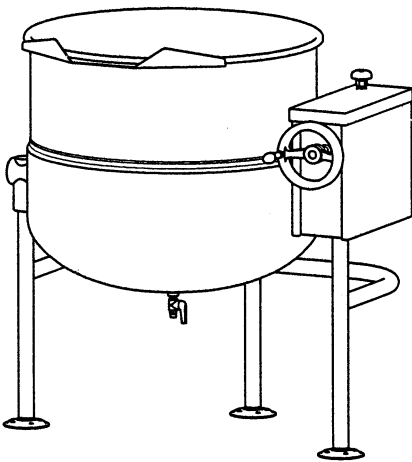


# INSTALLATION AND OPERATION MANUAL

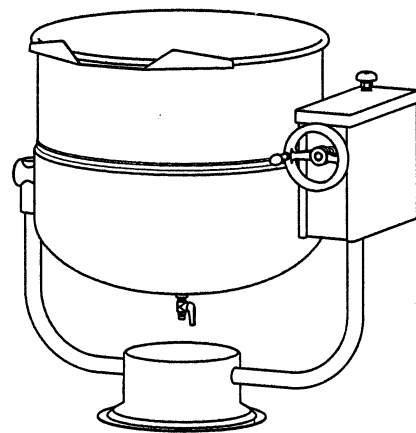
## DIRECT STEAM TILTING KETTLES

MODELS: DLT - 20, 30, 40, 60, 80, 100 GALLON

DPT - 20, 30, 40, 60, 80 GALLON



**DLT**



**DPT**

### **CROWN FOOD SERVICE EQUIPMENT LTD.**

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**IMPORTANT NOTES FOR INSTALLATION AND OPERATION**

It is recommended that this manual be read thoroughly and that all instructions be followed carefully.



**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: 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.**

**This manual should be retained for future reference.**

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# INSTALLATION AND OPERATION MANUAL - DIRECT STEAM TILTING KETTLES, MODELS DLT, DPT

