
PRODUCER OF HEAT EXCHANGER TECHNOLOGIES

RK Series

SHELL&TUBE CONDENSERS



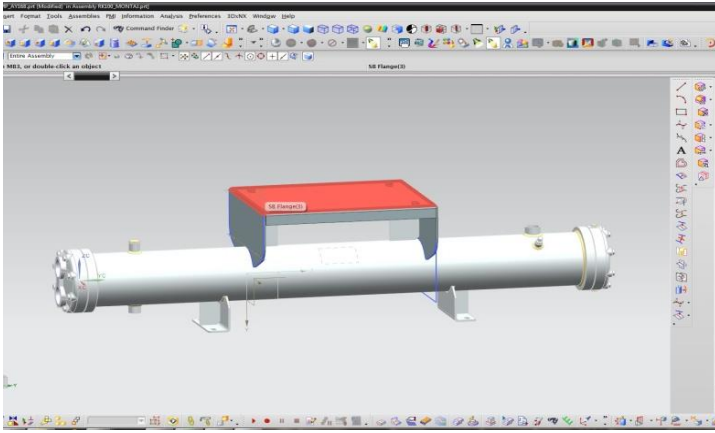
REFKAR
Heat Transfer Solutions

HEAT EXCHANGER TECHNOLOGIES

PERFORMANS | PERFORMANCE

REFKAR Shell&Tube Kondanserler endüstriyel ve konfor amaçlı soğutma ünitelerinde kullanılır. REFKAR RK_{DEW} ve RKM_{DEW} serisi Shell&Tube Kondanserler standart çalışma koşullarında 20 kW soğutma kapasitesinden 1680 kW soğutma kapasitesine kadar yüksek verim ve düşük basınç kaybı sağlayacak şekilde imal edilmiştir. RK_{DEW} serisi Shell&Tube kondanserler şehir suyu ve kule suyu kullanılan soğutma uygulamalarına, RKM_{DEW} serisi Shell&Tube kondanserler ise deniz suyu kullanılan soğutma uygulamalarına hizmet vermektedir. Müşteri memnuniyetini temel ilke edinen REFKAR farklı çalışma koşullarında standart ürün yelpazesinde müşteri odaklı projelere de hizmet verebilmektedir.

REFKAR Shell&Tube Condensers are used in industrial and comfort cooling units. REFKAR RK_{DEW} and RKM_{DEW} 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. RK_{DEW} series Shell&Tube condensers are used in cooling applications where city water and storage water are used while RKM_{DEW} series Shell&Tube condensers are used in cooling applications with sea water. Having adopted customer satisfaction as its main principle, REFKAR also renders services for customer focused projects under different working conditions in addition to its standard product range.



DİZAYN VE MALZEME | DESIGN AND MATERIAL

REFKAR Shell&Tube Kondanserler titreşim ve korozyon gibi performans düşürücü etkiler minimuma indirilecek şekilde dizayn edilmiştir. RKMDEW serisi Shell&Tube kondanserler deniz suyunun korozyon etkilerine karşı dayanıklı olarak dizayn ve imal edilmektedir. REFKAR Shell&Tube Kondanserlerde kullanılan malzemeler "European Pressure Vessel Codes" a göre seçilmiştir. **RK_{DEW} Shell&Tube Kondanserler:**

- Isı transferini sağlayan içten ve dıştan yivli özel geometrideki ısı transfer boruları bakır
- Ayna, gövde çelik
- Kapaklar pik döküm
- Cıvatalar çelik alaşım
- Contalar HCFC ve HCF soğutucu gazlar ile uyumlu asbetsiz malzemelerden üretilmektedir.

REFKAR Shell&Tube 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 REFKAR Shell&Tube Condensers are selected according to "European Pressure Vessel Codes". Materials used in REFKAR shell&tube type evaporators are chosen in compliance with "European Pressure Vessel Codes"

RK_{DEW} Shell&Tube Condensers;

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

KALİTE VE TEST | QUALITY AND TEST

REFKAR Shell&Tube Kondanserlerin mekanik hesapları TS EN13445-3 standardına uygun ve ISO 9001:2008 Kalite Yönetim Sistemine uygun CE belgeli olarak üretilmektedir. REFKAR Shell&Tube Kondanserlerin gaz tarafı 30 bar, su tarafı 12 bar azot testine tabi tutulmaktadır. Üretim hatalarına karşı REFKAR tüm ürünlerinde 2 yıl garanti vermektedir.

