

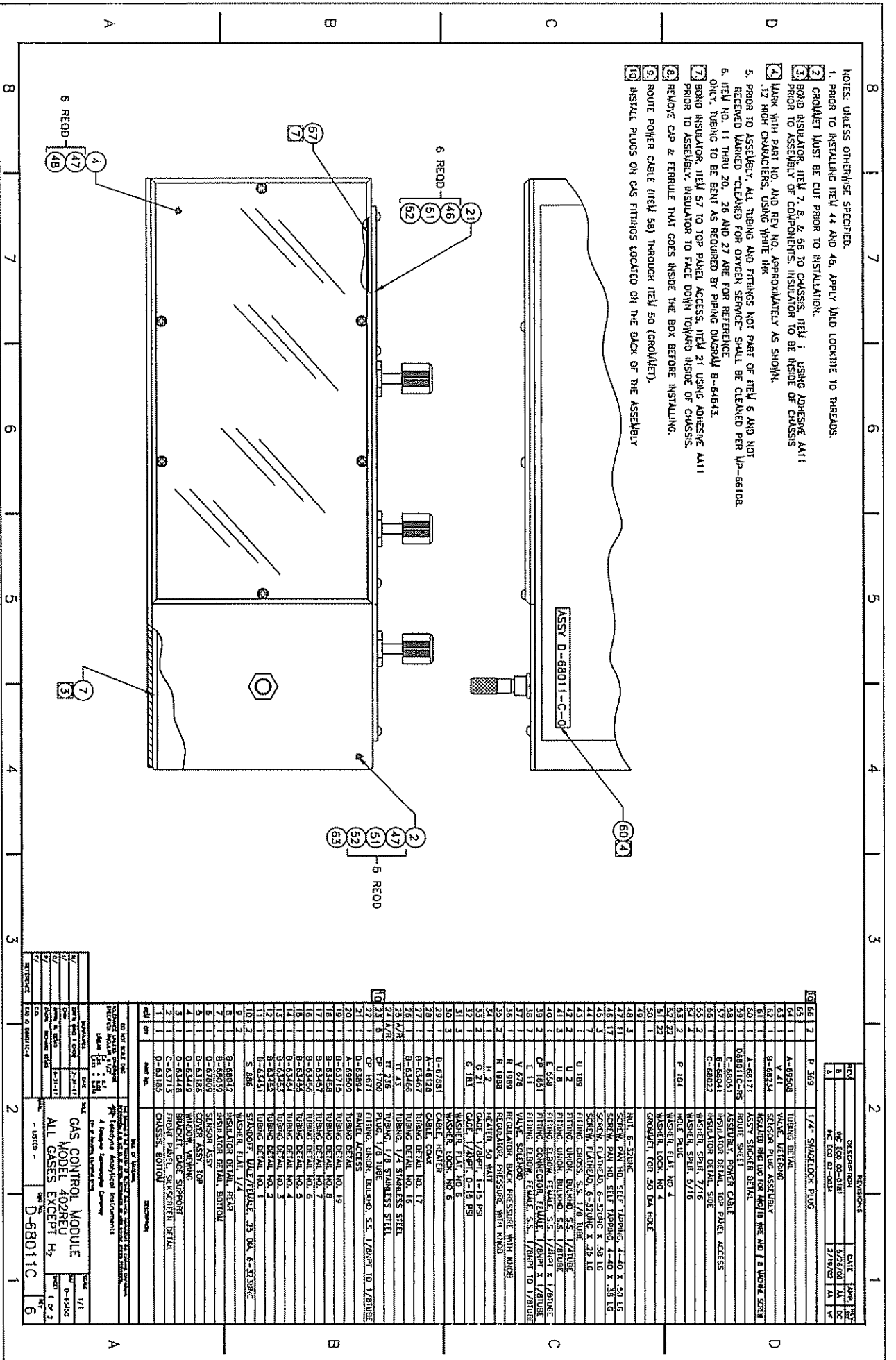
Model 402R-EU Sample Regulator replacement

The regulators are installed in the Gas Control Module
Ref. Assembly drawing #D68011 A-D

Note: The inside of the gas control module can be accessed, either from the top of the analyzer, *or by removing the gas control module from the analyzer.

- 1) Remove Power and disconnect gas lines from the rear of the analyzer. (Cap off gas lines to prevent contamination in the sample system)
- 2) Remove 3 Regulator knobs and hex-nuts, to free the module cover.
- 3) Remove small screws from the top cover and take off the cover.
- 4) If you cannot access the screws towards the back of the cover, the module can be moved forward. *Remove 4 large screws from the bottom of the analyzer and pull the module forward to remove.
- 5) The sample regulator is the one on the left, and the FID chamber is on the right.
- 6) Disconnect tubing from the sample regulator, and install the new regulator.
- 7) Verify that all fittings are tightened and leak-free.
- 8) Re-assemble the analyzer and proceed with Start-up procedure.

