

OPERATION AND MAINTENANCE MANUAL
CONDITIONING BATH



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Conditioning Bath

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1.A IMPORTANT NOTICE

The purpose of this manual is to supplement, BUT NOT TO REPLACE the services of qualified personnel to start up and adjust this equipment.

Persons without previous experience with this equipment should not attempt the initial adjustment and check-out procedures required until this installation is considered ready for operation, by a qualified operator.

Each cabinet or bath carries an individual serial number on the nameplate mounted on the cabinet. Please refer to this number when ordering replacement parts or when requesting any further information.

A copy of the complete bill of material applicable to each cabinet and a wiring diagram are shipped with each piece of equipment.

SAFETY PRECAUTIONS

This manual contains important information that ALL users should know and understand before using the equipment.

This information relates to USER SAFETY and PREVENTING EQUIPMENT PROBLEMS.

To help you recognize this information, we use the following terms to draw your attention to certain equipment labels and portions of this manual.

Please pay special attention to any label or information that is highlighted by one of these terms:

===== CAUTION =====

Important information that tells how to prevent damage to equipment, & or how to avoid a situation that may cause injury.

===== NOTE =====

Information that you should pay special attention to.

2.0 INSTALLATION

2.1 Remove the shipping crate and packing material carefully from the bath system. Do not discard the packing material until all of the items on the packing lists have been accounted for.

Conditioning Bath

2.2 Use a fork lift to remove the Bath Tank from the shipping pallet and position the tank in the desired location and level the tank by shimming the legs of the tank. Be sure to allow adequate floor space for maintenance.

2.3 Connect bath "fill" and "drain" valves to their appropriate plant services. Be sure to connect the water supply to the solenoid valve if your system is so equipped.

Connect the drain valve and the overflow to the plant drain connection. These connection points are well marked.

2.4 Connect the electrical supply, usually 30 amps, 208-240/110-120 VAC / 60 Hertz / One Phase to the customer's power terminal block located in the control cabinet and in accord with the requirements on the data label. Refer to drawing C- 1196.

===== **CAUTION** =====

Do not open the control cabinet without disconnecting power sources. It is suggested that all circuits be connected to a single disconnect box whenever possible.

2.5 Fill the bath with water to the desired level and check for leaks. Do not use contaminated water for this will accelerate corrosion and result in additional problems. Some customers treat the water with corrosion preventatives to lengthen the time required between water changes. Tests must be run to determine the effect of any additives prior to their use. Some customers use deionized water in their baths and this seems to be the best long term solution.

It is suggested that the water be changed once a year or more often, depending on local conditions. Do not place any regular steel fittings in the bath or in the water feed line! Only Brass or Stainless Steel components are acceptable.

3.0 DESCRIPTION

The specimen conditioning bath provides temperature control of the test specimens by a temperature controlled water bath.

The basic test bath consists of an insulated stainless steel tank with an external painted steel case and temperature control equipment as needed to satisfy the specific test requirements.

The test baths are usually equipped with heaters and a recirculating pump to provide uniform temperature.

The test baths can also be supplied with an automatic water level control and can be supplied with optional cooling accessories. Cooling is usually provided by the introduction of chilled water into the tank upon demand by the temperature controller.

Specimen mounting provisions are made with stainless steel sheet metal fixtures for small pipe specimens.

Other custom arrangements can be designed to suit individual testing requirements. Please call the factory for further information or for a special price quote.

4.0 CONTROLS

(Refer to Drawing A-1278-E)

4.1 Main circuit breaker or GFI circuit breaker controls the electrical power to the bath heaters and electrical controls. The baths usually require 208-240V/50/60Hz/1Ph for the heaters and 110-120V/50/60Hz/1Ph for the controls and pump.

4.2 Float Switch & Pilot Light, allows the float to activate the fill solenoid when the water level drops below the set point. The pilot light shows the Auto fill system is "ON".

4.3 Temperature Switch & Pilot Light, controls the electrical power to the temperature controller to operate heating. The pilot light shows the temperature control system is "ON".

===== NOTE =====

Two safety features installed in this system are: the pump switch must be in the ON position for the heater SSR to activate and the heater control SSR will only be active if the water flow sensor shows that water is being circulated through the system by the pump. Only when both of these conditions are met will the heating system be able to activate.

4.4 Temperature Controller maintains bath temperature by activating heating system as per settings. A sensing thermocouple in the test bath provides temperature measurement for the controller. See safety feature note above if the temperature controller shows as being activated but temperature does not increase. To calibrate the controller, see the manufacturer's instruction book located in the back section of this manual. Contact the factory if further information is required.

4.5 Pump Switch & Pilot Light, energizes the pump and circulates the water in the bath through a filter and evenly distributes the heated water. The pilot light shows the pump is "ON".

