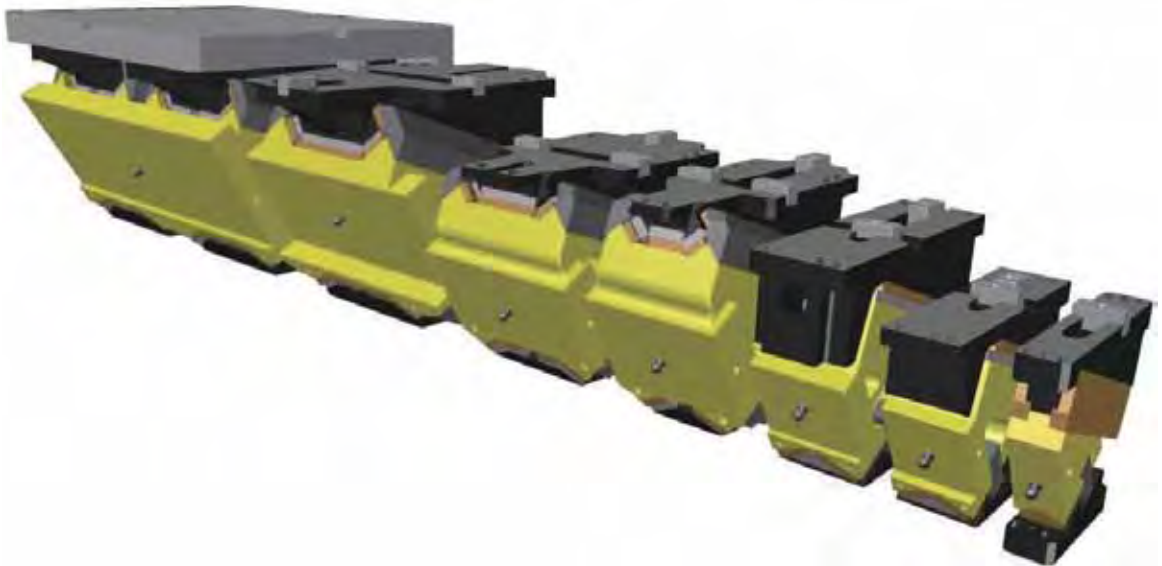


# Universal Cams

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**Specification**

W	θ	A	B	C	E	F	H	J	K	L	V	V <sub>1</sub>	x
50	00	225	118	107	77.5	122.5	45	23	20	47	75	75	0
	05	226.91	126.91	100	78.33	121.67	51.4			43			
	10	223.72	133.72	90	79.93	120.07	57.6			39			
	15	224.36	139.36	85	82.29	117.71	63.6	36					
	20	220.76	150.76	70	85.39	114.61	69.1	33					
	25	215.85	157.85	58	89.22	110.78	74.4	21					
	30	213.58	158.58	55	94.73	105.27	78.2						
	35	204.89	169.89	35	96.9	103.1	85.5						
	40	206.72	176.72	30	102.69	97.31	89.4						
	45	202.01	182.01	20	103.06	96.94	98.7						
	50	195.73	185.73	10	105.94	94.06	105.5						
55	189.83	189.83	0	116.3	83.7	104.8							

**Product Type**

Stroke S	Acting force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	θ
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
30.2	19.6 (2.0)	39.2 (4.0)	59(6.0)	827(84.3)	980 (99.9)	12.7	With additional slide clearance LGFV	50	00
30.5			137(14.0)	843(85.9)		12.3			05
30.3			216(22.0)	855(87.1)		11.8			10
30.5			98(10.0)	835(85.2)	979 (99.9)	11.8			15
30.4			172(17.5)	848(86.4)		11.5			20
30.0			843(86.0)	854(87.1)		11.3			25
32.6			865(88.2)	873(89.0)		10.9			30
35.4			884(90.1)	892(91.0)	10.6	35			
38.6			900(91.8)	10.6	40				
42.3			10.8	45					
46.7			10.8	50					
52.1	10.8	55							

**How to Order**

Order    Alterations

**Alteration**

● Select alterations with codes

Alterations	Code	Spec.
	N12	Change dowel hole diameter φ13H7 ⇒ φ12H7
	K	Add locating key (With 1 hexagon socket head cap screws M8×15)
	SC	Move forward mounting surface 1 ≦ SC ≦ 60 1mm increment
	WC	Change the width of mounting surface W=50 ⇒ W=65



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# CAM UNITS –GUIDE–

## ■ Aerial cam unit

Page	Type	Mounting surface width mm	working angle	Stamping process			Additional slide clearance	Allowable working force kN (ton)	Return spring force N (kgf)	Shut height mm	Disassembled view page
				Pierce	Trim	Flange					
P.12 - 31	STANDARD AERIAL CAM UNITS FOR PIERCE <b>LGFBV</b> (With additional slide clearance)	50	00-70	●			●	39.2 (4.0)	979-980 (99.9-100.0)	200	① P.7
		65							1190-1226 (121.3-125.0)	180-210	② P.7
		80						78.5 (8.0)	1454-1620 (148.2-165.2)	270	
		150						132.4 (13.5)	4611 (470.2)	270	
P.32 - 41	AERIAL CAM UNITS FOR HEAVY LOAD PIERCE <b>LGFBVS</b> (With additional slide clearance)	80	00-70	●			●	109.8 (11.2)	3545-3559 (361.5-362.9)	270	② P.7
		150						185.3 (18.9)	10149-10176 (1034.9-1037.7)	270	
P.42 - 65	WIDE AERIAL CAM UNITS FOR PIERCE <b>LGFBVW</b> (With additional slide clearance)	200	00-60	●			●	235.4 (24.0)	4903 (500.0)	350	③ P.8
		300						392.3 (40.0)	9806 (1000.0)	350	
		400						490.3 (50.0)	9806 (1000.0)	350	
		500						627.6 (64.0)	14710 (1500.0)	350	
		600						783.6 (79.9)	19613 (1999.9)	350	
P.66 - 71	COMPACT AERIAL CAM UNITS FOR PIERCE <b>LGFBVC</b> (With additional slide clearance)	52	00-80	●			●	29.4 (3.0)	980-981 (99.9-100.0)	125	④ P.8
P.72 - 77	COMPACT AERIAL CAM UNITS FOR HEAVY LOAD PIERCE <b>LGFBVA</b> (With additional slide clearance)	52	00-60	●			●	58.8 (6.0)	3324-3327 (338.9-339.2)	160	④ P.8
P.78 - 83	AERIAL CAM UNITS FOR HEAVY LOAD PIERCE <b>LGFBVH</b> (With additional slide clearance)	65	00-75	●			●	137.3 (14.0)	5258-5989 (536.1-610.7)	230	④ P.8
P.84 - 89	COMPACT LONG STROKE AERIAL CAM UNITS FOR PIERCE <b>LGFBVL</b> (With additional slide clearance)	52	00-50	●			●	29.4 (3.0)	902-921 (91.9-93.9)	135	④ P.8
P.90 - 99	AERIAL CAM UNITS FOR TRIM & FLANGE <b>LGFTT</b> (Without additional slide clearance)	65	00-70	●	●	●	×	39.2-58.8 (4.0-6.0)	891-1138 (90.9-116.0)	210	⑤ P.9
		100						88.3-98.1 (9.0-10.0)	2760-3091 (281.4-315.2)	280	
		200						196.1-235.4 (20.0-24.0)	5520-6182 (562.9-630.4)	280	

Page	Type	Mounting surface width mm	working angle	Stamping process			Additional slide clearance	Allowable working force kN (ton)	Return spring force N (kgf)	Shut height mm	Disassembled view page
				Pierce	Trim	Flange					
P.100 - 109	V SHAPE GUIDE AERIAL CAM UNITS FOR TRIM & FLANGE <b>LGFVT</b>	65	00-70	●	●	●	×	39.2 (4.0)	891-1138 (90.9-116.0)	210	⑤ P.9
		100						88.3 (9.0)	2576-2835 (262.7-289.1)	280	
		200						186.3 (19.0)	5152-5670 (525.4-578.2)	280	
P.110 - 139	RIGID AERIAL CAM UNITS <b>KACG</b>	50	00-65	●	●	●	●	58.8 (6.0)	1098-1167 (111.9-119.0)	180	① P.7
		65	00-60					58.8 (6.0)	810-835 (82.6-85.1)	175	② P.7
		80	00-65					98.1 (10.0)	1842-1914 (187.9-195.2)	270	① P.7
		150						294.2 (30.0)	7022 (716.1)	355	⑥ P.9
		200						294.2 (30.0)	7022 (716.1)	355	
		300						588.4 (60.0)	14045 (1432.2)	355	
P.140 - 163	NAAMS STANDARD AERIAL CAM UNITS <b>KACNR</b>	70	00-60	●	●	●	●	98.1 (10.0)	GAS SPRING 2350 (240) COIL SPRING 578-657 (59.0-67.0)	225	⑦ P.10
		80						166.7 (17.0)	GAS SPRING 2350 (240) COIL SPRING 994-1224 (101.3-124.8)	275	
		165						294.2 (30.0)	GAS SPRING 3430 (350) COIL SPRING 2694 (274.7)	300	
		200						353.0 (36.0)	GAS SPRING 6125 (625) COIL SPRING 4494 (458.3)	300	③ P.8
		300						451.1 (46.0)	GAS SPRING 10668 (1088) COIL SPRING 8015-9198 (817.3-937.9)	375	
		400						451.1 (46.0)	GAS SPRING 10668 (1088) COIL SPRING 8015-9198 (817.3-937.9)	375	

