



LVC



ADVANCED HEAT EXCHANGERS

SHELL & TUBE CONDENSERS

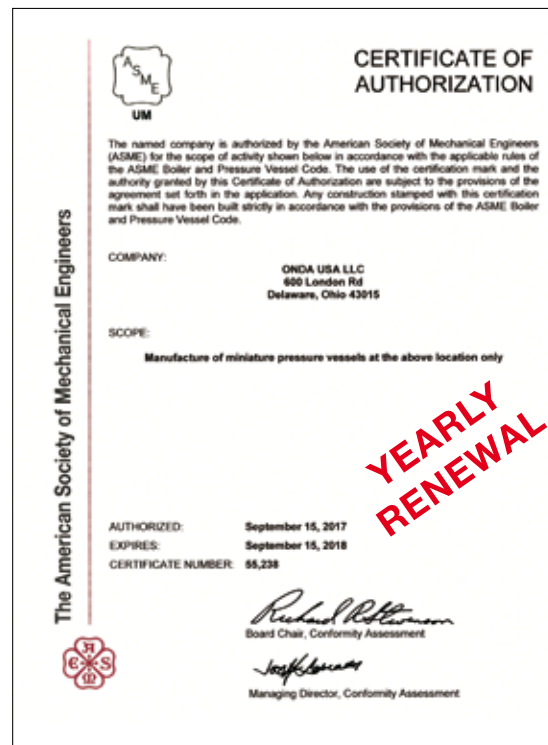
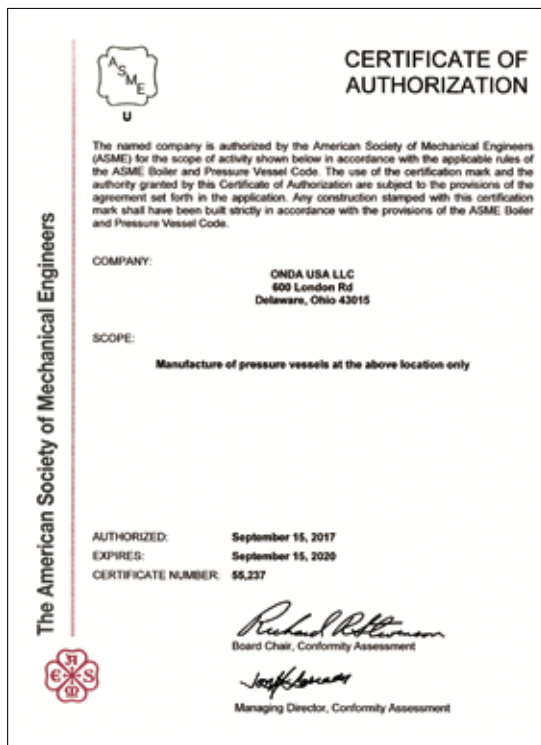
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SHELL & TUBE CONDENSERS

COMPANY OVERVIEW

For more than 20 years, ONDA has been a leading manufacturer of process heat exchangers for the refrigeration and air conditioning markets, partnering with many key OEM customers throughout the world. We offer a full range of shell & tube (DX & Flooded) and brazed-plate heat exchangers, in standard and custom configurations. Our heat exchangers are available with different raw materials and can be used with a variety of fluids. Our systems are compatible with many different refrigerants, including R410A, R134a, R22, R407C, R404A, R507 and others. We can provide multiple certifications, including ASME, P.E.D. and others.

All products are manufactured in compliance with ISO 9001 standards.



TECHNICAL INFORMATION

The LVC shell and tube heat exchangers are designed to be used as water-cooled condensers in air conditioning, refrigeration, and heat recovery applications.

The design specifications for the LVC condensers are included on pages 4 through 9 of this catalogue. The standard range of this product line is from 3-125 tower tons (15,000 Btu/hr per ton), and the condensers can be modified to meet your system requirements.

Dimensional data contained in this catalogue is intended to be used as informational purposes. For manufacturing drawings, please contact ONDA directly.

ONDA reserves the right to apply changes to this product line without prior notification.

LVC Construction:

Shell	Seamless carbon steel pipe, SA 2.5 shot blasted and cleaned prior to assembly.
Tubes	Copper, high-performance, enhanced design, roll expanded into multiple-grooved tubesheet.
Tubesheets	Carbon steel plate, precision machined by ONDA
Tube Supports	Carbon steel plate, machined by ONDA, with close tolerances to minimize vibrations.
Covers	Cast iron or carbon steel plate,
Water connections	FPT or flanged for corner joint to pipe welding
Refrigerant connections	Carbon steel pipe, suitable for ODS copper pipe brazing. ANSI flanges are available.
Other connections	All condensers include additional fittings for safety valves, auxiliary connections, vents and drains.
Finish	Exterior surfaces are cleaned and painted with a high quality alkydik-phenolic primer, for rust prevention.

