Aerial Cam Unit

Grade	Working Force [kN (tonf)] 1,000,000 strokes	Working Force [kN (tonf)] 300,000 strokes	Travel	Catalog No.	W	θ	Spring Type PS
White	22.1 (2.2)	29.4 (3.0)	Short	VACWS	46	00～80 (5° increments)	ISO ISOL

ISO, ISOL: Coil Spring

Order

Catalog No.	W	–	θ	–	PS	–	Option
VACWS	46	–	10	–	ISO		
VACWS	46	–	10	–	ISOL	–	SC60

Option

Option Code	Specification
SC	Mount face length is extended from 1 to 60 mm in increments of 1 mm.

■Spring Force & Return Force

● Coil Spring

ISO

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	125	12.8	1129	115	1507	154
05	220	22.4	1129	115	1506	154
10	282	28.8	1129	115	1504	153
15	108	11.0	1007	103	1341	137
20	144	14.7	1007	103	1339	137
25	180	18.4	1007	103	1337	136
30	180	18.4	1007	103	1334	136
35	180	18.4	1007	103	1332	136
40	180	18.4	1007	103	1330	136
45	180	18.4	1007	103	1327	135
50	180	18.4	1007	103	1325	135
55	220	22.4	1035	106	1480	151
60	180	18.4	1007	103	1592	162
65	169	17.2	1011	103	1802	184
70	150	15.3	1000	102	2061	210
75	188	19.2	1002	102	2469	252
80	254	25.9	980	100	3033	310

● Coil Spring

ISOL

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	88	9.0	796	81.2	1067	109
05	155	15.8	796	81.2	1066	109
10	199	20.3	796	81.2	1064	109
15	76	7.7	708	72.3	947	97
20	101	10.3	708	72.3	945	96
25	127	12.9	708	72.3	942	96
30	127	12.9	708	72.3	940	96
35	127	12.9	708	72.3	938	96
40	127	12.9	708	72.3	936	95
45	127	12.9	708	72.3	933	95
50	127	12.9	708	72.3	931	95
55	155	15.8	729	74.4	1042	106
60	127	12.9	708	72.3	1118	114
65	118	12.1	710	72.5	1264	129
70	106	10.8	704	71.8	1448	148
75	132	13.5	706	72.0	1736	177
80	179	18.3	690	70.4	2131	217

■Cam Travel

θ	Travel mm
00	20.6
05	20.6
10	21.0
15	21.2
20	22.1
25	23.0
30	25.0
35	27.1
40	29.6
45	32.4
50	35.8
55	45.3
60	46.0
65	47.3
70	49.7
75	50.2
80	57.6

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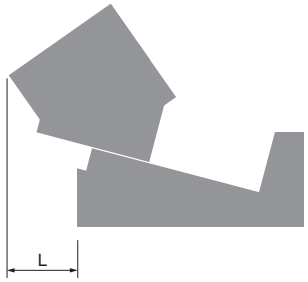
■Weight*1

θ	Total Weight kg	Cam Slider Weight kg	Tool Weight*2 kg
00	5.5	2.0	2.0
05	5.5	2.0	2.0
10	5.5	2.0	2.0
15	5.4	2.0	2.1
20	5.3	2.0	2.1
25	5.3	2.0	2.2
30	5.3	2.0	2.3
35	5.2	2.0	2.4
40	5.2	2.0	2.6
45	5.2	2.0	2.8
50	5.4	2.0	3.3
55	6.8	2.5	3.5
60	7.0	2.7	3.3
65	7.4	3.0	3.0
70	7.5	3.1	2.9
75	7.8	3.3	2.7
80	8.1	3.5	2.5

*1 This is the weight without SC and WC option. Reduce tool weight when with SC and WC option since the slider gets heavier.
*2 Tool weight is estimated value. Allowable tool weight varies depending on press speed.

■Rear Removal Space

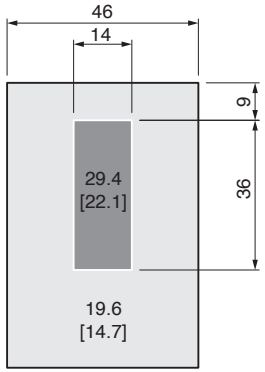
θ	L mm
00	23.4
05	29.7
10	35.9
15	44.9
20	53.5
25	61.6
30	69.1
35	77.2
40	81.7
45	90.6
50	93.9
55	90.0
60	88.9
65	95.0
70	99.7
75	105.1
80	112.1



■Working Force Distribution Diagram

The working forces indicated in the mount face distribution diagram are reached by putting the tooling center of gravity within each area for the following pictures.

: Working force (kN) allowed for up to 300,000 strokes
[ ]: Working force (kN) allowed for up to 1,000,000 strokes



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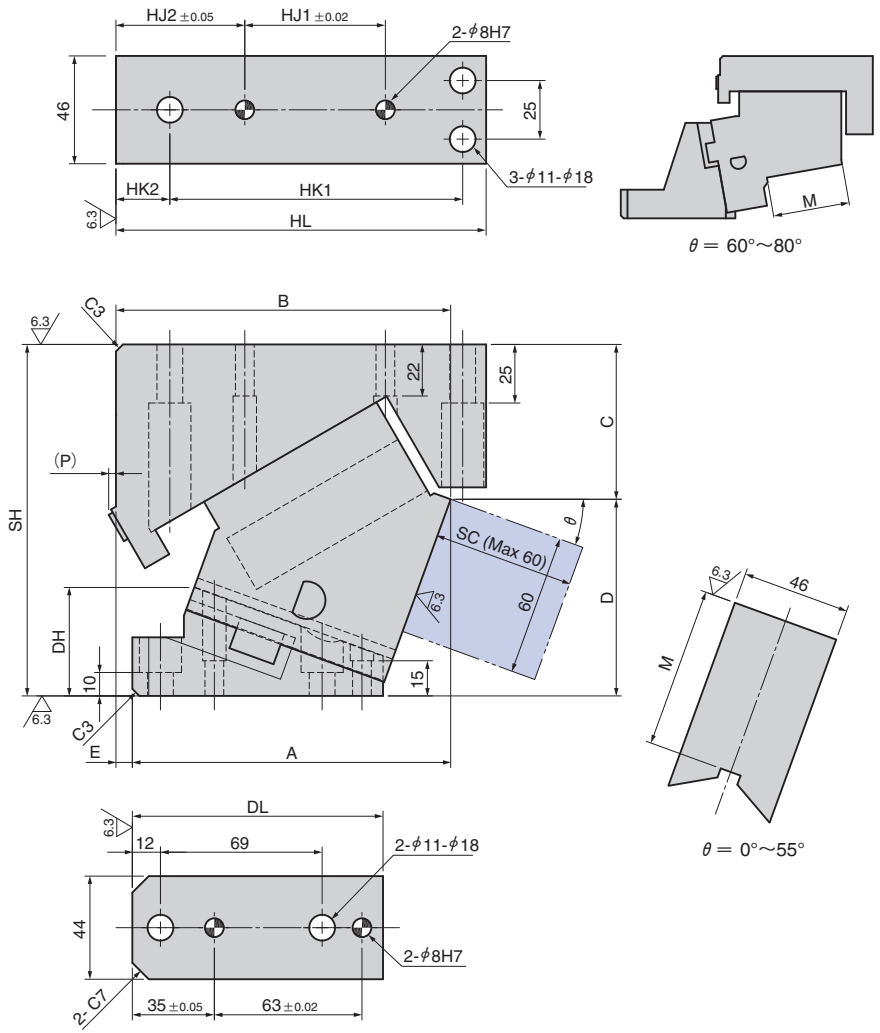
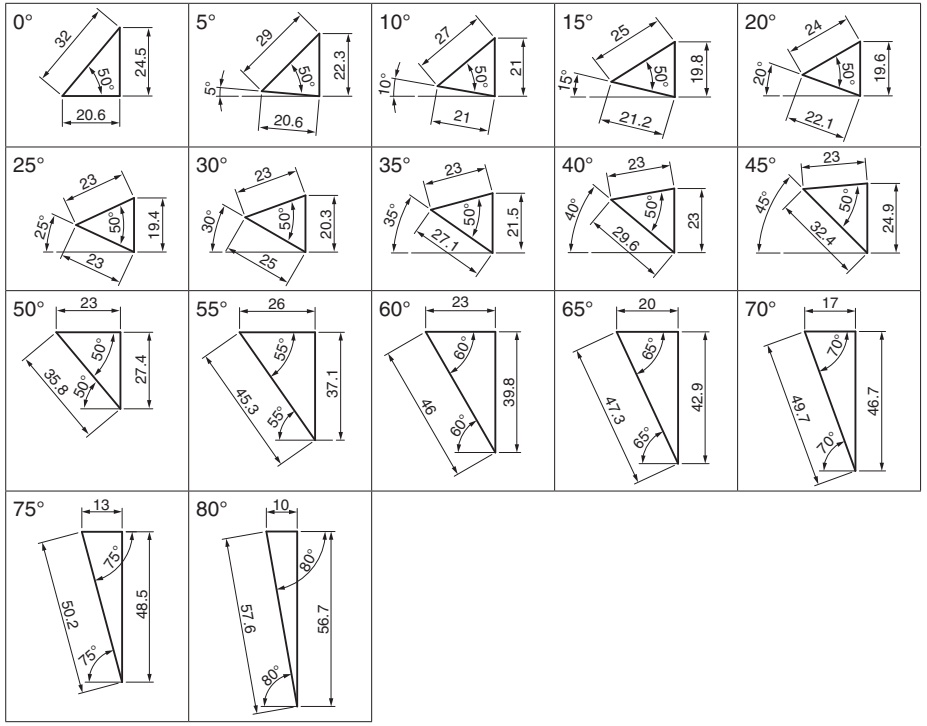
VACWS46

CAD FILE



θ	A	B	C	D	E	SH	HL	HK1	HK2	HJ1	HJ2	DH	DL	M	P
00	112.00	138.00	53.00	97.00	26		153	130	13	60	45	24.2			2.0
05	118.89	140.89	56.44	93.56	22		157	130	17	60	49	29.0			1.9
10	124.66	142.66	59.77	90.23	18		160	130	20	60	52	34.4			2.2
15	130.31	143.31	62.99	87.01	13		157	125	22	60	54	40.7			2.3
20	135.87	142.87	66.09	83.91	7		158	125	23	60	55	46.3			3.1
25	142.34	142.34	69.06	80.94	0	150	158	125	23	60	58	53.0		68.5	2.8
30	147.72	140.72	71.89	78.11	-7		158	125	23	60	58	60.6	107		3.2
35	151.04	137.04	74.58	75.42	-14		155	125	20	60	58	67.9			4.7
40	156.31	135.31	78.12	71.88	-21		155	125	20	60	61	74.6			3.1
45	160.54	127.54	81.51	68.49	-33		150	120	20	55	61	82.1			6.6
50	163.73	123.73	88.74	61.26	-40		150	120	20	55	61	84.9			5.0
55	181.23	138.23	97.82	62.18	-43	160	160	120	30	55	71	82.0		83.5	
60	182.78	134.78	106.81	58.19	-48	165	160	120	30	55	71	85.0			
65	209.23	132.23	108.72	61.28	-77		160	120	30	55	71	87.0	123	75	4.0
70	212.36	129.36	110.46	59.54	-83	170	160	120	30	55	71	90.0			
75	221.38	128.38	112.45	57.55	-93		160	120	30	55	71	93.0	120		
80	231.82	127.82	113.42	56.58	-104		160	120	30	55	71	100.0		80	

■Cam Diagram



Refer to page 389 for Table of Components.

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Aerial Cam Unit

Grade	Working Force [kN (tonf)] 1,000,000 strokes	Working Force [kN (tonf)] 300,000 strokes	Travel	Catalog No.	W	θ	Spring Type PS
White	22.1 (2.2)	29.4 (3.0)	Long	VACWL	46	00～50 (5° increments)	ISO ISOL

ISO, ISOL: Coil Spring

Order

Catalog No.	W	–	θ	–	PS	–	Option
VACWL	46	–	10	–	ISO		
VACWL	46	–	10	–	ISOL	–	SC60

Option

Option Code	Specification
SC	Mount face length is extended from 1 to 60 mm in increments of 1 mm.

■Spring Force & Return Force

● Coil Spring

ISO

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	108	11	1140	116	1522	155
05	154	15.7	1140	116	1520	155
10	222	22.7	1140	116	1518	155
15	118	12.1	1075	110	1431	146
20	144	14.6	1075	110	1429	146
25	169	17.2	1075	110	1427	146
30	194	19.8	1075	110	1425	145
35	219	22.4	1075	110	1422	145
40	244	24.9	1075	110	1420	145
45	244	24.9	1075	110	1418	145
50	269	27.5	1075	110	1415	144

● Coil Spring

ISOL

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	76	7.8	805	82.2	1080	110
05	109	11.1	805	82.2	1078	110
10	157	16.0	805	82.2	1076	110
15	83	8.5	756	77.1	1009	103
20	101	10.3	756	77.1	1007	103
25	119	12.1	756	77.1	1005	103
30	136	13.9	756	77.1	1003	102
35	154	15.7	756	77.1	1000	102
40	172	17.5	756	77.1	998	102
45	172	17.5	756	77.1	996	102
50	189	19.3	756	77.1	994	101

■Cam Travel

θ	Travel mm
00	28.9
05	30.5
10	31.1
15	32.2
20	34.1
25	36.0
30	38.0
35	40.1
40	42.4
45	46.5
50	49.8

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Aerial Cam Unit

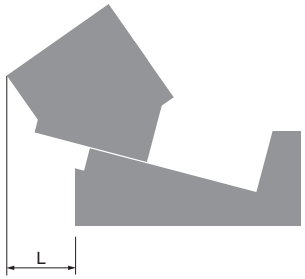
■Weight*1

θ	Total Weight kg	Cam Slider Weight kg	Tool Weight*2 kg
00	5.6	2.0	2.0
05	5.6	2.0	2.0
10	5.6	2.0	2.0
15	5.5	2.0	2.1
20	5.4	2.0	2.1
25	5.4	2.0	2.2
30	5.3	2.0	2.3
35	5.3	2.0	2.4
40	5.3	2.0	2.6
45	5.3	2.0	2.8
50	5.4	2.0	3.3

*1 This is the weight without SC and WC option. Reduce tool weight when with SC and WC option since the slider gets heavier.
*2 Tool weight is estimated value. Allowable tool weight varies depending on press speed.

■Rear Removal Space

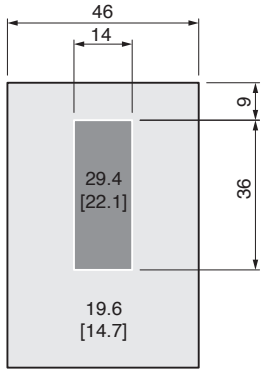
θ	L mm
00	28.6
05	34.0
10	38.2
15	46.6
20	55.3
25	62.5
30	70.1
35	68.1
40	71.7
45	80.6
50	83.9



■Working Force Distribution Diagram

The working forces indicated in the mount face distribution diagram are reached by putting the tooling center of gravity within each area for the following pictures.

