INSTRUCTION MANUAL
MODEL 1200
ATMOSPHERIC CONSISTOMETER
(Original Instructions)

Revision F – May 2025
P/N: 12-0385

S/N: _____

CHANDLER ENGINEERING®

AMETEK®

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General Information

Introduction

This manual contains installation, operation, and maintenance instructions for the Chandler Engineering Model 1200 Atmospheric Consistometer.

Purpose and Use

The Chandler Engineering Model 1200 Atmospheric Consistometer is used for various tests of oil well cements as detailed in the American Petroleum Institute *Specification for Materials and Testing for Well Cements - Specification 10A (API Spec 10A)*. The apparatus is used in conjunction with tests for:

- Determination of Water Content of Slurry
- Determination of Fluid Loss
- Determination of Rheological Properties of Cement Slurries

Description

The Chandler Engineering Model 1200 Atmospheric Consistometer consists of a stainless-steel water bath that houses two slurry containers. The instrument front panel contains a microprocessor-based temperature controller that also serves as a digital temperature indicator. The temperature controller operates a relay that controls a 1500-watt heater. The Model 1200 includes cooling coils as a standard feature.

Lighted switches that also serve as circuit breakers are installed in the front panel. The circuit breaker function of these switches eliminates the necessity for in-line fuses.

Units of consistency for the cement slurry are directly indicated on the top dials of the slurry containers. Slurry consistency is expressed in Bearden units of consistency, Bc, where 100 Bc is equivalent to the spring deflection observed with 2,080 grams-centimeter of torque (400 grams weight) using the weight-loaded calibrating device. For further details, refer to *API Spec 10A*.

The slurry containers are rotated by engaging the pins of the lid with the slots on the rotator. The rotators are fitted with timing sprockets driven by the motor, which is factory set at 150 rpm. The belt also drives an impeller that agitates the water bath. The motor should be turned off before engaging or disengaging the slurry container.

Features and Benefits

- CE certified.
- Temperature is measured accurately using a microprocessor-based temperature controller.
- Rate of water bath rise can be controlled to conform with *API Spec 10A* requirements or other temperature gradients desired.
- Stainless-steel water bath ensures long trouble-free operation in the normally corrosive cement testing environment.
- Operational simplicity provides freedom from operator error and a short training period for new operators.
- Units are designed for trouble-free oil field laboratory operation.
- Direct torque spring readout permits instant determination of the slurry viscosity in Bearden Units (Bc).
- Standard deadweight calibration is both simple and rapid, aiding measurement accuracy. (An optional calibrator unit may be purchased.)
- Constant temperature is maintained by a motor-driven stirred water bath that eliminates any hot spots on the slurry containers.
- Rotational speed of the slurry container is held constant by the drive motor assembly, which is factory set at 150 rpm.
- A variable speed option is available for studies at slurry container rotational speeds other than 150 rpm.
- Internal cooling coils provide quick cooling of the slurry.

Specifications

Operating Conditions

Input Voltage:	**208 – 240 VAC**
Input Current:	**8A**
Frequency:	**50 / 60 HZ, 1PHASE**
Maximum Working Temperature:	**200°F (93°C)**
Minimum Working Temperature:	**41°F (5°C)**
Heater Wattage:	**1500 W**
Maximum Inlet Water Pressure:	**100 psi (689 kPa)**
Measurement Range:	**0 - 100 Bc**
Slurry Container Volume:	**28 cubic inches (470 ml)**
Slurry Cup Rotational Speed:	**150 rpm supplied as standard (Option D-1 provides variable speeds from 50 - 200 rpm)**

Environmental Conditions

Environment:	**Indoor Use**
Altitude:	**6561.6 ft (2000m)**
Temperature:	**41°F - 104°F (5°C - 40°C)**
Relative Humidity:	**80% for temperatures up to 31°C decreasing linearly to 50% at 40°C**

Weights and Dimensions

Dimensions:	**25” (64cm) high x 15.5 (39cm) wide x 18” (45cm) deep**
Shipping Dimensions:	**29” (74cm) high x 20” (51cm) wide x 29” (74cm) deep**
Net Weight:	**110 lbs (50 kg)**
Shipping Weight:	**190 lbs (86 kg)**

Safety Requirements

READ BEFORE ATTEMPTING OPERATION OF INSTRUMENT

The Chandler Engineering Model 1200 Atmospheric Consistometer is designed for operator safety. Any instrument that is capable of high temperatures should always be operated with **CAUTION**!!

To ensure safety:

- Locate the instrument in a low traffic area and ensure the cooling vent is not obstructed.
- Always position the instrument in such a manner that allows easy access to the power cord.
- If the instrument is not used in accordance to this manual, the safety of the instrument may be impaired.
- Post signs where the instrument is being operated to warn non-operating personnel.
- Read and understand instructions before attempting instrument operation.
- Observe caution notes!
- Observe and follow the warning labels on the instrument.
- Never exceed the maximum temperature rating of the instrument.
- Always disconnect main power to the instrument before attempting any repair.
- Turn off the heater at completion of each test.
- Appropriately-rated fire extinguishers should be located within close proximity.
- Avoid contact with moving parts.
- Never exceed the instrument maximum pressure and temperature ratings. The particular safety requirements associated with the handling and use of the medium to be tested, especially the additional requirements associated with handling potentially flammable liquids or otherwise hazardous agents are the responsibility of the customer – proper precautions must be taken to reduce the risk of fire or explosion.

Before attempting to operate the instrument, the operator should read and understand this manual.

Symbols Used on Equipment

Symbol	Meaning
	Protective Conductor Terminal
	Hazardous Voltage Inside Disconnect power before opening
	Hot Surface Do Not Touch Allow to cool before servicing
	Documentation must be consulted in all cases where this caution symbol is marked.

Where to Find Help

In the event of problems, contact your local sales representative or Chandler Engineering:

- Telephone: 918-250-7200
- Fax: 918-459-0165
- E-mail: chandler.sales@ametek.com
- Website: www.chandlereng.com

Instrument training classes are also available.

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Section 1 – Installation

Unpacking the Instrument

Verify all parts listed on the packing slip have arrived with the instrument. If parts are missing, contact Chandler Engineering immediately.

Lifting Instructions

To position the instrument for installation, a two person lift is recommended. Firmly grasp the bottom of the instrument frame on opposite sides while lifting to ensure the instrument stays level. Do not attempt to lift, carry, or move the instrument with only one person.

