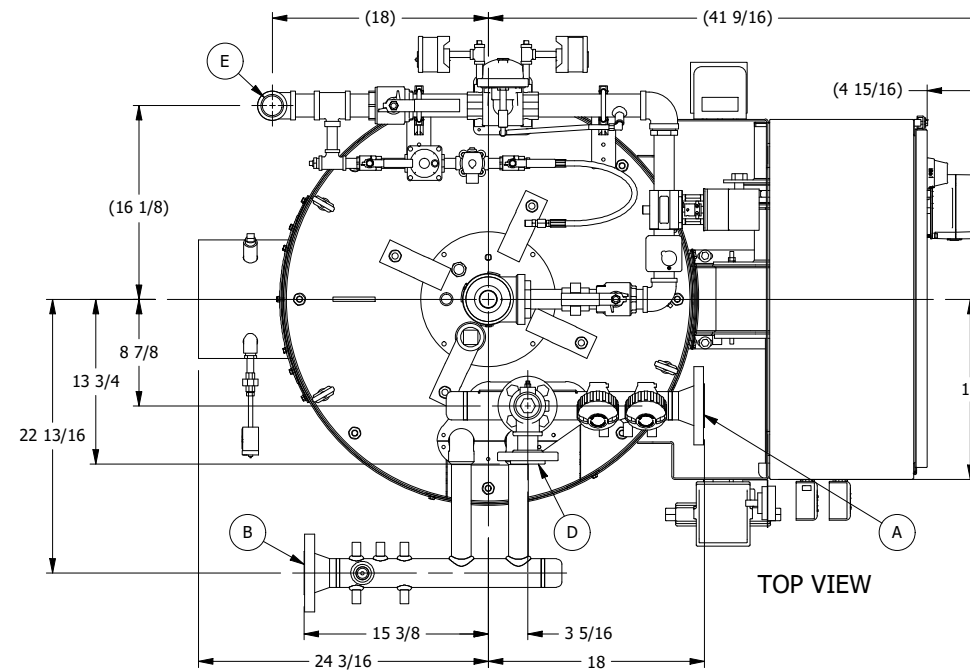


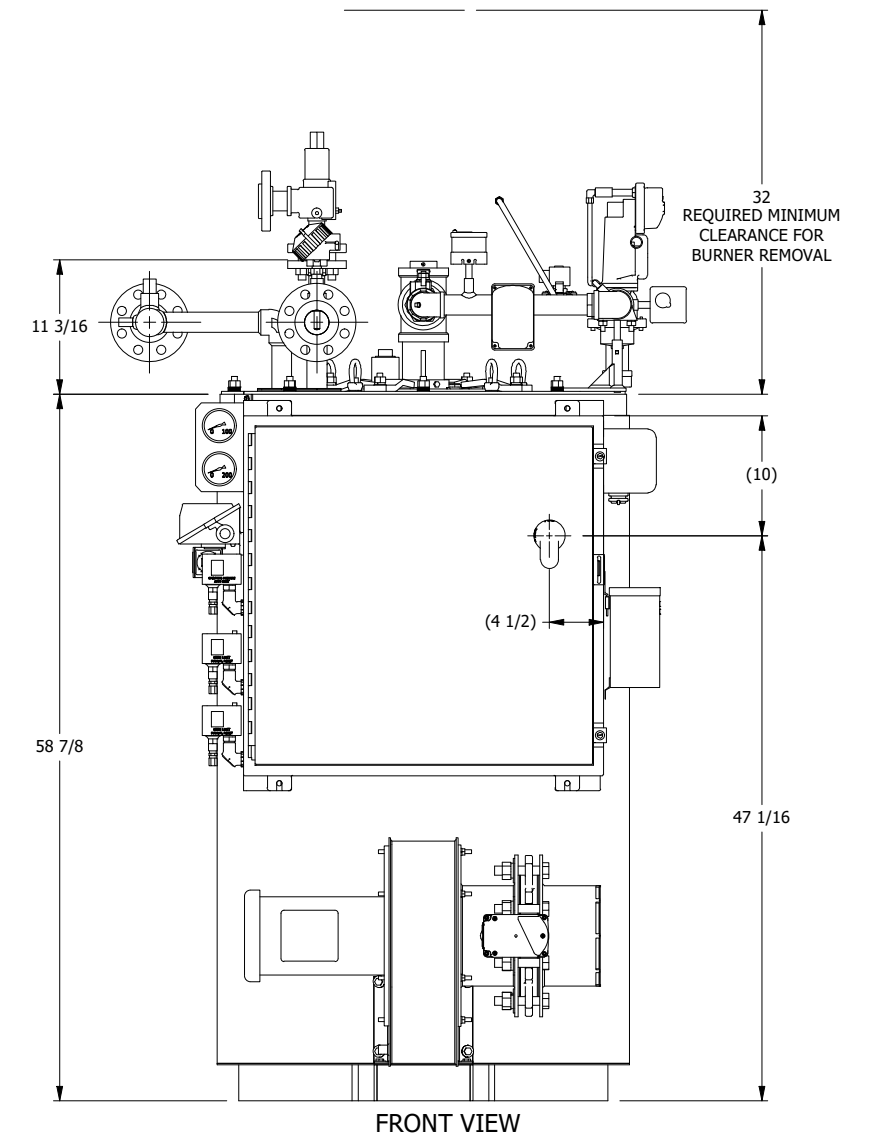
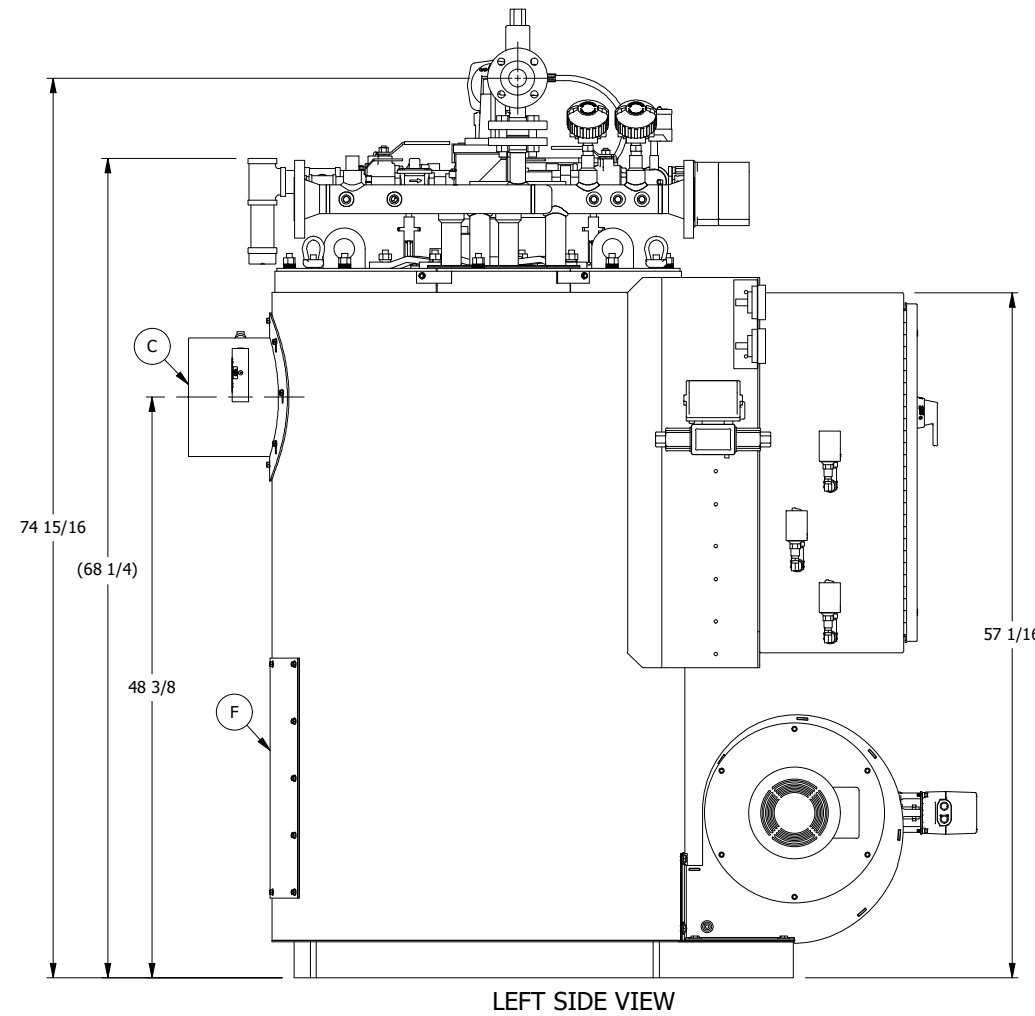
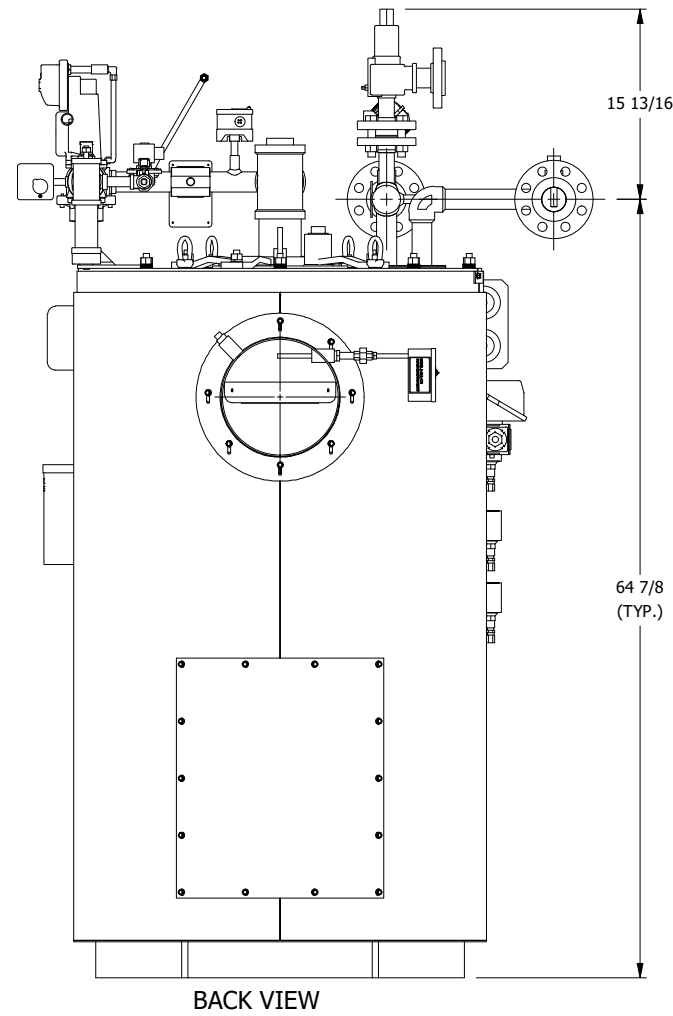


**Thermal Oil Heater 1.6 MMBTU
Asset 2085**



CUSTOMER CONNECTIONS			
ITEM	DESCRIPTION	SIZE	TYPE
A	THERMAL FLUID SUPPLY	2"	CL300
B	THERMAL FLUID RETURN	2"	CL300
C	EXHAUST FLUE (SEE NOTE 2)	10"	---
D	SAFETY RELIEF VALVE	1 1/2"	CL150
E	GAS INLET	1 1/2"	N.P.T.
F	INSPECTION OPENING	---	---

- NOTES:
 1. PORTIONS OF THE PIPING AND COMPONENTS MAY BE DISASSEMBLED FOR SHIPPING.
 2. EXHAUST FLUE CONNECTION, 12" RECOMMENDED VERTICAL STACK DIAMETER.



REV	REVISION DESCRIPTION	SHOP	ELEC. ENG	MECH. ENG	CHECKED	APPROVED
-	- INITIAL RELEASE -	-	-	-	-	-
REVISION HISTORY						

UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTION & WHOLE VALUE ± 1/8
 (1) PLACE DEC. ± 0.03
 (2) PLACE DEC. ± 0.015
 (3) PLACE DEC. ± 0.005
 ANGLE ± 0.5 DEG
 SURFACE FINISH 250 MICRO-INCHES

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THIRD ANGLE PROJECTION

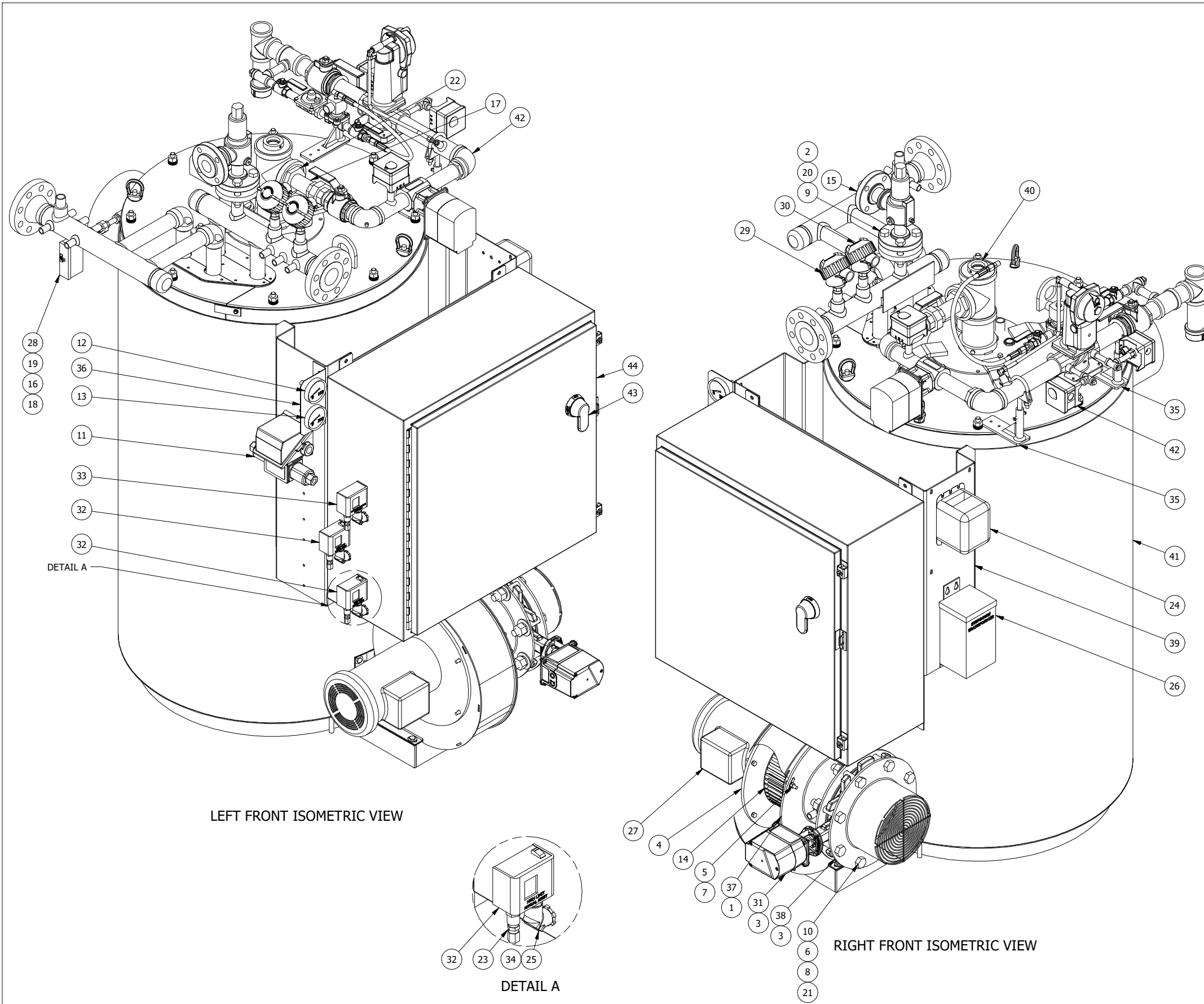
DRAWN BY: D. HARRINGTON 8/21/2023
 CHECKED BY: N/A
 B.O.M. REVIEW: N/A

MECHANICAL REVIEW: N/A
 ELECTRICAL REVIEW: LNL 8/21/2023
 APPROVED BY: GW 8/22/2023

JOB NUMBER: 569883
 PROJECT NAME: THERMOGENICS (MONTANA)
 PROJECT MANAGER: G. WILSON

DESCRIPTION: FT-0160-CU THERMAL FLUID GAS HEATER (CSD-1, NEMA 1)