# CAM UNITS –GUIDE–

## Die mount cam unit

Page	Type	Mounting surface width	Working angle	Slide stroke mm	Stamping process			Additional slide clearance	Allowable working force kN (ton)	Return spring force N (kgf)	Shut height mm	Disassembled view page
					Pierce	Trim	Flange					
P.164 - 187	STANDARD DIE MOUNT CAM UNITS DRILLED DOWEL HOLES FINISHED DOWEL HOLES <b>LGDC</b> <b>LGDCA</b>	52	00	25-60	●	●	●	×	29.4 (3.0)	594-613 (60.6-62.5)	140	⑧ P.10
		65	00-20	40-70					39.2 (4.0)	743-974 (75.8-99.4)	160-170	
		100		40-80					58.8-78.5 (6.0-8.0)	1109-1306 (113.1-133.2)	200	
		150		40-70					88.3-98.1 (9.0-10.0)	1817-1869 (185.3-190.6)	220-230	
		200	00	40-60					117.7 (12.0)	2765-2803 (281.9-285.8)	240	
		250							147.1 (15.0)	3614-3657 (368.6-372.9)	270	
		300							176.5 (18.0)	3614-3657 (368.6-372.9)	270	
		400							60	205.9 (21.0)	9325 (950.9)	
		500										
600												
P.188 - 193	COMPACT DIE MOUNTED CAM UNITS <b>LGDCC</b>	52	00-20	55	●		×	39.2 (4.0)	607 (61.9)	215-255	⑩ P.11	
		90	00-15					76.5 (7.8)	1213 (123.7)	220-225		

## Relationship of material thickness and bore diameter to pierce force.

Units: KN (tonf)

Punch diameter	Material thickness									
	0.6 t	0.7 t	0.8 t	1.0 t	1.2 t	1.4 t	1.6 t	1.8 t	2.0 t	2.3 t
φ 3	2.22(0.23)	2.59(0.26)	2.96(0.30)	3.69(0.38)	4.43(0.45)	5.17(0.53)	5.91(0.60)	6.65(0.68)	7.39(0.75)	8.50(0.87)
φ 4	2.96(0.30)	3.45(0.35)	3.94(0.40)	4.93(0.50)	5.91(0.60)	6.90(0.70)	7.88(0.80)	8.87(0.90)	9.85(1.01)	11.33(1.16)
φ 5	3.69(0.38)	4.31(0.44)	4.93(0.50)	6.16(0.63)	7.39(0.75)	8.62(0.88)	9.85(1.01)	11.08(1.13)	12.32(1.26)	14.16(1.45)
φ 6	4.43(0.45)	5.17(0.53)	5.91(0.60)	7.39(0.75)	8.87(0.90)	10.34(1.06)	11.82(1.21)	13.30(1.36)	14.78(1.51)	16.99(1.73)
φ 8	5.91(0.60)	6.90(0.70)	7.88(0.80)	9.85(1.01)	11.82(1.21)	13.79(1.41)	15.76(1.61)	17.73(1.81)	19.70(2.01)	22.66(2.31)
φ 10	7.39(0.75)	8.62(0.88)	9.85(1.01)	12.32(1.26)	14.78(1.51)	17.24(1.76)	19.70(2.01)	22.17(2.26)	24.63(2.51)	28.32(2.89)
φ 13	9.61(0.98)	11.21(1.14)	12.81(1.31)	16.01(1.63)	19.21(1.96)	22.41(2.29)	25.62(2.61)	28.82(2.94)	32.02(3.27)	36.82(3.76)
φ 16	11.82(1.21)	13.79(1.41)	15.76(1.61)	19.70(2.01)	23.64(2.41)	27.59(2.81)	31.53(3.22)	35.47(3.62)	39.41(4.02)	45.32(4.62)
φ 20	14.78(1.51)	17.24(1.76)	19.70(2.01)	24.63(2.51)	29.56(3.02)	34.48(3.52)	39.41(4.02)	44.33(4.52)	49.26(5.03)	56.65(5.78)
φ 25	18.47(1.88)	21.55(2.20)	24.63(2.51)	30.79(3.14)	36.95(3.77)	43.10(4.40)	49.26(5.03)	55.42(5.65)	61.58(6.28)	70.81(7.23)
φ 32	23.64(2.41)	27.59(2.81)	31.53(3.22)	39.41(4.02)	47.29(4.83)	55.17(5.63)	63.05(6.43)	70.93(7.24)	78.82(8.04)	90.64(9.25)
φ 38	28.08(2.87)	32.76(3.34)	37.44(3.82)	46.80(4.78)	56.16(5.73)	65.52(6.69)	74.88(7.64)	84.23(8.60)	93.59(9.55)	107.63(10.98)

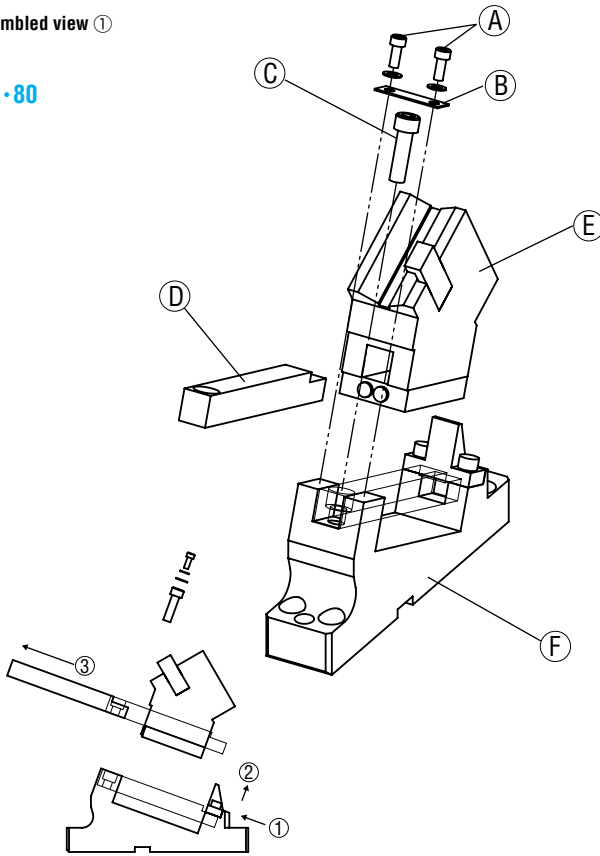
●Pierce force(KN(tonf))=Punch circumference(mm)×Material thickness(t)×Shear strength(392N/mm<sup>2</sup>(40kgf/mm<sup>2</sup>))÷1000



# CAM UNITS –DISASSEMBLY FEATURE–

## ■Disassembled view ①

LGFV50  
KACG50-80



How to remove the guide bar

### <Disassembly procedures>

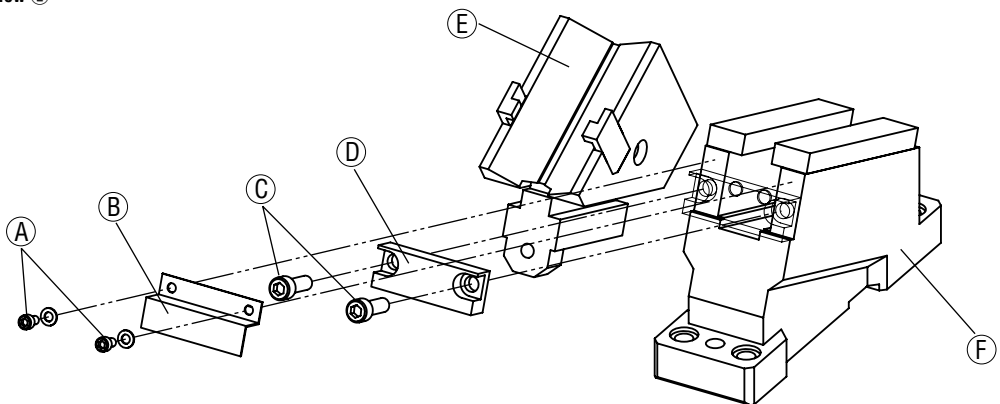
- Remove bolts (A), then remove the safety plate (B).
- Remove the bolt (C).
- Slide the guide bar (D) backward to remove it from the cam base (F) together with the cam slide (E).

