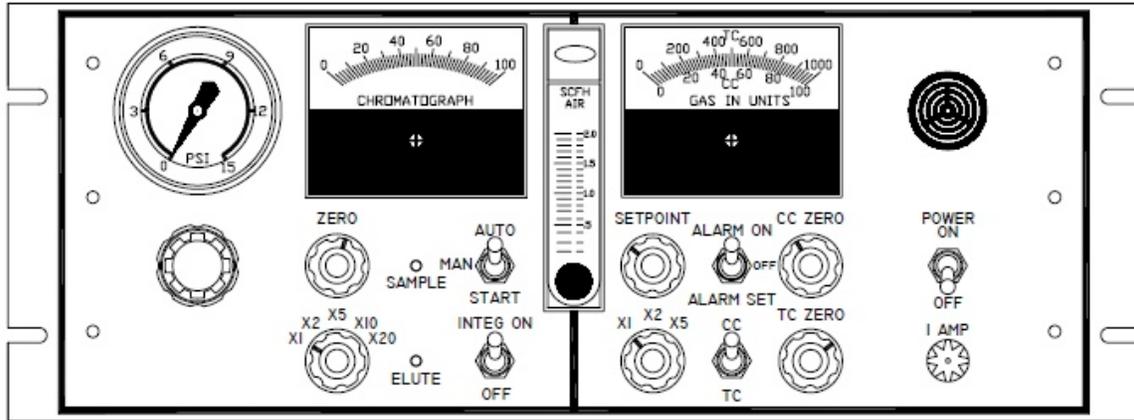


MGD

Gas Chromatograph



The MGD Precision gas system is the latest in a series of gas detection systems that have been designed for the mud logging industry. This system has retained the simplicity of the past and the innovation and technology of the present to develop the easiest to use and the most reliable gas instrument of the industry. This system has been designed with field service in mind. By incorporating both the total gas detector and the gas chromatograph into the same chassis, flow plumbing problems have been eliminated. By incorporating a high and low gas filament in the design dilution has become unnecessary. All flow components are easily cleaned and all internal plumbing is $\frac{1}{4}$ inch plastic tubing. The detectors used are the ceramic bead detector for both the CC and the chromatograph, and the TC is a long life platinum wire detector. The gas detector has separate zero controls and amplifiers for the CC, TC, and chromatograph. The chromatograph is microprocessor controlled for precise timing and utilizes a low cost and easily available gas chromatograph column.

SYSTEM REQUIREMENTS:

Voltage: 120 VAC 60 Hz
Dry Compressed Air: 20 TO 40 PSI

SPECIFICATIONS:

DIMENSIONS: 19 inches wide
7 inches high
12 inches deep

WEIGHT: 20 lbs

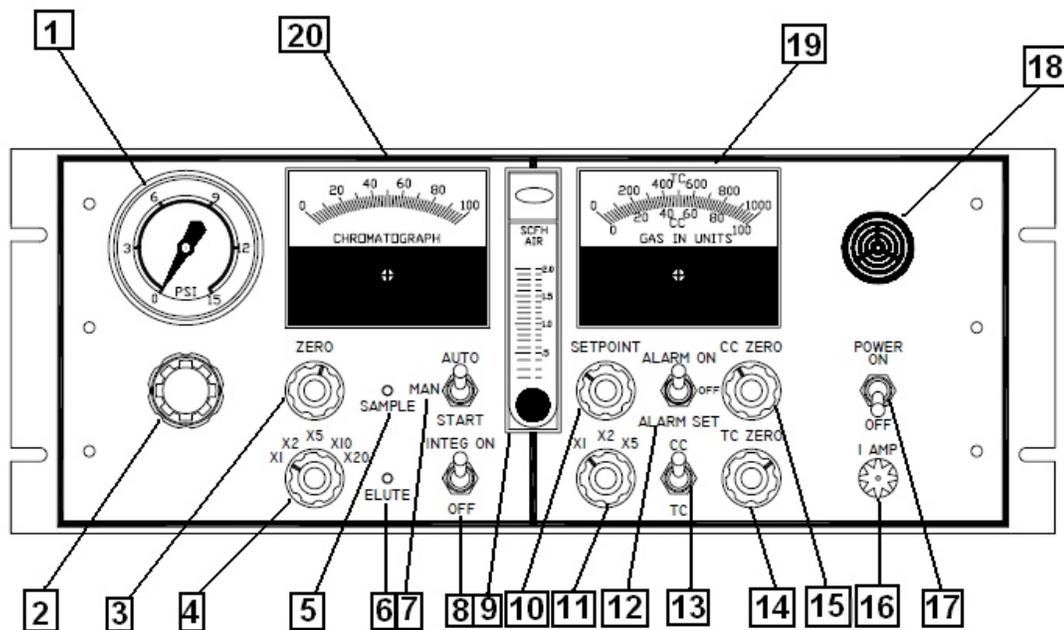
DETECTORS: CC Ceramic Bead
TC Platinum wire

RANGE: 1% Methane standard
CC detector 0-1000 units
TC detector 0-10000 units

FEATURES:

Separate zero controls and amplifiers for each detector
Adjustable audible alarm set point
Simultaneous outputs for CC, TC and chromatograph as well as one manually switch able output for TC and CC
0-5 vdc output full scale for each detector (unranged)
Recorder output 0 – 100 mvdc (.1vdc) ranged (adjustable)
CC/TC status dry contact output
Sample and elute status LEDs

FRONT PANEL:

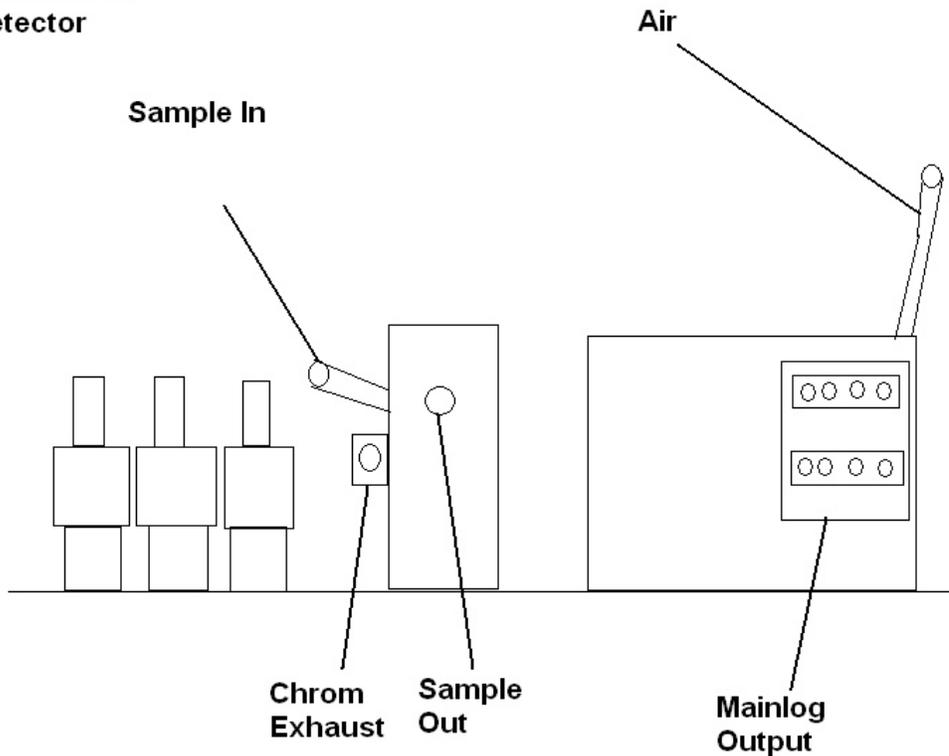


1. Pressure gauge
2. Pressure regulator
3. Chromatograph zero controls
4. Chromatograph range switch
5. Sample indicator LED
6. Elution status LED
7. Chromatograph cycle control
8. Integrator start pulse switch
9. Flowrate
10. Alarm set point control
11. Total gas range switch
12. Alarm status switch
13. CC/TC selector switch
14. TC zero control

- 15. CC zero control
- 16. 1 amp fuse socket
- 17. Power switch
- 18. Speaker with volume control
- 19. Total gas gauge
- 20. Chromatograph gauge

BACK:

**Back of Gas
Detector**



- Sample in: Connected to gas flow line
- Sample out: Exhaust, flows out of the trailer
- Chrom exhaust: Exhaust, flows out of the trailer
- Air: Connected to air compressor

Mainlog Output:

- CC+ to Acromag 13 "In0+"
- CC- to Acromag 14 "In0-"
- TC+ to Acromag 25 "In3+"
- TC- to Acromag 26 "In3-"
- Remote+ to Acromag 41 "OUT0"
- Remote- to Acromag 43 "Rtn"

CH+ to Acromag 15 “In1+”
CH- to Acromag 16 “In1-“

INITIAL SET UP:

1. Turn the power switch (17) to on and allow the MGD precision gas detector to warm up for no less than 90 minutes.
2. Connect the sample pump to sample in on the gas detector and pump only fresh air and no well bore gas into machine
3. Set the flow rater (9) to 2.5 SCFH.
4. Adjust the pressure regulator (2) till the pressure gauge (1) reads the correct pressure as designated by the label on the back of the pressure gauge or calibration sheet.
5. Zero the chromatograph by adjusting the zero knob (3) until the chromatograph gauge (20) reads 0 units
6. Select TC mode by switching the selector switch (13) to TC. Zero the TC Sensor with the TC Zero control (14) until the total gas gauge (19) reads 0.
7. Select CC mode by switching the selector switch (13) to CC. Zero the CC Sensor with the CC Zero control (15) until the total gas gauge (19) reads 0.

The gas detector is now warmed up, zeroed, set to calibrated flows, pressures, and is now ready for operation.

NORMAL OPERATION:

1. Connect the gas flow line into the gas detector line labeled sample in.
2. Reset the flow rater (9) to 2.5 SCFH.

3. Set the alarm to the desired setting by holding the alarm status switch (12) down to alarm set while dialing the set point knob (10). The setting will display on the total gas gauge (19) and the alarm can be toggled on or off with the status switch (12).

4. Set the chromatograph cycle control (7) to auto for machine control, to manual for mainlog control or external control, or hold the switch down to start a cycle. The elute LED flashes indicating the column is purged the sample LED and elute LED's remain lit during a cycle.

5. As the outdoor temperature changes so will the density of the air and gas flowing through the gas detector, it might be necessary to re-zero the gas detector by following steps 2-7 in the initial set up.

TROUBLESHOOTING:

1. Back up or save the log on the logging software
2. Verify machine has warmed up by feeling the bottom or left side of the gas detector and making sure this is warm to touch
3. Re-zero the gas detector by following steps 2-7 of the initial set up.
4. Close all other software programs besides logging software.
5. Verify column pressure on pressure gauge (1)
6. Verify that the chromatograph needle on gauge (20) moves during elution.
7. Check connections from machine to A/D DAQ to PC computer.
8. Verify correct settings in logging software (elution times, spans, cycle times, max readings, auto TC, test gas values, ect).
9. Reboot PC, DAQ, and cycle gas detector off and on and verify problem still exists.
10. Call tech support

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