Utilities Required

208-240VAC, 8A, 50/60HZ
Water supply
Drain

Tools/Equipment Required

Basic hand tools

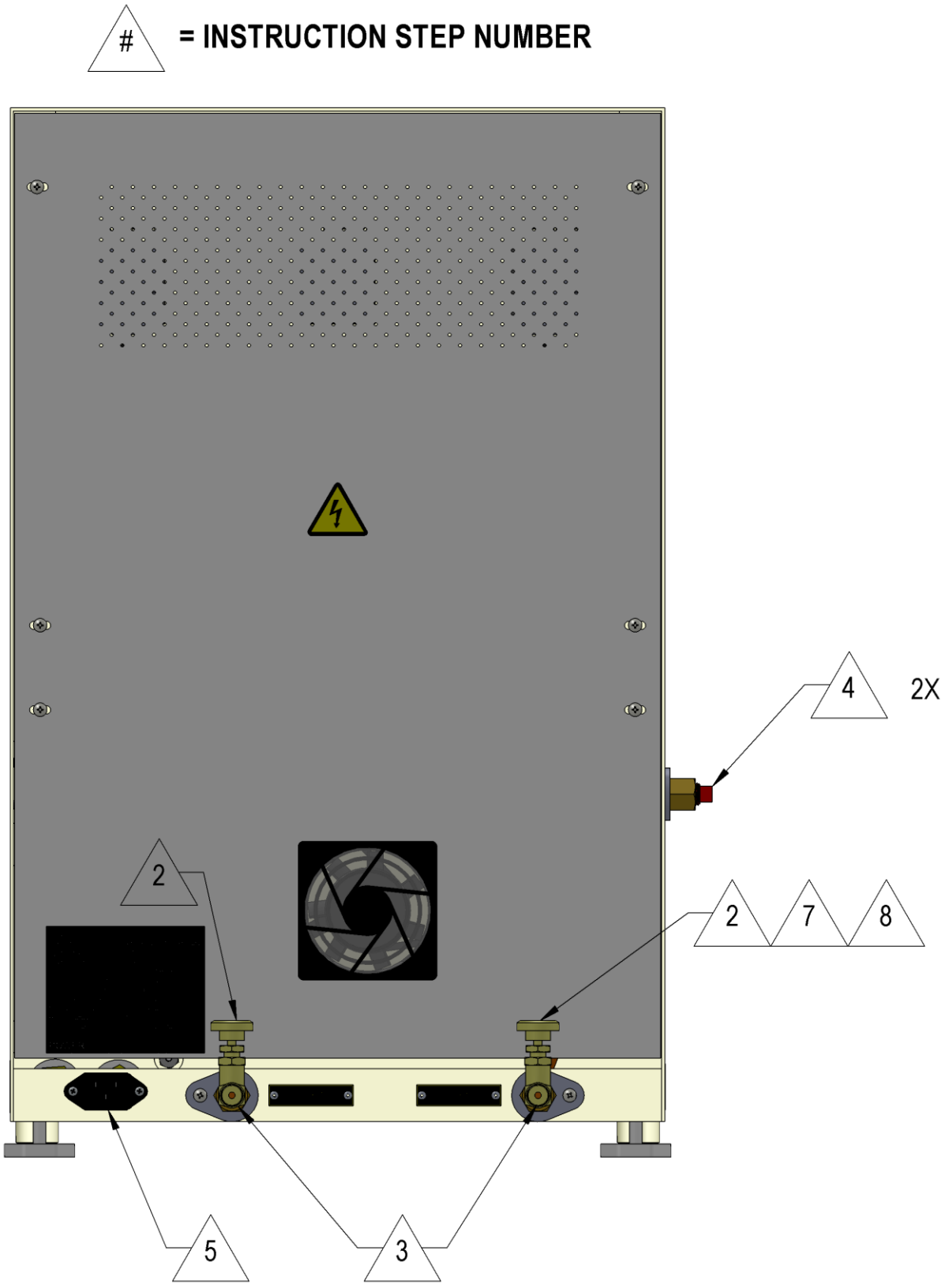
Setting up the Instrument

Refer to *Figure 1* for the following steps:

1. Place the instrument on a sturdy, level table.
2. Close the supply and drain valves.
3. Connect the water supply and drain lines.
4. Connect cooling coils to a cold water source and drain, if so desired. Cooling coil use is optional. Either connection can be used for the inlet or outlet.
5. Connect power cord to the correct voltage source.
6. Remove the slurry containers.
7. Fill the bath until it is 1/2” (12.5mm) below the brass rotating sleeves by opening up the water supply valve.
8. Close water supply valve when appropriate water level is obtained.

Note: *To prevent shock hazard, connect the instrument to an electrical outlet using a three-prong socket to provide positive ground.*

FIGURE 1
INSTALLATION – SETTING UP THE INSTRUMENT



Section 2 – Operating Instructions

Model 1200

As described in *Calibration Procedure*, found in *Maintenance - Section 3*, the paddle should be checked to ensure that it is not bent or does not rub the inside of the slurry container.

Refer to *Figure 2* for the following steps:

1. Verify the water level of the water bath is filled to 1/2" (12.5mm) below the brass rotating sleeves.
2. Set the desired test time using the appropriate timer. Refer to the *Timers* section for further details.
3. Turn the master switch ON.
4. Use the temperature controller to set the desired temperature or heating profile. Refer to *Set Point Control* in the *Temperature Controller* section for further details.
5. Prepare sample and fill the slurry container(s) as detailed in *API Spec 10A*.
6. Install the slurry container(s) in the instrument.
7. Turn on the motor switch.
8. Turn on the heater switch.
9. Turn the appropriate timer switch on to begin test.
10. A buzzer will sound upon completion of the test.

CAUTION: Remove the slurry on or before 100 Bc of torque to prevent shearing of the shear pin or slippage of the indicator caused by forcing it against the stop.

Timers

Timers are used to preset the sample conditioning time or to measure the total thickening time of the sample.

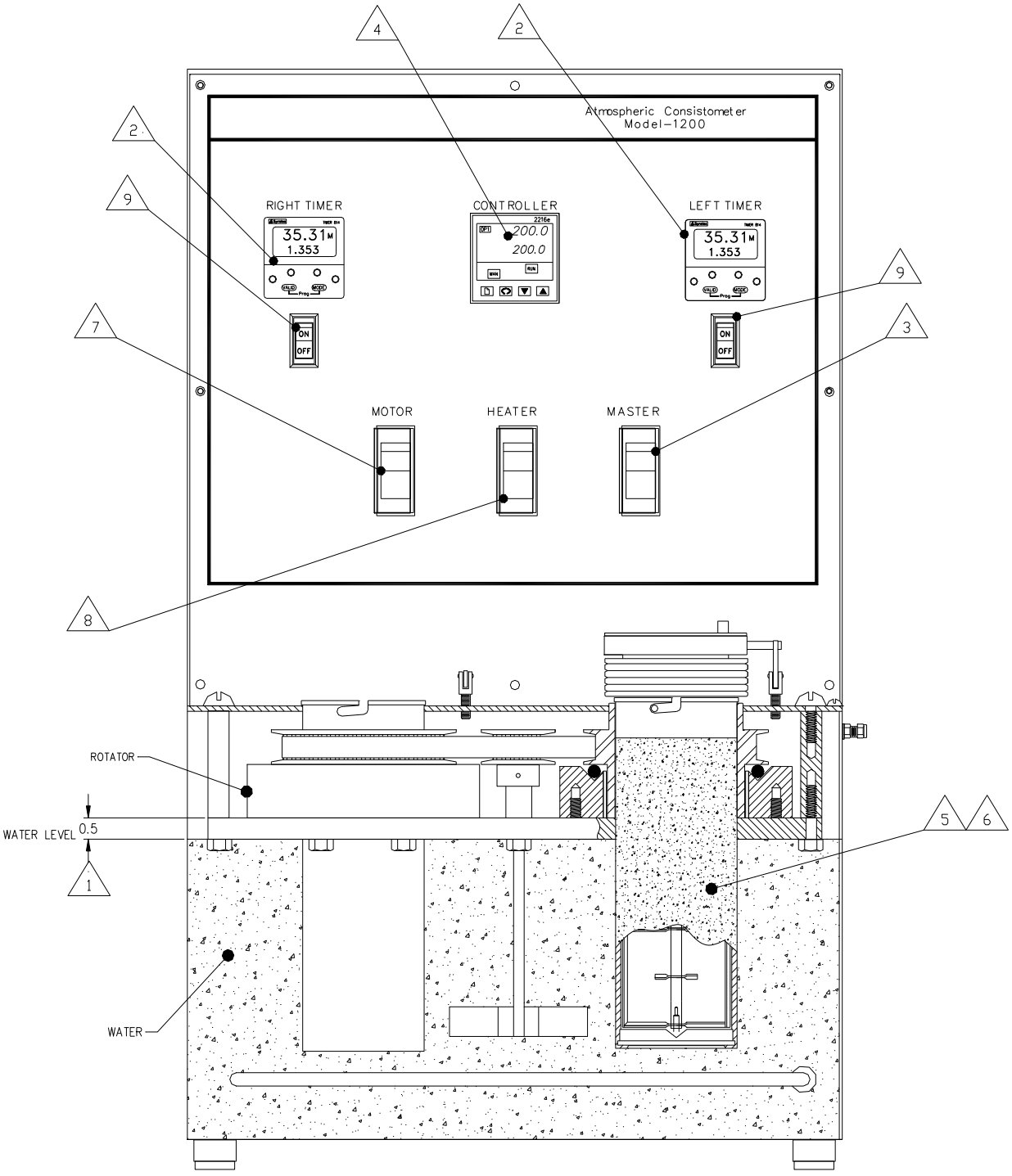
The switch below each timer is used to start or stop the timer. The timer range is factory set to read hours and minutes. The timer default value is set to 20 minutes. When the time has elapsed, an alarm will sound. The alarm may be silenced by turning off the timer switch. When the timer is turned off, it will reset to the preset time.

