IMPORTANT FOR FUTURE REFERENCE
Please complete this information and retain this manual for the life of the equipment:

Model #: _____

Serial #: _____

Date Purchased: _____

Installation & Operation Manual

Gas Fired Steam Jacketed Tilting Kettle
GC-12

Model GC-12

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

CROWN FOOD SERVICE EQUIPMENT
A Middleby Company
70 Oakdale Road, Downsview (Toronto) Ontario, Canada, M3N 1V9
Telephone: 919-762-1000 www.crownsteamgroup.com

MANUAL 10105 REV 0 (04/21)
$21.00

SAFETY PRECAUTIONS

Before installing and operating this equipment, be sure everyone involved in its operation is fully trained and aware of precautions. Accidents and problems can be caused by failure to follow fundamental rules and precautions.

The following symbols, found throughout this manual, alert you to potentially dangerous conditions to the operator, service personnel, or to the equipment.

⚠ **DANGER**	This symbol warns of immediate hazards that will result in severe injury or death.
⚠ **WARNING**	This symbol refers to a potential hazard or unsafe practice that could result in injury or death.
⚠ **CAUTION**	This symbol refers to a potential hazard or unsafe practice that could result in injury, product damage, or property damage.
NOTICE	This symbol refers to information that needs special attention or must be fully understood, even though not dangerous.

IMPORTANT NOTES FOR INSTALLATION AND OPERATION

⚠ WARNING

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ WARNING

FOR YOUR SAFETY:
Do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

⚠ WARNING

Improper installation, operation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing, operating or servicing this equipment.

NOTICE

This product is intended for commercial use only. NOT FOR HOUSEHOLD USE.

NOTICE

This manual should be retained for future reference.

PURCHASER: Instructions to be followed in the event the operator of this appliance smells gas must be posted in a prominent location. This information shall be obtained by consulting the local gas supplier.

Do not attempt to operate this unit in the event of a power failure.

Keep the appliance area free and clear from combustibles.

DO NOT obstruct the flow of combustion and ventilation air.

Adequate clearances MUST be maintained for servicing and proper operation.

Contact the factory, the factory representative or a local service company to perform maintenance and repairs should the appliance malfunction. Refer to warranty terms.

RETAIN THIS MANUAL FOR FUTURE REFERENCE.