DRAWING NUMBER: T91-8572
 SHEET 1 OF 2
 REVISION: -



MANUFACTURING B. O. M.					
ITEM	PART NUMBER	REV	DESCRIPTION	QTY	U.O.M.
1	2-12-00049		1" THERMAL BAR WT-65-1 SIL-TEMP TAPE	3.305	FT.
2	2-12-000405		1" 300# ELASTAGRAPH RING GASKET	1	EA.
3	2-12-000422		8" 150# ELASTAGRAPH RING GASKET	2	EA.
4	2-21-000110	A	FT-0120/0160/0240-C BLOWER MOTOR MOUNTING PLATE	1	EA.
5	2-22-000002	-	5/16-18 HEX NUT, GR. 5	6	EA.
6	2-22-000043		3/4" FLAT WASHER	8	EA.
7	2-22-000046		5/16" MEDIUM LOCK WASHER	6	EA.
8	2-22-000068		3/4" MEDIUM LOCK WASHER	8	EA.
9	2-22-000240	-	5/8-11 X 3" HHCS, ASME SA193 GR. B7 BOLT	4	EA.
10	2-22-000245		3/4-10 X 4" HHCS, ASME SA193 GR. B7 BOLT	8	EA.
11	2-30-000454		DP SWITCH 180 PSI MAWP, 10-100 PSID	1	EA.
12	2-30-000529		0-100 PSI PANEL MOUNT GAUGE	1	EA.
13	2-30-000530		0-200 PSI PANEL MOUNT GAUGE	1	EA.
14	2-30-000561		9 3/16" x 3" x 1 1/8" FAN WHEEL COUNTER CLOCKWISE ROTATION WITH 1/4" X 1/8" KEYWAY	1	EA.
15	2-30-008610		1" 300# INLET X 1 1/2" 150# OUTLET SECTION VIII FLANGED SAFETY RELIEF VALVE	1	EA.
16	2-35-000097		1/4" X 2" - NPT SCH 40 NIPPLE	1	EA.
17	2-35-000142		1 1/4" X 4" - NPT SCH 40 NIPPLE	1	EA.
18	2-35-000262		1/2" X 1/4" 150# BUSHING	1	EA.
19	2-35-000281		1/4" 150# CARBON STEEL UNION	1	EA.
20	2-35-000345		5/8-11 HEX NUT, ASTM A194 GR.2H	4	EA.
21	2-35-000346		3/4-10 HEX NUT, SA194 GR.2H	8	EA.
22	2-35-000497		3" X 1 1/4" 150# BUSHING	1	EA.
23	2-35-880037	-	1/4" N.P.T. X 1/4" COMPRESSION STAINLESS STEEL FITTING	3	EA.
24	2-40-000082		SINGLE POLE IGNITION TRANSFORMER 6KVA 120/60	1	EA.
25	2-40-000310		1/2" PULL ELBOW	3	EA.
26	2-40-000441		STEPDOWN TRANSFORMER	1	EA.
27	2-40-000599		MOTOR 3HP 3450 RPM TEFC 208/230/460/603PH C-FACE LESS BASE	1	EA.
28	2-40-000688		BURLING NEMA 1 1000°F STACK TEMPERATURE LIMIT WITH MANUAL RESET	1	EA.
29	2-40-000805		TYPE J THERMOCOUPLE SPRING LOADED WITH 1/4 SHEATH, 4" GROUNDED	1	EA.
30	2-40-000973		MID RANGE TEMPERATURE SPRING LOADED RTD WITH HEAD AND 4" STEM	1	EA.
31	2-40-001300	-	VA45.2-8.0VKF10 8" BUTTERFLY WITH SQM45 SERVO	1	EA.
32	2-40-003040		PRESSURE SWITCH WITH MANUAL RESET 15-150 PSI	2	EA.
33	2-40-003043		PRESSURE SWITCH WITH AUTO RESET 15-150 PSI	1	EA.
34	2-45-000337		1/2" RIGID CLOSE NIPPLE	3	EA.
35	5-10-003950	B	UPPER SUPPORT BRACKET FOR 1 1/2" GAS TRAIN W/ 6" EXTENSION	2	EA.
36	5-21-000273	C	TWO GAUGE MOUNTING BRACKET	1	EA.
37	5-21-006531	A	FT-0120 THRU 0240-C/ 0400-C/ 0600-C 8" AIR BUTTERFLY TO BLOWER HOUSING TRANSITION	1	EA.
38	5-21-006532	B	8" AIR BUTTERFLY FINGER GUARD ASSEMBLY	1	EA.
39	5-21-006618-70	-	FT-0120/0160-C PANEL BOX MOUNTING PANEL	1	EA.
40	7-30-004002	B	FT-0160-C NATURAL GAS BURNER ASSEMBLY	1	EA.
41	7-51-U09002		FT-0160-CU CAN AND COIL (SECTION VIII DIV 1)	1	EA.
42	7-54-016006	H	1 1/2" GAS TRAIN FOR FT-0120, FT-0160-C / CSD-1 / NEMA 1 / 120V / MODULATED (1/2 PSI MAX)	1	EA.
43	SEE ELECTRICAL		NEMA 1 & 12 DISCONNECT HANDLE	1	EA.
44	SEE ELECTRICAL		PANEL BOX 30" X 30" X 12" NEMA 4/12	1	EA.

REV	REVISION DESCRIPTION	SHOP	ELEC. ENG	MECH. ENG	CHECKED	APPROVED
REVISION HISTORY						

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES
TOLERANCES
 FRACTION & WHOLE VALUE ± 1/8
 (1) PLACE DEC. ± 0.03
 (2) PLACE DEC. ± 0.015
 (3) PLACE DEC. ± 0.005
 ANGLE ± 0.5 DEG
 SURFACE FINISH 250 MICRO-INCHES

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THIRD ANGLE PROJECTION

DRAWN BY: D. HARRINGTON 8/21/2023
 CHECKED BY: N/A
 B.O.M. REVIEW: N/A

MECHANICAL REVIEW: N/A
 ELECTRICAL REVIEW: LNL 8/21/2023
 APPROVED BY: GW 8/22/2023

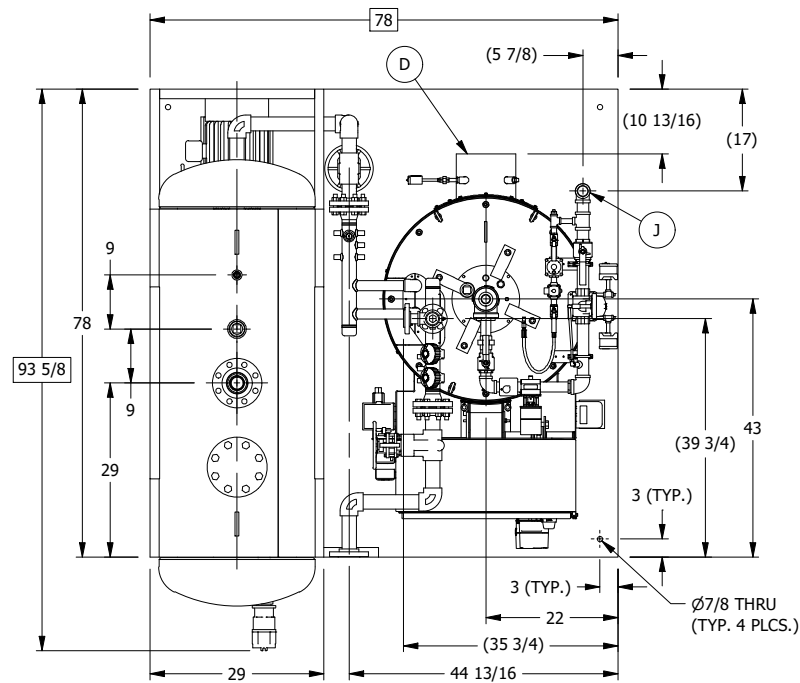
JOB NUMBER: 569883
 PROJECT NAME: THERMOGENICS (MONTANA)
 PROJECT MANAGER: G. WILSON

DESCRIPTION: FT-0160-CU THERMAL FLUID GAS HEATER (CSD-1, NEMA 1)
 SHEET 2 OF 2

DRAWING NUMBER: T91-8572
 REVISION: -

NOTES:

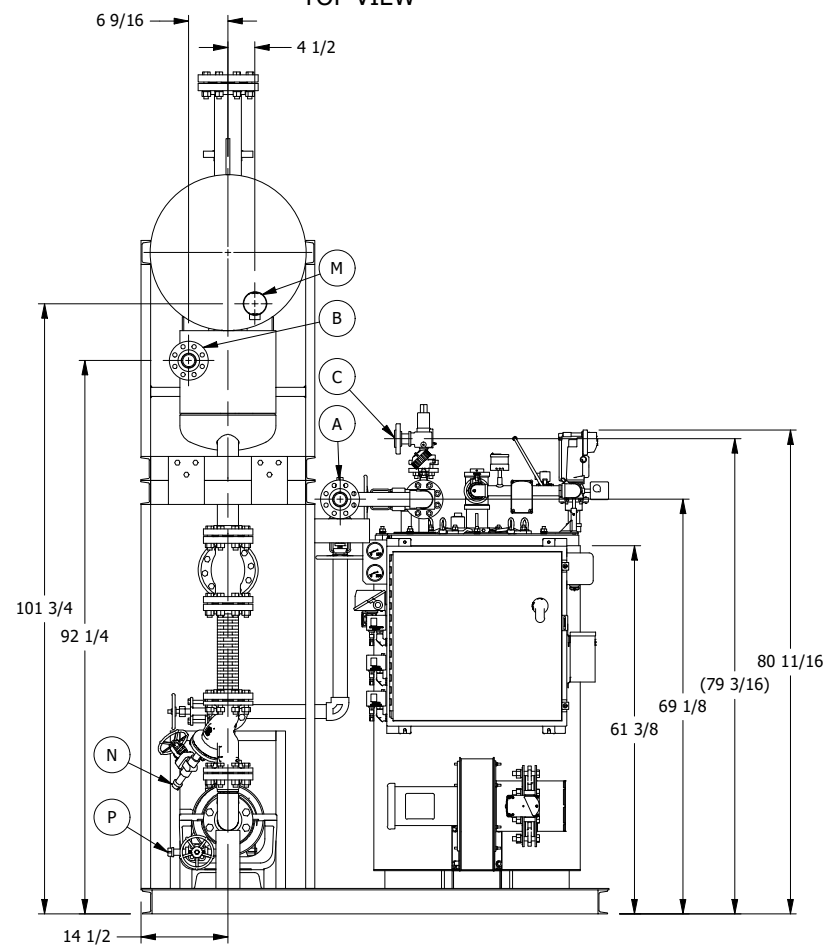
- PORTIONS OF THE PIPING AND COMPONENTS WILL BE DISASSEMBLED FOR SHIPPING
- D.A. TANK IS SHIPPED SEPARATELY.
- FORK HOLES ARE LOCATED ON RIGHT SIDE OF SKIDS.
- THE SUPPORT STRUCTURE MAY BE CROSS BRACED OR OTHERWISE ENHANCED BEYOND WHAT IS SHOWN, AS REQUIRED.
- LOCAL CODE OR SEISMIC RESTRAINT MAY REQUIRE ADDITIONAL FIELD SUPPORTS. THESE SUPPORTS ARE TO BE ADDED IN THE FIELD BY OTHERS.
- PLEASE REFER TO THE O&M MANUAL FOR ADDITIONAL INFORMATION REGARDING CLEARANCES AND INSTALLATION INSTRUCTIONS.
- RECOMMENDED VERTICAL STACK DIAMETER IS 12".
- (X) DENOTES FLANGE CONNECTION NUMBER. WHEN REASSEMBLING PIPING, MAKE SURE THE FLANGE CONNECTION NUMBERS ON BOTH MATING FLANGES ARE ADJACENT TO ONE ANOTHER.
- ALL DIMENSIONS INSIDE () DENOTE REFERENCE DIMENSIONS.
- ALL DIMENSIONS INSIDE □ DENOTE OVERALL DIMENSIONS.



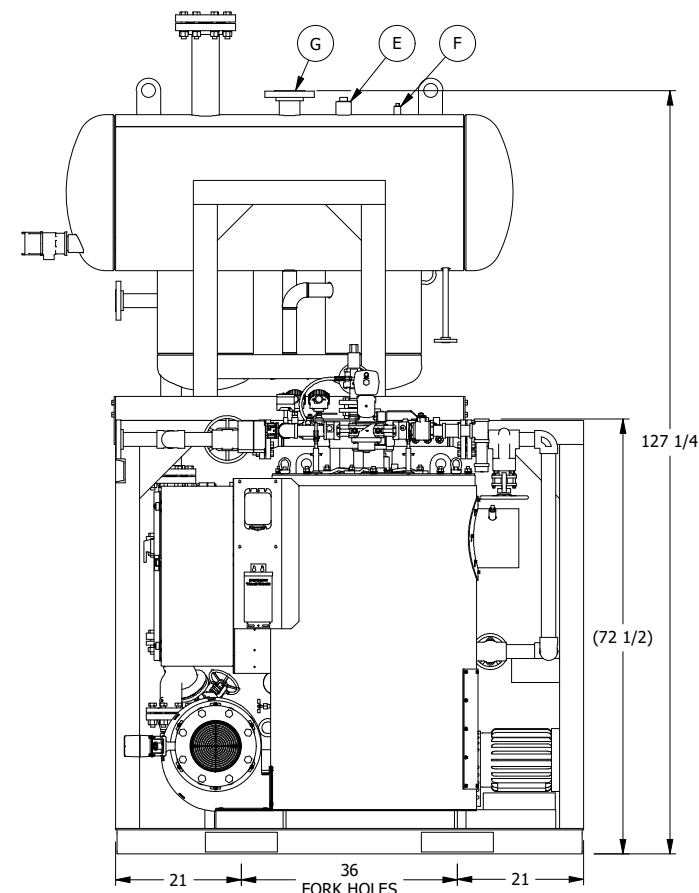
CONNECTIONS			
ITEM	DESCRIPTION	SIZE	TYPE
A	THERMAL FLUID OUTLET (SUPPLY)	2"	CL300
B	THERMAL FLUID INLET (RETURN)	2"	CL300
C	HEATER SAFETY RELIEF VALVE	1 1/2"	CL150
D	HEATER FLUE OUTLET (SEE NOTE 7)	10"	- - -
E	DA SAFETY RELIEF VALVE (PLUGGED)	1 1/2"	N.P.T.
F	NITROGEN BLANKET (PLUGGED)	1/2"	N.P.T.
G	DA TANK VENT	3"	CL300
H	DA TANK DRAIN	1"	CL300
J	GAS INLET	1 1/2"	N.P.T.
K	HIGH LEVEL CHECK PIPE	1/2"	CL300
L	LOW LEVEL CHECK PIPE	1/2"	CL300
M	LIQUID LEVEL SWITCH	2"	N.P.T.
N	STRAINER DRAIN (CAPPED)	3/4"	N.P.T.
P	DRAIN AND FILL (CAPPED)	3/4"	N.P.T.

