



MARKET FORGE

FT-CE SERIES ELECTRIC COUNTERTOP TILTING KETTLES PARTS AND SERVICE MANUAL

EFFECTIVE SEPTEMBER 11, 2014

Superseding All Previous Parts Lists.

The Company reserves the right to make substitution in the event that items specified are not available.

ERRORS: Descriptive and/or typographic errors are subject to correction.

MARKET FORGE

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P/N 14-0351 Rev A (9/14)

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TROUBLESHOOTING

LOW WATER LEVEL (Filling Jacketed Reservoir)

Proper water level must be maintained within the jacket for the kettle to operate. Depletion of water may occur from excessive opening of, or leakage through the safety relief valve.

If water is below required operating level, either initially at start-up or during use, the kettle will automatically shut off, and the LOW WATER signal light will come on.

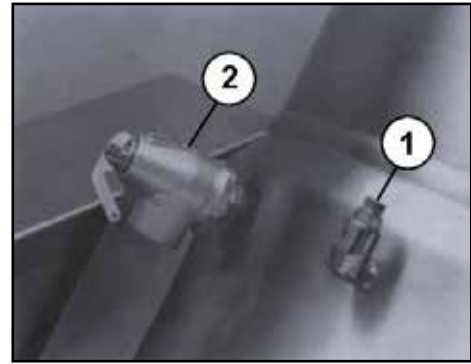
In order for the kettle to operate, the following procedure must be followed:

1. Trip the safety relief valve lever to relieve all pressure from the kettle jacket.
2. At exterior rear of kettle jacket remove nut from Air Vent.
3. Insert funnel into Air Vent opening and slowly add the indicated amount of distilled water for:
 - a. FT-4CE & FT-6CE Add 50 oz. (1.5 liters)
 - b. FT-10CE & FT-12CE Add 100 oz. (3 liters)
4. Replace Air Vent nut.
5. Follow Air Venting Instructions below.
6. Continue normal Operating Procedure of kettle.

VENTING INSTRUCTIONS

Check pressure gauge when kettle is cold. Gauge should be in the green vacuum zone. If not, air is present which must be vented (removed) for proper heating. Use the following procedures to vent air.

1. With an empty kettle, place power switch to the ON position.
2. Set temperature control thermostat to maximum. Heat kettle until heat indicator light goes off.
3. Using a 7/16" wrench, open bleed vent one full turn for 10 seconds and then close.



ITEM	DESCRIPTION
1	Bleed Vent
2	Pressure Relief Valve

4. Cool kettle. Check for proper vacuum in the green vacuum zone. If reading is not low enough, repeat entire procedure, steps 1 to 3.

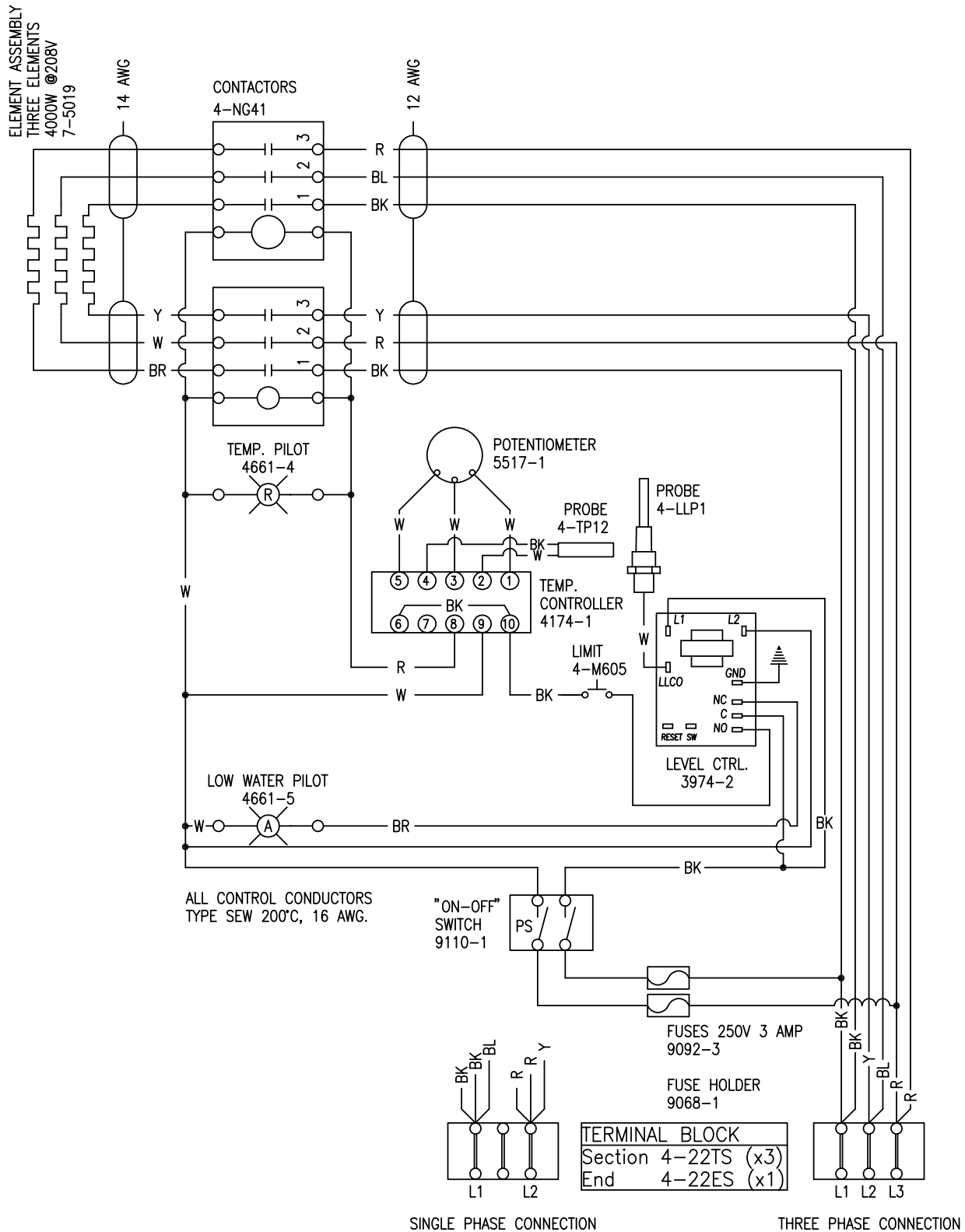


CAUTION

Before adding water to the reservoir, water supply should be analyzed to ensure that hardness is no greater than 2.0- grains per gallon and pH level is within the range of 7.0-8.5. Water which fails to meet these standards should be treated, or ionized distilled water with sodium used. EQUIPMENT FAILURE CAUSED BY INADEQUATE WATER QUALITY IS NOT COVERED UNDER WARRANTY.

