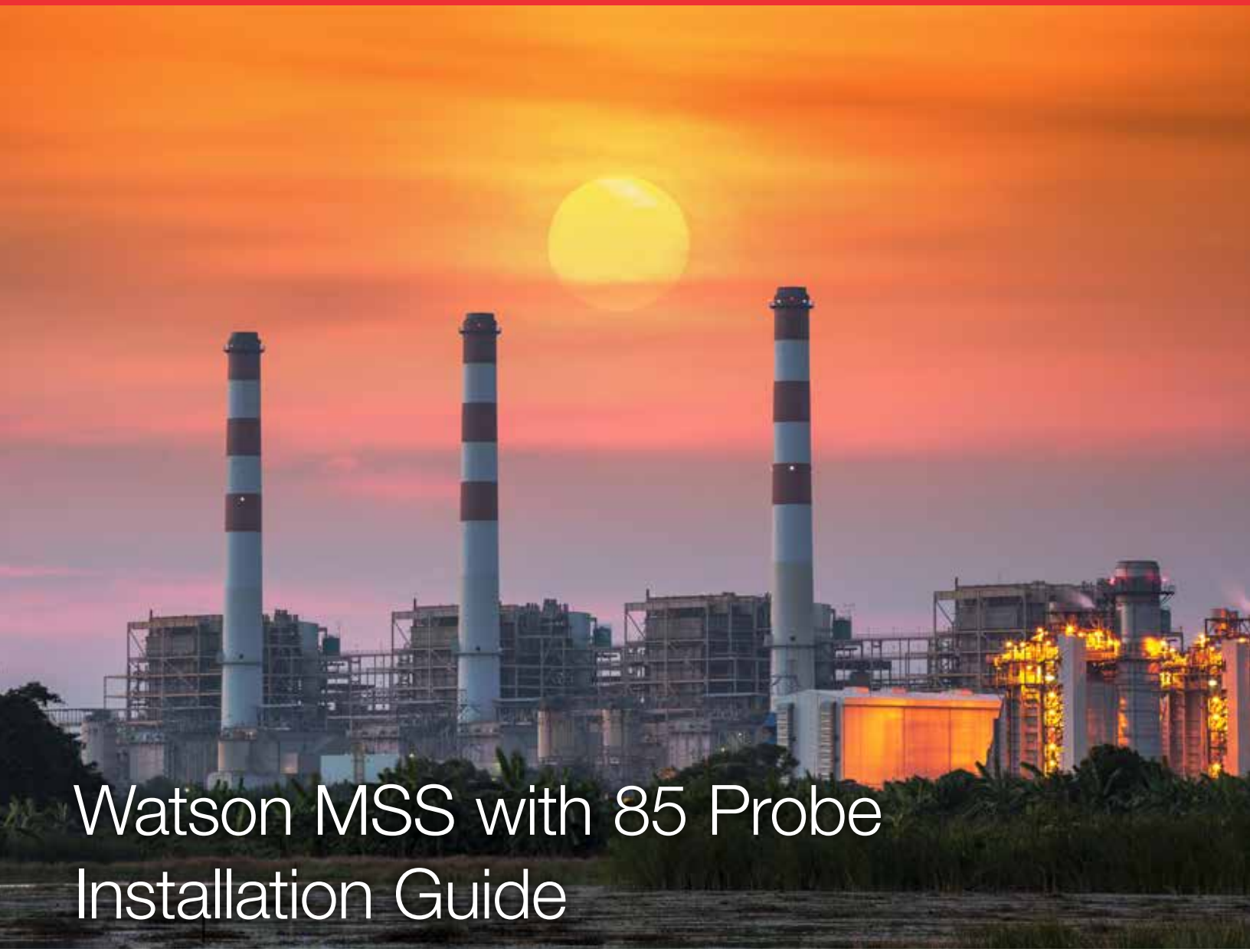
thermoscientific



Watson MSS with 85 Probe Installation Guide

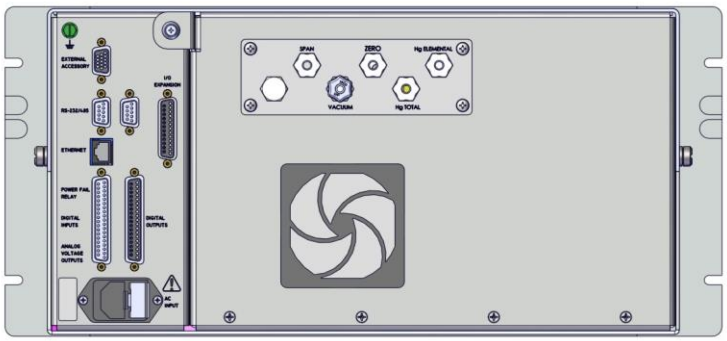
Mercury Speciation System

119545-00 • 8Mar2019

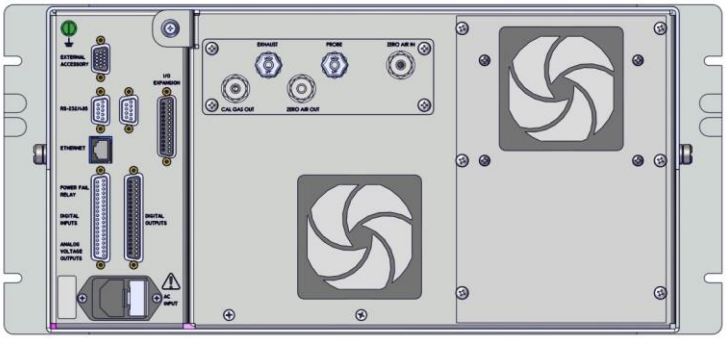
ThermoFisher SCIENTIFIC

FIG.1 UMBILICAL ELECTRICAL CONNECTIONS AT RACK

80i
Hg
ANALYZER



81i
Hg
CALIBRATOR



NOTE: GROUND HOLE IS COPPER & BIGGER IN DIA.

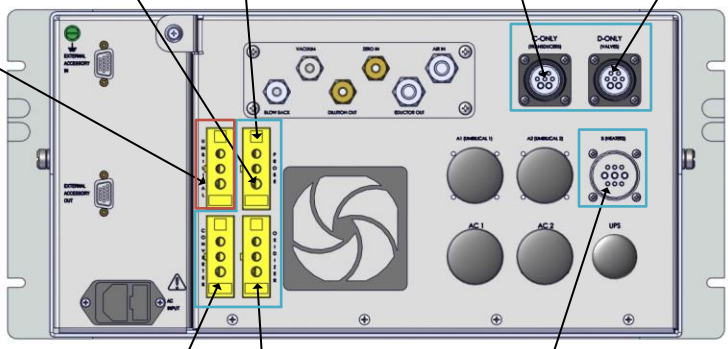
UMB COLD LINE
PROBE

UMB COLD LINE
C (TRANSDUCERS)

UMB COLD LINE
D (VALVES)

UMBILICAL
UMB HOT LINE

82i
Hg PROBE
CONTROLLER



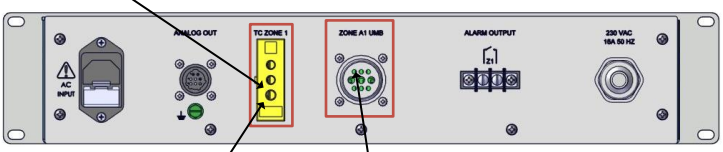
NOTE: GROUND HOLE IS COPPER & BIGGER IN DIA.

CONVERTER
UMB COLD LINE

HOVACAL BLOCKS
UMB COLD LINE

B (HEATERS)
UMB COLD LINE

TEMP
CONTROLLER



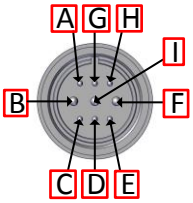
A1 (TC ZONE 1)
UMB HOT LINE

A1 (TEMP CONTROLLER)
UMB HOT LINE

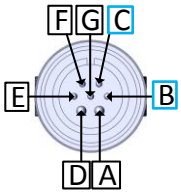
UMBILICAL (COLD LINE)

SYSTEM SIDE- ALL ELECTRICAL CONNECTIONS

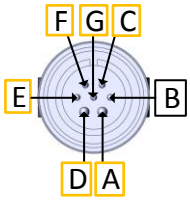
LABELED ON END OF WIRES



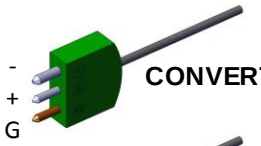
B (HEATERS)



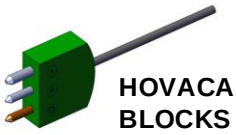
C TRANSDUCERS (OXYGEN POWER)



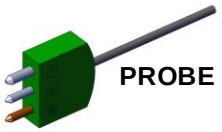
D (VALVES)



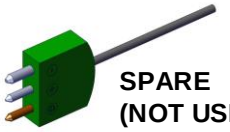
CONVERTER



HOVACAL BLOCKS



PROBE

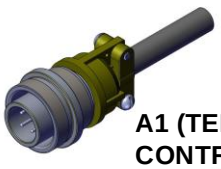


SPARE (NOT USED)

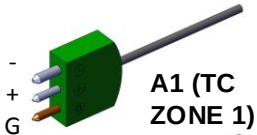
UMBILICAL (HOT LINE)

SYSTEM SIDE- ALL ELECTRICAL CONNECTIONS

LABELED ON END OF WIRES



A1 (TEMP CONTROLLER)



A1 (TC ZONE 1)

UMBILICAL
(80i TEMP READING ONLY)

UMBILICAL (COLD LINE)

PROBE SIDE - ALL ELECTRICAL CONNECTIONS

LABELED ON END OF WIRES

80i I/O

(FOR 80i CONNECTIONS REFER TO FIG 4A)