### <Reassembly procedures>

- Assemble (D) to (F) with (D) and (E) mated together.
  - Tighten (C).
  - Assemble (B) and tighten (A).
- ※Be sure to eliminate any foreign substances from the sliding surface and apply light weight oil before assembly.
- ※Fully tighten the bolts.

## ■Disassembled view ②

LGFV65-150  
LGFVS  
KACG65



### <Disassembly procedures>

- Remove bolts (A), then remove the safety plate (B).
- Remove bolts (C), then remove the stop plate (D).
- Slide the cam slide (E) backward to remove it from the cam base (F).

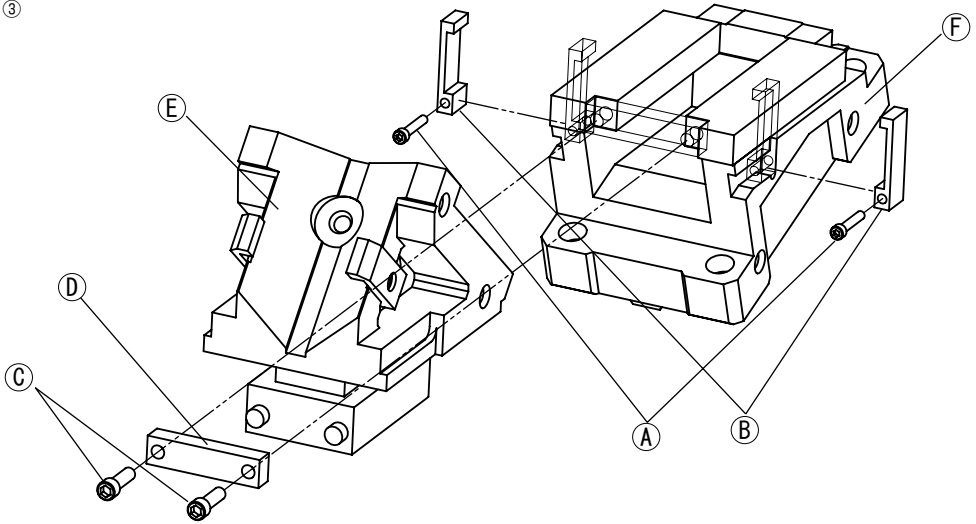
### <Reassembly procedures>

- Assemble (E) to (F) from the back.
  - Assemble (D) and tighten (C).
  - Assemble (B) and tighten (A).
- ※Be sure to eliminate any foreign substances from the sliding surface and apply light weight oil before assembly.
- ※Fully tighten the bolts.

# CAM UNITS –DISASSEMBLY FEATURE–

## ■Disassembled view ③

LGFVW  
KACNR165-400



### <Disassembly procedures>

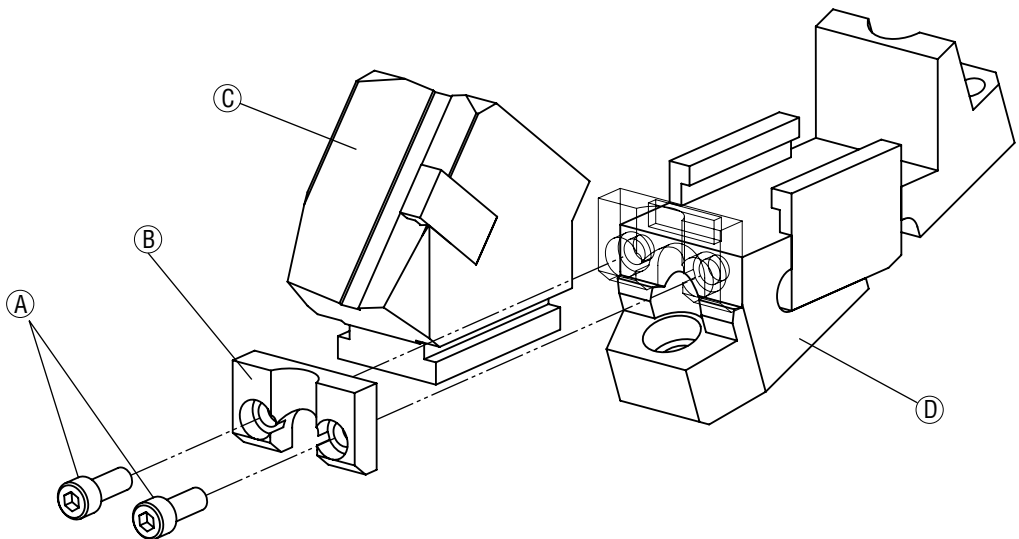
- Remove bolts (A), then remove safety plates (B).
- Remove bolts (C), then remove the stop plate (D).
- Slide the cam slide (E) backward to remove it from the cam base (F).

### <Reassembly procedures>

- Assemble (E) to (F).
  - Assemble (D) and tighten (C).
  - Assemble (B) and tighten (A).
- ※Be sure to eliminate any foreign substances from the sliding surface and apply light weight oil before assembly.
- ※Fully tighten the bolts.

## ■Disassembled view ④

LGFVC  
LGFVA  
LGFVH  
LGFVL



### <Disassembly procedures>

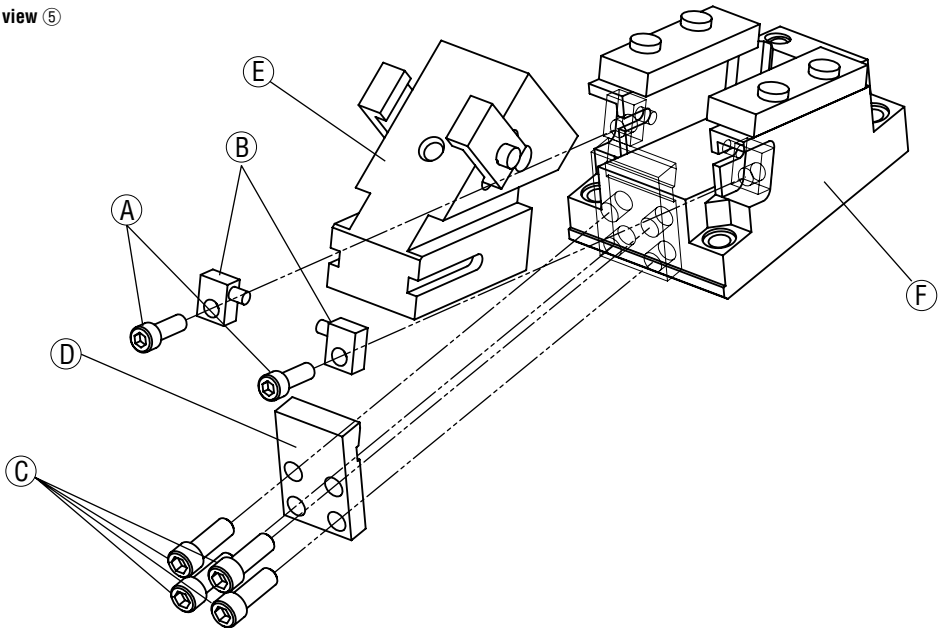
- Remove bolts (A), then remove the stopper (B).
- Slide the cam slide (C) backward to remove it from the cam base (D).

### <Reassembly procedures>

- Assemble (C) to (D).
  - Assemble (B) and tighten (A).
- ※Be sure to eliminate any foreign substances from the sliding surface and apply light weight oil before assembly.
- ※Fully tighten the bolts.