EQUIPMENT SPECIFICATION CHART	
ESTIMATED SHIPPING WEIGHT:	5,834 LBS.
ESTIMATED THERMAL FLUID CONTENT:	83 GALLONS

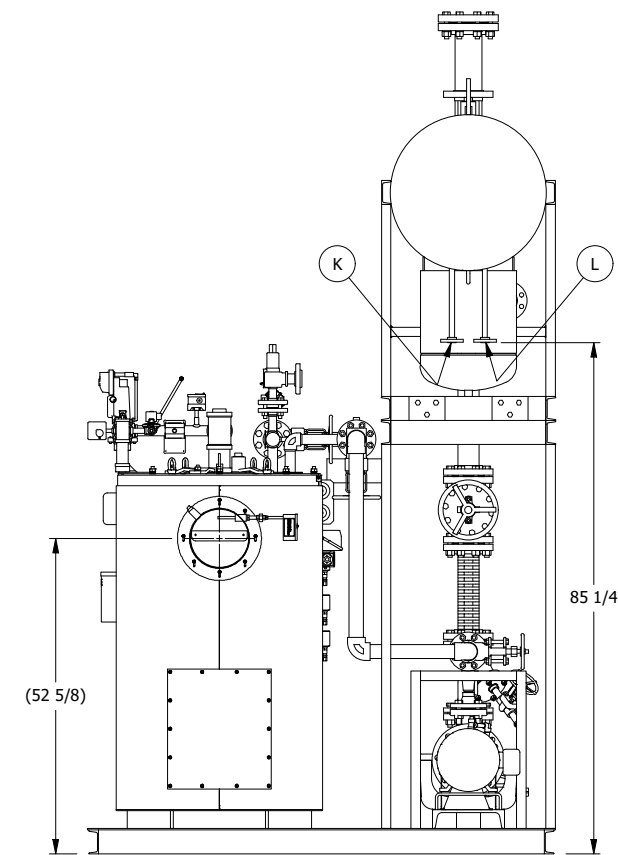
TOP VIEW



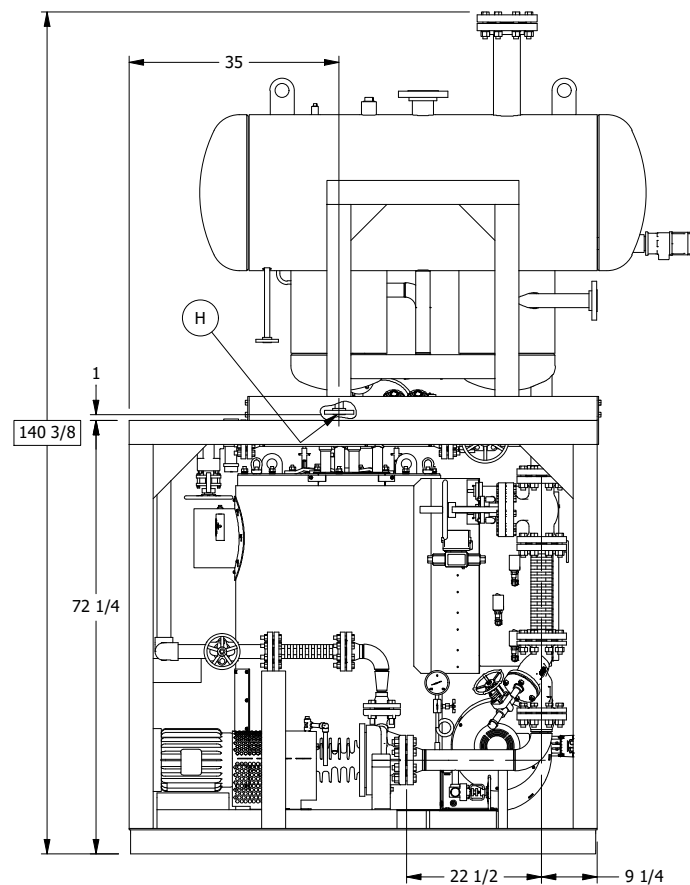
FRONT VIEW



RIGHT SIDE VIEW



BACK VIEW



LEFT SIDE VIEW

REV	REVISION DESCRIPTION	B.O.M.	ELEC. ENG	MECH. ENG	CHECKED	APPROVED
-	- INITIAL RELEASE -	-	-	-	-	-
REVISION HISTORY						

UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN INCHES. TOLERANCES: FRACTION & WHOLE VALUE ± 1/8 (1) PLACE DEC. ± 0.03 (2) PLACE DEC. ± 0.015 (3) PLACE DEC. ± 0.005 ANGLE ± 0.5 DEG SURFACE FINISH 250 MICRO-INCHES

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THIRD ANGLE PROJECTION

DRAWN BY: D. HARRINGTON 8/21/2023
 CHECKED BY: N/A
 B.O.M. REVIEW: N/A

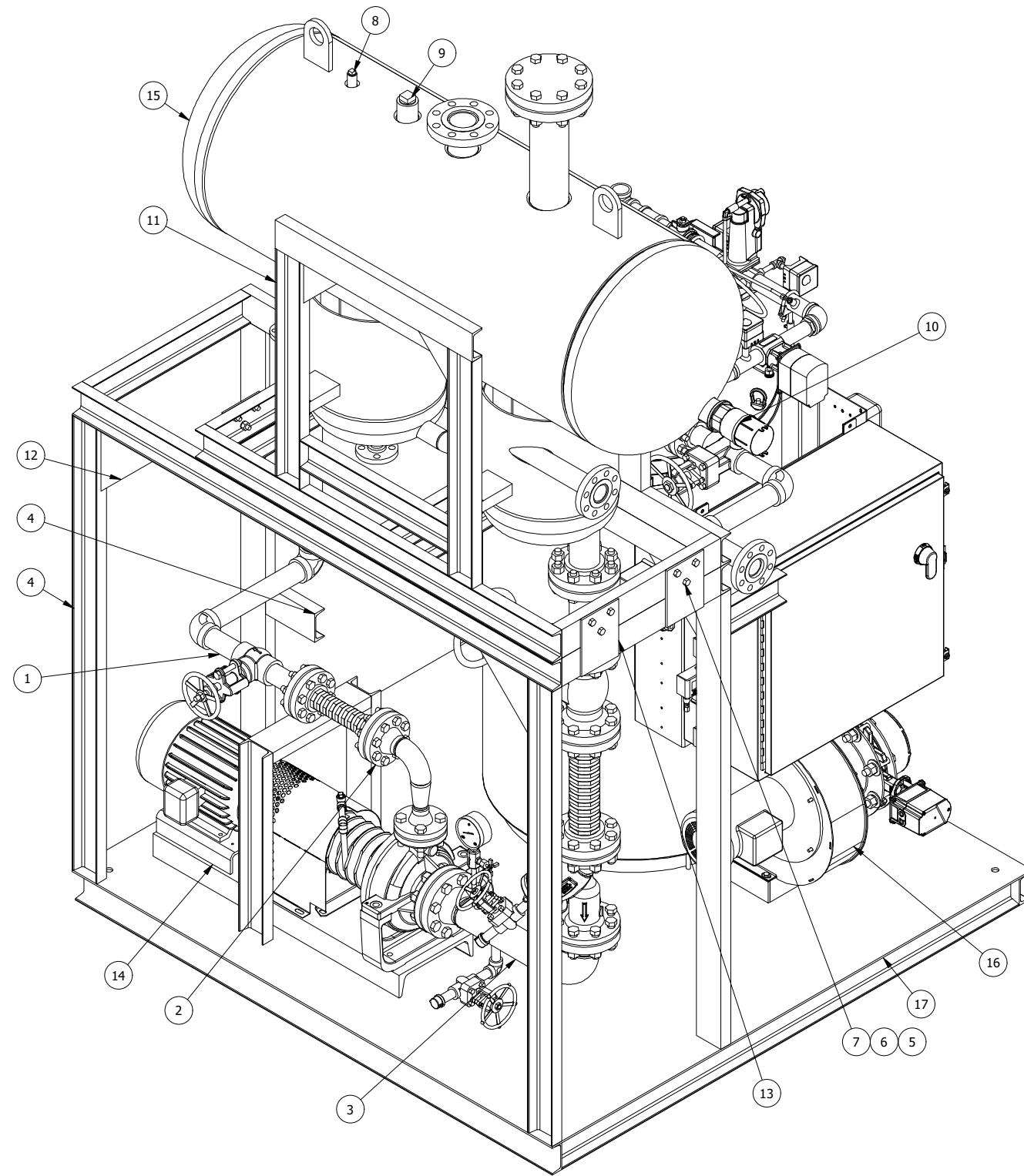
MECHANICAL REVIEW: N/A
 ELECTRICAL REVIEW: LNL 8/21/2023
 APPROVED BY: GW 8/22/2023

JOB NUMBER: 569883
 PROJECT NAME: THERMOGENICS (MONTANA)
 PROJECT MANAGER: G. WILSON

DESCRIPTION: FT-0160-CU HEATER WITH FT-0500-L DA TANK, DEANS 1.5X3X8.5 PUMP, 10 HP MOTOR, 3" SUCTION/2" DISCHARGE

DRAWING NUMBER: T99-8523
 REVISION: -

SHEET 1 OF 7



ISOMETRIC VIEW

BILL OF MATERIAL					
ITEM	PART NUMBER	REV	DESCRIPTION	QTY	U.O.M.
1	0-HP-ASSY01		HEATER PIPING ASSEMBLY	1	EA.
2	0-PD-ASSY01		PUMP DISCHARGE PIPING ASSEMBLY	1	EA.
3	0-PS-ASSY01		PUMP SUCTION PIPING ASSEMBLY	1	EA.
4	2-10-000101		4" X 5.4# CHANNEL A36	50.995	FT.
5	2-22-000058		1/2-13 HEX NUT, GR. 2H	12	EA.
6	2-22-000059		1/2" MEDIUM LOCK WASHER	12	EA.
7	2-22-000100		1/2-13 X 1 1/2" HHCS, SAE GR. 5 BOLT	12	EA.
8	2-35-000307		1/2" 3000# PLUG	1	EA.
9	2-35-000311		1 1/2" 3000# PLUG	1	EA.
10	2-40-000733		2" SOR LIQUID LEVEL SWITCH	1	EA.
11	5-10-000461	B	FT-0500-L DEAERATOR TANK STANDARD SUPPORT FRAME	1	EA.
12	5-10-004702	-	9" GUSSET (1/4" HR PLATE)	4	EA.
13	5-10-004703		TANK FRAME BRACKET	4	EA.
14	7-30-002002		DEAN 1 1/2 x 3 x 8 1/2 PUMP WITH 10 HP TEFC MOTOR	1	EA.
15	7-51-000002	K	FT-0500-L DA TANK	1	EA.
16	T91-8572		FT-0160-CU THERMAL FLUID GAS HEATER (CSD-1, NEMA 1)	1	EA.
17	WORK ORDER		78" X 78" SKID ASSEMBLY	1	EA.

-	- INITIAL RELEASE -	-	-	-	-	
REV	REVISION DESCRIPTION	B.O.M.	ELEC. ENG	MECH. ENG	CHECKED	APPROVED
REVISION HISTORY						

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 TOLERANCES:
 FRACTION & WHOLE VALUE ± 1/8
 (1) PLACE DEC. ± 0.03
 (2) PLACE DEC. ± 0.015
 (3) PLACE DEC. ± 0.005
 ANGLE ± 0.5 DEG
 SURFACE FINISH 250 MICRO-INCHES

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THIRD ANGLE PROJECTION

DRAWN BY: D. HARRINGTON 8/21/2023
 CHECKED BY: N/A
 B.O.M. REVIEW: N/A

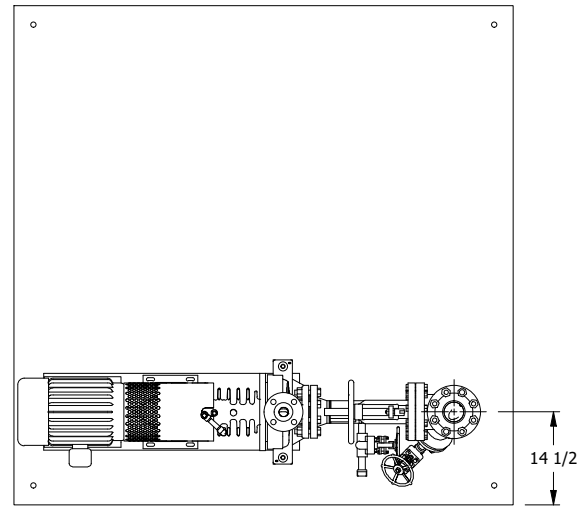
MECHANICAL REVIEW: N/A
 ELECTRICAL REVIEW: LNL 8/21/2023
 APPROVED BY: GW 8/22/2023

JOB NUMBER: 569883
 PROJECT NAME: THERMOGENICS (MONTANA)
 PROJECT MANAGER: G. WILSON

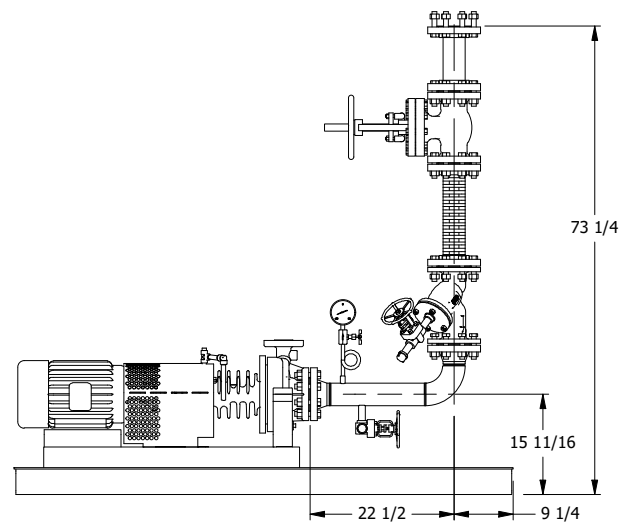
DESCRIPTION: FT-0160-CU HEATER WITH FT-0500-L DA TANK, DEANS 1.5X3X8.5 PUMP, 10 HP MOTOR, 3" SUCTION/2" DISCHARGE

