V2.7
November 2008

Vantage

Ultra-low maintenance batteries

Delivering quality

ALCAD

ALCAD Vantage

Ultra-low maintenance batteries

Ultra-high reliability, ultra-low maintenance

Alcad Vantage… a powerful combination of proven pocket-plate construction and advanced design from the world leader in industrial nickel-cadmium battery technology. With a 20-year life and ultra-low maintenance requirements, Vantage has become the cost-effective first choice – worldwide – for trouble-free standby power in the most demanding applications.

More reliable

Vantage can continue to supply power for 20 years or more thanks to its corrosion-free construction and Alcad's tried and tested pocket-plate technology. No physical plate degradation and no sudden death with resulting costly downtime.

Low life-cycle cost

The cost of ownership of a battery system can be calculated across three distinct phases: the initial investment, including the cost of purchase and installation; on-going maintenance costs, including unexpected and expensive downtime periods; finally, the battery replacement costs, which include the expense of disposal as well as renewal.

Vantage is the most cost-effective solution for any application – onshore or offshore – where long battery life, low maintenance costs, resistance to corrosion and total reliability are prime operating requirements.

More adaptable

Offshore oil and gas, emergency lighting, fire and security, telecoms, utilities, photovoltaics. You can depend upon Vantage for perfect peace of mind.

No water filling

No water filling is necessary during the Vantage 20-year service life because of the controlled recombination and the valve regulated venting system (topping-up is possible if required).

More durable

Vantage will survive treatment which would destroy lead acid batteries. This battery accepts ripple currents up to 0.2 C_5 A I_{eff} and can be over-discharged or reversed without damage. Prolonged abusive overcharge can easily be compensated by refurbishment with water.

More environmentally tolerant

Vantage performs in the most severe conditions and can operate over a temperature range from 0˚C to +40˚C (+32˚F to +104˚F). It can survive extremes of temperature from as low as –50˚C to as high as +70˚C (–58˚F to as high as +158˚F).

More manageable

Compact and lightweight, Vantage is easy to transport and install. It can be stored for one year without need of refresher charges.

Float-corrected data

Many nickel-cadmium batteries are used in stationary standby power applications where discharges occur infrequently and the battery is continuously charged by a float or constant potential charge. Under these circumstances there is a modification in the level of the discharge curve and allowances must be made for this when dimensioning the battery.

In order to simplify this process, the data Alcad supplies in this publication takes into account this phenomenon. The data published by Alcad is the performance after prolonged floating and it can be used directly to perform the battery calculation.

This phenomenon occurs with all nickel-cadmium batteries, but some other manufacturers of nickel-cadmium batteries may not take this effect into account in published data.

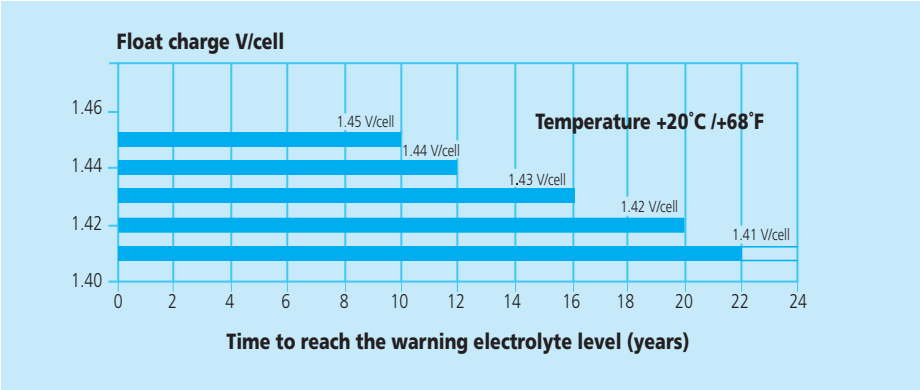
When calculating for deep discharges (0.65 V and 0.85 V) it is not necessary to take this effect into account.