NOT USED (CONN PIN: A)
NOT USED (CONN PIN: B)
29 (CONN PIN:E) (02 BOARD)
30 (CONN: PIN:C) (02 BOARD)
NOT USED (CONN PIN: D)
NOT USED (CONN PIN: F)
NOT USED (CONN PIN:G)

B (HEATERS)

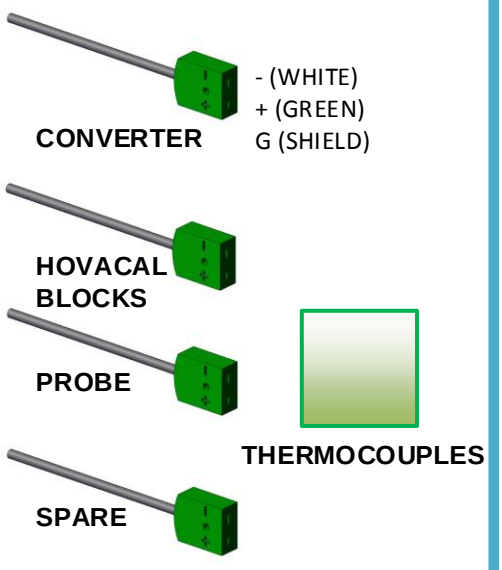
11 (CONN PIN: A) (PROBE HEATER)
15 (CONN PIN: C) (PROBE HEATER)
16 (CONN PIN: D) (CONV HEATER)
17 (CONN PIN: H) (CONV HEATER)
18 (CONN PIN: E) (STINGER HEATER)
19 (CONN PIN: G) (STINGER HEATER)
20 (CONN PIN: F) (HOVACAL BLOCKS)
28 (CONN PIN: B) (HOVACAL BLOCKS)
PE (CONN PIN: I) (PROTECTIVE EARTH)

C TRANSDUCERS (OXYGEN POWER)

NOT USED 6 (CONN PIN: G) (SHIELD)
NOT USED 7 (CONN PIN: F) (+24VDC)
NOT USED 8 (CONN PIN: E) (-24VDC)
9 (CONN PIN:C) (+24VDC)
10 (CONN PIN: B) (-24VDC)
NOT USED (CONN PIN: A)
NOT USED (CONN PIN: D)

D (VALVES)

1 (CONN PIN:D) (VALVE COMMON)
2 (CONN PIN:G) (HG SPIKE VALVE)
3 (CONN PIN:F) (NOT USED)
4 (CONN PIN:C) (STINGER BB VALVE)
5 (CONN PIN:E) (NOT USED)
NOT USED (CONN PIN: A, B)



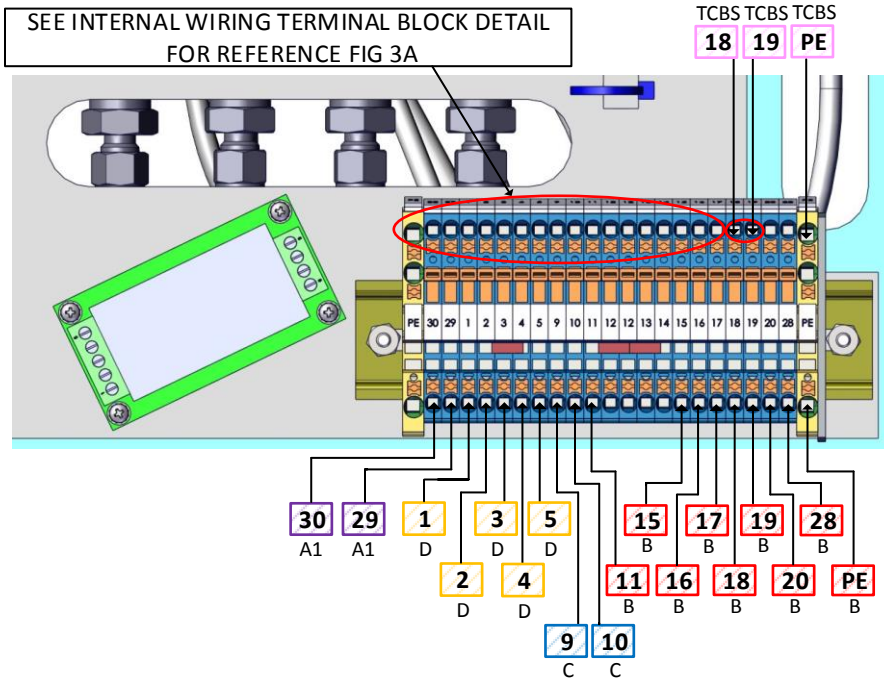
TEMPERATURE CONTROL BOX

TO TERMINAL (STINGER)