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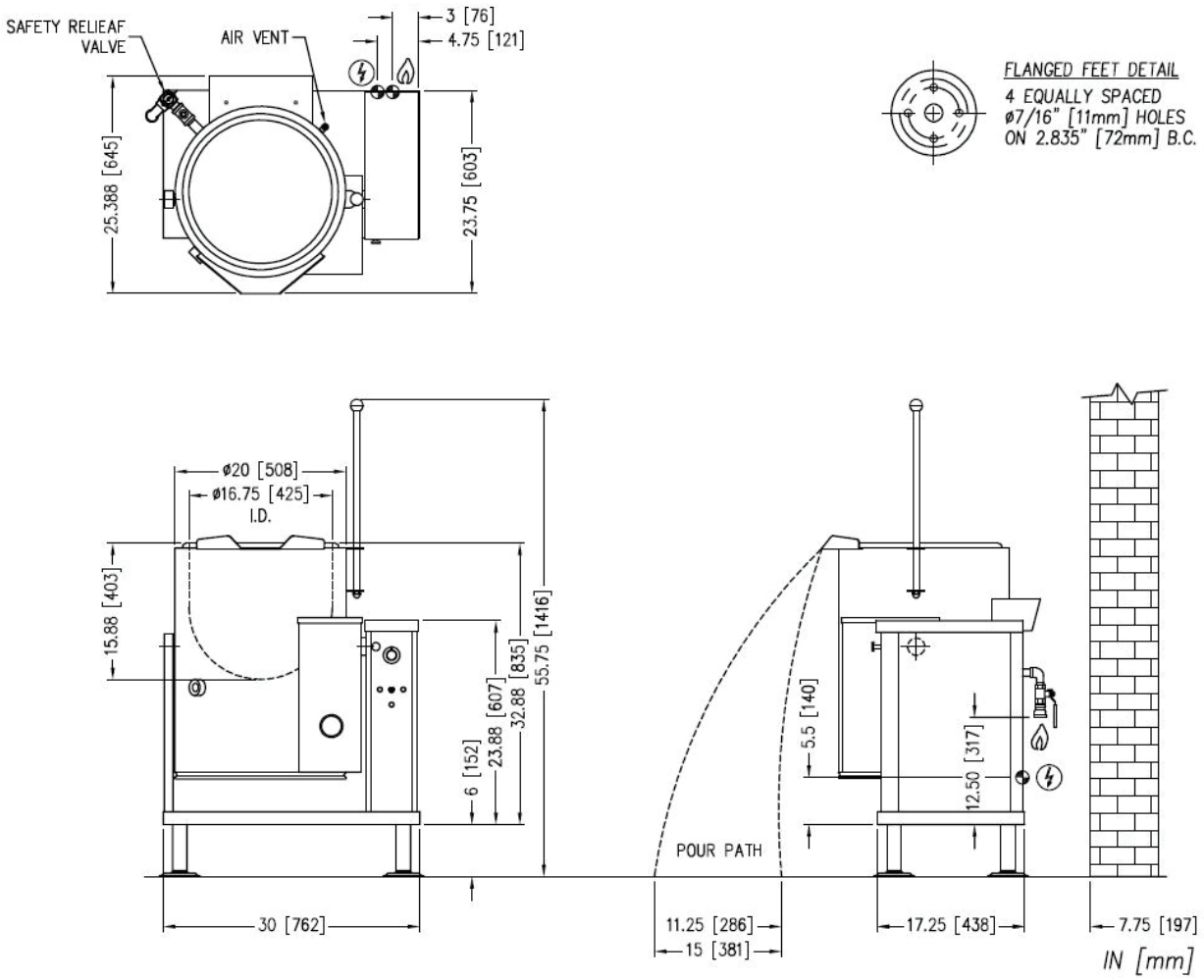
SERVICE CONNECTIONS



SERVICE CONNECTIONS

– Electrical Connection - Unless otherwise specified, field wire electrical connection to be 120V, 60 Hz, 1 Phase with grounding wire. Unit Furnished with 8' cord and 3-prong plug. Total max AMPS 2.0

– Gas Connection - 3/4" pipe supply line required

– Cold Water - 3/8" O.D. tubing to faucet (OPTIONAL)

GAS CHARACTERISTICS

Model	Gas Supply				Capacity	Shipping Weight	Minimum Clearance	
	BTU/HR.	kW/HR.	Supply Pipe Pressure (W.C.)					
GC-12	43,000	12.6	Natural 6"-14" (152-356 mm)	Propane 11"-14" (279-356 mm)	12 Gallon 46 Liter	255 lbs. [116 kg.]	SIDES BACK	0 6 [152

* For use on non-combustible floors only.

As continued product improvement is a policy of Crown, specifications are subject to changge without notice.

Introduction

Description

Model GC-12 (12 gallon capacity) gas fired, self-contained, tilting kettle. The kettle has a jacket of double-wall construction forming a sealed reservoir around the lower two-thirds of the kettle. The reservoir is charged with distilled water. The kettle is equipped with a “clean lock” to hold kettle in cooking position or tilted 105 degrees for ease of cleaning. The kettle is also equipped with automatic ignition, low water cut off and tilt switch, which, when activated, shuts down the burner.

Basic Function

The kettle operates by generating steam in the kettle reservoir. The sequence of operation is as follows:

1. Operator turns the power switch to the on position and sets the temperature control dial to the desired setting.
2. The red light comes on indicating the kettle is heating. The green “IGNITION” light comes on indicating that the ignition and burner are active.
3. Once the kettle reaches the set temperature, the red “TEMPERATURE” light and the green “IGNITION” light extinguish.
4. All kettles are supplied with sufficient water in the jacket. If for any reason the water level falls below the required amount to operate the kettle, the burner shuts down and the amber light comes on. See Adding Water in Service section.
5. The sight glass indicates the water level within the kettle jacket.
6. The relief valve is a safety feature which prevents the internal kettle pressure from exceeding 50 PSI. It should never be tampered with.