: Working force (kN) allowed for up to 300,000 strokes
[ ]: Working force (kN) allowed for up to 1,000,000 strokes



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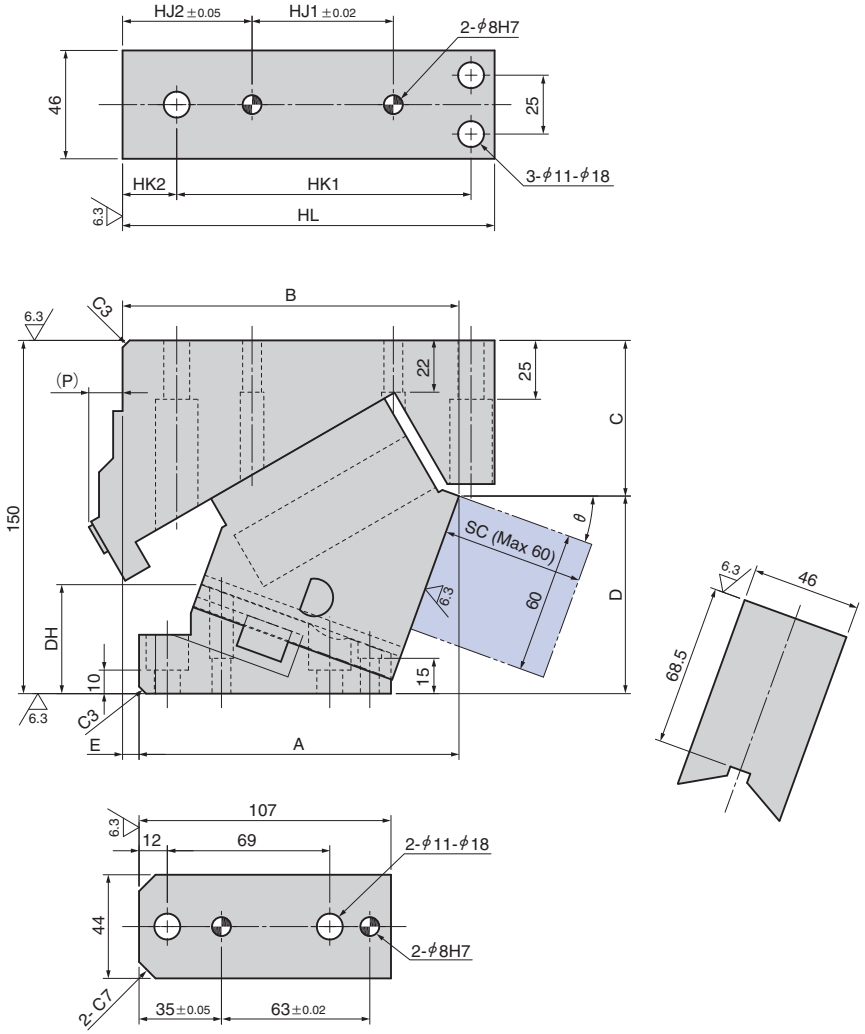
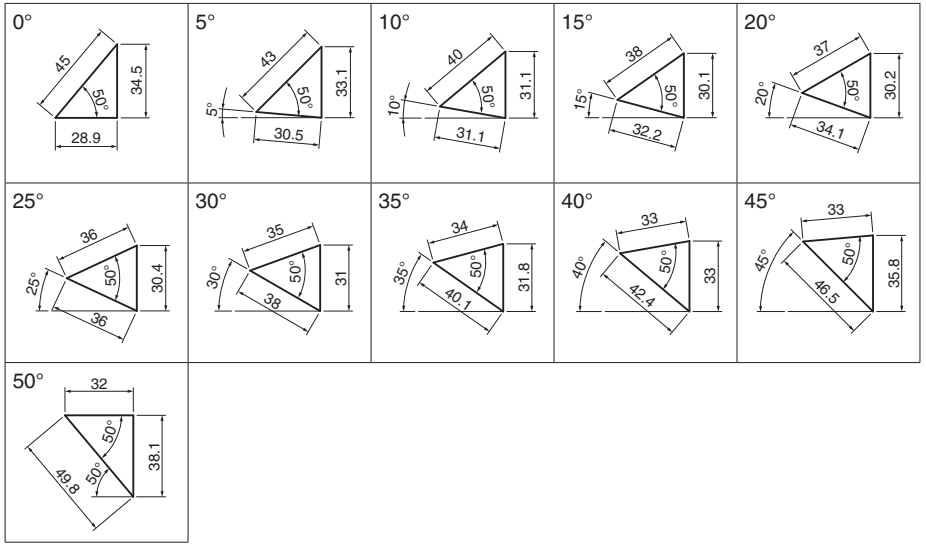
VACWL46

CAD FILE



θ	A	B	C	D	E	HL	HK1	HK2	HJ1	HJ2	DH	P
00	112.00	138.00	53.00	97.00	26	153	130	13	60	45	24.2	10.4
05	118.89	140.89	56.44	93.56	22	157	130	17	60	49	29.0	11.8
10	124.66	142.66	59.77	90.23	18	160	130	20	60	52	34.4	12.2
15	130.31	143.31	62.99	87.01	13	157	125	22	60	54	40.7	13.0
20	135.87	142.87	66.09	83.91	7	158	125	23	60	55	46.3	14.4
25	142.34	142.34	69.06	80.94	0	158	125	23	60	58	53.0	14.5
30	147.72	140.72	71.89	78.11	-7	158	125	23	60	58	60.6	14.5
35	151.04	147.04	74.58	75.42	-4	165	125	30	60	68	67.9	5.3
40	156.31	145.31	78.12	71.88	-11	165	125	30	60	71	74.6	3.0
45	160.54	137.54	81.51	68.49	-23	160	120	30	55	71	82.1	6.5
50	163.73	133.73	88.74	61.26	-30	160	120	30	55	71	84.9	4.0

■Cam Diagram



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Aerial Cam Unit

Grade	Working Force [kN (tonf)] 1,000,000 strokes	Working Force [kN (tonf)] 300,000 strokes	Travel	Catalog No.	W	θ	Spring Type PS
Sky	22.1 (2.2)	29.4 (3.0)	Short	VACSS	46	00~80 (5° increments)	GK NGK
Yellow	30.9 (3.1)	41.2 (4.2)		VACYS			ISO ISOL
Pink	42.1 (4.3)	56.4 (5.8)		VACPS			
Black	56.4 (5.8)	59.0 (6.0)		VACBS			GK NGK

ISO, ISOL: Coil Spring GK: Gas Spring (KALLER)
NGK: Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W	θ	PS	Option
VACSS	46	10	ISOL	
VACYS	46	10	NGK	SC60
VACPS	46	10	GK	NF – SC60 – K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
SC	Mount face length is extended from 1 to 60 mm in increments of 1 mm.
K	Key attached.

Refer to page 388 for key specification.

■Spring Force & Return Force

● Gas Spring Sky

θ	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	2887	295	3827	391
05	2887	295	3826	390
10	2887	295	3824	390
15	2887	295	3822	390
20	2887	295	3820	390
25	2887	295	3817	389
30	2887	295	3815	389
35	2887	295	3813	389
40	2887	295	3811	389
45	2887	295	3808	389
50	2887	295	3806	388
55	2715	277	3893	397
60	2948	301	4674	477
65	2819	288	5038	514
70	2689	274	5559	567
75	2854	291	7057	720
80	2750	281	8540	871

● Coil Spring
ISO Sky, Yellow, Pink

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	157	16.1	1835	187	2439	249
05	157	16.1	1835	187	2437	249
10	157	16.1	1835	187	2436	249
15	157	16.1	1835	187	2434	248
20	157	16.1	1835	187	2431	248
25	157	16.1	1835	187	2429	248
30	157	16.1	1835	187	2427	248
35	157	16.1	1835	187	2425	247
40	157	16.1	1835	187	2423	247
45	157	16.1	1835	187	2420	247
50	157	16.1	1835	187	2418	247
55	290	29.6	1795	183	2573	263
60	261	26.7	1765	180	2796	285
65	262	26.7	1757	179	3138	320
70	263	26.8	1752	179	3619	369
75	312	31.9	1665	170	4113	420
80	366	37.3	1672	171	5187	529

● Coil Spring
ISOL Sky, Yellow, Pink

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	76	7.7	882	90.0	1181	121
05	76	7.7	882	90.0	1180	120
10	76	7.7	882	90.0	1178	120
15	76	7.7	882	90.0	1176	120
20	76	7.7	882	90.0	1174	120
25	76	7.7	882	90.0	1171	120
30	76	7.7	882	90.0	1169	119
35	76	7.7	882	90.0	1167	119
40	76	7.7	882	90.0	1165	119
45	76	7.7	882	90.0	1162	119
50	76	7.7	882	90.0	1160	118
55	139	14.2	862	87.9	1232	126
60	126	12.8	848	86.5	1340	137
65	126	12.9	846	86.3	1507	154
70	126	12.9	842	85.9	1734	177
75	150	15.3	800	81.6	1970	201
80	176	17.9	803	81.9	2481	253

■Cam Travel

θ	Travel mm
00	20.6
05	22.7
10	24.9
15	27.1
20	29.5
25	32.0
30	34.7
35	37.7
40	41.1
45	45.1
50	49.8
55	45.3
60	46.0
65	47.3
70	49.7
75	50.2
80	57.6

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■Weight*1

θ	Total Weight kg	Cam Slider Weight kg	Tool Weight*2 kg
00	6.9	2.0	2.0
05	6.9	2.0	2.0
10	6.9	2.0	2.0
15	6.9	2.0	2.1
20	6.8	2.0	2.1
25	6.8	2.0	2.2
30	6.7	2.0	2.3
35	6.8	2.0	2.4
40	6.9	2.0	2.6
45	6.9	2.0	2.8
50	7.0	2.0	3.3
55	7.3	2.5	3.5
60	7.5	2.7	3.3
65	7.9	3.0	3.0
70	8.0	3.1	2.9
75	8.3	3.3	2.7
80	8.6	3.5	2.5

*1 This is the weight without SC and WC option. Reduce tool weight when with SC and WC option since the slider gets heavier.
*2 Tool weight is estimated value. Allowable tool weight varies depending on press speed.

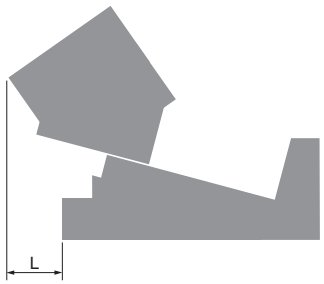
■Rear Removal Space

● Coil Spring

θ	L mm
00	3.3
05	8.9
10	13.2
15	21.2
20	29.9
25	38.1
30	45.8
35	52.1
40	57.6
45	60.6
50	65.9
55	72.0
60	70.9
65	77.0
70	81.7
75	87.1
80	94.1

● Gas Spring

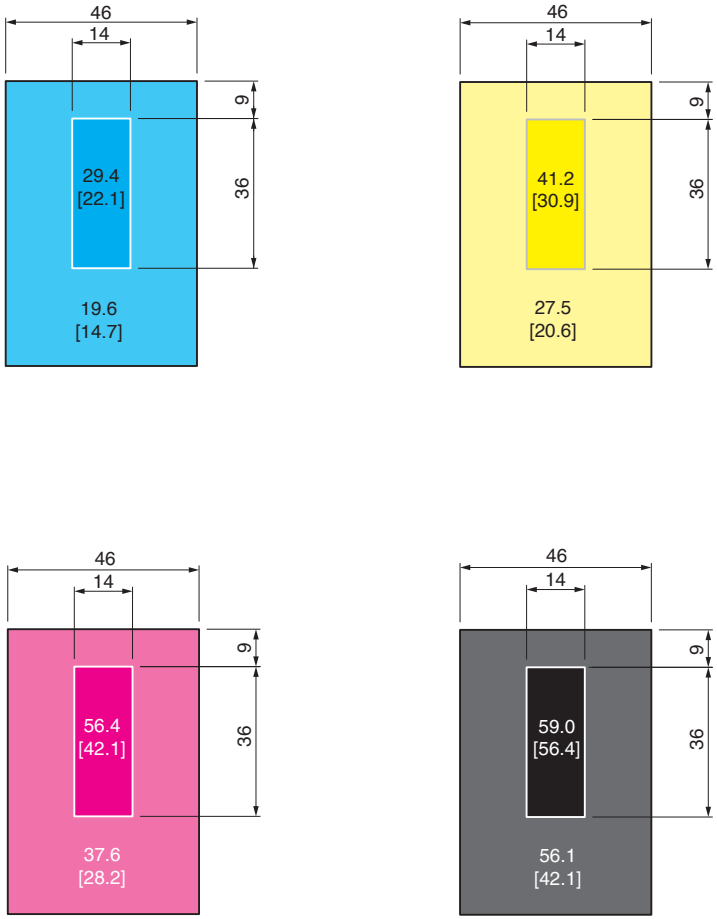
θ	L mm
00	3.3
05	8.9
10	13.2
15	21.2
20	29.9
25	38.1
30	45.8
35	52.1
40	57.6
45	60.6
50	65.9
55	72.0
60	70.9
65	77.0
70	81.7
75	87.1
80	94.1



■Working Force Distribution Diagram

The working forces indicated in the mount face distribution diagram are reached by putting the tooling center of gravity within each area for the following pictures.