SHEET 2 OF 7

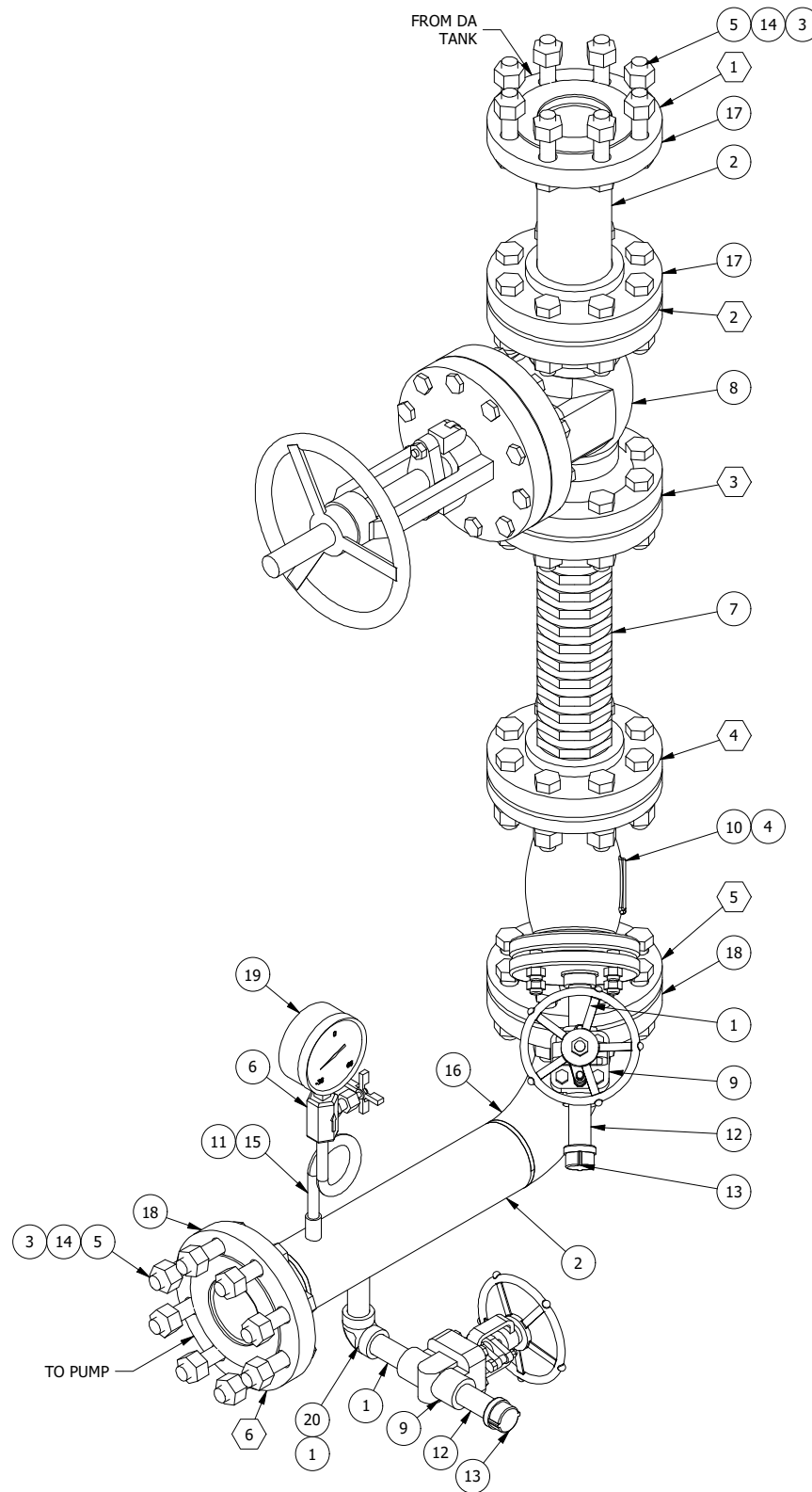
DRAWING NUMBER: T99-8523
 REVISION: -



TOP VIEW OF PUMP SUCTION PIPING



LEFT SIDE VIEW OF PUMP SUCTION PIPING



PUMP SUCTION PIPING ASSEMBLY
(0-PS-ASSY01)

BILL OF MATERIAL					
ITEM	PART NUMBER	REV	DESCRIPTION	QTY	U.O.M.
1	2-10-000108		3/4" SCH. 40 PIPE	0.750	FT.
2	2-10-000114		3" SCH. 40 SMLS PIPE	1.995	FT.
3	2-12-000415		3" 300# ELASTAGRAPH RING GASKET	6	EA.
4	2-12-000810		3" TITAN STRAINER GASKET	1	EA.
5	2-22-000243		3/4-10 X 3 1/2" HHCS, ASME SA193 GR. B7 BOLT	48	EA.
6	2-30-000453		1/4" N.P.T. CARBON STEEL NEEDLE VALVE (60B-101-24)	1	EA.
7	2-30-000523		3" X 16" 300# FLANGED FLEX CONNECTOR	1	EA.
8	2-30-000681		3" 300# FLANGED GATE VALVE	1	EA.
9	2-30-000869		3/4" SOCKET WELD GATE VALVE - CL800	2	EA.
10	2-30-004085		3" 300# TITAN FLANGED MESH Y-STRAINER	1	EA.
11	2-35-000178		1/4" 3000# FULL COUPLING	1	EA.
12	2-35-000189		3/4" X 3" - NPT SCH 80 T.O.E. NIPPLE	2	EA.
13	2-35-000285		3/4" 150# THREADED CAP	2	EA.
14	2-35-000346		3/4-10 HEX NUT, SA194 GR.2H	48	EA.
15	2-35-000390		1/4" SMLS STEEL SYPHON, SCH.80	1	EA.
16	2-35-000422		3" SCH. 40 WELD ELBOW	1	EA.
17	2-35-000449		3" 300# CARBON STEEL SLIP-ON FLANGE	2	EA.
18	2-35-000457		3" 300# CARBON STEEL WELD-NECK FLANGE	2	EA.
19	2-35-000883		-30" / 0 / 60 PSI WINTERS PRESSURE GAUGE	1	EA.
20	2-35-001094		3/4" 3000# SOCKET WELD ELBOW	1	EA.

-	-	-	-	-	-	-
REV	REVISION DESCRIPTION	B.O.M.	ELEC. ENG	MECH. ENG	CHECKED	APPROVED
REVISION HISTORY						

UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTION & WHOLE VALUE ± 1/8
(1) PLACE DEC. ± 0.03
(2) PLACE DEC. ± 0.015
(3) PLACE DEC. ± 0.005
ANGLE ± 0.5 DEG
SURFACE FINISH 250 MICRO-INCHES

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THIRD ANGLE PROJECTION

DRAWN BY: D. HARRINGTON 8/21/2023
MECHANICAL REVIEW: N/A
JOB NUMBER: 569883

CHECKED BY: N/A
ELECTRICAL REVIEW: LNL 8/21/2023
PROJECT NAME: THERMOGENICS (MONTANA)

B.O.M. REVIEW: N/A
APPROVED BY: GW 8/22/2023
PROJECT MANAGER: G. WILSON

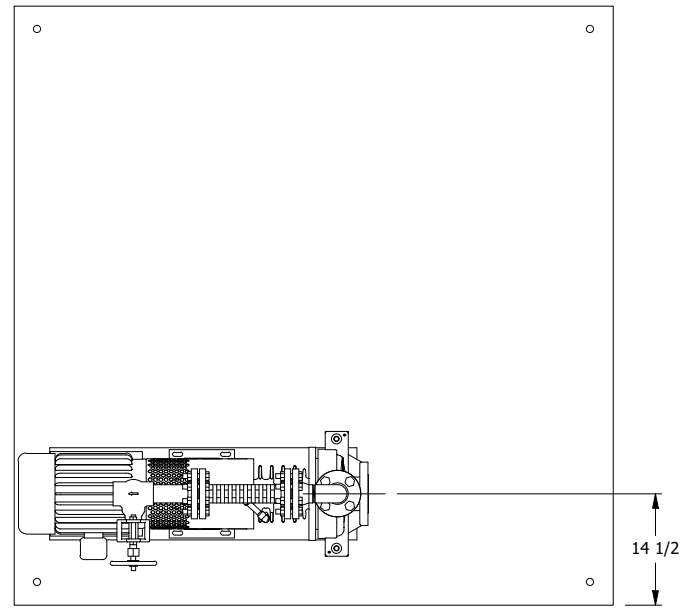
DESCRIPTION: FT-0160-CU HEATER WITH FT-0500-L DA TANK, DEANS 1.5X3X8.5 PUMP, 10 HP MOTOR, 3" SUCTION/2" DISCHARGE

SHEET 3 OF 7

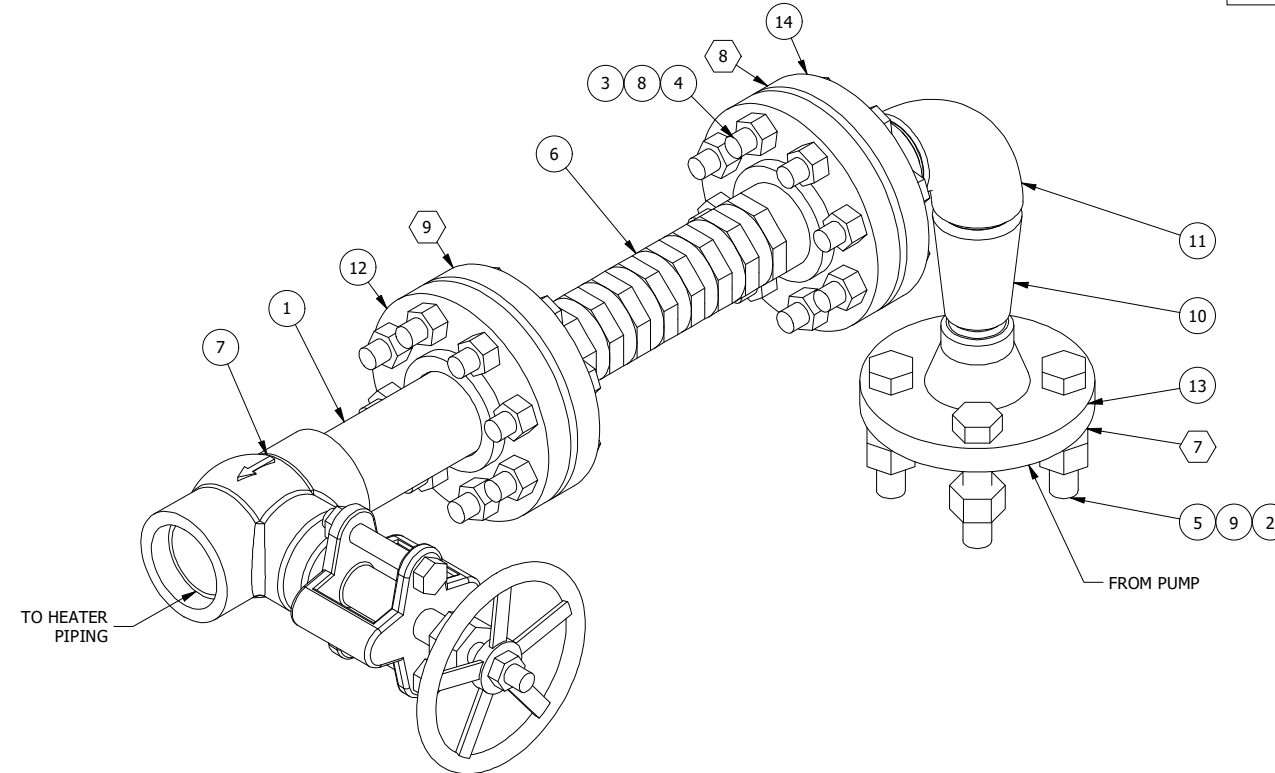
DRAWING NUMBER: T99-8523
REVISION: -

BILL OF MATERIAL

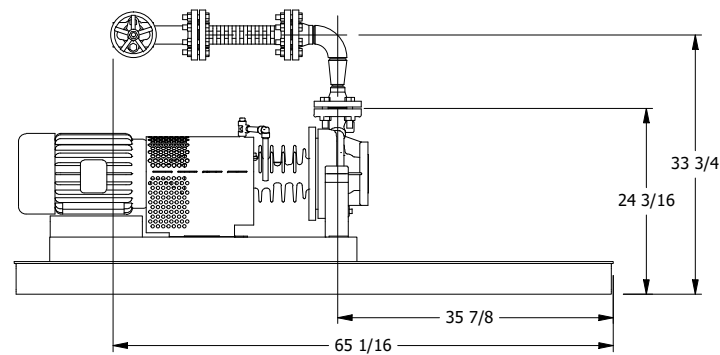
ITEM	PART NUMBER	REV	DESCRIPTION	QTY	U.O.M.
1	2-10-000112		2" SCH. 40 SMLS PIPE	.5	FT.
2	2-12-000409		1 1/2" 300# ELASTAGRAPH RING GASKET	1	EA.
3	2-12-000411		2" 300# ELASTAGRAPH RING GASKET	2	EA.
4	2-22-000240	-	5/8-11 X 3" HHCS, ASME SA193 GR. B7 BOLT	16	EA.
5	2-22-000243		3/4-10 X 3 1/2" HHCS, ASME SA193 GR. B7 BOLT	4	EA.
6	2-30-000521		2" X 12" 300# FLANGED FLEX CONNECTOR	1	EA.
7	2-30-000903		2" SOCKET WELD GLOBE VALVE - CL800	1	EA.
8	2-35-000345		5/8-11 HEX NUT, ASTM A194 GR.2H	16	EA.
9	2-35-000346		3/4-10 HEX NUT, SA194 GR.2H	4	EA.
10	2-35-000403		2" X 1 1/2" C.S. WELD REDUCER (SA-234)	1	EA.
11	2-35-000420		2" SCH. 40 WELD ELBOW	1	EA.
12	2-35-000447		2" 300# CARBON STEEL SLIP-ON FLANGE	1	EA.
13	2-35-000454		1 1/2" 300# CARBON STEEL WELD-NECK FLANGE	1	EA.
14	2-35-000455		2" 300# CARBON STEEL WELD-NECK FLANGE	1	EA.



