COMMERCIAL
ELECTRIC WATER HEATERS

CUSTOM Xi™ SERIES
HEAVY DUTY COMMERCIAL ELECTRIC WATER HEATERS

ADVANCED ELECTRONIC CONTROL

- A. O. Smith's new 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.

PLAIN ENGLISH TEXT

- 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 its exact location is shown, eliminates a need for field testing of elements.

LOW WATER CUT OFF

- Factory standard on board low water cutoff 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 sacrificial anode and an adaptive powered anode. The powered anode is self-adjusting to water conditions, does not require maintenance 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 conventional 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.

FOAM INSULATED

- All models meet or exceed the thermal efficiency and/or standby loss requirements of the U. S. Department of Energy and current edition ASHRAE/IES 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.

Features and benefits continued on the following page.

Attention: Changes have been made to some models. Please note that this spec sheet refers specifically to models manufactured in McBee, SC

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

Low Lead Content

HLW

AHRI CERTIFIED®
www.ahridirectory.org

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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.

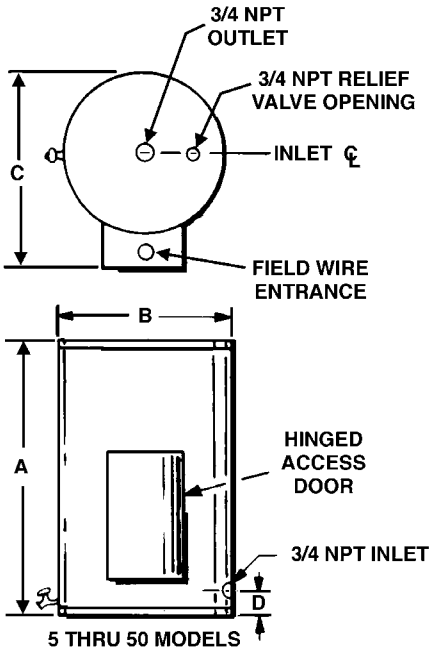
POWER CIRCUIT FUSING (120 AMP CURRENT DRAW AND ABOVE)

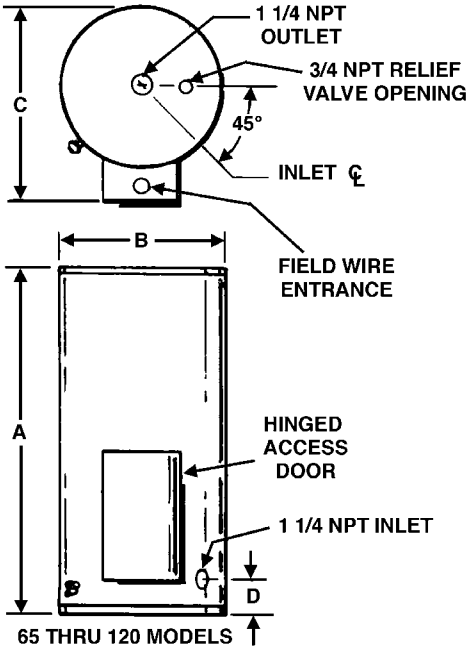
- Meets National Electric Code and UL requirements that water heaters must have internal fusing when current draw exceeds 120 amps.

SIMPLIFIED CIRCUITRY, COLOR-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 in Inches (mm)				Approx. Shipping Weight	
	Gallons	Litres		A	B	C	D	lbs.	Kg.
DSE-5A	5	19	3	22 in	16 in	24 in	4.25 in	82	37.2
DSE-10A	10	38	6	28.13 in	18 in	26 in	5.25 in	116	48.1
DSE-20A	20	76	18	31.75 in	22 in	28 in	5.75 in	145	65.7
DSE-30A**	30	114	24	43.25 in	22 in	28 in	5.75 in	218	98.9
DSE-40A**	40	151	36*	54.75 in	22 in	28 in	5.75 in	245	111.1
DSE-50A**	50	189	90	66.19 in	22 in	28 in	5.75 in	291	132.0
DSE-65A**	65	246	90	57.25 in	26.5 in	32.5 in	11.38 in	344	156.0
DSE-80A**	80	303	90	58.13 in	28 in	35 in	12.5 in	406	184.2
DSE-100A**	100	379	90	70.25 in	28 in	35 in	12.5 in	419	190.1
DSE-120A**	120	450	90	70.25 in	30.13 in	37 in	12.5 in	453	205.5

**30-120 gallon models not available below 12.3KW.
Some 40 gallon models may require the larger control box, depending on the electrical configuration.

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RECOVERY CAPACITIES

GPH recoveries at list temperature rise													
Standard kW Input	BTU/ Hour	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
12.3	41,968	166	125	100	83	71	62	55	50	45	42	38	36
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	1025	768	615	512	439	384	341	307	279	256	236	219
90	307,170	1229	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						
						Single Phase				Three Phase		
	No. of		208V	240V	480V	208V	240V	277V	480V	208V	240V	480V
3	1	3,000	1	1	1	14.4	12.5	10.8	6.3	8.3	7.2	3.6
6	1	6,000				28.8	25	21.2	12.5	16.7	14.4	7.2
9	1	9,000				43.3	37.5	32.5	18.8	25	21.7	10.8
12.3	1	12,300				59.1	51.3	44.4	25.6	34.2	29.6	14.8
15	1	15,000				72.1	62.5	54.2	31.3	41.6	36.1	18
18	*1	18,000	2	2		86.5	75	65	37.5	50	43.3	21.7
24	2	12,000				115.4	100	86.6	50	66.6	57.7	28.9
30	2	15,000				144.2	125	108.3	62.5	83.3	72.2	36.1
36	*2	18,000	3	3	2	173.1	150	130	75	99.9	86.6	43.3
45	3	15,000				216.3	187.5	162.5	93.8	124.9	108.3	54.1
54	3	18,000				N/A	225	194.9	112.5	149.9	129.9	65
60	4	15,000	4	4		N/A	250	216.6	125	166.7	145	72
75	5	15,000	5	5	3	N/A	N/A	N/A	156	208.4	181	90
90	5	18,000				N/A	N/A	N/A	188	250	217	108

* 208V models use one additional immersion heater.
*** Each immersion heater contains three electric elements.
Not available in 208 single phase for for 54 and 60 kW models.

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OPTIONAL EQUIPMENT & CONSTRUCTION

HANDHOLE CLEANOUT (NOT AVAILABLE ON 5 & 10 GALLON MODELS.)

DIAL TYPE COMBINATION TEMPERATURE & PRESSURE GAUGE
(SHIPPED LOOSE)

POWER CIRCUIT FUSING (LESS THAN 120 AMPS)

- 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.

NORTH CAROLINA CODE - FACTORY INSTALLED T&P VALVE

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 cutoff 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 the U. S. Department of Energy and current edition of ASHRAE/IES 90.1. Heater shall include a CSA Certified and ASME Rated T&P relief valve and a drain valve. Water heater units(s) shall be compatible with building management systems using Modbus or BACnet with optional ICC interface.

For technical information, call 800-527-1953. A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.

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