Alcad recycle

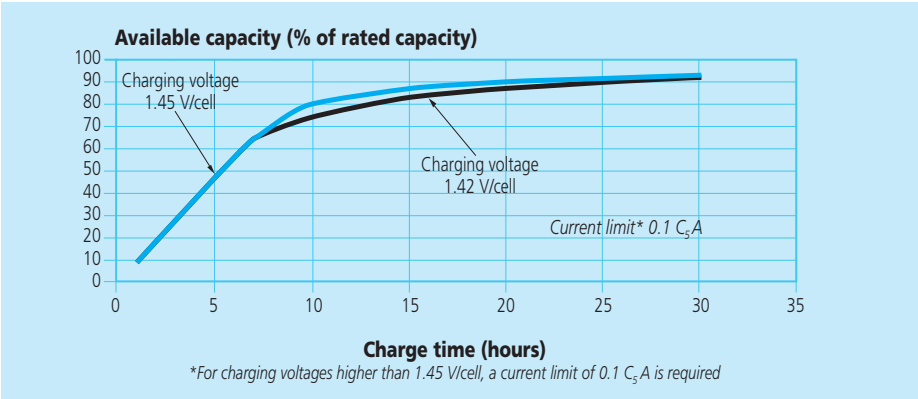
Alcad also recycle old batteries as part of their responsibility to safeguard the environment.

Vantage

Effect of charging voltage on water consumption



Available capacity on float charge from a fully discharged cell at +20˚C to +25˚C (+68˚F to +77˚F)



Meeting international standards

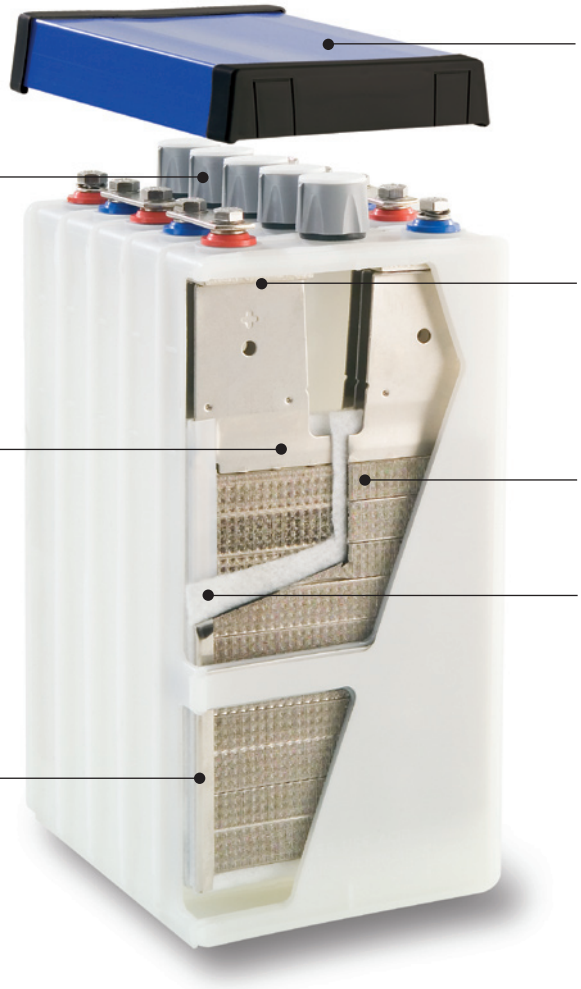
Alcad batteries are manufactured under a strict ISO 9001 regime. Highest quality materials and rigorous quality checking procedures ensure all relevant international standards are met, including IEC 60623 and 62259.

Vantage has been developed in line with the safety requirements of EN 50272-2, and components used (such as insulated cable connectors and end lug covers) are defined to ensure high protection against electric shocks (IP2 level).

Further technical data are available on request.

Vantage

Construction and block configuration



Protective cover
Prevents dust accumulation and minimises maintenance. Reduces handling and environmental risks.

In line with EN 50272-2 (safety) with IP2 level.

Flame arresting vent
Low pressure flame arresting vent.

Plate group bus
Connects the plate tabs with the terminal post. Plate tabs and terminal posts are projection welded to the plate group bus (beneath casing).