: Working force (kN) allowed for up to 300,000 strokes
[ ]: Working force (kN) allowed for up to 1,000,000 strokes



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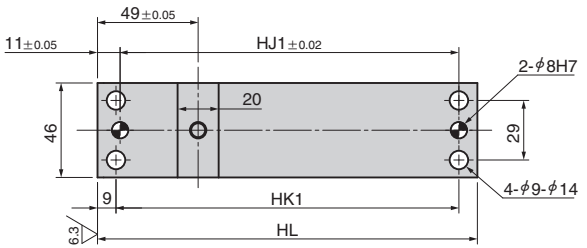
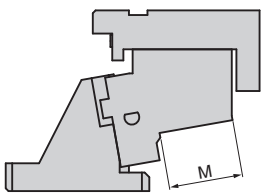
Aerial Cam Unit

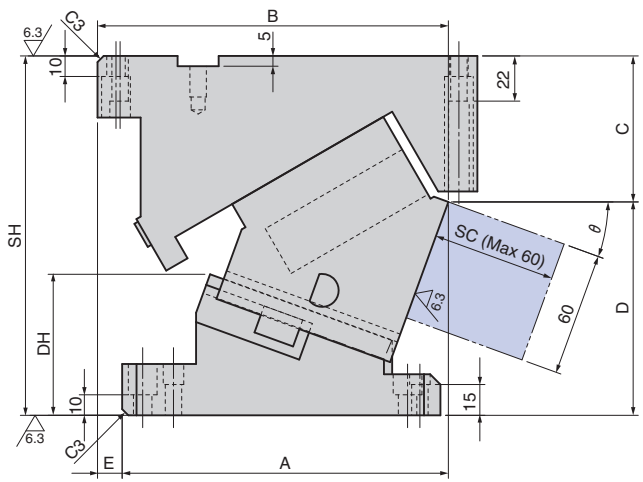
VACSS46
VACYS46
VACPS46
VACBS46

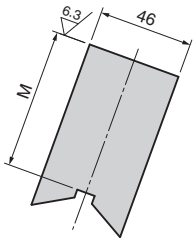
CAD FILE



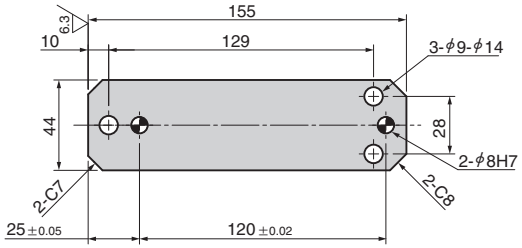


θ = 60°～80°



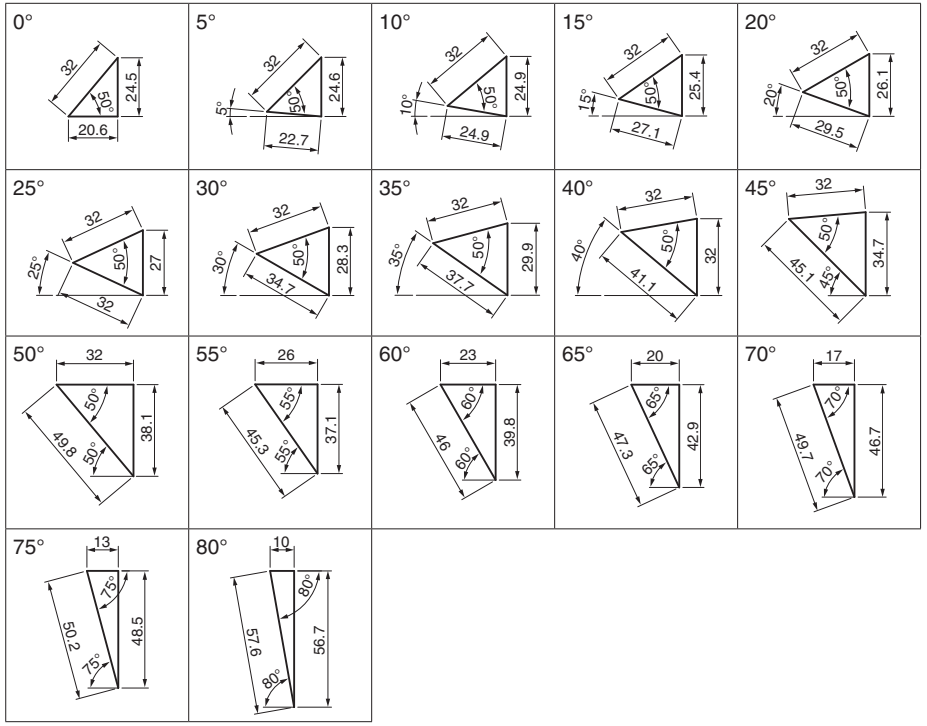


θ = 0°～55°



θ	A	B	C	D	E	SH	HL	HK1	HJ1	DH	M
00	132.00	160.00	57.00	118.00	28		170	152	150	45.2	
05	138.89	163.89	60.44	114.56	25		175	157	155	50.6	
10	145.66	167.66	64.77	110.23	22		180	162	160	55.4	
15	152.31	170.31	67.99	107.01	18		185	167	165	61.8	
20	158.87	170.87	71.09	103.91	12	175	185	167	165	68.7	
25	164.34	170.34	74.06	100.94	6		185	167	165	76.0	68.5
30	170.72	168.72	76.89	98.11	-2		185	167	165	84.6	
35	176.04	167.04	79.58	95.42	-9		185	167	165	92.6	
40	185.31	164.31	83.12	91.88	-21		185	167	165	102.3	
45	190.54	162.54	85.51	89.49	-28		185	167	165	112.3	
50	194.73	156.73	93.74	86.26	-38	180	180	162	160	119.9	
55	206.23	161.23	102.82	82.18	-45	185	180	162	160	109.6	83.5
60	207.78	157.78	111.81	78.19	-50	190	180	162	160	112.2	
65	217.23	155.23	113.72	81.28	-62		180	162	160	115.2	75
70	225.36	152.36	115.46	79.54	-73	195	180	162	160	118.6	
75	235.38	151.38	117.45	77.55	-84		180	162	160	120.6	
80	244.82	150.82	118.42	76.58	-94		180	162	160	126.1	80

■Cam Diagram



Refer to page 390 for Table of Components.

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Aerial Cam Unit

Grade	Working Force [kN (tonf)] 1,000,000 strokes	Working Force [kN (tonf)] 300,000 strokes	Travel	Catalog No.	W	θ	Spring Type PS
Sky	22.1 (2.2)	29.4 (3.0)	Long	VACSL	46	00～50 (5° increments)	GK NGK
Yellow	30.9 (3.1)	41.2 (4.2)		VACYL			ISO
Pink	42.1 (4.3)	56.4 (5.8)		VACPL			ISOL
Black	56.4 (5.8)	59.0 (6.0)		VACBL			GK NGK

ISO, ISOL: Coil Spring GK: Gas Spring (KALLER)
NGK: Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W		θ		PS		Option
VACSL	46	–	10	–	ISOL		
VACYL	46	–	10	–	NGK	–	SC60
VACPL	46	–	10	–	GK	–	NF – SC60 – K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
SC	Mount face length is extended from 1 to 60 mm in increments of 1 mm.
K	Key attached.

Refer to page 388 for key specification.

■Spring Force & Return Force

● Gas Spring
Sky, Yellow, Pink, Black

θ	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	2959	302	3923	400
05	2959	302	3921	400
10	2959	302	3919	400
15	2959	302	3917	400
20	2959	302	3915	399
25	2959	302	3913	399
30	2959	302	3911	399
35	2959	302	3908	399
40	2959	302	3906	399
45	2937	300	3875	395
50	2850	291	3758	383

● Coil Spring
ISO Sky, Yellow, Pink

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	108	11	1140	116	1522	155
05	108	11	1140	116	1520	155
10	108	11	1140	116	1518	155
15	108	11	1140	116	1516	155
20	108	11	1140	116	1514	154
25	108	11	1140	116	1512	154
30	108	11	1140	116	1509	154
35	108	11	1140	116	1507	154
40	108	11	1140	116	1505	154
45	108	11	1117	114	1472	150
50	108	11	1025	105	1349	138

● Coil Spring
ISOL Sky, Yellow, Pink

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	76	7.8	805	82.2	1080	110
05	76	7.8	805	82.2	1078	110
10	76	7.8	805	82.2	1076	110
15	76	7.8	805	82.2	1074	110
20	76	7.8	805	82.2	1072	109
25	76	7.8	805	82.2	1070	109
30	76	7.8	805	82.2	1068	109
35	76	7.8	805	82.2	1066	109
40	76	7.8	805	82.2	1063	108
45	76	7.8	789	80.5	1040	106
50	76	7.8	724	73.9	952	97

■Cam Travel

θ	Travel mm
00	28.9
05	31.9
10	35.0
15	38.2
20	41.5
25	45.0
30	48.8
35	53.1
40	57.9
45	62.0
50	62.2

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■Weight*1

θ	Total Weight kg	Cam Slider Weight kg	Tool Weight*2 kg
00	7.3	2.0	2.0
05	7.2	2.0	2.0
10	7.1	2.0	2.0
15	7.2	2.0	2.1
20	7.1	2.0	2.1
25	7.0	2.0	2.2
30	7.0	2.0	2.3
35	7.0	2.0	2.4
40	7.1	2.0	2.6
45	7.0	2.0	2.8
50	7.2	2.0	3.3

*1 This is the weight without SC and WC option. Reduce tool weight when with SC and WC option since the slider gets heavier.
*2 Tool weight is estimated value. Allowable tool weight varies depending on press speed.

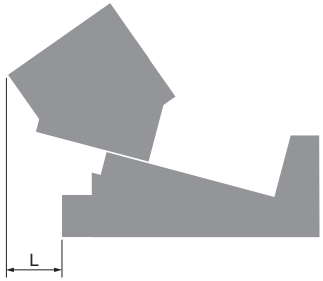
■Rear Removal Space

● Coil Spring

θ	L mm
00	0.0
05	4.3
10	9.1
15	17.5
20	26.5
25	35.1
30	41.1
35	47.6
40	53.3
45	57.4
50	67.0

● Gas Spring

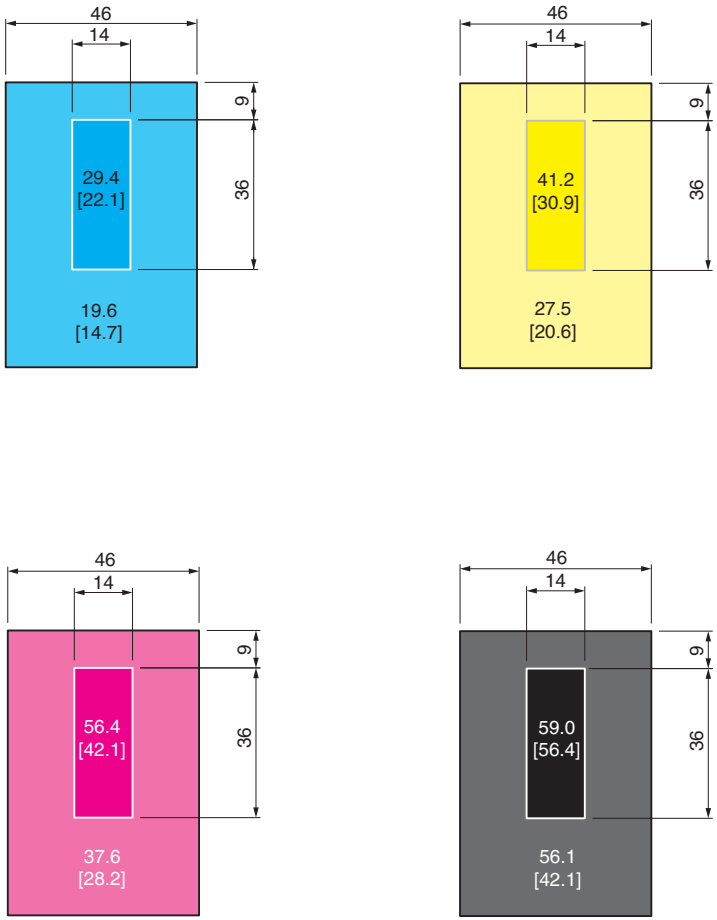
θ	L mm
00	0.0
05	3.1
10	7.8
15	16.1
20	25.0
25	33.5
30	39.5
35	45.9
40	51.6
45	56.7
50	67.0



■Working Force Distribution Diagram

The working forces indicated in the mount face distribution diagram are reached by putting the tooling center of gravity within each area for the following pictures.

: Working force (kN) allowed for up to 300,000 strokes
[ ]: Working force (kN) allowed for up to 1,000,000 strokes



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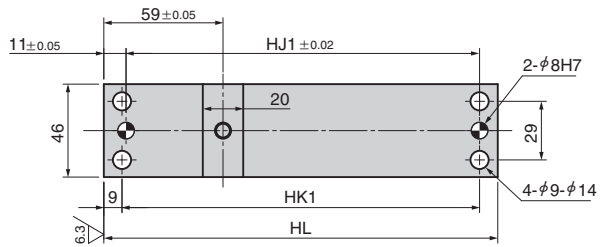
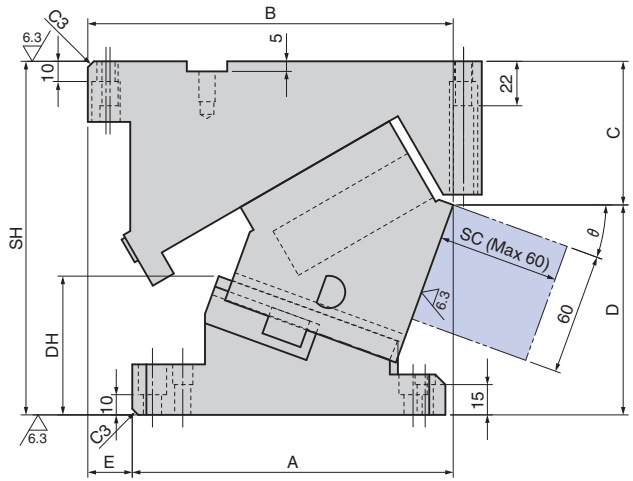
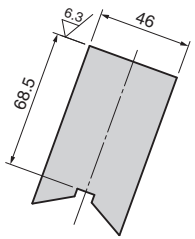
Aerial Cam Unit

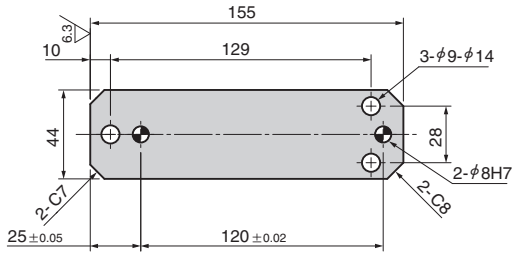
VACSL46
VACYL46
VACPL46
VACBL46

CAD FILE



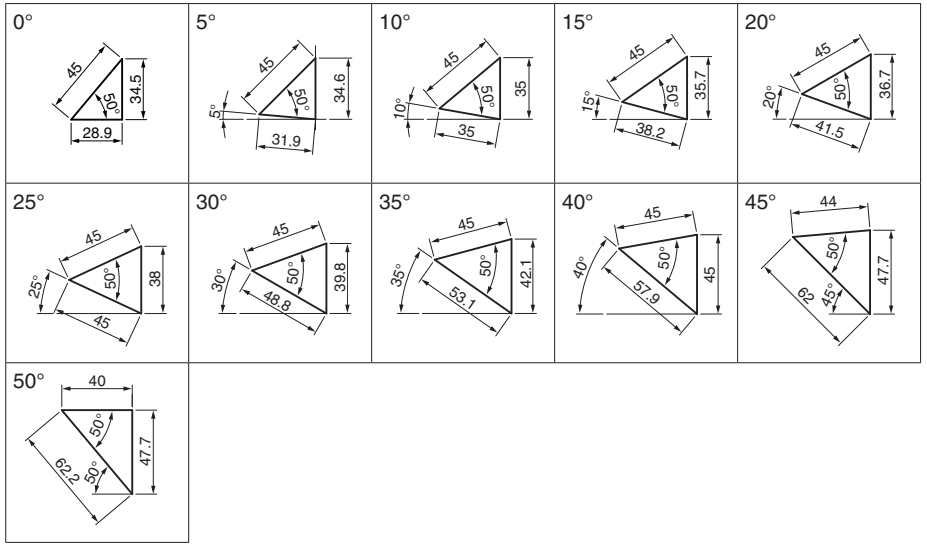






θ	A	B	C	D	E	SH	HL	HK1	HJ1	DH
00	132.00	170.00	57.00	118.00	38		180	162	160	45.2
05	138.89	173.89	60.44	114.56	35		185	167	165	50.6
10	145.66	177.66	64.77	110.23	32		190	172	170	55.4
15	152.31	180.31	67.99	107.01	28		195	177	175	61.8
20	158.87	180.87	71.09	103.91	22	175	195	177	175	68.7
25	164.34	180.34	74.06	100.94	16		195	177	175	76.0
30	170.72	180.72	76.89	98.11	10		197	179	177	84.6
35	176.04	179.04	79.58	95.42	3		197	179	177	92.6
40	185.31	176.31	83.12	91.88	-9		197	179	177	102.3
45	190.54	172.54	85.51	89.49	-18		195	177	175	112.3
50	194.73	161.73	93.74	86.26	-33	180	190	172	170	119.9

■Cam Diagram



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Aerial Cam Unit

Grade	Working Force [kN (tonf)] 1,000,000 strokes	Working Force [kN (tonf)] 300,000 strokes	Travel	Catalog No.	W	θ	Spring Type PS
White	27.9 (2.8)	37.2 (3.8)	Short	VACWS	58	00～80 (5° increments)	ISO ISOL

ISO, ISOL: Coil Spring

Order

Catalog No.	W	θ	PS	Option
VACWS	58	10	ISO	
VACWS	58	10	ISOL	SC60
VACWS	58	10	ISO	WC64
VACWS	58	10	ISOL	SC45 — WC64

Option

Option Code	Specification
SC	Mount face length is extended from 1 to 60 mm in increments of 1 mm.
WC	The width of the mount face is extended to 64 mm.

