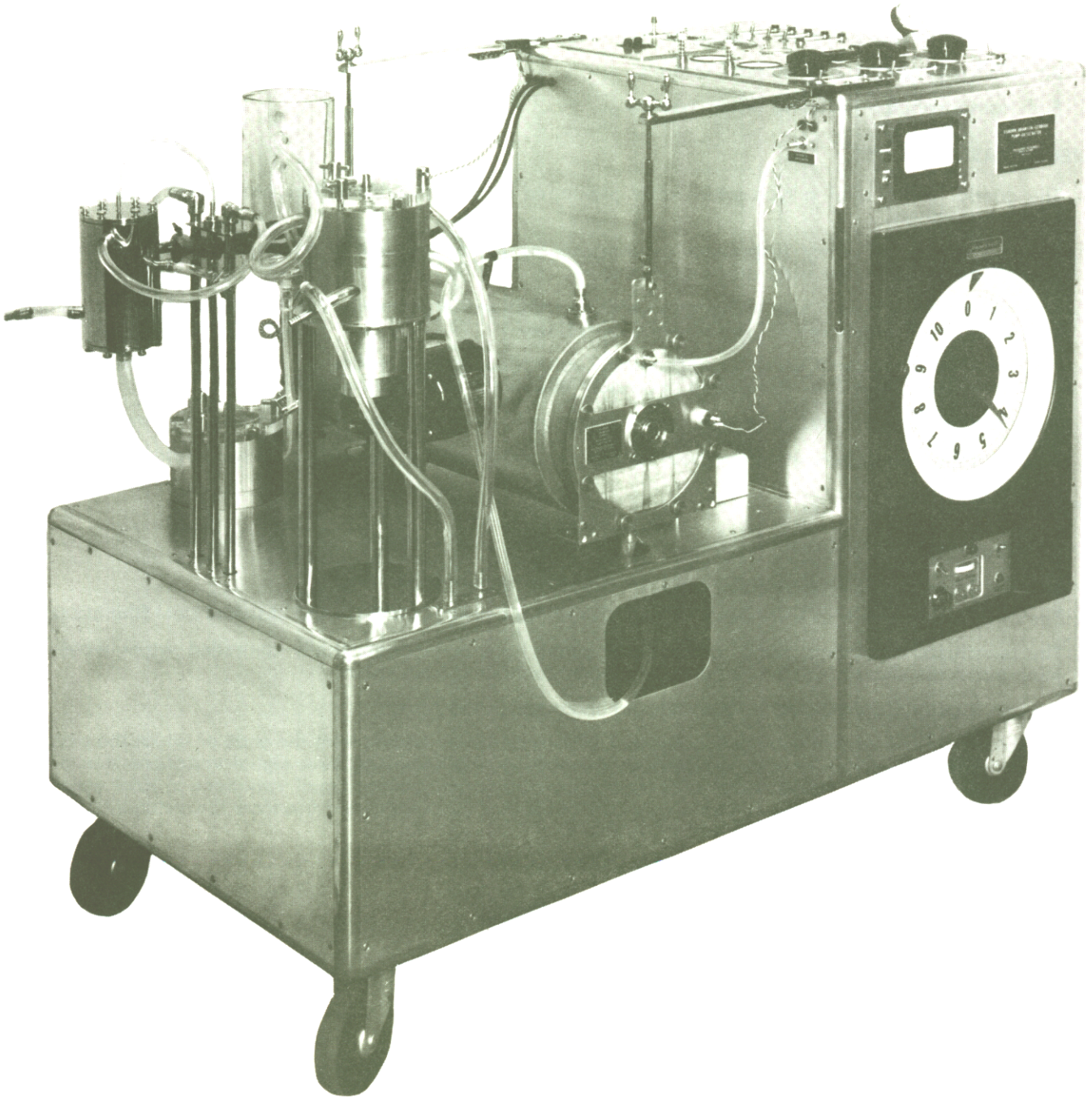
HALLIKAINEN *Instruments*
SLACO DIVISION
BIOLOGICAL and MEDICAL

OSBORN-BRAMSON-GERBODE PUMP OXYGENATOR

Model 1273



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The Osborn - Bramson - Gerbode PUMP - OXYGENATOR has been developed by the S. F. Institute of Medical Sciences at the Presbyterian Medical Center, San Francisco, California. For more than three years this has been the only type of heart-lung machine at Presbyterian Medical Center used clinically for extra corporeal circulation during open heart surgery. As of late spring 1963, over 500 such operations had been performed at Presbyterian Medical Center with almost no post-operative fever and absolutely no ill effects traceable to the machine. Successful perfusions lasting up to five hours have been performed. This machine is also in current use in other cardio-vascular centers in other parts of the world.

THE UNIT INCLUDES THE FOLLOWING:

1. A single roller, fully occlusive arterial pump.
2. A rotating disc oxygenator with built-in heat exchanger (see separate brochure for details).
3. A combined filter and bubble trap.
4. Two single roller suction pumps for "coronary return."
5. A water circulating pump for cooling or warming the blood.
6. All necessary automatic or manual controls.
7. Full instrumentation including alarm systems.

SPECIAL BASIC FEATURES

1. The arterial pump is of a type which after prolonged comparative testing has been found to produce minimum haemolysis.
2. The oxygenator efficiency (expressed as oxygenating surface per unit of priming volume) is almost twice that of the most widely used disc oxygenator.
3. The oxygenator is itself a heat exchanger, hence no additional equipment with its priming blood or cleaning and sterilizing are required for hypothermic perfusions.
4. The speed of the arterial pump is electronically controlled by the weight of blood in the oxygenator, so that the arterial flow into the patient accurately equals the rate of venous outflow.
5. Two "coronary return" suction pumps permit simultaneous selective use of two different degrees of vacuum.
6. A 3-position lever selects water for heat exchanger; either cooling, rewarming or temperature maintaining.

SPECIFICATIONS

1. For oxygenator (see separate brochure).
2. The arterial and coronary suction pumps are occlusive, single-roller type.
3. The filter and bubble trap is jacketed for heat transfer and contains a 100 mesh stainless steel filtering screen.
4. The centrifugal circulating pump draws water either from a thermostatically controlled warm water tank mounted in the chassis, or from an external bucket containing iced water.
5. Oxygen supply is humidified in a bubble jar mounted in the chassis.
6. The blood volume control system is comprised of two cantilever beams from the ends of which the oxygenator is suspended. Strain gauges mounted on the ends of the beams produce signal variations that are fed into an indicating wheatstone bridge with electronic proportional control. Small variations in total weight are thus used to control the arterial pump speed in order that the weight and therefore the volume of blood in the oxygenator, remains substantially constant.
7. Included in general controls and instrumentations are:
   a. Manual and automatic pump speed control.
   b. Pump speed indicator.
   c. Momentary reversing switch for arterial pump.
   d. Momentary stop switch for overriding safety switch and alarms.
   e. Oxygenator disc speed control.
   f. Oxygenator disc speed indicator.
   g. Vacuum indication and bleed valves for each coronary suction pump.
   h. Water temperature indicator.
   i. Blood temperature indicator.
   i. Switches for D.C. motor field power supply, lamps, alarms, water pump and heating plus a master switch.