To change the timer values, press the round push buttons below each digit.

FIGURE 2

OPERATING PROCEDURE – MODEL 1200

△x = STEP #



Temperature Controller

FIGURE 3

Upper Readout: Displays the current value of the process variable. If the controller is being used to control temperature, this value indicates the temperature of the pressure vessel. This value is green when the controller or display is not in an Alarm state.

Alarm Beacon: Flashes when any new alarm occurs (e.g. Over Temperature or Over Pressure or Sensor Break). The beacon will stay illuminated when an alarm is acknowledged but still active.

Lower Readout: Displays the target Set Point if the controller is in Automatic Mode. This displayed value will vary depending on the mode of the controller. This line may also display a scrolling message.

Manual Mode: Indicates Manual Mode has been selected. In Manual Mode, the Raise and Lower buttons operate on the Output Power. In Automatic Mode (this icon is off), the Raise and Lower buttons operate on the Set Point.

Output Indicators: Illuminate when the appropriate output is activated. On this controller, only Output 1 is used.

Page: Used to page through the various menus in the controller.

Scroll: Used to scroll through the parameter settings within a menu page.

Note: Press Page + Scroll to return to the “Home” Display. When at the Home Display, Page + Scroll will acknowledge any alarm.

Lower / Raise: Used to change the value of a parameter. Press and hold the button for rapid changes.

Set-Point Control Configuration

The temperature controller is used to control the temperature of the water bath. To set the water bath temperature, perform the following:

1. The controller should be in Auto mode. If the Manual Mode indicator  is illuminated, press and hold the **Up and Down** buttons for more than 3 seconds.

2. Adjust the Temperature Set Point with the **Up** and **Down** arrow buttons. When the temperature is being controlled, the Output **1** light will flash.

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Section 3 – Maintenance

Tools Required

Adjustable wrench
Phillips screwdriver

Cleaning and Service Tips

- The slurry cup rotators are moved on fluorocarbon polymer bearings that have low friction resistance and require only occasional lubrication. It is recommended that the rotators be examined periodically and lubricated with light lubricating oil.
- Never replace the power cord with an inadequately rated power cord (see *Section 5 – Replacement Parts* for the Chandler Engineering part number).
- Dishwashing liquid and water are recommended for cleaning the cabinet and removable parts.

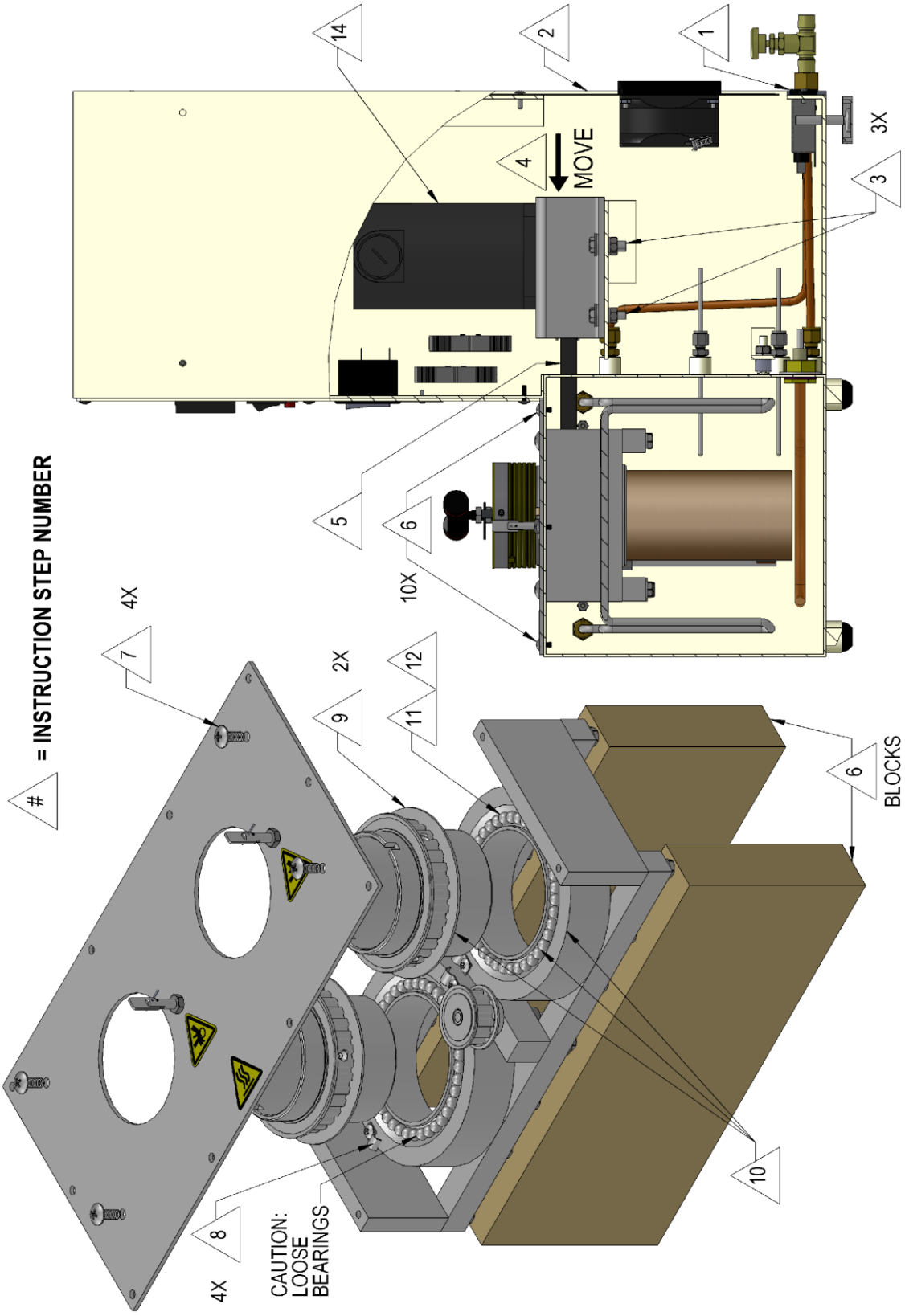
Refer to *Figure 4* for the following steps:

1. Disconnect electrical power.
2. Remove back protective cover plate.
3. Loosen bolts on motor mounting bracket.
4. Push motor forward.
5. Remove belt from motor timing sprocket.
6. Remove the ten (10) outer screws on the deck cover, remove the entire assembly from the water bath, and set it on blocks to prevent damage to the rotators.
7. Remove the four (4) inner screws on the deck and remove the top plate from the bearing housing.
8. Loosen and rotate retaining tabs securing the rotators in the bearing housing.
9. Pull rotators.

CAUTION: Watch for loose bearings when rotators are removed!

10. Clean rotators, bearings and bearing assembly with soapy water using Dishwashing liquid. Rinse with water and dry thoroughly.
11. Place bearings in bearing assembly. (**CAUTION:** Use 38 bearings per rotator!)
12. Apply oil generously to bearings.
13. Re-assemble instrument.
14. Pull motor back only enough to prevent belt slippage. Allow approximately 1/2" (12.5mm) slack in drive belt to prevent excessive side thrust to bearings. (**CAUTION**: Do not over-tighten belt!)

FIGURE 4 - CLEANING AND SERVICE TIPS



Calibration Procedure

Before calibration and operation of the instrument, the paddle should be tested for excessive friction by running the slurry container without cement inside. If the paddle is bent so that it rubs on the side, appreciable movement will be shown on the indicator. The bearings in the slurry-indicating lid should be checked for excessive friction. Any abnormality should be corrected before proceeding with the instrument calibration.

Calibration and operation of the instrument is described in *API Spec 10A*. This instrument is equipped with a calibrating spring and can be calibrated using the calibration device and adapter. The adapter is placed with screws on the right-rear side of the calibration device, and the ring rests on top of the lid. The roller located on the right-front side of the calibration device is raised to a position so that the cord is level with the lid.