■Spring Force & Return Force

● Coil Spring

ISO

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	230	23.4	2067	211	2756	281
05	402	41.0	2067	211	2753	281
10	517	52.7	2067	211	2750	281
15	198	20.2	1844	188	2452	250
20	263	26.9	1844	188	2449	250
25	329	33.6	1844	188	2446	250
30	329	33.6	1844	188	2442	249
35	329	33.6	1844	188	2438	249
40	329	33.6	1844	188	2435	248
45	329	33.6	1844	188	2431	248
50	329	33.6	1844	188	2427	248
55	402	41.0	1895	193	2713	277
60	329	33.6	1844	188	2917	298
65	309	31.5	1851	189	3302	337
70	275	28.1	1833	187	3780	386
75	345	35.2	1839	188	4537	463
80	466	47.6	1798	183	5570	568

● Coil Spring

ISOL

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	137	14.0	1235	126	1657	169
05	240	24.5	1235	126	1655	169
10	309	31.5	1235	126	1652	169
15	118	12.0	1100	112	1471	150
20	157	16.0	1100	112	1468	150
25	197	20.1	1100	112	1464	149
30	197	20.1	1100	112	1461	149
35	197	20.1	1100	112	1457	149
40	197	20.1	1100	112	1453	148
45	197	20.1	1100	112	1450	148
50	197	20.1	1100	112	1446	148
55	240	24.5	1132	116	1618	165
60	197	20.1	1100	112	1737	177
65	184	18.8	1106	113	1969	201
70	164	16.7	1094	112	2251	230
75	206	21.0	1098	112	2701	276
80	278	28.4	1073	110	3315	338

■Cam Travel

θ	Travel mm
00	20.6
05	20.6
10	21.0
15	21.2
20	22.1
25	23.0
30	25.0
35	27.1
40	29.6
45	32.4
50	35.8
55	45.3
60	46.0
65	47.3
70	49.7
75	50.2
80	57.6

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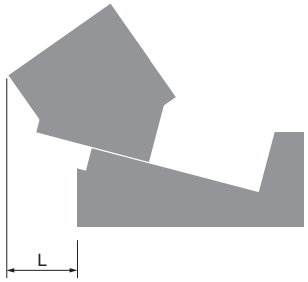
■Weight*1

θ	Total Weight kg	Cam Slider Weight kg	Tool Weight*2 kg
00	8.7	3.2	3.3
05	8.6	3.2	3.3
10	8.5	3.2	3.3
15	8.3	3.2	3.4
20	8.2	3.2	3.5
25	8.2	3.2	3.6
30	8.1	3.2	3.8
35	8.0	3.2	4.0
40	7.8	3.2	4.2
45	7.9	3.2	4.6
50	7.9	3.2	5.4
55	8.7	3.6	6.2
60	9.1	4.1	5.7
65	9.5	4.4	5.4
70	9.7	4.7	5.1
75	10.1	5.0	4.8
80	10.6	5.3	4.5

*1 This is the weight without SC and WC option. Reduce tool weight when with SC and WC option since the slider gets heavier.
*2 Tool weight is estimated value. Allowable tool weight varies depending on press speed.

■Rear Removal Space

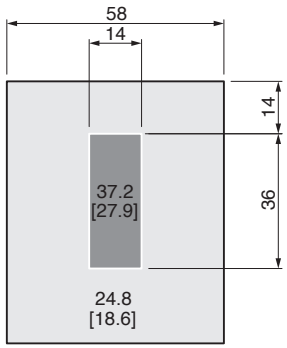
θ	L mm
00	24.8
05	30.9
10	35.6
15	41.7
20	49.1
25	58.4
30	66.3
35	74.6
40	83.3
45	89.3
50	96.7
55	91.6
60	97.6
65	103.3
70	106.5
75	113.6
80	120.3



■Working Force Distribution Diagram

The working forces indicated in the mount face distribution diagram are reached by putting the tooling center of gravity within each area for the following pictures.

: Working force (kN) allowed for up to 300,000 strokes
[ ]: Working force (kN) allowed for up to 1,000,000 strokes



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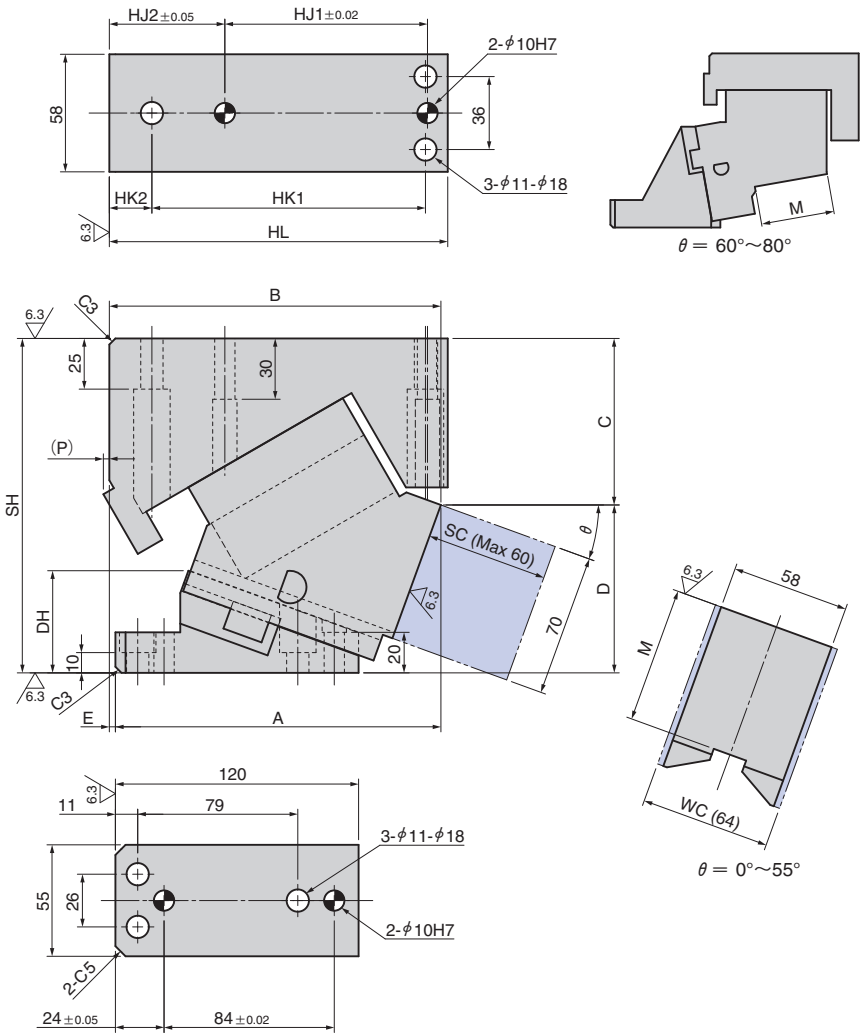
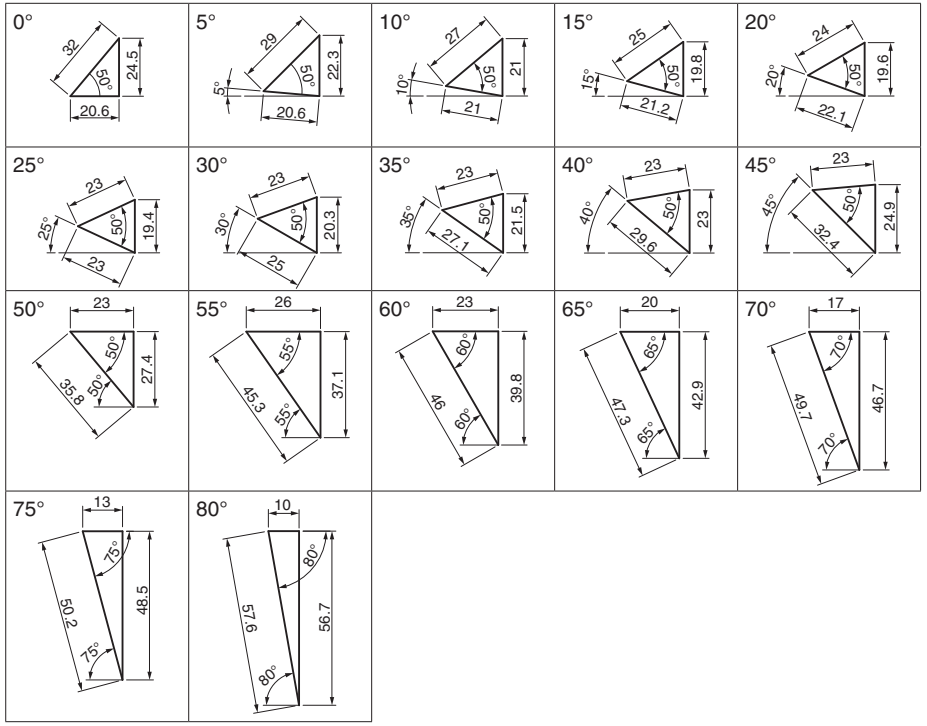
VACWS58

CAD FILE



θ	A	B	C	D	E	SH	HL	HK1	HK2	HJ1	HJ2	DH	M	P
00	135.00	162.00	64.00	101.00	27		164	140	13	107	47	27.9		1.5
05	141.75	163.75	68.74	96.26	22		168	140	17	107	51	32.7		2.1
10	148.26	165.26	73.36	91.64	17		169	140	18	107	52	38.3		2.0
15	154.54	163.54	77.84	87.16	9		166	135	20	100	56	44.0		3.7
20	160.62	163.62	82.16	82.84	3		167	135	21	100	57	50.4		2.9
25	165.51	161.51	86.31	78.69	-4	165	167	130	26	95	62	57.2	67	3.1
30	170.21	159.21	90.26	74.74	-11		167	130	26	95	62	64.4		3.0
35	173.76	154.76	94.00	71.00	-19		165	130	24	95	60	71.9		3.8
40	178.16	148.16	98.53	66.47	-30		157	125	21	85	62	78.6		5.6
45	182.44	142.44	103.82	61.18	-40		157	125	21	85	62	84.4		5.3
50	185.61	133.61	109.87	55.13	-52		153	125	17	80	63	89.3		7.0
55	194.29	145.29	117.22	62.78	-49	180	163	125	27	80	73	90.0	82	
60	204.74	142.74	119.87	65.13	-62	185	163	125	27	80	73	95.0	85	
65	211.09	137.09	123.64	66.36	-74		163	125	27	80	73	98.0	83	6.0
70	218.70	133.70	125.70	64.30	-85	190	163	125	27	80	73	100.0	78	
75	229.42	132.42	128.92	61.08	-97		163	125	27	80	73	103.0	80	
80	236.42	128.42	131.63	58.37	-108		163	125	27	80	73	110.0	80	

■Cam Diagram



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Grade	Working Force [kN (tonf)] 1,000,000 strokes	Working Force [kN (tonf)] 300,000 strokes	Travel	Catalog No.	W	θ	Spring Type PS
White	27.9 (2.8)	37.2 (3.8)	Long	VACWL	58	00～50 (5° increments)	ISO ISOL

ISO, ISOL: Coil Spring

Order

Catalog No.	W	θ	PS	Option
VACWL	58	10	ISO	
VACWL	58	10	ISOL	SC60
VACWL	58	10	ISO	WC64
VACWL	58	10	ISOL	SC45 — WC64

Option

Option Code	Specification
SC	Mount face length is extended from 1 to 60 mm in increments of 1 mm.
WC	The width of the mount face is extended to 64 mm.

■Spring Force & Return Force

● Coil Spring

ISO

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	198	20.2	2094	214	2792	285
05	282	28.8	2094	214	2789	285
10	409	41.7	2094	214	2786	284
15	217	22.1	1971	201	2620	267
20	263	26.8	1971	201	2617	267
25	309	31.6	1971	201	2613	267
30	355	36.3	1971	201	2610	266
35	402	41.0	1971	201	2606	266
40	448	45.7	1971	201	2602	266
45	448	45.7	1971	201	2599	265
50	494	50.4	1971	201	2595	265

● Coil Spring

ISOL

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	113	11.6	1247	127	1674	171
05	164	16.7	1247	127	1671	171
10	239	24.4	1247	127	1668	170
15	124	12.7	1173	120	1567	160
20	152	15.5	1173	120	1563	160
25	179	18.3	1173	120	1560	159
30	207	21.1	1173	120	1556	159
35	235	23.9	1173	120	1553	158
40	262	26.8	1173	120	1549	158
45	262	26.8	1173	120	1546	158
50	290	29.6	1173	120	1542	157

■Cam Travel

θ	Travel mm
00	28.9
05	30.5
10	31.1
15	32.2
20	34.1
25	36.0
30	38.0
35	40.1
40	42.4
45	46.5
50	49.8

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Aerial Cam Unit

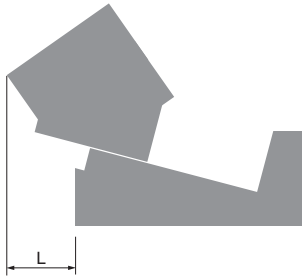
■Weight*1

θ	Total Weight kg	Cam Slider Weight kg	Tool Weight*2 kg
00	8.9	3.2	3.3
05	8.7	3.2	3.3
10	8.7	3.2	3.3
15	8.5	3.2	3.4
20	8.3	3.2	3.5
25	8.3	3.2	3.6
30	8.2	3.2	3.8
35	8.2	3.2	4.0
40	7.9	3.2	4.2
45	8.0	3.2	4.6
50	8.0	3.2	5.4

*1 This is the weight without SC and WC option. Reduce tool weight when with SC and WC option since the slider gets heavier.
*2 Tool weight is estimated value. Allowable tool weight varies depending on press speed.