THE END



- NOTES: UNLESS OTHERWISE SPECIFIED.
1. PRIOR TO INSTALLING ITEM 44 AND 45, APPLY WILD LOCKWIRE TO THREADS.
 2. GROUND MUST BE CUT PRIOR TO INSTALLATION.
 3. BOND INSULATOR, ITEM 7, 8, & 56 TO CHASSIS, ITEM 1, USING ADHESIVE M111 PRIOR TO ASSEMBLY OF COMPONENTS. INSULATOR TO BE INSIDE OF CHASSIS.
 4. MARK WITH PART NO. AND REV. NO. APPROXIMATELY AS SHOWN.
 5. .12 HIGH CHARACTER, USING WHITE INK.
 6. PRIOR TO ASSEMBLY, ALL TUBING AND FITTINGS NOT PART OF ITEM 6 AND NOT RECEIVED MARKED "CLEANED FOR OXYGEN SERVICE" SHALL BE CLEANED PER UP-6610A.
 7. ITEM NO. 11 THRU 20, 26 AND 27 ARE FOR REFERENCE.
 8. BOND INSULATOR, ITEM 57 TO TOP PANEL ACCESS, ITEM 21 USING ADHESIVE M111 PRIOR TO ASSEMBLY. INSULATOR TO FACE DOWN TOWARD INSIDE OF CHASSIS.
 9. REMOVE CAP & FERRULE THAT GOES INSIDE THE BOX BEFORE INSTALLING.
 10. ROUTE POWER CABLE (ITEM 58) THROUGH ITEM 50 (GROUNDLET).
 11. INSTALL PLUGS ON GAS FITTINGS LOCATED ON THE BACK OF THE ASSEMBLY.

REV	DESCRIPTION	DATE	APP.	CHK.
1	MC ECD 00-01H	5/28/00	JA	DC
2	MC ECD 00-002A	2/10/00	JA	W

QTY	DESCRIPTION	UNIT
2	P 369	1/4" SWAGELOCK PLUG
1	A-65308	TUBING DETAIL
1	B-64643	WASHER
1	B-64643	SENSOR PLUG ASSEMBLY
1	B-64643	INSULATED BNC LUG FOR MC/JB PNC MO/J B W/DRIFT SOLE
1	A-68171	ASSY SINKER DETAIL
1	D68011C-NS	ROUTE SHEET
1	C-68004	ASSEMBLY, POWER CABLE
1	B-68041	INSULATOR DETAIL, TOP PANEL ACCESS
1	C-68027	INSULATOR DETAIL, SIDE
1	B-64643	WASHER, SPRT, 7/16
1	B-64643	WASHER, SPRT, 5/16
1	P 104	WASHER, FLAT, NG 4
1	B-64643	WASHER, LOCK, NG 4
1	B-64643	GROUNDLET, FOR .50 DIA HOLE
1	481	1/4" SWAGELOCK PLUG
1	471	1/4" SWAGELOCK PLUG
1	461	1/4" SWAGELOCK PLUG
1	451	1/4" SWAGELOCK PLUG
1	441	1/4" SWAGELOCK PLUG
1	431	1/4" SWAGELOCK PLUG
1	421	1/4" SWAGELOCK PLUG
1	411	1/4" SWAGELOCK PLUG
1	401	1/4" SWAGELOCK PLUG
1	391	1/4" SWAGELOCK PLUG
1	381	1/4" SWAGELOCK PLUG
1	371	1/4" SWAGELOCK PLUG
1	361	1/4" SWAGELOCK PLUG
1	351	1/4" SWAGELOCK PLUG
1	341	1/4" SWAGELOCK PLUG
1	331	1/4" SWAGELOCK PLUG
1	321	1/4" SWAGELOCK PLUG
1	311	1/4" SWAGELOCK PLUG
1	301	1/4" SWAGELOCK PLUG
1	291	1/4" SWAGELOCK PLUG
1	281	1/4" SWAGELOCK PLUG
1	271	1/4" SWAGELOCK PLUG
1	261	1/4" SWAGELOCK PLUG
1	251	1/4" SWAGELOCK PLUG
1	241	1/4" SWAGELOCK PLUG
1	231	1/4" SWAGELOCK PLUG
1	221	1/4" SWAGELOCK PLUG
1	211	1/4" SWAGELOCK PLUG
1	201	1/4" SWAGELOCK PLUG
1	191	1/4" SWAGELOCK PLUG
1	181	1/4" SWAGELOCK PLUG
1	171	1/4" SWAGELOCK PLUG
1	161	1/4" SWAGELOCK PLUG
1	151	1/4" SWAGELOCK PLUG
1	141	1/4" SWAGELOCK PLUG
1	131	1/4" SWAGELOCK PLUG
1	121	1/4" SWAGELOCK PLUG
1	111	1/4" SWAGELOCK PLUG
1	101	1/4" SWAGELOCK PLUG
1	91	1/4" SWAGELOCK PLUG
1	81	1/4" SWAGELOCK PLUG
1	71	1/4" SWAGELOCK PLUG
1	61	1/4" SWAGELOCK PLUG
1	51	1/4" SWAGELOCK PLUG
1	41	1/4" SWAGELOCK PLUG
1	31	1/4" SWAGELOCK PLUG
1	21	1/4" SWAGELOCK PLUG
1	11	1/4" SWAGELOCK PLUG

