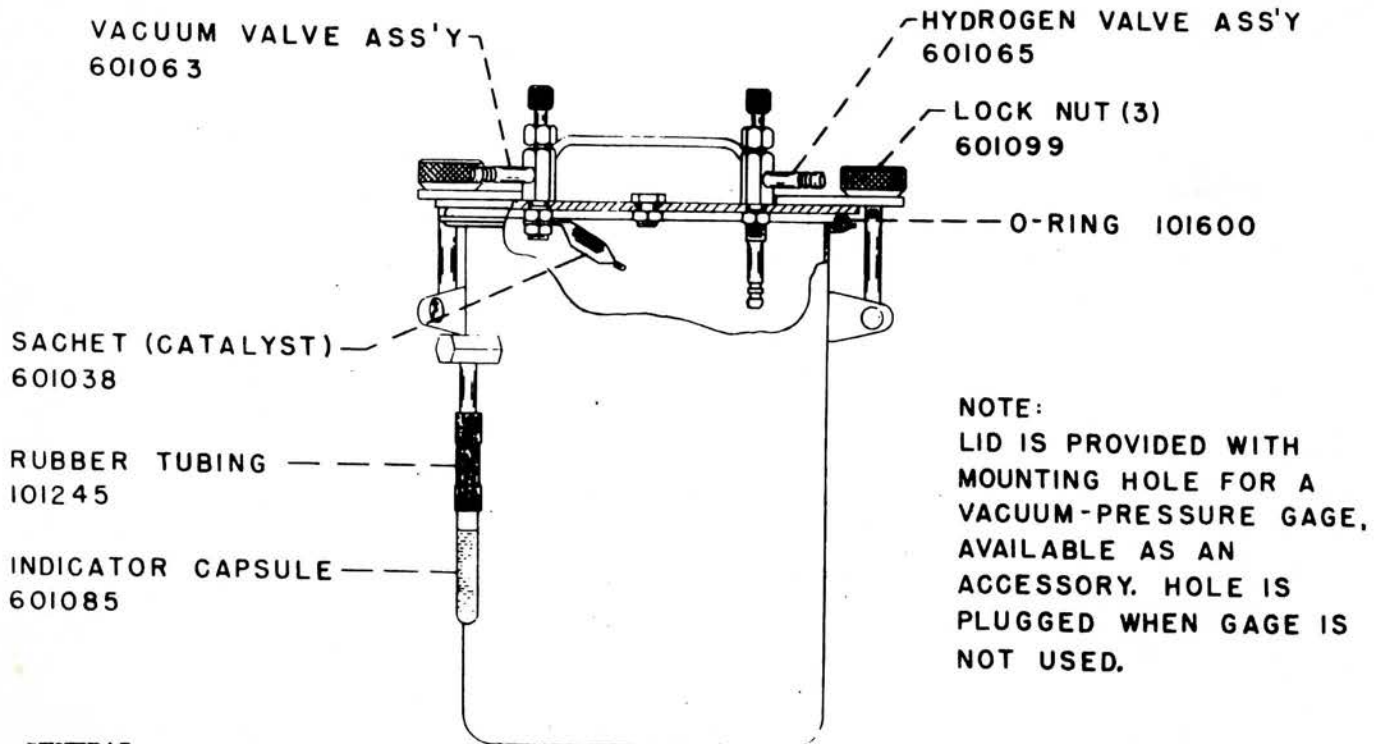


# TORBAL ANAEROBIC JAR

(Modified McIntosh and Fildes Pattern)

## Model AJ-3



### GENERAL

The new Torbal Anaerobic Jar incorporates a number of new features. The technique of using this apparatus differs from that of the older type apparatus and it is therefore particularly important to observe the operating instructions.

The jar is made of stainless steel. It is provided with a side arm for holding an external indicator and a capsule containing a semi-solid indicator is supplied as a standard with the apparatus. The lid is fitted with two valves for connection to vacuum and hydrogen supplies.

### THE CATALYST

The Torbal Anaerobic jar is provided with a room temperature catalyst which is active at temperatures above 0°C. and therefore should not be heated. The catalyst is a patented device supplied under license and is contained in a Monel-metal gauze sachet which can be easily removed from the lid if replacement becomes necessary.

It is important to note that certain gases such as chlorine, sulphur dioxide, hydrogen sulphide and carbon monoxide will poison the catalyst. In normal conditions, however, the concentrations of any of these gases will be very small and the life of the catalyst is reasonably long.

As the catalyst is active at room temperature it is particularly important to insure that hydrogen is not introduced into the apparatus in such a concentration that it will form an explosive mixture. Provided that the operating instructions are strictly adhered to there is no risk of explosion.

It is important to insure that the sachet containing the catalyst does not come into contact with water or any other solution when detached, the lid should be put down with its underside facing upwards.

#### THE INDICATOR

The Torbal Anaerobic Jar is provided with a capsule containing a semi-solid indicator. When the apparatus is ready for use the capsule should be broken at a point approximately  $\frac{1}{2}$ " above the level of the indicator and the open end inserted in the rubber tubing attached to the side arm. Spare replacement capsules are available from your supplier.

