

PRODUCER OF HEAT EXCHANGER TECHNOLOGIES

VOLGA – HVACTM s.t.c Series

SHELL & TUBE CONDENSERS

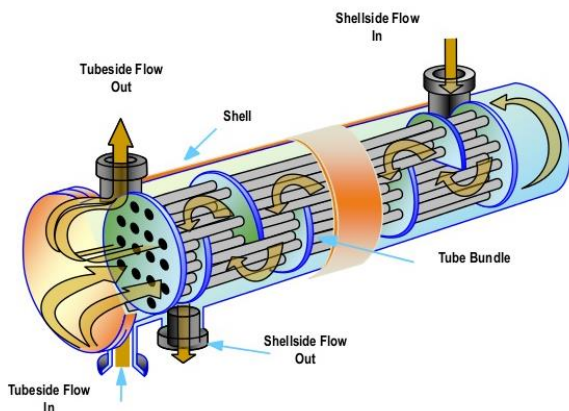


VOLGA[®]
HVAC

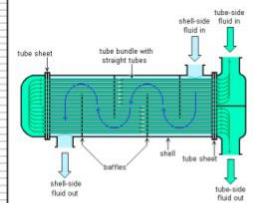
HEAT EXCHANGER TECHNOLOGIES

PERFORMANCE

VOLGA -HVAC. Shell &Tube Condensers are used in industrial and comfort cooling units. VOLGA -HVAC. (Stc series) Shell & Tube Condensers are manufactured in order to provide low pressure loss and high efficiency starting from a cooling capacity of 20 kW up to a capacity of 1680 kW under standard working conditions. RKDEW series Shell & Tube condensers are used in cooling applications where city water and storage water are used while VOLGA -HVAC. (Stc series) Shell & Tube condensers are used in cooling applications with sea water. Having adopted customer satisfaction as its main principle, VOLGA -HVAC. also renders services for customer focused projects under different working conditions in addition to its standard product range.



VOLGA - HVAC. SOFTWARE



DESIGN AND MATERIAL

VOLGA -HVAC. Condensers are designed in order to minimize performance decreasing factors such as vibration and corrosion. RKMDew series Shell & Tube condensers are designed and manufactured as resistant to corrosive effects of sea water. Materials used in VOLGA -HVAC. Shell & Tube Condensers are selected according to "European Pressure Vessel Codes". Materials used in VOLGA -HVAC. Shell & tube type evaporators are chosen in compliance with "European Pressure Vessel Codes" VOLGA -HVAC. (Stc series) Condensers;

- a) Heat transfer pipes with a special geometry and inside and outside grooves enabling the heat transfer are made of copper
- b) Tube sheets and bodies are made of steel
- c) Head Covers are made of cast iron
- d) Bolts are made of steel alloy
- e) Gaskets are made of asbestos free materials that are compatible with HCFC and HCF cooling gases.

QUALITY AND TEST

Mechanical calculations of VOLGA -HVAC. Shell & tube Condensers are made in accordance with TS EN13445-3 standard and with a CE certificate in compliance with CTI certificate. VOLGA -HVAC. Shell & tube Condensers are assessed through a nitrogen test with a gas side of 30 bars and a water side of 12 bars. VOLGA -HVAC. issues a guarantee of 3 years for all of its products against manufacturing defects.

Approval	PS		ts min	Ts max	Category
	Tube Side	Shell Side			
CE/GOST	10 bar	30 bar	-10 °C	90 °C	Up to Cat.IV, 97/23/CE

HEAT EXCHANGER TECHNOLOGIES

FOULING FACTOR

Fouling factor (f.f.) is important in selecting an condenser. The fouling factor levels under certain conditions are given below.

- Closed-circuit mains water f.f.= 0.000043 m²K/W
- Open-circuit mains water f.f.= 0.000086 m²K/W
- Glycol solution < %40 f.f.= 0.000086 m²K/W
- Glycol solution > %40 f.f.= 0.000172 m²K/W The table below lists the recommended glycol solution for low-temperature operating conditions.

Freezing Point [°C]	Ethilene Glycol [%Weight]	Propylene Glycol [%/Weight]
-5	12	16
-10	22	26
-15	30	34
-20	36	40
-25	40	44
-30	44	48
-35	48	52
-40	52	56

