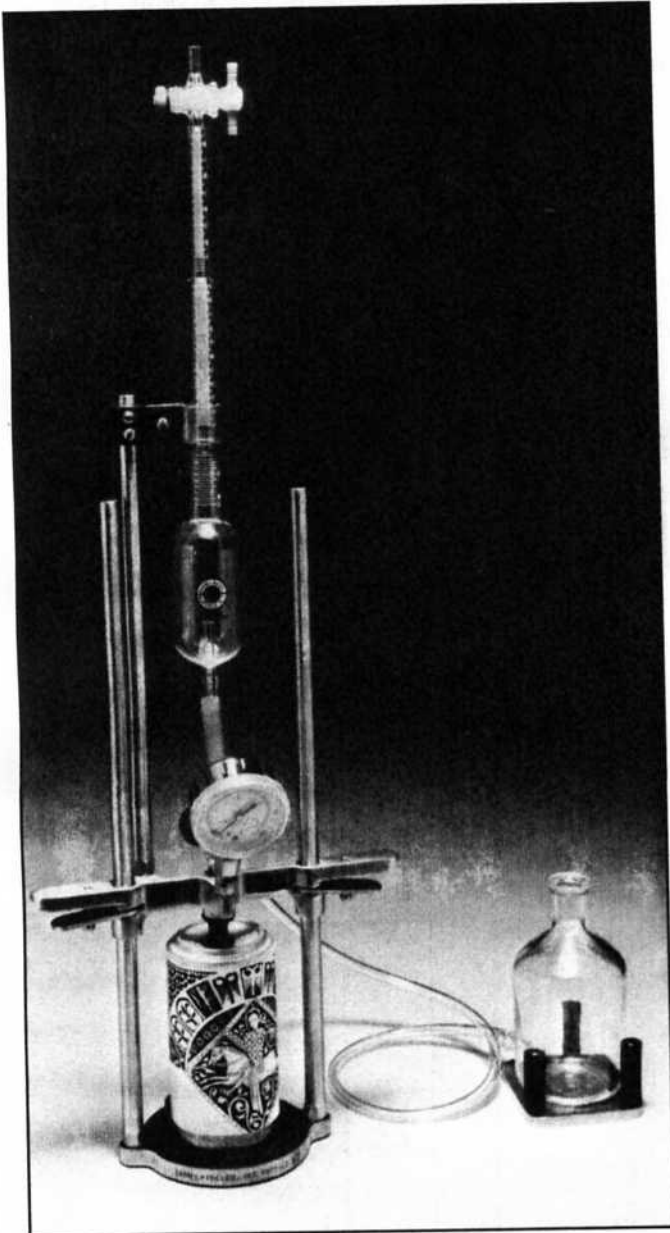


Zahm New Style Air Tester (Series 5000)



This instrument is recommended for testing air content where greater speed and accuracy is required. It is automatically adjustable to various size bottles and cans and is available in one and two litre sizes. The parts list and line drawing on page 16 of this manual should be used for assembly and as a reference when ordering replacement parts.

Operating Instructions

Assembly:

To assemble, use a little lubricant on the stem of the burette (5003-25) and the level bottle (5047) and immerse the connection tubing (5052) and the rubber coupling (5046) in hot water to facilitate insertion of the tubing. Now connect the rubber coupling (5046) to the center stem of the burette and connect the other end of the coupling to the hose nipple (5057) of the Whitey valve (5055). Connect the connection tubing (5052) to the side stem of the burette and to the stem of the level bottle (5047). Assemble the burette clamp (5006) around the burette and fasten in place on the support rod (5016).

Operation:

WARNING:

Caustic Solution is used in the operation of this instrument. This solution may cause severe burns to the operator if not handled with care. Wear goggles and protective clothing while operating this instrument.

The instrument is now ready for operation but should first be tested for any gas leaks that may occur at various connections. This may be accomplished by pressurizing the instrument and applying a soapy solution to the various connections and joints. The instrument may also be pressurized, submerged in a glass tank of water, and leaks observed in this manner.

The generally accepted temperature for gas analysis is 77°F./25°C. therefore, it is good practice to bring the samples to this temperature prior to testing. The volumes of CO₂ gas may be determined by taking the maximum pressure

reading during the test and then, immediately after the test, inserting a laboratory thermometer into the sample and recording the temperature. The CO₂ content can be determined from any standard temperature/pressure relationships chart using the above information.

- 1 Close the Whitey™ valve (5056), open the burette cock (5005) and put approximately 100 cc's of water in the level bottle (5047), elevating the same above the burette so as to allow the water to run down into the burette to the bottom of the calibrations.
- 2 Close the burette cock and lower the level bottle to its stand (5050).
- 3 Place a small beaker of water under the rubber seal (5045) and lower the cross bar (5024) so as to submerge the rubber seal in the water. Note: The cross bar is lowered by depressing the lock plates (5026) on each side of the cross bar and pushing downwards. When the lock plates are released the cross bar will remain firmly locked in position.
- 4 Open the Whitey valve (full). This will cause the water to be drawn upward through the Whitey valve, displacing any trapped air in the system. Tap the tubing to release air into the burette.
- 5 Close the Whitey valve and remove the beaker from the piercing needle (5042A).
- 6 Open the burette cock and allow the water to return to the level bottle and discard.
- 7 Replace the water in the level bottle with caustic solution, filling it approximately half full.