INSTALLATION

UNPACKING

IMMEDIATELY INSPECT FOR SHIPPING DAMAGE

Immediately after unpacking the steamer, check for possible shipping damage. If the steamer is found to be damaged, save the packaging material and contact the carrier within 15 days of delivery.

Prior to installation, verify that the type of gas supply (natural or propane) and electrical service agree with the specifications on the rating plate located on the left side panel as you face the front of the braising pan. If the supply and equipment requirements do not agree, contact your dealer immediately.

INSTALLATION CODES AND STANDARDS

Installation must conform with local codes, or in the absence of local codes, with the National Fuel Gas Code, ANSI Z223.1/NFPA 54, or the Natural Gas and Propane Installation Code, CSA B149.1, as applicable.

1. The appliance and its individual shut off valve must be disconnected from the gas supply piping system during any pressure testing of that system at pressures in excess of 1/2 psi (3.5 kPa).
2. The appliance must be isolated from the gas supply piping system by closing its individual manual shut off valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psi (3.5 kPa).

Electrical grounding must be provided in accordance with local codes, or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, or the Canadian Electrical Code, CSA C22.2, as applicable.

Ventilation must be provided in accordance with local codes, or in the absence of local codes, with ANSI/NFPA 96 Standard for Ventilation and Fire Protection of Commercial Cooking Operations.

⚠ WARNING

ELECTRICAL GROUNDING INSTRUCTIONS

This appliance is equipped with a three-prong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding prong from this plug. (120V units only).

The electrical diagram is located on the inside of side panel of left hand console.

⚠ WARNING

Do not connect the appliance to the electrical supply until after the gas connection has been made.

⚠ CAUTION

The pipe thread compound used when installing pipes must be a type that is resistant to the action of liquified petroleum or propane gases.

Gas Connection

1. The Serial and Rating Plate on the unit indicates the type of gas your unit is equipped to burn. DO NOT connect to any other gas type.
2. A 3/4” NPT line is provided at rear for the connection. The unit is equipped with an internal pressure regulator which is set at 4” W.C. manifold pressure for Natural Gas and 10” W.C. for Propane Gas. Use 1/8” pipe tap on the union elbow assembly located in the console for checking pressure.

An adequate gas supply is imperative. Undersized or low pressure lines will restrict the volume of gas required for satisfactory performance. A steady supply pressure, minimum 6 inch W.C. for natural gas and minimum 12 inch W.C. for propane gas is recommended. With all units operating simultaneously, the manifold pressure on all units should not show any appreciable drop. Fluctuations of more than 25% on natural gas and 10% on propane gas will create problems, affecting burner operation. Contact you gas company for correct supply line sizes.

Purge the supply line to clean out any dust, dirt or other foreign matter before connecting the line to the unit. Use pipe joint compound which is suitable for use with L.P. on all threaded connections.

Test pipe connections thoroughly for gas leaks.

⚠ WARNING

Never use an open flame to check for gas leaks. Check all connections for leaks using soapy water before use.

NOTICE

If this equipment is being installed at over 2,000 feet altitude and was not so specified on order, contact service department. Failure to install with proper orifice sizing may void the warranty.

To Install

1. Uncrate carefully. Report any hidden freight damage to the freight company immediately.
2. Ideally an exhaust system should be directly above the appliance to exhaust combustion gases generated by the unit.
3. The appliance is intended for use on noncombustible floors. The minimum clearance from combustible and noncombustible floor construction is 0” on right side, 0” on left side and 6” (152 mm) from the back of the flue chimney.
4. Appliance location must allow air supply to unit and obstruction free clearance for air opening into the combustion chamber.
5. Set the appliance in place and level using spirit level. Level left to right and front to back.
6. Mark hole locations on the floor through the anchoring holes provided in the flanged adjustable feet.
7. Remove the appliance from installation position and drill holes in locations marked on the floor. (See installation diagram on Page 4). Insert proper anchoring devices. (Not supplied).
8. Place appliance back in the installation position and Re-level left to right and front to back.
9. Bolt and anchor appliance securely to the floor.
10. Seal bolts and flanged feet with silastic or equivalent compound.
11. Make service connections as indicated.
12. The pressure relief valve is located at the left rear of the unit. This area should be kept clear and should not be in an area where operators will normally stand. The elbow on the relief valve should be turned toward the floor. 3/4” diameter pipe may be used to extend to the floor, but must not be piped directly to a drain. It must be vented to the atmosphere.
13. Check the pressure gauge on the front panel before operating. The reading should be in the green vacuum zone (below 0 PSI). See “Re-establishing Vacuum” section under Service Instructions.