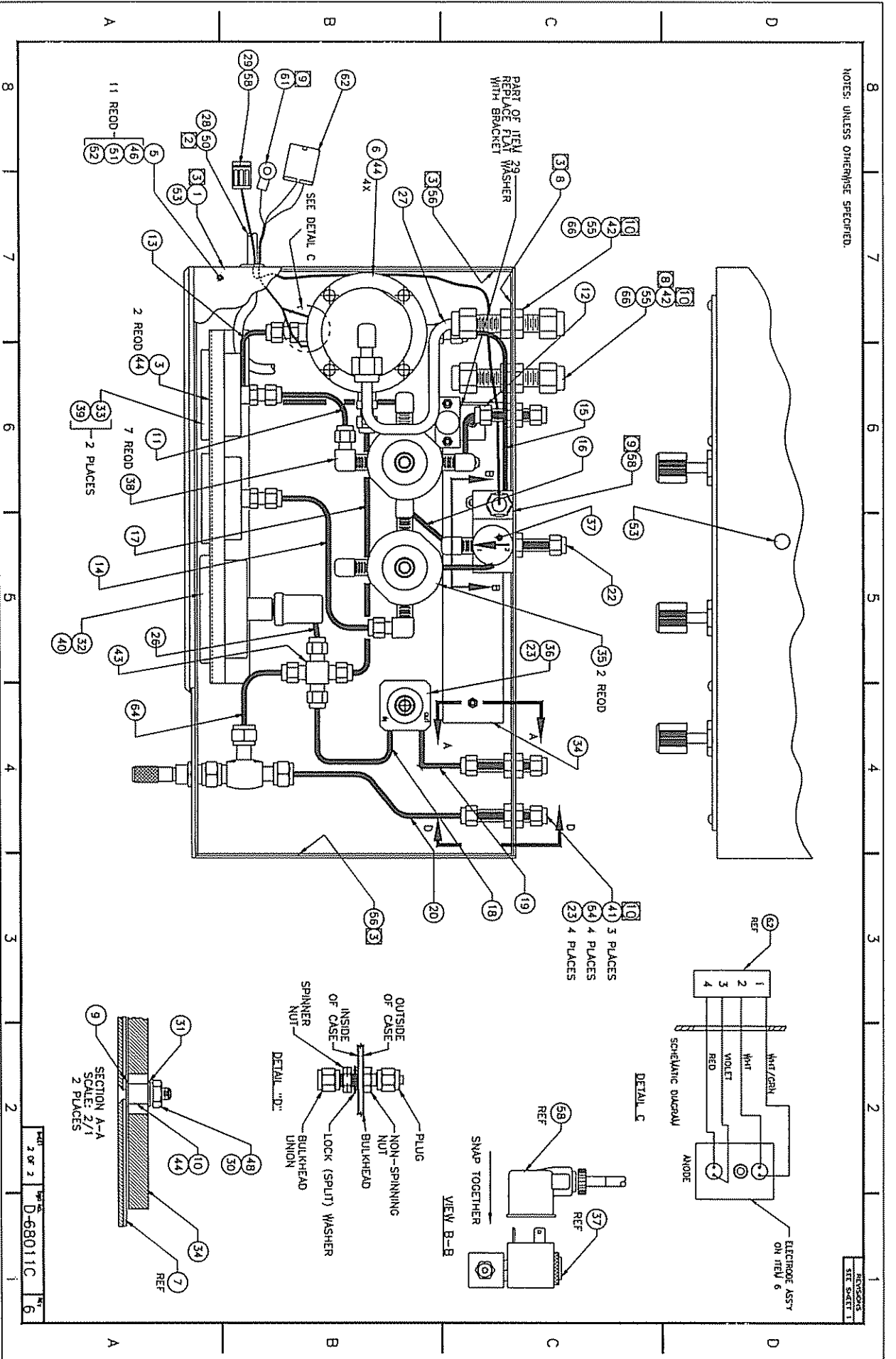
QTY	DESCRIPTION	UNIT
1	B-65261	CABLE HEATER
1	A-46128	CABLE, COAX
1	B-63467	TUBING DETAIL, NO. 17
1	B-63466	TUBING DETAIL, NO. 16
1	TT 43	TUBING, 1/4" STAINLESS STEEL
1	241	TUBING, 1/8" STAINLESS STEEL
1	CP 1709	PURGE, 1/8" TUBE
1	CP 1671	PURGE, 1/8" TUBE
1	D-61891	FITTING, ORGAC, BULKHEAD, SS, 1/8"PT X 1/8" TUBE
1	A-66509	TUBING DETAIL
1	B-63715	TUBING DETAIL, NO. 19
1	B-63458	TUBING DETAIL, NO. 8
1	B-63457	TUBING DETAIL, NO. 7
1	B-63456	TUBING DETAIL, NO. 6
1	B-63455	TUBING DETAIL, NO. 5
1	B-63454	TUBING DETAIL, NO. 4
1	B-63453	TUBING DETAIL, NO. 3
1	B-63452	TUBING DETAIL, NO. 2
1	B-63451	TUBING DETAIL, NO. 1
1	S 886	STANDARD, UNIZ/FERULE, .35 DIA, 6-13.50NC
1	B-68042	INSULATOR DETAIL, REAR
1	B-68039	INSULATOR DETAIL, BOTTOM
1	D-67809	SENSOR ASSY
1	D-63185	COVER ASSY, TOP
1	D-63449	WINDOW, VIEWING
1	D-63448	BRACKET, GAGE SUPPORT
1	C-63713	FRONT PANEL, SINKER DETAIL
1	D-63185	CHASSIS, BOTTOM