Mechanical calculations of REFKAR Shell&Tube Condensers are made in accordance with TS EN13445-3 standard and with a CE certificate in compliance with ISO 9001:2008 Quality Management System. REFKAR Shell&Tube Condensers are assessed through a nitrogen test with a gas side of 30 bars and a water side of 12 bars. REFKAR issues a guarantee of 2 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

KİRLENME FAKTÖRÜ | FOULING FACTOR

Kirlilik faktörü (f.f.) kondenser seçiminde dikkat edilmesi gereken en önemli kurallardan biridir. Aşağıda bazı durumlar için seçilmesi gereken kirlenme faktörü değerleri verilmiştir.

- Kapalı çevrim şebeke suyu f.f.= 0,000043 m2K/W
- Açık çevrim şebeke suyu f.f.= 0,000086 m2K/W
- Glikol çözeltisi < 40% f.f.= 0,000086 m2K/W
- Glikol çözeltisi > 40% f.f.= 0,000172 m2K/W

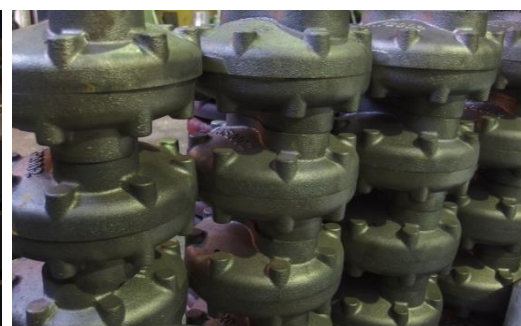
Ayrıca aşağıdaki tabloda düşük sıcaklık çalışma değerlerine uygun tavsiye edilen glikol karışım oranları verilmiştir.

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

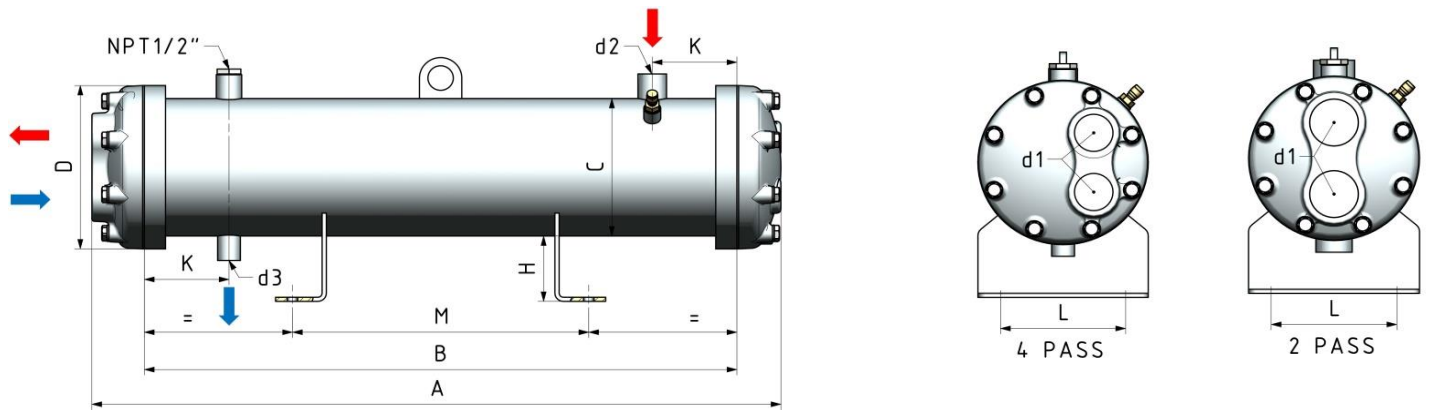
The table below lists the recommended glycol solution for low-temperature operating conditions.