OPERATION

NOTICE

Contact the factory, the factory representative or a local service company to perform maintenance and repairs should the appliance malfunction.

⚠ CAUTION

If you smell gas during the lighting procedure, immediately shut off the gas supply until the leak has been corrected.

⚠ WARNING

In the event of main burner ignition failure, a 5 minute purge period must be observed prior to re-establishing ignition source.

⚠ WARNING

In the event you smell gas, shut down equipment at the main shut off valve and contact the local gas company or gas supplier for service.

FRONT PANEL CONTROLS

POWER SWITCH: .....This switch turns the main power to the unit on and off. It must be turned on to heat the kettle. It should be turned off when the kettle will not be in use for long periods.

THERMOSTAT: .....Selects the desired internal kettle operating temperature. It also turns on the temperature light (red) and ignition light (green).

TEMPERATURE PILOT LIGHT (Red): .....This light is on when the thermostat is calling for heat.

IGNITION PILOTLIGHT (GREEN): .....Comes on with temperature light (red) and indicates ignition has occurred. Should it not come on with temperature light, this would indicate failed ignition or burnt out light.

LOW WATER LIGHT (AMBER): .....All kettles are supplied with sufficient water in the pressurized jacket. If at any time the water level falls below that required for proper operation, the kettle will not heat and this light will come on. See “Adding Water” section of service instructions.

PRESSURE GAUGE:.....The pressure gauge indicates the internal operating pressure of the kettle. When cold, the gauge should point to the green vacuum zone. If it does not, refer to “Re-establishing Vacuum” section. Under normal operation with the kettle empty (thermostat set at 10 or 275°F) the pressure should reach 30 psi. When loaded the pressure may be considerably less.

SIGHT GLASS: .....The sight glass indicates the water level within the kettle jacket.

PRESSURE RELIEF VALVE: .....The pressure relief valve is a safety device which prevents the internal kettle pressure from exceeding 50 psi. It should never be tampered with.

Tilting Instructions

Your kettle has the standard “Clean Lock” feature and may not be tilted without disengaging the tilt knob located on the console at the top left. This feature locks the kettle in the upright position and also allows the operator to lock the kettle at 105 degrees for ease of cleaning. Follow these steps to tilt kettle:

1. Pull out the tilt knob at the top left of console.
2. Using kettle tilt handle, pull kettle forward to desired angle of pour or until kettle locks at 105 degrees. The tilt knob can be released after the kettle has been tilted approximately 10 degrees.
3. Kettle will lock in position at 105 degrees and may be tilted further by pulling the tilt lock knob a second time allowing the kettle to tilt the full distance.
4. To return the kettle to the upright position, pull out the tilt lock knob and tilt the kettle upward until it locks in the upright position. The kettle should not move in either direction once in theupright position.

⚠ WARNING

In the event of main burner ignition failure, a 5 minute purge period must be observed prior to re-establishing ignition source.

Shut Down

1. Turn thermostat dial to “OFF” position.
2. Turn power switch to “OFF” position.
3. Close manual gas shut-off valve.

CLEANING

⚠ WARNING

Disconnect the power supply to the appliance before cleaning or servicing.

⚠ WARNING

Never spray water into electric controls or components!

⚠ WARNING

The equipment and its parts are hot. Use care when operating, cleaning and servicing.

⚠ CAUTION

Do not use cleaning agents that are corrosive.

Your kettle should be cleaned immediately after each use or when cooking a different product. Before cleaning, check that the kettle has cooled enough to touch it.