Refer to *Figure 5* for the following:

1. Place the container lid on the calibration assembly.
2. Place the adapter ring on the container lid assembly.
3. Place the cord counterclockwise around the lid and attach 300 grams of weight.
4. Pull the weight down slightly and release a few times to obtain an average reading. The indicator should read "**7.5**" (75 Bc ± 5 Bc).
5. Corrections can be made by turning the small set screw to loosen the spring clamp inside the lid.
6. Slide the spring to the right when the indicator reads below "**75**" Bc.
7. Slide the spring to the left when the indicator reads above "**75**" Bc.
8. After the spring is adjusted, loosen the top nut and set the indicator hand to "**0**" Bc.
9. The "**75**" Bc must be re-checked.
10. Repeat steps 1 through 9 until "**0**" and "**75**" Bc are correctly indicated within ± 5 Bc.
11. When the spring has been adjusted to read 75 Bc with 300 grams, several points should be checked, such as 25 Bc – 100 grams, 50 Bc – 200 grams, and 100 Bc – 400 grams.

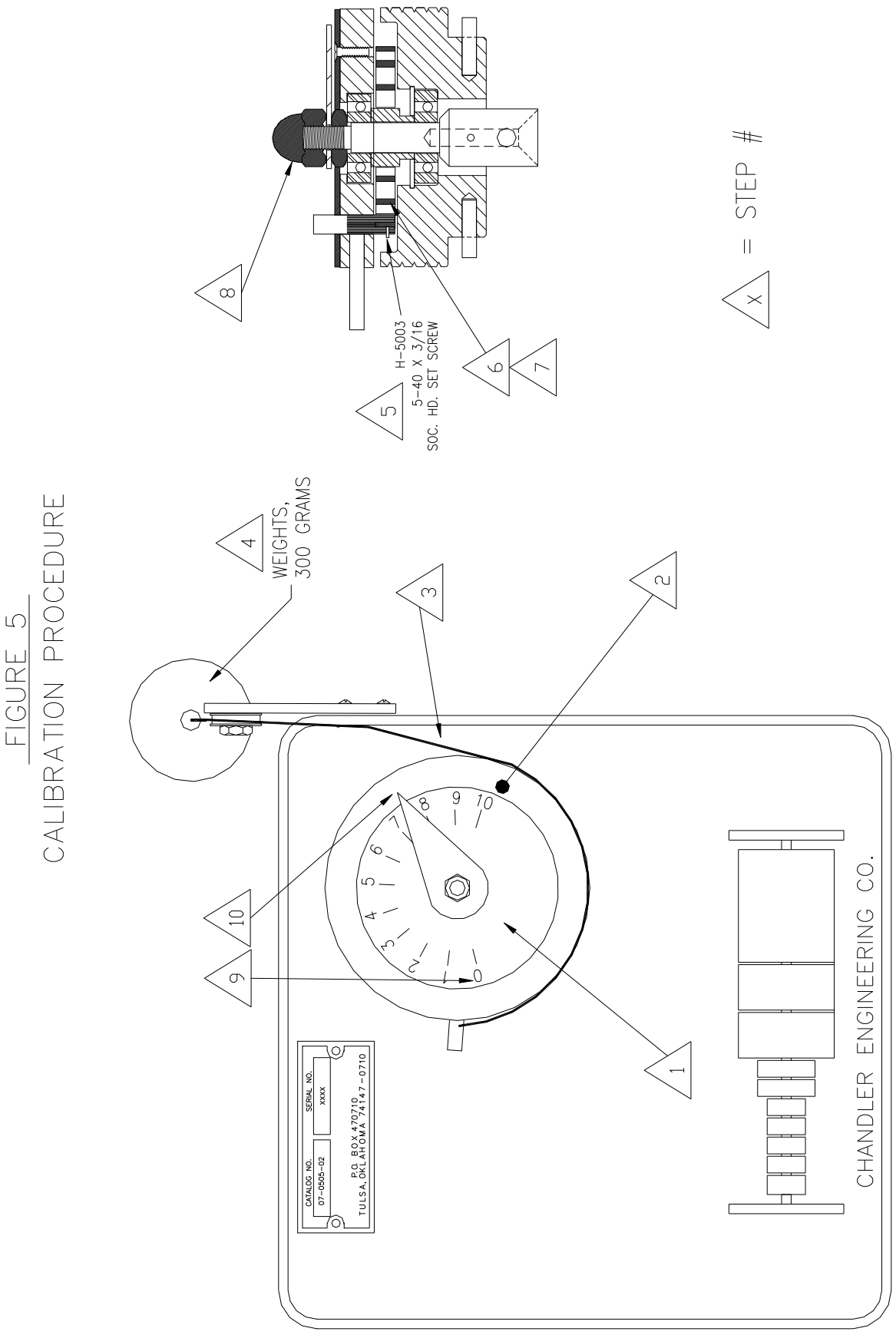


FIGURE 5
CALIBRATION PROCEDURE

Maintenance Schedule

MAINTENANCE SCHEDULE MODEL 1200 ATMOSPHERIC CONSISTOMETER					
COMPONENT	EACH TEST	MONTHLY	3 MONTHS	6 MONTHS	ANNUAL
Slurry Cup	Disassemble Clean Inspect				
Potentiometer Mechanism	Clean Inspect	Clean Inspect			●Calibrate
Drive Motor					●Check Speed
Rotators and Bearings			Clean Lubricate		
Temperature Controller					●Calibrated By Qualified Factory Service Technician
Thermocouple					●Calibrated By Qualified Factory Service Technician

This maintenance schedule applies to normal usage of two tests per day. Detailed procedures for these operations are contained in your manual.
● Per API Specifications

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Section 4 – Troubleshooting Guide

Problem	Solution
Unit will not power-up.	1. Check main power.
Drive motor is inoperative.	1. Replace motor controller fuse on the motor speed control board. 2. Clean and lubricate the bearings and rotators. 3. Replace brushes in the motor. 4. Replace the motor speed control board. 5. Replace motor.
Heater system is inoperative.	1. Replace solid state relay. 2. Replace temperature controller. 3. Replace heater.
Timer is inoperative.	1. Replace timer.

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Section 5 – Replacement Parts

Part Number	Description
07-0176	Thermocouple Assembly
07-0505-02	Potentiometer Calibrating Device Assembly (Optional)
12-0011	Container Lid Assembly
12-0021	Paddle Assembly
12-0023	Container Assembly
12-0033	Heater Assembly, 220V
12-0044	Bearing Housing Assembly
12-0045	Rotator Assembly
12-0047	Sprocket, Idler and Stirrer Assembly
12-0048	Impeller and Shaft Assembly
12-0056	Anchor Stop Assembly
12-0059	Internal Cooling Coil
12-0176	Timing Belt Sprocket, Coated
12-0177	Split Bushing, Coated
7080-1200-230V-M	Temperature Controller, Deg C
C17967	Timer
C08143	Fuse, 500mA, 250V, Slo-Blow
C09286	Motor, Gear, DC
C09287	Motor Speed Control
C12161	Timer Switch, SPST
C15529	Timer Buzzer
P-0025	Cable Clamp
P-0655	Glider Foot
P-0844	Shear Pin
P-1233	Rubber Foot
P-1500	Needle Valve
P-1648	Set Collar
P-1649	Timing Belt
P-1698	Nylon Bearing Balls
P-2948	Variable Speed Control Knob
P-3330	Solid State Relay
P-3389	Circuit Breaker Switch, 8A, 220V

To ensure correct part replacement, always specify Model and Serial Number of instrument when ordering or corresponding.

