



**PRESENTS:**

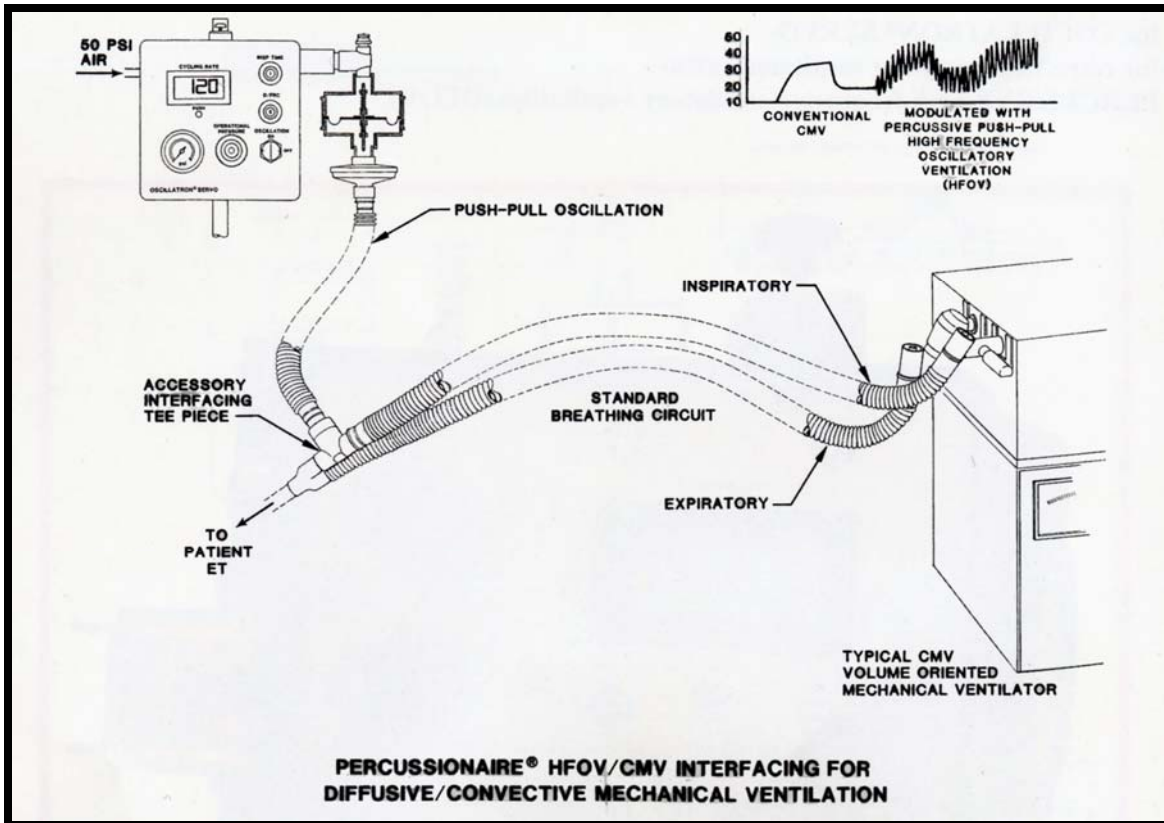
THE OSCILLATRON® SERVO CLINICAL MANUAL  
for retrofitting existing ventilators with  
PERCUSSIVE high frequency oscillatory ventilation (HFOV)



