



Goedhart KOAL-S

Air cooled condensers

Cu/Al

R404A



Air cooled condenser options

Control Options

There are various optional control packages available, including fully variable speed controlled products using inverter control or the latest EC fan control system. The control options include:

- EC speed control
- Inverter speed control
- Triac speed control
- Dual speed step control
- Single speed control

If a speed control method is utilised Goedhart recommends adding the option of internal motor protection.



Adiabatic Cooling System

The adiabatic cooling system is designed to enhance the thermal performance by reducing the effective incoming



air temperature during peak ambient and load conditions. Air temperature reduction is achieved by spraying water into the incoming airstream (please see Goedhart's Adiabatic brochure for further details).

Other Options

Goedhart offers a wide range of accessories and additional options, including anti-vibration mounts and optional leg extensions - to enhance fresh air in difficult locations. For further details please contact your Goedhart representative.

Vertical Mounting

Flat bed units may be specified with the coil vertical for horizontal air flow systems.



Sub-Cooling

Sub-cooling is achieved by the use of an integrated sub-cooling section which utilises approximately 10% of the coil surface.

This provides up to 7°C of sub-cooling at the standard rating condition of 15K DT1. Operating below 15K DT1, the amount of sub-cooling is reduced. The total heat of rejection capacity, inclusive of sub-cooling, will be reduced by 5%.

The system should be designed so that refrigerant passes from the condensing section into a liquid receiver or liquid trap to prevent gas from entering the sub-cooling section. Some larger units will have the end cooling outlet at the opposite end to other connections.

Capacity Data

Dewpoint

The capacities shown in this brochure are rated at dew point. This is the pressure/temperature condition at which a refrigerant gas begins to condense on the surface. As some refrigerants have significant glide (e.g. R407A/ 407C), the saturated gas and saturated liquid temperatures are not necessarily the same. It is important to ensure that all the components of a system are selected using the same rating method.

Whilst the use of mid-point does make selection easier, it is difficult to measure on site. At the catalogue rating point of 15K DT1, mid point capacities would be approximately 9% higher for R407C than the equivalent dew point figures shown in the tables.

Quality Assured



Goedhart is a quality assured company to ISO 9001:2000 encompassing Performance Testing, Manufacturing Systems and Inspection Procedures.

The range is certified with performances rated in accordance with B5 EN 327 and sound with EN13487. Data covered includes: performance, sound power, mean sound pressure, power input and surface area.

CE Marking

Goedhart's condensers are CE marked under the 'Low Voltage Directive'. Under the 'Pressure Equipment Directive', they are category 1 or 'SEP' and therefore excluded from it.



Energy Labelling

The energy efficiency of the air cooled condensers is rated in terms of a set of energy efficiency classes from A to E on the label, A being the most energy efficient, E the least efficient. The labels also give other useful information to the customer as they choose between various models. Rating is based on the ratio of nominal duty to power input with banding as in the table below.

Extremely low	$R > 110$
Very low	$70 < R < 110$
Low	$45 < R < 70$
Medium	$30 < R < 45$
High	< 30

Where $R = \text{Nominal Capacity} / \text{Total fan power input}$



Goedhart KOAL-S E

The KOAL-S E range of air-cooled condensers is based upon the well established E fin heat exchange matrix, combined with the HyBlade® range of fans from EBMpapst. This combination offers a versatile and economical solution to many refrigeration and air conditioning applications.

The range consists of one to eight fans in three coil depths and modules with 500 and 630 mm 4, 6 and 8 pole fans. This results in a wide range of capacities, noise levels and footprints to meet the diverse requirements of the industry.

Optional extras for the KOAL-S E range include vertical orientation (1 to 4 fan), multi circuiting, integral sub cooling section, alternative fin materials and coating. Control options include fan cycling, variable speed (including EC) and individual fan isolators. The KOAL-S E range is also available as a dry cooler designated KOAD-S E.

Model selections can be made either directly from the catalogue or by contacting your Goedhart representative to select for you the required air cooled condenser.