5.0 OPERATION

5.1 Fill the tank with water or solution to the float valve or the overflow pipe. Remember to allow for displacement of the water or solution whenever specimens are inserted or removed from the bath. **DO NOT OVERFILL THE BATH.**

5.2 Install specimens in the tank and connect to the pressure lines. Check for leaks before proceeding.

Refer to the instruction manual for your Hydrostatic testing equipment.
Bleed air from the specimens before heating your bath.

Do not apply final test pressure to the specimens until after they have completed their proper soak times. Refer to the proper ASTM or ISO standard.

5.3 Position the specimens so as to not damage the temperature sensing thermocouple located in the bath.

5.4 Turn on the recirculating pump and operate the temperature controls in accord with the manufacturer's instructions to reach the desired testing temperature.

5.5 Start your Hydrostatic testing equipment per instructions for your unit when the desired test bath temperature is reached.

Allow sufficient soak time for the specimens to reach the bath temperature according to ASTM D1598 standard, ISO standard or CSA standard you are using.

6.0 MAINTENANCE

6.1 Change water yearly or as needed, to prevent contamination and bacterial growth.

6.2 Lubricate pump and motor with mineral oil semi-annually. Refer to the pump manufacturer's instructions for additional maintenance procedures.

6.3 Use a commercial stainless steel cleanser to remove stains from the tank when cleaning.

6.4 Check the pump manufacturer's recommendations for additional maintenance suggestion.

6.5 Change the water filters on a regular schedule. We recommend replacing the filters at least once yearly or whenever the bath water is changed.

===== CAUTION =====

Extreme care must be taken when doing maintenance or any other work on a heated test bath. Burns or scalding could result by not wearing protective clothing and following established safety procedures.

===== CAUTION =====

Flow switch operation should be tested regularly. Check to verify there is flow when PUMP switch is turned on before turning on TEMPERATURE CONTROL. Heater tube can overheat and burn thermal blanket.

HGI offers an upgrade to Conditioning Baths with adds a limiter controller and thermocouple directly in heater tube to prevent overheating or fire. Contact HGI for more details

7.0 ===== CAUTION =====

7.1 Do not heat test bath without turning on the water pump system and having water covering the controller sensing thermocouple.

7.2 Avoid placing any regular steel parts in the test bath, as severe corrosion will result.

7.3 Use care when opening the heated test bath, some test temperatures are very high and steam burns of hands and arms can result.

===== NOTE =====

WEAR HAND AND ARM PROTECTION

7.4 Use Caution and observe the test bath water level when placing large specimens into the tank to prevent an overflow and possible scalding of the operator. Place all specimens in the tank slowly to avoid this hazard.

7.5 Always check bath and specimen temperature before attempting to work on the specimens to prevent possible scalding of the hands. The specimen connection hoses are of adequate length to permit easy removal of the whole assembly.

7.6 When installing specimens into the tank, care must be taken to prevent damage to the temperature sensing thermocouple.

7.7 Do not heat test bath without the circulating pump operating as improper temperature distribution may result.

7.8 Do not use end caps outside of the water test bath unless proper safety precautions are taken to prevent injury.

8.0 BATH COMPONENTS

8.1 An inner stainless steel tank shell with an outer painted steel tank shell, with fiberglass insulation between.

8.2 A fiberglass insulated inner stainless steel tank lid with an outer painted steel tank lid with stainless steel hinges and gas struts.

8.3 Stainless steel specimen racks and pressure manifolds.

8.4 Immersion heaters, recirculating pump, overflow pipe and control valving to operate system.

8.5 Electrical control box with circuit breaker or GFI circuit breaker as required and electrical controls with operation lights.

