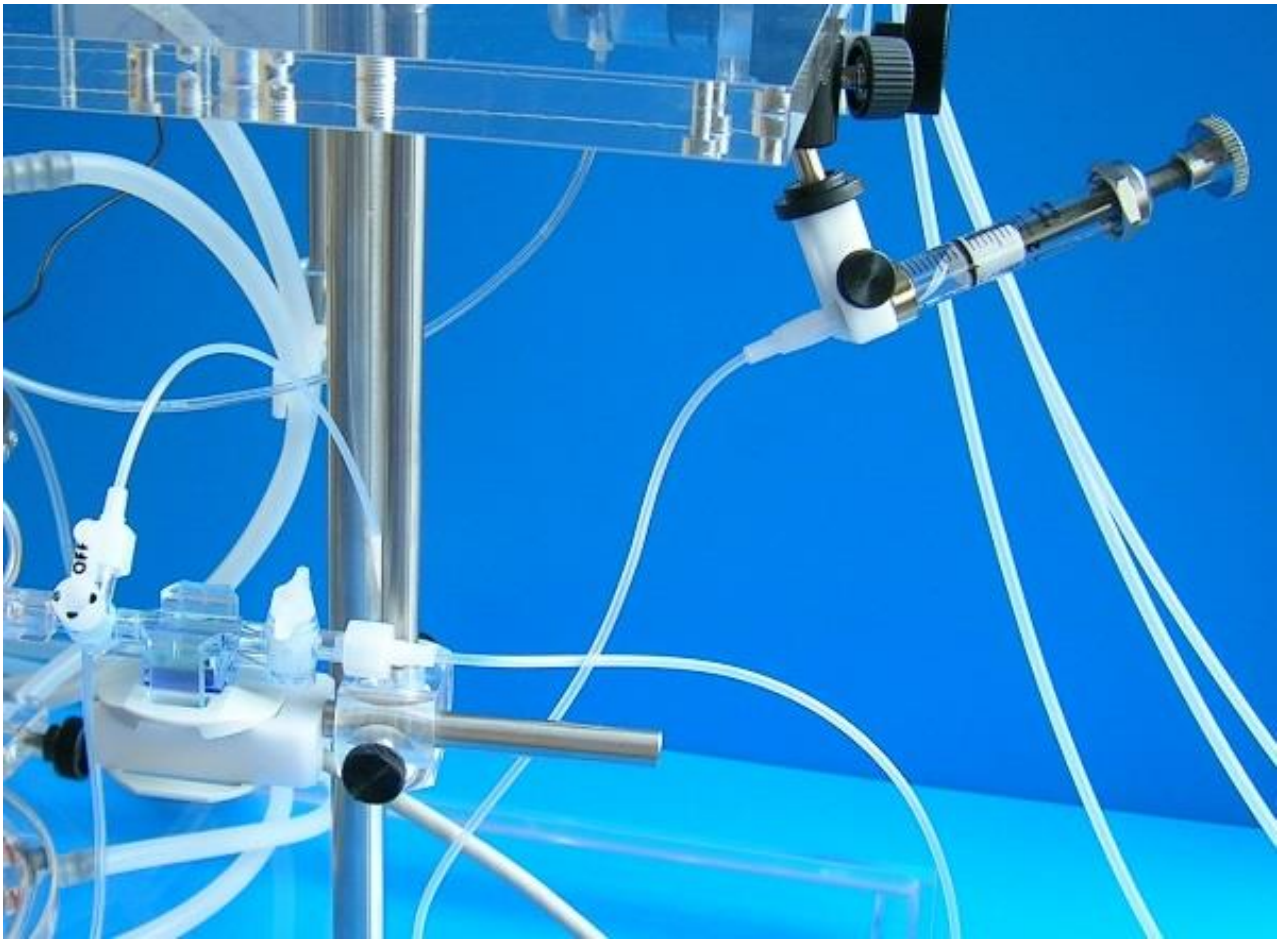
II. Preparing the catheter, pressure transducer and spindle syringe



As it is difficult to seal the cling film directly on the PE tubing. The surgical silk cannot be tied properly on a stiff PE tubing and can therefore not be firmly and precisely placed. To avoid this problem a small piece (length 5mm) of silicone tubing is drawn over the PE-tubing like shown on the figure. If you buy the ready to use catheters 73-3689 this silicone seal already is installed.

