LAB 023

LABORATORY SETUP INSTRUCTIONS

0700CG23F1 Manifold with 1500F1 and 1600 Pressure Extractors **May 2008**

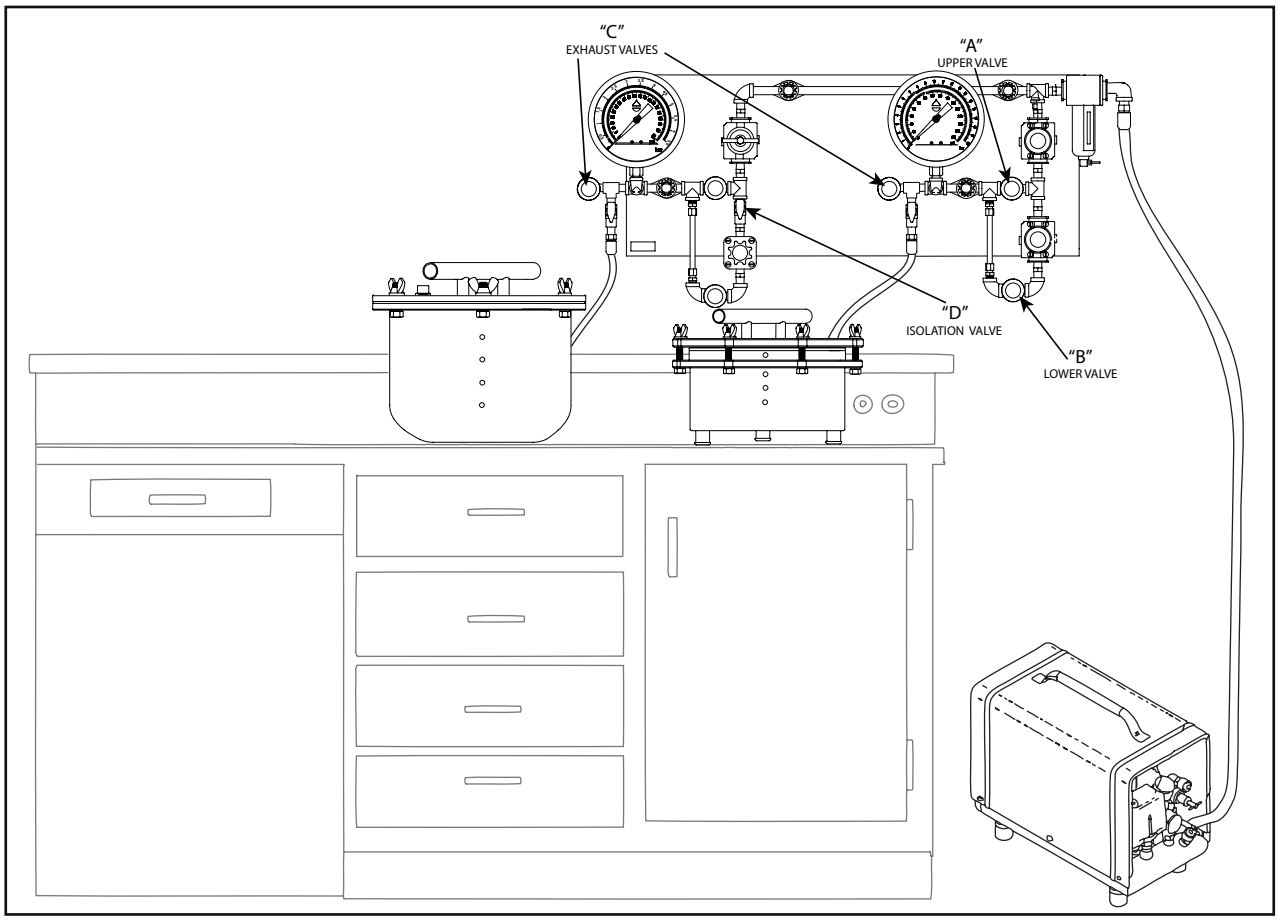

Fig. 01 Typical 0700CG23F1 Manifold Set-up

Your 0700CG23F1 Manifold is completely assembled, tested, and ready for mounting on your laboratory wall. The 3/4-inch thick formica-covered base, which supports the various components, can be drilled at any convenient location for mounting with wood screws or bolts to the laboratory wall.