## SERVICE CONNECTIONS

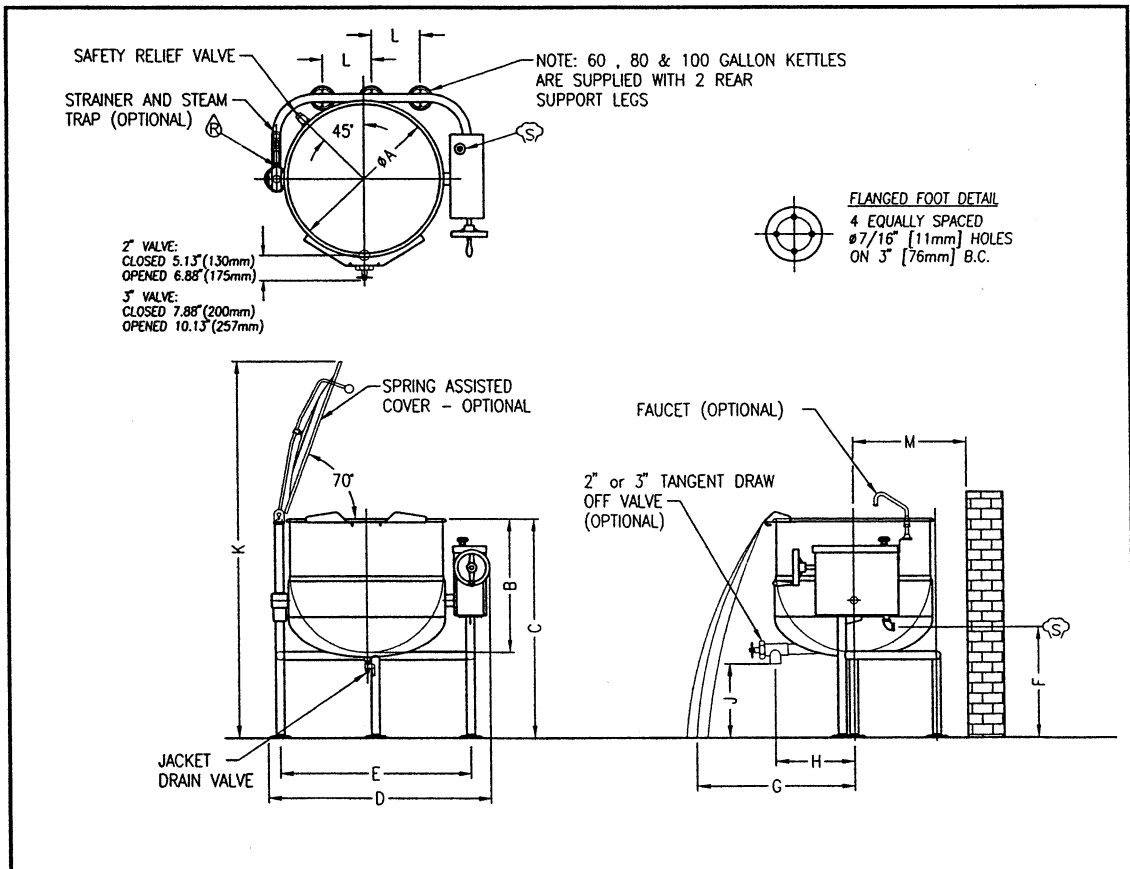
### INSTALLATION & SERVICE CONNECTIONS

☞ - STEAM SUPPLY: 3/4"IPS

Ⓔ - CONDENSATE RETURN: 1/2"IPS

MODEL	CAPACITY	UNITS	A	B	C	D	E	F	G	H(2")	H(3")	J(2")	J(3")	K	L	M
DLT-20	20 gallons	inches	21	18	37	34.75	28.5	22	25.63	12	13.25	17	16.5	59.5	-	15.38
	76 liters	mm	535	460	940	885	724	559	651	305	337	432	419	1512	-	391
DLT-30	30 gallons	inches	24	20	37	37.75	31.5	20.75	27.13	12.5	14.25	15	14.5	62.5	-	15.38
	114 liters	mm	610	510	940	960	800	527	689	317	362	381	368	1588	-	391
DLT-40	40 gallons	inches	26	22.5	37	39.75	33.5	20.25	28.63	13	15.25	12.5	12	64	-	16.38
	152 liters	mm	660	570	940	1010	850	514	727	330	387	318	305	1626	-	416
DLT-60	60 gallons	inches	29.5	26	40.5	43.25	37	21.5	30.13	13.75	15.5	14.5	14	74	9.5	18.38
	227 liters	mm	750	660	1029	1100	940	546	765	350	394	368	356	1879	241	467
DLT-80	80 gallons	inches	33	28	42.5	46.75	40.5	20	32.63	14.5	16.25	12.5	12	76	11	19.88
	303 liters	mm	840	710	1080	1185	1030	508	828	368	413	318	305	1930	279	505
DLT-100	100 gallons	inches	35.5	30	42.5	49.25	43	27	39.25	18	20.25	10.5	10	79	12.5	21.5
	379 liters	mm	902	762	1080	1251	1092	686	997	457	514	267	254	2007	318	546

\* Pressure reducing valve is required if incoming pressure exceeds 50 PSI(345 kPa).