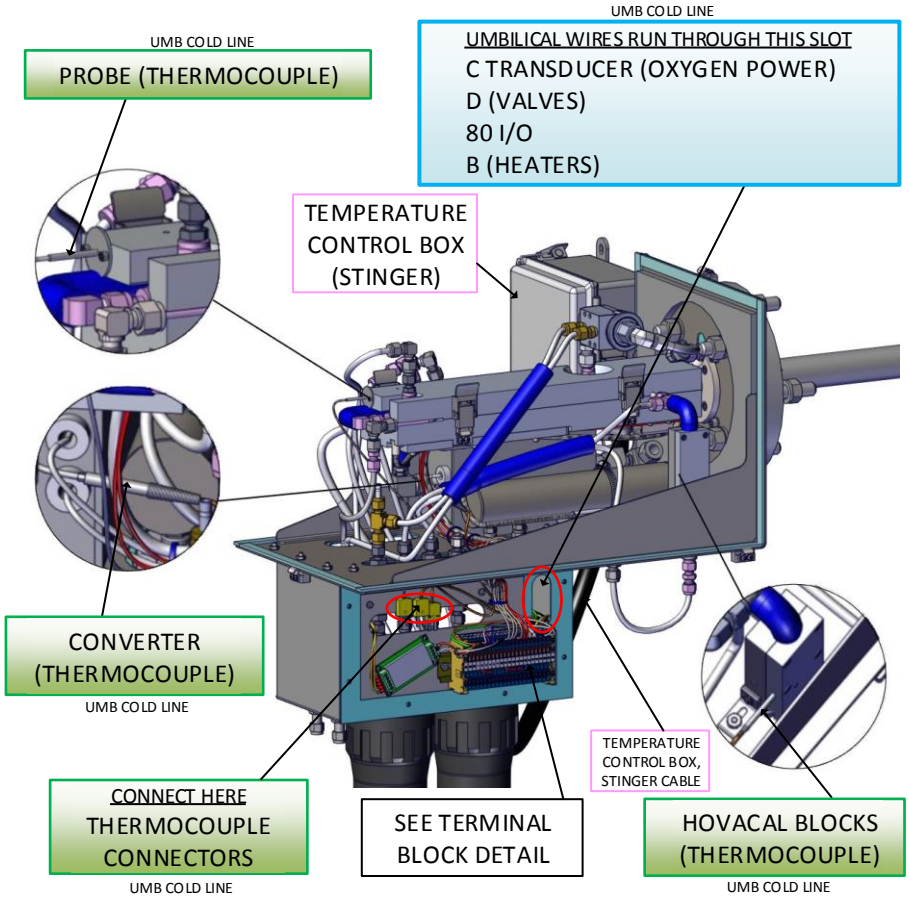
TCBS

18 (STINGER HEATER) TOP TERMINAL
19 (STINGER HEATER) TOP TERMINAL
PE (STINGER GROUND) TOP TERMINAL

FIG.2 UMBILICAL ELECTRICAL CONNECTIONS AT 85



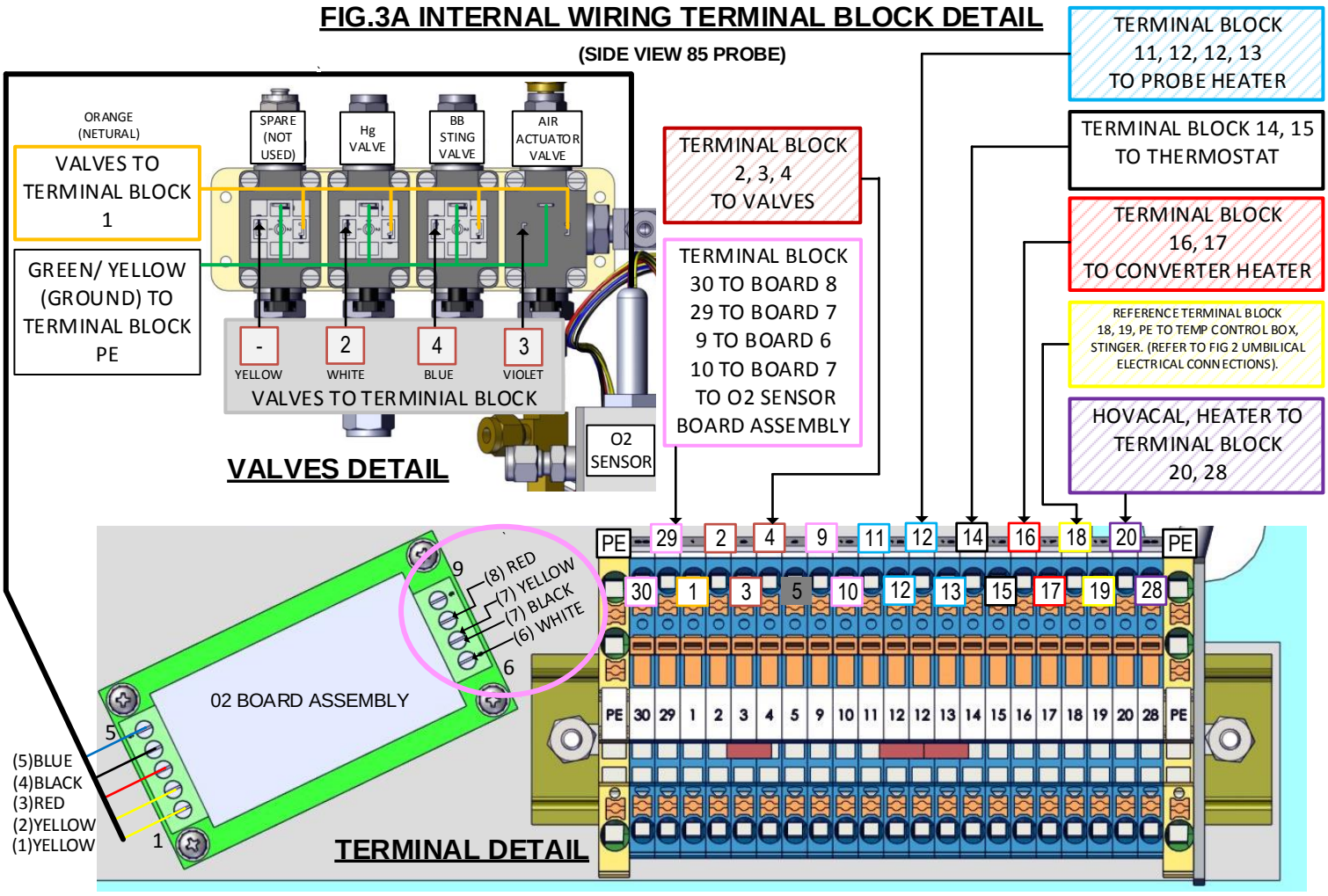
TERMINAL BLOCK DETAIL



85 PROBE

FIG.3A INTERNAL WIRING TERMINAL BLOCK DETAIL

(SIDE VIEW 85 PROBE)



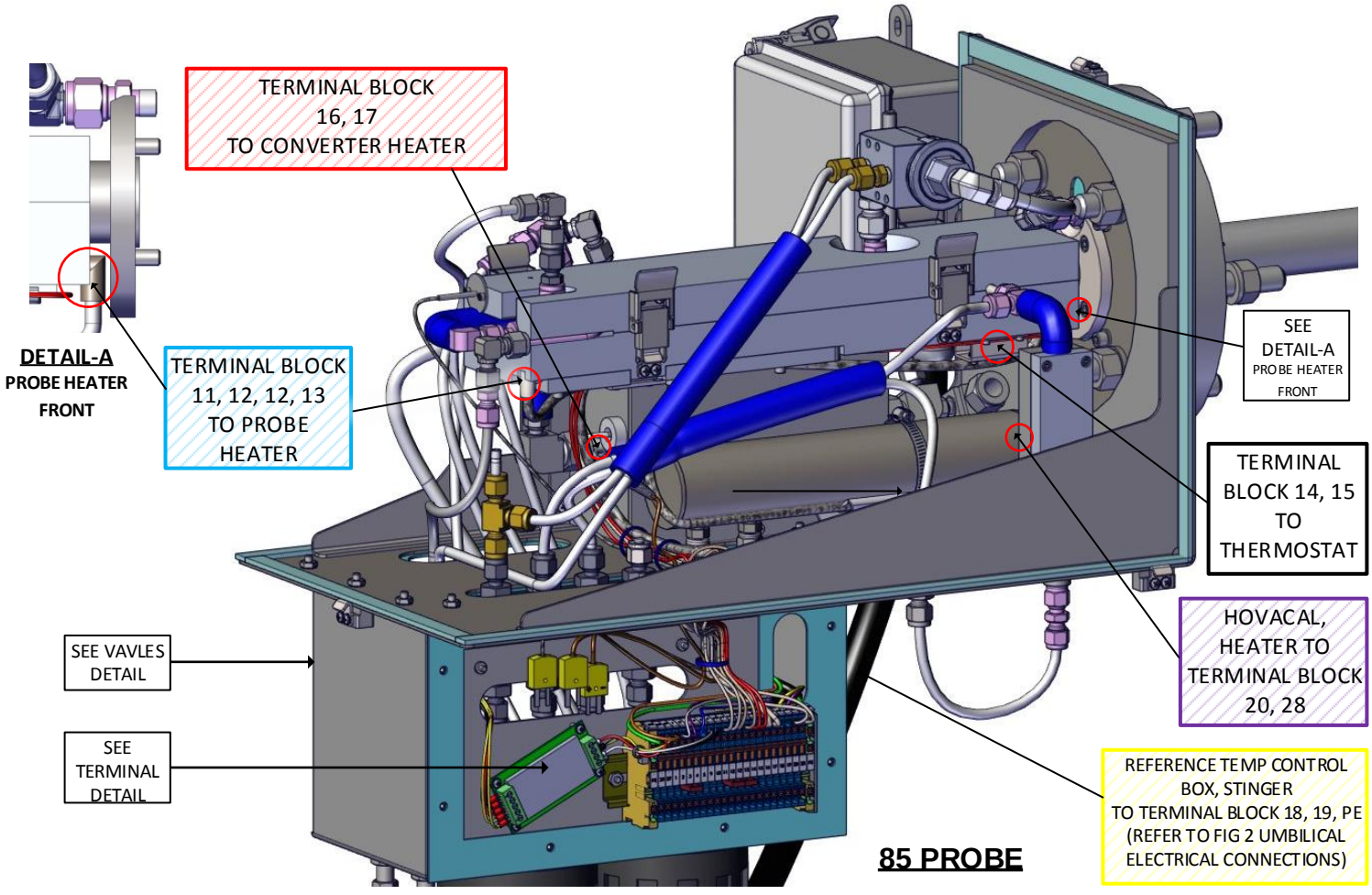
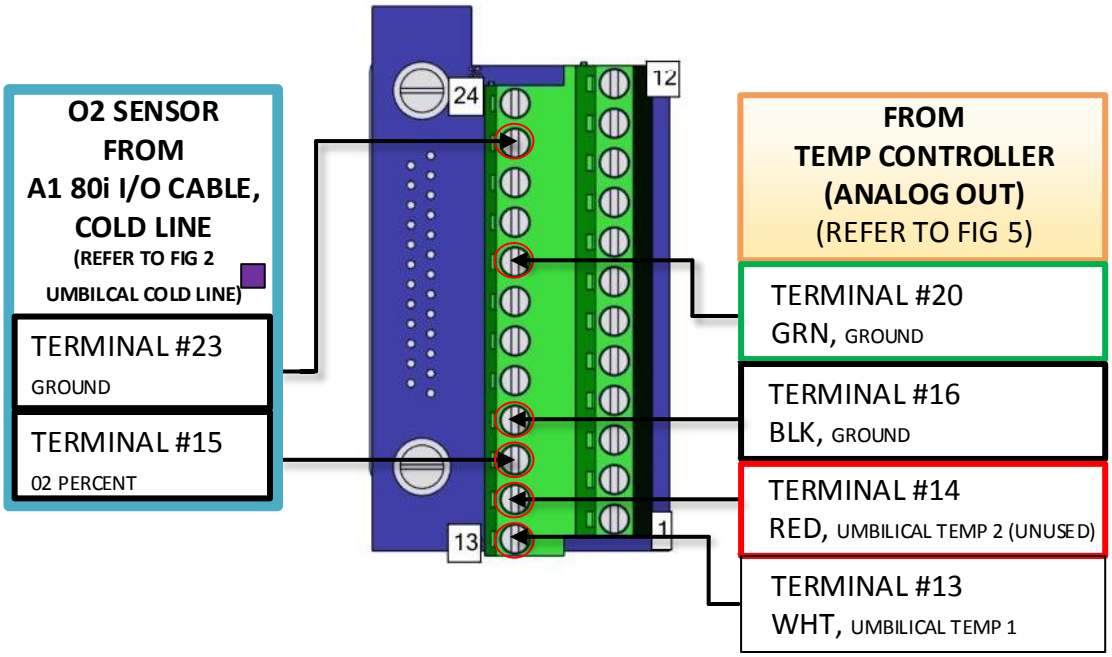


FIG.3B 85 INTERNAL WIRING TERMINAL BLOCK

FROM CONNECTION	TERMINAL BLOCK	COLOR	FUNCTION
VALVES, ALL 4	PE1	GREEN/ YELLOW	GROUND
VALVES, ALL 4	1	ORANGE	NETURAL
VALVE, SPARE (NOT USED)	-	YELLOW	-
VALVE, Hg	2	WHITE	L1
VALVE, BB STING	4	BLUE	L1
VALVE, AIR ACTUATOR	3	VIOLET	L1
O2 SENSOR BOARD ASSEMBLY, CONN 6	9	WHITE	+24V
O2 SENSOR BOARD ASSEMBLY, CONN 7	10	BLACK	-24V
O2 SENSOR BOARD ASSEMBLY, CONN 7	29	YELLOW	GROUND
O2 SENSOR BOARD ASSEMBLY, CONN 8	30	RED	02 PERCENT
PROBE HEATER	11	TAN	POWER
PROBE HEATER	12, 12	TAN	POWER
PROBE HEATER	13	TAN	POWER
THERMOSTAT	14	RED	SWITCH, OVER TEMP,
THERMOSTAT	15	RED	NORMALLY CLOSED
CONVERTER HEATER	16	TAN	POWER
CONVERTER HEATER	17	TAN	POWER
TEMP CONTROL BOX, STINGER HEATER	18	YELLOW	POWER
TEMP CONTROL BOX, STINGER HEATER	19	VIOLET	POWER
TEMP CONTROL BOX, STINGER HEATER	PE2	GREEN/YELLOW	GROUND
HOVACAL HEATER	20	TAN	POWER
HOVACAL HEATER	28	TAN	POWER
JUMPER, VALVE, Hg	2	RED	JUMPER
JUMPER, VALVE, AIR ACTUATOR	3	RED	JUMPER
JUMPER, PROBE HEATER	12	RED	JUMPER
JUMPER, PROBE HEATER	12	RED	JUMPER
JUMPER, PROBE HEATER	13	RED	JUMPER
JUMPER, THERMOSTAT	14	RED	JUMPER
NOT USED	5	NOT USED	NOT USED