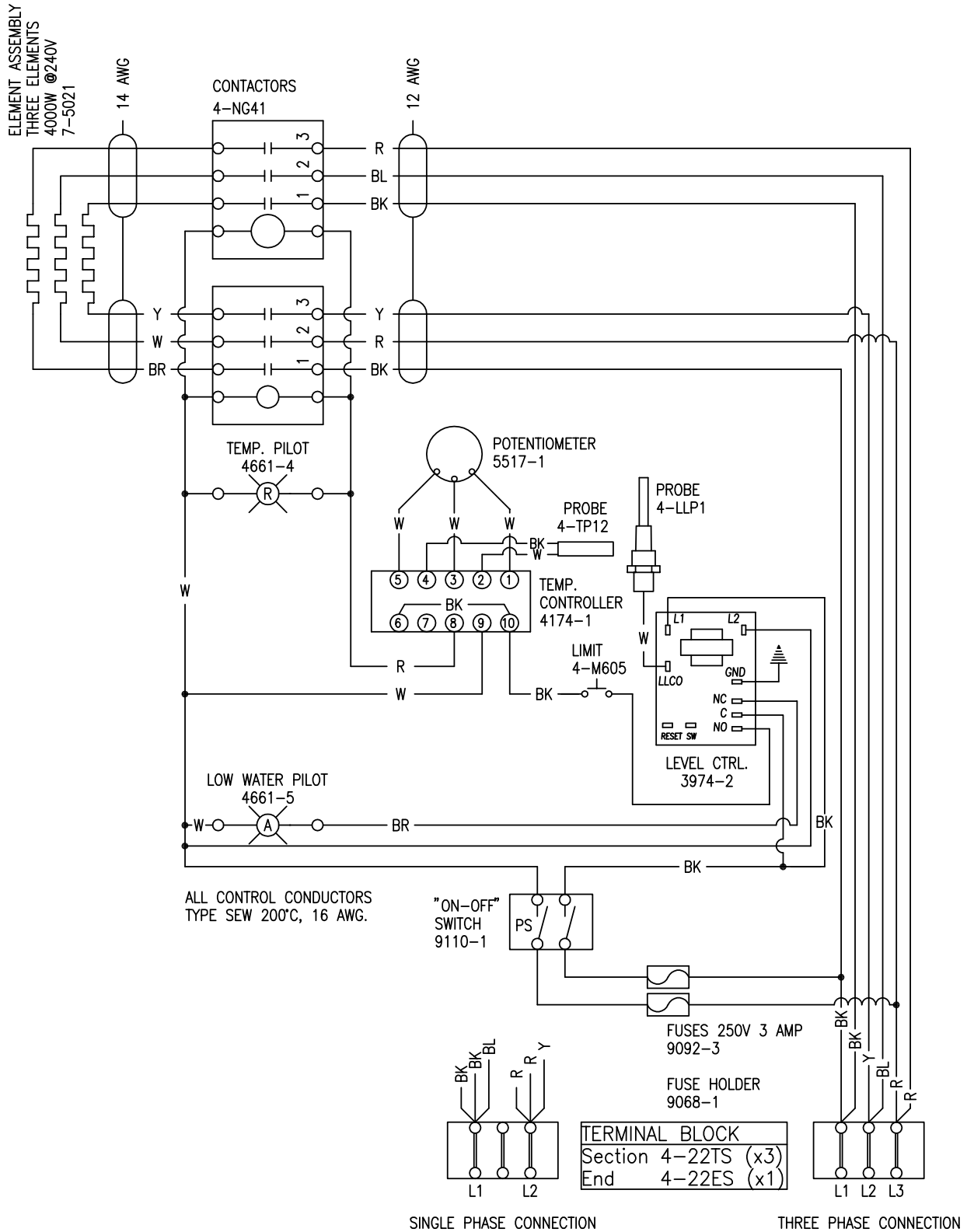
10 & 12 GALLON 208 VOLT

WIRING DIAGRAM



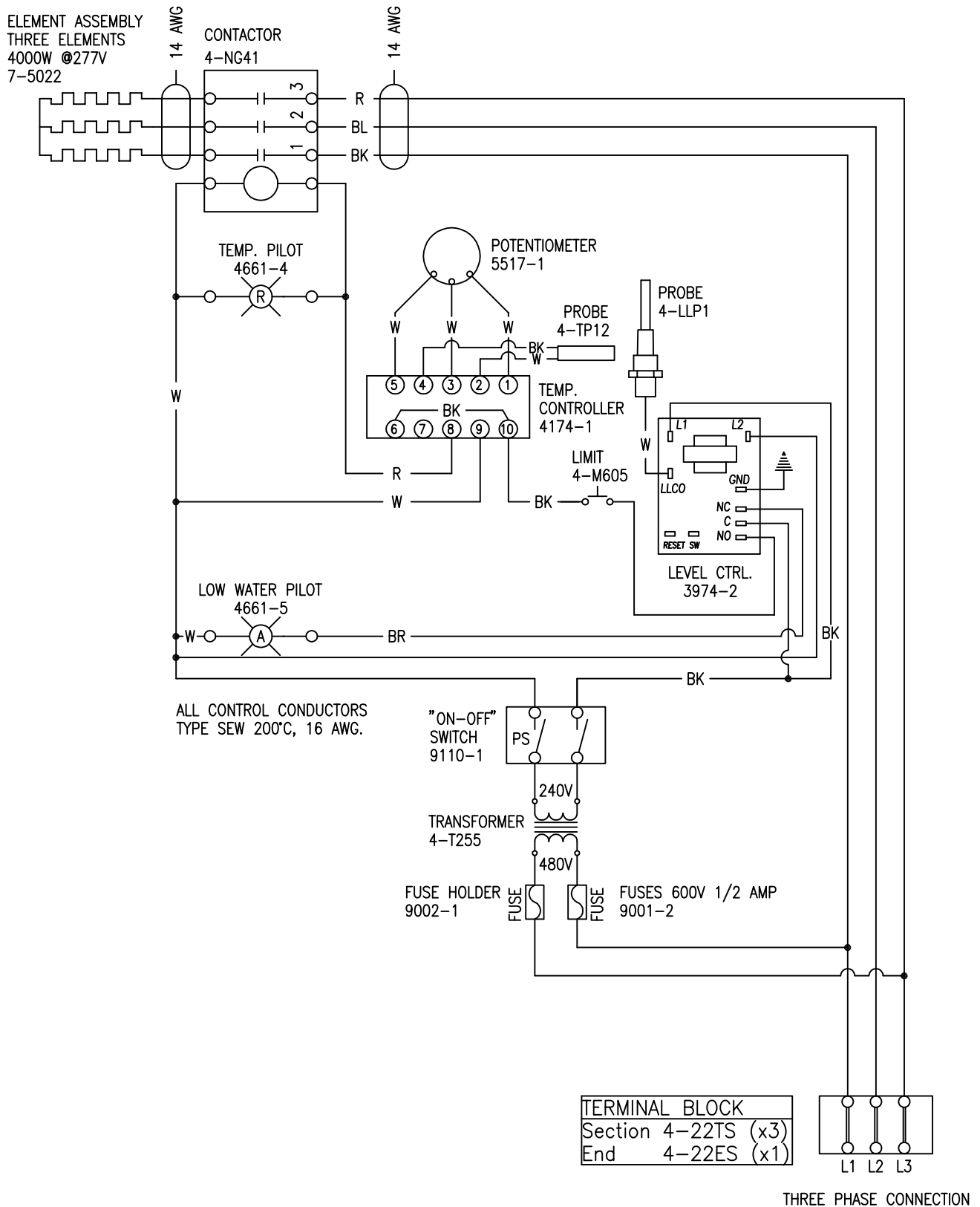
10 & 12 GALLON 240 VOLT

WIRING DIAGRAM



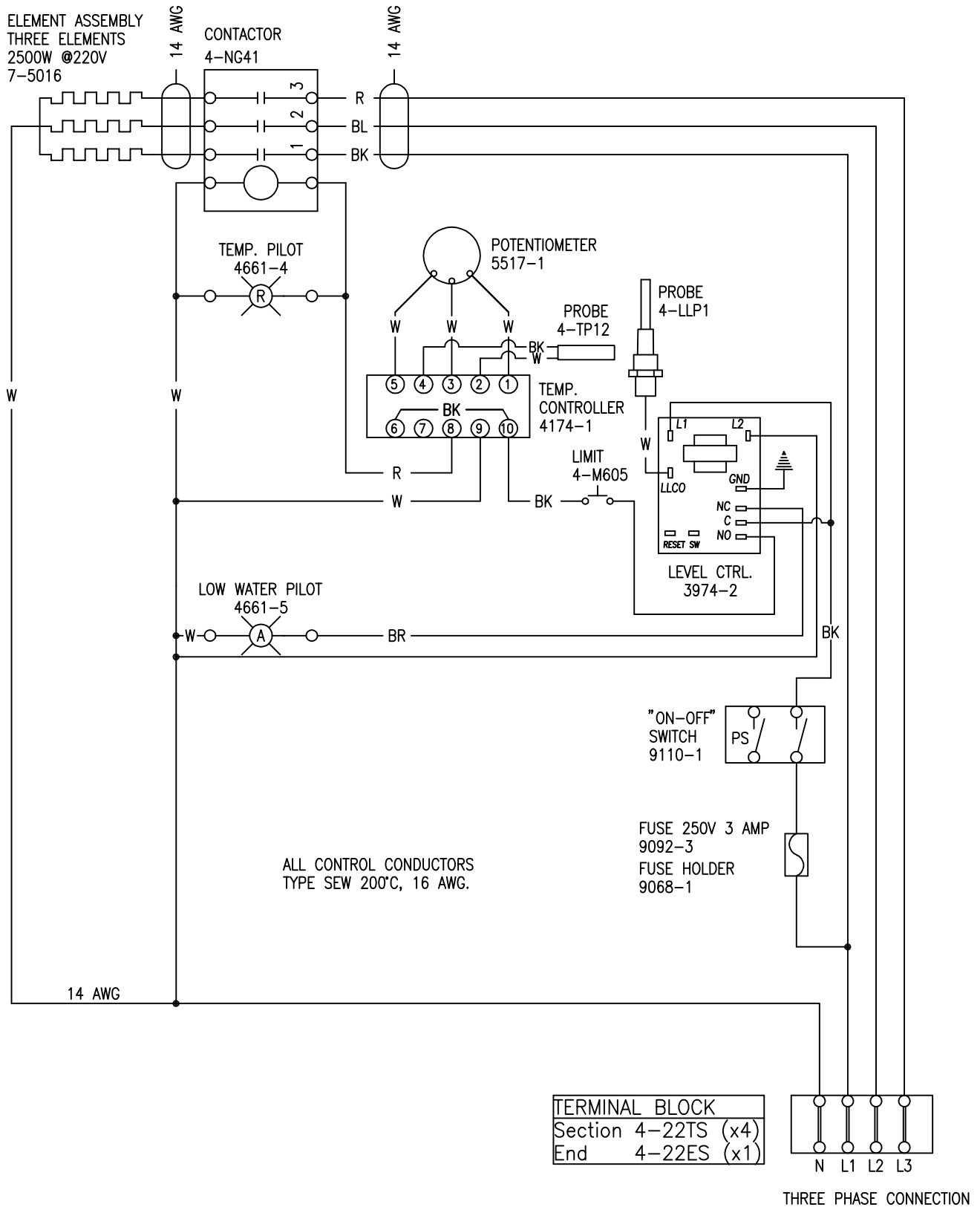