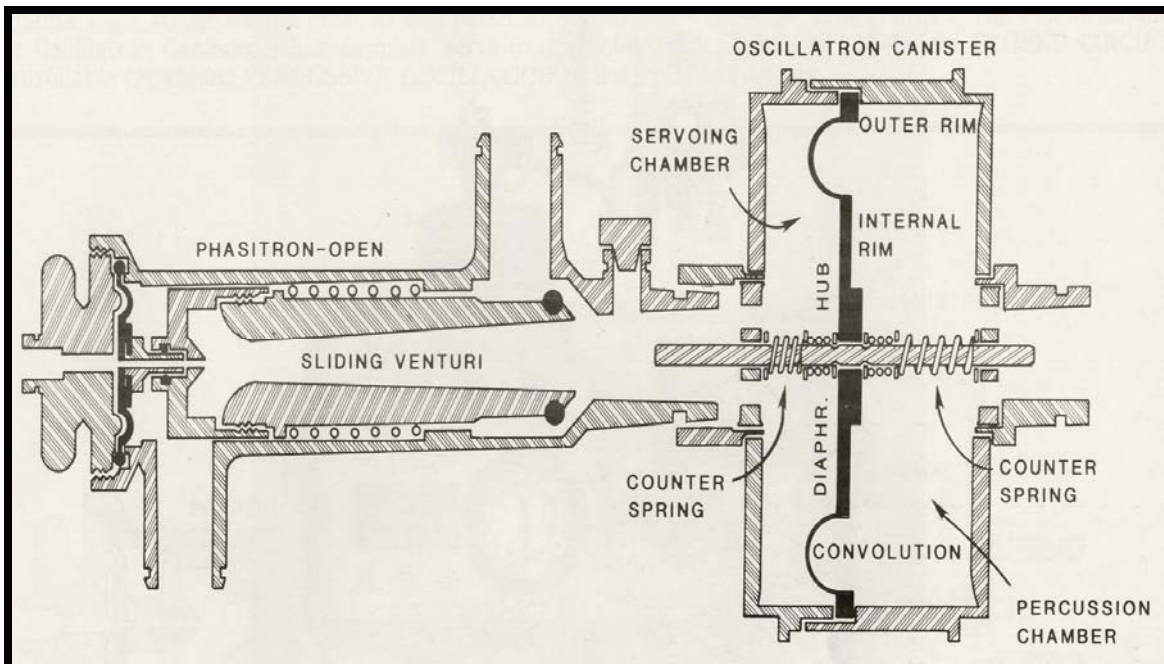
The Oscillatron® SERVO, MODEL F00036-2

**The Oscillatron® SERVO is a Bi-phasic UNIVERSAL (push-pull) Oscillator which instantly converts many existing neonatal, pediatric and adult ventilators to “STATE OF THE ART” volume oriented, pressure, time cycled (HFOV) ventilators “with diffusive programming to enhance their existing convective scheduling.”**

Your OLD or NEW volume/pressure oriented neonatal, pediatric or adult ventilator may become a NEW powerful "state of the art" convective/diffusive cardiopulmonary support system by interfacing the the Oscillatron® Servo Percussionator® for HFOV.



**THE OSCILLATRON® SERVOING A CMV VENTILATOR**



**THE OSCILLATRON® PUSH/PULL OSCILLATOR FOR HFOV**

## THE PERCUSSIONAIRE® OSCILLATRON® SERVO

The Oscillatron® Servo is the patented “state of the art” means for reliably injecting a Percussive positive pressure sub-tidal volume into a conventional breathing circuit during CMV, and then near instantaneously creating a sub ambient (negative) pressure to withdraw the same injected volume from the breathing circuit. This High Frequency Oscillatory Ventilation (HFOV) programming can be accomplished at frequencies of from 400 to 1000 cycles per minute.

By percussively increasing the mechanical mixing of endobronchial gases during the mechanical ventilation of the lung, alveolar O<sub>2</sub> tensions can be increased while concomitantly mobilizing CO<sub>2</sub> out of the alveoli through the respiratory bronchioles for convective transport out of the pulmonary structures to ambient.

