

## CUSTOM Xi™ SERIES HEAVY DUTY COMMERCIAL ELECTRIC WATER HEATERS

### ADVANCED ELECTRONIC CONTROL

- A. O. Smith's proprietary electronic water heater control, provides precise + or - 1° temperature control, that is ideal for industrial and food service applications where exact temperatures are needed.
- The Operating Set Point is adjustable from 90°F/42°C to 190°F/88°C. The factory setting is 120°F/49°C.
- Approved for 180°F/82°C sanitizing applications.

### EASY TO UNDERSTAND

- Text and animated icons display detailed operational and diagnostic information. Fault or Alert messages appear if an operational issue occurs.

### ELEMENT SENSING

- Each element is constantly monitored and current on/off state is displayed, any element failure is reported and it's exact location is shown, eliminates a need for field testing of elements.

### LOW WATER CUT-OFF

- Factory standard on board low water cut-off uses a remote electric immersion type probe to prevent energizing of the elements in the event of low water condition and eliminates accidental dry firing.

### SEQUENCING

- Units with multiple element contactors are sequenced on with one-second delay between stages. Prevents high amp electrical loads from hitting the electric system all at once and provides a smoother operating unit. Adjustable modulating mode is optional - see options.

### NIGHT SETBACK OPERATION

- Control system automatically lowers the operating set point by a user defined value during setback periods. Seven-day clock may be programmed for night set back and or weekend shutdown to reduce operating cost and save energy.

### BUILDING MANAGEMENT SYSTEM

- BACnet or Modbus compatible with optional ICC Gateway.
- Call 1.888.WATER02 for more information.

### POWERED ANODE

- The DSE models use a unique combination of a conventional magnesium anode and a European style power anode. The powered anode is self-adjusting to water conditions, does not require maintenance unless damaged, and provides longer-lasting tank protection in hard to reach areas. This multi-anode system provides superior anodic protection to hidden surfaces of the tank not protected in convention commercial electric water heaters.

### INCOLOY IMMERSION HEATERS

- Heavy-duty elements provide excellent protection against oxidation and scaling. Input ranges from 3kW to 90kW available (see accompanying chart). Rugged, industrial grade elements.

### HEAVY FOAM INSULATED

- All models meet or exceed the thermal efficiency and/or standby loss requirements of NRCan and current edition ASHRAE/IESNA 90.1.

### GLASSLINED TANK

- A. O. Smith's PermaGlas® coating provides truly superior protection against corrosion and is permanently bonded to all inner tank surfaces at 1600°F.

### ASME TANK CONSTRUCTION

- 160 psi working pressure.

### THREE YEAR LIMITED WARRANTY

- For complete warranty information consult written warranty.



**DSE-5A thru DSE-120A  
(DSE-100A Shown)**



Features and benefits continued on the following page.

## FEATURES AND BENEFITS (CONTINUED)

### STANDARD VOLTAGES

- 208, 240 and 480 volt single and three phase. All 208 and 240 volt at 24kW and below are supplied phase convertible (single to three and vice versa). 277 volt single phase also available. Consult factory for 120 volt power circuit availability.

### TERMINAL BLOCK

- To accept copper or aluminum leads (on units with more than one contactor).

### 120 VOLT CONTROL CIRCUIT

- Powered by fused transformer.

### MAGNETIC CONTACTORS

- Heavy-duty UL rated for 100,000 cycles.