Conditioning Bath

DEC 6, 1993

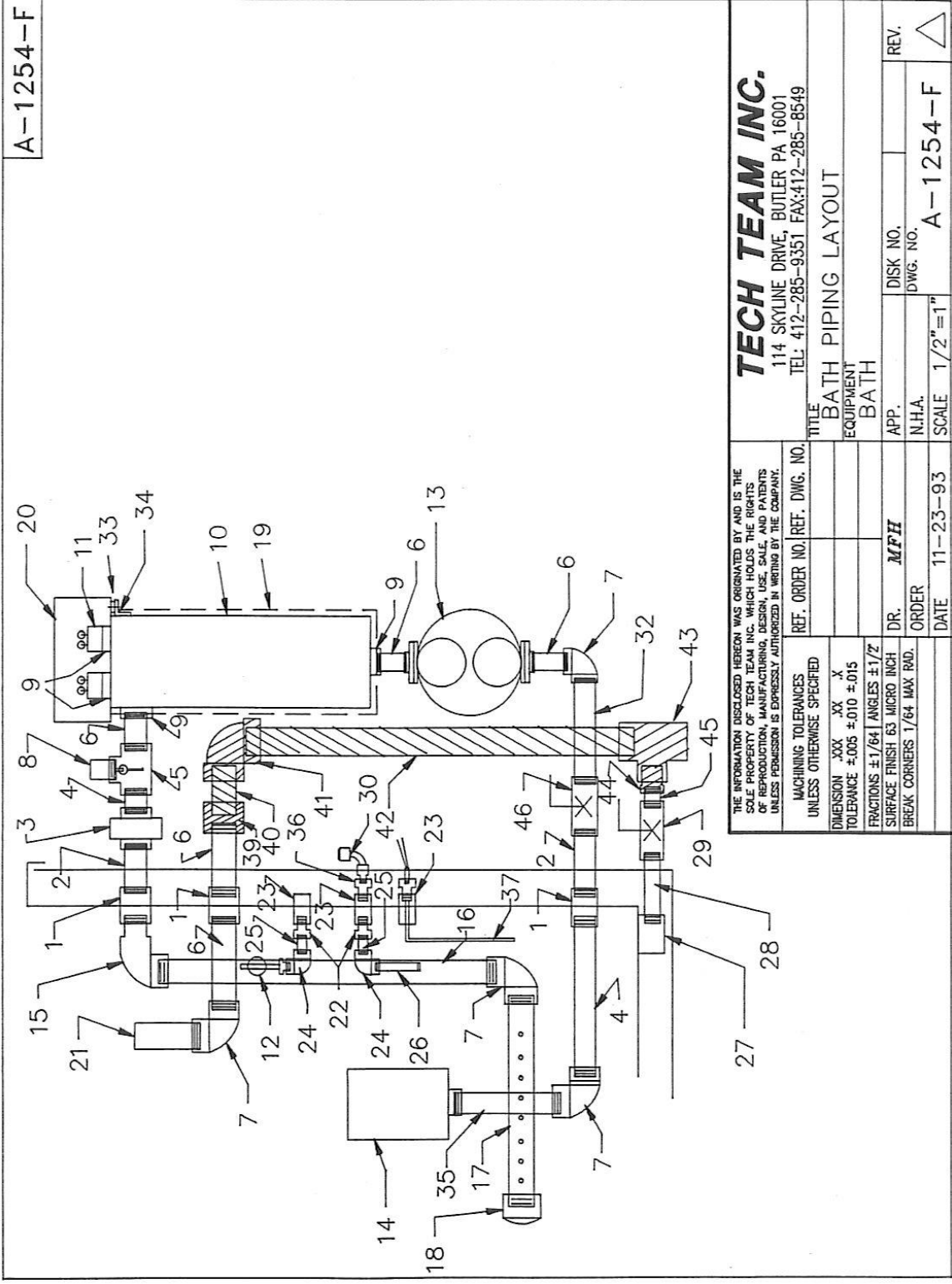
Bath Components

BMA1254F

Bill of Material
 Drawing No. A-1254-F
 Bath Pump Piping Layout

Item	Qty	Description	Part Number	
1	3	Coupling 1"	A-1254-1	(304 SS)
2	2	Nipple 1" x 5" Lg	A-1254-2	(304 SS)
3	1	Union 1"	A-1254-3	(304 SS)
4	3	Nipple 1" Close	A-1254-4	(304 SS)
5	1	Tee 1"	A-1254-5	(304 SS)
6	4	Nipple 1" x 3" Long	A-1254-6	(304 SS)
7	3	Elbow 1"	A-1254-7	(304 SS)
8	1	Flow Switch	A-1254-8	
9	4	Half Coupling 1" x 3/4" Long	A-1254-9	(304 SS)
10	1	Heater Tube (18" Long)	A-1254-10	(304 SS) TTI
11	2	Heating Elements 3KW @	A-1254-11	
12	1	Float	A-1254-12	
13	1	B/G Pump 1" NPT B100	A-1254-13	
14	1	Filter 1" NPT	A-1254-14	
15	1	Street Elbow 1"	A-1254-15	(304 SS)
16	1	Nipple 1" x 32" Long	A-1254-16	(304 SS)
17	1	Nipple 1" x 77" Long	A-1254-17	(304 SS)
18	1	Cap 1"	A-1254-18	(304 SS)
19	1	Insulating Jacket 4" Dia	A-1254-19	
20	1	Elect Box 6x6x4	A-1254-20	
21	1	Nipple 1" x 2" Thrd 1 End	A-1254-21	(304 SS)
22	2	Reducer 1/2" x 1/4"	A-1254-22	(304 SS)
23	3	Coupling 1/2"	A-1254-23	(304 SS)
24	2	Elbow 1/4"	A-1254-24	(304 SS)
25	2	Nipple 1/4" Close	A-1254-25	(304 SS)
26	1	Nipple 1/4" x 3" Long	A-1254-26	(304 SS)
27	1	Drain	A-1254-27	(304 SS) TTI
28	1	Nipple 3/4" x 5" Long	A-1254-28	(304 SS)
29	1	Ball Valve 3/4"	A-1254-29	(Bronze)
30	2	Elbow 1/4"NPT-1/4" Tube	A-1254-30	
31	1	Plastic Tube 1/4"	A-1254-31	(NOT SHOWN)
32	1	Nipple 1" x 6" Long	A-1254-32	(304 SS)
33	4	Spacers HDPE	A-1254-33	TTI A1879
34	4	Tabs SS	A-1254-34	TTI A1878A
35	1	Nipple 1" x 16" Long	A-1254-35	(304 SS)
36	1	Reducer 1/2" x 1/4"	A-1254-36	(Brass)
37	1	Thermocouple	A-1254-37	
38	1	Automatic Valve 1/4"	A-1254-38	(NOT SHOWN)
39	1	Adapter 1" FPT-1" CPVC	A-1254-39	(CPVC)
40	1	Nipple 1" x 3" Long	A-1254-40	(CPVC)
41	2	Elbow 1"	A-1254-41	(CPVC)
42	1	Nipple 1" x 20" Long	A-1254-42	(CPVC)
43	1	Tee 1"	A-1254-43	(CPVC)
44	1	Bushing 1" x 3/4"FPT	A-1254-44	(CPVC)
45	1	Nipple 3/4" x 3"	A-1254-45	(Brass)
46	1	Ball Valve 1"	A-1254-46	(Bronze)