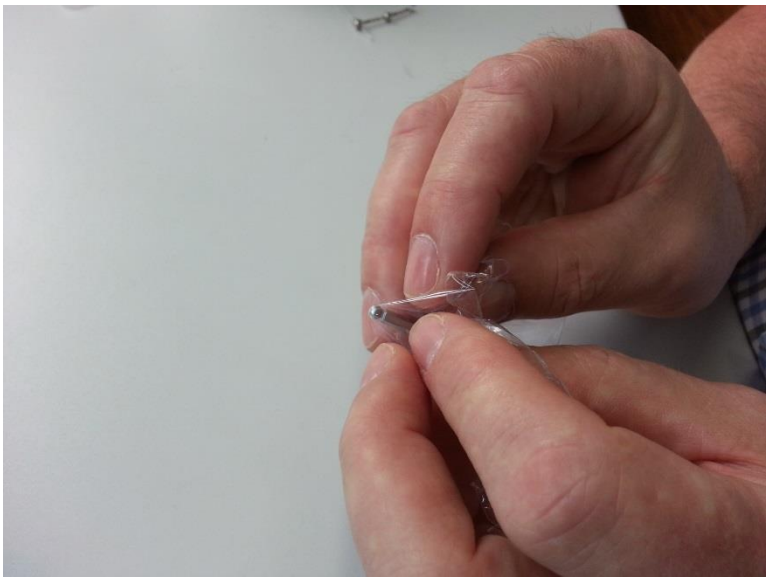
The unfilled PE tubing is mounted on the red shortened injection needle. The injection needle is directly mounted on the pressure transducer. The connected spindle syringe is filled with degassed distilled water. The so prepared catheter is then filled with this degassed distilled water through the pressure sensor.
Fill the PE catheter down to the end with the silicone seal bubble free with the distilled water.

PE catheter attached on red stub needle, Needle attached to APT300 pressure transducer

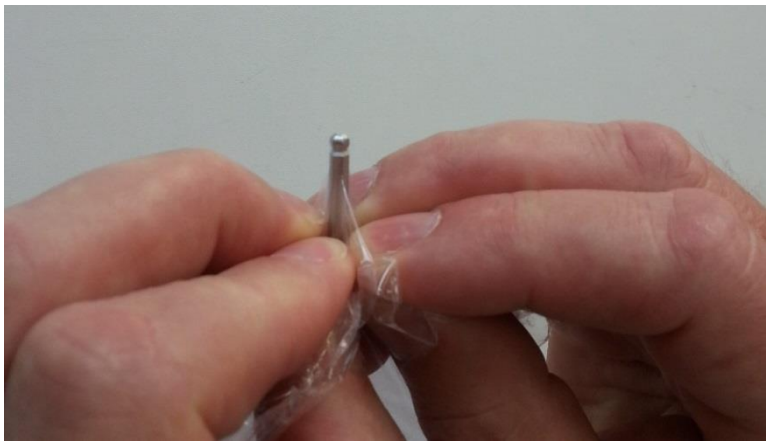


APT300 transducer with spindle syringe and PE catheter, all filled bubble free with degassed water

III. Preparing the balloon and installing the catheter

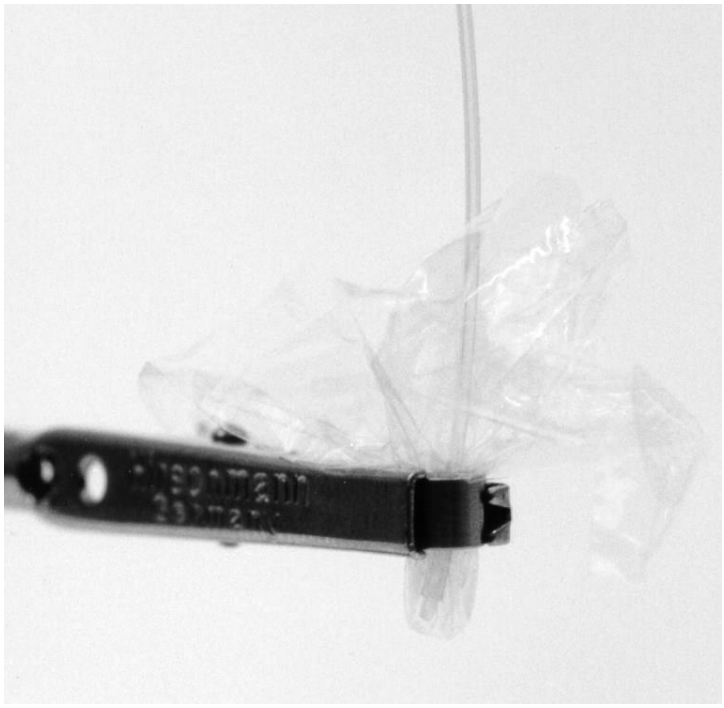


Take the HEX screwdriver and pull the cling film ceran wrap foil over the screwdriver