FIG.4A 80i REAR I/O PANEL CONNECTIONS

I/O EXPANSION



DIGITAL INPUT
REFER TO FIG 5

DIGITAL OUTPUT
REFER TO FIG 5

TERMINAL #24 & #12
RED JUMPER

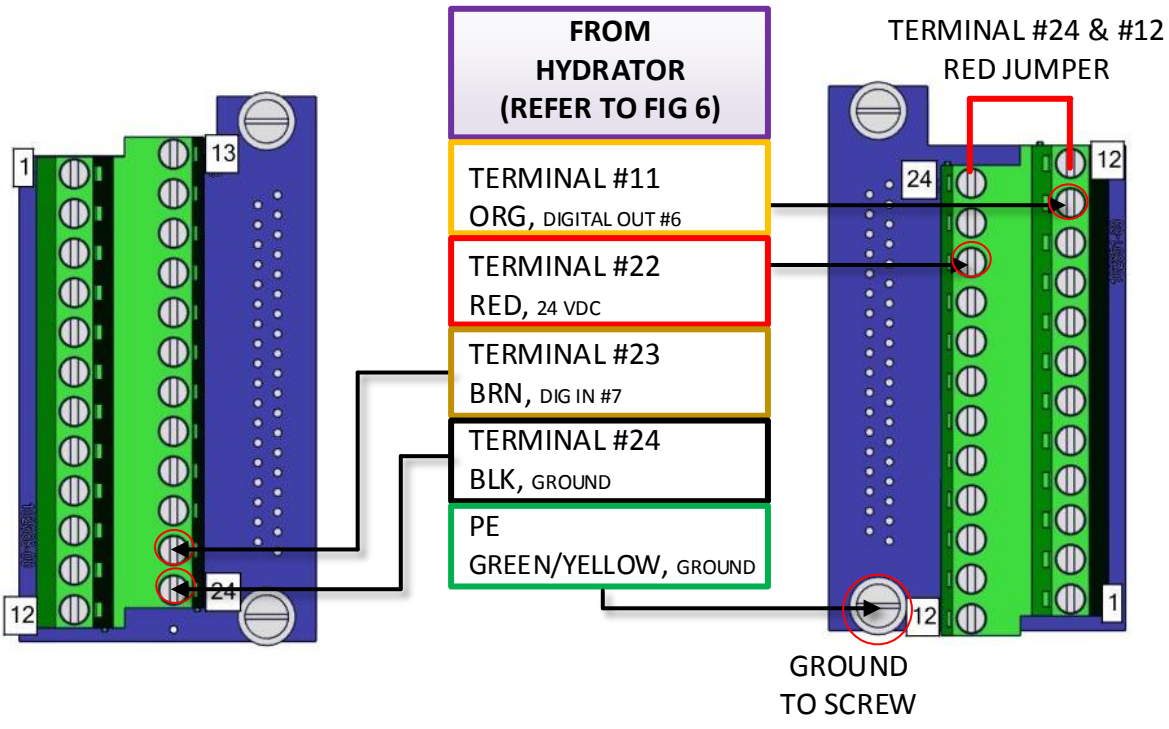
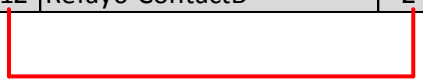


FIG.4B 80i REAR I/O PANEL CONNECTIONS

I/O Expansion Board, Terminal Board Pin Descriptions			
Pin	**Signal Description**	**Pin**	**Signal Description**
1	IOut1	13	Analog_In1 (Umbilical Temp 1)
2	GND_ISO	14	Analog_In2 (Umbilical Temp 1)
3	IOut2	15	Analog_In3 (Oxygen Sensor)
4	GND_ISO	16	GNDD (Umbilcal Temp 1)
5	IOut3	17	Analog_In4
6	GND_ISO	18	Analog_In5
7	IOut4	19	Analog_In6
8	GND_ISO	20	GNDD (Umbilcal Temp 2)
9	IOut5	21	Analog_In7
10	GND_ISO	22	Analog_In8
11	IOut6	23	GNDD (Oxygen Sensor)
12	GND_ISO	24	GNDD

Digital Inputs, Analog Voltage Output, I/O Terminal Board Pin Descriptions			
Pin	**Signal Description**	**Pin**	**Signal Description**
1	Analog1	13	Power_Fail_NC
2	Analog ground	14	Power_Fail_COM
3	Analog2	15	Power_Fail_NO
4	Analog ground	16	TTL_Input1
5	Analog3	17	TTL_Input2
6	Analog ground	18	TTL_Input3
7	Analog4	19	TTL_Input4
8	Analog ground	20	Digital ground
9	Analog5	21	TTL_Input5
10	Analog ground	22	TTL_Input5
11	Analog6	23	TTL_Input7 (Hydrator, Brown #7)
12	Analog ground	24	Digital ground (Hydrator, Black)

Digital Out, D/O Terminal Board Pin Descriptions			
Pin	**Signal Description**	**Pin**	**Signal Description**
1	Relay1-ContactA	13	Relay7-ContactA
2	Relay1-ContactB	14	Relay7-ContactB
3	Relay2-ContactA	15	Relay8-ContactA
4	Relay2-ContactB	16	Relay8-ContactB
5	Relay3-ContactA	17	Relay9-ContactA
6	Relay3-ContactB	18	Relay9-ContactB
7	Relay4-ContactA	19	Relay10-ContactA
8	Relay4-ContactB	20	Relay10-ContactB
9	Relay5-ContactA	21	Solenoid_Drive_Output1
10	Relay5-ContactB	22	+24V (Hydrator, Red)
11	Relay6-ContactA (Hydrator, Orange, #6)	23	Solenoid_Drive_Output2
12	Relay6-ContactB	24	+24V



Red Jumper (Hydrator)