10 & 12 GALLON 480 VOLT

WIRING DIAGRAM



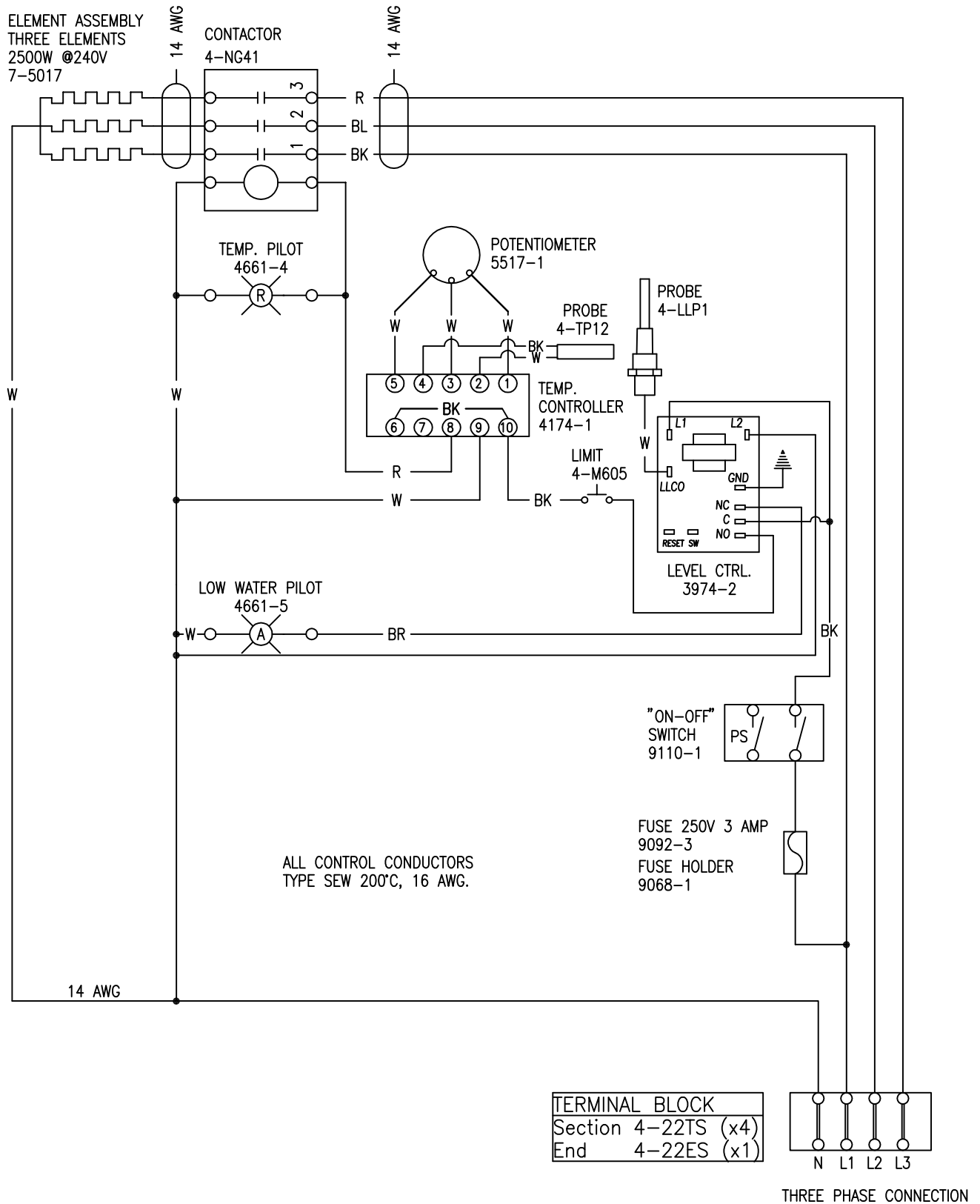
4 & 6 GALLON 220/380 VOLT

WIRING DIAGRAM

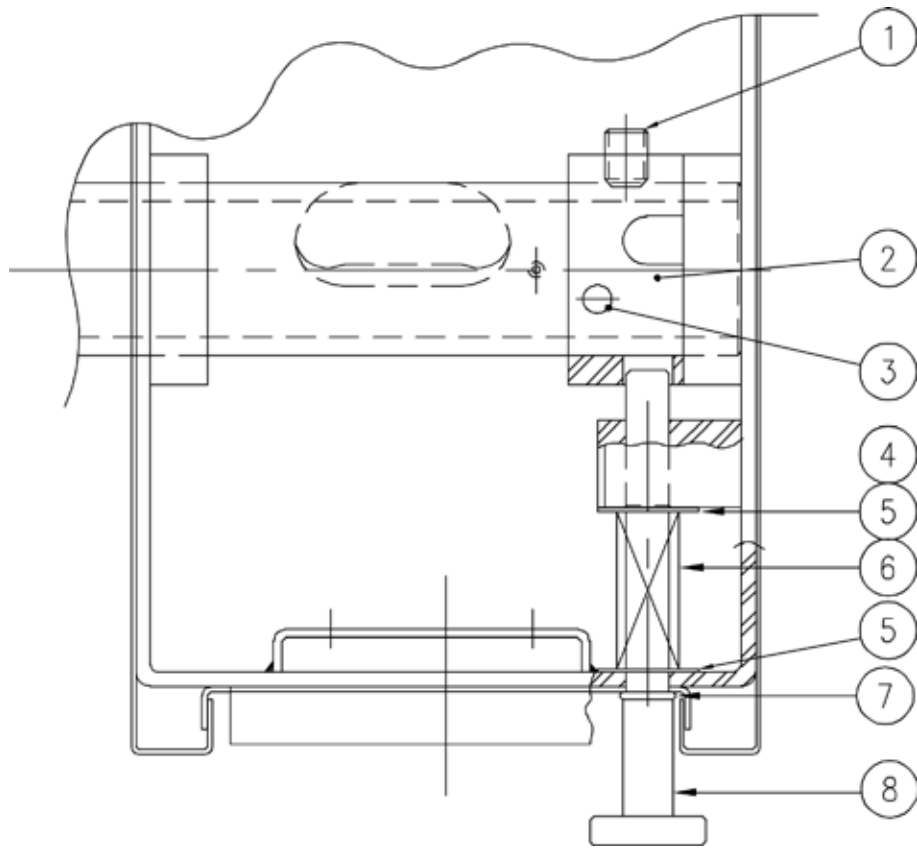


4 & 6 GALLON 240/415 VOLT

WIRING DIAGRAM

