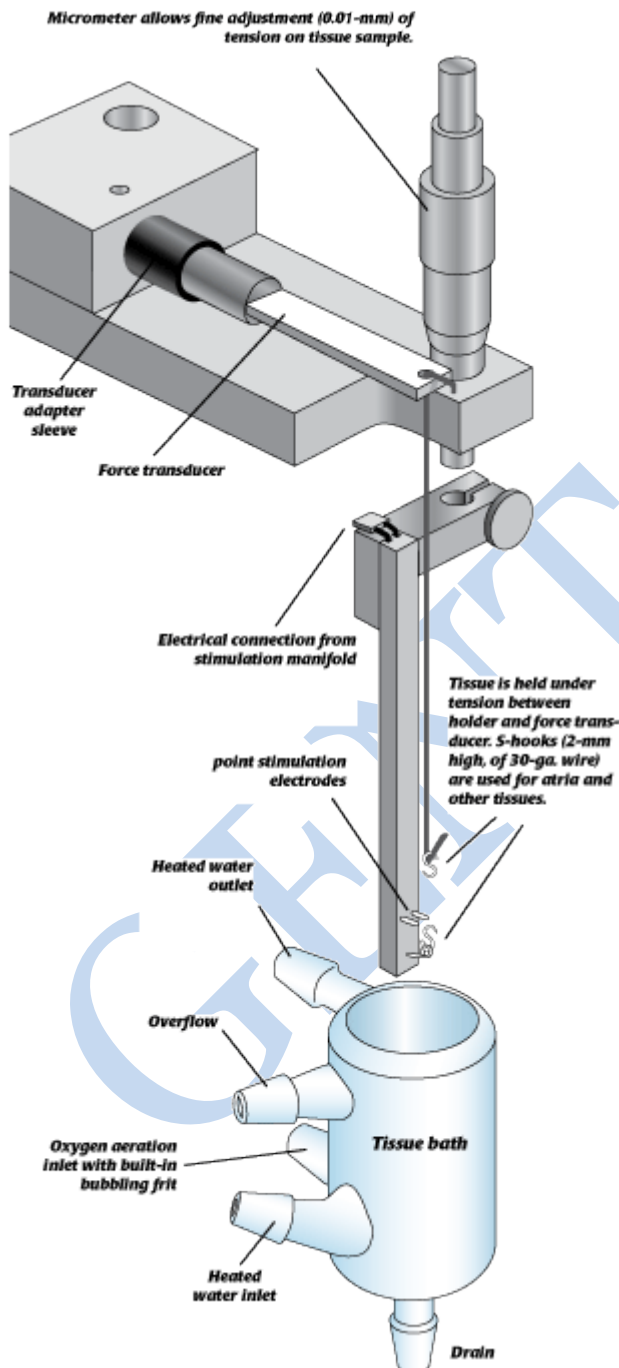


## Tissue Holders

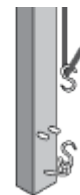


The devices that actually hold tissue for experimentation in a tissue bath are critical to success. They need to be robust, appropriately sized and well thought out in terms of the attachment to the tissue. Since many different sizes and types of tissue can be used in the study of smooth muscle, variety is also critical. WPI offers 10 different application specific tissue support devices. Five types of tissue holders are available for 10-50 mL organ baths and five types of Miniature Tissue Holders are available for smaller tissue preparations. In many applications it is desirable to deliver electrical stimulation to the tissue. WPI offers a series of tissue holders with built in stimulation electrodes. Connection to the stimulation device is accomplished with low mass connectors and wire. These ultimately connect to BNC connectors mounted in the stabilizing part of the frame. Connections to isolators or stimulators can then be made with standard coaxial cables.



### Glass Hook (G)

The glass hook is a universal design utilizing a glass rod terminating in an S-shaped glass hook. Stainless steel hooks or fine wire hangers are used to secure the tissue between the glass hook and the force transducer. The glass rod has a diameter 6.5mm and the hook is 2.5 mm away from the side of the glass rod.



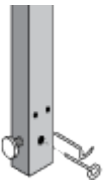
### AS Holder (#47030)

The AS holder is used for mounting atrial muscle preparations. This



#### **V Holder (#47040)**

The V holder is used to mount vascular rings. The bottom hook consists of a U-shaped wire. The top hook is an L-shaped wire. The tissue is mounted as shown. The hooks are made from 0.48 mm (0.019 in.) stainless steel wire. The U-shaped hook measures 6.35 mm (0.25 in.) in base.



#### **B Holder with Stimulation (BS)**

The B holder is designed for custom-made hooks. The bottom tissue hook is secured with a nylon screw. Stainless steel wire (0.56 mm or 0.022 in.) provided in the startup kit can be used to make the top hook that connects to the strain gauge. Platinum electrodes for point stimulation are identical to those on the AS holder.