FIG.5 INSTRUMENT COMMUNICATION

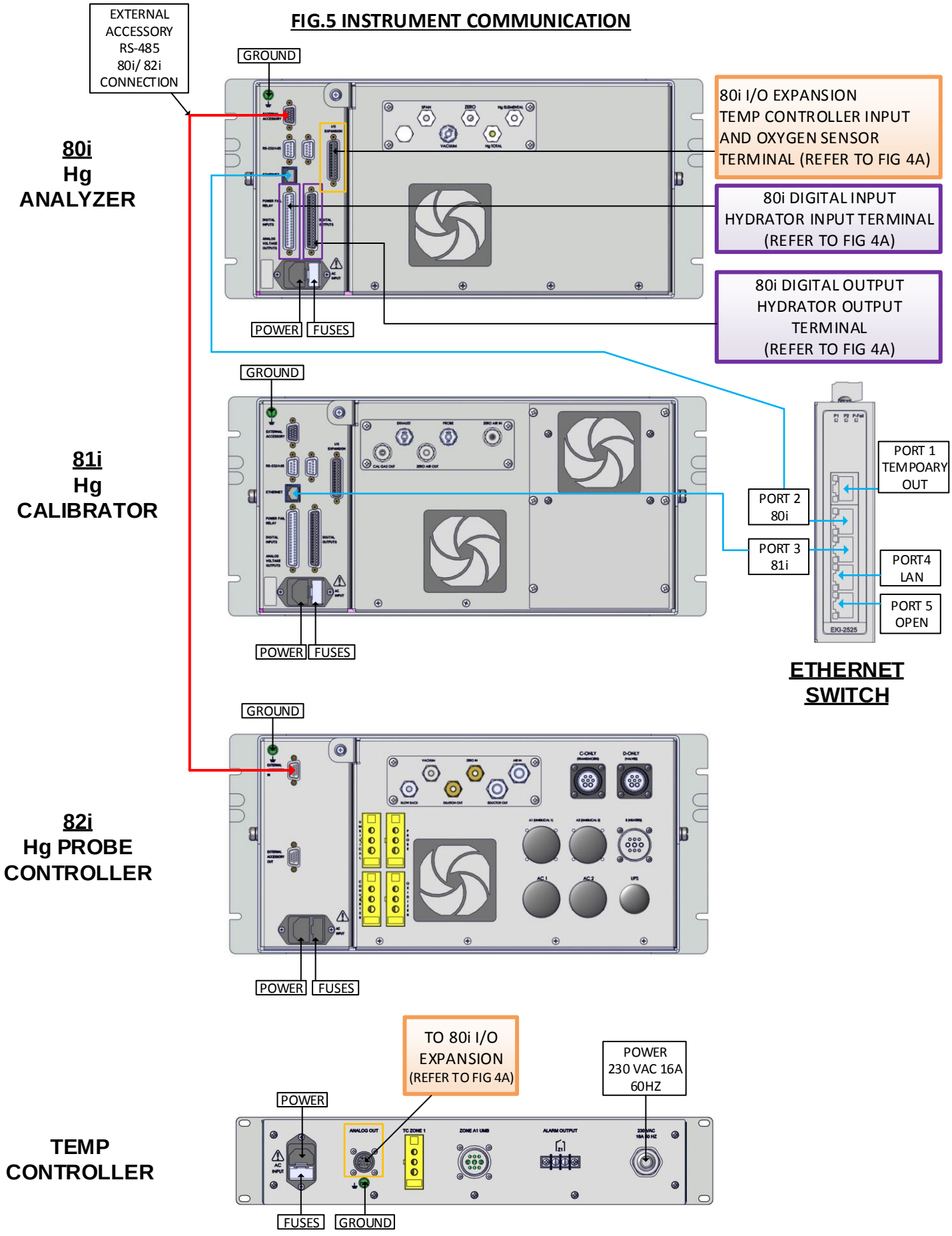


FIG.6 RACK PLUMBING

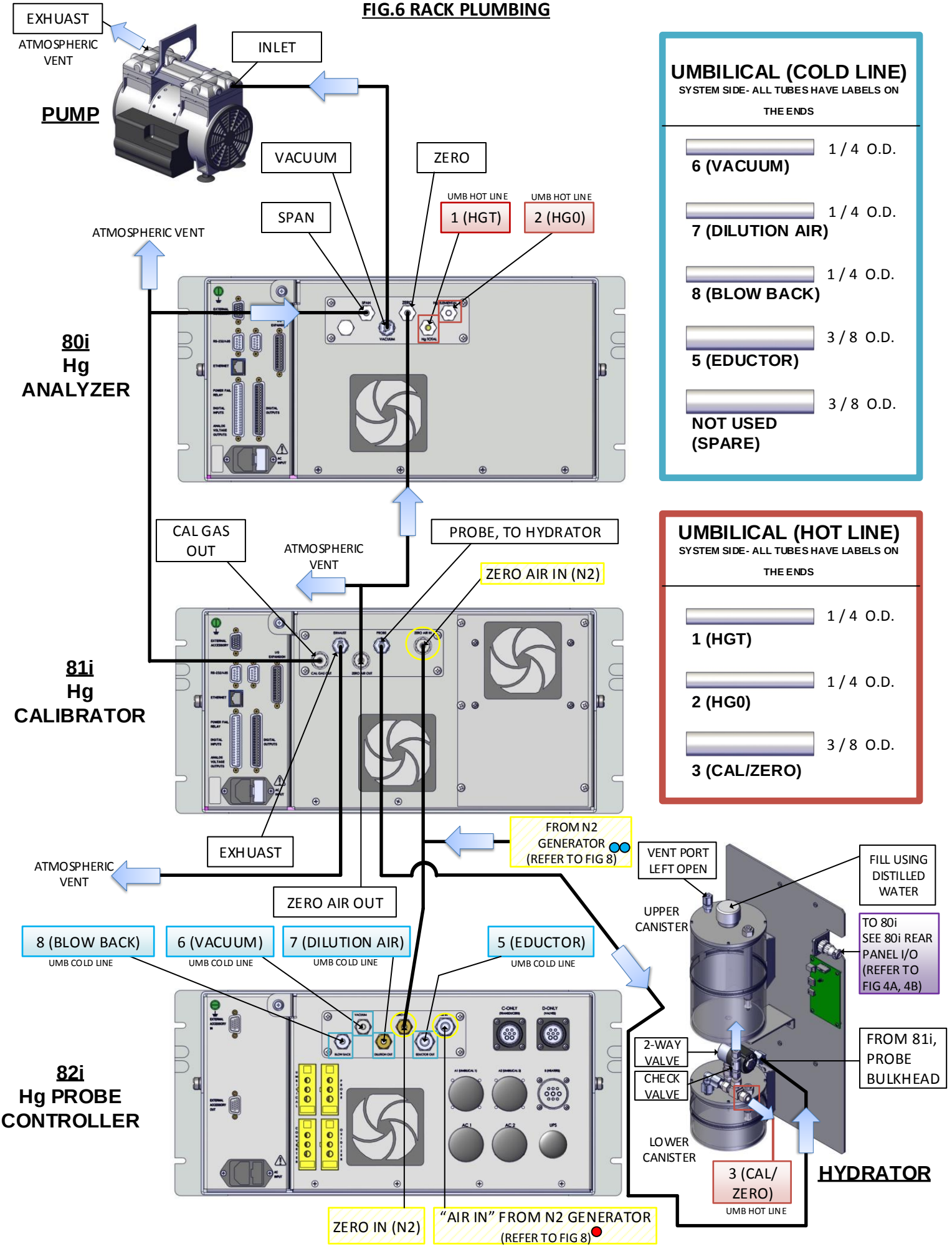


FIG.7 83i PROBE PLUMBING

UMBILICAL (COLD LINE)

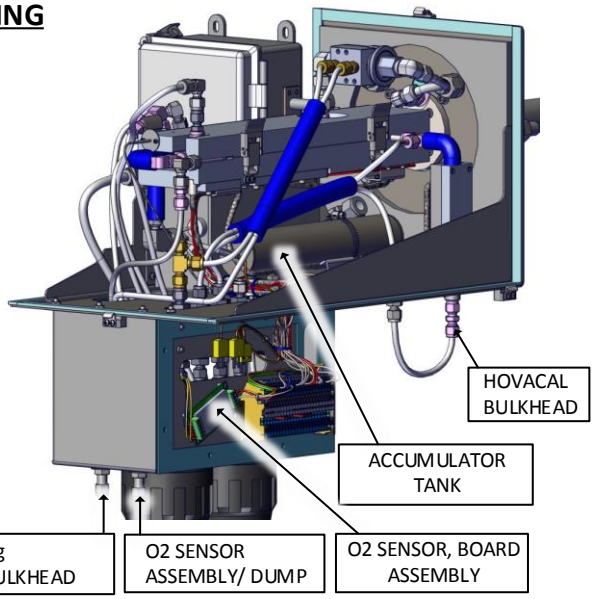
PROBE SIDE- ALL TUBES HAVE LABELS ON THE ENDS

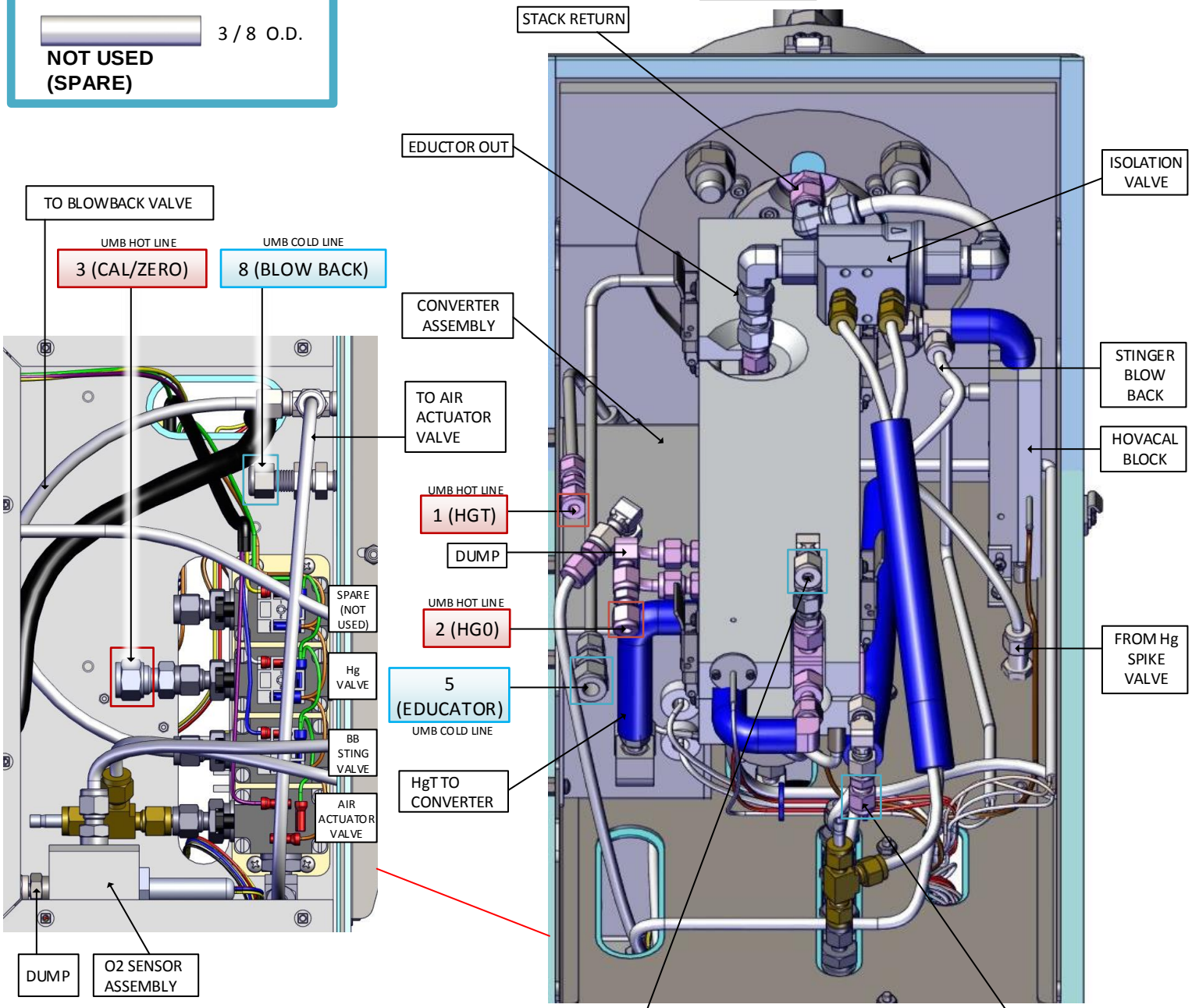
- 1 / 4 O.D. — **6 (VACUUM)**
- 1 / 4 O.D. — **7 (DILUTION AIR)**
- 1 / 4 O.D. — **8 (BLOW BACK)**
- 3 / 8 O.D. — **5 (EDUCTOR)**
- 3 / 8 O.D. — **NOT USED (SPARE)**

UMBILICAL (HOT LINE)