■Rear Removal Space

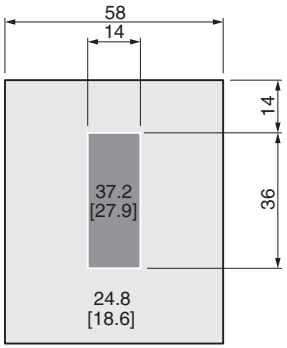
θ	L mm
00	27.4
05	33.8
10	37.9
15	44.2
20	50.9
25	59.4
30	66.3
35	64.6
40	73.3
45	79.3
50	86.7



■Working Force Distribution Diagram

The working forces indicated in the mount face distribution diagram are reached by putting the tooling center of gravity within each area for the following pictures.

: Working force (kN) allowed for up to 300,000 strokes
[ ]: Working force (kN) allowed for up to 1,000,000 strokes



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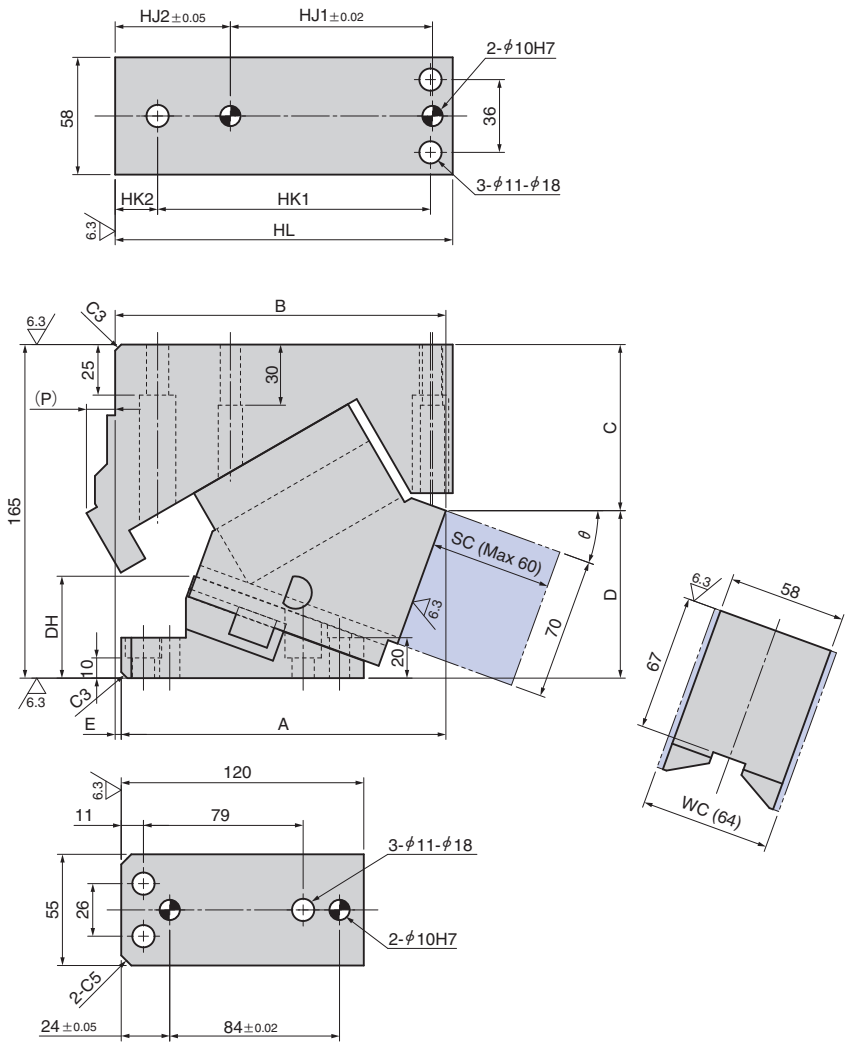
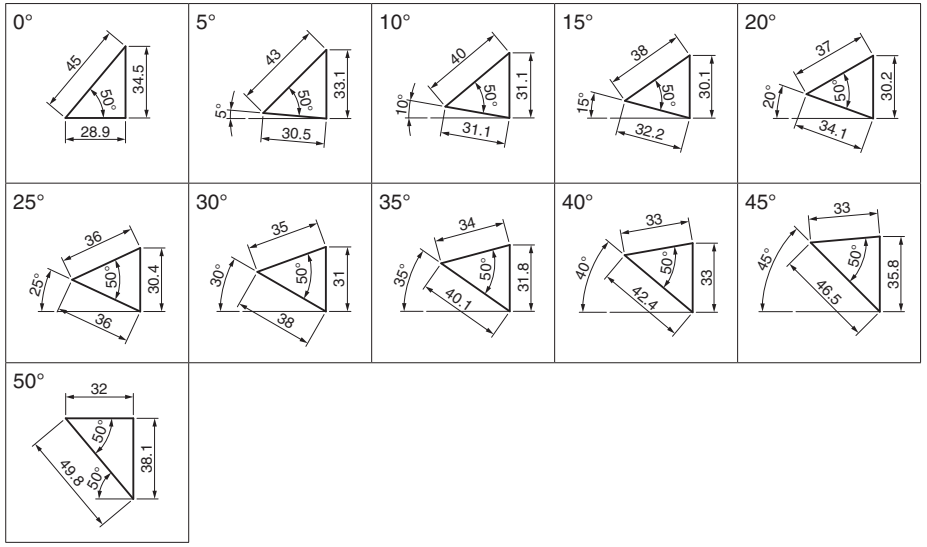
VACWL58

CAD FILE



θ	A	B	C	D	E	HL	HK1	HK2	HJ1	HJ2	DH	P
00	135.00	162.00	64.00	101.00	27	164	140	13	107	47	27.9	10.0
05	141.75	163.75	68.74	96.26	22	168	140	17	107	51	32.7	12.0
10	148.26	165.26	73.36	91.64	17	169	140	18	107	52	38.3	12.0
15	154.54	163.54	77.84	87.16	9	166	135	20	100	56	44.0	14.3
20	160.62	163.62	82.16	82.84	3	167	135	21	100	57	50.4	14.2
25	165.51	161.51	86.31	78.69	-4	167	130	26	95	62	57.2	14.8
30	170.21	159.21	90.26	74.74	-11	167	130	26	95	62	64.4	14.2
35	173.76	164.76	94.00	71.00	-9	175	130	34	95	70	71.9	4.4
40	178.16	158.16	98.53	66.47	-20	167	125	31	85	72	78.6	5.4
45	182.44	152.44	103.82	61.18	-30	167	125	31	85	72	84.4	5.3
50	185.61	143.61	109.87	55.13	-42	163	125	27	80	73	89.3	6.0

■Cam Diagram



Refer to page 389 for Table of Components.

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Aerial Cam Unit

Grade	Working Force [kN (tonf)] 1,000,000 strokes	Working Force [kN (tonf)] 300,000 strokes	Travel	Catalog No.	W	θ	Spring Type PS
Sky	27.9 (2.8)	37.2 (3.8)	Short	VACSS	58	00~80 (5° increments)	GK NGK
Yellow	42.6 (4.3)	56.8 (5.8)		VACYS			ISO
Pink	58.8 (6.0)	78.9 (8.0)		VACPS			ISOL
Black	78.9 (8.0)	98.0 (10.0)		VACBS			GK NGK

ISO, ISOL: Coil Spring GK: Gas Spring (KALLER)
NGK: Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W	–	θ	–	PS	–	Option
VACSS	58	–	10	–	ISOL		
VACYS	58	–	10	–	NGK	–	SC45 – WC64
VACPS	58	–	10	–	GK	–	NF – WC64 – K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
SC	Mount face length is extended from 1 to 60 mm in increments of 1 mm.
WC	The width of the mount face is extended to 64 mm.
K	Key attached.

Refer to page 388 for key specification.

■Spring Force & Return Force

● Gas Spring Sky

θ	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	2915	297	3876	396
05	2915	297	3873	395
10	2915	297	3870	395
15	2915	297	3866	394
20	2915	297	3863	394
25	2915	297	3860	394
30	2915	297	3856	393
35	2915	297	3853	393
40	2915	297	3849	393
45	2915	297	3845	392
50	2915	297	3842	392
55	2744	280	3932	401
60	2991	305	4739	484
65	2905	296	5189	529
70	2733	279	5643	576
75	2925	298	7227	737
80	2841	290	8815	899

● Gas Spring Yellow, Pink, Black

θ	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	4961	506	6575	671
05	4961	506	6572	671
10	4961	506	6569	670
15	4961	506	6566	670
20	4961	506	6563	670
25	4961	506	6559	669
30	4961	506	6556	669
35	4961	506	6552	669
40	4961	506	6548	668
45	4961	506	6545	668
50	4961	506	6541	667
55	4630	472	6640	678
60	5034	514	7982	814
65	4874	497	8715	889
70	4896	500	10123	1033
75	4843	494	11977	1222
80	4462	455	13861	1414

● Coil Spring
ISO Sky, Yellow, Pink

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	178	18.2	3118	318	4143	423
05	178	18.2	3118	318	4140	422
10	178	18.2	3118	318	4137	422
15	178	18.2	3118	318	4134	422
20	178	18.2	3118	318	4130	421
25	178	18.2	3118	318	4127	421
30	178	18.2	3118	318	4123	421
35	178	18.2	3118	318	4120	420
40	178	18.2	3118	318	4116	420
45	178	18.2	3118	318	4112	420
50	178	18.2	3118	318	4109	419
55	492	50.3	3152	322	4518	461
60	444	45.3	3109	317	4926	503
65	445	45.4	3116	318	5568	568
70	447	45.6	3128	319	6463	659
75	531	54.2	3009	307	7435	759
80	555	56.7	2998	306	9304	949

● Coil Spring
ISOL Sky, Yellow, Pink

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	92	9.4	1617	165	2162	221
05	92	9.4	1617	165	2159	220
10	92	9.4	1617	165	2156	220
15	92	9.4	1617	165	2153	220
20	92	9.4	1617	165	2149	219
25	92	9.4	1617	165	2146	219
30	92	9.4	1617	165	2142	219
35	92	9.4	1617	165	2139	218
40	92	9.4	1617	165	2135	218
45	92	9.4	1617	165	2132	218
50	92	9.4	1617	165	2128	217
55	255	26.0	1632	167	2336	238
60	230	23.5	1610	164	2546	260
65	231	23.5	1615	165	2879	294
70	232	23.6	1621	165	3342	341
75	275	28.1	1559	159	3843	392
80	288	29.3	1553	158	4807	490

■Cam Travel

θ	Travel mm
00	21.2
05	23.4
10	25.7
15	28.0
20	30.4
25	33.0
30	35.8
35	38.9
40	42.4
45	46.5
50	51.3
55	47.1
60	48.0
65	49.7
70	52.6
75	54.1
80	63.3

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■Weight*1

θ	Total Weight kg	Cam Slider Weight kg	Tool Weight*2 kg
00	9.9	3.2	3.3
05	9.9	3.2	3.3
10	9.8	3.2	3.3
15	9.7	3.2	3.4
20	9.7	3.2	3.5
25	9.5	3.2	3.6
30	9.4	3.2	3.8
35	9.4	3.2	4.0
40	9.4	3.2	4.2
45	9.3	3.2	4.6
50	9.5	3.2	5.4
55	10.3	3.6	6.2
60	10.7	4.1	5.7
65	11.1	4.4	5.4
70	11.3	4.7	5.1
75	11.7	5.0	4.8
80	12.2	5.3	4.5

*1 This is the weight without SC and WC option. Reduce tool weight when with SC and WC option since the slider gets heavier.
*2 Tool weight is estimated value. Allowable tool weight varies depending on press speed.

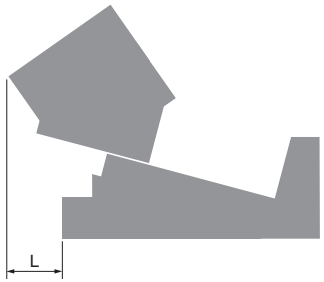
■Rear Removal Space

● Coil Spring

θ	L mm
00	3.0
05	8.9
10	14.5
15	20.7
20	27.7
25	36.4
30	44.6
35	51.2
40	57.1
45	65.3
50	70.7
55	68.1
60	74.1
65	79.8
70	84.4
75	90.1
80	96.8

● Gas Spring

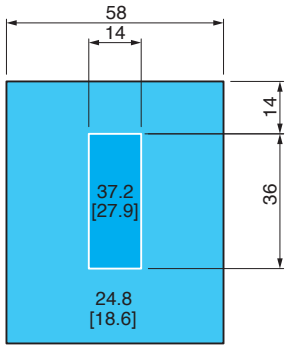
θ	L mm
00	0.0
05	3.6
10	8.7
15	14.6
20	21.2
25	29.6
30	37.6
35	44.0
40	49.7
45	57.8
50	63.2
55	68.1
60	74.1
65	79.8
70	84.4
75	90.1
80	96.8

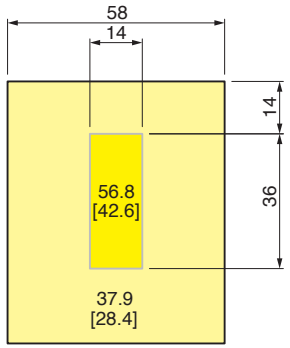


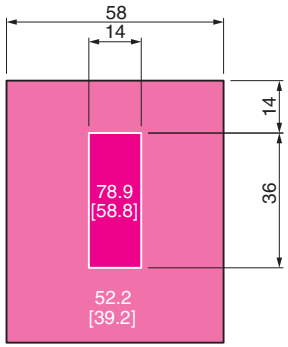
■Working Force Distribution Diagram

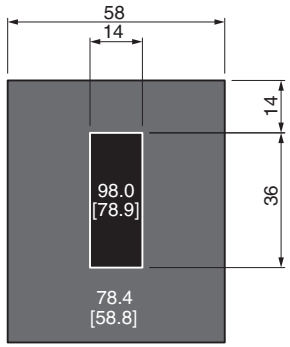
The working forces indicated in the mount face distribution diagram are reached by putting the tooling center of gravity within each area for the following pictures.