TOP VIEW OF PUMP DISCHARGE PIPING



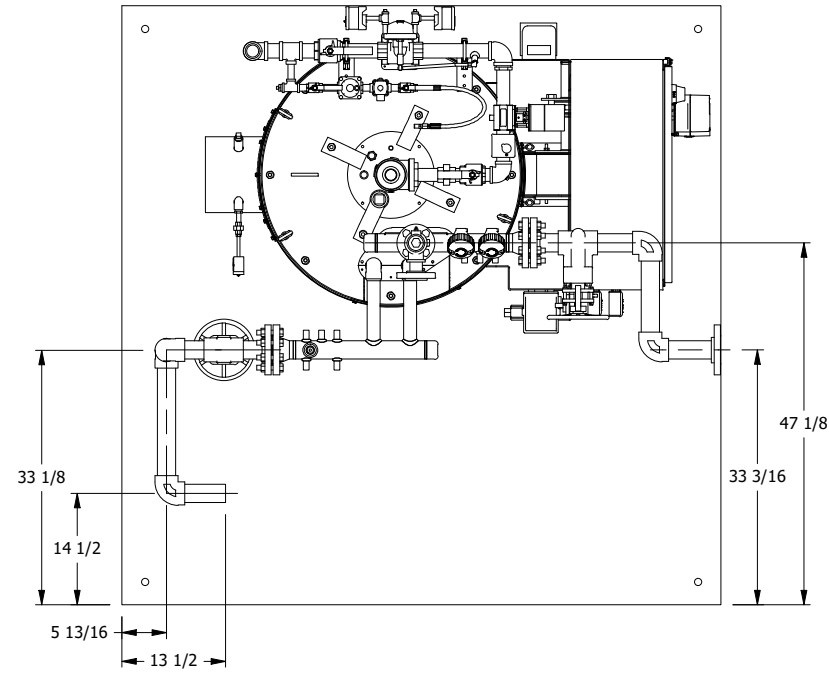
PUMP DISCHARGE PIPING ASSEMBLY
(0-PD-ASSY01)



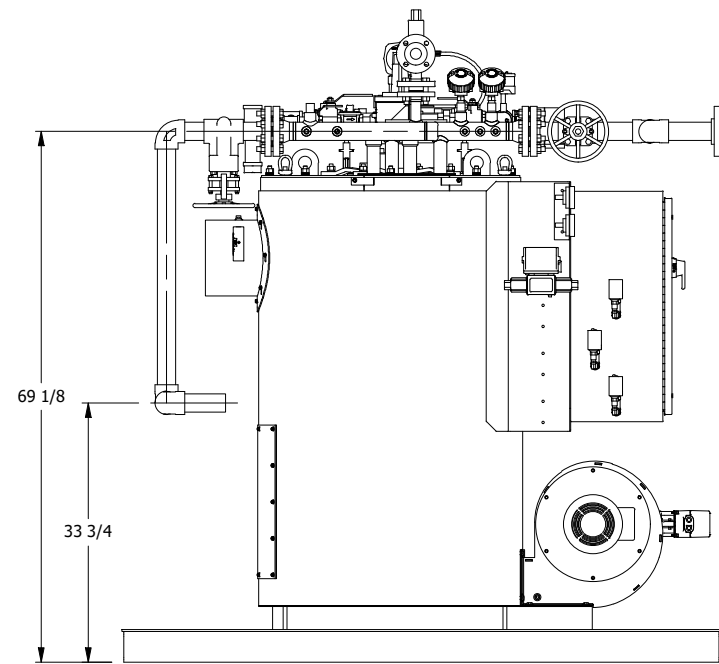
LEFT SIDE VIEW OF PUMP DISCHARGE PIPING

-	- INITIAL RELEASE -	-	-	-	-	UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN INCHES TOLERANCES FRACTION & WHOLE VALUE ± 1/8 (1) PLACE DEC. ± 0.015 (2) PLACE DEC. ± 0.015 (3) PLACE DEC. ± 0.005 ANGLE ± 0.5 DEG SURFACE FINISH 250 MICRO-INCHES	THIS DESIGN AND DRAWINGS ARE PROPRIETARY AND ARE THE EXCLUSIVE PROPERTY OF THE FULTON COMPANIES. THE CORPORATION DOES NOT PERMIT THEIR USE EXCEPT WITH PRIOR WRITTEN CONSENT.	THE ITEMS SHOWN IN THIS DRAWING MAY BE COVERED BY ONE OR MORE PATENTS OF FULTON.	THIRD ANGLE PROJECTION	DRAWN BY: D. HARRINGTON 8/21/2023	MECHANICAL REVIEW: N/A	JOB NUMBER: 569883	DESCRIPTION: FT-0160-CU HEATER WITH FT-0500-L DA TANK, DEANS 1.5X3X8.5 PUMP, 10 HP MOTOR, 3" SUCTION/2" DISCHARGE		DRAWING NUMBER T99-8523	REVISION -
REV	REVISION DESCRIPTION	B.O.M.	ELEC. ENG	MECH. ENG	CHECKED	APPROVED			CHECKED BY: N/A	ELECTRICAL REVIEW: LNL 8/21/2023	PROJECT NAME: THERMOGENICS (MONTANA)					
REVISION HISTORY										B.O.M. REVIEW: N/A	APPROVED BY: GW 8/22/2023	PROJECT MANAGER: G. WILSON				

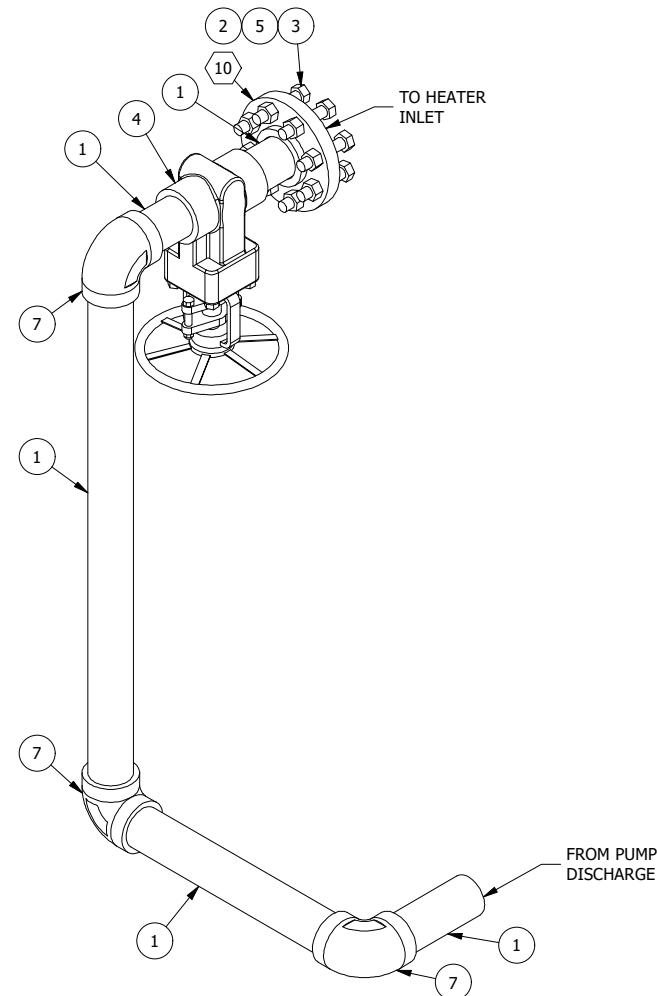
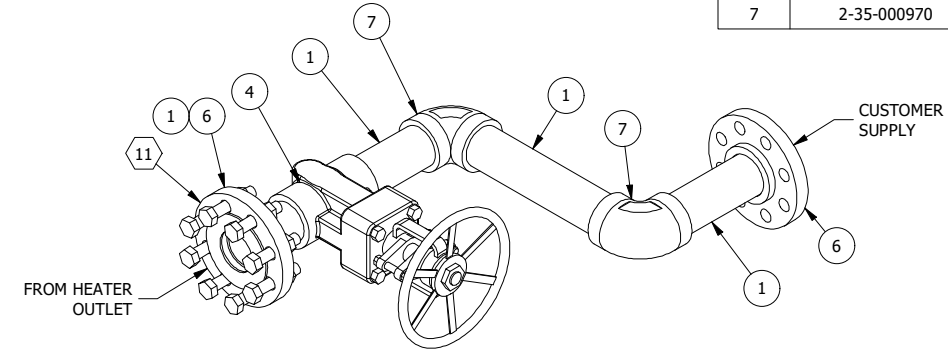
BILL OF MATERIAL					
ITEM	PART NUMBER	REV	DESCRIPTION	QTY	U.O.M.
1	2-10-000112		2" SCH. 40 SMLS PIPE	7.500	FT.
2	2-12-000411		2" 300# ELASTAGRAPH RING GASKET	2	EA.
3	2-22-000240	-	5/8-11 X 3" HHCS, ASME SA193 GR. B7 BOLT	16	EA.
4	2-30-000940		2" SOCKET WELD GATE VALVE - CL800	2	EA.
5	2-35-000345		5/8-11 HEX NUT, ASTM A194 GR.2H	16	EA.
6	2-35-000447		2" 300# CARBON STEEL SLIP-ON FLANGE	3	EA.
7	2-35-000970	-	2" 3000# SOCKET WELD ELBOW	5	EA.



TOP VIEW OF HEATER PIPING



LEFT SIDE VIEW OF HEATER PIPING



HEATER PIPING ASSEMBLY
(0-HP-ASSY01)

-	- INITIAL RELEASE -	-	-	-	-
REV	REVISION DESCRIPTION	B.O.M.	ELEC. ENG	MECH. ENG	CHECKED APPROVED
REVISION HISTORY					

UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTION & WHOLE VALUE ± 1/8
(1) PLACE DEC. ± 0.015
(2) PLACE DEC. ± 0.015
(3) PLACE DEC. ± 0.015
ANGLE ± 0.5 DEG
SURFACE FINISH 250 MICRO-INCHES

THIS DESIGN AND DRAWINGS ARE PROPRIETARY AND ARE THE EXCLUSIVE PROPERTY OF THE FULTON COMPANIES. THE CORPORATION DOES NOT PERMIT THEIR USE EXCEPT WITH PRIOR WRITTEN CONSENT.

THE ITEMS SHOWN IN THIS DRAWING MAY BE COVERED BY ONE OR MORE PATENTS OF FULTON.

DRAWN BY: D. HARRINGTON 8/21/2023
CHECKED BY: N/A
B.O.M. REVIEW: N/A

MECHANICAL REVIEW: N/A
ELECTRICAL REVIEW: LNL 8/21/2023
APPROVED BY: GW 8/22/2023

THIRD ANGLE PROJECTION

JOB NUMBER: 569883
PROJECT NAME: THERMOGENICS (MONTANA)
PROJECT MANAGER: G. WILSON

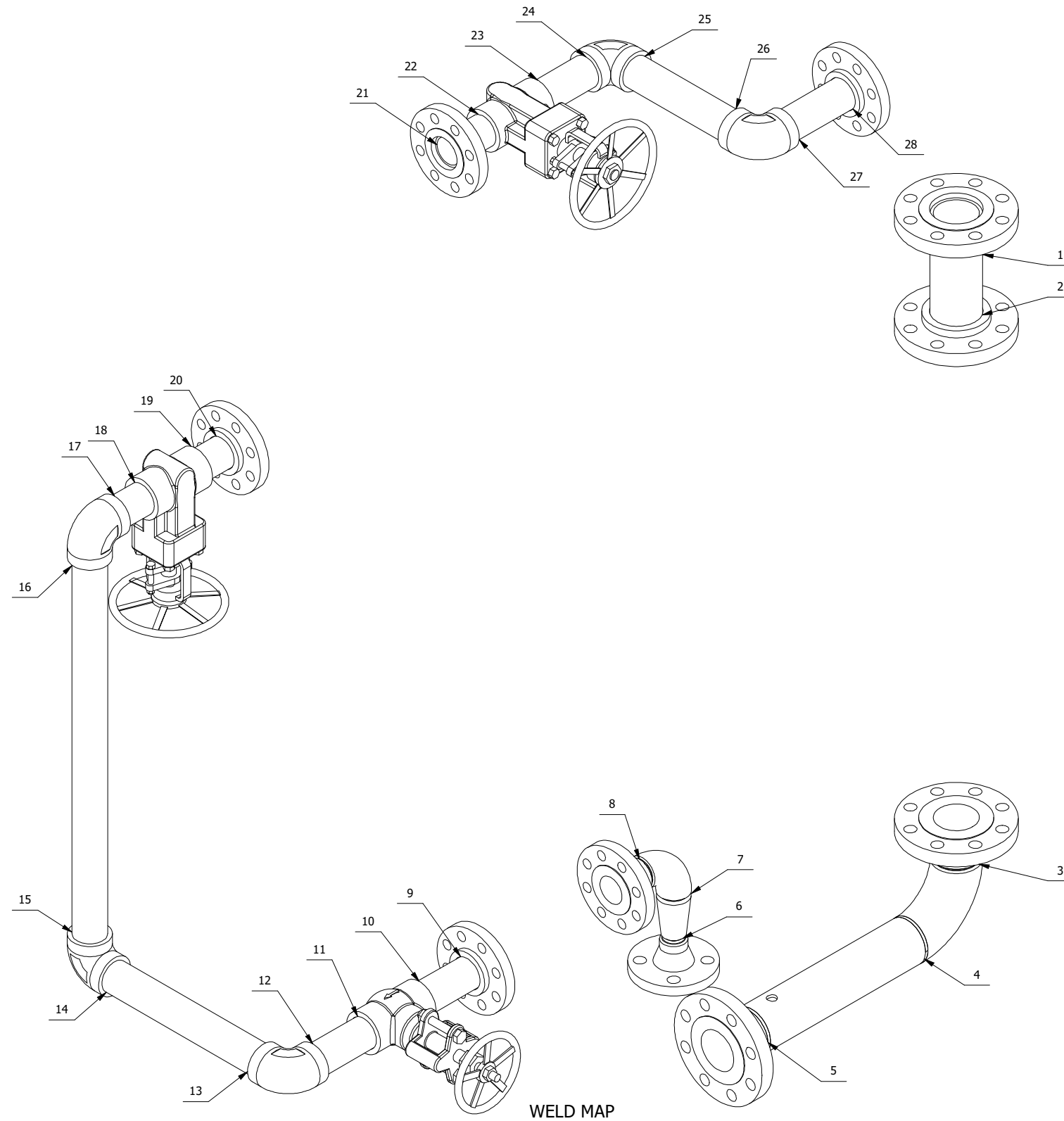
DESCRIPTION: FT-0160-CU HEATER WITH FT-0500-L DA TANK, DEANS 1.5X3X8.5 PUMP, 10 HP MOTOR, 3" SUCTION/2" DISCHARGE

Fulton
Fulton Thermal Corporation

DRAWING NUMBER: T99-8523

REVISION: -

SHEET 5 OF 7



WELD MAP

WELD MAP				
ITEM	ROOT	CAP	INSIDE SEAL WELD	QUALITY CONTROL VISUAL
1				
2				
3				
4				
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28				

QUALITY CONTROL VISUAL CHECKED BY:

-	- INITIAL RELEASE -	-	-	-	-	-
REV	REVISION DESCRIPTION	B.O.M.	ELEC. ENG	MECH. ENG	CHECKED	APPROVED
REVISION HISTORY						

UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN INCHES
TOLERANCES
 FRACTION & WHOLE VALUE ± 1/8
 (1) PLACE DEC. ± 0.015
 (2) PLACE DEC. ± 0.015
 (3) PLACE DEC. ± 0.015
 ANGLE ± 0.5 DEG
 SURFACE FINISH 250 MICRO-INCHES

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THE ITEMS SHOWN IN THIS DRAWING MAY BE COVERED BY ONE OR MORE PATENTS OF FULTON.