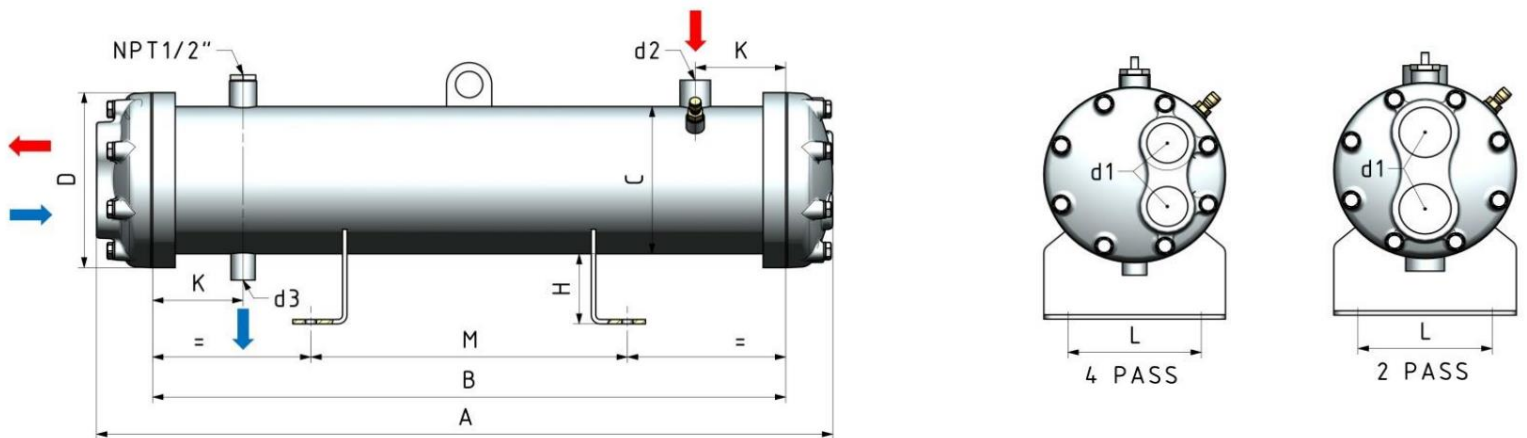
INSTALLATION AND OPERATION

Please ensure the following operating conditions for best use of your operator.

- The evaporator should be used in horizontal position.
- The air inside the product should be discharged before filling water.
- Ensure that the pressure drop and implementation conditions are in accordance with catalog values.
- Do not stop the water flow before the coolant in the evaporator is discharged.
- When not in use, fill the evaporator fully with anti-freeze fluid with no air in it and fully evacuate it, ensuring that it is dry.
- Regularly check the chemical properties of the water inside the evaporator. Incompliant water damages the evaporator.
- In case of a capacity decrease, you can reverse-operate the system for a short time for cleaning.
- Keep the evaporator away from sources of vibration.
- Prevent foreign particles in the water.
- Use anti-frees solution below 0 C.
- Prevent air in the pump cavitation and the system.
- Do not run the cooled fluids close to their freezing conditions.
- Do not exceed the allowed water flow.

VOLGA™-HVAC, stc Series SHELL&TUBE CONDENSERS FOR CITY OR TOWER WATER

VOLGA – HVAC SERIES CONDENSERS		20	35	45	55	65	65C	75C	90C	60	90	
CAPACITY	Q_N	kW	22	33	42	51	58	65	79	94	60	81
		Tons(RT)	6,3	9,4	12,0	14,5	16,5	18,5	22,5	26,8	17,1	23,1
FLOW RATE	W_N	m^3/h	3,5	6,1	7,8	9,5	11,2	10,4	12,9	15,6	11	15,6
PRESSURE DROP	Δp	kPa	16	29	30	33	31	57	65	73	19	22
PASS			4	4	4	4	4	4	4	2	2	
VOL. REFRIGERANT	L		6,3	5,6	9	8,2	7,5	13,2	12,1	11	20,3	18,8
VOLUME H ₂ O	L		3,5	4,1	4,8	5,5	6,2	6,3	7,3	8,2	7,0	8,4