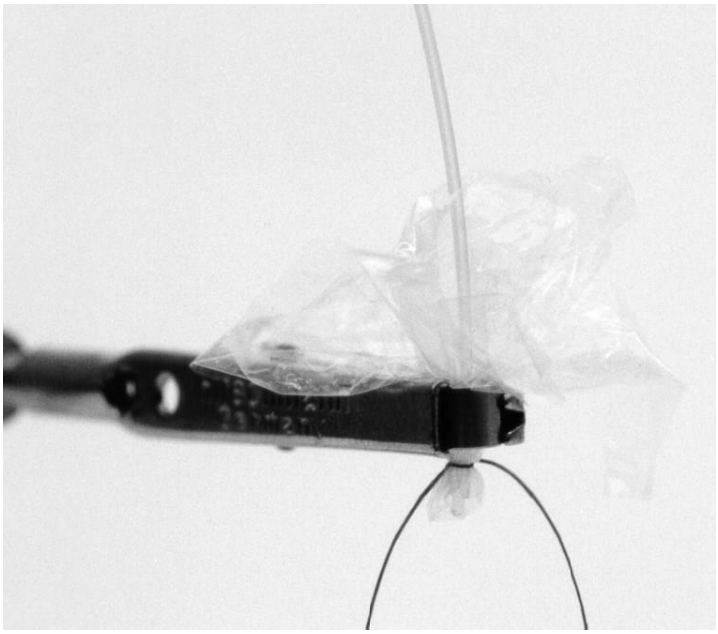
Gently pull the ceran wrap foil…too much force will damage the foil…