THIRD ANGLE PROJECTION

DRAWN BY: D. HARRINGTON 8/21/2023
 CHECKED BY: N/A
 B.O.M. REVIEW: N/A

MECHANICAL REVIEW: N/A
 ELECTRICAL REVIEW: LNL 8/21/2023
 APPROVED BY: GW 8/22/2023

JOB NUMBER: 569883
 PROJECT NAME: THERMOGENICS (MONTANA)
 PROJECT MANAGER: G. WILSON

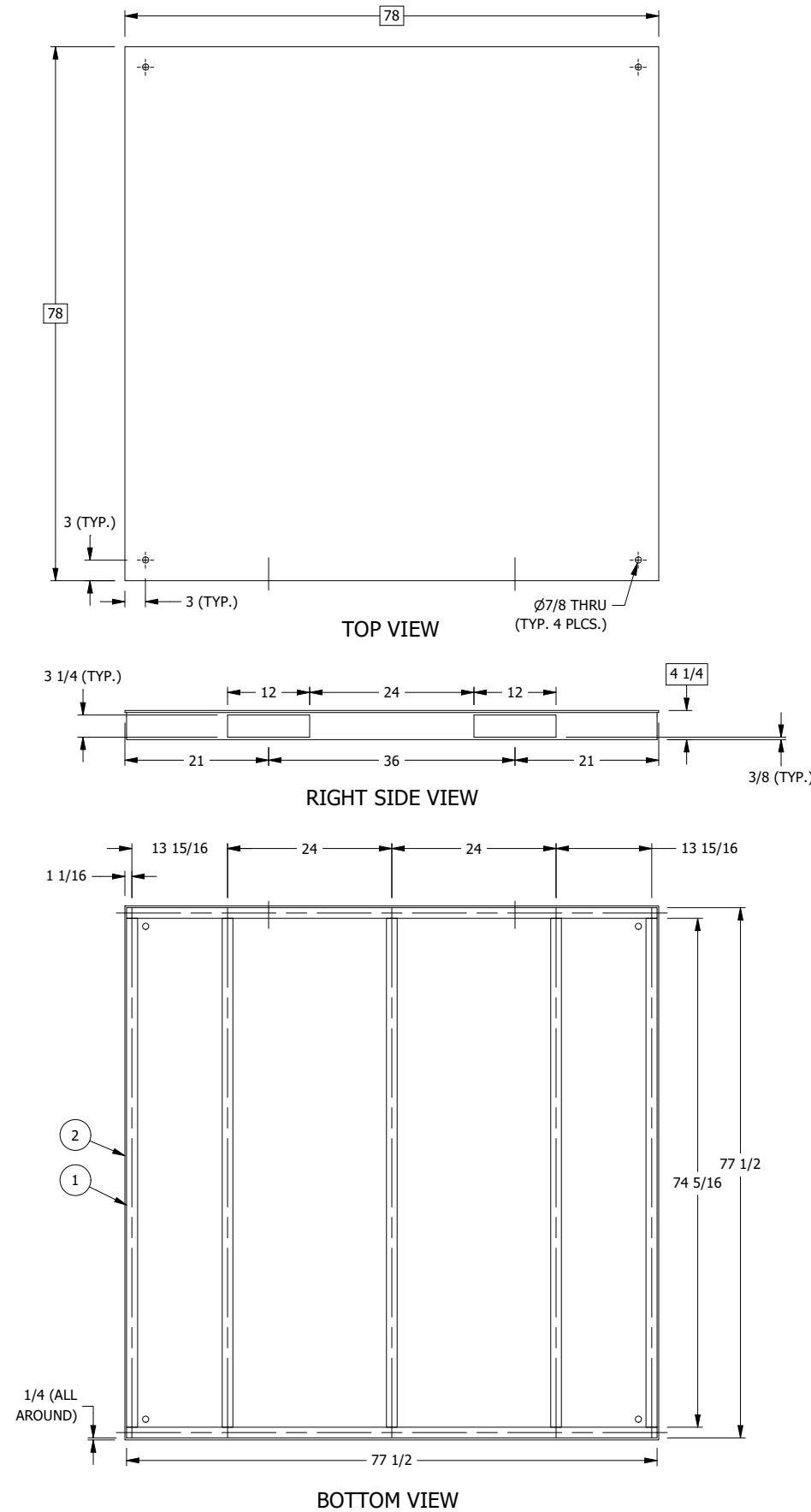
DESCRIPTION: FT-0160-CU HEATER WITH FT-0500-L DA TANK, DEANS 1.5X3X8.5 PUMP, 10 HP MOTOR, 3" SUCTION/2" DISCHARGE

DRAWING NUMBER: T99-8523

REVISION: -

SHEET 6 OF 7

BILL OF MATERIAL					
ITEM	PART NUMBER	REV	DESCRIPTION	QTY	U.O.M.
1	2-10-000101		4" X 5.4# CHANNEL A36	43.870	FT.
2	SOLITEC		1/4" HRS STEEL PLATE	42.250	SF.



NOTES:
1. LEAVE FRAMING 1/4" AWAY FROM ALL SKID EDGES

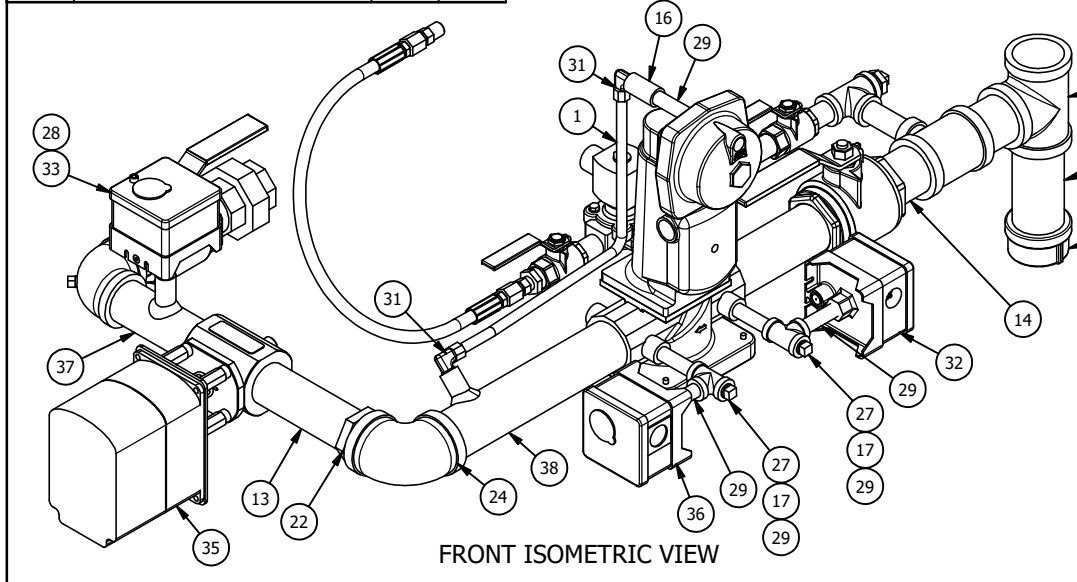
-	- INITIAL RELEASE -	-	-	-	-	-
REV	REVISION DESCRIPTION	B.O.M.	ELEC. ENG.	MECH. ENG.	CHECKED	APPROVED
REVISION HISTORY						

UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN INCHES	THIS DESIGN AND DRAWINGS ARE PROPRIETARY AND ARE THE EXCLUSIVE PROPERTY OF THE FULTON COMPANIES. THE CORPORATION DOES NOT PERMIT THEIR USE EXCEPT WITH PRIOR WRITTEN CONSENT.	THE ITEMS SHOWN IN THIS DRAWING MAY BE COVERED BY ONE OR MORE PATENTS OF FULTON.	DRAWN BY: D. HARRINGTON 8/21/2023	MECHANICAL REVIEW: N/A	JOB NUMBER: 569883
TOLERANCES: FRACTION & WHOLE VALUE (1) PLACE DEC. ± 0.03 (2) PLACE DEC. ± 0.015 (3) PLACE DEC. ± 0.005 ANGLE ± 0.5 DEG SURFACE FINISH 250 MICRO-INCHES			CHECKED BY: N/A	ELECTRICAL REVIEW: LNL 8/21/2023	PROJECT NAME: THERMOGENICS (MONTANA)
			B.O.M. REVIEW: N/A	APPROVED BY: GW 8/22/2023	PROJECT MANAGER: G. WILSON

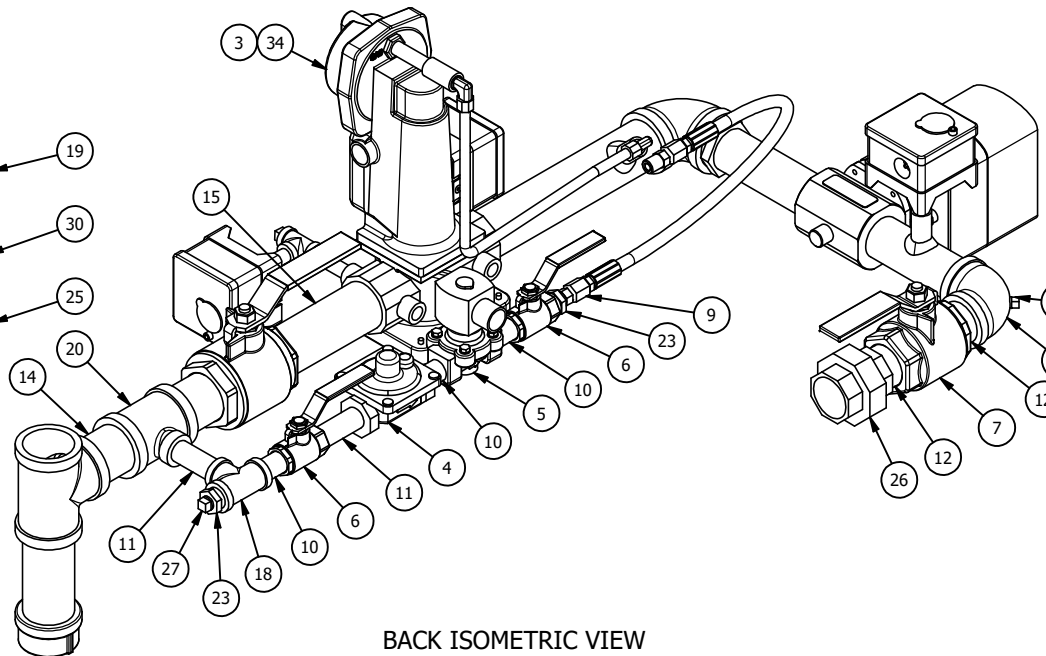
DESCRIPTION:
FT-0160-CU HEATER WITH FT-0500-L DA TANK,
DEANS 1.5X3X8.5 PUMP, 10 HP MOTOR, 3"
SUCTION/2" DISCHARGE

		REVISION
DRAWING NUMBER T99-8523		-

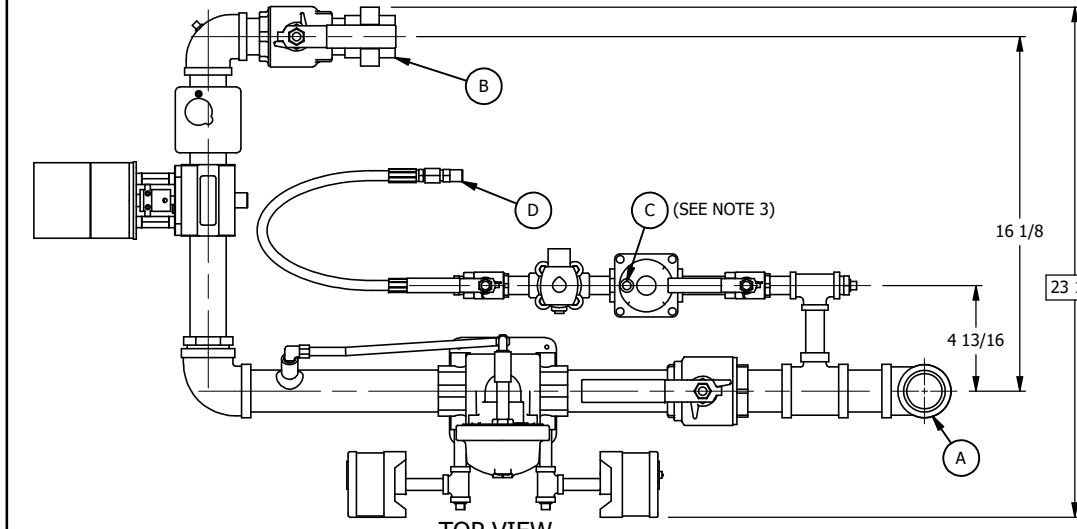
CUSTOMER CONNECTIONS			
ITEM	DESCRIPTION	SIZE	TYPE
A	GAS INLET	1 1/2"	N.P.T.
B	GAS OUTLET	1 1/4"	N.P.T.
C	PILOT REGULATOR VENT	1/8"	N.P.T.
D	PILOT OUTLET	1/4"	N.P.T.