Bath Order Number _____



A-1254-F

<p>TECH TEAM INC. 114 SKYLINE DRIVE, BUTLER PA 16001 TEL: 412-285-9351 FAX:412-285-8549</p>	
<p>TITLE BATH PIPING LAYOUT</p>	
<p>EQUIPMENT BATH</p>	
<p>DR. MPH</p>	<p>DISK NO.</p>
<p>ORDER</p>	<p>DWG. NO. A-1254-F</p>
<p>DATE 11-23-93</p>	<p>SCALE 1/2"=1"</p>
<p>REV.</p>	<p>△</p>

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REF. ORDER NO. | REF. DWG. NO.

MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED

DIMENSION .XXX .XX .X
 TOLERANCE ±.005 ±.010 ±.015
 FRACTIONS ±1/64 ANGLES ±1/2°
 SURFACE FINISH 63 MICRO INCH
 BREAK CORNERS 1/64 MAX RAD.

Conditioning Bath

Bath Components

BMA1255A

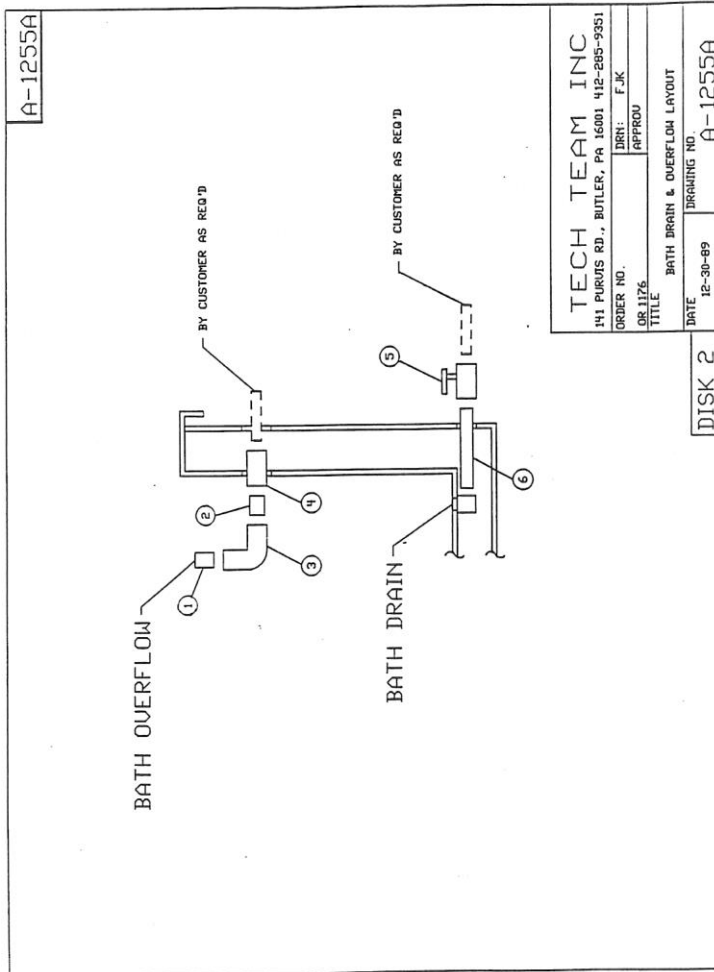
Bill of Material

for

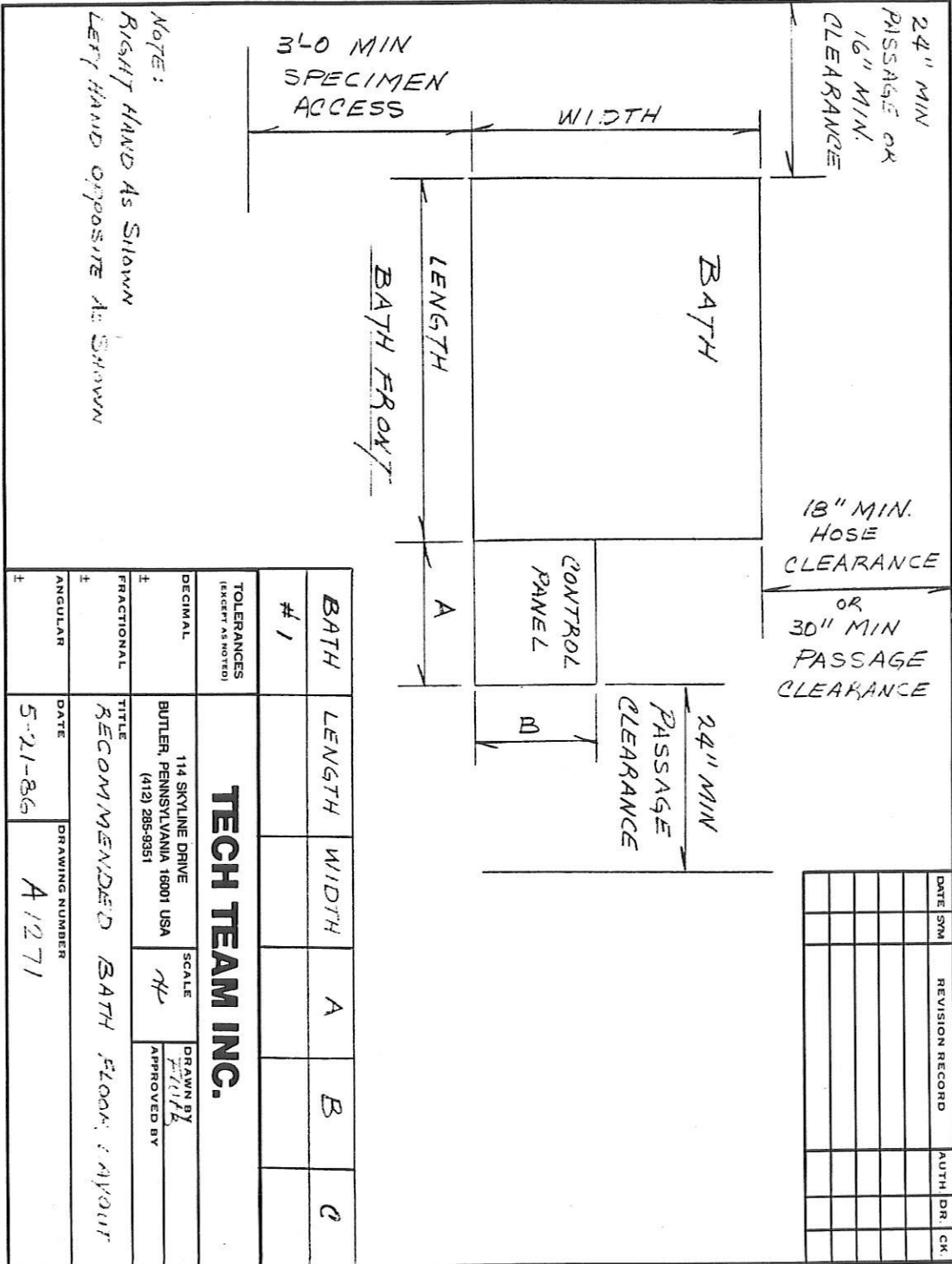
Drawing No. A-1255A

Piping Layout For Bath Overflow & Drain

Item	Qty	Description	Part Number
1	1	Nipple 1"x 3" (thread one end)	A-1255A-1 (316 SS)
2	1	Nipple 1"x 2"lg.	A-1255A-2 (316 SS)
3	1	Elbow 1"	A-1255A-3 (316 SS)
4	1	Coupling 1"	A-1255A-4 (316 SS)
5	1	Ball valve 3/4" bronze	A-1255A-5
6	1	Nipple 3/4"x 5"lg.	A-1255A-6 (316 SS)



Conditioning Bath



NOTE:
 RIGHT HAND AS SHOWN
 LEFT HAND OPPOSITE AS SHOWN

K&E ALBANY, N.Y. 12205
 ENGINEERS' STANDARD FORM

DATE	SM	REVISION RECORD	AUTH	DR.	CK.

BATH #	LENGTH	WIDTH	A	B	C
# 1					

TOLERANCES (KEEP AS NOTED)

TECH TEAM INC.