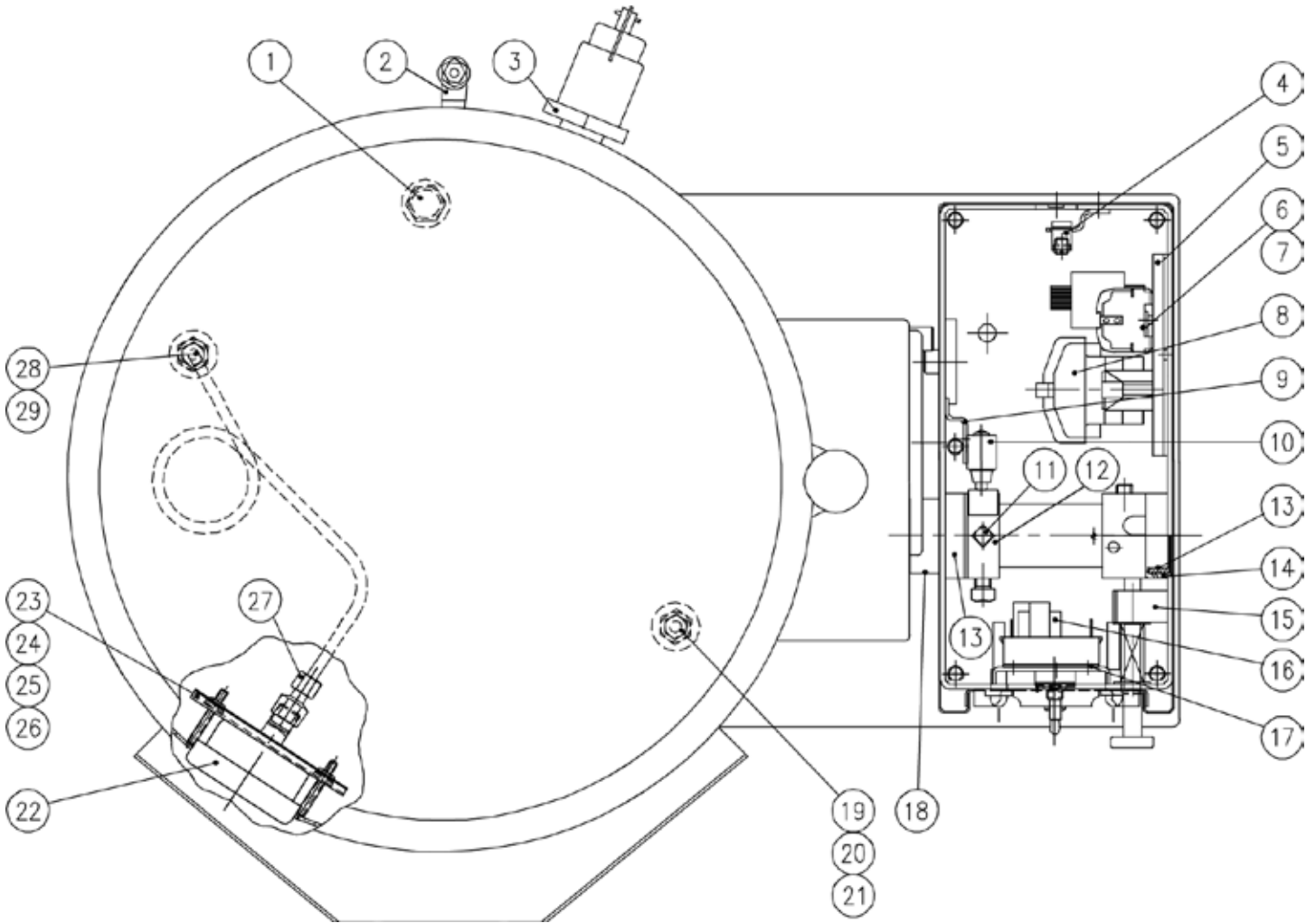


TILTING MECHANISM



ITEM	PART NO.	DESCRIPTION	QTY
1	97-7139	Hex. Socket Set Screw, 3/8 -16 NC x 1/2	1
2	97-7140	Cam Collar	1
3	97-7141	Spring Pin, 1/4 Diameter x 2 1/4" Long	1
4	97-6677	External Ring Spae-Naur #R1000-37	1
5	97-7142	Plain Washer, 3/8 ID x 7/8 OD x T = 0.048	2
6	97-5917	Spring	1
7	97-6679	"O" Ring Seal, E-515-80-11, 5/16 I.D.	1
8	97-6680	Locking Pin	1