: Working force (kN) allowed for up to 300,000 strokes
[ ]: Working force (kN) allowed for up to 1,000,000 strokes









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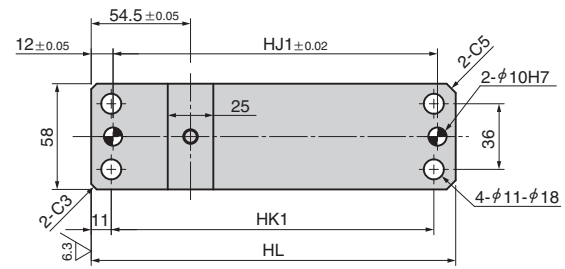
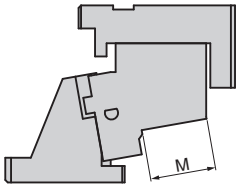
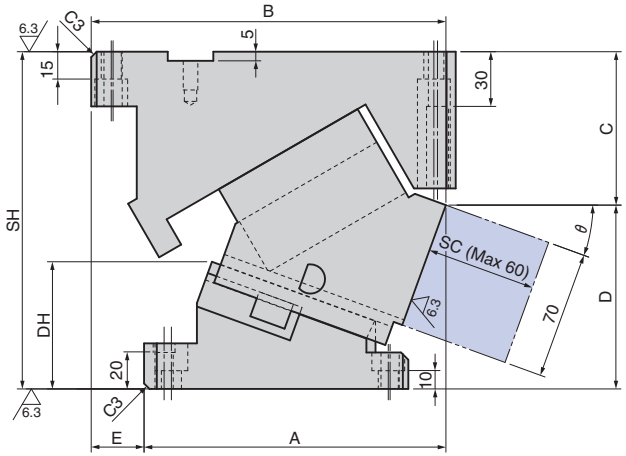
VACSS58
VACYS58
VACPS58
VACBS58

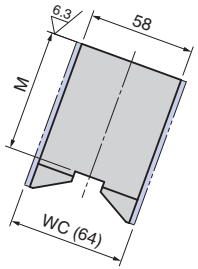
CAD FILE



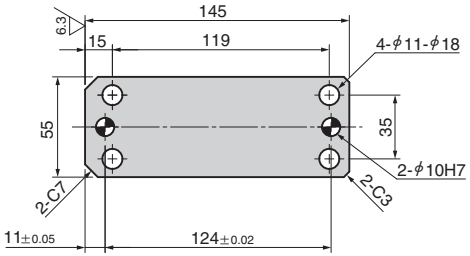


θ = 60°~80°



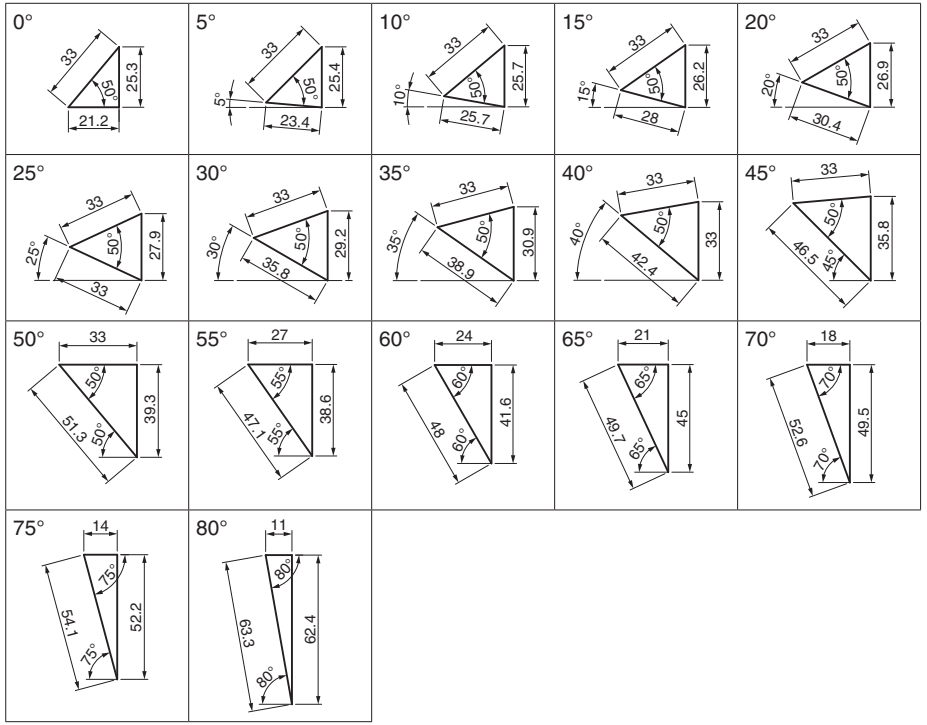


θ = 0°~55°



θ	A	B	C	D	E	SH	HL	HK1	HJ1	DH	M
00	138.00	187.00	66.00	119.00	49		185	162	163	45.9	
05	145.75	190.75	70.74	114.26	45		190	167	168	51.0	
10	152.26	193.26	75.36	109.64	41		195	172	173	56.8	
15	159.54	193.54	79.84	105.16	34		195	172	173	63.0	
20	165.62	194.62	84.16	100.84	29	185	200	177	178	69.8	
25	171.51	193.51	88.31	96.69	22		200	177	178	76.9	67
30	176.21	191.21	92.26	92.74	15		200	177	178	84.4	
35	180.76	188.76	96.00	89.00	8		200	177	178	92.2	
40	185.16	185.16	100.53	84.47	0		200	177	178	99.2	
45	189.44	177.44	103.82	81.18	-12		195	172	173	107.3	
50	193.61	170.61	115.87	74.13	-23	190	190	167	168	111.4	
55	203.29	172.29	123.22	81.78	-31	205	190	167	168	114.8	82
60	213.74	169.74	125.87	84.13	-44	210	190	167	168	119.1	85
65	220.09	164.09	129.64	85.36	-56		190	167	168	121.6	83
70	226.70	160.70	131.70	83.30	-66	215	190	167	168	124.6	78
75	236.42	159.42	134.92	80.08	-77		190	167	168	127.0	80
80	244.42	155.42	137.63	77.37	-89		190	167	168	133.0	

■Cam Diagram



Refer to page 390 for Table of Components.

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Aerial Cam Unit

Grade	Working Force [kN (tonf)] 1,000,000 strokes	Working Force [kN (tonf)] 300,000 strokes	Travel	Catalog No.	W	θ	Spring Type PS
Sky	27.9 (2.8)	37.2 (3.8)	Long	VACSL	58	00~50 (5° increments)	GK NGK
Yellow	42.6 (4.3)	56.8 (5.8)		VACYL			ISO
Pink	58.8 (6.0)	78.9 (8.0)		VACPL			ISOL
Black	78.9 (8.0)	98.0 (10.0)		VACBL			GK NGK

ISO, ISOL: Coil Spring GK: Gas Spring (KALLER)
NGK: Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W	–	θ	–	PS	–	Option
VACSL	58	–	10	–	ISOL		
VACYL	58	–	10	–	NGK	–	SC45 – WC64
VACPL	58	–	10	–	GK	–	NF – WC64 – K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
SC	Mount face length is extended from 1 to 60 mm in increments of 1 mm.
WC	The width of the mount face is extended to 64 mm.
K	Key attached.

Refer to page 388 for key specification.

■Spring Force & Return Force

● Gas Spring Sky

θ	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	2959	302	3933	401
05	2959	302	3930	401
10	2959	302	3927	401
15	2959	302	3924	400
20	2959	302	3921	400
25	2959	302	3917	400
30	2959	302	3914	399
35	2959	302	3910	399
40	2959	302	3907	399
45	2937	300	3874	395
50	2850	291	3755	383

● Gas Spring Yellow, Pink, Black

θ	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	5040	514	6680	682
05	5040	514	6677	681
10	5040	514	6674	681
15	5040	514	6671	681
20	5040	514	6668	680
25	5040	514	6664	680
30	5040	514	6661	680
35	5040	514	6657	679
40	5040	514	6653	679
45	4998	510	6594	673
50	4831	493	6369	650

● Coil Spring
ISO Sky, Yellow, Pink

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	190	19.4	2086	213	2781	284
05	190	19.4	2086	213	2778	283
10	190	19.4	2086	213	2775	283
15	190	19.4	2086	213	2772	283
20	190	19.4	2086	213	2768	282
25	190	19.4	2086	213	2765	282
30	190	19.4	2086	213	2761	282
35	190	19.4	2086	213	2758	281
40	190	19.4	2086	213	2754	281
45	190	19.4	2044	209	2695	275
50	190	19.4	1875	191	2469	252

● Coil Spring
ISOL Sky, Yellow, Pink

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	113	11.6	1247	127	1674	171
05	113	11.6	1247	127	1671	171
10	113	11.6	1247	127	1668	170
15	113	11.6	1247	127	1665	170
20	113	11.6	1247	127	1662	170
25	113	11.6	1247	127	1658	169
30	113	11.6	1247	127	1655	169
35	113	11.6	1247	127	1651	168
40	113	11.6	1247	127	1647	168
45	113	11.6	1222	125	1610	164
50	113	11.6	1121	114	1474	150

■Cam Travel

θ	Travel mm
00	28.9
05	31.9
10	35.0
15	38.2
20	41.5
25	45.0
30	48.8
35	53.1
40	57.9
45	62.0
50	62.2

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■Weight*1

θ	Total Weight kg	Cam Slider Weight kg	Tool Weight*2 kg
00	10.1	3.2	3.3
05	10.1	3.2	3.3
10	10.1	3.2	3.3
15	10.0	3.2	3.4
20	9.9	3.2	3.5
25	9.8	3.2	3.6
30	9.7	3.2	3.8
35	9.6	3.2	4.0
40	9.6	3.2	4.2
45	9.5	3.2	4.6
50	9.8	3.2	5.4

*1 This is the weight without SC and WC option. Reduce tool weight when with SC and WC option since the slider gets heavier.
*2 Tool weight is estimated value. Allowable tool weight varies depending on press speed.

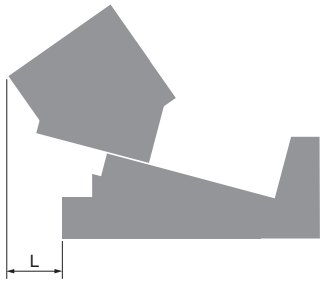
■Rear Removal Space

● Coil Spring

θ	L mm
00	2.3
05	9.1
10	15.6
15	22.6
20	30.2
25	39.6
30	48.3
35	55.2
40	61.4
45	66.7
50	73.2

● Gas Spring

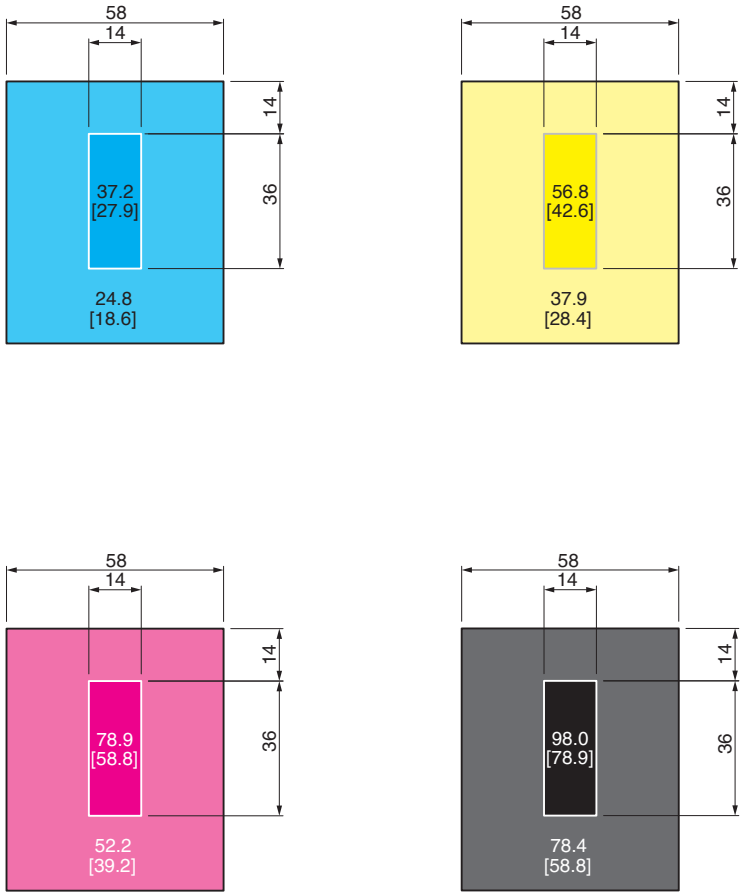
θ	L mm
00	0.0
05	0.0
10	5.2
15	11.5
20	18.5
25	27.3
30	35.6
35	42.2
40	48.1
45	53.3
50	59.7



■Working Force Distribution Diagram

The working forces indicated in the mount face distribution diagram are reached by putting the tooling center of gravity within each area for the following pictures.

: Working force (kN) allowed for up to 300,000 strokes
[ ]: Working force (kN) allowed for up to 1,000,000 strokes



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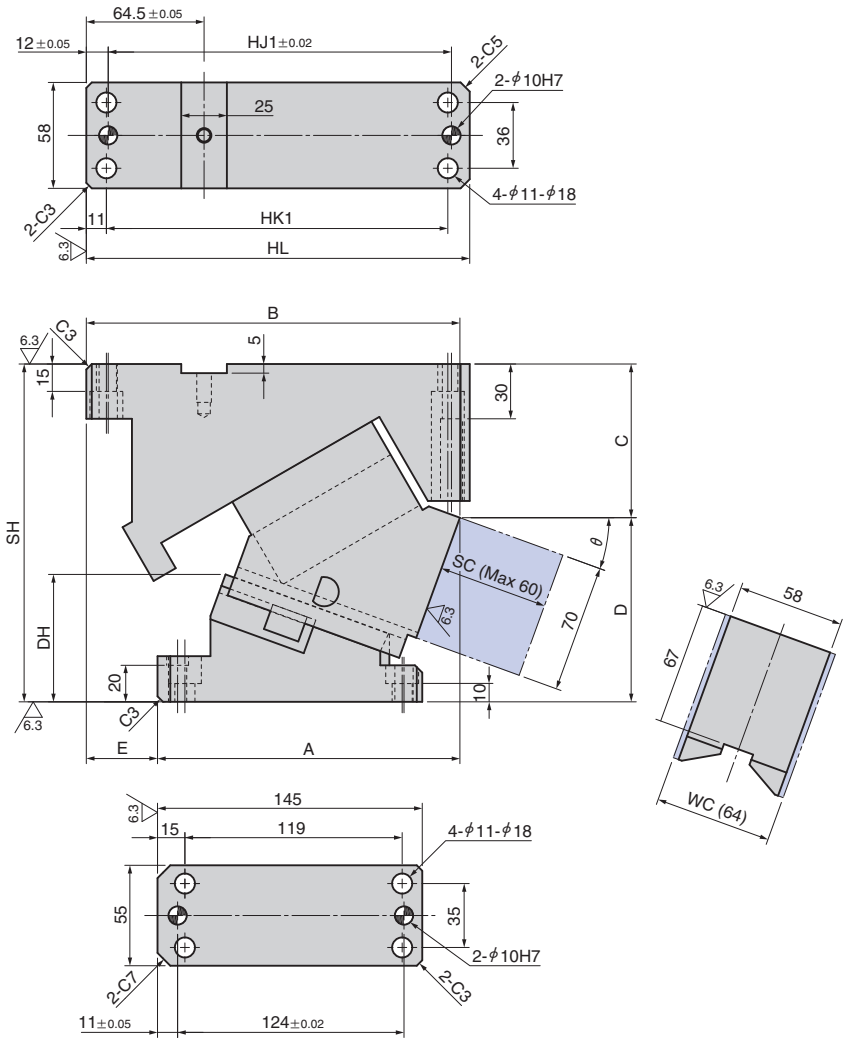
Aerial Cam Unit