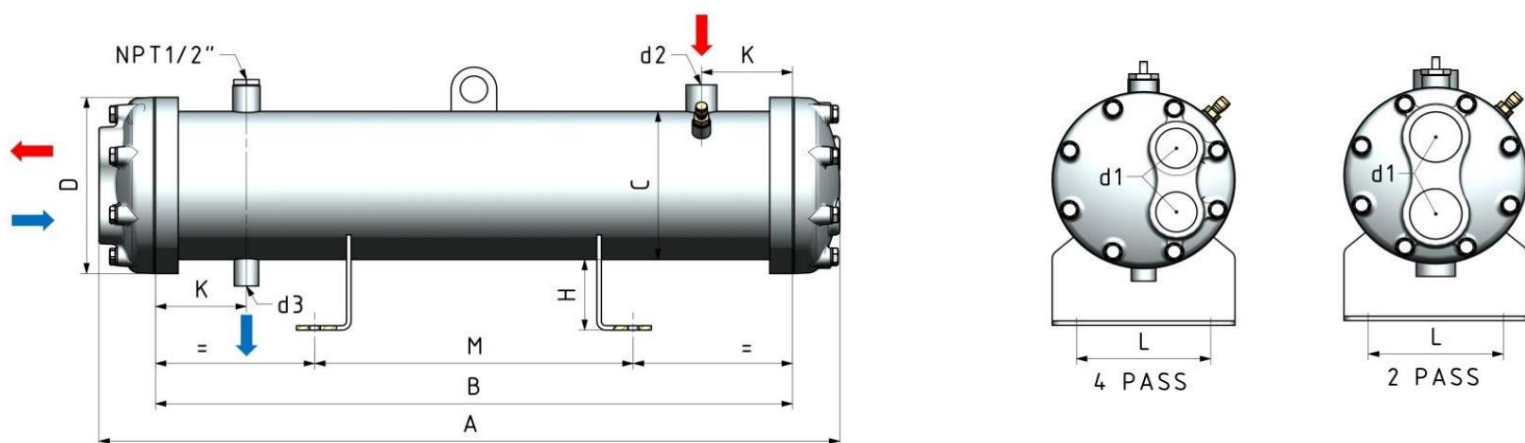
VOLGA – HVAC SERIES CONDENSERS		20	35	45	55	65	65C	75C	90C	60	90	
DIMENSIONS (mm)	A	790	790	815	815	815	1115	1115	1115	1515	1515	
	B	700	700	700	700	700	1000	1000	1000	1400	1400	
	C	140	140	168	168	168	168	168	168	168	168	
	D	170	170	200	200	200	200	200	200	200	200	
	H	80	80	80	80	80	80	80	80	80	80	
	K	100	100	100	100	100	100	100	100	100	100	
	L	120	120	150	150	150	150	150	150	150	150	
	M	350	350	350	350	350	500	500	500	700	700	
	d1	G 1"	G 1"	G 1 1/2"	G 1 1/2"	G 1 1/2"	G 1 1/2"	G 1 1/2"	G 1 1/2"	G 1 1/2"	G 2"	G 2"
	d2	W 22	W 22	W 28	W 28	W 28	W 28	W 28	W 28	W 28	W 35	W 35
d3	W 16	W 16	W 22	W 22	W 22	W 22	W 22	W 22	W 22	W 28	W 28	

WEIGHT	kg	32	34	45	46	47	55	57	59	65	68
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NOMINAL DATA R407C	Inlet water temperature	28 °C	Condensing temperature (DEW)	42 °C
	Outlet water temperature	33 °C	Subcooling Δt	3 K
	Fouling factor	0,000043 m^2K/W		

VOLGA™-HVAC, stc Series SHELL&TUBE CONDENSERS FOR CITY OR TOWER WATER

VOLGA – HVAC SERIES CONDENSERS		100	120	130	145	165	180	200	220	245	265	
CAPACITY	Q _N	kW	94	111	120	141	163	176	205	227	251	273
		Tons(RT)	26,8	31,6	34,2	40,2	46,4	50,1	58,4	64,7	71,5	77,8
FLOW RATE	W _N	m ³ /h	17,3	20,8	22,4	25,1	28,6	31,2	34,6	38,1	42,4	45,9
PRESSURE DROP	Δp	kPa	21	25	27	46	50	36	33	33	48	52
PASS			2	2	2	2	2	2	2	2	2	2
VOL. REFRIGERANT	L		17,2	15,7	14,9	22,4	20,4	19,4	27	25	36,5	34,5
VOLUME H ₂ O	L		9,8	11,1	11,8	12,1	13,9	14,7	18,1	19,8	21,6	23,4