KETTLE TOP VIEW



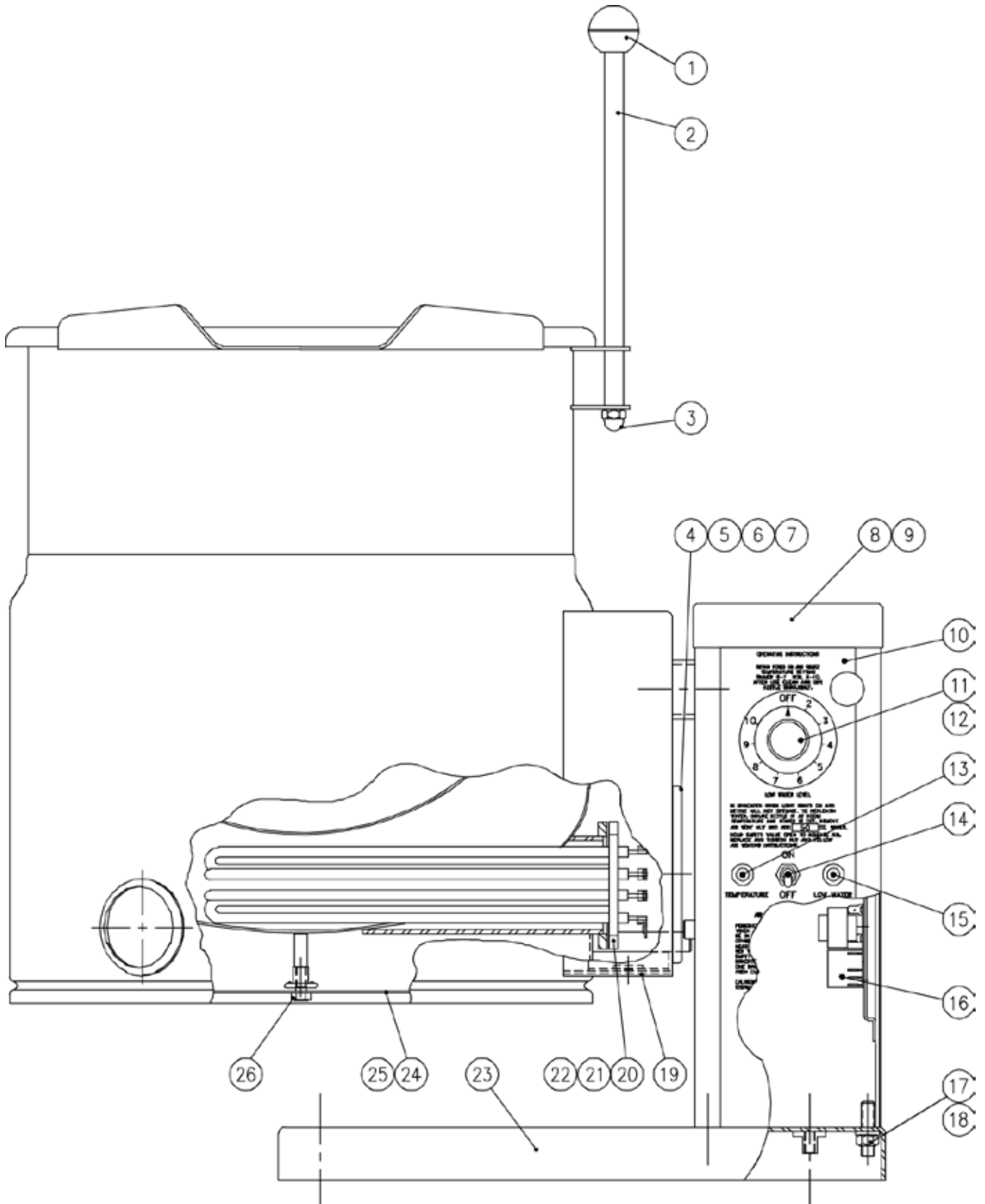
KETTLE TOP VIEW

ITEM	PART NO.	DESCRIPTION	FT-4CE & FT-6CE QTY.	FT-10CE & FT-12CE QTY.
1	97-5425	Liquid Level Probe	1	1
2	97-5415	Air Vent Assembly	1	1
3	97-5009	Safety Relief Valve	1	1
4	97-5052	Ground Lug	1	1
5	98-6131	Component Mounting Bracket	1	1
6	10-6963	Terminal Block	3	3
	10-6963	Terminal Block, (220/380, 240/415)	4	4
7	10-6962	Terminal Block, End Section	1	1
**8	97-5609	Contactora (208, 240V)	2	2
	97-5609	Contactora (380, 416, 480, 600V)	1	1
9	97-7111	Micro Switch Bracket	1	1
10	97-5414	Micro Switch	1	1
11	97-7112	Square Head Set Screw, 3/8-16 NC x 1/2	2	2
12	97-6518	Actuating Collar	1	1
13	97-5340	Trunnion Bronze Bearing	1	1
14	97-5650	Trunnion Bearing Housing	2	2
15	97-7113	Marine Lock Assembly	1	1
16	97-5797	Temperature Controller	1	1
17	97-6515	Mounting Plate	1	1
18	97-6973	Boston Bronze Bearing	1	1
19	97-6500	Reducer, 3/8 NPT - 1/4 NPT	1	1
20	97-6398	Compression Fitting	1	1
21	97-7114	Temperature Probe	1	1
22	97-6563	Pressure Gauge	1	1
*	97-5620	"O" Ring	1	1
23	97-6499	Pressure Gauge Plate	1	1
24	97-7115	Hex Nut #10 - 32 NC Zinc	2	2
25	97-7116	Flat Washer #10 Zinc	2	2
26	97-7117	Split Lock Washer #10 Zinc	2	2
27	97-5046	Compression Fitting	1	1
28	97-5000	Compression Fitting	1	1
29	97-5146	Copper Tubing		1
	97-5145	Copper Tubing	1	
*30	97-5648	Wire Harness - Thermostat	1	1
*31	97-5649	Wire Harness - Elements	1	1
*32	97-7118	Hex Bolt, 5/16-18 x 1-1/4	4	4
*33	97-7119	Flat Washer, 5/16 x 1-1/2 OD	4	4
*34	97-6368	Relief Valve Extension	1	1

* NOT SHOWN.