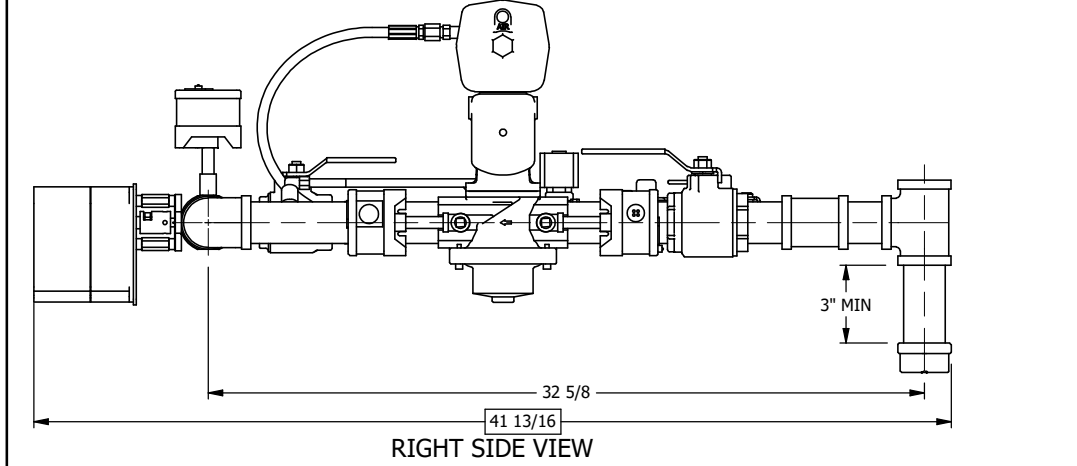
FRONT ISOMETRIC VIEW



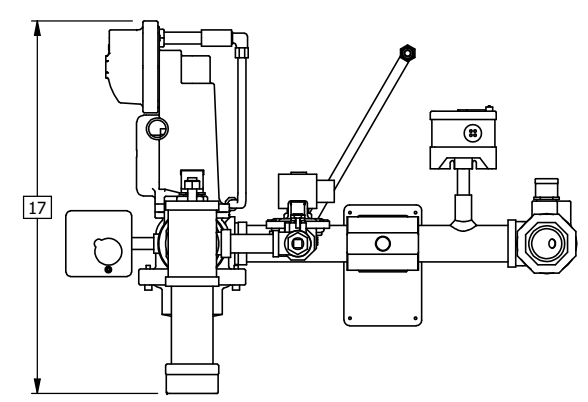
BACK ISOMETRIC VIEW



TOP VIEW



RIGHT SIDE VIEW



BACK VIEW

MANUFACTURING B.O.M.					
ITEM	PART NUMBER	REV	DESCRIPTION	QTY	U.O.M.
1	2-10-000189		3/8" OD X .049 WALL ALUMINUM TUBING	1.240	FT.
2	2-20-000025		1 1/4" DRILLED AND TAPPED THREADED ELBOW	1	EA.
3	2-30-000003		1 1/2" N.P.T. GAS VALVE VGG10.404U	1	EA.
4	2-30-000102		1/2" GAS PRESSURE REGULATOR RV48 (1/2 PSI MAX)	1	EA.
5	2-30-000298		1/2" AUTOMATIC PILOT GAS VALVE (120/60) CSA/UL/FM (8214G020) 5 PSI MAX	1	EA.
6	2-30-001246		1/2" NPT CSA/UL/FM GAS BALL VALVE (SERIES 94A)	2	EA.
7	2-30-001248	-	1 1/4" NPT CSA/UL/FM GAS BALL VALVE (SERIES 94A)	1	EA.
8	2-30-001249	-	1 1/2" NPT CSA/UL/FM GAS BALL VALVE (SERIES 94A)	1	EA.
9	2-30-001980		1/4" X 24" FLEX HOSE CS	1	EA.
10	2-35-000087		1/2" X 2" - NPT SCH 40 NIPPLE	3	EA.
11	2-35-000089		1/2" X 3" - NPT SCH 40 NIPPLE	2	EA.
12	2-35-000140		1 1/4" X 2" - NPT SCH 40 NIPPLE	2	EA.
13	2-35-000143		1 1/4" X 6" - NPT SCH 40 NIPPLE	1	EA.
14	2-35-000150		1 1/2" X 3" - NPT SCH 40 NIPPLE	2	EA.
15	2-35-000152		1 1/2" X 6" - NPT SCH 40 NIPPLE	1	EA.
16	2-35-000178		1/4" 3000# FULL COUPLING	1	EA.
17	2-35-000204		1/4" THREADED TEE	2	EA.
18	2-35-000213		1/2" THREADED TEE	1	EA.
19	2-35-000225		1 1/2" THREADED TEE	1	EA.
20	2-35-000246		1 1/2" X 1 1/2" X 1/2" THREADED REDUCING TEE	1	EA.
21	2-35-000249		1/8" 3000# PLUG	1	EA.
22	2-35-000257		1 1/2" X 1 1/4" 150# BUSHING	1	EA.
23	2-35-000262		1/2" X 1/4" 150# BUSHING	2	EA.
24	2-35-000274		1 1/2" THREADED ELBOW	1	EA.
25	2-35-000288		1 1/2" 150# THREADED CAP	1	EA.
26	2-35-000295		1 1/4" 150# CARBON STEEL UNION	1	EA.
27	2-35-000306		1/4" 3000# PLUG	3	EA.
28	2-35-000371		1/4" X 2" - NPT SCH 80 NIPPLE	1	EA.
29	2-35-000703		1/4" X 2 1/2" - NPT SCH 80 NIPPLE	5	EA.
30	2-35-000804		1 1/2" X 5" - NPT SCH 40 NIPPLE	1	EA.
31	2-35-001352		3/8" COMP X 1/4" MNPT ALUMINUM 90 DEG TUBING COMPRESSION FITTING	2	EA.
32	2-40-000387		SIEMENS QPL31.050M00 LOW GAS PRESSURE SWITCH W/ MANUAL RESET 1"-20" WC	1	EA.
33	2-40-000390		SIEMENS QPH31.050M00 HIGH GAS PRESSURE SWITCH W/ MANUAL RESET 2"-20" WC	1	EA.
34	2-40-000884		SKP25.011U1 SIEMENS AIR/GAS RATIO VALVE 120V	1	EA.
35	2-40-001111	-	SQM45.295B9 TO SIEMENS 1 1/4" FULL PORT BUTTERFLY VALVE ASSEMBLY	1	EA.
36	2-40-002103	-	SIEMENS QPL31.050A00 LOW GAS PRESSURE SWITCH W/ AUTO RESET 1"-20" WC	1	EA.
37	5-10-001512		1 1/4" X 5 1/2" STD NIPPLE WITH 1/4" COUPLING	1	EA.
38	5-10-001516	-	1 1/2" X 10" STD NIPPLE WITH 1/4" COUPLING	1	EA.

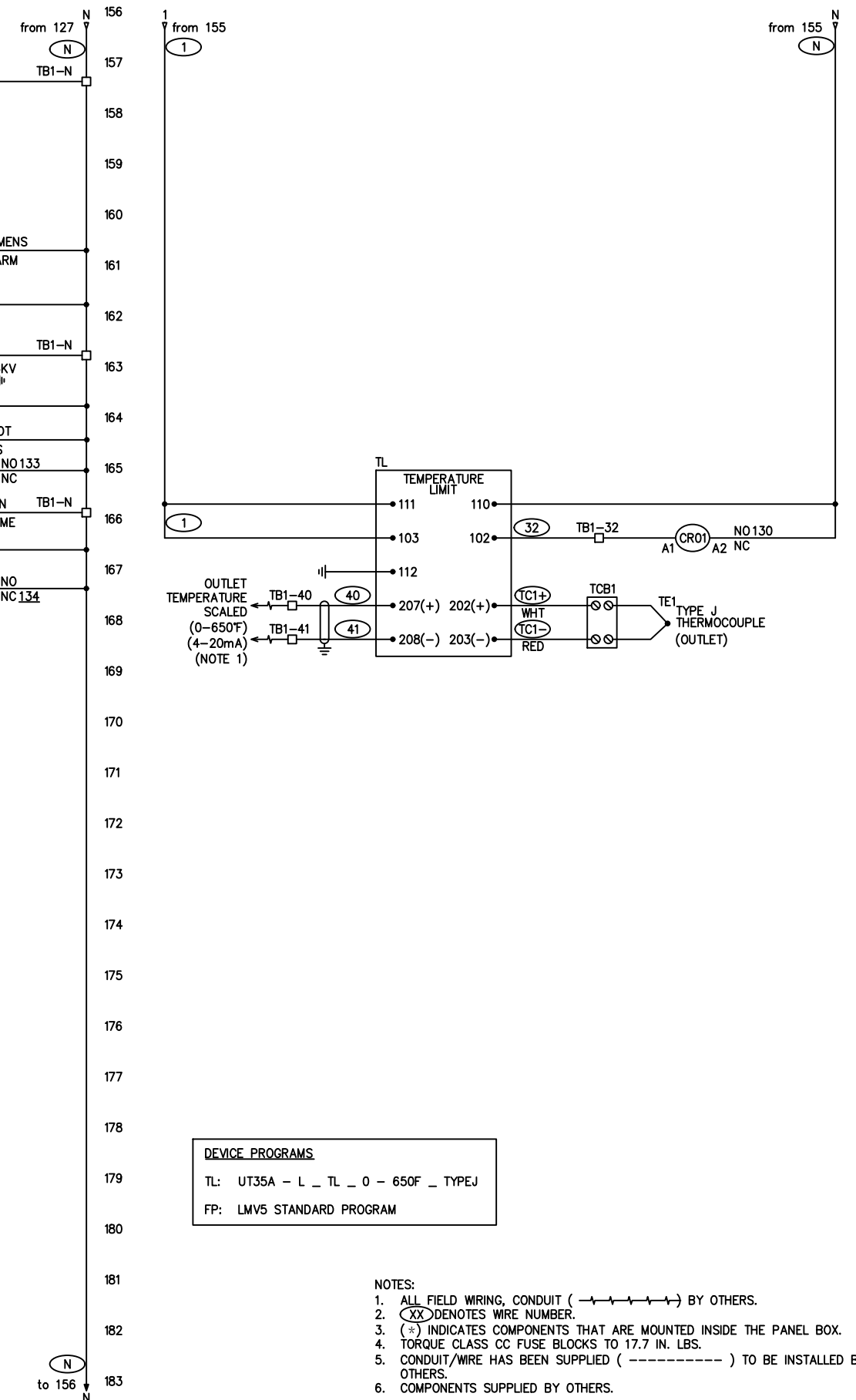
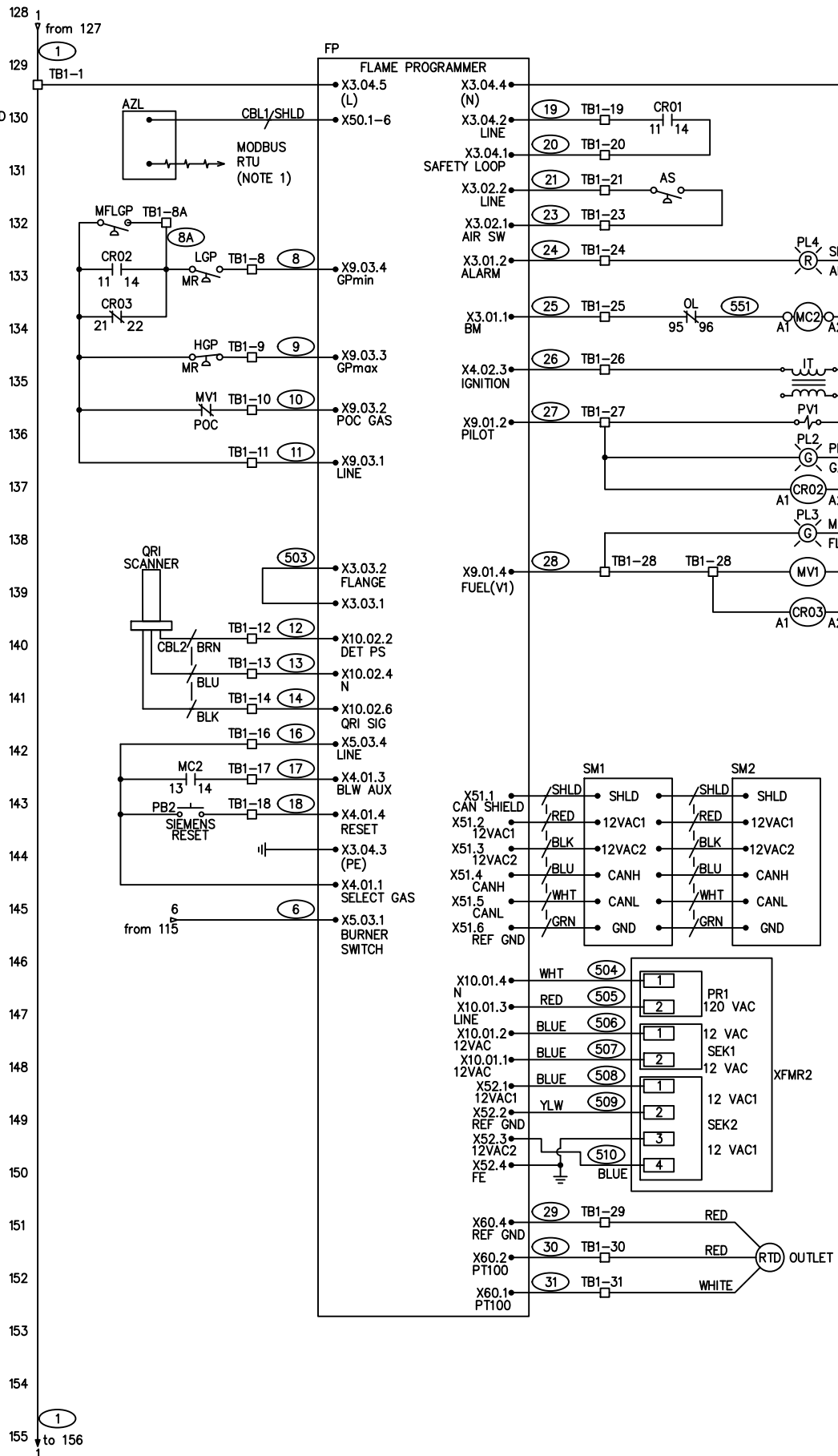
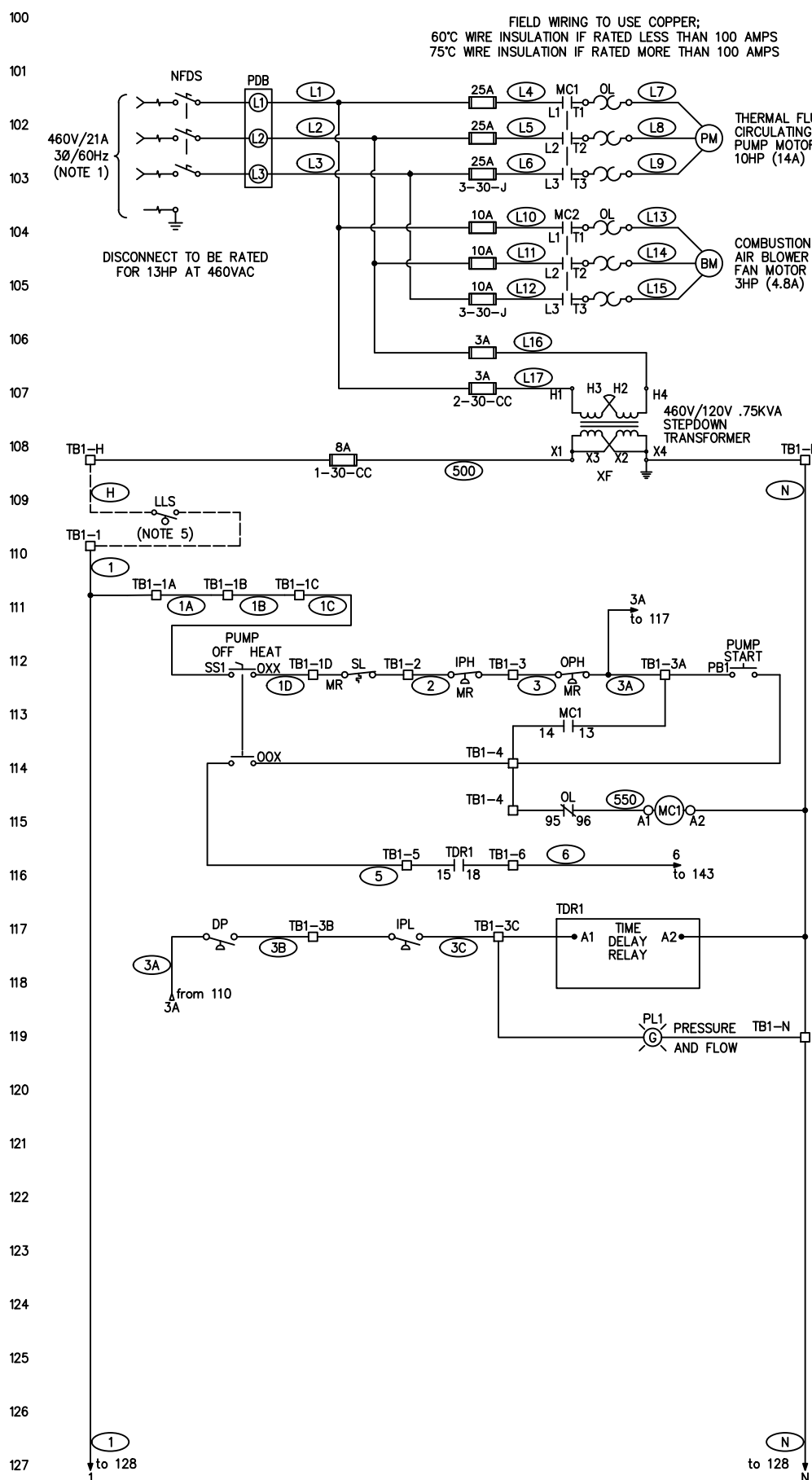
- NOTES:
- ALL DIMENSIONS ARE IN INCHES, AND ARE FOR REFERENCE ONLY, DUE TO FABRICATION VARIANCES AND INDIVIDUAL THREAD ENGAGEMENT. DIMENSIONS MAY CHANGE.
 - NO CLOSE NIPPLES ARE USED ON GAS CONNECTIONS. ALL PIPE FITTINGS, UNLESS OTHERWISE NOTED, ARE N.P.T. SCHEDULE 40 CONFORMING TO ASME A733-89 OR EQUIVALENT.
 - ALL COMPONENTS VENTED TO THE ATMOSPHERE WILL HAVE SEPARATE VENT LINES INSTALLED BY OTHERS AND ARE TO BE RED TAGGED FOR CUSTOMER NOTIFICATION AT FINAL ASSEMBLY.
 - ENGINEERING MAY APPROVE SUBSTITUTION OF DEPICTED COMPONENTS WITH AN EQUIVALENT APPROVED COMPONENT DUE TO CODE, AREA OF INSTALLATION, CUSTOMER REQUIREMENTS AND/OR AVAILABILITY OF PARTS AT THE TIME OF ASSEMBLY.
 - USE SPRING SUPPLIED WITH REGULATOR FOR NATURAL GAS. FOR PROPANE APPLICATIONS, USE ITEMS 2-30-000177.