REV	DATE	DESCRIPTION
1	10/11/07	REVISED TO ADD PARTS 1-6
2	10/11/07	REVISED TO ADD PARTS 7-12
3	10/11/07	REVISED TO ADD PARTS 13-18
4	10/11/07	REVISED TO ADD PARTS 19-24
5	10/11/07	REVISED TO ADD PARTS 25-30
6	10/11/07	REVISED TO ADD PARTS 31-36
7	10/11/07	REVISED TO ADD PARTS 37-42
8	10/11/07	REVISED TO ADD PARTS 43-48
9	10/11/07	REVISED TO ADD PARTS 49-54
10	10/11/07	REVISED TO ADD PARTS 55-60

GAS CONTROL MODULE
MODEL 402RE
ALL GASES EXCEPT H₂

REV 1/1
REV 2/1
REV 3/1
REV 4/1
REV 5/1
REV 6/1
REV 7/1
REV 8/1
REV 9/1
REV 10/1

D-68011C 6



Model 402R-EU

Start-up procedure

Equipment needed:

Digital multimeter (DMM).
Power cord.

Document needed:

Instruction manual.

Gas needed:

Zero gas: Zero grade (Representative of Background gas)
Fuel: (40%H₂/ 60% N₂) or 100% H₂.
Air: Zero grade Air
Span gas: (70-90% of range) ppm CH₄ balance back ground)

Procedure:

- 1- Connect power cord to AC inlet.
- 2- Position ON/OFF switch to ON.

- 3- Connect zero grade AIR to analyzer, set the input pressure at 30 PSIG, adjust the Air Regulator inside the sample module for 15 psig, or as indicated in data sheet of the instruction manual.
- 4- Connect Zero gas to analyzer, set the pressure at 30 PSIG or same as sample pressure, adjust sample bypass valve so that the sample pressure gauge inside the sample module indicate the pressure in the instruction manual, and sample bypass flow meter read 0.5 to 2 SCFH.
- 5- Connect fuel (40/60 mix or 100 H₂ per application). Set pressure at 30 PSIG.
- 6- check 0-1vdc, 4-20 ma out put, and alarm(s), by adjusting the zero and span pot to get the analyzer reading from 0-100% of full scale.
- 7- let the Analyzer run for 8 hours or overnight.
- 8- after the sample cell temperature is stabilized, position range switch to Ignite Hold for <6 seconds then release to HI range.
- 9- wait until the analyzer reading is stabilized, introduce span gas, adjust fuel regulator increment of 0.5 PSIG at a time and watch for the analyzer reading to increase, continue to adjust fuel regulator until the analyzer reading is increasing slower or the reading start to decrease.
- 10- wait until the analyzer reading is stabilized, adjust span pot until the analyzer reads the concentration in the cylinder.
- 11- Introduce zero gas, wait until the reading is stabilized, adjust zero pot until analyzer reading is 0 ppm.
- 12- Repeat steps 9 and 10 until no further adjustment is required.
- 13- Connect sample to the analyzer, check the sample pressure and flow rate, now the analyzer is ready to go on line.

NOTE: The flow Restructures are: **Blanket air = 600 sccm, Sample = 30sccm. Fuel = 200 sccm.** (Standard 40/60 mix), & **Fuel = 30 sccm** (100% H₂).
When the background is hydrogen the fuel port is connect to zero grade nitrogen.