When the surface begins to dry, as shown by cracks and by a deeper penetration of the blue color, the indicator can easily be rejuvenated by heating the top in a Bunsen flame and pouring it off, leaving the moist part below exposed. Rejuvenation can be repeated until no more material remains in the tube.

#### OPERATING INSTRUCTIONS

1. Insert the indicator capsule in the side arm and note its blue color.
2. Place the cultures in the jar. If petri dishes are used they may be lowered with a sling tape which can be left in position to facilitate removal.
3. Place the lid squarely on the "O" ring with the tabs aligned with the locking studs. Tighten the lock nuts to secure the lid.
4. The valves are marked H and V indicating that they should be connected to hydrogen and vacuum respectively. Connect the valves to the hydrogen and vacuum supplies. It will be found necessary to regrease the valve threads occasionally to insure their smooth operation.

Suitable hydrogen supplies are:

- (a) A cylinder of hydrogen with regulator valve.
- (b) Rubber (football) bladder filled from cylinder.
- (c) A Kipp's apparatus charged with arsenic-free zinc and 25 per cent sulphuric acid, so as to give pure hydrogen.
- (d) B.B.L. Gaspak (see last page for instructions.)

The hydrogen should run through a Woulff bottle on its way to the jar so that the flow of gas can be seen.

5. Open the valve V and evacuate the jar to a pressure of approximately 10 cm. of mercury. (A vacuum pressure gauge is available as an accessory from your supplier or directly from the Torsion Balance Co. The use of the gauge precludes the need of manometers or other pressure measuring devices.) Close the valve. At this stage the clamp will loosen as the lid is sucked in by the vacuum. It should not be tightened because the lid resumes its former position when the hydrogen is admitted.
6. Open the valve H. The hydrogen will rush in to fill the vacuum and then if the catalyst is active it will continue to flow into the jar as the reaction with oxygen takes place. There is no need to wait until this reaction is completed. Sufficient hydrogen is present and combination with oxygen will continue in the incubator. Leave the jar connected to the hydrogen supply for three minutes and then close the valve. If the flow ceases after the first rush of gas, the catalyst is probably inactive and should be changed.
7. Remove the hydrogen and vacuum connections and place the jar in an incubator at 37°C. After one or two hours the indicator will be reduced and will decolorize. If decolorization does not occur within 6 hours then a leak should be suspected. This may be due either to a faulty fitting of the side arm indicator, to a faulty positioning of the lid or a defective valve seat. If after repeating the above procedure (paragraph 6) several times the indicator still fails to decolorize, poisoning of the catalyst should be suspected. If the jar continues to operate unsatisfactorily, contact The Torsion Balance Co., Clifton, N. J.
8. When opening the apparatus after removal from the incubator it may be found that there is a slight negative pressure inside; this can be released by opening one of the valves.

The lid should be taken off by means of its lip.

## **Instructions for the Use of Torbal AJ-3 Anaerobic Jar with B.B.L. Gaspak Hydrogen + Carbon Dioxide Generator Envelope**

The new TORBAL Stainless Steel Anaerobic Jar Model AJ-3 may be used with the B. B. L. Gaspak Hydrogen + Carbon Dioxide Generator Envelope to insure improved growth of anaerobes. The Gaspak is a disposable source of hydrogen with carbon dioxide, designed to produce controlled generation of a pre-determined volume of gases for effective anaerobic conditions. The special catalyst provided with the TORBAL Jar causes the oxygen remaining in the jar to combine with the hydrogen generated by the Gaspak rapidly and safely at room temperatures, eliminating the necessity for electrical or auxiliary heating of the Jar. The presence of the carbon dioxide permits the growth of certain anaerobes which will not grow under ordinary anaerobic conditions.

Isolation of more bacteroides and clostridium species than ever before have been reported by microbiologists in medical schools, public health and hospital laboratories using this safer, easier and quicker way of achieving effective anaerobic conditions. With the combination of the TORBAL AJ-3 and the B. B. L. Gaspak you can eliminate vacuum pumps, gas tanks, monometers and pressure reducing valves.

**FOLLOW THESE SIMPLE DIRECTIONS WHEN USING THE TORBAL JAR WITH THE GASPAK**

1. Load the Jar. Place the rubber "O" ring in the retaining groove. No grease or Plastiline is necessary with the TORBAL lid. Close the valves. Break the indicator capsule and insert the open end into the rubber tube attached to the sidearm. Be sure the rubber tubing fits tightly on the sidearm and the indicator capsule.
2. Cut off the corner of the Gaspak envelope at the dotted line. Place the Gaspak upright in the TORBAL Jar, using cardboard or other insulation between the Gaspak and the plates or tubes to prevent excessive transfer of heat generated within the Gaspak unit.
3. Add 10 ml. of water (distilled or tap) to the open Gaspak. Immediately cover the Jar with the TORBAL lid and clamp. The lid cushions on the rubber ring and seals the Jar.
4. The indicator on the external arm which is blue in the presence of oxygen and colorless in its absence will indicate when the reaction is completed. Allow ten to fifteen minutes to complete the reaction. No auxiliary or electrical heating is necessary. The reaction takes place at room temperature.
5. Incubate the TORBAL Jar.