■ Disassembled view ⑤

LGFTT  
LGFVT



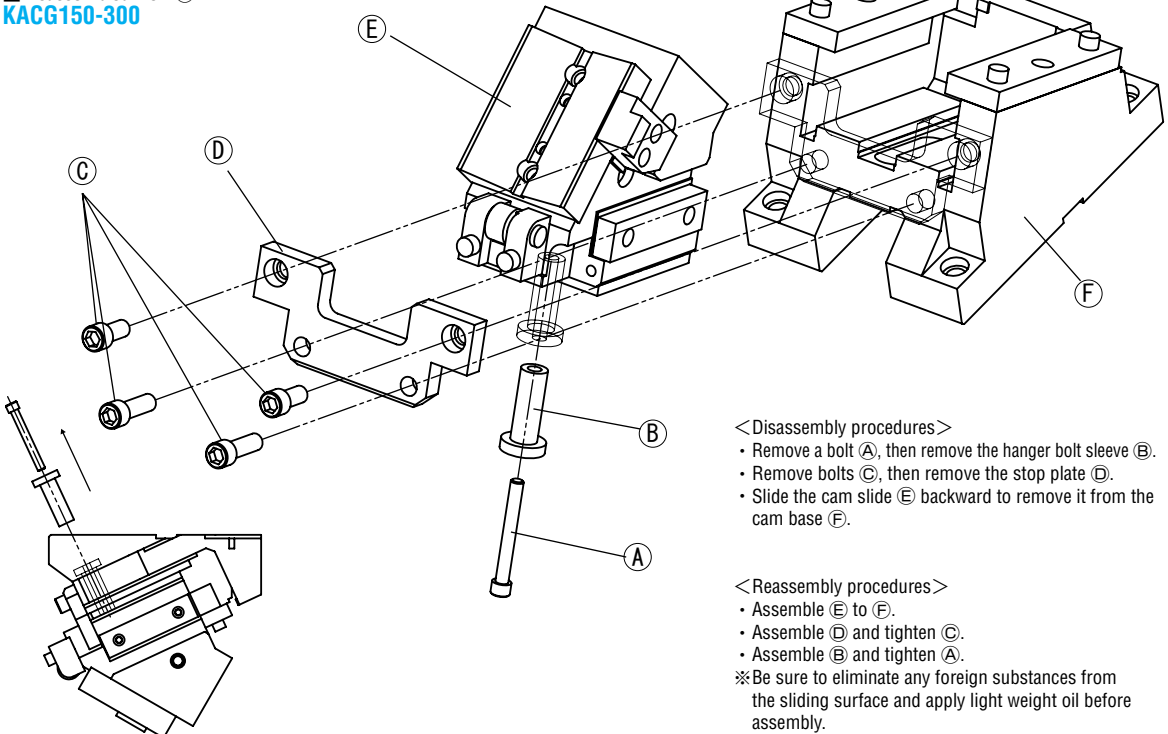
<Disassembly procedures>

- Remove bolts (A), then remove safety plates (B).
- Remove bolts (C), then remove the stop plate (D).
- Slide the cam slide (E) backward to remove it from the cam base (F).

<Reassembly procedures>

- Assemble (E) to (F).
  - Assemble (D) and tighten (C).
  - Assemble (B) and tighten (A).
- ※ Be sure to eliminate any foreign substances from the sliding surface and apply light weight oil before assembly.
- ※ Fully tighten the bolts.

■ Disassembled view ⑥  
KACG150-300



<Disassembly procedures>

- Remove a bolt (A), then remove the hanger bolt sleeve (B).
- Remove bolts (C), then remove the stop plate (D).
- Slide the cam slide (E) backward to remove it from the cam base (F).

<Reassembly procedures>

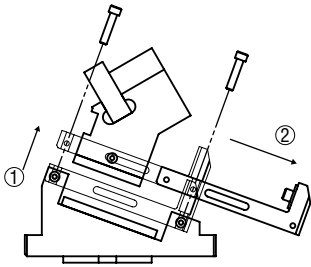
- Assemble (E) to (F).
  - Assemble (D) and tighten (C).
  - Assemble (B) and tighten (A).
- ※ Be sure to eliminate any foreign substances from the sliding surface and apply light weight oil before assembly.
- ※ Fully tighten the bolts.

How to remove the hanger bolt sleeve

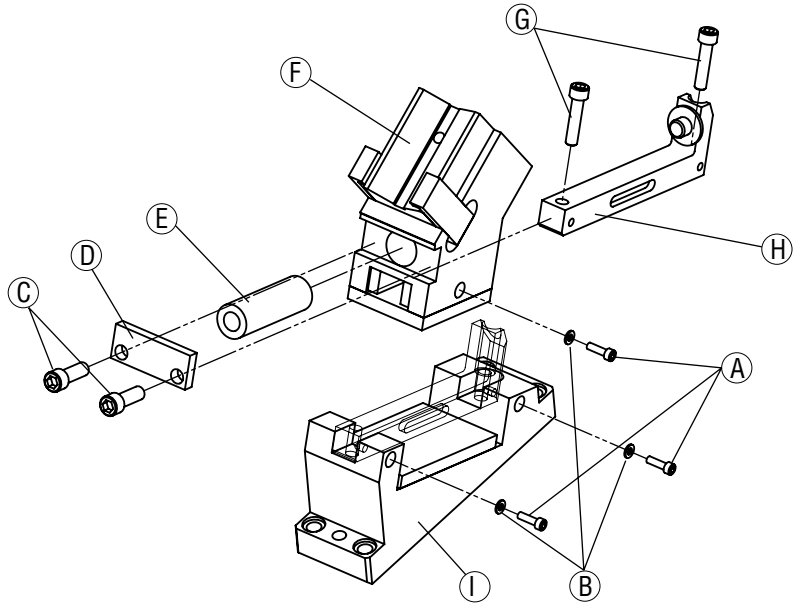
# CAM UNITS –DISASSEMBLY FEATURE–

## ■Disassembled view ⑦

KACNR70-80



How to remove the guide bar



### <Disassembly procedures>

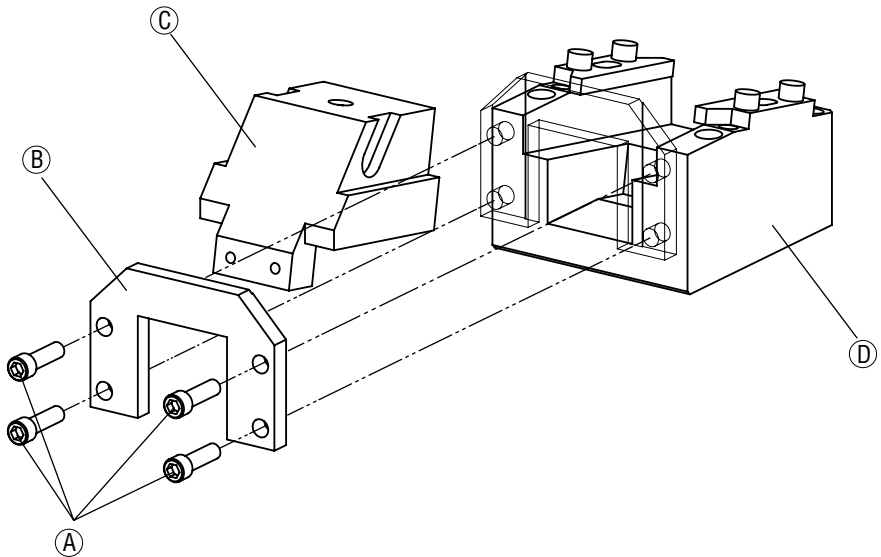
- Remove bolts (A) and spring washers (B).
- Remove bolts (C), then remove the spring retainer plate (D).
- Pull out the coil spring (E) from the cam slide (F).
- Remove bolts (G) and then remove (F) from the cam base (I) together with the guide bar (H).

### <Reassembly procedures>

- Assemble (F) to (I) with (F) and (H) assembled.
- Tighten (G).
- Assemble (E) to (F).
- Assemble (D) and tighten (C).
- Assemble (B) and tighten (A).
- ※Be sure to eliminate any foreign substances from the sliding surface and apply light weight oil before assembly.
- ※Fully tighten the bolts.