PROBE SIDE- ALL TUBES HAVE LABELS ON THE ENDS

- 1 / 4 O.D. — **1 (HGT)**
- 1 / 4 O.D. — **2 (HG0)**
- 3 / 8 O.D. — **3 (CAL/ZERO)**





85 PROBE
(LEFT VIEW)

85 PROBE
(TOP VIEW)

FIG.8 NITROGEN GENERATOR DETAIL

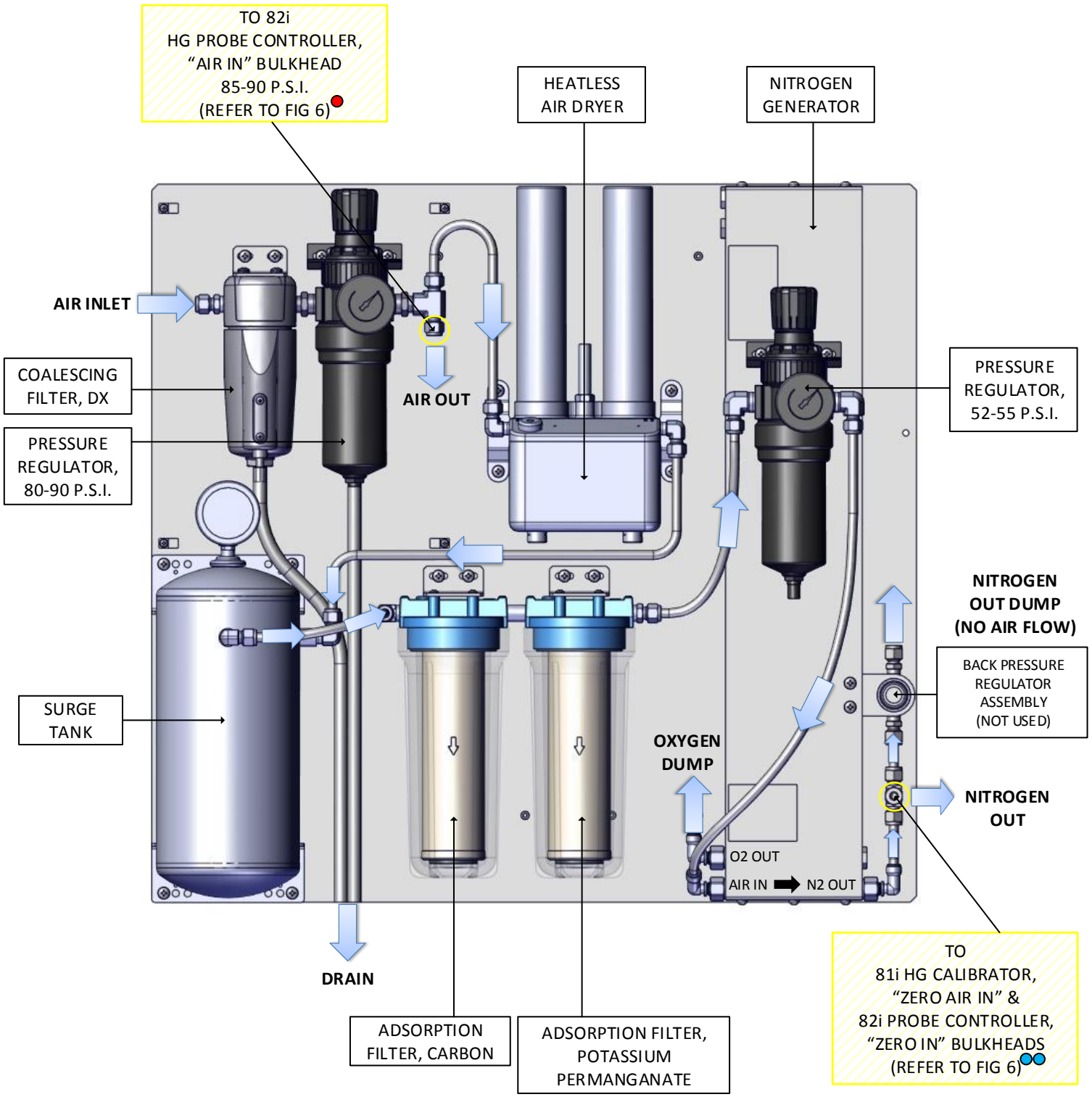


FIG.9 SYSTEM PLUMBING DIAGRAM WITH HOVACAL ATTACHMENT