114 SKYLINE DRIVE
 BUTLER, PENNSYLVANIA 16001 USA
 (412) 286-9351

SCALE: *HP*

DRAWN BY: *HP*
 APPROVED BY: *HP*

DECIMAL

FRACTIONAL

ANGULAR

DATE: 5-21-86

DRAWING NUMBER: A 1271

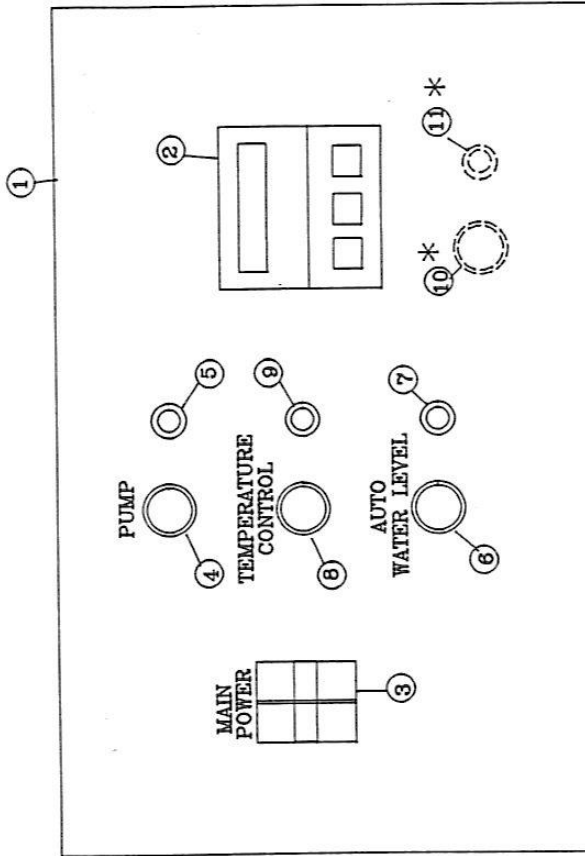
TITLE: RECOMMENDED BATH FLOOR LAYOUT

MADE IN U.S.A.

Conditioning Bath

A1278C

ITEM	QTY	DESCRIPTION
1	1	BATH CONTROL PANEL, C-1017C
2	1	TEMPERATURE CONTROLLER
3	1	CIRCUIT BREAKER
4	1	PUMP SWITCH/LIGHT
5	1	PUMP FUSE
6	1	AUTO FILL SWITCH/LIGHT
7	1	AUTO FILL FUSE
8	1	TEMPERATURE SWITCH/LIGHT
9	1	TEMPERATURE FUSE
10	1	CHILLER SWITCH/LIGHT
11	1	CHILLER FUSE



ADDITIONAL TAGS REQUIRED

QTY	DESCRIPTION
1	DRAIN
1	OVERFLOW
5	WARNING/ELECTRIC
1	WARNING/STEAM
1	TECH TEAM INC.
1	SERIAL No.

NOTE.
 *CHILLER CONTROL SWITCH/LIGHT & FUSE
 ARE OPTIONAL EQUIPMENT #10 & #11

TECH TEAM INC.
 114 SKYLINE DRIVE BUTLER, PENNSYLVANIA 16001
 TEL: 412-285-9351 FAX: 412-285-8549
 ORDER No. DRAWN BY MFH
 REVISED
 TITLE BATH CONTROL PANEL
 DATE 11/17/91 DRAWING No. A1278C
 REV.