KOAL-S E Features

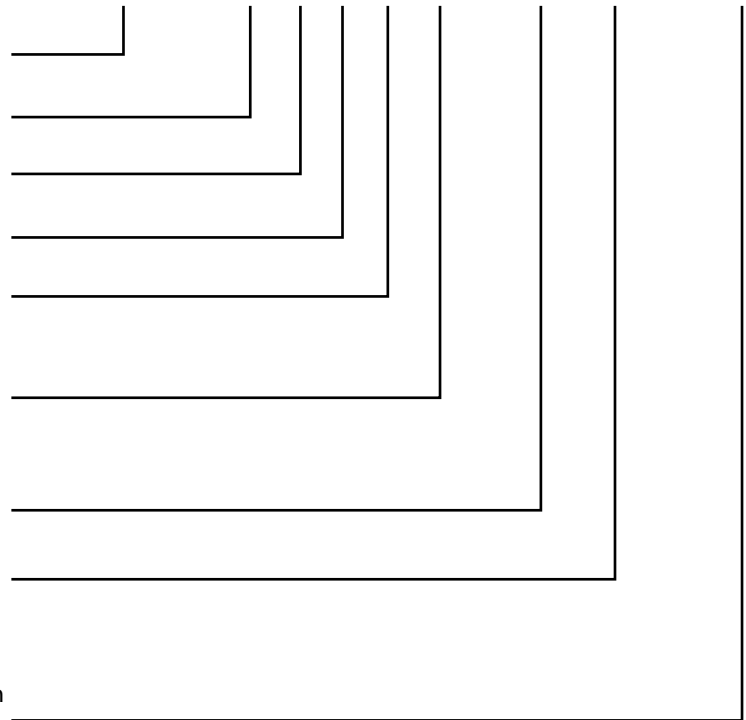
- 3 Module length sizes (A,B,C)
- 500mm or 630mm HyBlade® fansets
- 4,6,8 pole or EC
- Optional coil fin materials and coating
- Standard powder coated, RAL7036 (Platinum Gray) robust casework. RAL 9010 Bright on request.
- factory fitted or separate control options
- Compact design Vertical coil (1-4 fans) or Horizontal coil (1-8 fans)
- Wall mounting kits available for Vertical coil 1-4 fan units



Type description

KOAL-S EA 1 2 4 H - N6 04 - AL

- KOAL-S E = range
- A, B, C = module length
- 1 or 2 = bank of fans
- 1, 2, 3, 4 = fans per bank
- 2, 3, 4 = coils row
- H = Horizontal = orientation
= Vertical air direction
- V = Vertical = Horizontal air direction
- N5=500mm, N6=630mm = Fan type
- AC pole 04, 06, 08, EC, = Motor speed
XX=without fans



- AL = Copper tubes/Aluminium fins
- AV = Copper tubes/Vinyl coated aluminium fin
- CU = Copper tubes/Copper fins
- BG = Blygold tubes and fins
- ALMG = Copper tubes/Sea water resistant (Almg) fins





KOAL-S E 630 Selection data

Model KOAL-S E	DELTA (High Speed)					STAR (Low Speed)					Total Surface m ²	Internal Volume dm ³	R404A Charge kg
	Duty (15 K DT1 - Dew Point)	Air Volume	Sound Pressure Level at 10m (+/- 2 dB(A))	Power Input W	Energy rating	Duty (15 K DT1 - Dew Point)	Air Volume	Sound Pressure Level at 10m (+/- 2 dB(A))	Power Input W	Energy rating			
	R404A & R507A					R404A & R507A							
	kW	m ³ /h	dB(A)	kW	m ³ /h	dB(A)	kW						