Donma Noktası / Freezing Point [°C]	Etilen Glikol / Ethilene Glycol [% Ağırlıkça/Weight]	Propilen Glikol / Propylene Glycol [%Ağırlıkça/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



RK_{dew} SHELL&TUBE CONDENSERS FOR CITY OR TOWER WATER

RKDEW 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	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

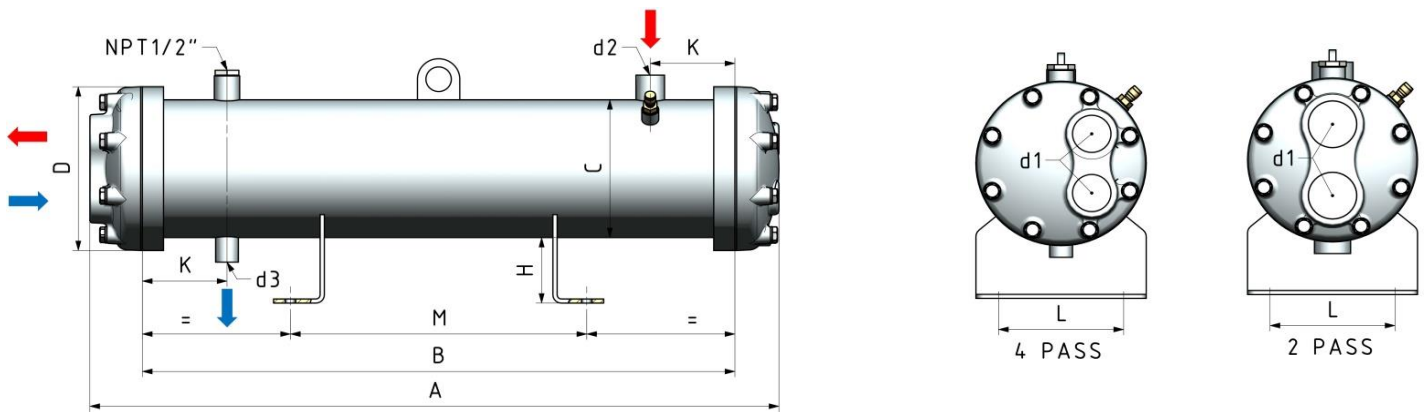


RKDEW SERIES CONDENSERS		20	35	45	55	65	65C	75C	90C	60	90	
DIMENSIONS (mm)	A	790	790	815	815	815	1115	1115	1115	1515	1515	
	B	700	700	700	700	700	1000	1000	1000	1400	1400	
	C	140	140	168	168	168	168	168	168	168	168	
	D	170	170	200	200	200	200	200	200	200	200	
	H	80	80	80	80	80	80	80	80	80	80	
	K	100	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	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		