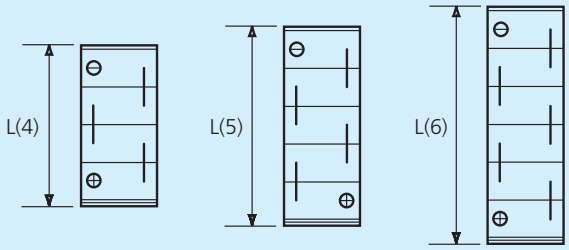
Plate tab
Spot welded to the plate side frames, to the upper edge of the pocket plate and to the plate group bus.

Plate
Horizontal pockets of double-perforated steel strips.

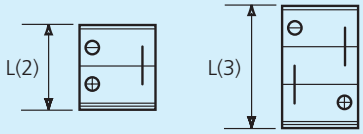
Separators
These separate the plates and insulate the plate frames from each other. This special type of separator improves the internal recombination.

Plate frame
Seals the plate pockets and serves as a current collector.

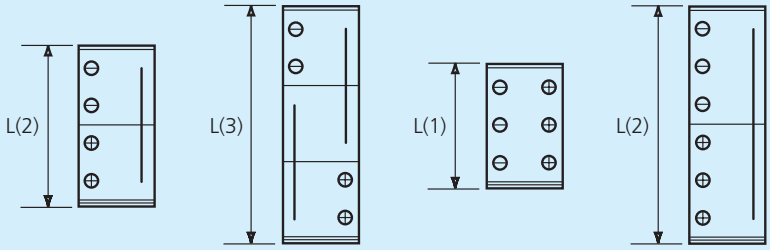
For serial connection of blocks on racks or on shelves, always use blocks with an even number of cells. This gives short, straight interblock connectors. When a block with an odd number of cells is necessary, it should be placed at the end of a cell row.



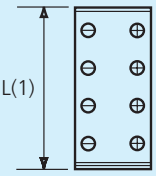
VN 8 – VN 48 Blocks of cells with single pole bolts.



VN 71 – VN 142 Blocks of cells with single pole bolts.



VN 166 – VN 426 Blocks of cells with 2 – 3 pole bolts per pole.

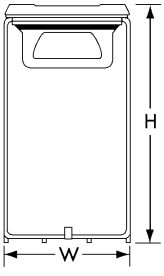


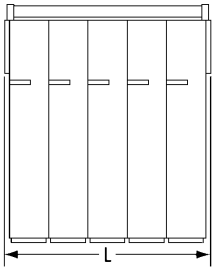
VN 476 – VN 850 Blocks of cells with 4 – 6 pole bolts per pole.