630 mm 4 pole 3x400V

EB112-N604-3	28,2	13536	61	2500	E	24,8	10728	52	1640	E	38	7	2,2
EC112-N604-3	32,8	14040	61	2460	E	28,5	11160	52	1640	E	48	9	2,8
EB113-N604-3	37,5	12888	60	2540	E	32,4	10152	52	1660	E	58	10	3,2
EC113-N604-3	42,5	13536	61	2500	E	36,3	10728	52	1640	E	72	12	3,8
EB114-N604-3	43,3	12312	60	2580	E	36,8	9576	52	1680	E	77	13	4,1
EC114-N604-3	48,9	13032	60	2530	E	41,4	10296	52	1650	E	96	17	5,4
EB122-N604-3	56,4	27144	63	4990	E	49,6	21456	54	3290	E	77	13	4,1
EC122-N604-3	65,6	28080	63	4930	E	57	22320	54	3280	E	96	16	5,1
EB123-N604-3	75,0	25776	63	5080	E	64,8	20232	54	3320	E	115	18	5,7
EB132-N604-3	84,6	40680	65	7490	E	74,4	32184	56	4930	E	115	19	6,0
EC123-N604-3	85,0	27144	63	4990	E	72,6	21528	54	3290	E	144	23	7,3
EB124-N604-3	86,6	24624	63	5160	E	73,6	19224	54	3360	E	154	24	7,6
EC124-0604-3	97,8	26136	63	5060	E	82,8	20664	54	3310	E	192	30	9,5
EC132-N604-3	98,4	42120	65	7390	E	85,5	33480	56	4920	E	144	23	7,3
EB133-N604-3	112,5	38664	65	7630	E	97,2	30384	56	4980	E	173	26	8,2
EB142-N604-3	112,8	54288	66	9990	E	99,2	42912	57	6580	E	154	24	7,6
EC133-N604-3	127,5	40680	65	7490	E	108,9	32256	56	4930	E	216	33	10,4
EB134-N604-3	129,9	36936	65	7740	E	110,4	28800	56	5030	E	230	34	10,7
EC142-N604-3	131,2	56160	66	9850	E	114	44640	57	6560	E	192	30	9,5
EC134-N604-3	146,7	39168	65	7590	E	124,2	30960	56	4960	E	288	44	13,9
EB143-N604-3	150,0	51480	66	10170	E	129,6	40464	57	6630	E	230	35	11,1
EC143-N604-3	170,0	54216	66	9990	E	145,2	42984	57	6570	E	288	45	14,2
EB144-N604-3	173,2	49248	66	10320	E	147,2	38376	57	6710	E	307	46	14,5
EC144-N604-3	195,6	52200	66	10120	E	165,6	41256	57	6610	E	384	58	18,3