## ■Disassembled view ⑧

LGDC52-300  
LGDCA52-300



### <Disassembly procedures>

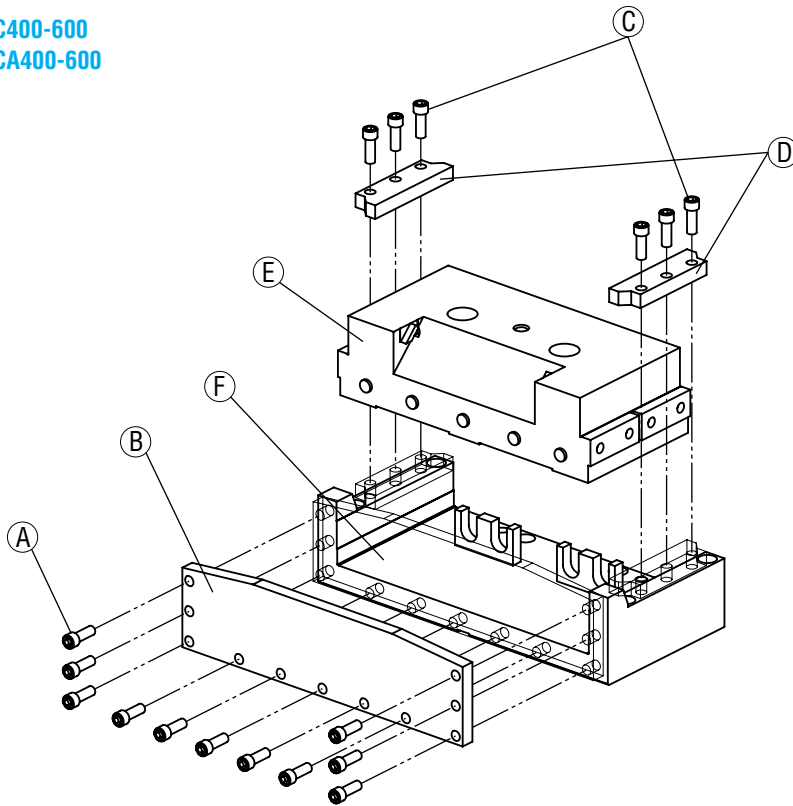
- Remove bolts (A), then remove the stop plate (backup plate) (B).
- Slide the cam slide (C) backward to remove it from the cam base (D).

### <Reassembly procedures>

- Assemble (C) to (D).
- Assemble (B) and tighten (A).
- ※Be sure to eliminate any foreign substances from the sliding surface and apply light weight oil before assembly.
- ※Fully tighten the bolts.

■ Disassembled view ⑨

LGDC400-600  
LGCA400-600



< Disassembly procedures >

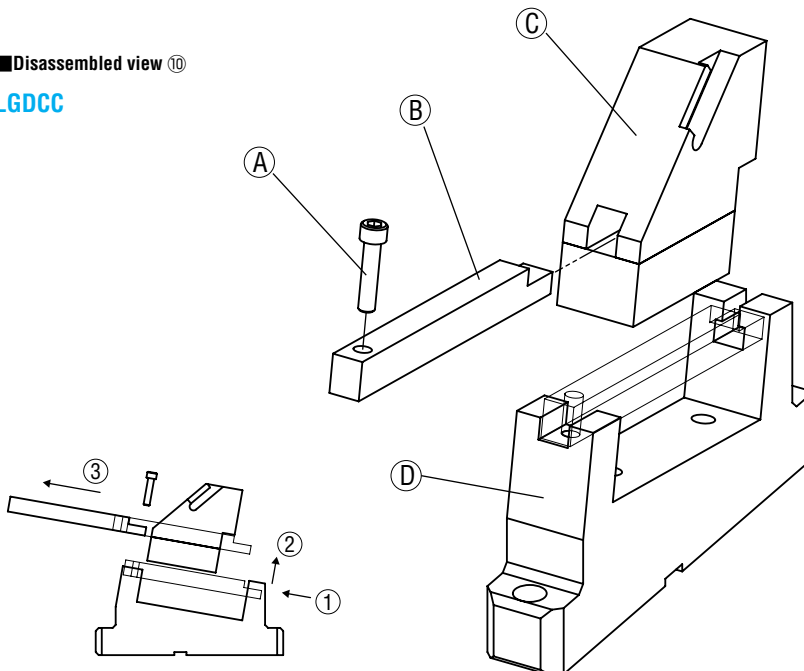
- Remove bolts (A), then remove the backup plate (B).
- Remove bolts (C), then remove upper plates (D).
- Slide the slide (E) upward to remove it from the cam base (F).

< Reassembly procedures >

- Assemble (E) to (F).
- Assemble (D) and tighten (C).
- Assemble (B) and tighten (A).
- ※ Be sure to eliminate any foreign substances from the sliding surface and apply light weight oil before assembly.
- ※ Fully tighten the bolts.

■ Disassembled view ⑩

LGDC



< Disassembly procedures >

- Remove the bolt (A).
- Slide the guide bar (B) backward to remove it from the cam base (D) together with the cam slide (C).

< Reassembly procedures >

- Assemble (B) to (D) with (B) and (C) assembled.
- Tighten (A).
- ※ Be sure to eliminate any foreign substances from the sliding surface and apply light weight oil before assembly.
- ※ Fully tighten the bolts.

How to remove the guide bar



W	$\theta$	A	B	C	E	F	H	J	K	L	V	V <sub>1</sub>	x
50	00	225	118	107	77.5	122.5	45	23	20	47	75	75	0
	05	226.91	126.91	100	78.33	121.67	51.4			43			
	10	223.72	133.72	90	79.93	120.07	57.6			39			
	15	224.36	139.36	85	82.29	117.71	63.6			36			
	20	220.76	150.76	70	85.39	114.61	69.1			33			
	25	215.85	157.85	58	89.22	110.78	74.4	21					
	30	213.58	158.58	55	94.73	105.27	78.2						
	35	204.89	169.89	35	96.9	103.1	85.5						
	40	206.72	176.72	30	102.69	97.31	89.4						
	45	202.01	182.01	20	103.06	96.94	98.7						
	50	195.73	185.73	10	105.94	94.06	105.5						
55	189.83	189.83	0	116.3	83.7	104.8	65						

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
30.2	19.6 (2.0)	39.2 (4.0)	59(6.0)	827(84.3)	980 (99.9)	12.7	With additional slide clearance <b>LGFV</b>	50	00	
30.5			137(14.0)	843(85.9)		12.3			05	
30.3			216(22.0)	855(87.1)		11.8			10	
30.5			98(10.0)	835(85.2)		11.8			15	
30.4			172(17.5)	848(86.4)		11.5			20	
30.0			163(16.6)	843(86.0)	979 (99.9)	11.3			25	
32.6						854(87.1)			11.1	30
35.4						865(88.2)			10.9	35
38.6						873(89.0)			10.9	40
42.3						884(90.1)			10.6	45
46.7						892(91.0)			10.6	50
52.1						900(91.8)			10.8	55



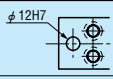

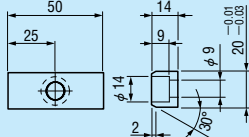

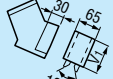
Order **Catalog No.** **LGFV** **W** **50** -  **$\theta$**  **40**



Alterations



**Catalog No.** **LGFV** **W** **50** -  **$\theta$**  **40** - (N12 · K...etc.) **N12**

Alterations	Code	Spec.
	<b>N12</b>	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 12H7
	<b>K</b>	Add locating key (With 1 hexagon socket head cap screws M8×15) 
	<b>SC</b>	Move forward mounting surface $1 \leq SC \leq 60$ 1mm increment
	<b>WC</b>	Change the width of mounting surface $W=50 \Rightarrow W=65$