Conditioning Bath

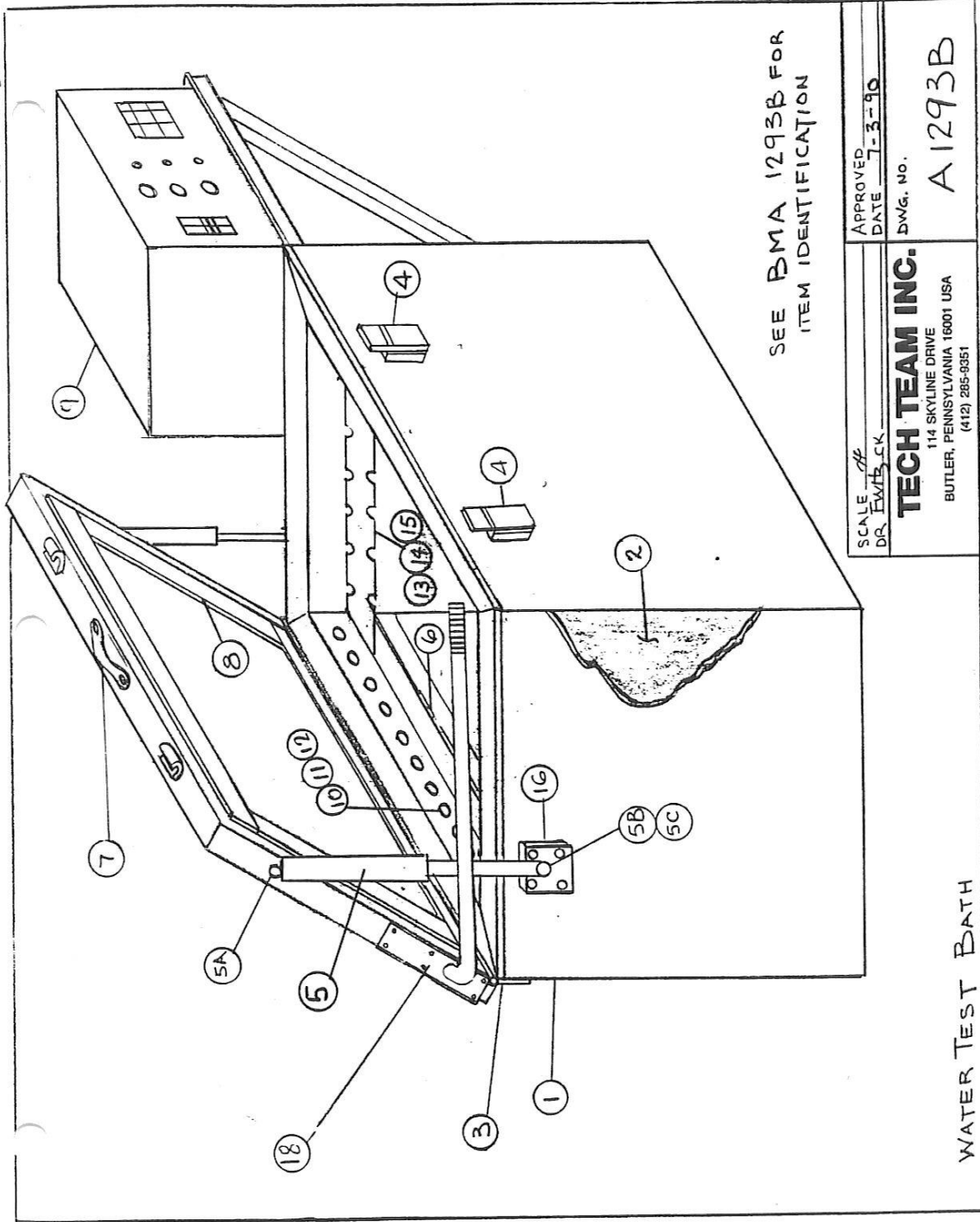
Bath Components

BMA1293B

BILL OF MATERIAL
for
Drawing No. A-1293B
For Bath Pump Piping Layout

Item	Qty	Description	Part Number
1	1	Tank and Lid	A-1293-1
2	1	Fiberglass Insulation	A-1293-2
3	1	Hinge SS	A-1293-3
4	2	Latch and Keeper	A-1293-4
5	2	Holder, Gas Spring	A-1293-5
5A	2	Stud	A-1293-5A
5B	2	Clip	A-1293-5B
5C	2	Fitting	A-1293-5C
6	2	Stainless Steel Angles	A-1293-6
7	1	Chrome Handle	A-1293-7
8	1	Seal - Silicon Sponge	A-1293-8
9	1	Bath Control Cabinet	A-1293-9
10	48	Brass Bulkhead Fitting 1/4"	A-1293-10
11	48	Brass Hole Plug	A-1293-11
12	0	Black Hole Plug	A-1293-12
13	5	Specimen Support Plate	A-1293-13
14	5	Speciment Support Bar	A-1293-14
15	5	Speciment Support Clamp	A-1293-15
16	2	Gas Spring Mounts	A-1293-16
17	0	Condensation Tray	A-1293-17
18	1	Low Thrust Handle	A-1293-12

Conditioning Bath



BILL OF MATERIAL

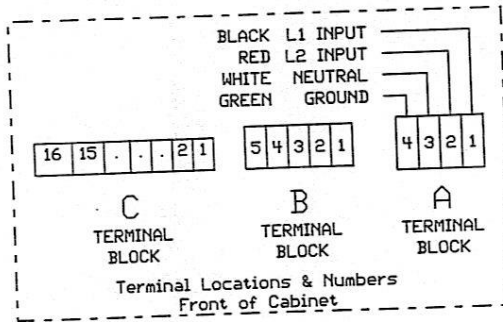
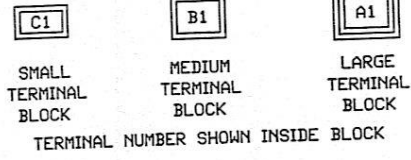
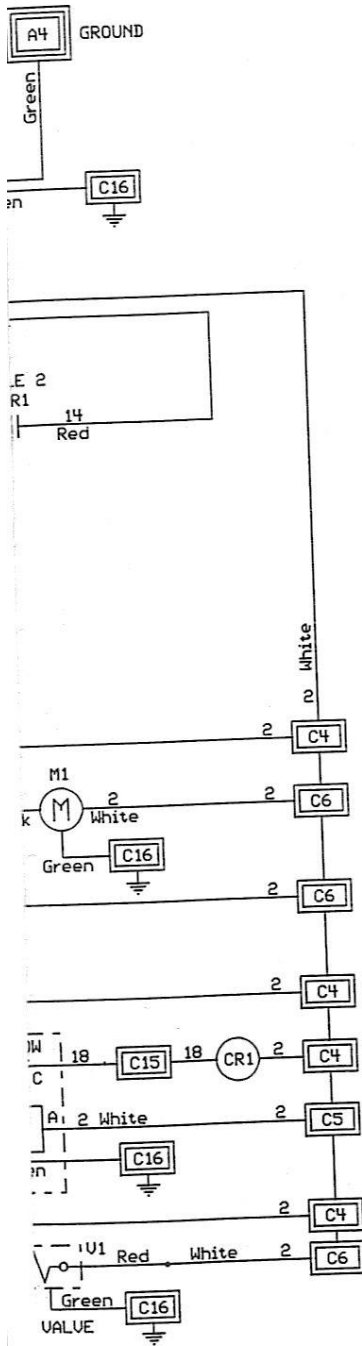
ELECTRICAL