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Section 6 – Drawings and Schematic

Drawing Number	Description
07-0505-02	Potentiometer Calibration Device Assembly
12-0011	Container Lid Assembly
12-0330	Wiring Schematic, 200-240VAC
12-0333	Model 1200 Atmospheric Consistometer

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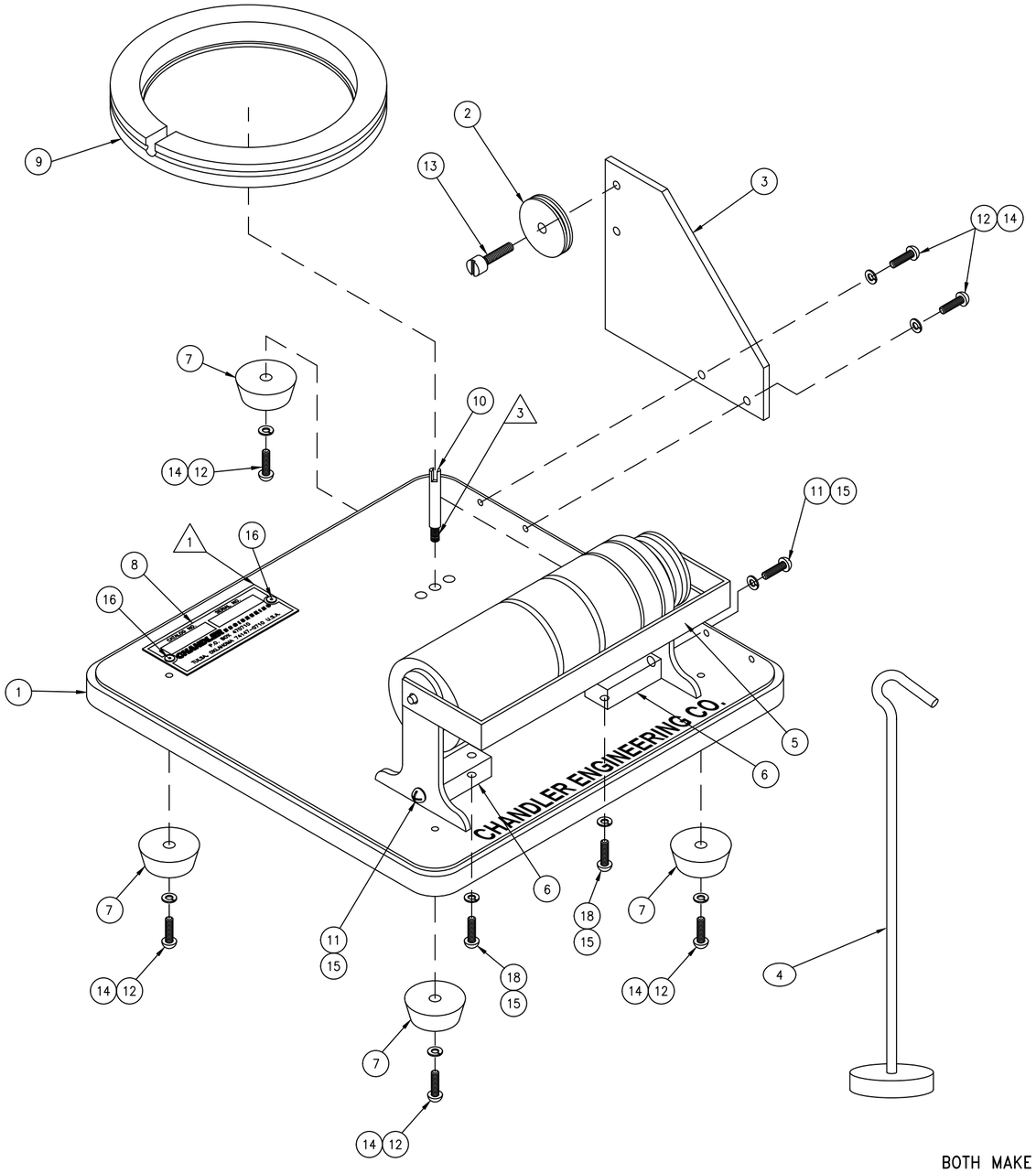
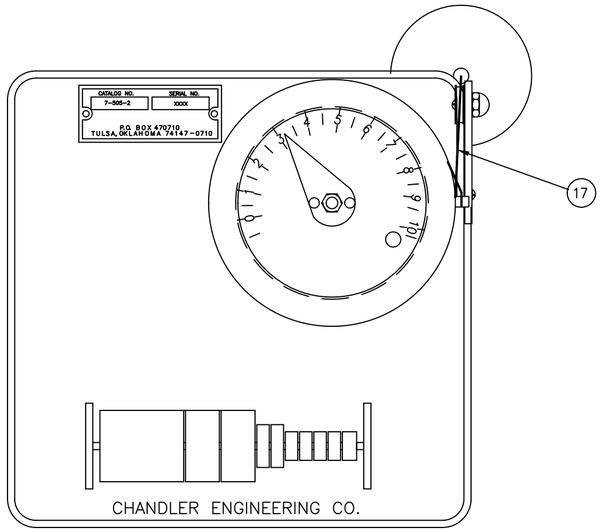
REVISIONS					
ECN	ZONE	REV	DESCRIPTION	DATE	APPROVED
10019		L	MATCHED SYSTEM REV TO DRAWING	2/23/06	JB/TC
T1726		M	ADDED NOTES	7/8/08	TC
T8914		N	ADDED 12-0198	03/27/20	JS
10339		P	FIXED NOTES 1 AND 3	05/01/25	JS





BOTH MAKE UP 07-1564 SET

-04	-03	-02	-01	PART NUMBER	DESCRIPTION	MATERIAL SPEC.	ITEM
			1	12-0198	HUB,PADDLE		19
			2	H-8018	SCEW, 8-32 X 5/8 LG		18
			1	07-0519	CORD ASSEMBLY	NYLON	17
			2	H-10000	"POP" RIVET	ALUM.	16
			4	H-8001	#8 LOCK WASHER	SST	15
			6	H-6001	#6 LOCK WASHER	SST	14
			1	C08848	SCREW, S/H, SHOULDER, 8-32 X 3/16 LG	SST	13
			6	H-6017	SCREW, BNDG, 6-32 X 3/8 LG.	SST	12
			2	H-8011	SCREW, BNDG HD, 8-32 X 3/8 LG.	SST	11
			1	07-0593	SHAFT, PIVOT ADAPTER	SST	10
			1	07-0592	RING, ADAPTER	BRASS	9
			1	57-0003	MODEL/SERIAL PLATE	ALUM	8
			4	P-1233	FEET, BASE	RUBBER	7
			2	07-0508	BAR, MOUNTING, WEIGHT SET	ALUM.	6
			1	07-1537	SET,CALIBRATED WEIGHT	BRASS	5
			1	07-1538	HANGER,CALIBRATED WEIGHT	ALUM	4
			1	07-0595	SUPPORT, PULLEY	ALUM.	3
			1	C08847	PULLEY	PLASTIC	2
			1	07-0507	BASE PLATE	CAST ALUM.	1

QTY. REQD. — PARTS LIST

1200-00 — NEXT ASSY

1200 ATMOS. CONSIST. — USED ON

APPLICATION

TOLERANCES:
1 PLACE ±
2 PLACE ±
3 PLACE ±
ANGLES ±
SURF. FINISH ✓

APPROVALS		DATE
DRAWN:	AB	04/24/00
CHECKED:	JH	04/24/00
ENGR.:	BD	04/24/00

CHANDLER ENGINEERING

TITLE ASSEMBLY, POTENTIOMETER CALIBRATING DEVICE

SIZE	S.O. NO.	DWG NO.	REV.
C		07-0505-02	P

SCALE: | DO NOT SCALE DRAWING | SHEET: 1 of 1

NOTES:
1. 57-0003 SERIAL NUMBER PLATE MUST BE STAMPED WITH PART NUMBER AND SERIAL NUMBER OF 07-1564 WEIGHT SET BEFORE RIVETING IN PLACE.
2. SERIAL NUMBER OF CALIBRATOR MUST MATCH WEIGHT SET, HANGER, AND CERTIFICATION SHEET. CERTIFICATION SHEET MUST BE SHIPPED WITH CALIBRATOR.
3. APPLY LOCTITE 222 TO THREADS.