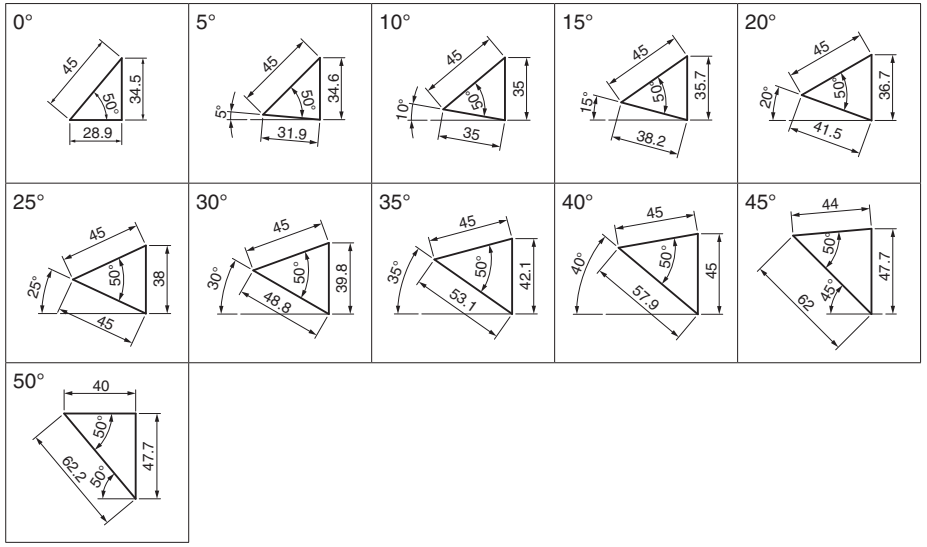
VACSL58
VACYL58
VACPL58
VACBL58

CAD FILE



θ	A	B	C	D	E	SH	HL	HK1	HJ1	DH
00	138.00	197.00	66.00	119.00	59		195	172	173	45.9
05	145.75	200.75	70.74	114.26	55		200	177	178	51.0
10	152.26	203.26	75.36	109.64	51		205	182	183	56.8
15	159.54	203.54	79.84	105.16	44		205	182	183	63.0
20	165.62	204.62	84.16	100.84	39	185	210	187	188	69.8
25	171.51	203.51	88.31	96.69	32		210	187	188	76.9
30	176.21	201.21	92.26	92.74	25		210	187	188	84.4
35	180.76	198.76	96.00	89.00	18		210	187	188	92.2
40	185.16	195.16	100.53	84.47	10		210	187	188	99.2
45	189.44	189.44	103.82	81.18	0		207	184	185	107.3
50	193.61	177.61	115.87	74.13	-16	190	202	179	180	111.4

■Cam Diagram



Refer to page 390 for Table of Components.

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Aerial Cam Unit

Grade	Working Force [kN (tonf)] 1,000,000 strokes	Working Force [kN (tonf)] 300,000 strokes	Travel	Catalog No.	W	θ	Spring Type PS
Sky	36.8 (3.7)	49.0 (5.0)	Short	VACSS	72	00~80 (5° increments)	GK NGK
Yellow	60.3 (6.1)	80.4 (8.2)		VACYS			ISO
Pink	77.4 (7.9)	103.7 (10.6)		VACPS			ISOL
Black	103.7 (10.6)	127.4 (13.0)		VACBS			GK NGK

ISO, ISOL: Coil Spring GK: Gas Spring (KALLER)
NGK: Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W	–	θ	–	PS	–	Option
VACSS	72	–	10	–	ISOL		
VACYS	72	–	10	–	NGK	–	SC55 – WC90
VACPS	72	–	10	–	GK	–	NF – SC60 – K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
SC	Mount face length is extended from 1 to 60 mm in increments of 1 mm.
WC	The width of the mount face is extended to 90 mm. When combined with SC option, the maximum extension of the SC dimension is 55 mm.
K	Key attached.

Refer to page 388 for key specification.

■Spring Force & Return Force

● Gas Spring Sky

θ	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	3407	348	4556	465
05	3407	348	4550	464
10	3407	348	4543	464
15	3407	348	4537	463
20	3407	348	4529	462
25	3407	348	4522	461
30	3407	348	4514	461
35	3407	348	4507	460
40	3407	348	4499	459
45	3407	348	4491	458
50	3407	348	4483	457
55	3362	343	4812	491
60	3277	334	5185	529
65	3340	341	5958	608
70	3205	327	6610	674
75	3260	333	8040	820
80	3285	335	10176	1038

● Gas Spring Yellow, Pink, Black

θ	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	6930	707	9206	939
05	6930	707	9200	939
10	6930	707	9193	938
15	6930	707	9187	937
20	6930	707	9179	937
25	6930	707	9172	936
30	6930	707	9164	935
35	6930	707	9157	934
40	6930	707	9149	934
45	6930	707	9141	933
50	6930	707	9133	932
55	6793	693	9739	994
60	6543	668	10370	1058
65	6733	687	12033	1228
70	6647	678	13735	1402
75	6564	670	16225	1656
80	6568	670	20391	2081

● Coil Spring
ISO Sky, Yellow, Pink

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	359	36.7	4551	464	6066	619
05	359	36.7	4551	464	6060	618
10	359	36.7	4551	464	6053	618
15	359	36.7	4551	464	6046	617
20	359	36.7	4551	464	6039	616
25	359	36.7	4551	464	6032	616
30	359	36.7	4551	464	6024	615
35	359	36.7	4551	464	6016	614
40	359	36.7	4551	464	6008	613
45	359	36.7	4551	464	6000	612
50	359	36.7	4551	464	5993	612
55	288	29.4	2761	282	3949	403
60	383	39.1	4543	464	7194	734
65	359	36.7	4191	428	7483	764
70	362	36.9	4125	421	8514	869
75	374	38.2	3931	401	9702	990
80	390	39.8	3774	385	11696	1193

● Coil Spring
ISOL Sky, Yellow, Pink

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	173	17.6	2189	223	2949	301
05	173	17.6	2189	223	2942	300
10	173	17.6	2189	223	2936	300
15	173	17.6	2189	223	2929	299
20	173	17.6	2189	223	2922	298
25	173	17.6	2189	223	2914	297
30	173	17.6	2189	223	2907	297
35	173	17.6	2189	223	2899	296
40	173	17.6	2189	223	2891	295
45	173	17.6	2189	223	2883	294
50	173	17.6	2189	223	2875	293
55	180	18.4	1728	176	2466	252
60	184	18.8	2183	223	3448	352
65	173	17.6	2016	206	3588	366
70	174	17.8	1984	202	4080	416
75	180	18.3	1888	193	4642	474
80	188	19.1	1813	185	5592	571

■Cam Travel

θ	Travel mm
00	22.5
05	24.8
10	27.2
15	29.7
20	32.3
25	35.0
30	38.0
35	41.3
40	45.0
45	49.3
50	54.5
55	75.0
60	76.0
65	75.7
70	76.0
75	73.4
80	74.9

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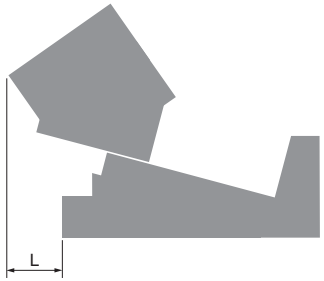
■Weight*1

θ	Total Weight kg	Cam Slider Weight kg	Tool Weight*2 kg
00	19.0	6.9	4.4
05	18.9	6.9	4.4
10	18.9	6.9	4.5
15	19.0	6.9	4.6
20	18.9	6.9	4.8
25	18.9	6.9	5.0
30	18.7	6.9	5.3
35	18.6	6.9	5.6
40	18.6	6.9	6.1
45	18.4	6.9	6.9
50	18.9	6.9	8.0
55	20.3	7.4	9.6
60	20.6	7.6	9.4
65	21.0	8.0	9.0
70	22.0	8.9	8.1
75	22.8	9.5	7.5
80	23.8	10.4	6.6

*1 This is the weight without SC and WC option. Reduce tool weight when with SC and WC option since the slider gets heavier.
*2 Tool weight is estimated value. Allowable tool weight varies depending on press speed.

■Rear Removal Space

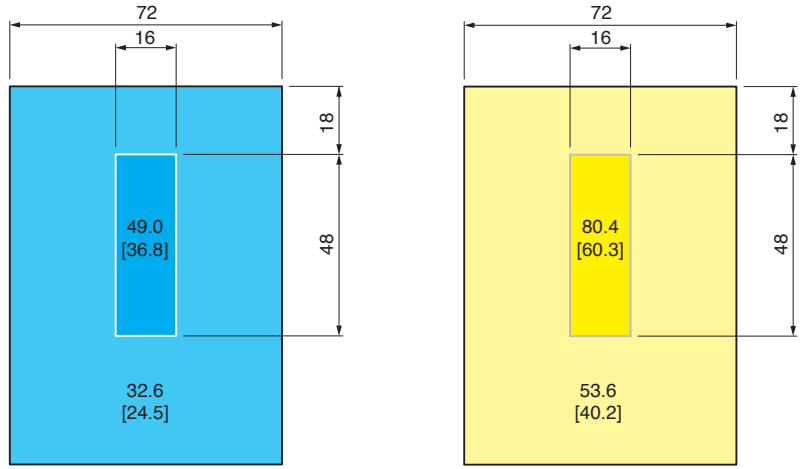
θ	L mm
00	7.3
05	15.4
10	21.8
15	27.6
20	38.3
25	50.3
30	62.3
35	71.2
40	79.9
45	88.4
50	93.7
55	82.9
60	87.8
65	96.0
70	111.1
75	121.1
80	131.5

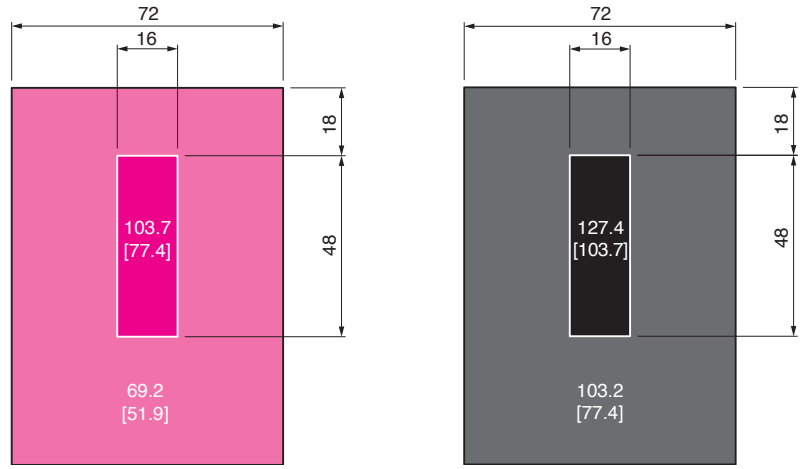


■Working Force Distribution Diagram

The working forces indicated in the mount face distribution diagram are reached by putting the tooling center of gravity within each area for the following pictures.

: Working force (kN) allowed for up to 300,000 strokes
[ ]: Working force (kN) allowed for up to 1,000,000 strokes





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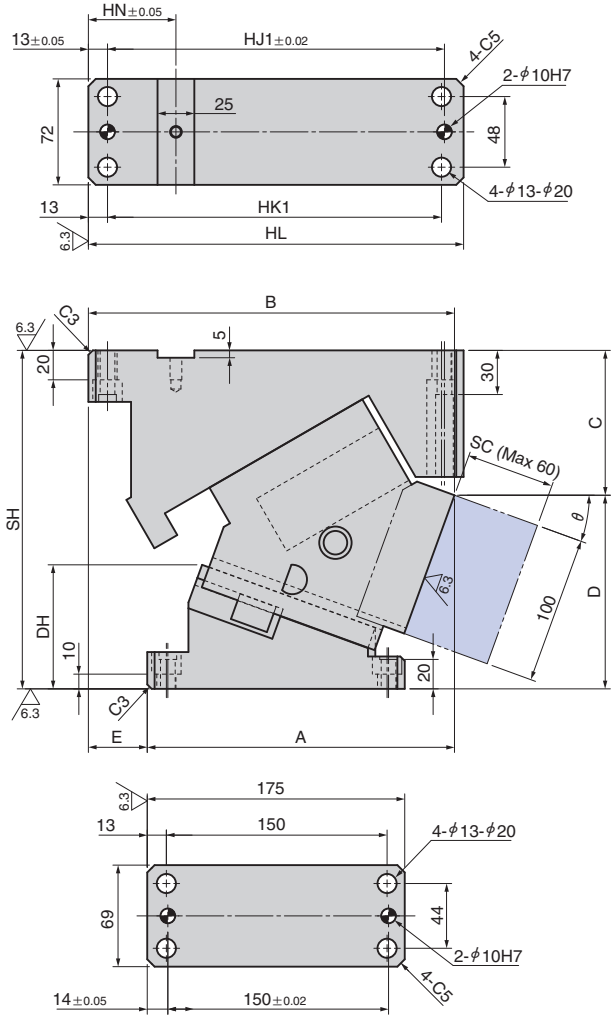
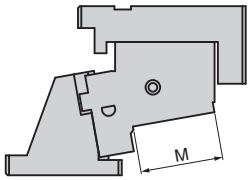
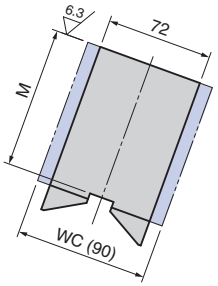
VACSS72
VACYS72
VACPS72
VACBS72