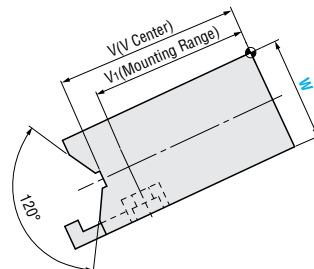
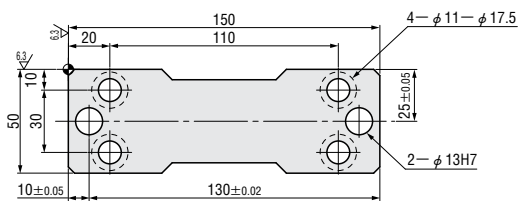
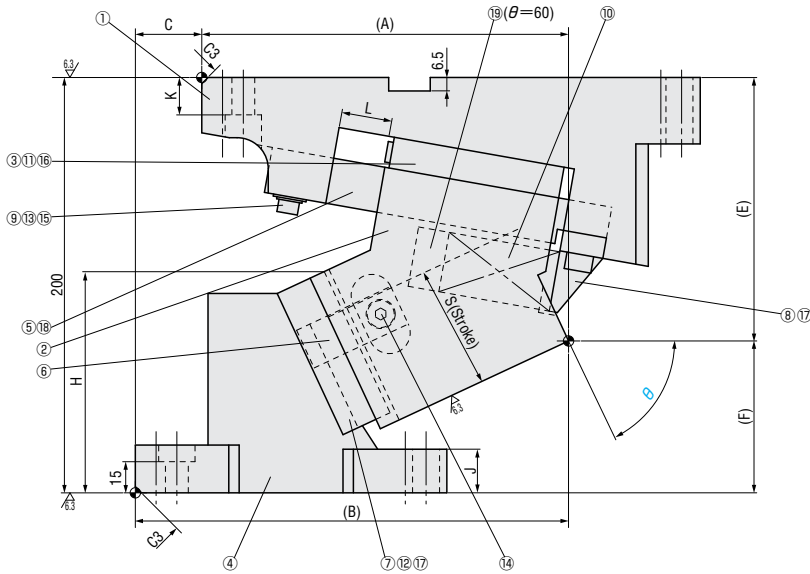
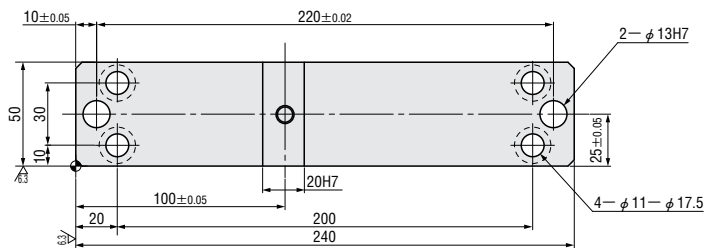
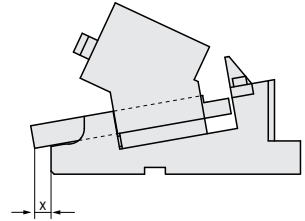
# STANDARD AERIAL CAM UNITS FOR PIERCE

—LGFV—

— With additional slide clearance —

LGFV50 ( $\theta=60-70$ )

■ Rear removal space



■ Components table P.30



W	$\theta$	A	B	C	E	F	H	J	K	L	V	V <sub>1</sub>	x
50	60	179.27	194.27	15	125.08	74.92	105.5	21	18	30	75	65	3
	65	176.6	208.6	32	126.87	73.13	106.5			25	90	75	
	70	177	215	38	135.83	64.17	107.0			20	92		

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
59.1	19.6 (2.0)	39.2 (4.0)	163 (16.6)	911 (92.9)	979 (99.9)	11.2	— With additional slide clearance— <b>LGJV</b>	50	60
58.3			299 (30.5)	922 (94.0)		11.6			65
57.6			226 (23.1)	916 (93.4)	980 (100.0)	12.0			70



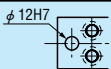

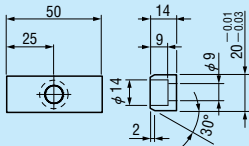
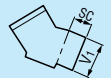
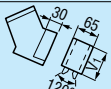
Order

Catalog No.	W	—	$\theta$
LGJV	50	—	65



Alterations

Catalog No.	W	—	$\theta$	—	(N12 · K...etc.)
LGJV	50	—	65	—	K

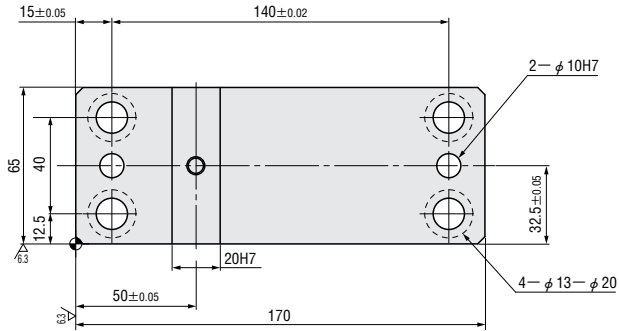
Alterations	Code	Spec.
	N12	Change dowel hole diameter $\phi 13H7 \Rightarrow \phi 12H7$
	K	Add locating key (With 1 hexagon socket head cap screws M8×15) 
	SC	Move forward mounting surface $1 \leq SC \leq 60$ 1mm increment
	WC	Change the width of mounting surface $W=50 \Rightarrow W=65$

# STANDARD AERIAL CAM UNITS FOR PIERCE

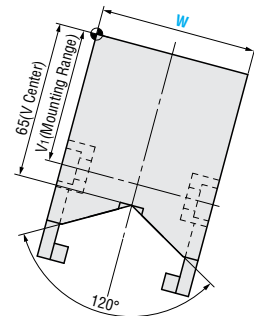
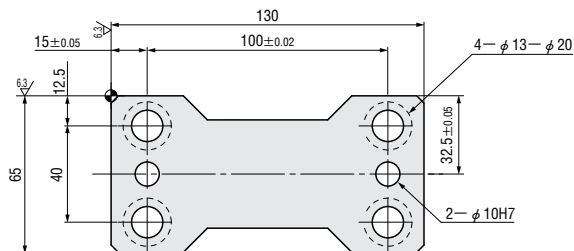
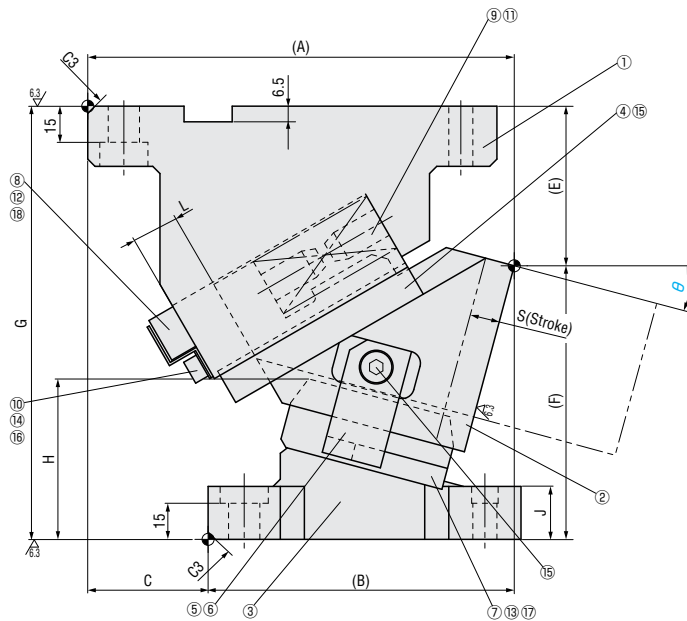
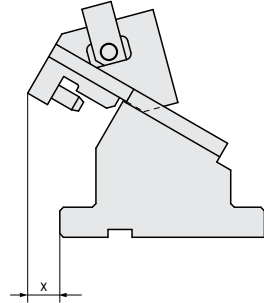
—LGFV—

— With additional slide clearance —

LGFV65 ( $\theta=00-45$ )



## ■ Rear removal space



■ Components table P.30

W	$\theta$	A	B	C	E	F	G	H	J	L	V <sub>i</sub>	x
65	00	170	110	60	53	127	180	59.5	33	21.2	65	7
	05	171.41	116.41	55	60.27	119.73		59.0	25	19.6		13
	10	177.16	122.16		63.06	116.94		63.5		18.3		20
	15	177.2	127.2	50	66.33	113.67		67.9	22	17.3		25
	20	176.51	136.51	40	70.01	109.99		72.2		17.1		30
	25	172.94	137.94	35	75.64	104.36		74.9		16.6		31
	30	177.78	147.78	30	78.32	101.68		80.7				
	35	173.29	153.29	20	83.25	96.75		84.5		16.5		35
	40	170.78	160.78	10	82.44	97.56		96.0				
	45	165.5	163	2.5	86.51	93.49		100.9				

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
15.0	19.6 (2.0)	39.2 (4.0)	289 (29.5)	888(90.6)	1190 (121.3)	9.5	— With additional slide clearance— <b>LGJV</b>	65	00	
15.1			357 (36.4)	914(93.2)		9.3			05	
15.2			350 (35.7)	939(95.7)		1226 (125.0)			9.0	10
15.5			398 (40.5)	958(97.7)					8.8	15
16.5			407 (41.5)	977(99.6)					8.6	20
17.1			431 (44.0)	987(100.6)					8.5	25
18.5				1011(103.1)					8.3	30
19.6			1025(104.5)	8.3					35	
21.5			436 (44.4)	1044(106.5)					8.1	40
23.3				1059(107.9)					8.1	45



Order **Catalog No.** **LGJV** **W** **65** —  **$\theta$**  **35**



Alterations **Catalog No.** **LGJV** **W** **65** —  **$\theta$**  **20** — **(K · SC)** **SC30**