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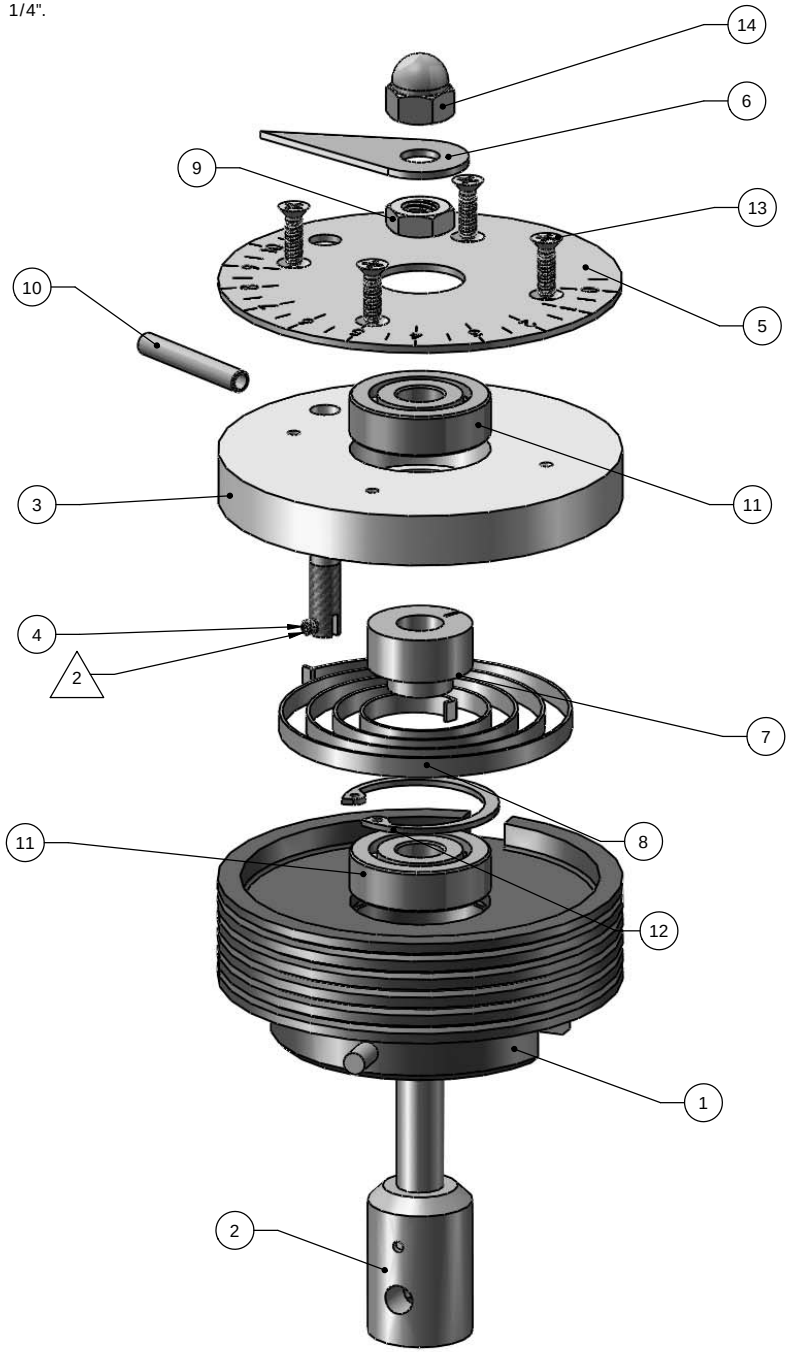
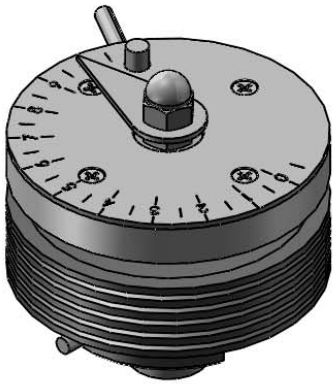
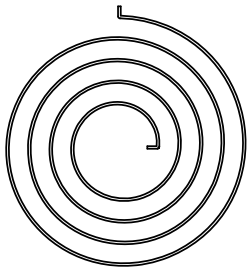
NOTES:
1. AFTER ASSEMBLY, CALIBRATE PER PROCEDURE 12-0168. REMEMBER THAT CALIBRATOR WEIGHT HOOK WEIGHS 50 GRAMS.
2. MAKE SURE PIN (SMOOTH END) IS MINIMIM 11/32" THROUGH. SPRING END SHOULD BE 1/4".

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	K	ECN T1526, UPDATED SPRING ORIENTATION	3/10/2008	JB/TC
	L	ECN T1858; ADDED ITEM 13 TO BOM	8/20/2008	TC







TOP VIEW
SPRING ORIENTATION
(CLOCKWISE ROTATION)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	12-0015	LID	1
2	12-0017	SHAFT,TORQUE	1
3	12-0036	BASE,ALUM,CLEAR ANODIZED	1
4	12-0019	RETAINING PIN	1
5	12-0014	DIAL	1
6	12-0013	POINTER	1
7	12-0016	COLLAR,SPRING,SST	1
8	07-0591	SPRING,CALIBRATION	1
9	P-1673	NUT,LCK,CD,5/16-24,NYLON	1
10	P-1646	PIN,ROLL,.1875 X 1.5L	1
11	P-1588	BEARG,BALL,.393X1.181X.354	2
12	P-1642	RING,RTNG,INT,1.319OD	1
L 13	H-6018	SCREW,FHMS,SS,6-32X0.500,PHIL	4
14	P-1703	.NUT,ACN,CD,5/16-24,LOCK	1

.	.
.	.
.	.
NEXT ASSY	USED ON
APPLICATION	
BREAK SHARP EDGES, DEBURR	

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES
TOLERANCES:
1 PLACE ±0.030
2 PLACE ±0.010
3 PLACE ±0.005
ANGLES ±1/2°
SURF. FINISH 63