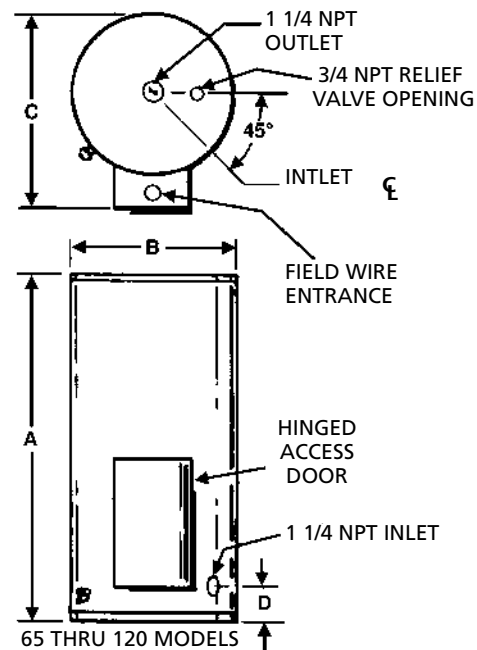
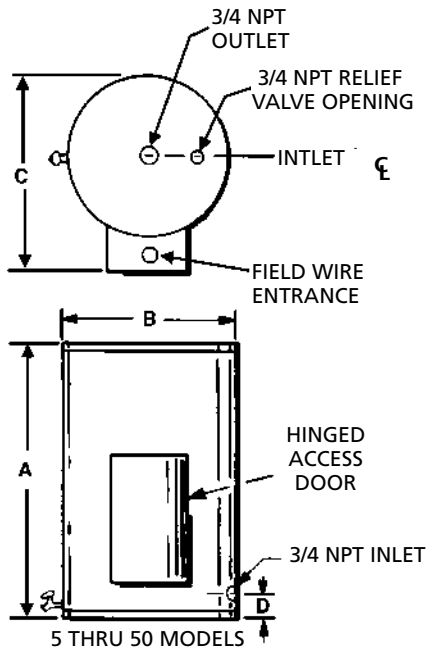
### POWER CIRCUIT FUSING

- Protects all elements, thermostats, and internal wiring circuits against excess current flow.

### SIMPLIFIED CIRCUITRY, COLOUR-CODED FOR EASE OF SERVICE

### HINGED CONTROL COMPARTMENT DOOR

### CSA CERTIFIED AND ASME RATED T&P RELIEF VALVE



## ROUGH-IN DIMENSIONS

MODEL NUMBER	TANK CAPACITY		MAXIMUM KW INPUT	DIMENSIONS								APPROX. SHIPPING WEIGHT	
	USG	LITRES		A		B		C		D		LB	KG
				INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM		
DSE-5A	5	19	3	22	559	16	406	24	610	4-1/4	108	82	37
DSE-10A	10	38	6	28-1/8	715	18	457	26	660	5-1/4	133	116	48
DSE-20A	20	76	18	31-3/4	807	22	559	28	711	5-3/4	146	145	66
DSE-30A	30	114	24	43-1/4	1,099	22	559	28	711	5-3/4	146	218	99
DSE-40A	40	151	36	54-3/4	1,391	22	559	28	711	5-3/4	146	245	111
DSE-50A	50	189	90	66-3/16	1,681	22	559	28	711	5-3/4	146	291	132
DSE-65A	65	246	90	57-1/4	1,454	26-1/2	673	32-1/2	826	11-3/8	289	344	156
DSE-80A	80	303	90	58-1/8	1,477	28	711	35	889	12-1/2	318	406	184
DSE-100A	100	379	90	70-1/4	1,784	28	711	35	889	12-1/2	318	419	190
DSE-120A	120	450	90	70-1/4	1,784	30-1/8	765	37	940	12-1/2	318	453	206



# Commercial Electric Water Heaters

## RECOVERY CAPACITIES

GPH RECOVERIES AT LIST TEMPERATURE RISE													
STANDARD KW INPUT	BTU/h	30°F RISE	40°F RISE	50°F RISE	60°F RISE	70°F RISE	80°F RISE	90°F RISE	100°F RISE	110°F RISE	120°F RISE	130°F RISE	140°F RISE
3	10,239	41	31	24	20	17	15	13	12	11	10	10	9
6	20,478	82	62	49	41	35	31	27	25	22	21	19	18
9	30,717	123	92	74	62	53	46	41	37	34	31	28	26
12	40,956	164	123	98	82	70	61	55	49	45	41	38	35
15	51,195	205	154	123	102	88	88	68	61	56	51	47	44
18	61,434	246	184	148	123	105	92	82	74	67	62	57	53
24	81,912	328	246	197	164	140	123	109	98	90	82	76	70
30	102,390	410	308	246	205	176	154	137	123	112	103	95	88
36	122,868	492	369	295	246	211	184	164	148	134	123	113	105
45	153,585	615	461	369	307	263	230	205	184	168	154	142	132
54	184,302	738	554	443	359	316	277	246	221	201	185	170	158
60	204,780	819	615	492	410	351	307	273	246	223	205	189	176
75	255,975	1,025	768	615	512	439	384	341	307	279	256	236	219
90	307,170	1,229	922	738	615	527	461	410	369	335	307	284	263