The refrigerant circuit of each condenser meets the ASME Sect. VIII Div. 1 code requirement and is stamped accordingly.

The water and refrigerant circuits are pneumatically tested, to avoid any contamination caused by humidity.

ONDA LVC Condenser Design Suggestions

The fouling factor (f.f.) is essential for the correct condenser selection. ONDA uses the following guidelines:

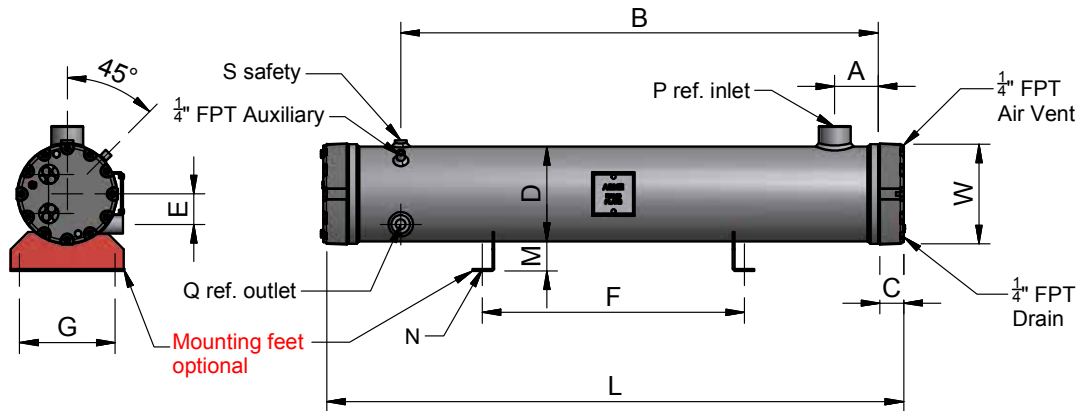
- Normal city water f.f. =	0.000244 [ft ² h°F/Btu]
- Treated tower water f.f. =	0.000244 [ft ² h°F/Btu]
- River water f.f. =	0.000488 [ft ² h°F/Btu]
- Glycol solutions < 40% f.f. =	0.000488 [ft ² h°F/Btu]
- Glycol solutions > 40% f.f. =	0.000977 [ft ² h°F/Btu]

It is recommended that the water velocity inside the tubes is between 3.94 and 9.19 ft/s.

PLEASE READ OPERATING AND INSTRUCTIONS MANUAL BEFORE USE

NOMENCLATURE

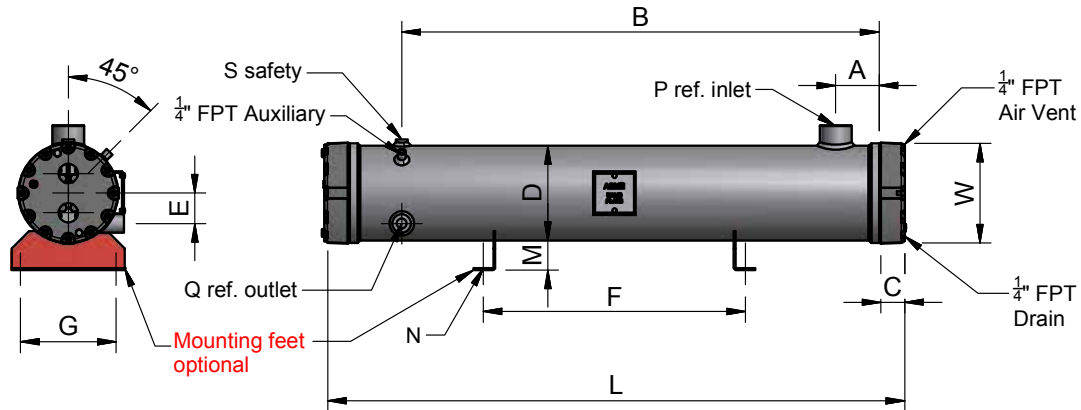
ODS	Outer brazing diameter
FPT	Female American Standard Taper pipe threads