APPROVALS		DATE
DRAWN:	JB	10/18/07
CHECKED:	TC	10/19/07
ENGR.:	JJM	10/18/07

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CHANDLER ENGINEERING

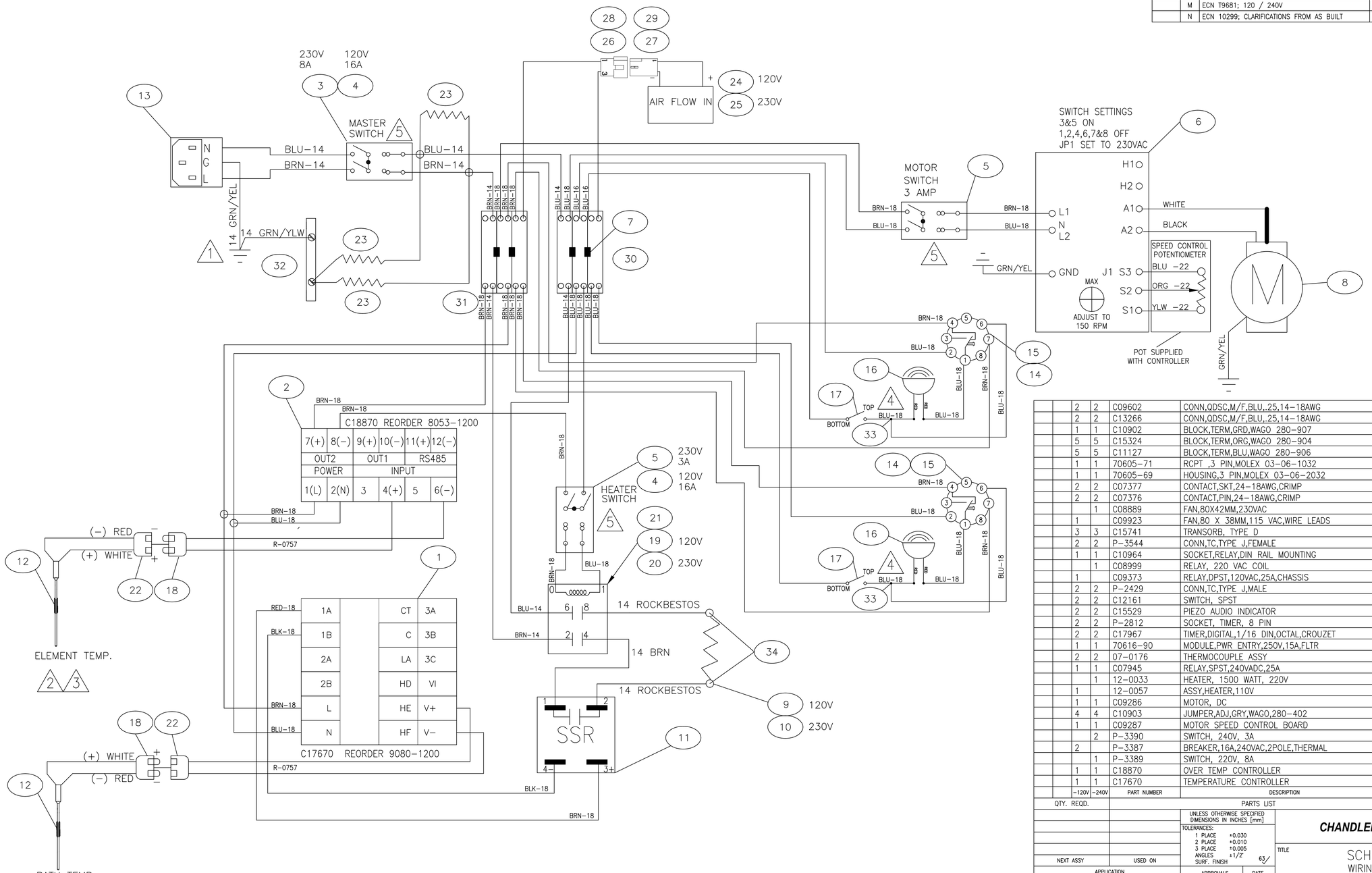
TITLE
CONTAINER,ASSY LID MODEL 1200

SIZE	S.O. NO.	DWG NO.	REV.
C		12-0011	L

SCALE: 1:1 | TITLE BLOCK REV: 1.0 | SHEET: 1 of 1

1. CLEARLY MARK CHASSIS GROUND CONNECTIONS WITH C12232 LABEL (GROUND SYMBOL): SECURE THE INLET POWER GROUND WIRE (GREEN/YELLOW) UNDER ITS OWN NUT (ALL OTHER GROUND WIRES CAN BE HELD UNDER A SINGLE NUT).
2. MARK "E" (ELEMENT) OR "B" (BATH) ON EACH RESPECTIVE THERMOCOUPLE DISCONNECT.
3. BAND THERMOCOUPLE ELEMENT TO HEATER WITH HOSECLAMP.
4. MOUNT TIMER ENABLE SWITCHES WITH "O" ON TOP AND "I" ON BOTTOM SO OPERATOR CAN SEE THE RED MARKING WHEN SWITCH IS ON.
5. MOUNT HEATER AND MOTOR SWITCHES SO OPERATOR CAN READ "ON" AND "OFF"
6. MOUNT MASTER SWITCH WITH "I" ON TOP SO THE ON POSITION FOR MASTER, HEATER AND MOTOR ARE THE SAME POSITION.

REVISIONS					
ZONE	REV	DESCRIPTION OF REVISION	DATE	APPROVALS	
	B	ECN T6286; UPDATED MOTOR WIRING	12/15/14	TC	TC
	C	ECN T6496; DEL P-0330, ADD C07945	03/2415	TC	TC
	D	ECN T6863; MOTOR SW SETTINGS, MOTOR WIRING	10/27/15	CAC	TC
C10,D10	E	ECN T7700; +/- CORRECTED ON SECONDARY TC	06/01/17	BW	JS
	F	ECN T8035; CHANGED ITEM 13, OBSOLETE	03/16/18	TAS	JS
	G	ECN T8101; REVERSED REV F TO REV E	05/03/18	TAS	JS
	H	ECN T8142; UDATED WIRING FOR ITEM 13	06/25/18	TAS	JS
	J	ECN T9301; EPC UPDATE	08/30/21	WJW	JS
	K	ECN T9338; OVERTEMP WIRING UPDATE	10/21/21	WJW	JS
E3	L	ECN T9588; POT REFERENCE	03/30/23	WJW	JS
	M	ECN T9681; 120 / 240V	08/22/23	WJW	JS
	N	ECN 10299; CLARIFICATIONS FROM AS BUILT	03/10/25	WJW	JS



		2	2	C09602	CONN,QDSC,M/F,BLU,.25,14-18AWG		33
		2	2	C13266	CONN,QDSC,M/F,BLU,.25,14-18AWG		33
		1	1	C10902	BLOCK,TERM,GRD,WAGO 280-907		32
		5	5	C15324	BLOCK,TERM,ORG,WAGO 280-904		31
		5	5	C11127	BLOCK,TERM,BLU,WAGO 280-906		30
		1	1	70605-71	RCPT ,3 PIN,MOLEX 03-06-1032		29
		1	1	70605-69	HOUSING,3 PIN,MOLEX 03-06-2032		28
		2	2	C07377	CONTACT,SKT,24-18AWG,CRIMP		27
		2	2	C07376	CONTACT,PIN,24-18AWG,CRIMP		26
			1	C08889	FAN,80X42MM,230VAC		25
		1		C09923	FAN,80 X 38MM,115 VAC,WIRE LEADS		24
		3	3	C15741	TRANSORB, TYPE D		23
		2	2	P-3544	CONN,TC,TYPE J,FEMALE		22
		1	1	C10964	SOCKET,RELAY,DIN RAIL MOUNTING		21
			1	C08999	RELAY, 220 VAC COIL		20
		1		C09373	RELAY,DPST,120VAC,25A,CHASSIS		19
		2	2	P-2429	CONN,TC,TYPE J,MALE		18
		2	2	C12161	SWITCH, SPST		17
		2	2	C15529	PIEZO AUDIO INDICATOR		16
		2	2	P-2812	SOCKET, TIMER, 8 PIN		15
		2	2	C17967	TIMER,DIGITAL,1/16 DIN,OCTAL,CROUZET		14
		1	1	70616-90	MODULE,PWR ENTRY,250V,15A,FLTR		13
		2	2	07-0176	THERMOCOUPLE ASSY		12
		1	1	C07945	RELAY,SPST,240VADC,25A		11
			1	12-0033	HEATER, 1500 WATT, 220V		10
		1		12-0057	ASSY,HEATER,110V		9
		1	1	C09286	MOTOR, DC		8
		4	4	C10903	JUMPER,ADJ,GRY,WAGO,280-402		7
		1	1	C09287	MOTOR SPEED CONTROL BOARD		6
			2	P-3390	SWITCH, 240V, 3A		5
		2		P-3387	BREAKER,16A,240VAC,2POLE,THERMAL		4
			1	P-3389	SWITCH, 220V, 8A		3
		1	1	C18870	OVER TEMP CONTROLLER		2
		1	1	C17670	TEMPERATURE CONTROLLER		1
		-120V	-240V	PART NUMBER	DESCRIPTION	MATERIAL SPEC.	ITEM

PARTS LIST

QTY. REQD.

NEXT ASSY | USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES [mm]