Operating Instructions (Continued)

NOTE: Wear protective clothing & goggles when using caustic solution. A 20% solution of either Potassium Hydroxide or Sodium Hydroxide is recommended for air testing.* The above solutions may be purchased from any laboratory/chemical supply company.

* A weaker solution may be used, but the tests will take longer and fewer tests can be performed.

- 8 Raise the level bottle to fill the burette completely and close the burette cock. To prevent overflow, the caustic trap (5079) is furnished for attachment at the top of the burette. While filling the burette, check the plastic connection tubing (5052) and work out any air bubbles that may be present.
- 9 Place the bottle or can to be tested on the base pad (5022) and lower the cross bar to the point where the rubber seal just touches the top of the container.
- 10 Depress the lock plates and push the cross bar rapidly downwards until the container is pierced.
- 11 Release the lock plates. The cross bar will remain locked in place with the rubber seal compressed to prevent leakage at the point of piercing. Be careful not to trip the lock plates after piercing as only a slight upward pressure on the lock plates will release the cross bar.
- 12 Hold the instrument at the bottom of the base with the right hand while the left hand holds both the guide rod (5017) and support rod (5016). Shake the instrument with a rapid back and forth motion until maximum gauge pressure has been obtained. Note: The burette is very fragile and may break if it comes in contact with an object while shaking the instrument. Also, be sure that the level bottle and stand are located in such a manner that they do not tip over when shaking the instrument.
- 13 Open the Whitey valve (5056) and allow gas to flow into the burette, reducing the gauge pressure to 5 psi or less, and close the Whitey valve. Shake the instrument a few times to allow absorption of CO₂ gas by the caustic solution. It is also advisable to invert the instrument and allow the gas that was released into the burette to be absorbed in the larger bottom bulb of the burette. The shaking of the instrument allows for more build up of gas in the test container and for the next release of gas into the burette.
- 14 Open the Whitey valve and repeat the above process again. Usually eight or ten shakes is enough to remove most of the air in the sample. For very accurate work, however, the operation should be continued until a constant air reading is obtained. When making the air reading in the burette, the level bottle should be raised so as to bring the liquid in the burette and level bottle to the same level.

AIR READINGS: If air readings tend to increase after a period of testing, the caustic solution may be diluting and should be replaced with a fresh solution. The number of tests that can be expected from the caustic solution may vary according to the strength of the solution being used.
- 15 Close the Whitey valve and release the lock plates by pressing them in an upward direction and then raise the cross bar to a level that will allow removal of the container.

Cleaning of the Instrument:

When the tests have been completed the instrument should be cleaned as follows:

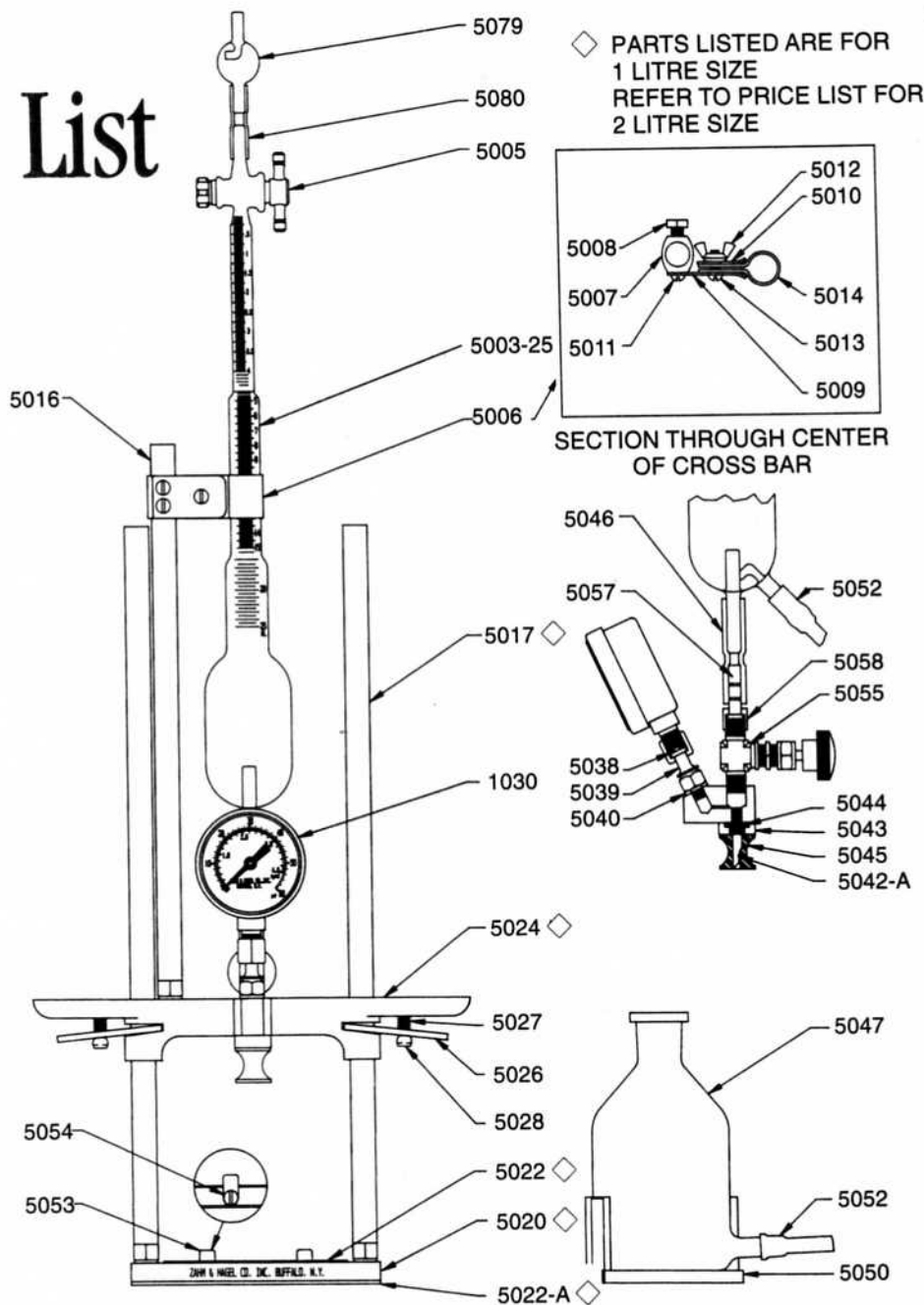
- 1 Close the Whitey valve and open the burette cock and allow the caustic solution to drain into the level bottle. Discard the caustic solution if it has become weak or, if still good, store in a sealed glass container for future use.
- 2 Open the Whitey valve, fill the level bottle with warm water and raise the level bottle above the top of the burette. Fill the burette with the warm water until it overflows at the caustic trap.
- 3 Lower the level bottle and allow the water in the burette to drain through the Whitey valve and also back into the level bottle. Repeat step #2 several times or until all traces of caustic solution have been drained from the burette and fittings.
- 4 The pressure gauge should be removed from the gauge adapter (5039), rinsed in warm water and then dried.

Note: Caustic solution will eventually discolor the Tygon™ Plastic connection tubing (5052) and also cause deterioration of the rubber coupling (5046). If this condition occurs the parts should be replaced.

Calibration of Pressure Gauge:

The pressure gauge should be tested for accuracy at the beginning of each shift. Procedures for re-calibration are sent with the instrument.

Parts List



P/N	DESCRIPTION	P/N	DESCRIPTION	P/N	DESCRIPTION
5001	AIR TESTER COMPLETE W/ALL ACCESSORIES	5016	SUPPORT ROD	5043	PACKING NUT
5003-25	BURETTE W/TEFLON* STOPCOCK (0-25ml) 0-100 ML CAPACITY	5017	GUIDE ROD (2 REQ'D)	5044	NUT GASKET
5005	REPLACEMENT TEFLON STOPCOCK	5020	BASE	5045	RUBBER SEAL
5006	BURETTE CLAMP COMPLETE (5007 THROUGH 5014)	5022	BASE PAD (TOP)	5046	RUBBER COUPLING
5007	CLAMP SLIDE	5022A	BASE PAD (BOTTOM)	5047	LEVEL BOTTLE (250 ML)
5008	THUMB SCREW	5024	CROSS BAR	5050	LEVEL BOTTLE STAND (250 ML)
5009	SUPPORT BAND	5026	LOCK PLATE (2 REQ'D)	5052	CONNECTION TUBE (30")
5010	CLAMP BAND	5027	LOCK SPRING (2 REQ'D)	5053	CAN STOP (2 REQ'D)
5011	SCREW (2 REQ'D)	5028	LOCK SCREW (2 REQ'D)	5054	CAN STOP SCREW (2 REQ'D)
5012	WING NUT	1030	PRESSURE GAUGE (0-60psi & 0-4.2kg/cm ²)	5055	WHITEY VALVE ONLY-PLATED
5013	SCREW	5038	GAUGE GASKET	5056	WHITEY VALVE W/5057 NIPPLE & 5058 NUT
5014	PLASTIC BAND	5039	GAUGE ADAPTER	5057	HOSE NIPPLE
		5040	ADAPTER GASKET	5058	NIPPLE NUT
		5042-A	PIERCING NEEDLE (.703 OAL) PIERCING POINT-STD.)	5079	CAUSTIC TRAP
				5080	PLASTIC COUPLING

*Teflon is a DuPont registered Trade Mark