Until you get a balloon like this

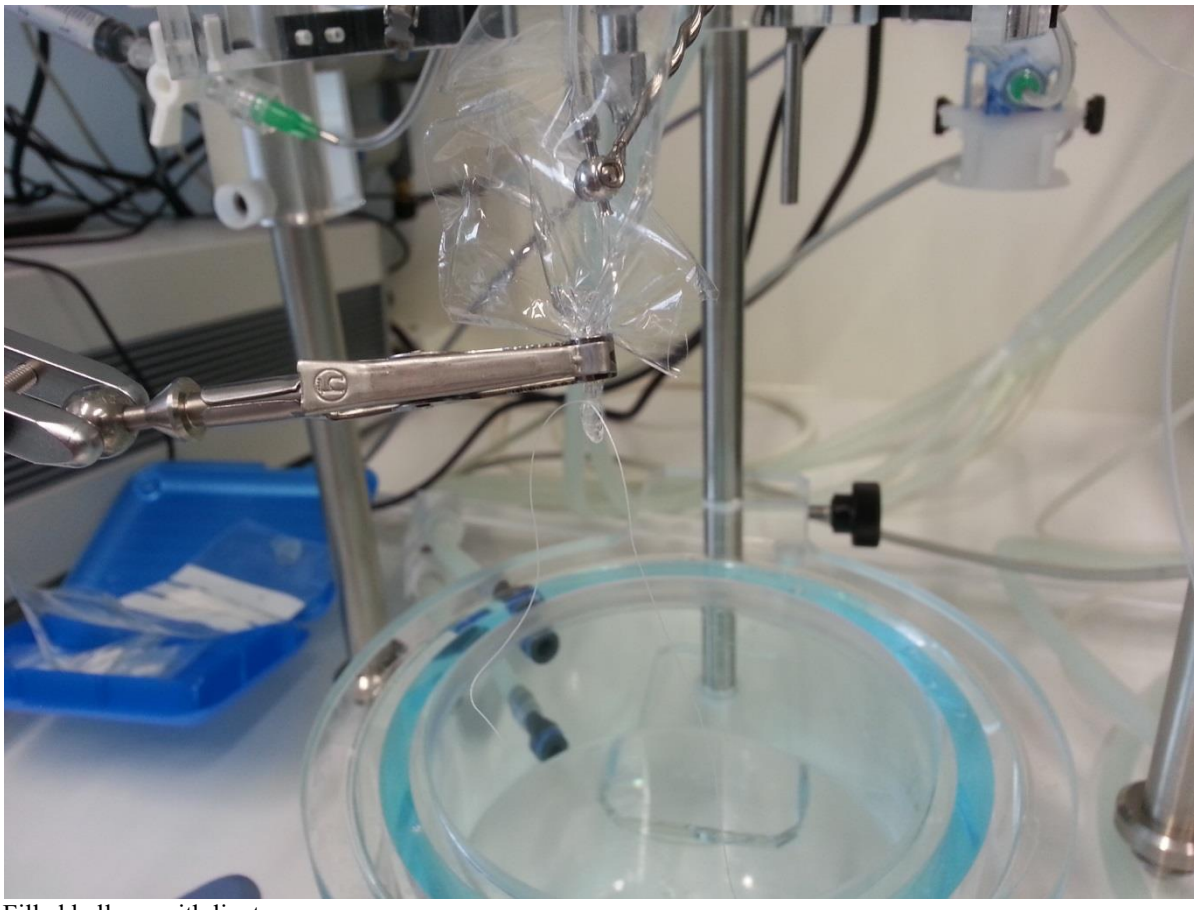


To fill the balloon, the mounting ring is installed in the lower of the two crocodile clamps. Bring your preformed balloon into this holder. The tip of the PE catheter can be used and should end around 5 to 6mm below the mounting ring. Now the prefilled catheter is placed into the preformed balloon. The tip of the PE catheter should not touch the bottom of the balloon. The silicone tubing must be visible inside the balloon. Now fill slowly the preformed balloon using the spindle syringe until the ceran wrap balloon overflows. Make sure the air is completely removed. There should be no air bubbles in the balloon. Any air bubble in the balloon will damp the LVP signal and lead to a reduced systolic LVP pressure and to a wrong calculated dLVP/dt value

IV. Ligating the balloon

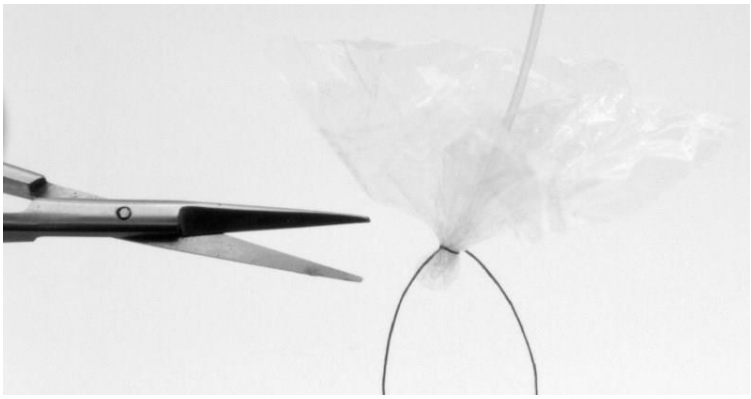


After the catheter has been placed properly and all air bubbles are removed, ligate the balloon on the catheter just below the mounting ring. Be sure the ligature is located on the silicone tubing, this is very important. Double the ligature and tie well the knot. Several knots may be necessary. The silicon tubing has a better compliance than the PE-tubing and assures a good sealing. It also maintains the ligature in place.