Normally, the Laboratory Compressor (Model 0505V#) is set adjacent to the laboratory bench and the Pressure Control Manifold. As indicated in *(Fig.01)*, a Connecting Hose Combination (Model 0505-2000) is used for pressure connection between the Compressor and Manifold, and is included in the 0505V#. The Connecting Hose Combination has an quick connect fitting which snaps into the back pressure outlet on the compressor tank. The flexible rubber hose connects the compressor with the inlet fitting on the Manifold. The thread size of this Connecting Hose, as well as the Connecting Hose used to connect the various extractors to the Manifold, is 9/16-18 "B" or CGA-022.. A pressure seal at the hose connection is made when the round "nose" of the brass stem inside the hose nut is pressed against the recessed conical surface of the pressure fittings. This is a metal-to-metal seal and is very effective. The screw threads on the fitting and the hose nut only serve as a means of holding the parts

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in contact. The threads themselves do not make a seal. Only a small amount of torque should be used to connect the hoses.

The 0700CG23F1 Manifold is a combination manifold which combines the 0700G2 station and the 0700G3F1 station. The 0700G2 station is used to operate the 15 Bar Ceramic Plate Extractor (Model 1500F1). The 0700G3F1 station provides very precise, low-pressure regulation in the pressure range from 1 to 75 psi and is used for operation of the Volumetric Pressure Plate Extractor (Model 1250), Tempe Pressure Cells (Models 1400/1450), and the 5 Bar Pressure Plate Extractor (Model 1600).

The 0700G2 station consists of a 10 to 250 psi Pressure Regulator (Model 0766P0250); a 5 to 150 psi Pressure Regulator (Model 0766P0150); a 0 to 300 psi Test Gauge (Model 0780P0300); plus all the necessary valves and fittings. In setting extraction pressures in the range from 125 psi to 225 psi, valve A, referenced in the attached drawing, F161,, is opened and valve B is closed. All pressure regulation is then done with the one Regulator (Model 0766P0250). The Regulator is turned clockwise for higher pressure values and the pressure is read directly on the Test Gauge. For low extraction pressures in the range from 5 to 150 psi, valve A is closed and valve B is opened. The High Pressure Regulator (Model 0766P0250) is set for a pressure value that is 10-20 psi above the planned v--- of setting the low pressure regulation. This High Pressure Regulator then supplies pressure to the Low Pressure Regulator (Model 0766PO150). This Low Pressure Regulator is then set for the extraction pressure desired and the pressure is read out on the test gauge.

This system for low pressure regulation is known as “double regulation” and is frequently used to provide very accurate control of pressure. All regulators reflect, in their output pressure, variations present in the pressure from the sources of supply. By placing two regulators in series, such as mentioned above, variations in the output pressure from the first regulator are considerably reduced by the second regulator so that the output pressure from the second regulator is very constant with source pressure variations reduced in the ratio of 1:100 or more.

At the end of a run when you want to exhaust the air from the extractor, simply close valves A and B, then open up the exhaust valve C until the extractor is emptied of air. The extractor is now safe to open.

The 0700G3F1 station consists of a 5 to 150 psi Pressure Regulator (Model 0766P0150); a 1 to 60 psi Nullmatic Regulator (0765); a 0 to 100 psi Test Gauge (Model 0780P0100); and all the necessary valves and fittings. In making pressure settings at this station, it is important to carefully adjust both of the pressure regulators. The Nullmatic Regulators. The Nullmatic Regulator continuously exhausts a certain amount of air when it is used on “dead-end service” such as is the case with our Extractors. The amount of air exhausted is proportional to the pressure differential between the supply air and the pressure setting of the delivered air. For normal use and for maximum conservation of compressed air from the tank, the Regulator (Model 0766P0150) should be set at a pressure two to three psi higher than the equilibrium pressure you wish delivered from the Nullmatic Regulator. When this procedure is followed, the amount of air that escapes from the Nullmatic Regulator is in the order of 2/100 cu.ft. of air per minute. Keep in mind that the nullmatic is accurate in the range of 1-60 psi and the 150psi regulator is accurate in the range of 5-150 psi. If the bleeding of the nullmatic is problematic in your application (such as a limited nitrogen source), then just leave it on in the 1-5 psi range, after which valve B can be closed and the isolation valve D also closed to effectively remove the nullmatic from the system. Also note that in the range of 60-75 psi, the nullmatic must be isolated because the pressure is beyond the rated use of the unit. If you can use the nullmatic, it will provide you a little higher accuracy in stability than the 150 regulator but the tradeoff being higher air loss rate. This amount of air is very easily built up by the compressor pump in the course of its pumping cycle.

