

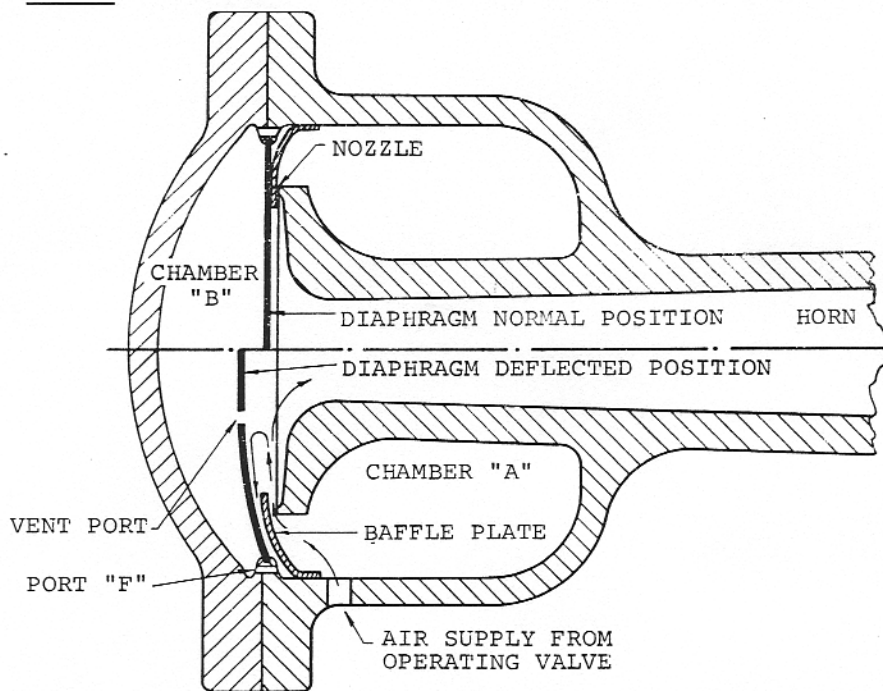


# ENGINEERING DATA SHEET

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## 100/1.3.5 LESLIE-SUPERTYFON AIR HORN OPERATION OF POWER CHAMBER



### "LESLIE-SUPERTYFON" PATENTED POWER CHAMBER

The "Leslie-Supertyfon" patented power chamber is a device for vibrating a diaphragm to produce a high sound output.

Generally, when high sound outputs are generated by a vibrating diaphragm type unit, high stresses are experienced within the diaphragm and the constant flexing and reversal of the stresses causes the diaphragm to fail from fatigue. In the power chamber of the Leslie-Supertyfon a unique valving arrangement formed by the diaphragm itself as it vibrates, permits the use of the operating air to move the diaphragm in both directions. As a result it is possible to use a much lighter diaphragm, of more flexible character, than would normally be employed in such a device.

### THE PRINCIPLE OF OPERATION IS AS FOLLOWS:

When the air horn operating valve is opened to blow the horn, high pressure air is admitted to chamber "A", building up the pressure in "A". This pressure exerts a force on the diaphragm through the flexible baffle plate, tending to force it away from the nozzle, and at the same time, away from baffle plate. As soon as the diaphragm moves away from the nozzle and baffle plate, air is permitted to escape past the diaphragm into the horn and at the same time through port "F" to the back of diaphragm (chamber "B"). The build-up in pressure in "B" exerts a force on the diaphragm, resisting further travel and by virtue of the greater

effective diaphragm area exposed to chamber "B" as compared to chamber "A", tends to restore it to its original position.

At the same time as the air pressure is being fed into "B" and out through the horn, the pressure in "A" tends to fall, which also reduces the tendency for the diaphragm to travel away from the nozzle and allows the pressure in "B" to exert its restoring force. Pressure in "B" also leaks off through vent port to horn so that when the diaphragm has returned to its normal position against the nozzle and against the baffle plate, cutting off the supply to "B", the pressure in "B" will fall and the pressure in "A" will again rise to the point where the diaphragm can be deflected and repeat the cycle outlined above.

It is this unique and patented principle that keeps the diaphragm deflection and stress low and permits the use of a very thin flexible member which always operated at stresses well within its proportional limit and as a consequence gives long diaphragm life.

The use of the air in this new principle is extremely efficient and is best realized by referring to the comparative chart of other chime horns versus the Leslie-Supertyfon for sound output versus air consumption.

There are no adjustments to be made or go out of order as the Leslie-Supertyfon is entirely self-adjusting.