** SELECT AS REQUIRED.

KETTLE FRONT VIEW



KETTLE FRONT VIEW

ITEM	PART NO.	DESCRIPTION	FT-4CE & FT-6CE QTY.	FT-10CE & FT-12CE QTY.
1	97-5008	Handle Knob	1	1
2	97-5115	Tilt Handle	1	1
3	97-5116	Acorn Nut, 3/8" - 16 UNC	1	1
4	97-7120	Element Access Cover Assembly	1	1
5	97-6529	Gasket	1	1
6	97-7121	Internal Tooth Lock Washer, 1/4"	1	1
7	97-7122	Hex. Nut, 1/4" - 20 NC Zinc	1	1
*	97-6530	Yoke, Access Cover	1	1
8	97-6965	Console Cover Gasket	1	1
9	97-7123	Top Cover, Console	1	1
10	97-6981	Decal		1
	97-7124	Decal	1	
11	97-5617	Potentiometer Complete with Wires and Push On Terminals	1	1
12	97-5013	Knob	1	1
13	98-6162	Temperature Pilot, Red	1	1
14	97-6513	Power Switch	1	1
15	97-6512	Low Water Pilot, Amber	1	1
16	97-7125	Liquid Level Control	1	1
17	97-7126	Hex Nut, 3/8 - 16 NC Zinc	5	5
18	97-7127	Flat Washer, 3/8" Zinc	5	5
19	97-6506	Trunnion Box Bottom		1
	97-6507	Trunnion Box Bottom	1	
	97-7128	Gasket		1
	97-6922	Gasket	2	2
	97-6739	Screw, 10-32 x 1/2	1	
**20	97-5015	Element Assembly, 7.5 kW, 208V	1	
	97-5016	Element Assembly, 7.5 kW, 220/380V	1	
	97-5017	Element Assembly, 7.5 kW, 240/416V	1	
	97-5018	Element Assembly, 7.5 kW, 480V	1	
	97-7129	Element Assembly, 7.5 kW, 600V		1
	97-5019	Element Assembly, 12 kW, 208V		1
	97-5020	Element Assembly, 12 kW, 220/380V		1
	97-5021	Element Assembly, 12 kW, 240/416V		1
	97-5022	Element Assembly, 12 kW, 480V		1
	97-7130	Element Assembly, 12 kW, 600V	1	
21	97-7131	Element Gasket		1
	97-5025	Element Gasket	4	4

KETTLE FRONT VIEW

ITEM	PART NO.	DESCRIPTION	FT-4CE & FT-6CE QTY.	FT-10CE & FT-12CE QTY.
22	97-7132	Hex. Screw 5/16-18 NC x 3/4, ST/ST	1	1
23	97-7133	Base Assembly	1	
24	97-6504	Bottom Cover		1
	97-6505	Bottom Cover	1	
25	97-6502	Bottom Cover Gasket		1
	97-6503	Bottom Cover Gasket		1
26	97-7134	Hex. Screw, 5/16 - 18 NC x 1/2 Zinc	1	1
*27	97-7135	Element Terminal Screw, 10 - 32 x 3/8	4	4
*28	97-7136	Faucet Bracket, (Optional)	1	1
*29	97-7137	Kettle Cover, (Optional)	1	
	97-7138	Kettle Cover, (Optional)		1
* **30	97-5616	Transformer, 380/416V-120V, 50/60 Hz, 100VA	1	1
	97-5613	Transformer, 480V-120V, 60 Hz, 100VA	1	1
	98-6191	Transformer, 600V-120V, 60 Hz, 100VA	1	1
* **31	97-5476	Fuse, 250V, 3A, (208 - 240V Units)	2	2
	97-5476	Fuse, 250V, 3A, (200/380V and 240/415V Units)	1	1
	98-6188	Fuse, 1/2 A, 600V, (380 - 600V Units)	2	2
* **32	97-5864	Fuse Holder, (208 - 240V Units)	2	2
	97-5864	Fuse Holder, (220/380V and 240/415V Units)	1	1
	98-6187	Fuse Holder, (380 - 600V Units)	1	1

* NOT SHOWN.

** SELECT AS REQUIRED.

MATERIAL SAFETY DATA SHEET

PREPARATION INFORMATION:

Prepared for use in Canada by: E H & S Product Regulatory Management Department

DOW CHEMICAL CANADA INC.
P.O. Box 1012
Sarnia, Ontario, N7T 7K7
(800) 331-6451

CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

IN CASE OF EMERGENCY:

Fort Saskatchewan, Alberta: (780) 998-8282
Sarnia, Ontario: (519) 339-3711
Varenes, Quebec: (450) 652-1000

Product: DOWFROSTTM HD HEAT TRANSFER FLUID, DYED
Product Code: 04632
Effective Date: 2/20/01 Date Printed: 07/10/02MSD: 002239

DOW CHEMICAL CANADA INC. P.O. Box 1012
Sarnia, Ontario
Canada, N7T 7K7
24-Hour Emergency Phone Number (USA): (989) 636-4400

Product: DOWFROSTTM HD HEAT TRANSFER FLUID, DYED
Product Code: 04632
Effective Date: 08/03/04 Date Printed: 08/04/04MSD: 002239

The DOW CHEMICAL COMPANY, Midland, MI, USA, 48674 Customer Information Center: 800-258-2436

COMPOSITION/INFORMATION ON INGREDIENTS

Propylene Glycol	CAS # 000057-55-6	94%
Dipotassium Phosphate	CAS # 007758-11-4	<5%
Deionized Water	CAS # 007732-18-5	<5%

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HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Clear yellow liquid. Odourless. Avoid temperatures above 450°F, 232°C.

POTENTIAL HEALTH EFFECTS (See Section 11 for toxicological data.)

EYE: May cause slight transient (temporary) eye irritation. Corneal injury is unlikely. Mists may cause eye irritation.

SKIN CONTACT: Prolonged contact is essentially nonirritating to skin. A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. Repeated exposures may cause flaking and softening of skin.

INGESTION: Single dose oral toxicity is considered to be extremely low. No hazards anticipated from swallowing small amounts incidental to normal handling operations.

INHALATION: At room temperature, vapours are minimal due to physical properties. Mists may cause irritation of upper respiratory tract (nose and throat).

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Repeated excessive exposure to propylene glycol may cause central nervous system effects.

CANCER INFORMATION: Did not cause cancer in laboratory animals.

TERATOLOGY (BIRTH DEFECTS): Birth defects are unlikely. Exposures having no adverse effects on the mother should have no effect on the fetus.

REPRODUCTIVE EFFECTS: In animal studies, has been shown not to interfere with reproduction.