REV	REVISION DESCRIPTION	B.O.M.	ELEC. ENG	MECH. ENG	CHECKED	APPROVED
H	RESIZED FUEL TRAIN PER ECR2022-2883. S.CLARK 10/04/22	CNS 10/14/22	LNL 10/14/22	DLH 10/14/22	NJO 10/14/22	CNS 10/14/22
REVISION HISTORY						

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES	TOLERANCES FRACTION & WHOLE VALUE ± 1/8 (1) PLACE DEC. ± 0.03 (2) PLACE DEC. ± 0.015 (3) PLACE DEC. ± 0.005 ANGLE ± 0.5 DEG SURFACE FINISH 250 MICRO-INCHES	THIS DESIGN AND DRAWINGS ARE PROPRIETARY AND ARE THE EXCLUSIVE PROPERTY OF THE FULTON COMPANIES. THE CORPORATION DOES NOT PERMIT THEIR USE EXCEPT WITH PRIOR WRITTEN CONSENT.	THE ITEMS SHOWN IN THIS DRAWING MAY BE COVERED BY ONE OR MORE PATENTS OF FULTON.	DRAWN BY: R.C.K. / D.M.B. 6/22/1995	MECHANICAL REVIEW: N/A	JOB NUMBER:
				CHECKED BY: S.E.S. 6/22/1995	ELECTRICAL REVIEW: N/A	PROJECT NAME:
				B.O.M. REVIEW: N/A	APPROVED BY: M.W. 6/22/1995	PROJECT MANAGER:

DESCRIPTION:
1 1/2" GAS TRAIN FOR FT-0120, FT-0160-C / CSD-1 / NEMA 1 / 120V / MODULATED (1/2 PSI MAX)

DRAWING NUMBER: 7-54-016006
REVISION: H



DEVICE PROGRAMS

TL: UT35A - L - TL - 0 - 650F - TYPEJ

FP: LMV5 STANDARD PROGRAM

- NOTES:**
1. ALL FIELD WIRING, CONDUIT (- - - - -) BY OTHERS.
 2. (XX) DENOTES WIRE NUMBER.
 3. (*) INDICATES COMPONENTS THAT ARE MOUNTED INSIDE THE PANEL BOX.
 4. TORQUE CLASS CC FUSE BLOCKS TO 17.7 IN. LBS.
 5. CONDUIT/WIRE HAS BEEN SUPPLIED (- - - - -) TO BE INSTALLED BY OTHERS.
 6. COMPONENTS SUPPLIED BY OTHERS.

REV	REVISION DESCRIPTION	B.O.M.	ELEC. ENG	MECH. ENG	CHECKED	APPROVED
-	INITIAL RELEASE	-	-	-	-	-
REVISION HISTORY						

UNLESS OTHERWISE NOTED: DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± 1/16 (2) PLACE DEC. ± .01 (3) PLACE DEC. ± .005 ANGLES ± 2 DEG. SURFACE FINISH 250 MICRO-INCHES	This design and drawings are proprietary and are the exclusive property of The Fulton Companies. The corporation does not permit their use except with prior written consent.	The items shown in this drawing may be covered by one or more patents of The Fulton Companies.	DRAWN BY: J/L	AUG-22-23	MECH. ENG: N/A	JOB NUMBER: N/A	569883
			CHECKED BY: N/A		ELEC. ENG: N/A	PROJECT NAME: MONTANA	8-22-23
			B.O.M. REVIEW: N/A		APPROVED BY: N/A	PROJECT MANAGER: N/A	8-22-23

DESCRIPTION: FT-0160-C ELECTRICAL SCHEMATIC, GAS FIRED, NEMA 1, THERMAL FLUID HEATER, 120V CONTROLS

The Fulton Companies
972 Centerville Road
Pulaski, New York USA 13142

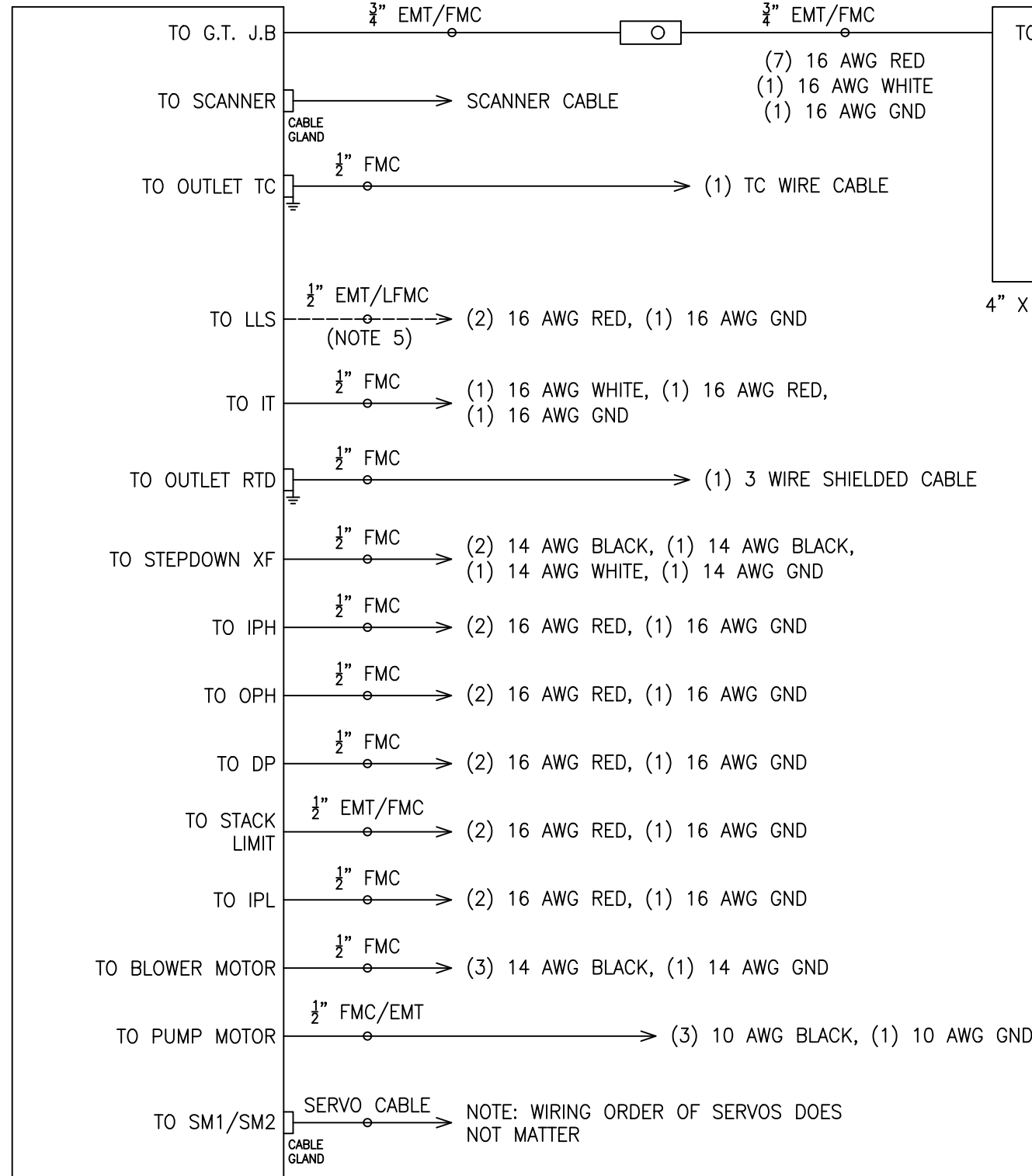
Fulton

DRAWING NUMBER: T53-10840

REV: -

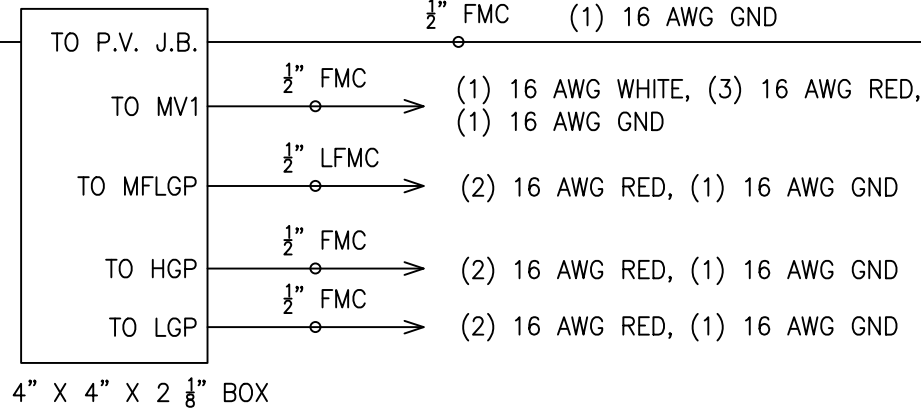
SHEET 1 OF 3

HEATER PANEL

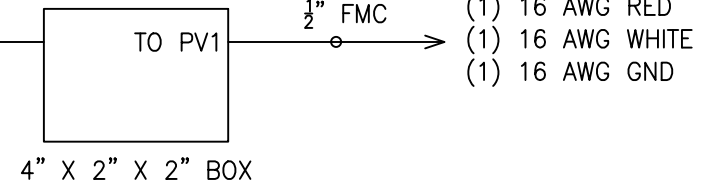


30" X 30" X 12"

GAS TRAIN JUNCTION BOX



PILOT VALVE JUNCTION BOX



GUIDELINES:

- PANEL BOXES SHOULD BE AT LEAST 10" FROM ANY PIPING
- CONDUIT SHOULD BE AT LEAST 4" FROM ANY PIPING
- WIRE COLORS: RED = 120VAC CONTROL WIRING
BLUE(+)/YELLOW(-) = 24VDC CONTROL WIRING
BLACK = INCOMING POWER/3Ø POWER
WHITE = NEUTRAL
- FMC = FLEXIBLE METALLIC CONDUIT (GREENFIELD)
- EMT = ELECTRICAL METALLIC TUBING
- RMC = RIGID METAL CONDUIT
- LFMC = LIQUID TIGHT FLEXIBLE METAL CONDUIT

REQUIREMENTS

- POUR FITTINGS ARE REQUIRED BETWEEN PANEL BOX AND ALL GAS TRAIN COMPONENTS
- POUR FITTINGS SHALL BE NO MORE THAN 18" FROM COMPONENTS AND PANEL BOXES ON CLASS 1 DIV 2 HEATERS
- LUGS SHALL BE INSTALLED ON ALL 3Ø FIELD WIRES
- ALL FIELD WIRING SHALL BE LABELED WITH JOB NUMBER, WIRE NUMBER, AND CONDUIT RUN
- THERE MUST BE AT LEAST 3'6" OF CLEARANCE IN FRONT OF ALL PANEL BOXES WITH AT LEAST 30" WIDTH, OR THE WIDTH OF THE PANEL BOX (WHICHEVER IS GREATER)
- THERE SHALL BE NOTHING INSTALLED THAT PROTRUDES IN FRONT OF THE PANEL BOX IN THE SPACE SPECIFIED ABOVE
- SQUEEZE CONNECTORS ARE NOT TO BE MOUNTED ON TOP OF PANEL BOXES (DUE TO WATER MIGRATION)

NOTES:

- ALL FIELD WIRING, CONDUIT (---) BY OTHERS.
- (XX) DENOTES WIRE NUMBERS.
- (*) INDICATES COMPONENTS THAT ARE MOUNTED INSIDE THE PANEL BOX.
- FIELD WIRING TO CLASS CC FUSEBLOCKS TO BE TORQUED @ 17.7 IN. LBS.
- CONDUIT / WIRING HAS BEEN SUPPLIED (-----) WIRING TO BE INSTALLED BY OTHERS.
- COMPONENTS SUPPLIED BY OTHERS.

UNLESS OTHERWISE NOTED: DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± 1/16 (2) PLACE DEC. ± .01 (3) PLACE DEC. ± .005 ANGLES ± 2 DEG. SURFACE FINISH 250 MICRO-INCHES
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The items shown in this drawing may be covered by one or more patents of The Fulton Companies.



DRAWN BY: JL	AUG-22-23	MECH. ENG: N / A	N / A	JOB NUMBER: 569883
CHECKED BY: N / A	N / A	ELEC. ENG: JJPG	8-22-23	PROJECT NAME: MONTANA
B.O.M. REVIEW N / A	N / A	APPROVED BY: LNL	8-22-23	PROJECT MANAGER: N / A

DESCRIPTION:
FT-0160-C ELECTRICAL SCHEMATIC , GAS FIRED,
NEMA 1, THERMAL FLUID HEATER, 120V
CONTROLS

The Fulton Companies
972 Centerville Road
Pulaski, New York USA 13142



DRAWING NUMBER: T53-10840	REV -
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REVISION HISTORY