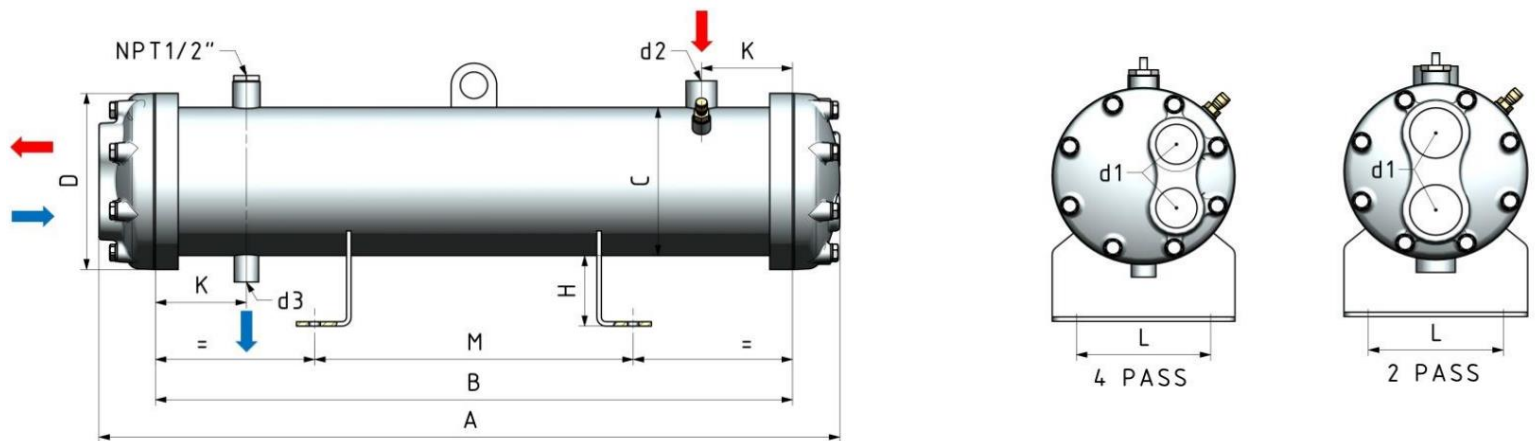
VOLGA – HVAC SERIES CONDENSERS		100	120	130	145	165	180	200	220	245	265	
DIMENSIONS (mm)	A	1515	1515	1515	1915	1915	1915	1915	1915	1915	1915	
	B	1400	1400	1400	1800	1800	1800	1800	1800	1800	1800	
	C	168	168	168	168	168	168	168	194	194	219	219
	D	200	200	200	200	200	200	200	250	250	250	250
	H	80	80	80	80	80	80	80	80	80	80	80
	K	150	150	150	150	150	150	150	150	150	150	150
	L	150	150	150	150	150	150	150	180	180	200	200
	M	700	700	700	900	900	900	900	900	900	900	900
	d1	G 2"	G 2"	G 2"	G 2"	G 2"	G 2"	G 2"	G 2 1/2"	G 2 1/2"	G 2 1/2"	G 2 1/2"
	d2	W 35	W 35	W 35	W 42	W 42	W 42	W 42	W 42	W 42	W 54	W 54
d3	W 28	W 28	W 28	W 35	W 35	W 35	W 35	W 35	W 35	W 42	W 42	

WEIGHT	kg	71	73	75	85	89	91	124	128	139	143
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NOMINAL DATA R407C	Inlet water temperature	28 °C	Condensing temperature (DEW)	42 °C
	Outlet water temperature	33 °C	Subcooling Δt	3 K
	Fouling factor	0,000043 m ² K/W		

VOLGA™-HVAC, stc Series SHELL&TUBE CONDENSERS FOR CITY OR TOWER WATER

VOLGA – HVAC SERIES CONDENSERS		285	315	340	360	400	450	480	520	550	610	
CAPACITY	Q_N	kW	295	321	345	380	424	472	498	557	596	649
		Tons(RT)	84,0	91,5	98,3	108,3	120,8	134,5	141,9	158,7	169,8	184,9
FLOW RATE	W_N	m^3/h	49,3	54,2	58,8	62,3	69,2	77,9	83,2	90	95,2	106
PRESSURE DROP	Δp	kPa	55	42	59	44	48	55	37	37	38	43
PASS			2	2	2	2	2	2	2	2	2	2
VOL. REFRIGERANT	L		32,5	64,9	63	59	55	51,1	89	83	79	75,1
VOLUME H ₂ O	L		25,1	28,1	29,8	33,3	36,8	40,4	44,6	49,9	53,4	57,0