RKDEW 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



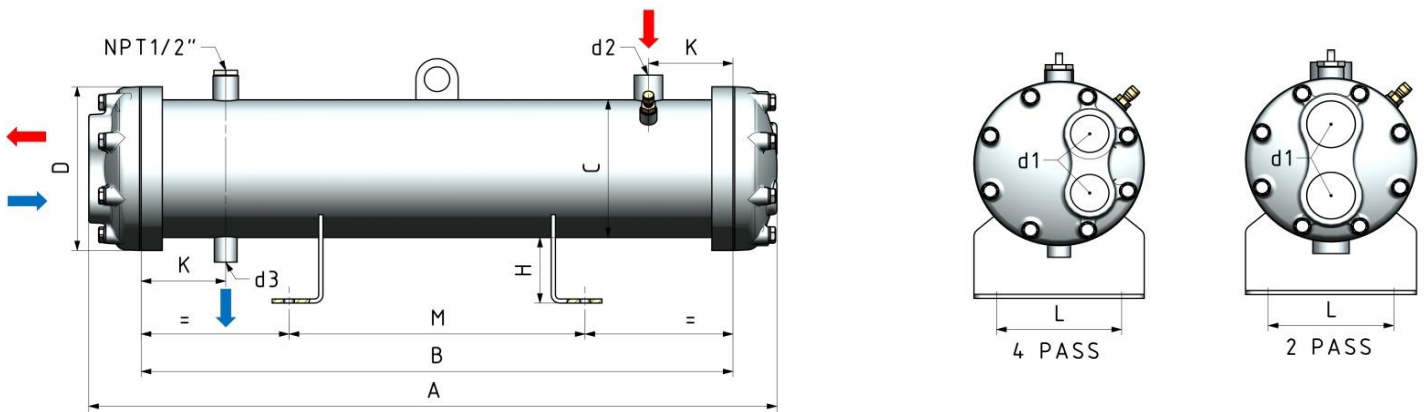
RKDEW SERIES CONDENSERS			100	120	130	145	165	180	200	220	245	265
DIMENSIONS (mm)	A		1515	1515	1515	1915	1915	1915	1915	1915	1915	1915
	B		1400	1400	1400	1800	1800	1800	1800	1800	1800	1800
	C		168	168	168	168	168	168	194	194	219	219
	D		200	200	200	200	200	200	250	250	250	250
	H		80	80	80	80	80	80	80	80	80	80
	K		150	150	150	150	150	150	150	150	150	150
	L		150	150	150	150	150	150	180	180	200	200
	M		700	700	700	900	900	900	900	900	900	900
	d1		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 54	W 54
d3		W 28	W 28	W 28	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^2K/W		

RK_{dew} SHELL&TUBE CONDENSERS FOR CITY OR TOWER WATER

RKDEW 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

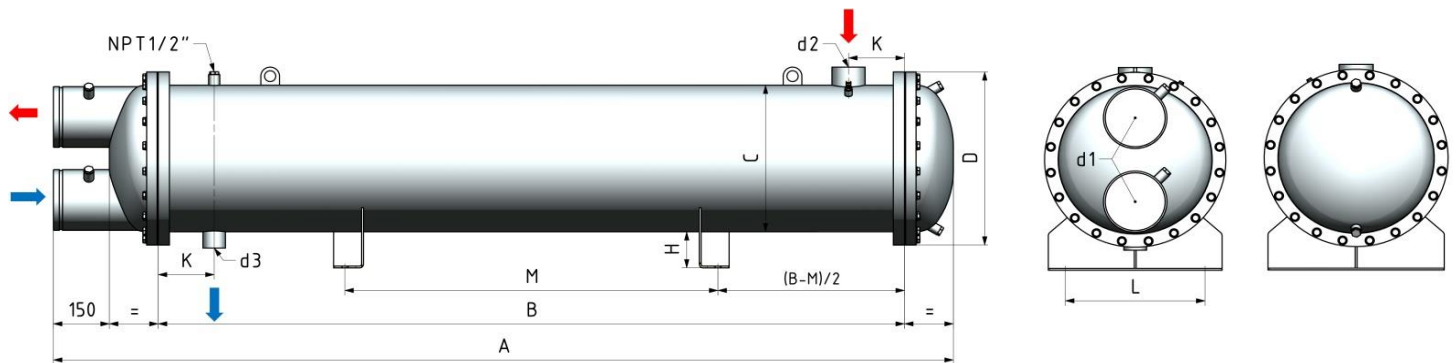


RKDEW SERIES CONDENSERS			285	315	340	360	400	450	480	520	550	610	
DIMENSIONS (mm)	A		1915	1925	1925	1925	1925	1925	1940	1940	1940	1940	
	B		1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	
	C		219	273	273	273	273	273	324	324	324	324	
	D		250	295	295	295	295	295	350	350	350	350	
	H		80	100	100	100	100	100	100	100	100	100	
	K		150	150	150	150	150	150	150	150	150	150	
	L		180	240	240	240	240	240	280	280	280	280	
	M		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		