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

## SERVICE CONNECTIONS

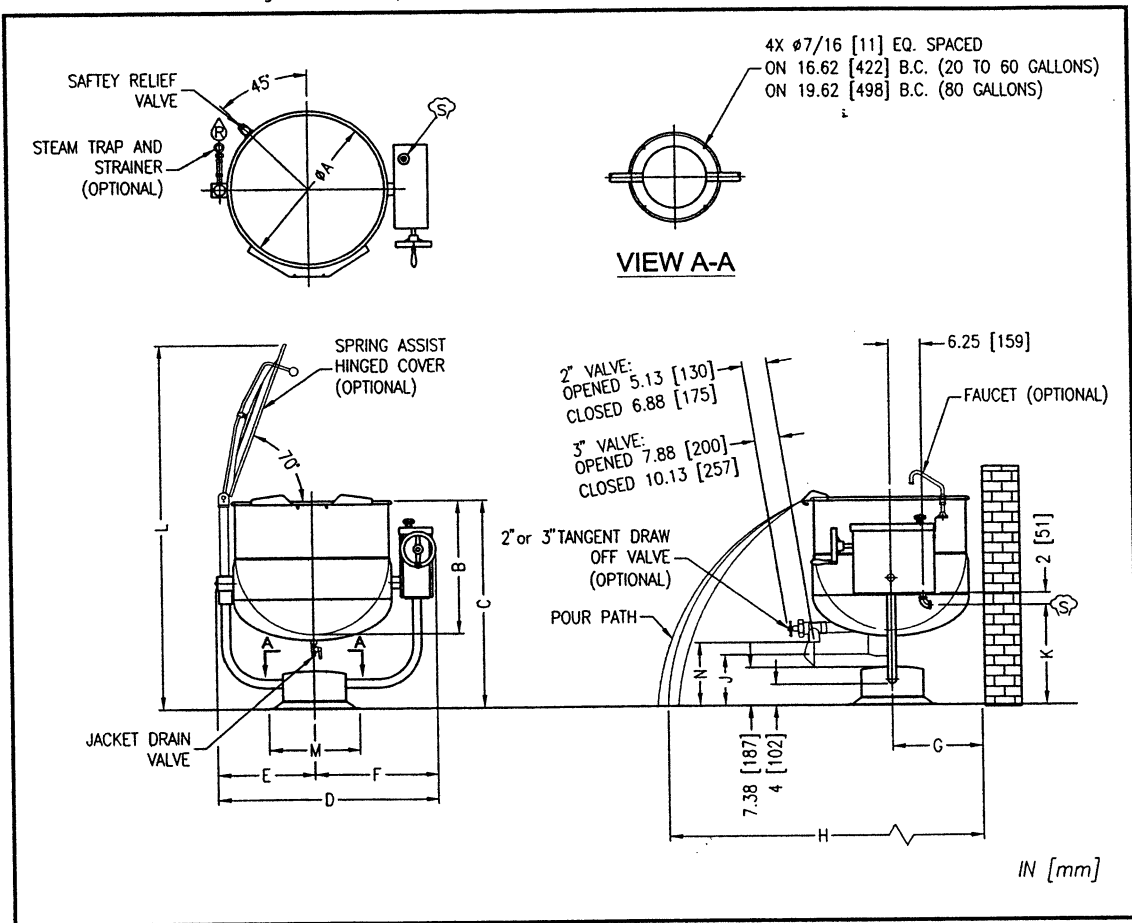
## INSTALLATION & SERVICE CONNECTIONS

Ⓢ - STEAM SUPPLY: 3/4"IPS

Ⓐ - CONDENSATE RETURN: 1/2"IPS

MODEL	CAPACITY	UNITS	A	B	C	D	E	F	G	H	J	K	L	M	N(2")	N(3")
DPT- 20	20 gallons	inches	21	18	37	34.75	14.75	20	13.5	41	15.25	20.5	59.5	17.5	16.75	16.25
	76 liters	mm	535	460	940	883	375	508	343	1041	387	521	1512	445	425	413
DPT- 30	30 gallons	inches	24	20	37	37.75	16.25	21.5	14	43	13.25	20	62.5	17.5	14.75	14.25
	114 liters	mm	610	510	940	959	413	546	356	1092	337	508	1588	445	375	362
DPT- 40	40 gallons	inches	26	22.5	37	39.75	17.25	22.5	15.5	45	10.75	18.5	64	17.5	12.25	11.75
	152 liters	mm	660	570	940	1010	438	572	394	1143	273	470	1626	445	311	298
DPT- 60	60 gallons	inches	29.5	26	40.5	43	18.87	24.13	17.5	48	10.25	19.25	74	17.5	14.25	13.75
	227 liters	mm	750	660	1029	1092	479	613	445	1219	260	489	1879	445	362	349
DPT- 80	80 gallons	inches	33	28	42.5	46.5	20.63	25.88	19	52	9.75	20.5	76	20.5	12.25	11.75
	303 liters	mm	840	710	1080	1181	524	657	483	1321	248	521	1930	521	311	298

\* Pressure reducing valve is required if incoming pressure exceeds 50 PSI(345 kPa).