1. Rinse the inside of the kettle thoroughly and drain to remove any food particles.
2. Using a nylon brush, clean the kettle with a mild detergent and water. Never use steel wool or scouring powder as it will scratch stainless steel. Plain steel wool can leave small pieces of steel which can rust.
3. Rinse the inside of the kettle thoroughly with clean water. Drain the kettle by tilting or the tangent draw-off valve, depending on model, to allow the detergent and water solution to drain.
4. Wipe the exterior of the kettle with a clean, damp cloth.

⚠ WARNING

If you are cleaning a valve that is assembled to a kettle, be sure the kettle is **completely empty of any product**.

WHAT TO DO IF SURFACE RUST APPEARS

Metal utensils should never be used as they will scratch the surface of the equipment and rust may begin to form. To remove surface accumulation of rust from the inadvertent use of such utensils, the following procedure may be used.

1. Use undiluted white vinegar with a non-abrasive scouring pad (plastic) or cloth on the affected area to remove the rust stain. The appliance should not be heated and remain at room temperature during the entire cleaning process.
2. If the stain resists removal, additional exposure time with vinegar may be required, to a maximum of one hour.
3. Thoroughly wash all of the vinegar away with fresh clear water. Dry the surface completely and allow one hour before using the appliance to cook.

Following daily and period maintenance procedures will prolong the life for your equipment. Climatic conditions - salt air - may require more thorough and frequent cleaning or the life of the equipment could be adversely affected.

Stainless Steel

To remove normal dirt, grease or product residue from stainless steel, use ordinary soap and water (with or without detergent) applied with a sponge or cloth. Dry thoroughly with a clean cloth. Never use vinegar or any other corrosive cleaner.

To remove grease and food splatters or condensed vapors that have baked on the equipment, apply cleanser to a damp cloth or sponge and rub cleanser on the metal in the direction of the polishing lines. Rubbing cleanser as gently as possible in the direction of the polished lines will not mar the finish of the stainless steel. **NEVER RUB WITH A CIRCULAR MOTION**.

Soil and burn deposits which do not respond to the above procedure can usually be removed by rubbing the surface with **SCOTCH-BRITE**™ scouring pads or **STAINLESS** scouring pads. DO NOT USE ORDINARY STEEL WOOL as any particles left on the surface will rust and further spoil the appearance of the finish. **NEVER USE A WIRE BRUSH, STEEL SCOURING PADS (EXCEPT STAINLESS), SCRAPER, FILE OR OTHER STEEL TOOLS**. Surfaces which are marred collect dirt more rapidly and become more difficult to clean. Marring also increases the possibility of corrosive attack. Refinishing may then be required.

TO REMOVE HEAT TINT: Darkened areas sometimes appear on stainless steel surfaces where the area has been subjected to excessive heat. These darkened areas are caused by thickening of the protective surface of the stainless steel and is not harmful. Heat tint can normally be removed by the foregoing, but tint which does not respond to this procedure calls for a vigorous scouring in the direction of the polish lines using **SCOTCH-BRITE**™ scouring pads or a **STAINLESS** scouring pad in combination with a powdered cleanser. Heat tint action may be lessened by not applying or by reducing heat to equipment during slack periods.

All food contact surfaces must be thoroughly drained and flushed prior to cooking in the kettle.

CONTROL PANEL: The textured control panel should be cleaned with warm water and mild soap. Never use an abrasive cloth or steel wool. Never use cleaning solvents with a hydrocarbon base.

Periodic Maintenance

⚠ CAUTION

Under normal operating conditions a “try lever test” should be performed every two months. Under severe service conditions, or if corrosion and/or deposits are noticed within the valve body, testing must be performed more often. A “try lever test” should also be performed at the end of any non-service period.

⚠ CAUTION

Hot, high pressure fluid may be discharged from body drain and vent during “try lever” test.

Care must be taken to avoid any bodily contact.

⚠ CAUTION

High sound levels may be experienced during “try lever” test. Wear proper safety equipment and exercise extreme care! Test at, or near, half of the operating pressure by holding the test lever fully open for at least two seconds to flush the valve seat free of sediment and debris. Then release lever and permit the valve to snap shut.

If lift lever does not activate, or there is no evidence of discharge, turn off equipment immediately and contact a licensed contractor or qualified service personnel.