RKDEW 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



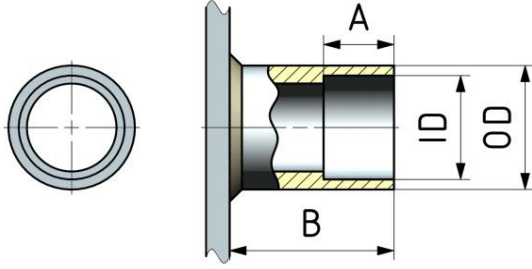
RKDEW SERIES CONDENSERS		675	760	840	940	1040	1100	1220	1360	1520	1680
DIMENSIONS (mm)	A	1940	2175	2175	2415	2415	2415	2435	2435	2455	2455
	B	1800	1800	1800	2000	2000	2000	2000	2000	2000	2000
	C	324	356	356	406	406	406	457	457	508	508
	D	350	430	430	480	480	480	530	530	580	580
	H	100	100	100	100	100	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"
	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^2K/W		

AKSESUARLAR - ACCESSORIES

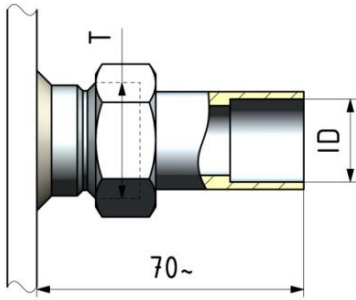
Kaynaklı Bağlantı / Welding Connection (W)



Ölçüler / Dimensions

KOD / 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

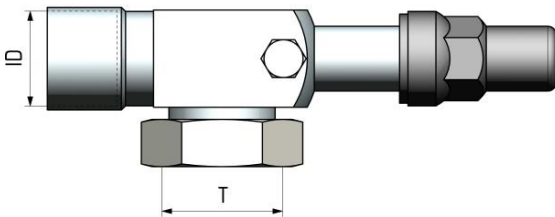
Rotalock Bağlantı / Rotalock Connection (RL)



Ölçüler / Dimensions

KOD / 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 Valf / Rotalock Valve (RLV)

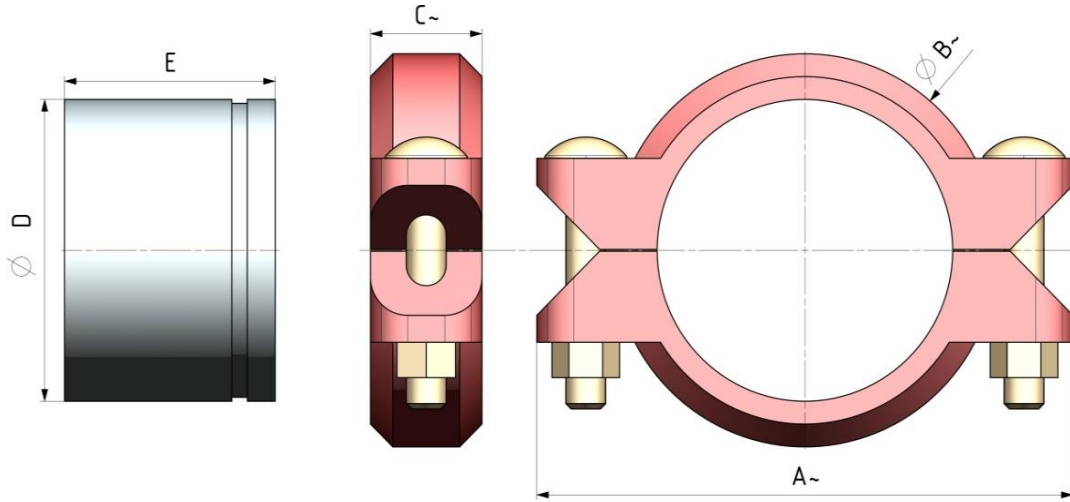


Ölçüler / Dimensions

KOD / 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

AKSESUARLAR - ACCESSORIES

Esnek Kaplin / Flexible Coupling (FLC)