## STANDARD KW INPUTS AND AMPERAGE

STANDARD KW RATINGS	IMMERSION HEATERS***	WATTAGE	NUMBER OF 50A CONTACTORS			FULL LOAD CURRENT IN AMPERES							
			208V	240V	480V	SINGLE PHASE				THREE PHASE			
	NO. OF					208V	240V	277V	480V	208V	240V	480V	600V
3	1	3,000	1	1	1	14.4	12.5	10.8	6.3	8.3	7.2	3.6	3.0
6	1	6,000				28.8	25.0	21.2	12.5	16.7	14.4	7.2	6.0
9	1	9,000				43.3	37.5	32.5	18.8	25.0	21.7	10.8	9.0
12	1	12,000				57.7	50.0	43.3	25.0	33.3	28.9	14.4	12.0
15	1	15,000				72.1	62.5	54.2	31.3	41.6	36.1	18.0	15.0
18	*1	18,000	2	2	1	86.5	75.0	65.0	37.5	50.0	43.3	21.7	18.0
24	2	12,000				115.4	100.0	86.6	50.0	66.6	57.7	28.9	24.0
30	2	15,000				144.2	125.0	108.3	62.5	83.3	72.2	36.1	30.0
36	*2	18,000	3	3	2	173.1	150.0	130.0	75.0	99.9	86.6	43.3	36.0
45	3	15,000				216.3	187.5	162.5	93.8	124.9	108.3	54.1	45.0
54	3	18,000				N/A	225.0	194.9	112.5	149.9	129.9	65.0	54.0
60	4	15,000	4	4	2	N/A	250.0	216.6	125.0	166.7	145.0	72.0	60.0
74	5	15,000	5	5	3	N/A	N/A	N/A	156.0	208.4	181.0	90.0	75.0
90	5	18,000				N/A	N/A	N/A	188.0	250.0	217.0	108.0	90.0

\* 208V models use one additional immersion heater.  
 \*\*\* Each immersion heater contains three electric elements.



# Commercial Electric Water Heaters

## OPTIONAL EQUIPMENT & CONSTRUCTION

### DIAL TYPE COMBINATION TEMPERATURE & PRESSURE GAUGE (SHIPPED LOOSE).

### POWER CIRCUIT FUSING

- Sub-divides internal circuitry with maximum of 60 amp fuses. Supplied as standard when required by NEC and UL.

### ALARM HORN

- Horns may be furnished to warn of any condition in the heater for which sensors have been specified.

## CONTROL OPTIONS

### MODULATING CONTROL

- The first element on is the first element off.
- Not available on single element, single contactor units.

### OPTIONAL INTERNATIONAL VOLTAGES

- 380, 415, 575 and 600 volts three-phase available with Y connected elements.

## SPECIFICATION

The heater shall be a glass-lined Custom Xi™ commercial electric model No. \_\_\_\_\_ with \_\_\_\_\_gallons storage, as manufactured by A. O. Smith. Heater should be rated at \_\_\_\_\_kW, \_\_\_\_\_volts, \_\_\_\_\_phase, 50/60 cycle AC and constructed in accordance with ASME Code, shall bear appropriate symbol and be listed with the National Board as required. Heater shall be listed with Underwriters' Laboratories and classified to The National Sanitation Foundation Standard No. 5. All internal surfaces of the tank shall be glass-lined with an alkaline borosilicate composition that has been fused-to-steel by firing at a temperature of 1600°F. Tank shall be cathodically protected with a combination of sacrificial and powered anodes. The entire vessel is to be enclosed in a round steel enclosure with baked enamel finish. Water heater shall have an electronic control with large LCD displaying current water heater status; provide real time element status and sensing, low water cut-off and economy mode operation. Shall have 120 volt control circuit transformer, transformer fusing, magnetic contactor(s), element fusing per N.E.C., and commercial grade incoloy elements. Temperature controls include limiting switch which will require resetting manually in the event the temperature reaches 202°F. Foam insulation shall meet the thermal efficiency and/or standby loss requirements of NRCan and current edition of ASHRAE/IES 90.1. Heater shall include a CSA Certified and ASME Rated T&P relief valve and drain valve.

For Technical Information call 888-599-2837. A. O. Smith Enterprises Ltd. reserves the right to make product changes or improvements without prior notice.