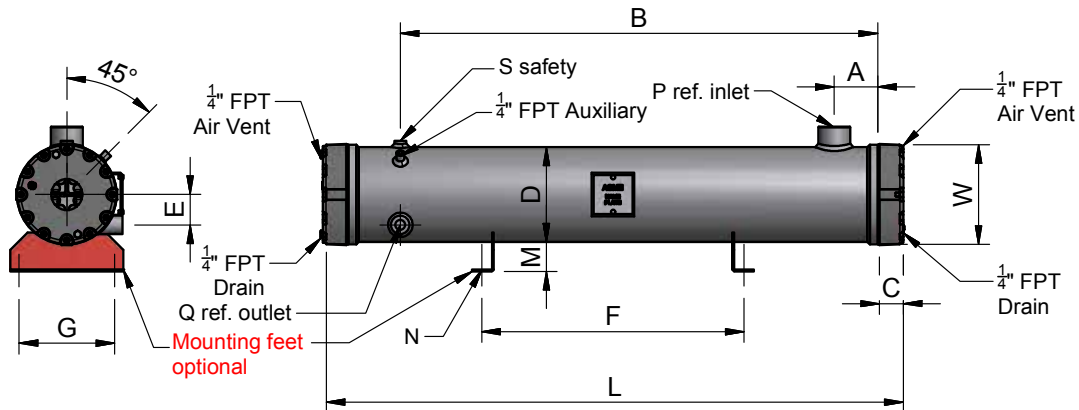
MODEL		LVC	3	5	8	10	15	20	25
Total heat of rejection	R 410A	kBtu/h	57	75	114	170	237	324	364
Water pressure drop		psi	1,40	1,40	3,60	3,70	4,40	1,40	1,40
Water flow rate		gpm	11,5	15,1	22,9	34,2	47,7	65,1	73,2
Total heat of rejection	R 134a	kBtu/h	56	74	112	167	231	318	358
Water pressure drop		psi	1,30	1,30	3,50	3,50	4,20	1,30	1,30
Water flow rate		gpm	11,2	14,9	22,6	33,6	46,5	63,9	72
Pumpdown capacity		lbs	19	18	24	21	40	60	58
Number of passes		n	4				2		
Refrigerant side volume		ft ³	0,3	0,3	0,4	0,3	0,7	1,0	0,9
Water side volume			0,1	0,1	0,1	0,2	0,3	0,4	0,4

Dimensions [inches]	A	3,13	3,13	3,50	3,50	3,88	3,88	3,88	
	B	20,75	20,75	28,00	28,00	28,00	44,00	44,00	
	C	2,28				2,25			
	D	6 5/8				8 5/8			
	E	13,50		24,63		24,63	35,38		
	F	6,30				8,63			
	G	2,28				2,63			
	M	0,50				0,50			
	N	2,38		2,13		2,88	3,00	2,75	
	L	28,13		36,50		36,63	52,63		
W	7,00				9,00				
Weight	lbs	76	78	95	100	158	206	211	
Refrigerant connections	P (ODS)	7/8	1 1/8	1 3/8		1 5/8	1 5/8	2 1/8	
	Q (ODS)	5/8	5/8	7/8		1 1/8	1 1/8	1 3/8	
Safety connection	S	3/8 FPT		1/2 FPT			1/2 FPT		
Water connections		1 1/4 FPT	1 1/4 FPT	1 1/4 FPT	1 1/4 FPT	2" FPT	2" FPT	2" FPT	

Nominal data	DESIGN PRESSURE AT 149°F				R 410A	R 134a	WATER
					650 psi	450 psi	150 psi
	Inlet water temperature				85 °F		
	Outlet water temperature				95 °F		
	Condensing temperature (bubble)				105 °F		
	Subcooling				5 °F		
Waterside fouling factor				0,000244 ft ² h °F/Btu			