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

# INSTALLATION AND OPERATION MANUAL - DIRECT STEAM TILTING KETTLES, MODELS DLT, DPT

## 1.0 INSTALLATION INSTRUCTIONS

1. Select a location to provide drainage for kettle pour path when tilted and for draw-off valve if so equipped.
2. Mark hole locations through flanged adjustable feet on DLT models and through pedestal base on DPT models. Remove kettle.
3. On hole locations marked, drill holes and insert expansion shields to accommodate 5/16" size lag bolts.
4. Reposition kettle. On DLT models level kettle by making necessary adjustment on flanged foot.
5. Bolt down kettle and seal with Silastic or other equivalent sealing compound. Sealant must be applied not only to bolt heads but also around flanges or pedestal base making contact with floor surface to fulfil NSF requirements.
6. Connect steam line (3/4" pipe size) to the kettle, making sure there is a steam control valve strainer fairly convenient to the kettle.
7. Connect kettle condensate return line to a drain or to a boiler return line. Each kettle return line must have a suitable steam trap. Boiler return lines must have a check valve.
8. Safety relief valve on kettle must not be plugged as it is set to relieve excess pressure in the kettle.
9. If incoming steam pressure is greater than kettle maximum operation pressure then a pressure reducing valve must be installed in the line.
10. If large amounts of water accumulate in the steam line it will be necessary to install one or more ball float traps in the line to eliminate the water.
11. A steam line pressure gauge is also recommended to determine the actual amount of steam coming to the kettle.
12. Check for proper operation.

## **INTRODUCTION**

### **2.0 DESCRIPTION**

All Crown direct connected steam jacketed kettles pertaining to this manual are direct steam operated pressure vessels of a double-wall stainless steel construction forming a steam chamber (jacket) enveloping the lower two thirds of the kettle bowl surface. All kettles are tilting, floor mounted in fixed positions either on legs with adjustable flanged feet (DLT Models) or pedestals (DPT Models). All kettles are equipped with a drain cock, safety relief valve and a steam control valve. Options on kettles are hinged spring assisted stainless steel lid covering the kettle bowl opening and a sanitary stainless steel tangent draw-off valve as an alternate method for the removal of the food product from the kettle bowl.

### **3.0 BASIC FUNCTIONING**

#### **3.1 CAPACITIES**

All models are suffixed with either - 20, - 30, - 40, - 60, - 80 or - 100 to indicate the capacity of that kettle in U.S. gallons. Thus a DLT-40 is a two thirds jacketed direct steam kettle mounted on legs with a capacity of 40 gallons (U.S.). If the letter F is added to the suffix, this then indicates that the kettle is full jacketed direct steam kettle mounted on a pedestal with a capacity of 40 gallons (U.S.).

#### **3.2 FUNCTIONING MODE**

Crown direct connected steam jacketed kettles consist of a stainless steel bowl and a stainless steel jacket which envelopes two thirds of the lower surface of the bowl thus forming a sealed pressure vessel (chamber) into which steam is introduced by means of a manual control valve.

The kettle bowl is the container for the food product which ideally should be of a liquid or semi-liquid consistency to achieve complete contact with the bowl surface and thus fully absorb the heat transmitted through the surface.

The temperature required for the cooking process to function adequately must be greater than the boiling point of the liquid food product, viz. water. Further, the greater the steam pressure used, the higher the temperature and consequently the quicker the cooking process. For example, steam pressurized at 30 p.s.i. attains a temperature of 274 degrees Fahrenheit (135 degrees Celsius).

#### **4.0 OPERATING INSTRUCTIONS**

1. If kettle has draw-off valve, close it.
2. Fill kettle with product to desired level.
3. Slowly turn the steam control valve ON to full open position (counter clockwise).
4. The water or food should boil 3-4 minutes per gallon. If it does not then incoming pressure should be checked to determine that it is adequate to operate the kettle efficiently.
5. Regulate steam control valve depending on type of food being prepared.
6. When food is cooked, turn off steam, remove food and clean kettle immediately to prevent residue from drying on kettle bowl surface.

#### **5.0 CLEANING INSTRUCTIONS**

Your kettle should be cleaned immediately after each use.