Capacity and dimensions

Vantage

Vantage type	Capacity at the 5 h rate (Ah)	Nominal Voltage V	Overall height (with protective cover) H (mm)	H (in.)	Width W (mm)	W (in.)	Length per block L (mm)	L (in.)	Approx. weight per block (kg)	(lb)
VN 8-4	8	4.8	270	10.63	123	4.84	133	5.24	5.5	12.1
VN 8-5	8	6	270	10.63	123	4.84	162	6.38	6.8	15.0
VN 8-6	8	7.2	270	10.63	123	4.84	191	7.52	8.1	17.9
VN 16-4	16	4.8	270	10.63	123	4.84	133	5.24	6.1	13.4
VN 16-5	16	6	270	10.63	123	4.84	162	6.38	7.6	16.8
VN 16-6	16	7.2	270	10.63	123	4.84	191	7.52	9.1	20.1
VN 24-4	24	4.8	270	10.63	123	4.84	153	6.03	7.3	16.1
VN 24-5	24	6	270	10.63	123	4.84	187	7.36	9.0	19.9
VN 24-6	24	7.2	270	10.63	123	4.84	221	8.70	10.7	23.6
VN 32-4	32	4.8	270	10.63	123	4.84	201	7.91	10.0	22.1
VN 32-5	32	6	270	10.63	123	4.84	247	9.72	12.4	27.3
VN 32-6	32	7.2	270	10.63	123	4.84	293	11.54	14.8	32.6
VN 40-4	40	4.8	270	10.63	123	4.84	249	9.80	12.3	27.1
VN 40-5	40	6	270	10.63	123	4.84	307	12.08	15.3	33.7
VN 40-6	40	7.2	270	10.63	123	4.84	365	14.37	18.3	40.4
VN 48-4	48	4.8	270	10.63	123	4.84	249	9.80	13.7	30.2
VN 48-5	48	6	270	10.63	123	4.84	307	12.08	17.0	37.5
VN 48-6	48	7.2	270	10.63	123	4.84	365	14.37	20.3	44.8
VN 71-2	71	2.4	421	16.57	195	7.68	97	3.82	10.2	22.5
VN 71-3	71	3.6	421	16.57	195	7.68	133	5.24	14.6	32.2
VN 95-2	95	2.4	421	16.57	195	7.68	112	4.41	13.3	29.3
VN 95-3	95	3.6	421	16.57	195	7.68	155	6.10	19.4	42.8
VN 119-2	119	2.4	421	16.57	195	7.68	133	5.24	15.8	34.8
VN 119-3	119	3.6	421	16.57	195	7.68	187	7.36	23.2	51.2
VN 142-2	142	2.4	421	16.57	195	7.68	145	5.71	18.5	40.8
VN 142-3	142	3.6	421	16.57	195	7.68	205	8.07	27.0	59.5
VN 166-2	166	2.4	421	16.57	195	7.68	184	7.24	22.8	50.3
VN 166-3	166	3.6	421	16.57	195	7.68	263	10.35	33.6	74.1
VN 190-2	190	2.4	421	16.57	195	7.68	198	7.80	25.5	56.2
VN 190-3	190	3.6	421	16.57	195	7.68	284	11.18	37.7	83.1
VN 238-2	238	2.4	421	16.57	195	7.68	241	9.49	30.5	67.3
VN 238-3	238	3.6	421	16.57	195	7.68	349	13.74	45.3	99.9
VN 285-2	285	2.4	421	16.57	195	7.68	265	10.43	33.6	74.1
VN 285-3	285	3.6	421	16.57	195	7.68	385	15.16	49.9	110
VN 357-1	357	1.2	421	16.57	195	7.68	187	7.36	23.2	51.2
VN 357-2	357	2.4	421	16.57	195	7.68	349	13.74	45.0	99.2
VN 426-1	426	1.2	421	16.57	195	7.68	205	8.07	27.0	59.5
VN 476-1	476	1.2	421	16.57	195	7.68	241	9.49	30.2	66.5
VN 570-1	570	1.2	405	15.94	195	7.68	265	10.43	34.5	76.0
VN 600-1	600	1.2	405	15.94	195	7.68	295	11.61	37.4	82.4
VN 710-1	710	1.2	405	15.94	195	7.68	325	12.80	42.0	92.5
VN 850-1	850	1.2	405	15.94	195	7.68	385	15.16	49.5	109.1





Cell connection bolt per pole:

VN 8-4 to VN 48-6:	M6
VN 71-2 to VN 95-3:	M8
VN 119-2 to VN 142-3:	M10
VN 166-2 to VN 190-3:	2 x M8
VN 238-2 to VN 285-3:	2 x M10
VN 357-1 to VN 426-1:	3 x M10
VN 476-1 to VN 570:	4 x M10
VN 600 to VN 710:	5 x M10
VN 850:	6 x M10