(use with Drawing B-1063J)

Item	Qty	Description	Part Number
1	1	Circuit Breaker Dual	B-1063J-01 (THQL)
2	1	Challenger Box	B-1063J-02 (TL240S 40)
3	1	Mercury Relay 2 pole NO	B-1063J-03 (6X598E)
4	1	Partlow MIC 2000 controller	B-1063J-04 (2110101)
5	1	Thermocouple	B-1063J-05 (J29018U-01A)
6	1	Solid State Relay	B-1063J-06 (SSRT-240A10)
7	2	Electrical Heaters	B-1063J-07
8	1	Level Switch Gems	B-1063J-08 (26717)
9	1	Paddle Switch Gems	B-1063J-09 (30641)
10	1	Fill Valve Solenoid ASCO	B-1063J-10 (8000G)
11	3	Fuse Holder HKP	B-1063J-11 (345613A)
12	1	Fuse 5 Amp	B-1063J-12 (MDX-5)
13	2	Fuse 1 Amp	B-1063J-13 (AGC-1)
14	2	Switch SPST & Indicator Light	B-1063J-14 (10101)
15	1	Switch DPST & Indicator Light	B-1063J-15 (10102)
16	1	16 Terminal Block 20 Amp	B-1063J-16 (76008)
17	1	4 Terminal Block 30 Amp	B-1063J-17 (524)
18	1	3 Terminal Block 60 Amp	B-1063J-18 (212)
19	2	MOV/Surge protector	B-1063J-19 (C10DK201)
20	10ft	Wire #10 AWG Green	B-1063J-20
21	12ft	Wire #10 SRML Black	B-1063J-21
22	25ft	Wire #14 SRML White/Black	B-1063J-22
23	12ft	Wire #16 AWG Green	B-1063J-23
24	35ft	Wire #16 AWG White	B-1063J-24
25	35ft	Wire #16 AWG Black	B-1063J-25
26	5ft	Wire #16 AWG Red	B-1063J-26
27	2	Wire Nuts (Orange)	B-1063J-27 (30-073)
28	2	Butt Splice (Blue)	B-1063J-28 (BSV14X-C)
29	4	Butt Splice (Red)	B-1063J-29 (BSV18X-C)
30	2	Fork Terminal (Yellow #6)	B-1063J-30 (RB10-6F)
31	4	Fork Terminal (Blue #6)	B-1063J-31 (RB14-6F)
32	5	Fork Terminal (Blue #8)	B-1063J-32 (RB14-8F)
33	48	Fork Terminal (Red #6)	B-1063J-33 (RA18-6F)
34	2	Ring Terminal (Blue #8)	B-1063J-34 (PV14-8R)
35	1	Hubble Connector Skintight	B-1063J-35 (NTP 1/2)
36	2	Romex Connectors 1/2"	B-1063J-36
37	4	locktight Connector 1/2"	B-1063J-37 (STC 50)
38	4	Locktight Connector 90 1/2"	B-1063J-38 (STC 50-90)
39	3	Lock Nut 1/2"	B-1063J-39
40	8ft	LiquidTite Conduit 1/2"	B-1063J-40
41	42	Tie Wrap Cable Stay - Small	B-1063J-41 (PLT1M-C)
42	30	Tie Wrap Cable Stay - Medium	B-1063J-42 (PLT11.51-M)
43	7	Hold Down Cable Tie	B-1063J-43 (ABMS-A-C)

Conditioning Bath

B-1063J



TECH TEAM INC		
114 Skyline Drive Butler, PA 16001		
TEL: 412-285-9351		
FAX: 412-285-8549		
ORDER NO. OR1288 & STANDARD	DRN: KRL	
		APP: KRL
TITLE BATH ELECTRICAL SCHEM.		
DATE 9-01-92	DRAWING NO. B-1063J	REV. 1

Conditioning Bath