1. Ensure that steam supply is OFF.
2. Pre-rinse inside of kettle thoroughly and drain to remove any food particles.
3. Using a nylon brush, clean kettle with a mild detergent and warm water rinse. Never use steel wool or scouring powder as it will scratch stainless steel.
4. Tilt kettle fully or open the tangent draw-off valve if one is provided to allow soap and water solution to drain. Rinse with clean water.
5. On kettles equipped with a draw-off valve, by hand, turn the large hex nut counter-clockwise until it is completely disengaged from thread. Grasp knob to valve and slowly pull out valve stem and disc. Do not allow disc to come in contact with hard surfaces since damage to disc may occur and result in valve leakage. Wash the valve stem, disc and handle. Insert nylon brush with detergent into interior of valve body and tangent draw-off tube and brush vigorously. Replace valve stem assembly and engage hex nut fully by hand. Flush kettle with clean warm water. Leave valve open when kettle is not in use.

**WARNING**

**IT IS NOT RECOMMENDED TO USE CLEANING AGENTS THAT ARE CORROSIVE.**

Use of cleaning agents that contain chloride, acids or salts are corrosive and may cause pitting and corrosion when used over a period of time; this will reduce the life of the appliance.

Should pitting or corrosion occur, this is not covered by warranty.

Follow the recommended cleaning instructions. Use a mild detergent, warm water and rinse thoroughly.

## **6.0 TROUBLESHOOTING MAINTENANCE**

### **6.1 PREVENTIVE MAINTENANCE**

No preventive maintenance is required other than adhering to the Cleaning Procedure instructions.

### **6.2 DRAW-OFF VALVE LEAKS**

If a leak occurs through the valve stem, replace the "O" ring. If the leak can be attributed to faulty sealing occurring between the stem disc and valve seat, then quite often this problem can be corrected by cleaning off the dried on food residue with an extremely fine emery cloth or the rubber vulcanized stem piece has been damaged and must be replaced.

#### **NOTICE**

**DRAW OFF VALVE HAS A VULCANIZED RUBBER COATED STEM FOR BETTER SEALING. DO NOT OVER TIGHTEN. THIS MAY CAUSE THE RUBBER TO PULL AWAY FROM STEM AND PERMANENTLY DAMAGE IT.**

### **6.3 EXTREMELY SLOW COOKING TIME**

If the cooking time is abnormally slow then the difficulty may be due to insufficient steam pressure and/or volume. First determine that pressure on incoming steam line at kettle is within 5 p.s.i. of rated kettle pressure. Note that pressures approaching the rated kettle pressure are liable to set off the safety relief valve. If required pressure is available to kettle, then possibly volume of steam is not sufficient. Minimum 3/4" pipe size is required to the kettle but if the steam generating source is at a great distance from the kettle, larger pipe will be required. Finally, the core of the steam supply pipe may have debris or scalants that impede steam flow and will require disassembly and inspection.

#### **6.4 AIR VENTING**

It is recommended that the "optional" steam trap assembly be installed. This should be plumbed to the exit end of the kettle. The thermostatic trap is a mechanical device that closes on high temperature and opens when the temperature drops, allowing the water which formed from condensate to exhaust but retain the steam under pressure.

The temperatures required for the cooking process to function adequately must be greater than the boiling point of the liquid food product, that is, water. The greater the steam pressure used, the higher the temperature and the quicker the cooking process. For example, steam pressurized at 30 p.s.i. reaches a temperature of 274 degrees Fahrenheit (135 degrees Celsius). Since air is an unsuitable media through which heat may be transferred, the air should be exhausted from the jacket by opening the pressure relief valve until the air has been completely replaced by pressurized steam.

In the initial stages of the cooking process when the steam comes in contact with the cold kettle bowl surface, it condenses and forms a large amount of water. The condensate water must be removed from the kettle jacket in order for the kettle to function adequately. The ball valve located at the base of the kettle jacket may be opened to remove the water. It may be necessary to repeat this procedure several times depending on the number of batches being cooked as each batch will create condensate. If the kettle appears to be slow in heating, this would indicate that there is water in the jacket. Open ball valve and drain. Close valve and commence operation of kettle.