CAD FILE





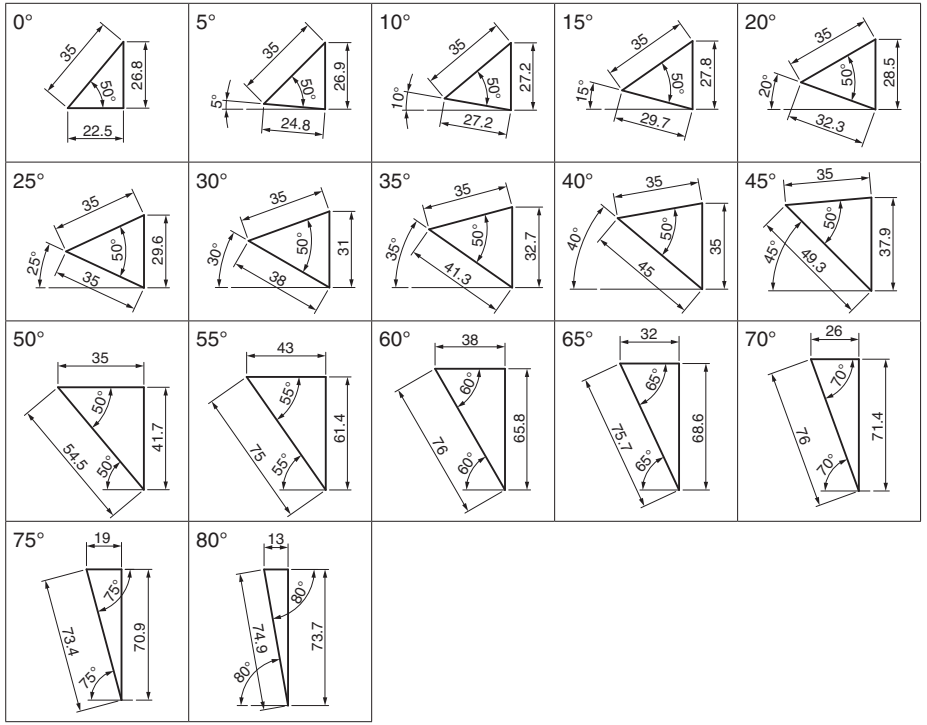
θ = 60°~80°



θ = 0°~55°

θ	A	B	C	D	E	SH	HL	HK1	HJ1	HN	DH	M
00	172.00	236.00	72.00	158.00	64		235	207	209		54.9	
05	182.43	240.43	78.86	151.14	58		240	212	214		61.2	
10	191.54	244.54	85.57	144.43	53		245	217	219		68.1	
15	201.33	247.33	92.10	137.90	46		250	222	224		75.8	
20	208.81	248.81	98.43	131.57	40	230	255	227	229		84.3	
25	217.02	247.02	104.52	125.48	30		255	227	229	59.5	93.3	96
30	224.97	242.97	110.36	119.64	18		255	227	229		102.9	
35	231.68	239.68	115.92	114.08	8		255	227	229		112.8	
40	238.19	234.19	122.18	107.82	-4		255	227	229		122.0	
45	243.51	226.51	126.13	103.87	-17		250	222	224		133.5	
50	248.67	219.67	141.76	93.24	-29	235	245	217	219		138.0	
55	251.57	226.57	147.13	102.87	-25	250	253	225	227		144.5	106
60	260.14	222.14	148.30	106.70	-38		253	225	227		149.1	105
65	269.24	216.24	150.83	104.17	-53		253	225	227	67.5	151.2	
70	288.09	214.09	152.28	102.72	-74	255	253	225	227		153.6	115
75	300.78	209.78	154.27	100.73	-91		253	225	227		156.4	120
80	314.84	205.84	159.85	95.15	-109		253	225	227		157.5	125

■Cam Diagram



Refer to page 390 for Table of Components.

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Aerial Cam Unit

Grade	Working Force [kN (tonf)] 1,000,000 strokes	Working Force [kN (tonf)] 300,000 strokes	Travel	Catalog No.	W	θ	Spring Type PS
Sky	36.8 (3.7)	49.0 (5.0)	Long	VACSL	72	00～50 (5° increments)	GK NGK
Yellow	60.3 (6.1)	80.4 (8.2)		VACYL			ISO
Pink	77.4 (7.9)	103.7 (10.6)		VACPL			ISOL
Black	103.7 (10.6)	127.4 (13.0)		VACBL			GK NGK

ISO, ISOL: Coil Spring GK: Gas Spring (KALLER)
NGK: Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W	–	θ	–	PS	–	Option
VACSL	72	–	10	–	ISOL		
VACYL	72	–	10	–	NGK	–	SC55 – WC90
VACPL	72	–	10	–	GK	–	NF – SC60 – K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
SC	Mount face length is extended from 1 to 60 mm in increments of 1 mm.
WC	The width of the mount face is extended to 90 mm. When combined with SC option, the maximum extension of the SC dimension is 55 mm.
K	Key attached.

Refer to page 388 for key specification.

■Spring Force & Return Force

● Gas Spring Sky

θ	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	3371	344	4509	460
05	3371	344	4503	459
10	3371	344	4496	459
15	3371	344	4489	458
20	3371	344	4482	457
25	3371	344	4475	457
30	3371	344	4467	456
35	3371	344	4459	455
40	3371	344	4451	454
45	3344	341	4408	450
50	3304	337	4347	444

● Gas Spring Yellow, Pink, Black

θ	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	6836	698	9082	927
05	6836	698	9076	926
10	6836	698	9069	925
15	6836	698	9063	925
20	6836	698	9055	924
25	6836	698	9048	923
30	6836	698	9040	922
35	6836	698	9033	922
40	6836	698	9025	921
45	6757	698	8912	909
50	6638	677	9747	995

● Coil Spring
ISO Sky, Yellow, Pink

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	358	36.6	2822	288	3784	386
05	358	36.6	2822	288	3777	385
10	358	36.6	2822	288	3771	385
15	358	36.6	2822	288	3764	384
20	358	36.6	2822	288	3757	383
25	358	36.6	2822	288	3749	383
30	358	36.6	2822	288	3742	382
35	358	36.6	2822	288	3734	381
40	358	36.6	2822	288	3726	380
45	358	36.6	2732	279	3600	367
50	358	36.6	2598	265	3415	348

● Coil Spring
ISOL Sky, Yellow, Pink

θ	Spring Force Initial Load N	Spring Force Initial Load kgf	Spring Force Final Load N	Spring Force Final Load kgf	Return Force N	Return Force kgf
00	225	22.9	1770	181	2396	245
05	225	22.9	1770	181	2390	244
10	225	22.9	1770	181	2384	243
15	225	22.9	1770	181	2377	243
20	225	22.9	1770	181	2369	242
25	225	22.9	1770	181	2362	241
30	225	22.9	1770	181	2354	240
35	225	22.9	1770	181	2347	239
40	225	22.9	1770	181	2339	239
45	225	22.9	1714	175	2257	230
50	225	22.9	1630	166	2138	218

■Cam Travel

θ	Travel mm
00	35.4
05	39.0
10	42.8
15	46.6
20	50.7
25	55.0
30	59.7
35	64.9
40	70.7
45	74.7
50	77.8

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■Weight*1

θ	Total Weight kg	Cam Slider Weight kg	Tool Weight*2 kg
00	19.4	6.9	4.4
05	19.3	6.9	4.4
10	19.3	6.9	4.5
15	19.4	6.9	4.6
20	19.4	6.9	4.8
25	19.3	6.9	5.0
30	19.1	6.9	5.3
35	19.0	6.9	5.6
40	19.1	6.9	6.1
45	18.8	6.9	6.9
50	19.3	6.9	8.0

*1 This is the weight without SC and WC option. Reduce tool weight when with SC and WC option since the slider gets heavier.
*2 Tool weight is estimated value. Allowable tool weight varies depending on press speed.

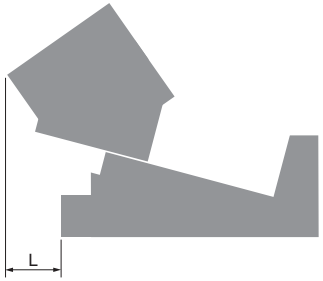
■Rear Removal Space

● Coil Spring

θ	L mm
00	1.6
05	10.6
10	18.0
15	24.5
20	35.9
25	48.5
30	55.9
35	65.2
40	74.2
45	80.9
50	88.2

● Gas Spring

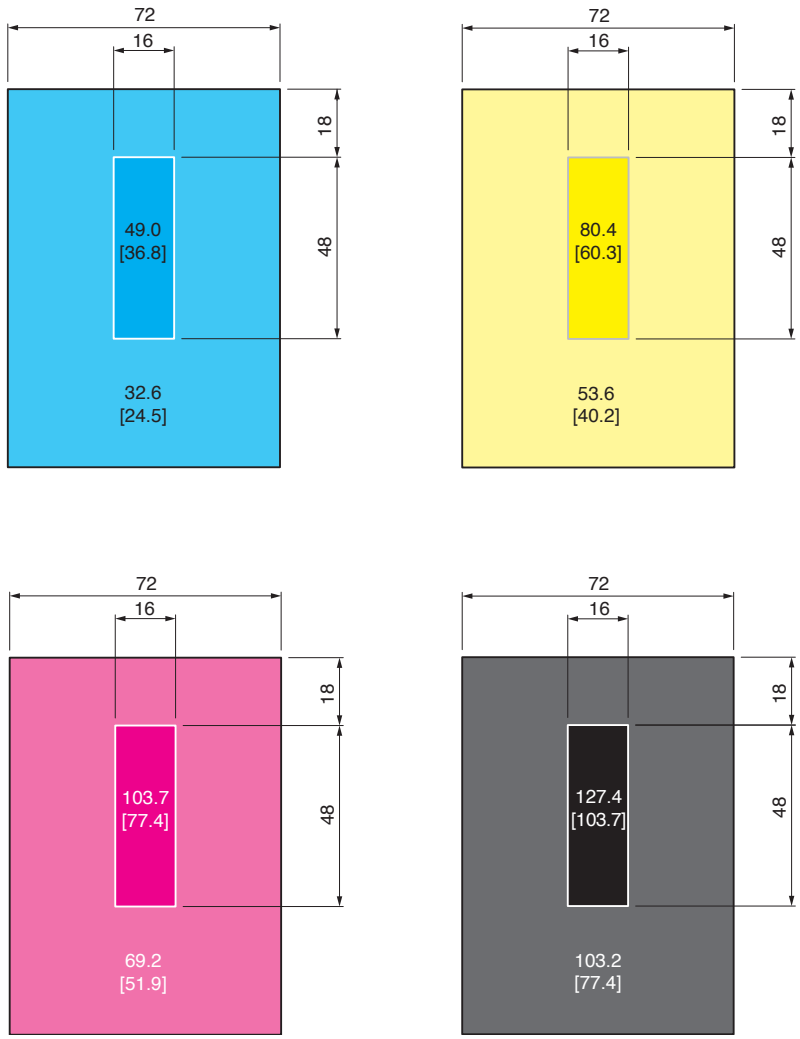
θ	L mm
00	0.0
05	7.4
10	14.5
15	20.8
20	32.0
25	44.4
30	51.7
35	60.8
40	69.7
45	76.4
50	83.7



■Working Force Distribution Diagram

The working forces indicated in the mount face distribution diagram are reached by putting the tooling center of gravity within each area for the following pictures.

: Working force (kN) allowed for up to 300,000 strokes
[ ]: Working force (kN) allowed for up to 1,000,000 strokes



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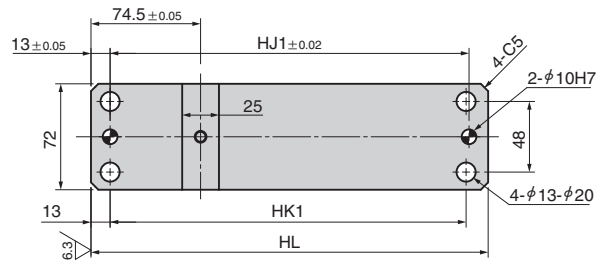
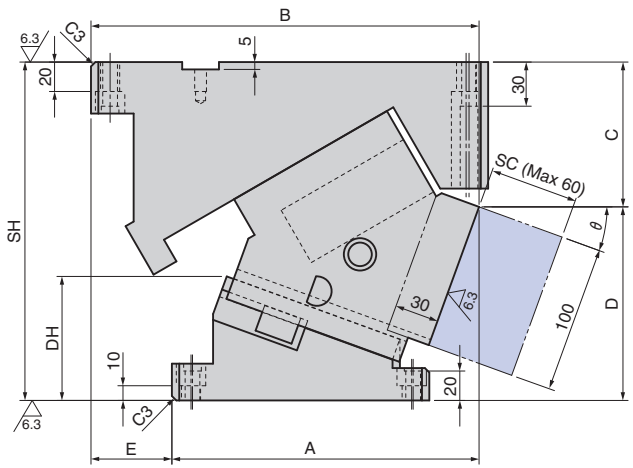
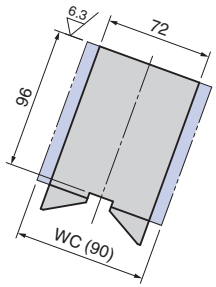
Aerial Cam Unit

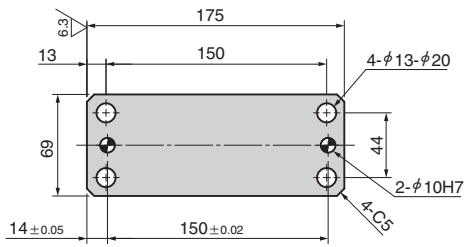
VACSL72
VACYL72
VACPL72
VACBL72

CAD FILE



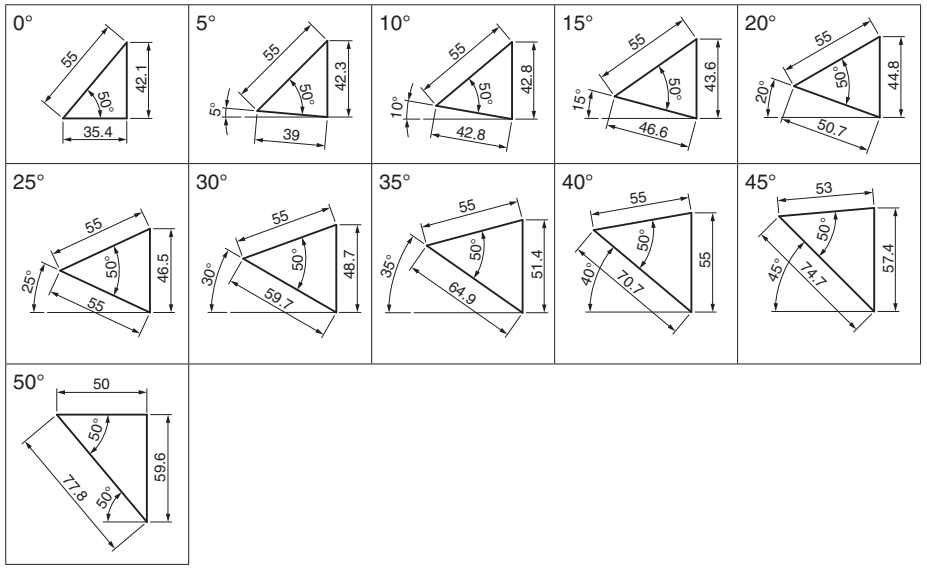






θ	A	B	C	D	E	SH	HL	HK1	HJ1	DH
00	172.00	251.00	72.00	158.00	79		250	222	224	54.9
05	182.43	255.43	78.86	151.14	73		255	227	229	61.2
10	191.54	259.54	85.57	144.43	68		260	232	234	68.1
15	201.33	262.33	92.10	137.90	61		265	237	239	75.8
20	208.81	263.81	98.43	131.57	55	230	270	242	244	84.3
25	217.02	262.02	104.52	125.48	45		270	242	244	93.3
30	224.97	262.97	110.36	119.64	38		275	247	249	102.9
35	231.68	259.68	115.92	114.08	28		275	247	249	112.8
40	238.19	254.19	122.18	107.82	16		275	247	249	122.0
45	243.51	246.51	126.13	103.87	3		270	242	244	133.5
50	248.67	234.67	141.76	93.24	-14	235	265	237	239	138.0

■Cam Diagram



Refer to page 390 for Table of Components.

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