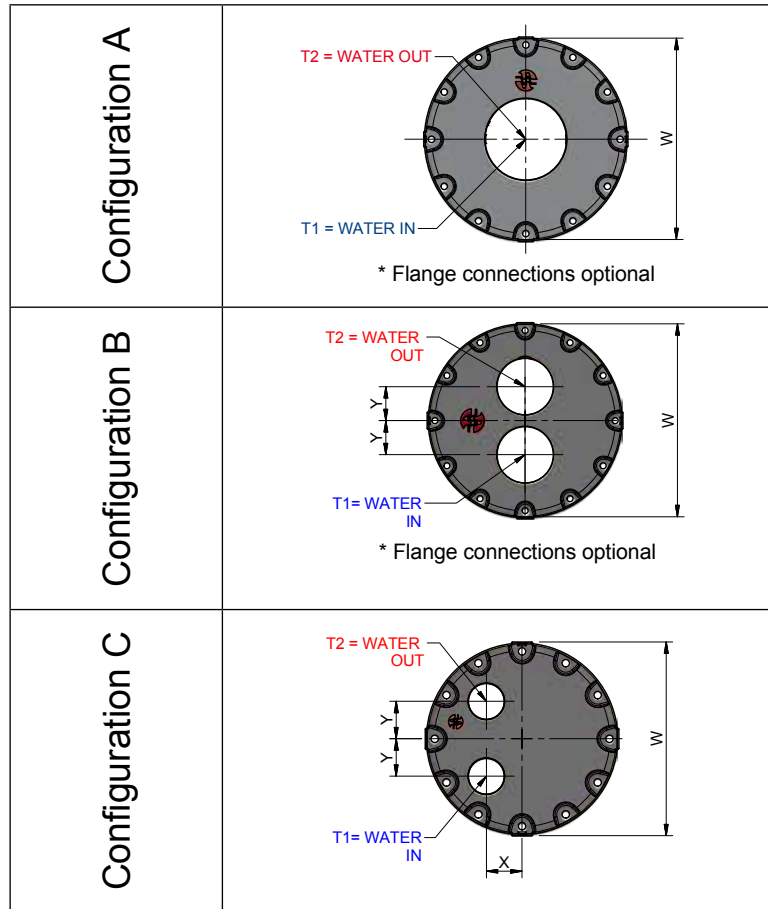


MODEL	LVC	30	40	50	60	70	80	
Total heat of rejection	R 410A	kBtu/h	485	636	778	948	1090	1231
Water pressure drop		psi	1,4	3,1	3,1	2,90	3,00	3,00
Water flow rate		gpm	97,5	127,9	156,4	190,6	219,2	247,5
Total heat of rejection	R 134a	kBtu/h	476	620	759	925	1062	1201
Water pressure drop		psi	1,3	2,9	2,9	2,80	2,80	1,30
Water flow rate		gpm	95,6	124,6	152,5	185,8	213,4	241,3
Pumpdown capacity	lbs	96	124	116	175	167	159	
Number of passes		2		2		2		
Refrigerant side volume	ft3	1,5	2,0	1,9	2,8	2,7	2,5	
Water side volume		0,6	0,7	0,8	1,1	1,2	1,3	
Dimensions [inches]	A	3,38	3,38	3,75	3,88	3,88	3,88	
	B	44,63	56,75	55,38	55,38	55,38	55,38	
	C	2,75		3,13		3,13		
	D	10 3/4		12 3/4		12 3/4		
	E	3,75		3,50		4,38		
	F	35,38	45,50		45,50		45,50	
	G	11,00		11,75		11,75		
	M	3,50		3,75		3,75		
	N	0,56		0,63		0,63		
	L	53,75	65,63		66,38		66,38	
W	11,22		13,20		13,20			
Weight	lbs	311	362	378	489	505	520	
Refrigerant connections	P (ODS)	2 1/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	
	Q (ODS)	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 5/8	
Safety connection	S	1/2 FPT		1/2 FPT		1/2 FPT		
Water connections		3" FPT	3" FPT	3" FPT	4" FPT	4" FPT	4" FPT	
Nominal data	DESIGN PRESSURE AT 149°F				R 410A	R 134a	WATER	
					650 psi	450 psi	150 psi	
	Inlet water temperature				85 °F			
	Outlet water temperature				95 °F			
	Condensing temperature (bubble)				105 °F			
	Subcooling				5 °F			
Waterside fouling factor				0,000244 ft ² h °F/Btu				