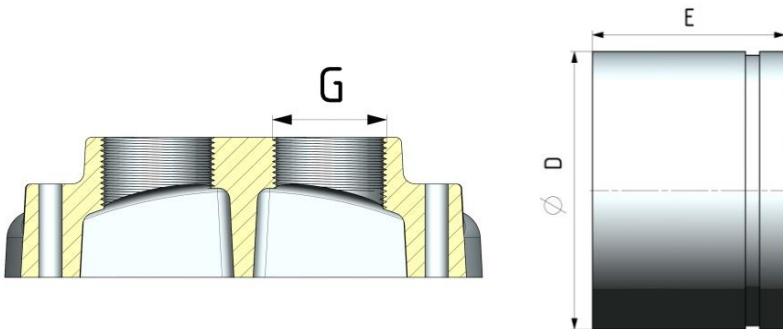


Ölçüler / Dimensions

KOD / 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

Su Bağlant Şekilleri / Water Connection Types

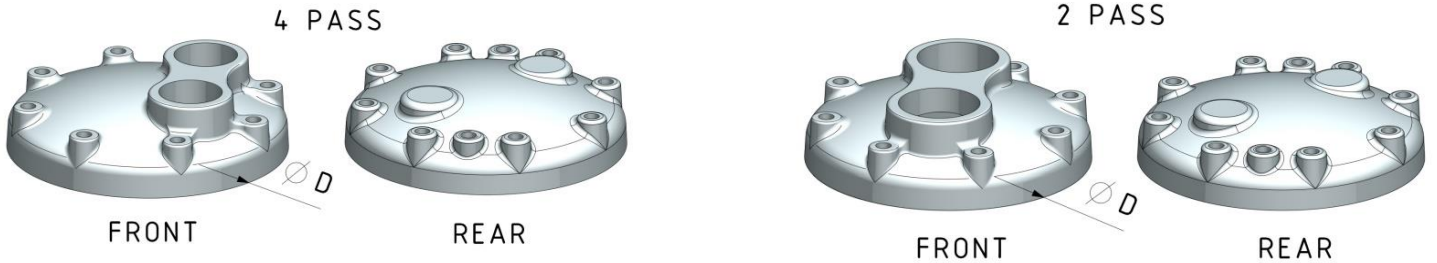
Ölçüler / Dimensions



KOD / 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

YEDEK PARÇA - SPARE PARTS

Kondenser Kapakları / Condenser Caps



Ölçüler / Dimensions

KOD / CODE	D	PASS	SU HATTI BAĞLANTILARI WATER CONNECTION	KULLANILDIĞI ÜRÜNLER / SUITABLE WITH
K1704	170	4	G 1"	RKDEW20-RKDEW35
K2004	200	4	G 1 1/2"	RKDEW(45,55,65,60C,75C,90C)
K2002	200	2	G 2"	RKDEW60-RKDEW180
K2502	250	2	G 2 1/2"	RKDEW200-RKDEW285
K2952	295	2	G 3"	RKDEW315-RKDEW450
K3502	350	2	G 4"	RKDEW480-RKDEW675
K4302	430	2	DN125 (Victaulic)	RKDEW760-RKDEW840
K4802	480	2	DN150 (Victaulic)	RKDEW940-RK1100
K5302	530	2	DN150 (Victaulic)	RKDEW1220-RKDEW1360
K5802	580	2	DN150 (Victaulic)	RKDEW1520-RKDEW1680

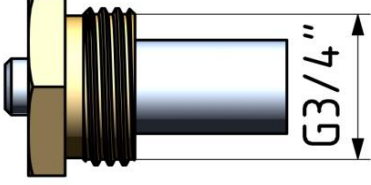
Kondenser Contaları / Condenser Gaskets

Ölçüler / Dimensions

KOD / CODE	D	PASS	KULLANILDIĞI ÜRÜNLER / SUITABLE WITH
KC1704	170	4	RKDEW20-RKDEW35
KC2004	200	4	RKDEW(45,55,65,60C,75C,90C)
KC2002	200	2	RKDEW60-RKDEW180
KC2502	250	2	RKDEW200-RKDEW285
KC2952	295	2	RKDEW315-RKDEW450
KC3502	350	2	RKDEW480-RKDEW675
KC4302	430	2	RKDEW760-RKDEW840
KC4802	480	2	RKDEW940-RKDEW1100
KC5302	530	2	RKDEW1220-RKDEW1360
KC5802	580	2	RKDEW1520-RKDEW1680

