MULTIPLEX DELIVERY SYSTEM (MDS)

3 Station shown in photo

2 Station – 78914732
3 Station – 78914733
4 Station – 78918185
I. Assembly and Installation Instructions
   A. If the MDS is to be installed on a PAM (Portable Anesthesia Machine), the 3/8“ stainless steel rod provided will fit into either of the holes at the top of the PAM legs.
   B. If the MDS is to be installed on any other anesthesia system, a Universal Mounting Block is necessary (Patterson part number 78914734).
   C. The colored tubing can be cut to length to match the needs of the operator and the position of the appliances used to deliver the inhalant anesthetic.

II. Principle of Operation:
   A. The MDS is designed specifically for use with rodents using one or more induction chambers and one or more nonrebreathing (NRB) systems. The MDS assures the proper flow rate to individual inhalant anesthesia stations using one vaporizer. This is accomplished by having a secondary set of flow meters, from 2 to 4, that are placed after the primary flow meter and vaporizer.
   B. One of the basic physical laws of inhalant anesthesia systems is that the gases follow the path of least resistance. Most simple “on / off” type stopcocks controlling the flow of inhalant anesthesia deliver a disproportionate flow of gases to the various stations.
      1. The more stopcocks controlling the flow of gases, the higher the risk of disproportionate distribution of gases. In other words, one station may receive the bulk of the fresh gases, and other stations may not have sufficient flow rate to assure that the subject receives sufficient fresh gas to remove the exhaled CO2 within the NRB system. The removal of CO2 is crucial to the well-being of the subject. A build-up of CO2 within the NRB system can result in respiratory acidosis which may cascade into metabolic acidosis. This condition can often result in the death of the subject.
   C. Our recommendation for the O2 flow rate for an induction chamber is a minimum of 2 LPM. This is done to assure that the fresh gas flow flushes out the exhaled CO2 from the induction chamber. Our recommendation for the O2 flow rate for a NRB system is a minimum of 500cc / minute (for mice) and 1 LPM (for rats).
   D. The O2 flow rate on the primary flow meter needs to be set at or slightly above the total flow rates on all of the secondary flowmeters. For example, with a 3-station MDS an investigator may want to have one station as an induction chamber, the other two as NRB systems. The induction chamber would require 2 LPM and the NRB systems would require 500cc / minute each. As the total volume would be 3 LPM, the primary flow meter would be set at or slightly above 3 LPM.
   E. There is a safety valve included with the MDS system that is installed on the primary flow meter. This automatic safety pressure relief valve opens if the primary flowmeter is left on with no secondary flowmeters turned on and releases pure oxygen (not anesthetic) into the workplace. This prevents any damage to the vaporizer and ancillary instrumentation. The safety relief valve is an integral part of the MDS system and can be installed on almost any inhalant anesthesia system. There is no danger whatsoever with O2 being released into the environment.
   F. As an added benefit, the MDS system is color coded. This means that each fresh gas secondary flow meter and the appropriate supply lines are all color coded such that it is easy to follow the line of fresh gas from the flow meter to the appliance being used to deliver the fresh gas.