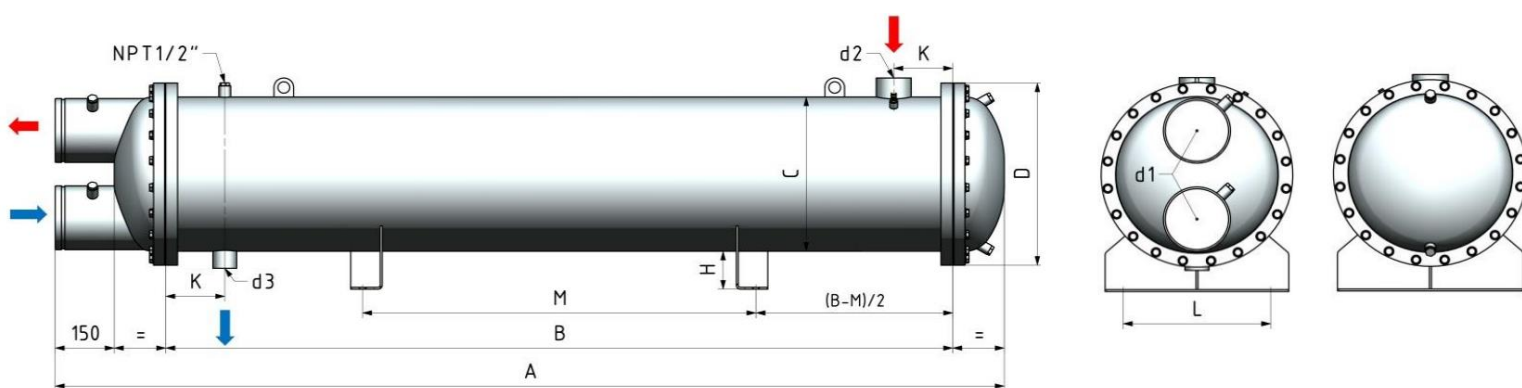
VOLGA – HVAC SERIES CONDENSERS		285	315	340	360	400	450	480	520	550	610	
DIMENSIONS (mm)	A	1915	1925	1925	1925	1925	1925	1940	1940	1940	1940	
	B	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	
	C	219	273	273	273	273	273	273	324	324	324	
	D	250	295	295	295	295	295	295	350	350	350	
	H	80	100	100	100	100	100	100	100	100	100	
	K	150	150	150	150	150	150	150	150	150	150	
	L	180	240	240	240	240	240	240	280	280	280	280
	M	900	900	900	900	900	900	900	900	900	900	900
	d1	G 2 1/2"	G 3"	G 3"	G 3"	G 3"	G 3"	G 3"	G 4"	G 4"	G 4"	G 4"
	d2	W 54	W 54	W 54	W 54	W 54	W 54	W 54	W 54	W 54	W 54	W 80
d3	W 42	W 42	W 42	W 42	W 42	W 42	W 42	W 42	W 42	W 42	W 54	

WEIGHT	kg	147	181	185	193	201	208	248	259	267	274
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NOMINAL DATA R407C	Inlet water temperature	28 °C	Condensing temperature (DEW)	42 °C
	Outlet water temperature	33 °C	Subcooling Δt	3 K
	Fouling factor	0,000043 m ² K/W		

VOLGA™-HVAC, stc Series SHELL&TUBE CONDENSERS FOR CITY OR TOWER WATER

VOLGA – HVAC SERIES CONDENSERS		675	760	840	940	1040	1100	1220	1360	1520	1680	
CAPACITY	Q _N	kW	702	793	867	1039	1178	1243	1350	1489	1670	1849
		Tons(RT)	200,0	225,9	247,0	296,0	335,6	354,1	384,6	424,2	475,8	526,8
FLOW RATE	W _N	m ³ /h	117	132	145	163	180	190	211	235	263	291
PRESSURE DROP	Δp	kPa	49	37	41	49	51	54	45	50	39	41
PASS			2	2	2	2	2	2	2	2	2	2
VOL. REFRIGERANT	L		71,1	92,1	85,2	144	131,9	125,3	180,1	169,1	222,3	205,8
VOLUME H ₂ O	L		60,5	81,4	87,5	109,6	120,4	126,3	140,8	150,6	174,3	188,9



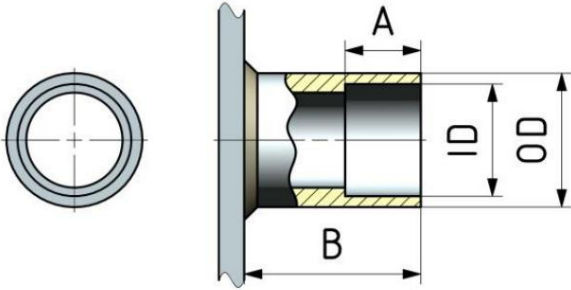
VOLGA – HVAC SERIES CONDENSERS		675	760	840	940	1040	1100	1220	1360	1520	1680	
DIMENSIONS (mm)	A	1940	2175	2175	2415	2415	2415	2435	2435	2455	2455	
	B	1800	1800	1800	2000	2000	2000	2000	2000	2000	2000	
	C	324	356	356	406	406	406	457	457	508	508	
	D	350	430	430	480	480	480	530	530	580	580	
	H	100	100	100	100	100	100	100	100	100	100	
	K	150	150	150	150	150	150	150	150	150	150	
	L	280	320	320	370	370	370	420	420	470	470	
	M	900	900	900	1000	1000	1000	1000	1000	1000	1000	
	d1	G 4"	J 5"	J 5"	J 6"	J 6"	J 6"	J 6"	J 6"	J 6"	J 6"	J 6"
	d2	W 80	W 80	W 80	W 80	W 80	W 80	W 100	W 100	W 100	W 100	
d3	W 54	W 54	W 54	W 54	W 54	W 54	W 80	W 80	W 80	W 80		