Service

General

When any difficulty arises always check that the unit has been connected to the gas supply type and voltage for which it was supplied. This can be done by examining the serial plate on the lower right side of the unit. It will list the gas type and voltage for which the unit was manufactured.

NOTICE

Contact the factory, the factory representative or a local service company to perform maintenance and repairs.

⚠ WARNING

Adjustments and service work may be performed only by a qualified technician who is experienced in, and knowledgeable with, the operation of commercial gas cooking equipment. To assure your confidence, contact your authorized service agency for reliable service, dependable advice or other assistance, and for genuine factory parts.

Pressure Switch

The pressure switch is preset for proper operation from the factory and should not be adjusted until it is determined to be the cause of an operating pressure deficiency.

Appliance malfunctions caused by pressure switch misadjustment are:

1. Pressure relief valve opening, especially on preheat from a cold start to 285 °F (pressure switch set too high.)
2. Burners being shut down prematurely by the pressure switch (pressure switch set is too low).

If adjustment of pressure switch is required, call a qualified service technician to service the unit.

Service Technician

1. Bypass the thermostat by removing the wire on terminal 8 and install on piggy back on terminal 10. Ignition and temperature light will come on.
2. Turn on unit and allow it to reach approximately 35 psi. Rotate knob on pressure switch clockwise to increase, counterclockwise to decrease. Use centre of black ring as an indicator until burner shuts off at 35 psi as shown on pressure gauge on front of unit.
3. To check that the pressure switch operates, cool the kettle down by filling with cold water. Once cooled, turn kettle back on. Burner should shut down at 35 psi.
4. Turn off power and cool unit down so that pressure on gauge is below 30 psi.
5. When pressure is below 30 psi, reconnect the thermostat into circuit and set thermostat dial to maximum setting.
6. Turn on power and allow pressure to reach 30 psi on the pressure gauge.
7. Thermostat must shut off at 30 psi. Should it fail to do this, adjustment will be required.
8. To set thermostat, adjust the trim-pot on the control inside the kettle. It is located next to terminal 2 and is not sealed. Turning pot clockwise will lower the temperature setting, counterclockwise increases temperature.
9. To check that the thermostat operates correctly, cool the unit as before and turn thermostat dial to maximum setting. Burner should ignite and cycle between 22 and 30 psi.
10. If vacuum has been lost, heat unit until 30 psi, and open vent nut to release pressure in order to create vacuum. When ignition and temperature lights come on, between 22 to 24 psi, close vent nut and allow to build pressure.
11. Unit is now ready for operation.

Adding Water (Low Water Light Comes On)

When the “Low Water” light is on, additional water is required and the following steps must be followed:

1. Unit should be completely cold and off.
2. Lift handle of pressure relief valve to release the remaining vacuum in the kettle (relief valve is at left rear of kettle).
3. Remove air vent nut on the elbow located at the rear right of the unit.
4. Using pure distilled water only, pour the water into the opening (a funnel will be helpful). Water will enter the kettle slowly, as air must escape through the same hole. Water should be added until the water level is past the centre of the sight glass. The sight glass is located on the lower front left of the kettle.
5. When sufficient water has been added, replace and tighten the nut. Be sure to seal threads with pipe joint compound suitable for steam at 50 psi.
6. Vacuum must be re-established. See Re-establishing Vacuum).

Re-Establishing Vacuum

Periodically check pressure gauge when kettle is cold. It should be in green vacuum zone (below 0 psi). Otherwise air is present and proper heating will not occur.

To remove air:

1. With the kettle empty, turn the thermostat knob to the highest temperature.
2. When the temperature pilot light goes off, open air vent nut one (1) full turn for 20 seconds and then close and tighten the nut. This should remove the air and any loss in performance should return.
3. Proper vacuum in the kettle should now be re-established.

Troubleshooting

PROBLEM	PROBABLE CAUSE
Unit does not come on	Power switch and/or thermostat is “OFF”.
	Unit is not plugged in.
	Main power supply is off.
	Tilt micro switch out of alignment or faulty.
Unit is on electrically, but does not heat	Gas supply to the unit is “OFF”.
	The manual shut-off valve is “OFF”.
	The thermostat is not turned “ON.”
	The kettle is not in the upright position.
	The electronic ignition is not functioning.
	Pressure switch is not functioning.
	Low water in kettle jacket.
	Thermostat is not functioning.
Unit is slow to preheat and slow to recover	Wrong size orifices.
	Wrong gas supply.
	Incorrect pressure at supply.
	Loss of vacuum.