DİĞER / OTHERS

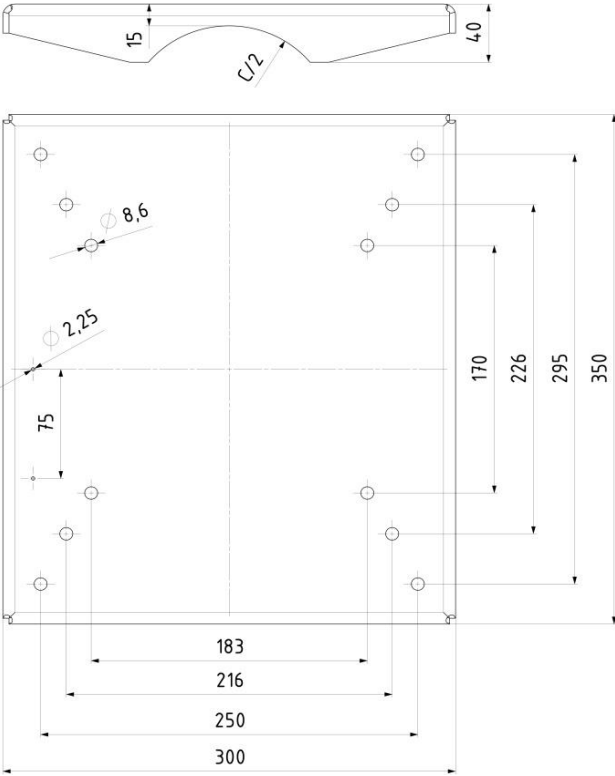
Çinko Anod / Zinc Anode



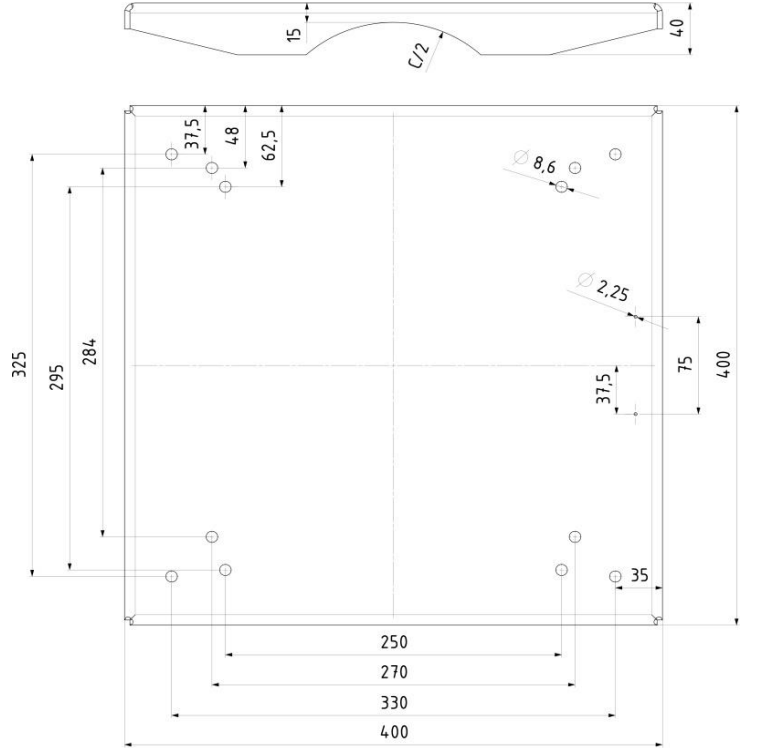
Tüm ürünlerde aynı tip tutya çubuğu kullanılır.
It is used the same type of zinc anode rod in all products.

Kompresör Bağlantı Platformu / Compressor Mounting Platform

GÖVDE ÇAP / SHELL DIAMETER	KOD / CODE
140 mm	KPAY 140
168 mm	KPAY 168
194 mm	KPAY 194



D : Ø 140 - 168



D : Ø 194

PRODUCER OF HEAT EXCHANGER TECHNOLOGIES



Refkar Soğutma ve Isı Transfer Cihazları San. Ve Tic. Ltd. Şti.
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