WEIGHT	kg	283	352	366	466	490	503	592	614	725	758
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NOMINAL DATA R407C	Inlet water temperature	28 °C	Condensing temperature (DEW)	42 °C
	Outlet water temperature	33 °C	Subcooling Δt	3 K
	Fouling factor	0,000043 m ² K/W		

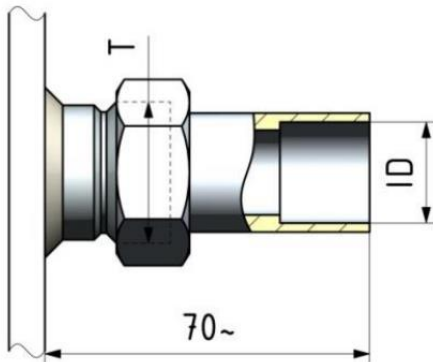
ACCESSORIES

Welding Connection (W)



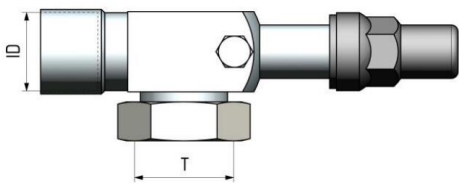
Dimensions				
CODE	A	B	ID	OD
W16	15	30	16,2	21,3
W19	15	30	19,4	25
W22	15	30	22,6	26,9
W28	15	30	28,8	33,7
W35	15	30	35,4	42,4
W42	15	35	42,3	48,3
W54	15	45	54,3	60,3
W67	20	50	67	76
W80	20	50	80,5	88,9
W105	20	50	106	114

Flange Connection (FL)



Dimensions		
CODE	ID	T
RLA16	16,2	1" 14-UNS
RLA19	19,4	1" 14-UNS
RLB22	22,6	1 ¼" 12-UNF
RLB28	28,8	1 ¼" 12-UNF
RLC28	28,8	1 ¾" 12-UN
RLC35	35,4	1 ¾" 12-UN
RLC42	42,3	1 ¾" 12-UN

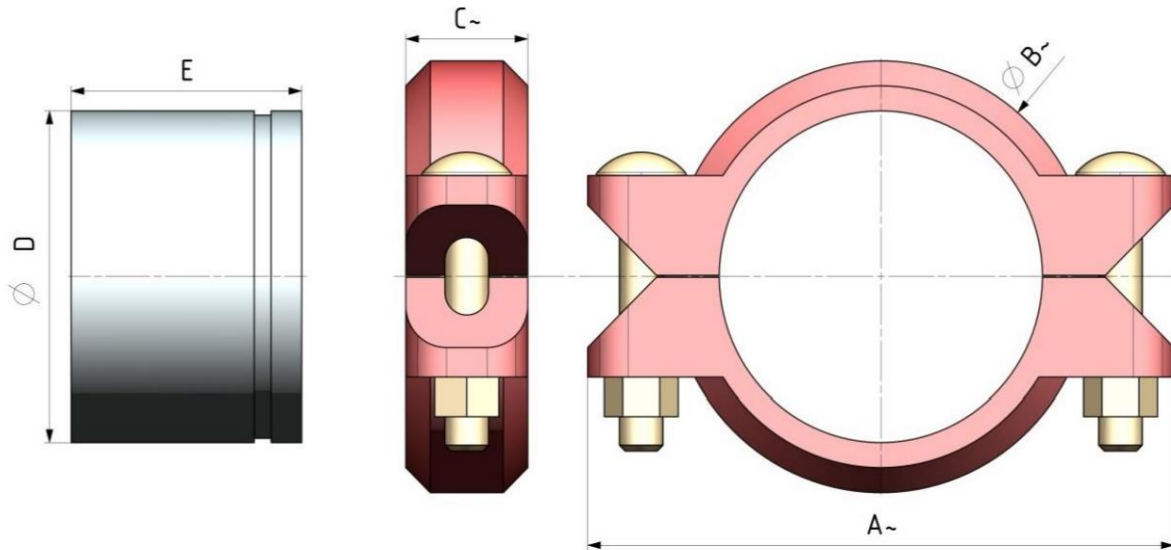
Rotalock Connection (RL)



Dimensions		
CODE	ID	T
RLVA16	16,2	1" 14-UNS
RLVA19	19,4	1" 14-UNS
RLVB22	22,6	1 ¼" 12-UNF
RLVB28	28,8	1 ¼" 12-UNF
RLVC28	28,8	1 ¾" 12-UN
RLVC35	35,4	1 ¾" 12-UN
RLVC42	42,3	1 ¾" 12-UN

ACCESSORIES

Flexible Coupling (FLC)