Cell performance

Performance after prolonged float charge of fully charged cell

Available amperes at +20°C ± 5°C (+68°F ± 9°F) **Final voltage: 1.00 V/cell**

Cell type	C_5 Ah	HOURS					MINUTES						SECONDS			
		10 h	8 h	5 h	3 h	2 h	90 min	60 min	45 min	30 min	10 min	5 min	60 s	30 s	10 s	1 s
VN 8	8	0.8	1.0	1.6	2.6	3.8	4.7	6.1	6.9	8.0	10.9	12.2	16.2	17.9	21.1	25.5
VN 16	16	1.6	2.0	3.2	5.1	7.6	9.4	12.2	13.8	16.0	21.8	24.5	32.3	35.7	42.2	51.0
VN 24	24	2.4	3.0	4.8	7.7	11.3	14.1	18.4	20.7	24.0	32.6	36.7	48.5	53.6	63.2	76.5
VN 32	32	3.2	4.0	6.4	10.3	15.1	18.8	24.5	27.5	32.0	43.5	49.0	64.6	71.4	84.3	102
VN 40	40	4.0	5.1	8.0	12.8	18.9	23.5	30.6	34.4	40.0	54.4	61.2	80.8	89.3	105	128
VN 48	48	4.9	6.1	9.6	15.4	22.7	28.2	36.7	41.3	47.9	65.3	73.4	96.9	107	126	153
VN 71	71	7.2	9.0	14.2	23.2	33.9	41.8	54.3	61.4	70.8	94.0	100.3	123	134	153	179
VN 95	95	9.7	12.0	19.0	31.1	45.3	55.9	72.6	82.2	94.7	126	134	165	180	205	239
VN 119	119	12.1	15.0	23.8	38.9	56.8	70.0	91.0	103	119	157	168	207	225	256	299
VN 142	142	14.5	17.9	28.4	46.4	67.8	83.5	109	123	142	188	201	247	269	306	357
VN 166	166	16.9	21.0	33.2	54.3	79.2	97.6	127	144	165	220	235	288	314	358	417
VN 190	190	19.4	24.0	37.9	62.1	90.7	112	145	164	189	251	268	330	359	409	478
VN 238	238	24.3	30.0	47.5	77.8	114	140	182	206	237	315	336	413	450	513	598
VN 285	285	29.1	36.0	56.9	93.2	136	168	218	247	284	377	403	495	539	614	717
VN 357	357	36.3	45.0	71.4	117	170	210	273	309	357	471	504	621	675	768	897
VN 426	426	43.5	53.7	85.2	139	203	251	327	369	426	564	603	741	807	918	1071
VN 476	476	48.6	60.0	95.0	156	228	280	364	412	474	630	672	826	900	1026	1196
VN 570	570	58.2	71.8	114	187	273	335	436	493	568	754	805	989	1078	1229	1432
VN 600	600	61.3	75.6	120	197	287	353	459	519	597	794	847	1041	1134	1293	1508
VN 710	710	72.5	89.5	142	233	340	418	543	615	707	940	1002	1232	1342	1530	1784
VN 850	850	86.8	107	170	279	407	500	650	736	846	1125	1200	1475	1607	1832	2136

Available amperes at +20°C ± 5°C (+68°F ± 9°F) **Final voltage: 1.05 V/cell**

Cell type	C_5 Ah	HOURS					MINUTES						SECONDS			
		10 h	8 h	5 h	3 h	2 h	90 min	60 min	45 min	30 min	10 min	5 min	60 s	30 s	10 s	1 s
VN 8	8	0.8	1.0	1.6	2.5	3.5	4.3	5.4	5.9	6.5	8.5	9.9	13.3	15.0	17.5	22.1
VN 16	16	1.6	2.0	3.2	5.1	7.1	8.7	10.9	11.8	12.9	17.0	19.7	26.5	29.9	35.0	44.2
VN 24	24	2.4	3.0	4.7	7.6	10.6	13.0	16.3	17.7	19.4	25.5	29.6	39.8	44.9	52.5	66.3
VN 32	32	3.2	4.0	6.3	10.1	14.2	17.3	21.8	23.7	25.8	34.0	39.4	53.0	59.8	70.0	88.4
VN 40	40	4.1	5.0	7.9	12.7	17.7	21.7	27.2	29.6	32.3	42.5	49.3	66.3	74.8	87.6	111
VN 48	48	4.9	6.0	9.5	15.2	21.2	26.0	32.6	35.5	38.8	51.0	59.2	79.6	89.8	105	133
VN 71	71	7.2	8.9	14.1	22.8	32.6	38.3	46.3	51.6	59.6	74.8	83.3	106	114	128	149
VN 95	95	9.6	11.9	18.9	30.5	43.6	51.2	61.9	69.1	79.8	100	111	142	152	171	199
VN 119	119	12.0	14.9	23.6	38.2	54.6	64.2	77.6	86.5	100	125	140	178	191	214	249
VN 142	142	14.3	17.7	28.2	45.6	65.1	76.6	92.6	103	119	150	167	213	228	255	298
VN 166	166	16.7	20.7	33.0	53.3	76.1	89.5	108	121	139	175	195	248	266	298	348
VN 190	190	19.2	23.7	37.7	61.0	87.1	102	124	138	160	200	223	284	305	341	398
VN 238	238	24.0	29.7	47.2	76.4	109	128	155	173	200	251	279	356	382	427	499
VN 285	285	28.7	35.6	56.6	91.5	131	154	186	207	239	300	334	426	457	512	597
VN 357	357	36.0	44.7	70.8	115	164	193	233	260	300	375	420	534	573	642	747
VN 426	426	42.9	53.1	84.6	137	195	230	278	309	357	450	501	639	684	765	894
VN 476	476	48.0	59.4	94.4	153	218	256	310	346	400	502	558	712	764	854	998
VN 570	570	57.5	71.1	113	183	261	307	371	414	479	601	668	853	915	1023	1195
VN 600	600	60.5	74.9	119	193	275	323	391	436	504	633	703	897	963	1076	1258
VN 710	710	71.6	88.6	141	228	325	382	462	516	597	749	832	1062	1140	1274	1489
VN 850	850	85.7	106	169	273	389	457	554	618	714	896	996	1271	1364	1525	1782