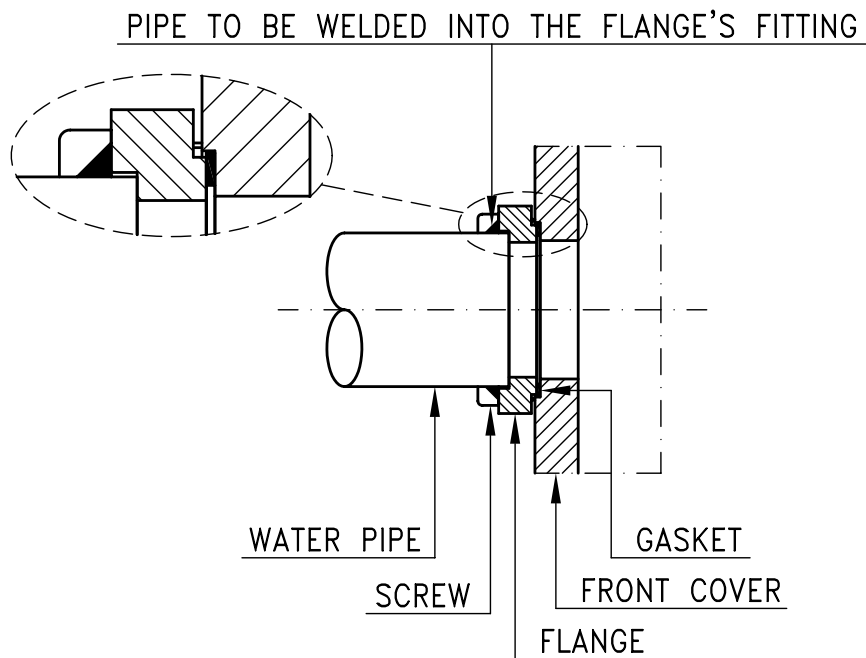
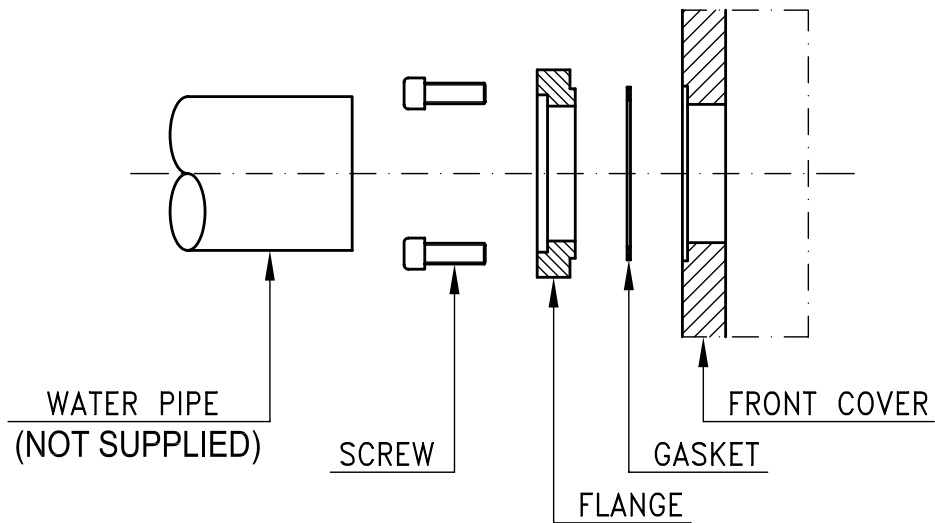
MODEL		LVC	100	125		
Total heat of rejection	R 410A	kBtu/h	1614	2031		
Water pressure drop		psi	1,40	1,50		
Water flow rate		gpm	324,5	408,4		
Total heat of rejection	R 134a	kBtu/h	1581	1989		
Water pressure drop		psi	1,40	1,50		
Water flow rate		gpm	317,6	400		
Pumpdown capacity		lbs	268	243		
Number of passes			1	1		
Refrigerant side volume		ft3	4,3	3,9		
Water side volume			2,3	2,7		
Dimensions [inches]	A		3,88	3,88		
	B		91,38	91,13		
	C			8,13		
	D			12 ¾		
	E			4,38		
	F			70,88		
	G			11,75		
	M			3,75		
	N			0,63		
	L			112,25		
Weight		lbs	704	755		
Refrigerant connections	P (ODS)		3 1/8	3 1/8		
	Q (ODS)			2 1/8		
Safety connection	S		¾ FPT			
Water connections			5" FPT	5" FPT		
Nominal data	DESIGN PRESSURE AT 149°F			R410A	R134a	WATER
				650 psi	450 psi	150 psi
	Inlet water temperature			85 °F		
	Outlet water temperature			95 °F		
	Condensing temperature (bubble)			105 °F		
	Subcooling			5 °F		
Waterside fouling factor			0,000244 ft ² h °F/Btu			

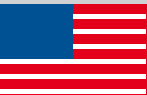
WATER CONNECTIONS



For model LVC		3-5-8-10	15	20-25	30-40-50	60-70-80	100-125
Figure		C	C	B	B	B	A
Passes		4	4	2	2	2	1
W	inches	7,0	9"	9"	11,22	13,25	13,25
X		1,12	1,75	-	-	-	-
Y		1,37	1,75	1,62	2"	2,31	-
T1		1"1/4 FPT	2" NPTF	2" NPTF	3" NPTF	4" NPTF	5" NPTF
T2		1"1/4 FPT	2" NPTF	2" NPTF	3" NPTF	4" NPTF	5" NPTF

(*) FLANGE CONNECTIONS OPTIONAL





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