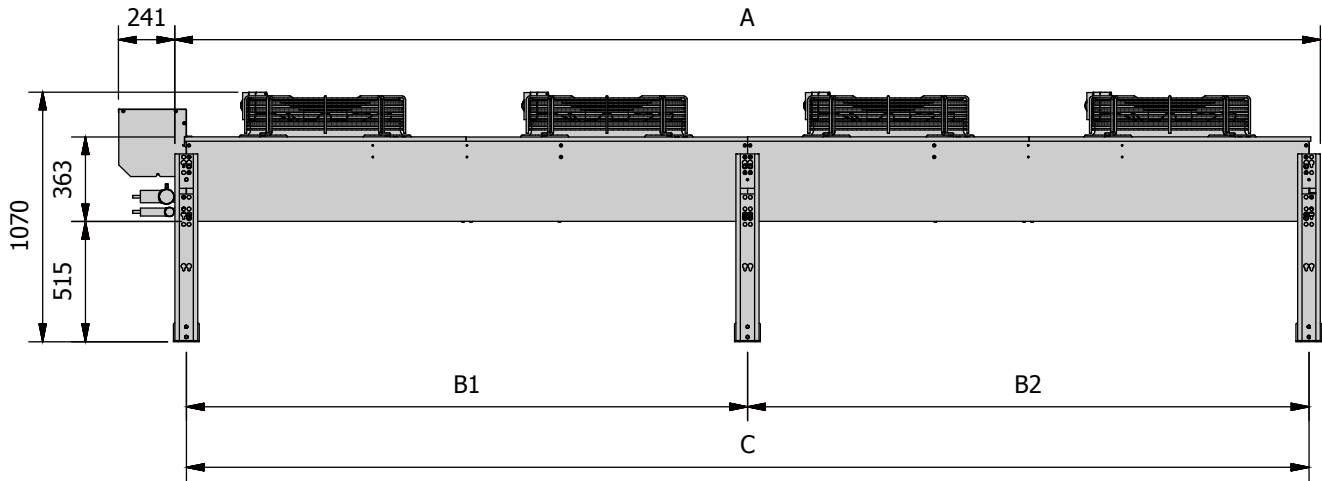
630 mm 6 pole 3x400V

EB112-0606-3	23,3	9792	46	700	D	20,8	7416	39	470	D	38	7	2,2
EC112-N606-3	26,6	10440	46	700	D	23,5	7920	39	460	C	48	9	2,8
EB113-N606-3	29,4	9072	46	710	D	25,3	6840	39	480	C	58	10	3,2
EB114-N606-3	33,1	8496	47	730	C	27,6	6336	39	490	C	77	12	3,8
EC113-N606-3	33,1	9864	46	700	C	28,4	7416	39	470	C	72	12	3,8
EC114-N606-3	37,5	9288	46	710	C	31,4	7056	39	480	C	96	15	4,7
EB122-N606-3	46,6	19584	49	1410	D	41,6	14832	42	940	D	77	13	4,1
EC122-N606-3	53,2	20880	49	1390	D	47	15912	42	920	C	96	16	5,1
EB123-N606-3	58,8	18144	49	1420	D	50,6	13680	42	970	C	115	18	5,7
EB124-N606-3	66,2	16992	50	1450	C	55,2	12744	42	980	C	154	24	7,6
EC123-N606-3	66,2	19656	49	1410	C	56,8	14904	42	930	C	144	23	7,3
EB132-N606-3	69,9	29376	50	2110	D	62,4	22248	43	1400	D	115	18	5,7
EC124-N606-3	75,0	18648	49	1420	C	62,8	14040	42	960	C	192	29	9,2
EC132-N606-3	79,8	31248	50	2090	D	70,5	23832	44	1380	C	144	23	7,3
EB133-N606-3	88,2	27216	51	2130	D	75,9	20520	43	1450	C	173	26	8,2
EB142-N606-3	93,2	39168	51	2810	D	83,2	29664	44	1870	D	154	24	7,6
EB134-N606-3	99,3	25488	52	2180	C	82,8	19080	44	1470	C	230	34	10,7
EC133-N606-3	99,3	29520	50	2110	C	85,2	22320	43	1400	C	216	33	10,4
EC142-N606-3	106,4	41688	51	2790	D	94	31752	45	1840	C	192	30	9,5
EC134-N606-3	112,5	27936	50	2120	C	94,2	21096	43	1440	C	288	43	13,6
EB143-N606-3	117,6	36288	52	2840	D	101,2	27288	44	1940	C	230	34	10,7
EB144-N606-3	132,4	33984	53	2910	C	110,4	25488	45	1960	C	307	44	13,9
EC143-N606-3	132,4	39384	51	2810	C	113,6	29808	44	1870	C	288	42	13,3
EC144-N606-3	150,0	37296	51	2830	C	125,6	28152	44	1920	C	384	57	18,0