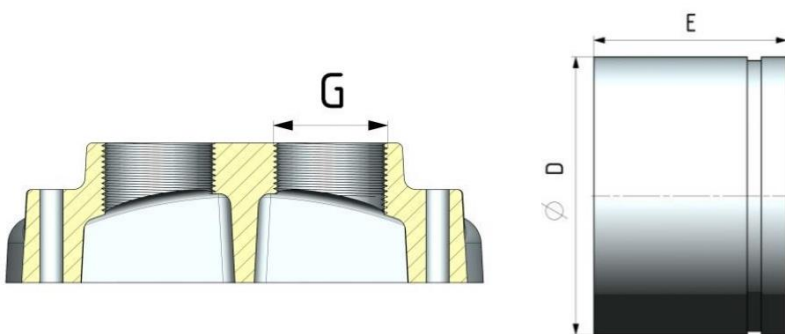


Dimensions

CODE	A	B	C	D	E
J3 FLC089	165	115	50	88,9	80
J4 FLC114	200	145	50	114,3	100
J5 FLC140	245	175	50	139,7	100
J6 FLC168	275	205	55	168,3	150
J8 FLC220	345	265	60	219,1	150

Water Connection Types

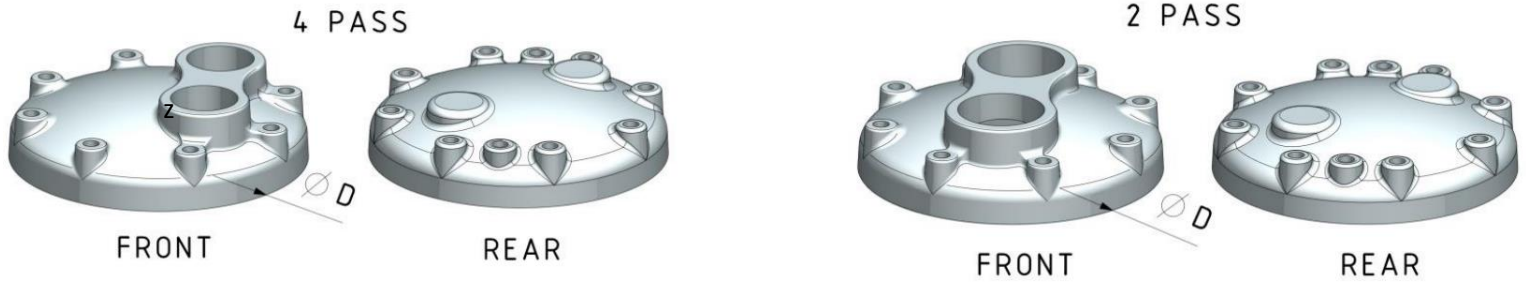
Dimensions



CODE	G	DN	E (mm)
G1	G 1"	-	-
G11	G 1 1/2"	-	-
G2	G 2"	-	-
G21	G 2 1/2"	-	-
G3	G 3"	-	-
G4	G 4"	-	-
J4	-	114,3	100
J5	-	139,7	100
J6	-	168,3	150

SPARE PARTS

Condenser Caps



Dimensions

CODE	D	PASS	WATER CONNECTION	SUITABLE WITH
K1704	170	4	G 1"	20-35
K2004	200	4	G 1 1/2"	(45,55,65,60C,75C,90C)
K2002	200	2	G 2"	60-180
K2502	250	2	G 2 1/2"	200-285
K2952	295	2	G 3"	315-450
K3502	350	2	G 4"	480-675
K4302	430	2	DN125 (Victaulic)	760-840
K4802	480	2	DN150 (Victaulic)	940-1100
K5302	530	2	DN150 (Victaulic)	1220-1360
K5802	580	2	DN150 (Victaulic)	1520-1680

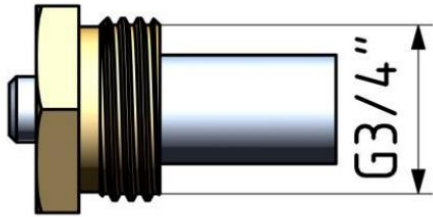
Condenser Gaskets

Dimensions

CODE	D	PASS	SUITABLE WITH
KC1704	170	4	20-35
KC2004	200	4	(45,55,65,60C,75C,90C)
KC2002	200	2	60-180
KC2502	250	2	200-285
KC2952	295	2	315-450
KC3502	350	2	480-675
KC4302	430	2	760-840
KC4802	480	2	940-1100
KC5302	530	2	1220-1360
KC5802	580	2	1520-1680