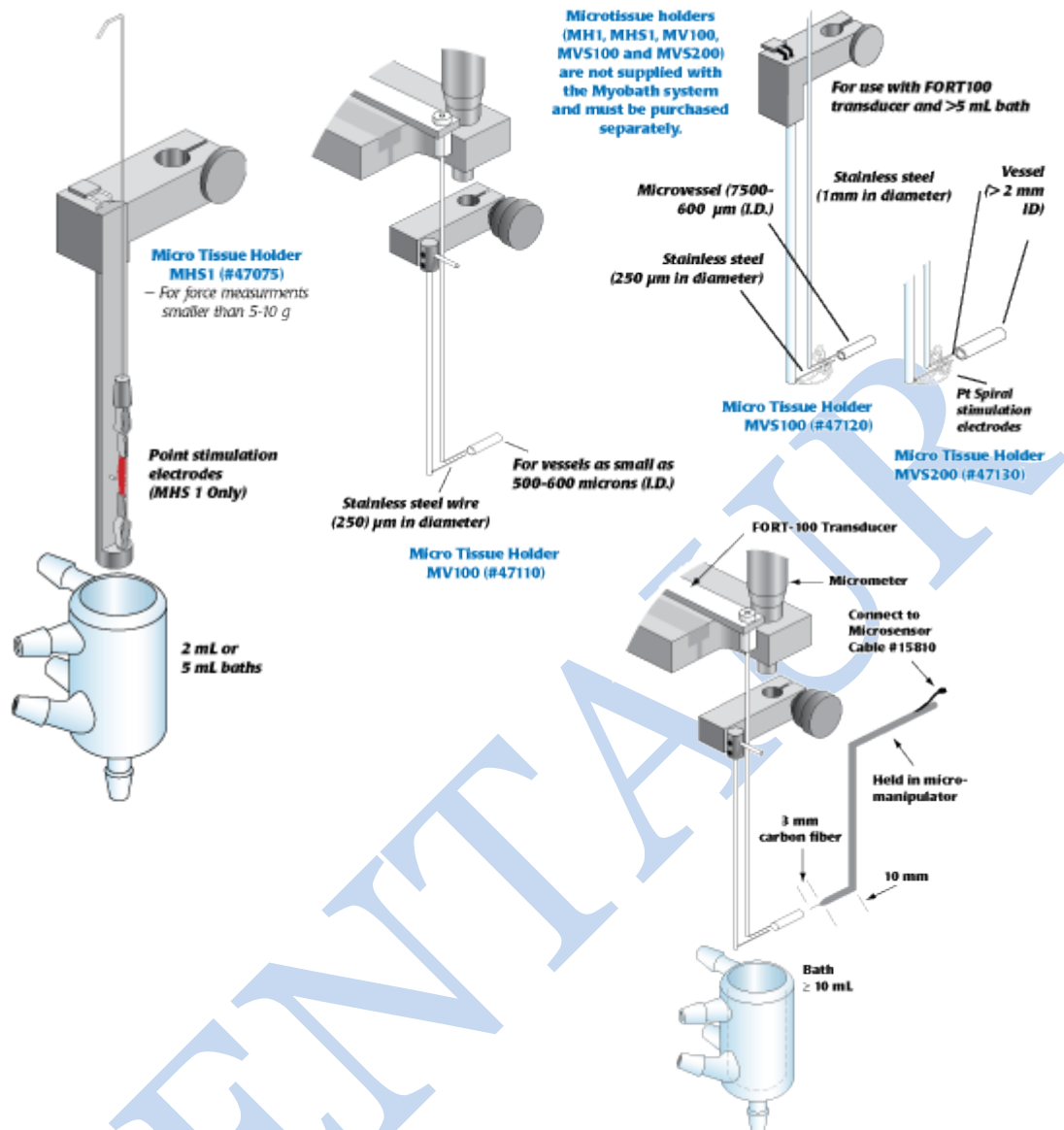
#### **Micro Tissue Holders**

holder is equipped with stimulation electrodes. The tissue is mounted onto the two S-shaped hooks (made from 301/2 gauge needles). The S-hooks measure 2 mm in diameter on both ends with a sharp tip on one end where tissue is pieced. The two point stimulation platinum (Pt) electrodes on the holder are 2.54 mm (0.1in.) apart.



#### **VS Holder (#47050)**

V Holder with Stimulation The VS holder uses the same tissue-mounting mechanism as the V holder, but has two 5 mm flexible platinum stimulation electrodes, which can be positioned around the tissue. The stimulation connector and electrodes are designed to be replaceable. The VS holder can only be used in the 25mL or 50mL baths.



With the wide use of transgenic mice in studies of this kind, the need for tissue support mechanisms capable of handling the extremely small size of vessels and muscle strips harvested from small animals is paramount. WPI offers five micro-tissue holders for use with micro tissue strips, micro vessels and other tissues where the force measurements are less than 10 g. Micro tissue holders are designed to be used with the 2 mL and 5 mL volume tissue baths and FORT 25 transducer. Micro tissue Holders MH1 and MHS1 are designed for muscle strips as small as 0.5 mm in width and 5 mm in length. The muscle strip is held between two miniature vessel clips with a clamping pressure of 60 grams. These holders are most suitable for measuring isometric force of less than 5-10 grams. MHS1 differs from MH1 only in that it has an in-built stimulation circuit and electrodes. Micro vessel holders MV100, MVS100 and MVS200 require a tissue bath larger than 5 mL and the use of FORT 25 or comparable transducer. These holders are designed for studying tension in vascular rings. When used with the micrometer driven tensioner/positioner they can also be used for measuring the lumen diameter of vessel preparations. The MV100 and MVS100 can be used for micro vessel preparations as small as 500-600 microns (ID). MVS200 is designed for larger vessels (> 2 mm ID). MVS100 and MVS200 feature specially designed spiral stimulation electrodes fabricated from 250-micron diameter platinum wire. The two-and-a-half turns of each spiral electrode span appropriately 4-5 mm. The positions of the spiral electrodes can be adjusted with respect to the tissue placement, a feature that is very useful in controlling stimulus intensity.