Alterations	Code	Spec.
	<b>K</b>	Add locating key (With 1 hexagon socket head cap screws M8×15) 
	<b>SC</b>	Move forward mounting surface 1 ≤ SC ≤ 60 1mm increment



W	$\theta$	A	B	C	E	F	G	H	J	L	V <sub>i</sub>	x
65	50	165.41	170.41	5	96.79	93.21	190	111.1	22	17.1	65	37
	55	159.51	169.51	10	99.89	90.11		115.3				42
	60	156.68	176.68	20	120.78	89.22	210	129.1		18.1		46
	65	150.33	175.33	25	122.8	87.2		129.4				52
	70	146.45	178.45	32	131.68	78.32		128.5				63

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
26.5	19.6 (2.0)	39.2 (4.0)	407 (41.5)	1073(109.4)	1226 (125.0)	8.4	—With additional slide clearance— <b>LGfV</b>	65	50
29.7				1087(110.9)					8.4
35.0			1102(112.3)	9.3					60
41.4			1121(114.3)	9.3					65
51.1			1140(116.2)	9.5					70



Order

Catalog No. **LGfV** W **65** —  $\theta$  **60**



Alterations



Catalog No. **LGfV** W **65** —  $\theta$  **60** — (K · SC) **K**

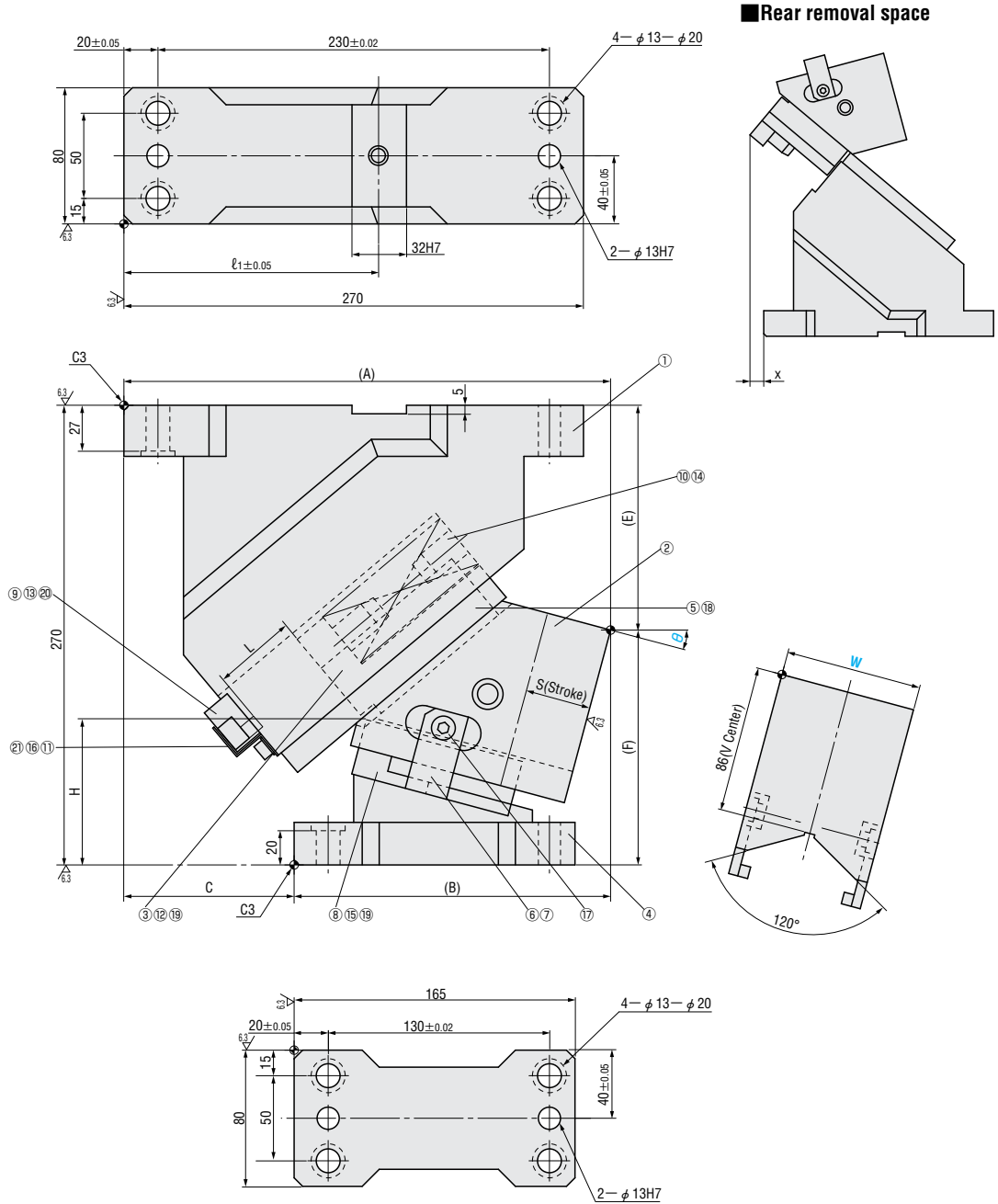
Alterations	Code	Spec.
	<b>K</b>	Add locating key (With 1 hexagon socket head cap screws M8×15) 
	<b>SC</b>	Move forward mounting surface 1 ≤ SC ≤ 60 1mm increment

# STANDARD AERIAL CAM UNITS FOR PIERCE

—LGFV—

— With additional slide clearance —

LGJV80 ( $\theta=00-60$ )



W	$\theta$	A	B	C	E	F	H	L	$\ell_1$	x
80	00	260	160	100	99	171	83	50	130	12
	05	272.93	172.93		109.39	160.61	83.8		150	17
	10	279.92	179.92		120.43	149.57	84.6			
	15	285.93	185.93		132.04	137.96	85.3			
	20	285.9	195.9	90	129.12	140.88	100.9		27	
	25	289.8	199.8		141.6	128.4	101.5			
	30	282.59	207.59	75	134.36	135.64	121.9		36	
	35	284.27	209.27		147.32	122.68	122.3			
	40	274.8	214.8	60	140.38	129.62	142.6		45	
	45	274.2	214.2		153.44	116.56	142.7			
	50	262.46	227.46	35	151.39	118.61	157.8		57	
	55	259.6	224.6		164.14	105.86			56	
	60	240.64	240.64		0	176.59			93.41	157.7

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
32.1	39.2 (4.0)	78.5 (8.0)	270 (27.5)	1409(143.7)	1620 (165.2)	25.9	— With additional slide clearance — LGFV	80	00
38.4				1445(147.3)		26.3			05
38.9				1447(147.6)		26.6			10
39.7				1450(147.8)		25.1			15
46.1				1474(150.3)		25.3			20
47.8				1480(150.9)		25.3			25
54.3				1496(152.5)		23.2			30
57.4				1501(153.1)		23.4			35
64.3				1515(154.5)		22.4			40
69.6				1523(155.3)		22.4			45
77.8				1534(156.4)		21.6			50
87.2				1542(157.2)		21.7			55
98.5				1553(158.3)		23.2			60



Order Catalog No. **LGfV** W **80** -  $\theta$  **25**



Alterations Catalog No. **LGfV** W **80** -  $\theta$  **15** - (N12 · N16 · etc.) **N12**

Alterations	Code	Spec.
	<b>N12</b>	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 12H7
	<b>N16</b>	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 16H7
	<b>K</b>	Add locating key (With 1 hexagon socket head cap screws M8×15)
	<b>SC</b>	Move forward mounting surface $0 \leq SC \leq 60$ 1mm increment
	<b>WC</b>	Change the width of mounting surface W=80 $\Rightarrow$ W=100 or 120 ⚠ Only 100 or 120 can be specified





W	$\theta$	A	B	C	E	F	H	L	$\ell_1$	x
80	65	235.61	240.61	5	188.65	81.35	157.4	35	170	74
	70	227.83	237.83	10	195.53	74.47	157.1	30		75

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
81.6	39.2 (4.0)	78.5 (8.0)	323 (32.9)	1386 (141.3)	1454 (148.2)	23.7	—With additional slide clearance— <b>LGFV</b>	80	65
86.4			404 (41.2)	1547 (157.8)	1616 (164.8)	23.9			70



Order

<b>Catalog No.</b>	<b>W</b>	—	<b><math>\theta</math></b>
LGFV	80	—	70



Alterations



<b>Catalog No.</b>	<b>W</b>	—	<b><math>\theta</math></b>	—	(N12 · N16...etc.)
LGFV	80	—	65	—	WC100

Alterations	Code	Spec.
	N12	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 12H7
	N16	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 16H7
	K	Add locating key (With 1 hexagon socket head cap screws M8×15)
	SC	Move forward mounting surface $0 \leq SC \leq 60$ 1mm increment
	WC	Change the width of mounting surface $W=80 \Rightarrow W=100$ or 120 Only 100 or 120 can be specified.