OTHERS

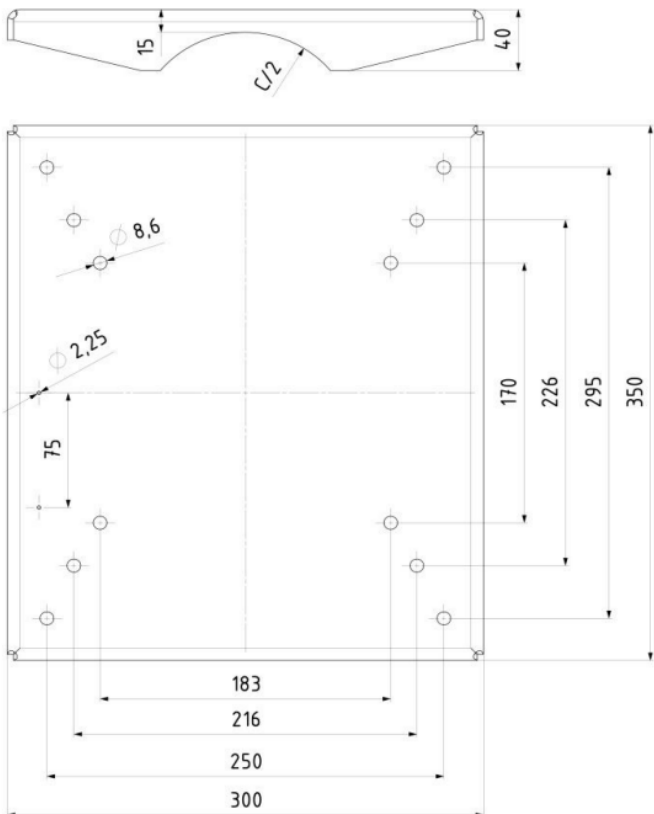
Zinc Anode



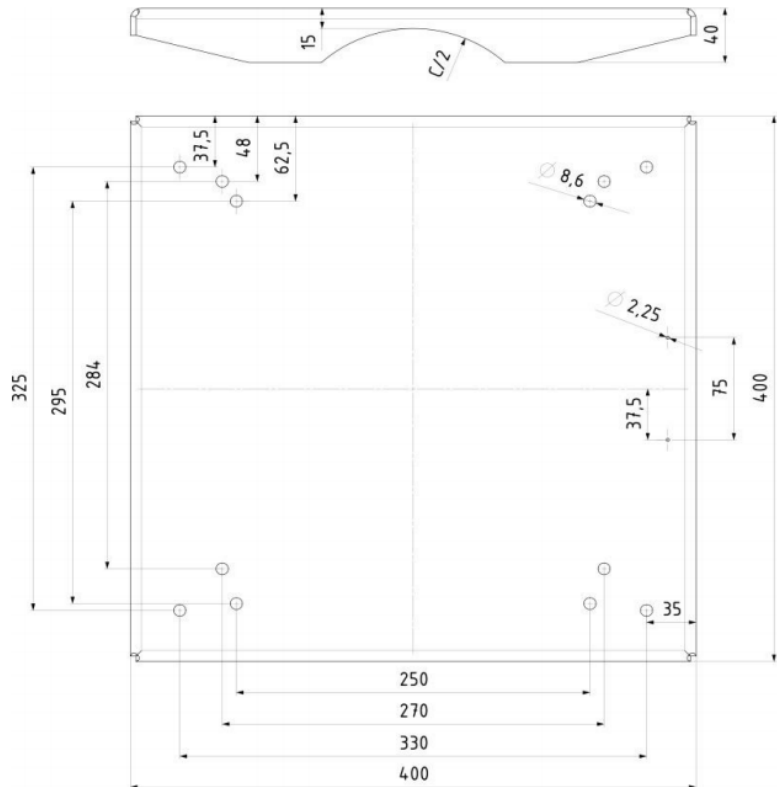
It is used the same type of zinc anode rod in all products.

Compressor Mounting Platform

SHELL DIAMETER	CODE
140 mm	KPAY 140
168 mm	KPAY 168
194 mm	KPAY 194



D : Ø 140 - 168

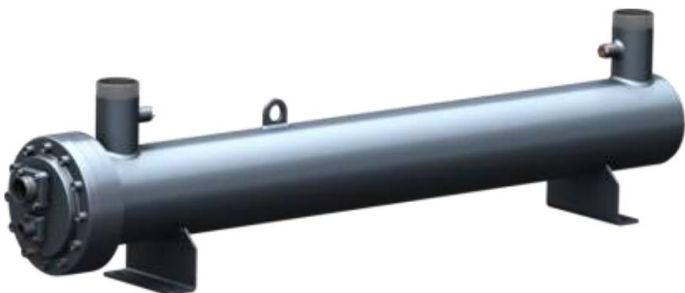


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Notes

VOIGA[®]

HVAC



VOLGA – HVAC. Series

COMPACT HEAT EXCHANGERS



PRODUCER OF HEAT EXCHANGER TECHNOLOGIES

VOIGA[®]
HVAC



SAUDI ARABIA

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