TOLERANCES:
1 PLACE ±0.030
2 PLACE ±0.010
3 PLACE ±0.005
ANGLES ±1/2°
SURF. FINISH 63

CHANDLER ENGINEERING

TITLE: SCHEMATIC WIRING, 1200

APPROVALS		DATE
DRAWN:	TC	10/26/12
CHECKED:	JS	10/26/12
ENGR.:	JM	10/26/12

SIZE | S.O. NO. | DWG NO. 12-0330 | REV. N

SCALE: NONE | DO NOT SCALE DRAWING | SHEET: 1 of 1

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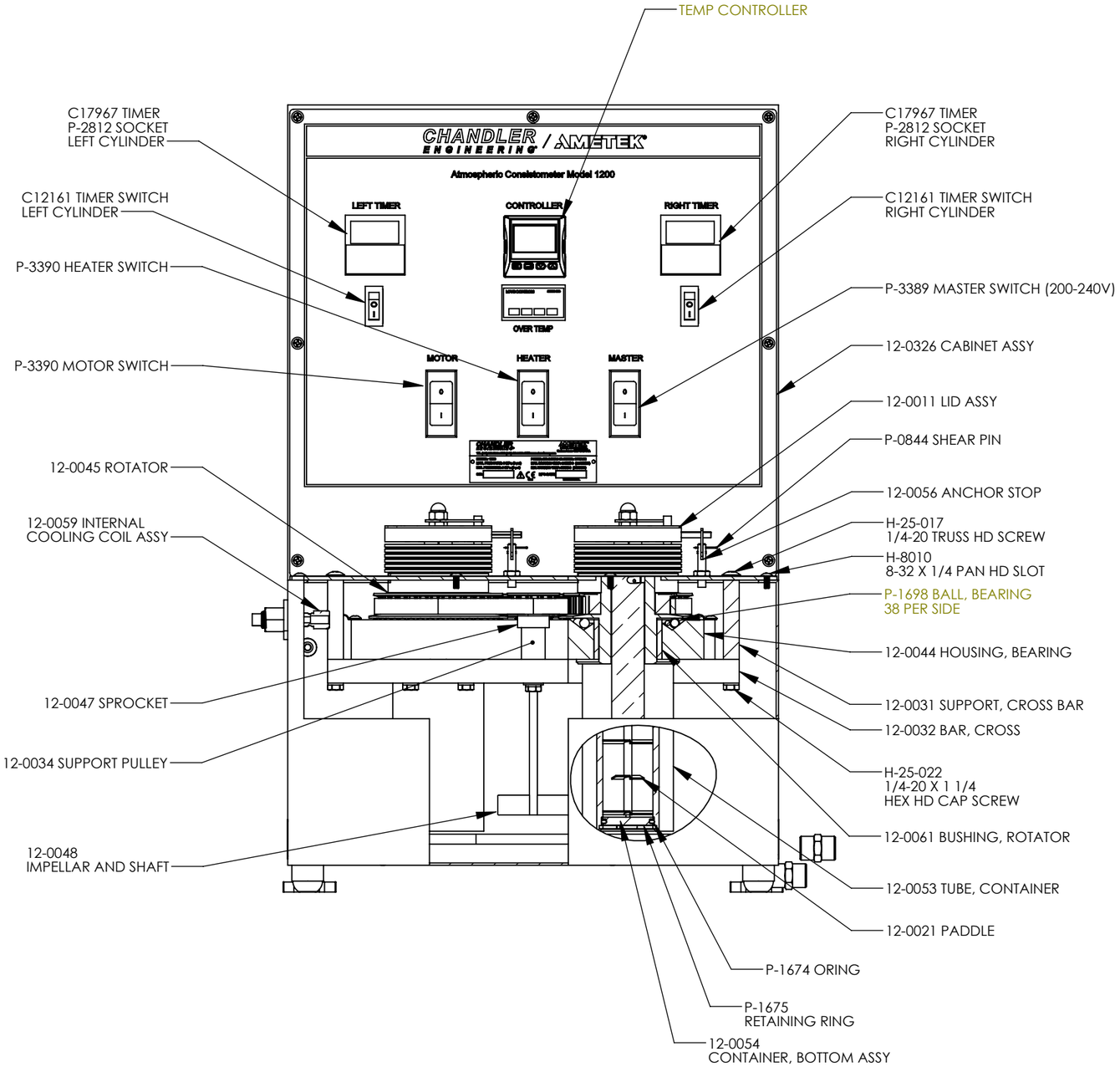
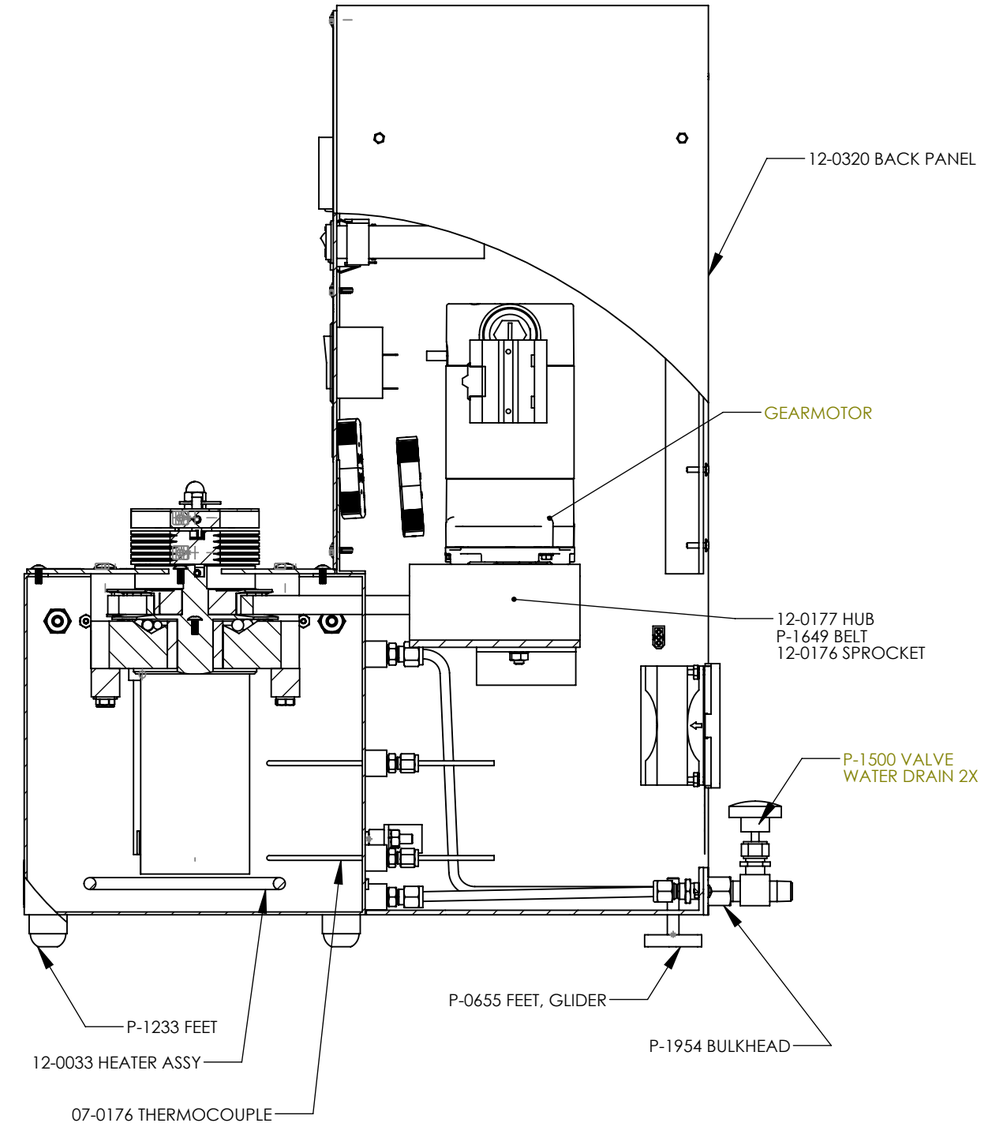
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	C	ECN T9556; CHANGED TIMER	2/21/2023	JS





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BREAK EDGES, DEBURR
UON DIMS ARE IN INCHES
1 PLC ±0.030 2 PLC ±0.010
3 PLC ±0.005 ANGL ±1/2°
SURFACE FINISH 63 RMS
THIRD ANGLE PROJECTION

DRAWN: TC 8/18/2014
MFG: TC 8/18/2014
ENGR: JJM 8/18/2014
TYPE:
STRUCT:

CHANDLER ENGINEERING

MODEL 1200 ATMOSPHERIC, CE

PN: 1200-230V
PROJ: Imported Data Set

REV C | SIZE B
SHEET 1 OF 1

TITLE BLOCK REV 3

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Please Send Us Your Comments on This Manual

Model Number _____ Serial Number _____

Printing Date of this manual (from the Title Page) _____

Please circle a response for each of the following statements. Use:

(1)= Strongly agree (2) =Agree (3) =Neutral, no opinion (4) =Disagree (5) =Strongly disagree

a) The manual is well organized.	**1**	**2**	**3**	**4**	**5**
b) I can find the information I want.	**1**	**2**	**3**	**4**	**5**
c) The information in the manual is accurate.	**1**	**2**	**3**	**4**	**5**
d) I can easily understand the instructions.	**1**	**2**	**3**	**4**	**5**
e) The manual contains enough examples.	**1**	**2**	**3**	**4**	**5**
f) The examples are appropriate and helpful.	**1**	**2**	**3**	**4**	**5**
g) The manual layout is attractive and useful.	**1**	**2**	**3**	**4**	**5**
h) The figures are clear and helpful.	**1**	**2**	**3**	**4**	**5**

i) The sections I refer to most often are _____

_____

Other comments _____

_____

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Serial Number _____

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