NOTICE

Contact the factory, the factory representative or a local service company to perform maintenance and repairs.

APPENDIX 'A'

SAFETY DATA SHEET
DOW CHEMICAL CANADA ULC

Product name: DOWFROST™ HD Heat Transfer Fluid, Dyed **Issue Date:** 01/19/2017
Print Date: 01/23/2017

DOW CHEMICAL CANADA ULC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: DOWFROST™ HD Heat Transfer Fluid, Dyed

Recommended use of the chemical and restrictions on use
Identified uses: Intended as a heat transfer fluid for closed-loop systems. We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

COMPANY IDENTIFICATION
DOW CHEMICAL CANADA ULC
#2400, 215 - 2ND STREET S.W.
CALGARY AB T2P 1M4
CANADA

Customer Information Number: 800-258-2436
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 1-888-226-8832
Local Emergency Contact: 613-996-6666

2. HAZARDS IDENTIFICATION

Hazard classification
This product is not hazardous under the criteria of the Hazardous Products Regulation (HPR) as implemented under the Workplace Hazardous Materials Information System (WHMIS 2015).

Other hazards
No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration

Propylene glycol	57-55-6	> 93.0 %
Water	7732-18-5	< 5.0 %
Dipotassium hydrogen phosphate	7758-11-4	< 5.0 %

4. FIRST AID MEASURES

Description of first aid measures
General advice: If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air; if effects occur, consult a physician.

Skin contact: Wash off with plenty of water.

Eye contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

Ingestion: No emergency medical treatment necessary.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

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

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Keep unnecessary and unprotected personnel from entering the area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Small spills: Absorb with materials such as: Cat litter. Sawdust. Vermiculite. Zorb-all®. Collect in suitable and properly labeled containers. Large spills: Dike area to contain spill. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Conditions for safe storage: Do not store in: Galvanized steel. Opened or unlabeled containers. Store in the following material(s): Carbon steel. Stainless steel. Store in original unopened container. See Section 10 for more specific information. Additional storage and handling information on this product may be obtained by calling your sales or customer service contact.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Propylene glycol	US WEEL	TWA	10 mg/m3
	CA ON OEL	TWAEV Total	155 mg/m3 50 ppm
	CA ON OEL	TWAEV	10 mg/m3
	CA ON OEL	TWA	155 mg/m3 50 ppm
	CA ON OEL	TWA	10 mg/m3
	CA ON OEL	TWA Vapour and aerosols	155 mg/m3 50 ppm
	CA ON OEL	TWA aerosol	10 mg/m3

Consult local authorities for recommended exposure limits.

Exposure controls
Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use safety glasses (with side shields).

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Wear clean, body-covering clothing.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Yellow to green
Odor	Characteristic
Odor Threshold	No test data available
pH	9.5 50% *Literature*
Melting point/range	Not applicable to liquids
Freezing point	supercools
Boiling point (760 mmHg)	152 °C *Literature*
Flash point	**closed cup** 104 °C *Pensky-Martens Closed Cup ASTM D 93* Propylene glycol., (based on major component)
Evaporation Rate (Butyl Acetate = 1)	< 0.5 *Estimated.*
Flammability (solid, gas)	Not applicable to liquids
Lower explosion limit	2.6 % vol *Literature* Propylene glycol.
Upper explosion limit	12.5 % vol *Literature* Propylene glycol.

Vapor Pressure	2.2 mmHg *Literature*
Relative Vapor Density (air = 1)	>1.0 *Literature*
Relative Density (water = 1)	1.06 at 20 °C / 20 °C *Literature*
Water solubility	100 % *Literature*
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	371 °C *Literature* Propylene glycol.
Decomposition temperature	No test data available
Kinematic Viscosity	43.4 cSt at 20 °C *Literature*
Explosive properties	No data available
Oxidizing properties	No data available
Molecular weight	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: Stable under recommended storage conditions. See Storage, Section 7. Hygroscopic

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Avoid direct sunlight or ultraviolet sources.