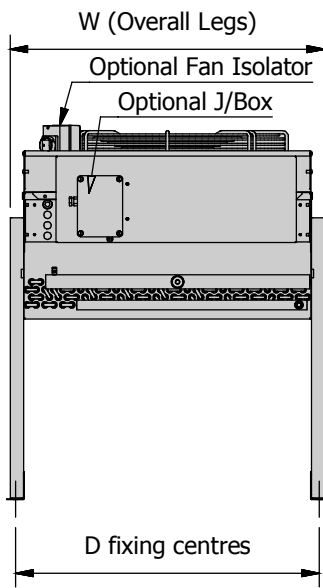
630 mm 8 pole 3x400V

EB112-N608-3	19,7	7128	37	350	C	16,3	4824	28	200	B	38	7	2,2
EC112-N608-3	22,1	7560	37	340	C	18,1	5184	28	200	B	48	8	2,5
EB113-N608-3	24,2	6624	37	360	C	19,1	4536	29	200	B	58	10	3,2
EB114-N608-3	26,4	6192	38	370	B	20,4	4248	29	200	B	77	12	3,8
EC113-N608-3	27,1	7128	37	350	B	21,5	4896	28	200	B	72	12	3,8
EC114-N608-3	30	6840	37	360	B	23,1	4680	29	200	A	96	15	4,7
EB122-N608-3	39,4	14256	40	700	C	32,6	9720	31	400	B	77	12	3,8
EC122-N608-3	44,2	15192	40	680	C	36,2	10368	31	390	B	96	16	5,1
EB123-N608-3	48,4	13248	40	720	C	38,2	9000	32	400	B	115	18	5,7
EB124-N608-3	52,8	12384	41	740	B	40,8	8496	32	410	B	154	24	7,6
EC123-N608-3	54,2	14328	40	700	B	43	9792	31	400	B	144	23	7,3
EB132-N608-3	59,1	21384	41	1050	C	48,9	14544	33	600	B	115	18	5,7
EC124-N608-3	60	13608	40	710	B	46,2	9288	32	400	A	192	29	9,2
EC132-N608-3	66,3	22752	41	1030	C	54,3	15552	33	590	B	144	23	7,3
EB133-N608-3	72,6	19872	41	1080	C	57,3	13536	34	610	B	173	26	8,2
EB142-N608-3	78,8	28512	42	1400	C	65,2	19440	34	790	B	154	23	7,3
EB134-N608-3	79,2	18576	42	1110	B	61,2	12672	34	610	B	230	34	10,7
EC133-N608-3	81,3	21456	41	1050	B	64,5	14688	33	600	B	216	32	10,1
EC142-N608-3	88,4	30384	43	1370	C	72,4	20736	34	780	B	192	30	9,5
EC134-N608-3	90	20448	41	1070	B	69,3	13968	33	600	A	288	43	13,6
EB143-N608-3	96,8	26496	42	1440	C	76,4	18072	35	810	B	230	34	10,7
EB144-N608-3	105,6	24696	43	1480	B	81,6	16920	35	820	B	307	44	13,9
EC143-N608-3	108,4	28656	42	1400	B	86	19584	34	790	B	288	42	13,3
EC144-N608-3	120,0	27216	42	1430	B	92,4	18576	34	800	A	384	55	17,4

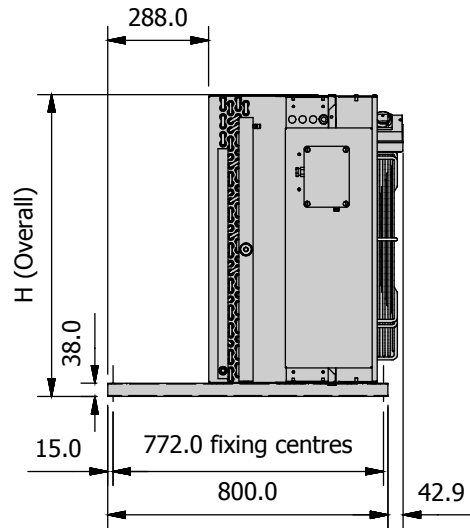
KOAL-S E Drawing



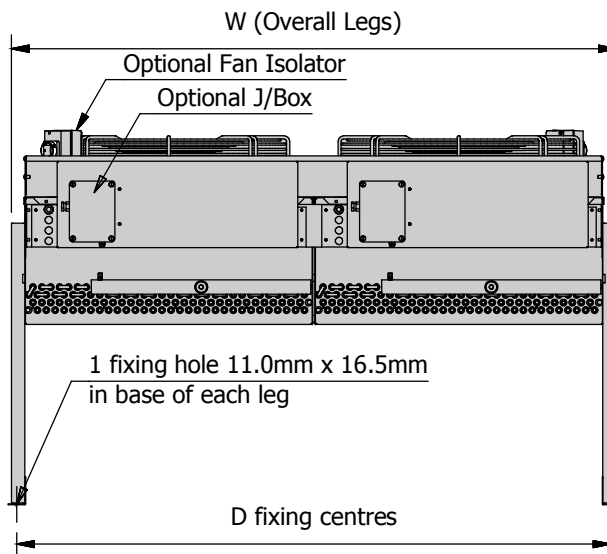
E SINGLE BANK HORIZONTAL UNIT



E VERTICAL UNIT



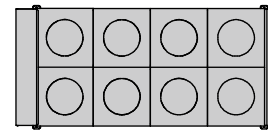
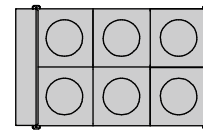
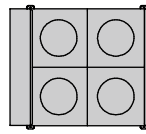
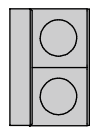
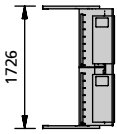
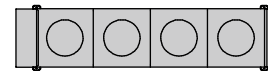
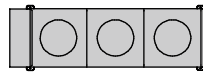
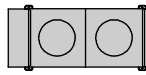
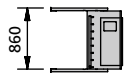
E DOUBLE BANK HORIZONTAL UNIT