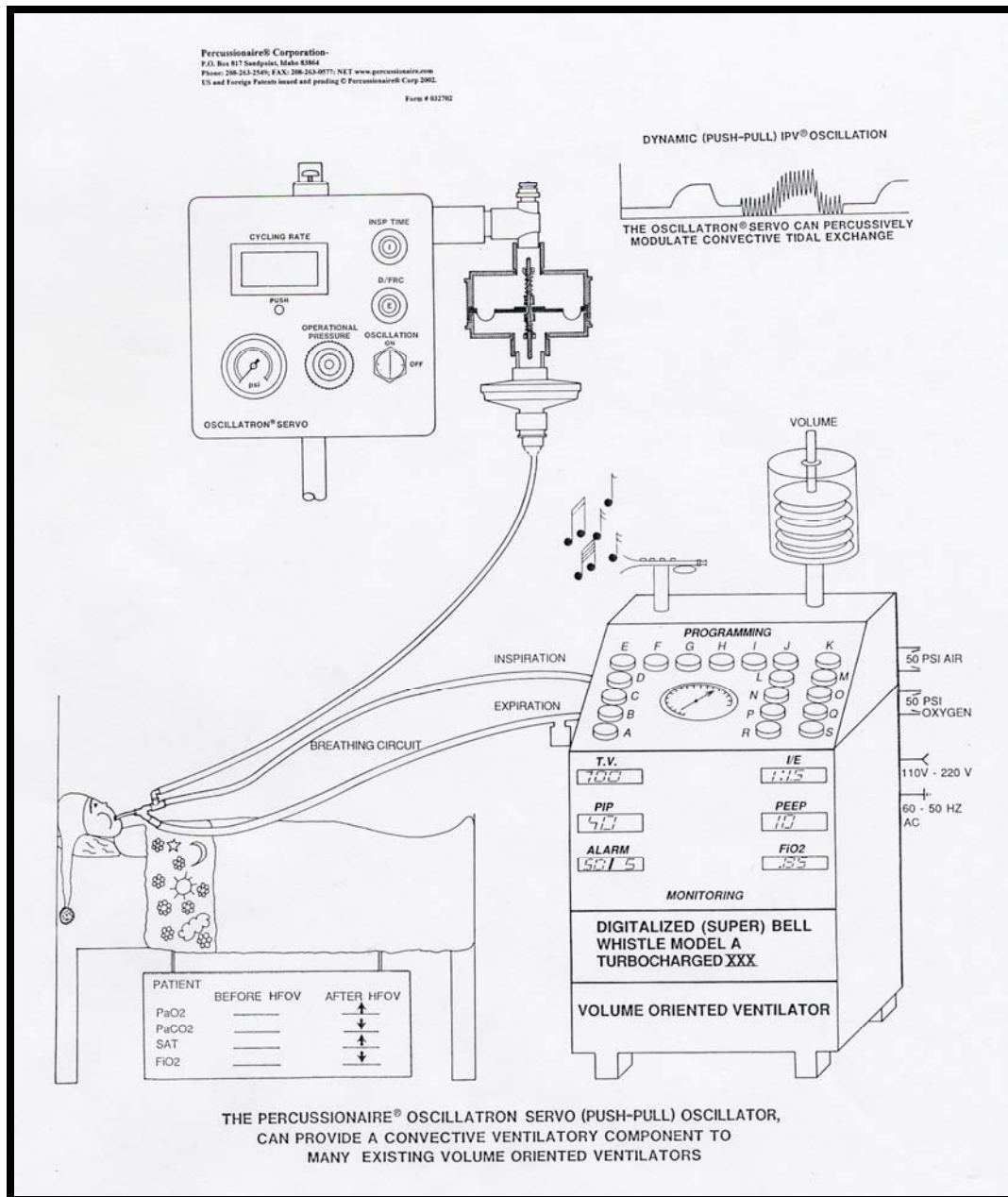
The patented Oscillatron® functional logic produces a high frequency Percussive endobronchial delivery because of its near instantaneous reversal of inspiratory-expiratory-inspiratory flow gradient shifts. Variable i/e ratios enhance the minimal sub clinical flow gradient transition penalties; therefore, the time allowed for maximal inspiratory and expiratory flow gradient injection and retrieval is enhanced.

Existing Piston and Magnetic Oscillators for administering HFOV have major flow gradient reversal penalties because of their conceptual design inertia. The cycling time lost in retarded flow gradient reversals impinge upon the available maximal flow gradient transfer time, vastly reducing the intrapulmonary “minute gas exchange.” Therefore, they are not capable of generating, an effective endobronchial percussion.

For example, Piston and Magnetic Oscillator designs cycling at 900 times per minute can have massive transition handicaps. With a 67 millisecond cyclic interval at a 1:1 i/e ratio, the maximum inspiratory and expiratory injection as well as recovery time for tidal exchange is about 34.5 milliseconds. If the time required for inspiratory-expiratory-inspiratory flow gradient reversals is about 30 milliseconds, only about 37 milliseconds remain for effective injection and recovery of a sub tidal volume. Therefore, at a 1:1 i/e ratio, there is only about 15 milliseconds remaining for the injection and 15 milliseconds for the recovery of sub tidal volumes under the maximum flow gradient potentials.

The Oscillatron® employs a differential pneumatic flow interrupter cycling means (conceived by Dr. Bird) servoing a linearized positive phase Phasitron® injector exhalation valve (with a transition penalty of less than five milliseconds), which in turn compresses a diaphragmatic governed counter-spring assembly for the generation of a near instantaneous flow gradient reversal. Therefore, the design transition handicap of the Oscillatron® is sub clinical, allowing a maximized percussive endobronchial sub tidal injection within the optimal 400 to 1000 per minute cycling rates. The Oscillatron® is captured within a small 6.5” by 6.5” x 6.5” housing weighing less than three pounds.

Notes:

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