Incompatible materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Alcohols. Ethers. Organic acids.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

For the major component(s): Propylene glycol.
LD50, Rat, > 20,000 mg/kg

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

For the major component(s): Propylene glycol.
LD50, Rabbit, > 20,000 mg/kg

Acute inhalation toxicity
At room temperature, exposure to vapor is minimal due to low volatility. Mist may cause irritation of upper respiratory tract (nose and throat).

For the major component(s):
LC50, Rat, 4 Hour, vapour, 6.15 mg/l No deaths occurred following exposure to a saturated atmosphere.

Skin corrosion/irritation
Prolonged contact is essentially nonirritating to skin.
Repeated contact may cause flaking and softening of skin.

Serious eye damage/eye irritation
May cause slight temporary eye irritation.
Corneal injury is unlikely.

Sensitization
For the major component(s):
Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

Carcinogenicity
Similar formulations did not cause cancer in laboratory animals.

Teratogenicity
For the major component(s): Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity
For the major component(s): In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

Mutagenicity
In vitro genetic toxicity studies were negative. For the major component(s): Animal genetic toxicity studies were negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Propylene glycol

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 40,613 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
LC50, Ceriodaphnia dubia (water flea), static test, 48 Hour, 18,340 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Growth rate inhibition, 19,000 mg/l, OECD Test Guideline 201

Toxicity to bacteria
NOEC, Pseudomonas putida, 18 Hour, > 20,000 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Ceriodaphnia dubia (water flea), semi-static test, 7 d, number of offspring, 13,020 mg/l

Dipotassium hydrogen phosphate

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Leuciscus idus (Golden orfe), static test, 48 Hour, > 900 mg/l, Method Not Specified.

Persistence and degradability

Propylene glycol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Biodegradation may occur under anaerobic conditions (in the absence of oxygen).
10-day Window: Pass
Biodegradation: 81 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent
10-day Window: Not applicable
Biodegradation: 96 %
Exposure time: 64 d
Method: OECD Test Guideline 306 or Equivalent

Theoretical Oxygen Demand: 1.68 mg/mg

Chemical Oxygen Demand: 1.53 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	69.000 %
10 d	70.000 %
20 d	86.000 %

Photodegradation
Atmospheric half-life: 10 Hour
Method: Estimated.

Dipotassium hydrogen phosphate
Biodegradability: Biodegradation is not applicable.

Bioaccumulative potential

Propylene glycol
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -1.07 Measured
Bioconcentration factor (BCF): 0.09 Estimated.

Dipotassium hydrogen phosphate
Bioaccumulation: No bioconcentration is expected because of the relatively high water solubility.

Mobility in soil

Propylene glycol
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient (Koc): < 1 Estimated.

Dipotassium hydrogen phosphate
No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices 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. AS YOUR SUPPLIER, WE HAVE 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: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler. Reclaimer. Incinerator or other thermal destruction device.

14. TRANSPORT INFORMATION

TDG

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Not regulated for transport

Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code

Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

Canadian Domestic Substances List (DSL)

This product contains at least one substance which is not listed on the Canadian Domestic Substances List (DSL).

16. OTHER INFORMATION

Hazard Rating System

NFPA

Health	Fire	Reactivity
0	1	0

Revision

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Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

CA ON OEL	Canada. Ontario OELs

TWA	8-hr Time Weighted Average
TWAEV	time-weighted average exposure value
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW CHEMICAL CANADA ULC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided 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 between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

NOTES

Notes

GC-12
Gas Fired Steam Jacketed Tilting Kettle

CFESA
Commercial Food Equipment Service Association

Genuine Parts
Protect *YOU* All-Ways !
C NAFEM E S A

A product with the Crown name incorporates the best in durability and low maintenance. We all recognize, however, that replacement parts and occasional professional service may be necessary to extend the useful life of this appliance. When service is needed, contact a Crown Authorized Service Agency, or your dealer. To avoid confusion, always refer to the model number, serial number, and type of your appliance.

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