When setting the pressure for a run, the procedure is as follows (please reference *(Fig.01)*).

The valve at the end of the Connecting Hose is first closed. The Nullmatic Regulator is then opened a number of turns so that you are sure it is set at a pressure considerably above that which you plan to use. Then the Regulator (Model 0766P0150) is opened so that the pressure can flow through the Nullmatic Regulator and register on the Test Gauge. The Regulator (Model 0766P0150) is adjusted so that Pressure Gauge reads, say, three psi higher than the equilibrium pressure you plan to use in the Extractor. The Nullmatic Regulator is now closed until the excess air is exhausted up to the pressure value you desire in the Extractor and which will now be registered on the Test Gauge. The valve to the Pressure Extractor can now be opened and the regulators will maintain the pressure in the Extractor at the value set. A minor adjustment is needed at the end due to the added friction of additional path for the air to flow.

PROPER SETTING FOR USING OR EXCLUDING THE NULLMATIC REGULATOR:

If the nullmatic regulator is to be used, the upper valve a must be closed (turned clockwise to stop), the lower valve B must be open (turn counter-clockwise to stop) and the isolation valve D must be open (valve handle perpendicular to pipe).

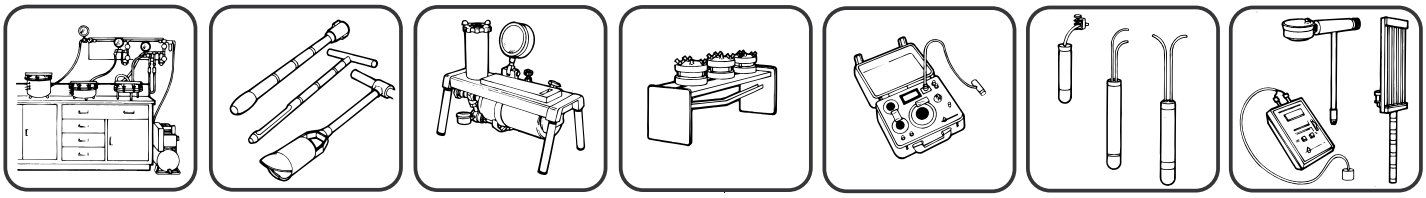
If the nullmatic regulator is not to be used or using the 150 regulator exclusively, then the upper valve A must be open (turn counter-clockwise to stop), the lower valve must be closed (turn clockwise to stop) and the isolation valve must be closed (valve handle perpendicular to pipe).

This system for low pressure regulation is known as “double regulation” and is frequently used to provide very accurate control of pressure. All regulators reflect, in their output pressure, variations present in the pressure from the sources of supply. By placing two regulators in series, such as mentioned above, variations in the output pressure from the first regulator are considerably reduced by the second regulator so that the output pressure from the second regulator is very constant with source pressure variations reduced in the ratio of 1:100 or more.

At the end of a run when you want to exhaust the air from the extractor, simply close valves A and B, then open up the exhaust valve C until the extractor is emptied of air. The extractor is now safe to open.

THE LAB 023V1 LABORATORY SETUP INCLUDES:

QUANTITY	PART #	DESCRIPTION
1	1600	5 Bar Pressure Plate
1	1500F1	15 Bar Ceramic Plate Extractor
8	1093	Soil Sample Retaining Rings, one dozen
1	1080G1	PM Hinge, Includes 1081
1	0776L60	Connecting Hose 60”, for
1	0775L60	Connecting Hose 60”, for
4	0675B15M1	15 Bar Pressure Plate
4	0675B05M1	5 Bar Pressure Plate
1	0700CG23F1	Manifold, which incorporates (as shown in illustration):
		(1) one each 0760G1 Air Filter
		(2) one each 0766P0250 Regulator (10-250 psi)
		(3) two each 0766P0150 Regulator (5-150 psi)
		(4) one each 0780P0300 Test Gauge (0-300 psi)
		(5) one each 0780P0100 Test Gauge (0-100 psi)
		(6) once each 0765 Nullmatic Regulator (0-60 psi)
		All necessary valves and fittings
4	0675B03M1	1 Bar Pressure Plate
4	0675B01M3	1 Bar HF Pressure Plate
1	0505V1106	110 Volts 60HZ



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