Filled balloon with ligature

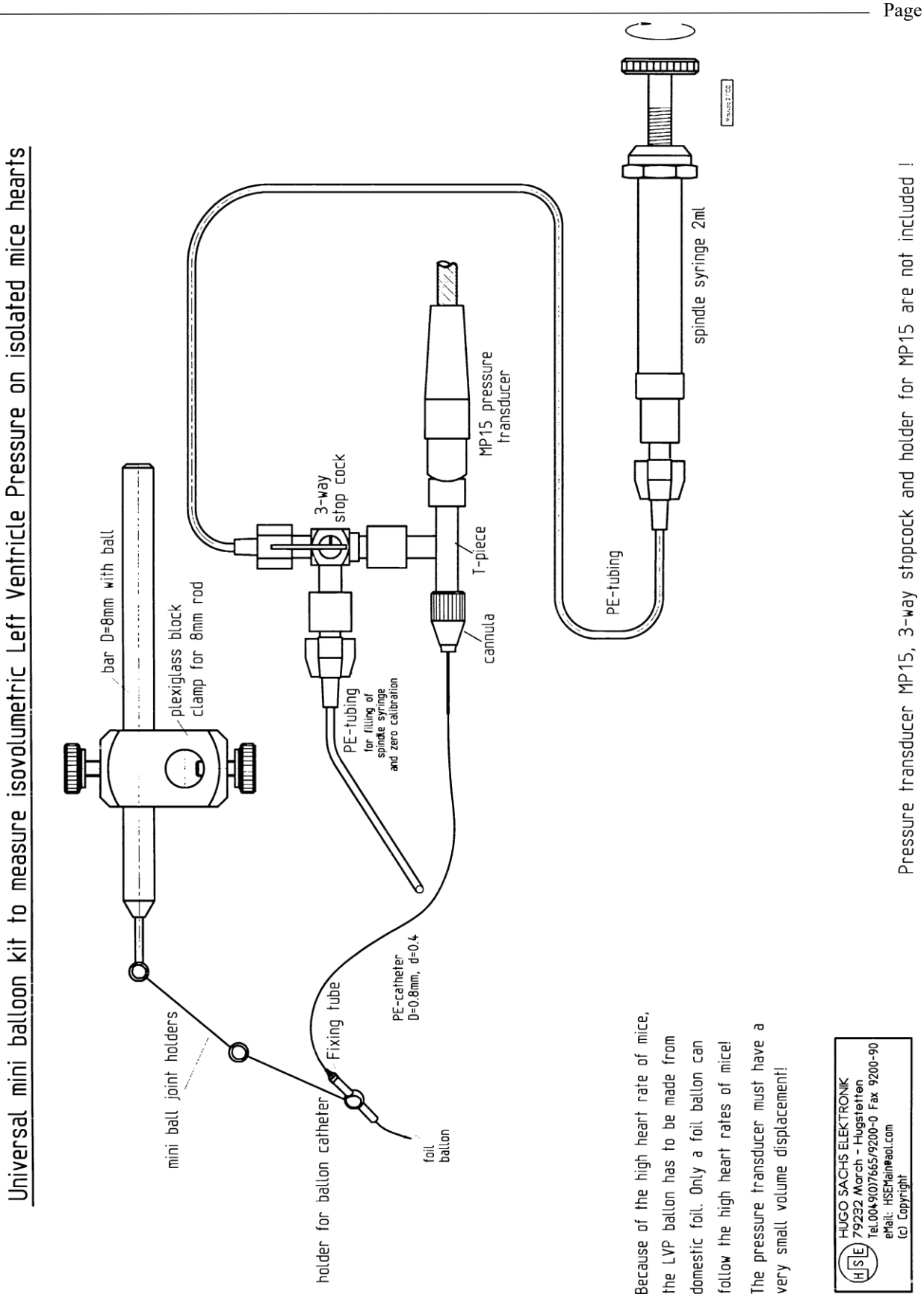
V. Cutting the tread and the cling film surplus



Cut the surgical silk and the cling film surplus with a micro scissor. Be careful. Don't touch the balloon surface with the scissors!

Balloon read to use

The sealing can be tested by blowing up the balloon slowly without stretching it and verifying visually that the filling liquid is not escaping. For a test you can blow up the balloon to 50mmHg and close the two-way stopcock between pressure transducer and spindle syringe. The balloon has not the dedication of a constant volume for precise pressure, the balloon must be a separator between the ventricle wall and the liquid making the transmission to the pressure transducer. The balloon must therefore be made of very thin material which ensures a good transmission of the contraction of the left ventricle without interfering itself. To introduce the balloon into the left ventricle, the balloon must be deflated.


Universal mini balloon kit to measure isovolumetric Left Ventricle Pressure on isolated mice hearts
bar D=8mm with ball
plexiglass block
clamp for 8mm rod
3-way
stop cock
MP15 pressure
transducer
T-piece
cannula
PE-tubing
for filling of
spindle syringe
and zero calibration
PE-tubing
spindle syringe 2ml
PE-catheter
D=0.8mm, d=0.4
Fixing tube
mini ball joint holders
holder for ballon catheter
foil
ballon
Pressure transducer MP15, 3-way stopcock and holder for MP15 are not included !
Because of the high heart rate of mice,
the LVP ballon has to be made from
domestic foil. Only a foil ballon can
follow the high heart rates of mice!
The pressure transducer must have a
very small volume displacement!
HUGO SACHS ELEKTRONIK
79232 March - Hugstetten
Tel.0049(0)7665/9200-0 Fax 9200-90
eMail: HSEMain@aol.com
(c) Copyright