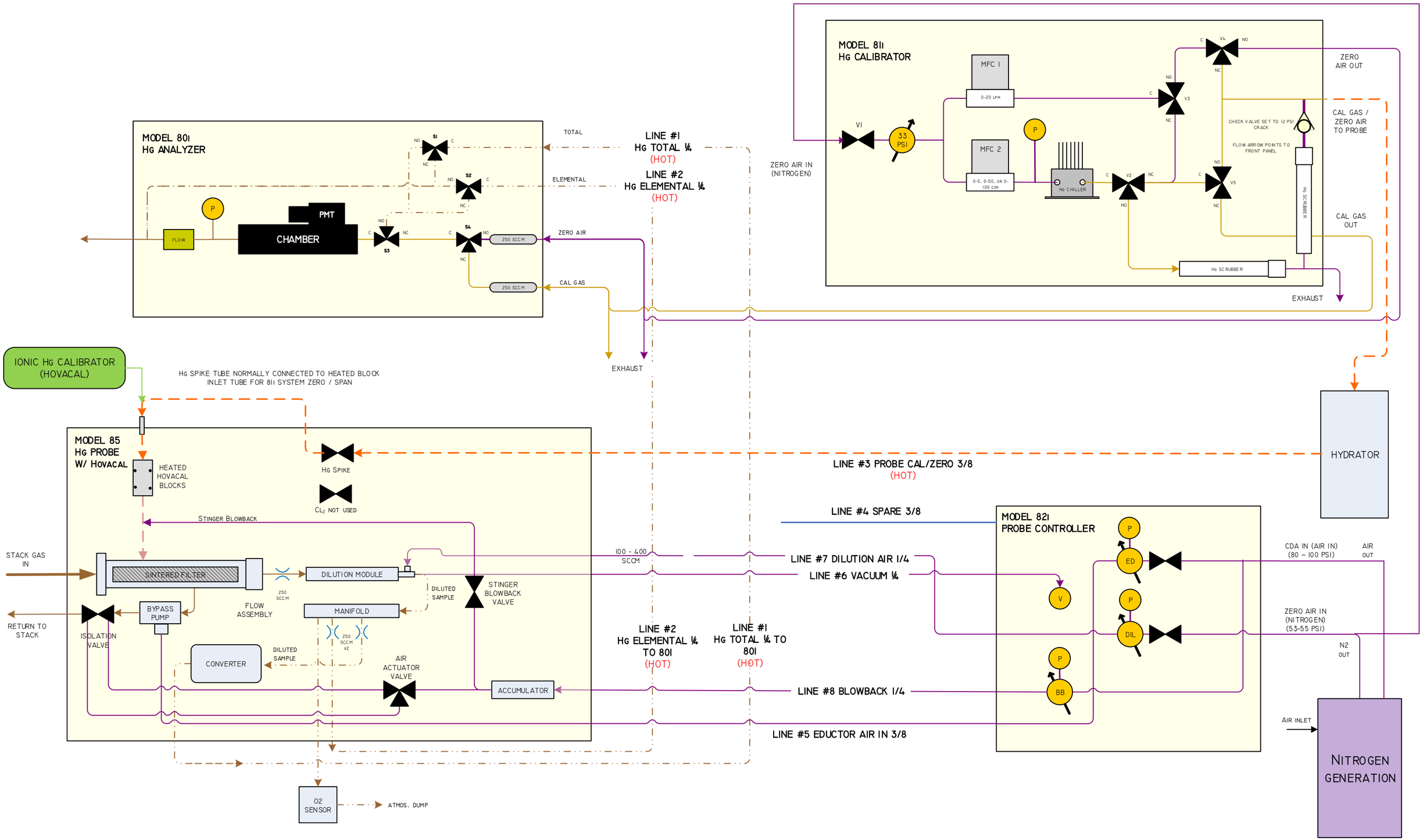


FIG.10 SYSTEM CALL OUTS

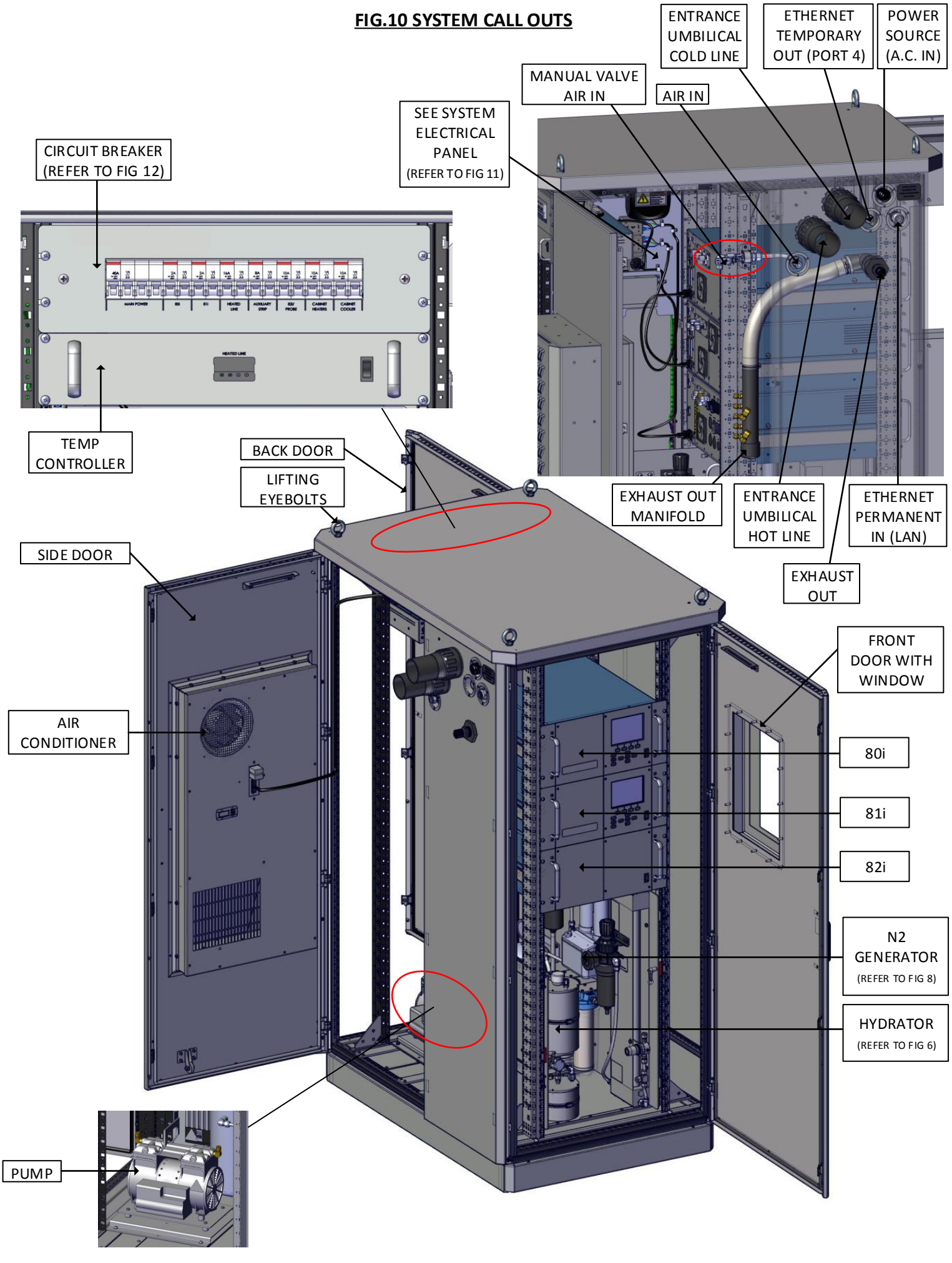


FIG.11 SYSTEM ELECTRICAL PANEL

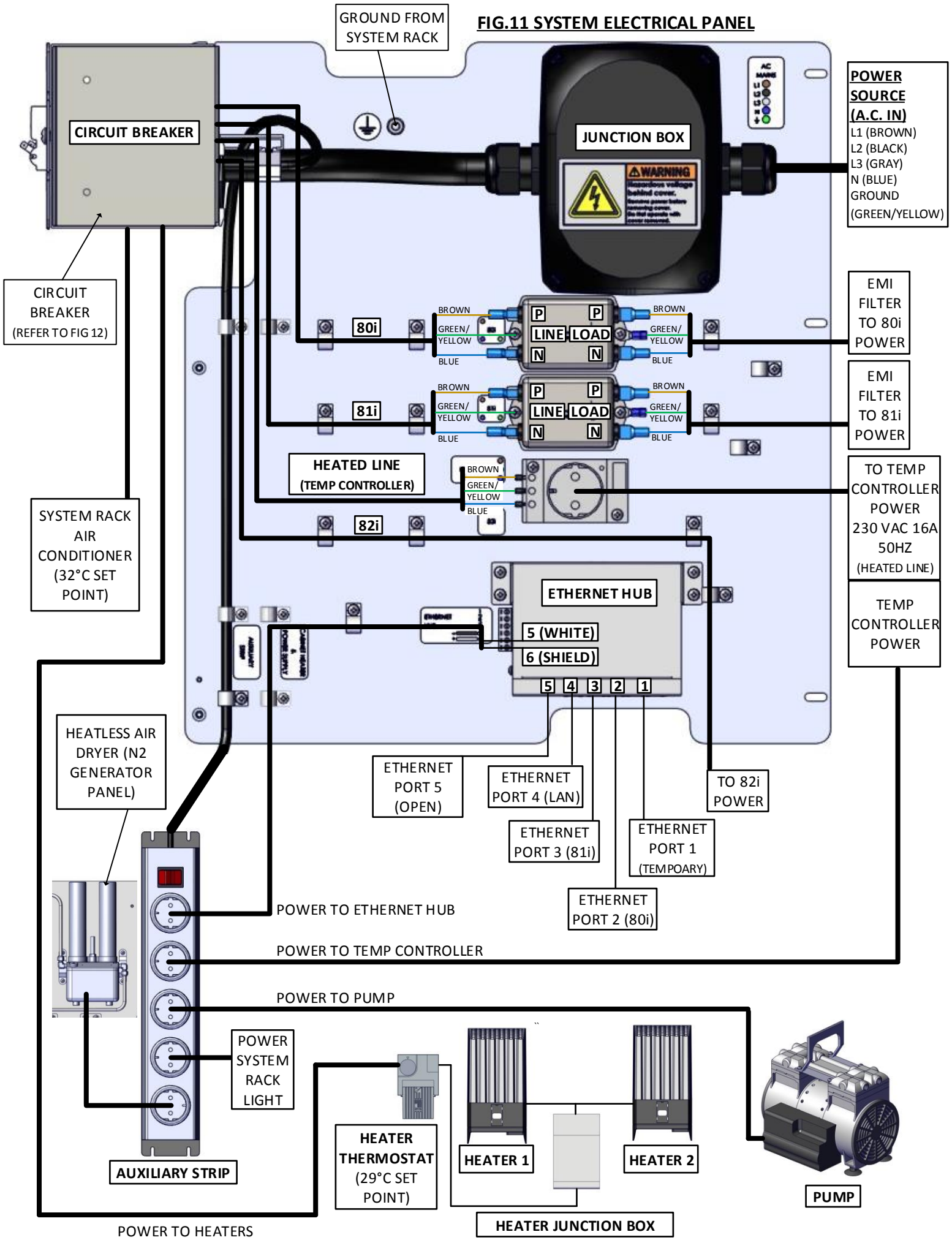
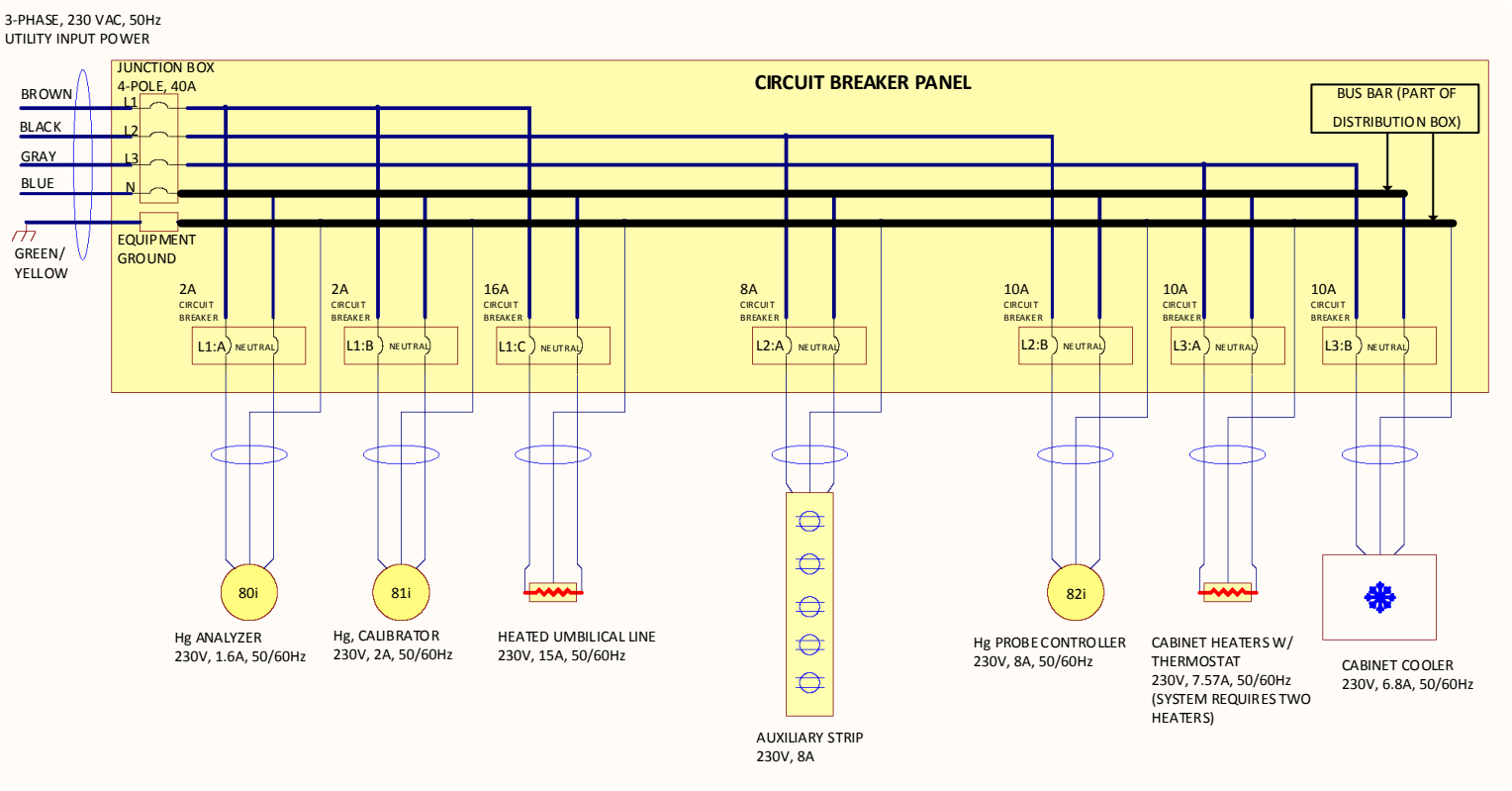
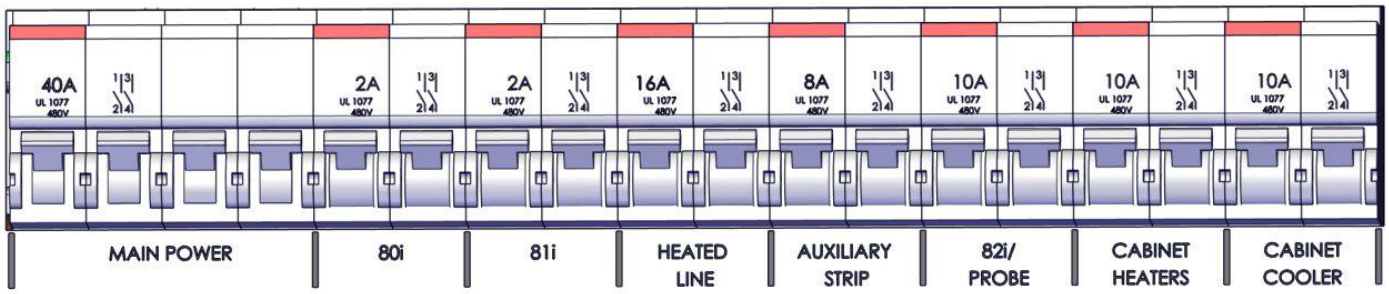