Performance after prolonged float charge of fully charged cell

Available amperes at +20°C ± 5°C (+68°F ± 9°F) **Final voltage: 1.10 V/cell**

Cell type	C_5 Ah	HOURS					MINUTES						SECONDS			
		10 h	8 h	5 h	3 h	2 h	90 min	60 min	45 min	30 min	10 min	5 min	60 s	30 s	10 s	1 s
VN 8	8	0.8	1.0	1.6	2.3	3.0	3.5	4.4	4.8	5.3	6.5	7.6	10.5	11.9	14.1	17.9
VN 16	16	1.6	2.0	3.1	4.6	5.9	7.0	8.8	9.5	10.5	13.0	15.1	21.1	23.8	28.2	35.7
VN 24	24	2.4	3.0	4.7	6.8	8.9	10.5	13.3	14.3	15.8	19.4	22.7	31.6	35.7	42.3	53.6
VN 32	32	3.2	4.0	6.2	9.1	11.9	14.0	17.7	19.0	21.1	25.9	30.3	42.2	47.6	56.4	71.4
VN 40	40	4.0	5.0	7.8	11.4	14.9	17.6	22.1	23.8	26.4	32.4	37.8	52.7	59.5	70.6	89.3
VN 48	48	4.8	6.0	9.3	13.7	17.8	21.1	26.5	28.6	31.6	38.9	45.4	63.2	71.4	84.7	107
VN 71	71	7.1	8.8	13.8	21.5	29.0	33.5	39.2	42.7	47.2	58.3	64.6	83.3	92.7	102	111
VN 95	95	9.5	11.8	18.4	28.8	38.9	44.8	52.4	57.2	63.1	78.0	86.4	111	124	136	149
VN 119	119	11.9	14.7	23.1	36.0	48.7	56.1	65.6	71.6	79.1	97.7	108	140	155	171	187
VN 142	142	14.2	17.6	27.5	43.0	58.1	67.0	78.3	85.4	94.3	117	129	167	185	204	223
VN 166	166	16.6	20.5	32.2	50.3	67.9	78.3	91.6	100	110	136	151	195	217	238	260
VN 190	190	19.0	23.5	36.9	57.5	77.7	89.6	105	114	126	156	173	223	248	273	298
VN 238	238	23.8	29.5	46.2	72.1	97.3	112	131	143	158	195	217	279	311	342	373
VN 285	285	28.5	35.3	55.3	86.3	117	134	157	171	189	234	259	334	372	409	447
VN 357	357	35.7	44.1	69.3	108	146	168	197	215	237	293	324	420	465	513	561
VN 426	426	42.6	52.8	82.5	129	174	201	235	256	283	351	387	501	555	612	669
VN 476	476	47.6	59.0	92.4	144	195	224	262	286	316	390	434	558	622	684	746
VN 570	570	57.0	70.7	111	172	234	268	314	342	378	467	520	668	745	819	893
VN 600	600	60.0	74.4	116	182	246	282	330	361	398	492	547	703	784	862	940
VN 710	710	71.0	88.0	138	215	291	334	391	427	471	582	647	832	928	1020	1113
VN 850	850	85.0	105	165	257	348	400	468	511	564	696	775	996	1111	1221	1332