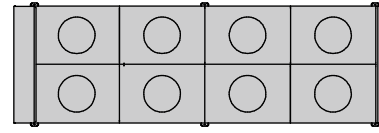
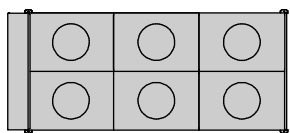
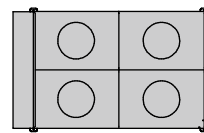
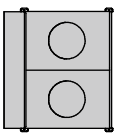
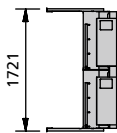
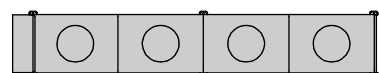
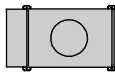
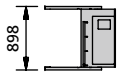
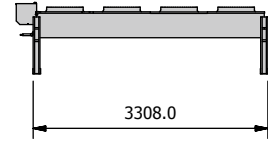
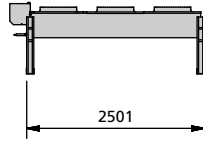
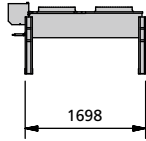
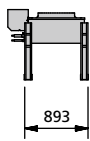
KOAL-S E Dimensions

Model KOAL-S E		Banks	Fans per bank	Coil Rows	A	B1	B2	C	D	W	H	Approx Dry Weight		Inlet	Outlet	
					mm	mm	mm	mm	mm	mm	mm	mm	AL	CU	mm	mm
													kg	kg		
EA	112	1	1	2	893	-	-	795	867	898	863	75	85	35	15	
EA	113	1	1	3	893	-	-	795	867	898	863	80	97	28	15	
EA	114	1	1	4	893	-	-	795	867	898	863	85	107	35	15	
EA	122	1	2	2	1698	-	-	1600	867	898	863	120	142	35	15	
EA	123	1	2	3	1698	-	-	1600	867	898	863	130	163	35	15	
EA	124	1	2	4	1698	-	-	1600	867	898	863	140	184	35	15	
EA	132	1	3	2	2500,5	-	-	2402,5	867	898	863	164	197	35	15	
EA	133	1	3	3	2500,5	-	-	2402,5	867	898	863	183	233	42	28	
EA	134	1	3	4	2500,5	-	-	2402,5	867	898	863	195	261	54	35	
EA	142	1	4	2	3308	-	-	3210	867	898	863	209	254	42	28	
EA	143	1	4	3	3308	-	-	3210	867	898	863	229	296	54	28	
EA	144	1	4	4	3308	-	-	3210	867	898	863	249	338	54	35	
EA	212	2	1	2	893	-	-	795	1695	1726	-	144	164	35	15	
EA	213	2	1	3	893	-	-	795	1695	1726	-	154	187	28	15	
EA	214	2	1	4	893	-	-	795	1695	1726	-	164	209	35	15	
EA	222	2	2	2	1698	-	-	1600	1695	1726	-	233	278	35	15	
EA	223	2	2	3	1698	-	-	1600	1695	1726	-	253	320	35	15	
EA	224	2	2	4	1698	-	-	1600	1695	1726	-	273	362	35	15	
EA	232	2	3	2	2500,5	-	-	2402,5	1695	1726	-	322	389	35	15	
EA	233	2	3	3	2500,5	-	-	2402,5	1695	1726	-	360	460	42	28	
EA	234	2	3	4	2500,5	-	-	2402,5	1695	1726	-	383	517	54	35	
EA	242	2	4	2	3308	-	-	3210	1695	1726	-	413	502	42	28	
EA	243	2	4	3	3308	-	-	3210	1695	1726	-	452	586	54	28	
EA	244	2	4	4	3308	-	-	3210	1695	1726	-	492	670	54	35	
EB	112	1	1	2	1293	-	-	1195	867	898	863	97	113	35	15	
EB	113	1	1	3	1293	-	-	1195	867	898	863	104	129	35	15	
EB	114	1	1	4	1293	-	-	1195	867	898	863	113	146	35	15	
EB	122	1	2	2	2500,5	-	-	2402,5	867	898	863	163	196	35	15	
EB	123	1	2	3	2500,5	-	-	2402,5	867	898	863	177	227	42	28	
EB	124	1	2	4	2500,5	-	-	2402,5	867	898	863	192	259	54	35	
EB	132	1	3	2	3703	-	-	3605	867	898	863	230	280	42	28	
EB	133	1	3	3	3703	-	-	3605	867	898	863	252	327	54	28	