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FIRST AID

EYES: Flush eyes with plenty of water.

SKIN: Wash off in flowing water or shower.

INGESTION: No adverse effects anticipated by this route of exposure incidental to proper industrial handling.

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: 214°F, 107°C (based on a similar material)

METHOD USED: PMCC

AUTOIGNITION TEMPERATURE: Not determined.

FLAMMABILITY LIMITS

LFL: Not determined.

UFL: Not determined

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HAZARDOUS COMBUSTION PRODUCTS: During a fire, smoke may contain the original material in addition to unidentified toxic and/or irritating compounds. Hazardous combustion products may include and are not limited to carbon monoxide and carbon dioxide.

OTHER FLAMMABILITY INFORMATION: Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Flammable concentrations of vapour can accumulate at temperatures above 214°F. Liquid mist of this product can burn. Spills of these organic liquids on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. Container may rupture from gas generation in a fire situation.

EXTINGUISHING MEDIA: Water fog or fine spray, carbon dioxide, dry chemical, foam. Alcohol resistant foams (ATC type) are preferred if available. General purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively. Do not use direct water stream. May spread fire.

MEDIA TO BE AVOIDED: Do not use direct water stream.

FIRE FIGHTING INSTRUCTIONS: Keep people away. Isolate fire area and deny unnecessary entry. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Fight fire from protected location or safe distance. Consider use of unmanned hose holder or monitor nozzles. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of re-ignition has passed. Immediately withdraw all personnel from area in case of rising sound from venting safety device or discolouration of the container. Move container from fire area if this is possible without hazard.

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

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ACCIDENTAL RELEASE MEASURES (See Section 15 for Regulatory Information)

PROTECT PEOPLE: Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls/Personal Protection.

PROTECT THE ENVIRONMENT: Avoid contamination of all waterways. CLEAN-UP: See Section 13, Disposal Consideration.

HANDLING AND STORAGE

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: No special handling requirements data available.

HANDLING: See Section 8, Exposure Controls/Personal Protection. STORAGE: See Section 10, Stability and Reactivity.

EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION: Use safety glasses. Safety glasses should be sufficient for most operations; however, for misty operations wear chemical goggles.

SKIN PROTECTION: Use gloves impervious to this material.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. In misty atmospheres, use an approved mist respirator.

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EXPOSURE GUIDELINES: Propylene glycol: AIHA WEEL is 10 mg/m³ for total vapour and aerosol.

PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE/PHYSICAL STATE: Clear yellow liquid.

ODOUR: Odourless

VAPOUR PRESSURE: 0.22 mmHg @ 20°C

VAPOUR DENSITY: 2.6

BOILING POINT: 320°F, 160°C

SOLUBILITY IN WATER/MISCIBILITY: Complete

SPECIFIC GRAVITY OR DENSITY: 1.058 @ 25/25°C

STABILITY AND REACTIVITY CHEMICAL STABILITY: Thermally stable at typical use temperatures.

CONDITIONS TO AVOID: Avoid use temperatures above 450°F, 232°C. Product can degrade at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

INCOMPATIBILITY WITH OTHER MATERIALS: Avoid contact with oxidizing materials. Avoid contact with strong acids

HAZARDOUS DECOMPOSITION PRODUCTS: Hazardous decomposition products depend upon temperature, air supply and the presence of other materials.

HAZARDOUS POLYMERIZATION: Will not occur.

TOXICOLOGICAL INFORMATION (See Section 3 for Potential Health Effects. For detailed toxicological data, write or call the address or non-emergency number shown in Section 1).

SKIN: The LD₅₀ for skin absorption in rabbits is >10,000 mg/kg.

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INGESTION: The oral LD50 for rats is 20,000 - 34,000 mg/kg.

MUTAGENICITY: In vitro mutagenicity studies were negative. Animal mutagenicity studies were negative.

ECOLOGICAL INFORMATION (For detailed Ecological data, write or call the address or non-emergency number shown in Section 1.)

ENVIRONMENTAL FATE

MOVEMENT & PARTITIONING: Based largely or completely on data for major component(s). Bioconcentration potential is low (BCF less than 100 or Log Pow less than 3). Potential for mobility in soil is very high (Koc between 0 and 50).

DEGRADATION AND PERSISTENCE: Based largely or completely on data for major component(s). Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Degradation is expected in the atmospheric environment within minutes to hours.

ECOTOXICITY: Based largely or completely on data for major component(s). Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50 >100 mg/L in most sensitive species).

DISPOSAL CONSIDERATIONS (See Section 15 for Regulatory Information)

DISPOSAL: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. THE DOW CHEMICAL COMPANY HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION 2 (Composition/Information On Ingredients).

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FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: recycler, reclaimer, incinerator or other thermal destruction device.

As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Center at 800-258-2436 or 989-832-1556 for further details.

TRANSPORT INFORMATION

DEPARTMENT OF TRANSPORTATION (D.O.T.): For D.O.T. regulatory information, if required, consult transportation regulations, product shipping papers, or contact your Dow representative.

CANADIAN TDG INFORMATION: For TDG regulatory information, if required, consult transportation regulations, product shipping papers, or your Dow representative.

REGULATORY INFORMATION (Not meant to be all-inclusive – selected regulations represented).

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

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U.S. REGULATIONS

SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Not to have met any hazard category.

TOXIC SUBSTANCES CONTROL ACT (TSCA):

All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME	CAS NUMBER	LIST
1, 2-Propanediol	000057-55-6	PA1

PA1= Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%). OSHA HAZARD COMMUNICATION STANDARD:

This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

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CANADIAN REGULATIONS

WHMIS INFORMATION: The Canadian Workplace Hazardous Materials Information System (WHMIS) Classification for this product is:

This product is not a "Controlled Product" under WHMIS. CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)

This product contains one or more substances which are not listed on the Canadian Domestic Substances List (DSL). Contact your Dow representative for more information.

OTHER INFORMATION

MSDS STATUS: Revised Section 8 (Exposure Guidelines).

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The information herein is given in good faith, but no warranty, express or implied, is made. Consult The Dow Chemical Company for further information.