Available amperes at +20°C ± 5°C (+68°F ± 9°F) **Final voltage: 1.14 V/cell**

Cell type	C_5 Ah	HOURS					MINUTES						SECONDS			
		10 h	8 h	5 h	3 h	2 h	90 min	60 min	45 min	30 min	10 min	5 min	60 s	30 s	10 s	1 s
VN 8	8	0.8	1.0	1.5	2.0	2.4	2.7	3.4	3.7	4.1	5.3	6.2	8.3	9.7	11.6	15.1
VN 16	16	1.6	1.9	3.0	3.9	4.8	5.5	6.7	7.3	8.2	10.5	12.3	16.7	19.4	23.1	30.3
VN 24	24	2.3	2.9	4.6	5.9	7.2	8.2	10.1	11.0	12.2	15.8	18.5	25.0	29.1	34.7	45.4
VN 32	32	3.1	3.8	6.1	7.9	9.6	11.0	13.5	14.6	16.3	21.1	24.6	33.3	38.8	46.2	60.5
VN 40	40	3.9	4.8	7.6	9.9	12.0	13.7	16.8	18.3	20.4	26.4	30.8	41.7	48.5	57.8	75.7
VN 48	48	4.7	5.7	9.1	11.8	14.4	16.5	20.2	21.9	24.5	31.6	36.9	50.0	58.1	69.4	90.8
VN 71	71	6.9	8.5	13.5	19.5	22.0	23.7	27.1	28.5	32.9	41.8	48.5	62.9	68.0	76.5	86.7
VN 95	95	9.2	11.4	18.0	26.1	29.4	31.7	36.3	38.1	44.1	55.9	64.8	84.2	91.0	102	116
VN 119	119	11.6	14.3	22.6	32.7	36.9	39.7	45.5	47.7	55.2	70.0	81.2	105	114	128	145
VN 142	142	13.8	17.1	27.0	39.0	44.0	47.3	54.3	57.0	65.9	83.5	96.9	126	136	153	173
VN 166	166	16.1	19.9	31.5	45.6	51.4	55.3	63.5	66.6	77.0	97.6	113	147	159	179	203
VN 190	190	18.5	22.8	36.1	52.2	58.9	63.3	72.6	76.2	88.1	112	130	168	182	205	232
VN 238	238	23.1	28.6	45.2	65.4	73.7	79.3	91.0	95.5	110	140	162	211	228	256	291
VN 285	285	27.7	34.2	54.1	78.3	88.3	95.0	109	114	132	168	194	252	273	307	348
VN 357	357	34.8	42.9	67.8	98.1	111	119	137	143	166	210	244	315	342	384	435
VN 426	426	41.4	51.3	81.0	117	132	142	163	171	198	251	291	378	408	459	519
VN 476	476	46.2	57.2	90.4	131	147	159	182	191	220	280	324	422	456	512	582
VN 570	570	55.3	68.5	108	157	176	190	218	229	263	335	388	505	546	613	697
VN 600	600	58.2	72.1	114	165	185	200	229	241	277	353	408	532	575	645	734
VN 710	710	68.9	85.3	135	195	219	237	271	285	328	418	483	629	680	764	868
VN 850	850	82.5	102	161	234	263	284	325	341	393	500	579	754	814	914	1039

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Alcad Limited

Sweden
Telephone: +46 491 68 100
Facsimile: +46 491 68 110

Alcad Sales Offices

United Kingdom
Telephone: +44 1279 772 555
Facsimile: +44 1279 420 696

Middle East
Telephone: +357 25 871 816
Facsimile: +357 25 343 542

Asia
Telephone: +65 6 7484 486
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USA
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