EB	134	1	3	4	3703	-	-	3605	867	898	863	274	375	54	35	
EB	142	1	4	2	4903	2402,5	2402,5	4805	867	898	863	322	389	42	28	
EB	143	1	4	3	4903	2402,5	2402,5	4805	867	898	863	352	452	54	35	
EB	144	1	4	4	4903	2402,5	2402,5	4805	867	898	863	381	515	54	35	
EB	212	2	1	2	1293	-	-	1195	1695	1726	-	188	221	35	15	
EB	213	2	1	3	1293	-	-	1195	1695	1726	-	203	252	35	15	
EB	214	2	1	4	1293	-	-	1195	1695	1726	-	219	286	35	15	
EB	222	2	2	2	2500,5	-	-	2402,5	1695	1726	-	319	386	35	15	
EB	223	2	2	3	2500,5	-	-	2402,5	1695	1726	-	349	449	42	28	
EB	224	2	2	4	2500,5	-	-	2402,5	1695	1726	-	379	512	54	35	
EB	232	2	3	2	3703	-	-	3605	1695	1726	-	454	554	42	28	
EB	233	2	3	3	3703	-	-	3605	1695	1726	-	498	648	54	28	
EB	234	2	3	4	3703	-	-	3605	1695	1726	-	543	743	54	35	
EB	242	2	4	2	4903	2402,5	2402,5	4805	1695	1726	-	632	766	42	28	
EB	243	2	4	3	4903	2402,5	2402,5	4805	1695	1726	-	693	892	54	35	
EB	244	2	4	4	4903	2402,5	2402,5	4805	1695	1726	-	751	1018	54	35	
EC	112	1	1	2	1293	-	-	1195	1070	1101	1066	104	125	35	15	
EC	113	1	1	3	1293	-	-	1195	1070	1101	1066	114	145	35	15	
EC	114	1	1	4	1293	-	-	1195	1070	1101	1066	123	165	35	15	
EC	122	1	2	2	2500,5	-	-	2402,5	1070	1101	1066	175	216	42	28	
EC	123	1	2	3	2500,5	-	-	2402,5	1070	1101	1066	193	256	54	28	
EC	124	1	2	4	2500,5	-	-	2402,5	1070	1101	1066	212	295	54	35	
EC	132	1	3	2	3703	-	-	3605	1070	1101	1066	250	312	54	28	
EC	133	1	3	3	3703	-	-	3605	1070	1101	1066	278	372	54	35	
EC	134	1	3	4	3703	-	-	3605	1070	1101	1066	306	431	54	35	
EC	142	1	4	2	4903	2402,5	2402,5	4805	1070	1101	1066	344	427	42	35	
EC	143	1	4	3	4903	2402,5	2402,5	4805	1070	1101	1066	381	506	54	35	
EC	144	1	4	4	4903	2402,5	2402,5	4805	1070	1101	1066	418	585	54	35	
EC	212	2	1	2	1293	-	-	1195	2101	2132	-	197	238	35	15	
EC	213	2	1	3	1293	-	-	1195	2101	2132	-	216	278	35	15	
EC	214	2	1	4	1293	-	-	1195	2101	2132	-	234	317	35	15	
EC	222	2	2	2	2500,5	-	-	2402,5	2101	2132	-	338	412	42	28	
EC	223	2	2	3	2500,5	-	-	2402,5	2101	2132	-	375	500	54	28	
EC	224	2	2	4	2500,5	-	-	2402,5	2101	2132	-	412	579	54	35	
EC	232	2	3	2	3703	-	-	3605	2101	2132	-	488	613	54	28	
EC	233	2	3	3	3703	-	-	3605	2101	2132	-	544	731	54	35	
EC	234	2	3	4	3703	-	-	3605	2101	2132	-	599	850	54	35	
EC	242	2	4	2	4903	2402,5	2402,5	4805	2101	2132	-	664	830	42	35	
EC	243	2	4	3	4903	2402,5	2402,5	4805	2101	2132	-	738	988	54	35	
EC	244	2	4	4	4903	2402,5	2402,5	4805	2101	2132	-	812	1145	54	35	

KOAL-S E model layout



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