FIG.12 SYSTEM CIRCUIT BREAKER DETAIL

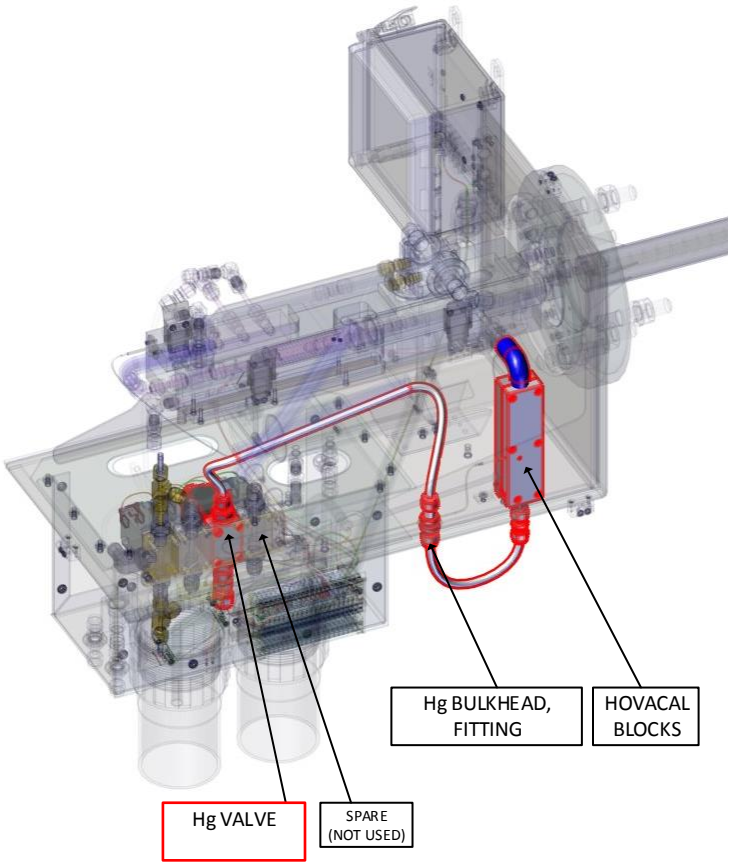


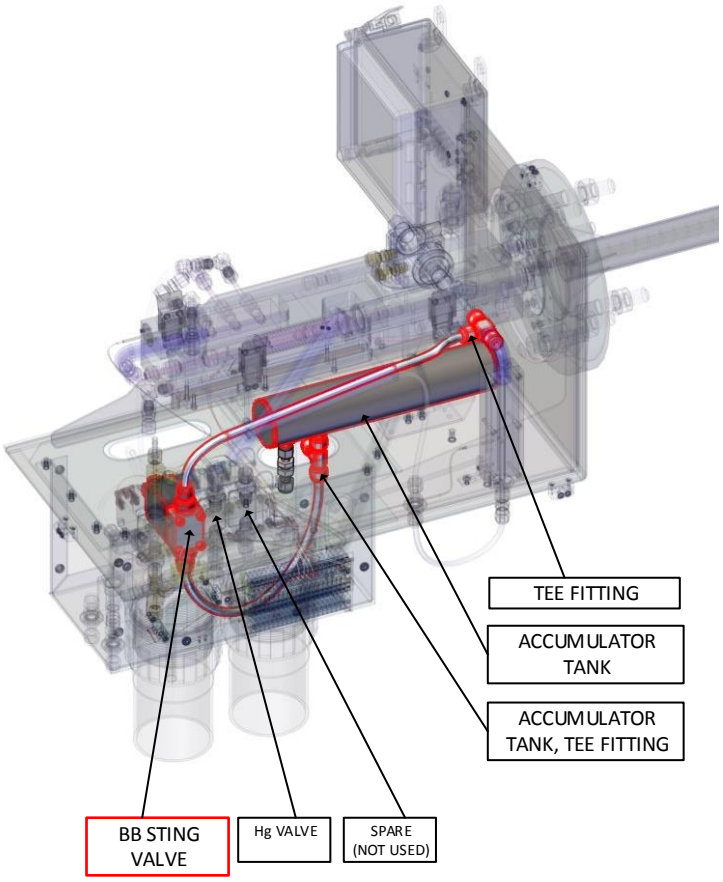


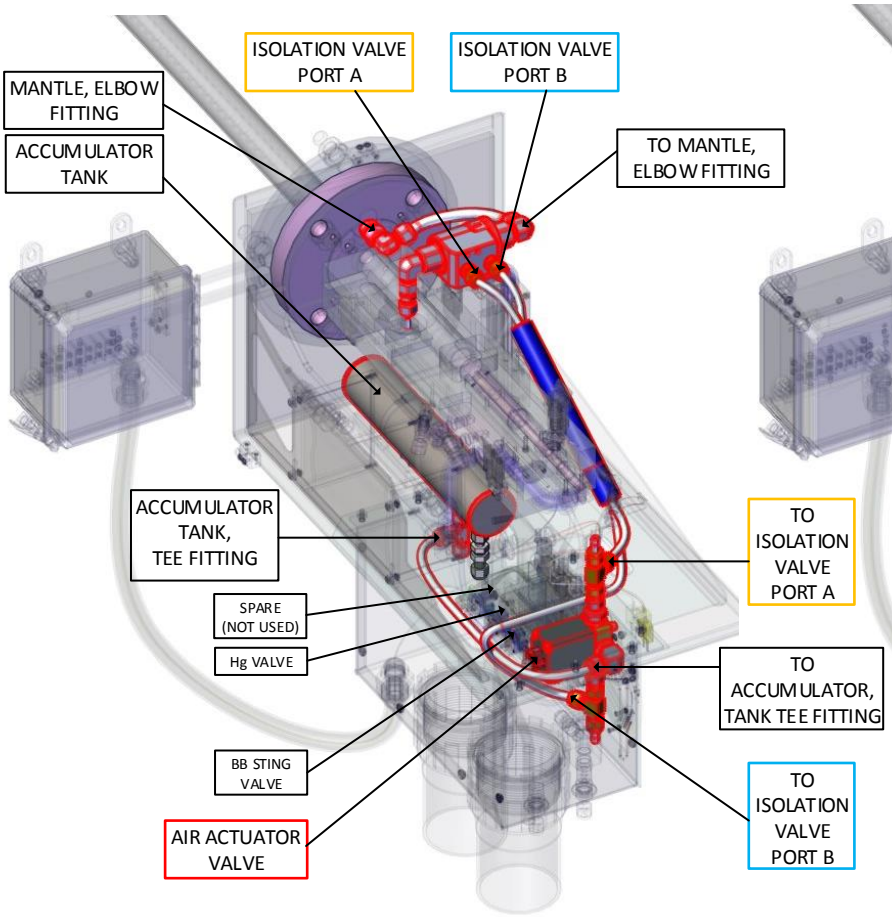
CIRCUIT BREAKER PANEL

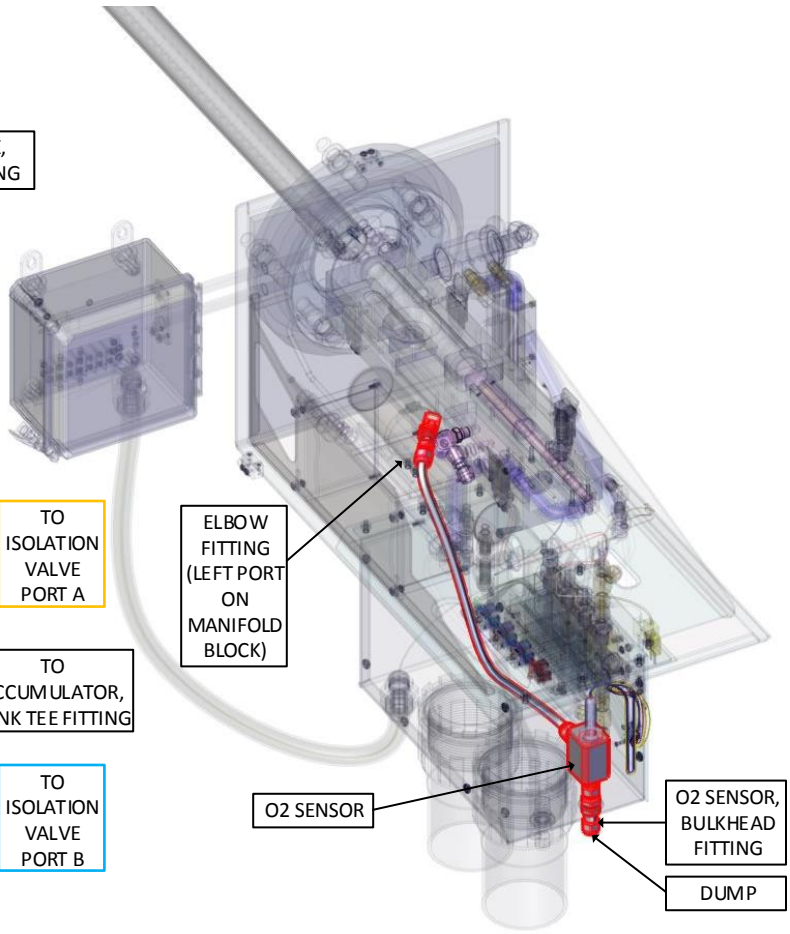
FRONT VIEW

FIG.13 85 INTERNALPROBE PLUMBING









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