W	$\theta$	A	B	C	E	F	H	L	$\ell_1$	x
150	00	280	160	120	85	185	94.0	50	100	20
	05	288.26	173.26	115	95.84	174.16				
	10	285.54	180.54	105	102.36	167.64				
	15	291.79	186.79		114.47	155.53	98.7			
	20	286.97	196.97	90	122.07	147.93	103.5			
	25	291.02	201.02		135.08	134.92	103.2			
	30	283.92	213.92	70	138.4	131.6	112.8			
	35	285.66	215.66		151.91	118.09	112.4			
	40	276.20	231.20	45	155.53	114.47	121.9			
	45	275.56	230.56		169.14	100.86	121.4			
	50	263.74	238.74	25	167.65	102.35	137.0			
	55	260.74	235.74		180.94	89.06	137.6			
	60	246.6	246.6	0	193.92	76.08	138.2			
	65	241.35	241.35		206.49	63.51	138.6			
								40		104

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
32.1	88.3 (9.0)	132.4 (13.5)	636 (64.9)	3991(407.0)	4611 (470.2)	45.4	—Without additional slide clearance— <b>LGfV</b>	150	00
32.3				3999(407.8)		45.9			05
38.9				4102(418.3)		44.4			10
39.7				4110(419.1)		44.9			15
46.1				4182(426.4)		43.2			20
47.8				4198(428.0)		43.7			25
54.3				4245(432.9)		42.2			30
57.4				4261(434.5)		42.7			35
64.3				4301(438.6)		41.0			40
69.6				4325(441.0)		41.4			45
77.8				4357(444.2)		40.5			50
87.2				4380(446.7)		40.9			55
98.5				4412(449.9)		41.5			60
93.2			1431 (145.9)	4444(453.2)	42.2	65			



Order

Catalog No. **LGfV** W **150** —  $\theta$  **25**



Alterations



Catalog No. **LGfV** W **150** —  $\theta$  **15** — (N12 · N16...etc.) **N12**

Alterations	Code	Spec.
	<b>N12</b>	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 12H7
	<b>N16</b>	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 16H7
	<b>K</b>	Add 2 locating keys (With 2 hexagon socket head cap screws M8X15)
	<b>TK</b>	T-keywaying Add 6 locating keys (With 6 hexagon socket head cap screws M8X15)
	<b>S</b>	With collars, screws and nuts to fix bottom dead center.



Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	θ
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
86.4	88.3 (9.0)	132.4 (13.5)	2226 (227.0)	4476 (456.4)	4611 (470.2)	43.5	— Without additional slide clearance — <b>LGJV</b>	<b>150</b>	<b>70</b>



Order

Catalog No.	W	—	θ
<b>LGJV</b>	<b>150</b>	—	<b>70</b>



Alterations

Catalog No.	W	—	θ	—	(N12 · N16...etc.)
<b>LGJV</b>	<b>150</b>	—	<b>70</b>	—	<b>TK</b>

Alterations	Code	Spec.
<p>φ 12H7 or φ 16H7</p>	<b>N12</b>	Change dowel hole diameter φ 13H7 ⇒ φ 12H7
	<b>N16</b>	Change dowel hole diameter φ 13H7 ⇒ φ 16H7
	<b>K</b>	Add 2 locating keys (With 2 hexagon socket head cap screws M8×15)
<p>255 34 30 90±0.05</p>	<b>TK</b>	T-keywaying Add 6 locating keys (With 6 hexagon socket head cap screws M8×15)
<p>Plate Screw Nut</p>	<b>S</b>	With collars, screws and nuts to fix bottom dead center.

# STANDARD AERIAL CAM UNITS FOR PIERCE

— LGFV — CAM DIAGRAM

■ LGFV

<p><b>50-00</b></p>	<p><b>50-05</b></p>	<p><b>50-10</b></p>	<p><b>50-15</b></p>	<p><b>50-20</b></p>
<p><b>50-25</b></p>	<p><b>50-30</b></p>	<p><b>50-35</b></p>	<p><b>50-40</b></p>	<p><b>50-45</b></p>
<p><b>50-50</b></p>	<p><b>50-55</b></p>	<p><b>50-60</b></p>	<p><b>50-65</b></p>	<p><b>50-70</b></p>
<p><b>65-00</b></p>	<p><b>65-05</b></p>	<p><b>65-10</b></p>	<p><b>65-15</b></p>	<p><b>65-20</b></p>
<p><b>65-25</b></p>	<p><b>65-30</b></p>	<p><b>65-35</b></p>	<p><b>65-40</b></p>	<p><b>65-45</b></p>
<p><b>65-50</b></p>	<p><b>65-55</b></p>	<p><b>65-60</b></p>	<p><b>65-65</b></p>	<p><b>65-70</b></p>

<b>80-00</b> 	<b>80-05</b> 	<b>80-10</b> 	<b>80-15</b> 	<b>80-20</b> 
<b>80-25</b> 	<b>80-30</b> 	<b>80-35</b> 	<b>80-40</b> 	<b>80-45</b> 
<b>80-50</b> 	<b>80-55</b> 	<b>80-60</b> 	<b>80-65</b> 	<b>80-70</b> 
<b>150-00</b> 	<b>150-05</b> 	<b>150-10</b> 	<b>150-15</b> 	<b>150-20</b> 
<b>150-25</b> 	<b>150-30</b> 	<b>150-35</b> 	<b>150-40</b> 	<b>150-45</b> 
<b>150-50</b> 	<b>150-55</b> 	<b>150-60</b> 	<b>150-65</b> 	<b>150-70</b> 

# STANDARD AERIAL CAM UNITS FOR PIERCE

## —LGFV— COMPONENTS TABLE

### ■LGFV50( $\theta=00-10$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Base	FCD540	1
②	Cam Slide	FCD540	1
③	Cam Lower Plate	S45C with Special Sintered alloy	1
④	Cam Driver	FC250	1
⑤	Guide Bar	Bronze with Graphite	1
⑥	Positive Return Strap	S45C	1
⑦	V-Block	Bronze with Graphite	1
⑧	Spring Stopper	SS400	1
⑨	Safety Plate	SS400	1
⑩	Coil Spring	$\phi 27 \times 125$	1
⑪	Bumper	Urethane	2
⑫	Dowel Pin	$\phi 8 \times 30$	4
⑬	Disc Spring	For M6	2
⑭	Cap Screw	M8 $\times$ 15	1
⑮	Cap Screw	M6 $\times$ 10	2
⑯	Cap Screw	M8 $\times$ 20	4
⑰	Cap Screw	M8 $\times$ 25	4
⑱	Cap Screw	M10 $\times$ 35	1

### ■LGFV50( $\theta=15-60$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Base	FCD540	1
②	Cam Slide	FCD540	1
③	Cam Lower Plate	S45C with Special Sintered alloy	1
④	Cam Driver	FC250	1
⑤	Guide Bar	Bronze with Graphite	1
⑥	Positive Return Strap	S45C	1
⑦	V-Block	Bronze with Graphite	1
⑧	Spring Stopper	SS400	1
⑨	Safety Plate	SS400	1
⑩	Coil Spring	$\phi 27 \times 100$ ( $\theta=15-20$ ) $\phi 27 \times 90$ ( $\theta=25-60$ )	1
⑪	Bumper	Urethane	2
⑫	Dowel Pin	$\phi 8 \times 30$	4
⑬	Disc Spring	For M6	2
⑭	Cap Screw	M8 $\times$ 15	1
⑮	Cap Screw	M6 $\times$ 10	2
⑯	Cap Screw	M8 $\times$ 20	4
⑰	Cap Screw	M8 $\times$ 25	4
⑱	Cap Screw	M10 $\times$ 35	1
⑲	Spacer	SS400	1

### ■LGFV50( $\theta=65-70$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Base	FCD540	1
②	Cam Slide	FCD540	1
③	Cam Lower Plate	S45C with Special Sintered alloy	1
④	Cam Driver	FC250	1
⑤	Guide Bar	Bronze with Graphite	1
⑥	Positive Return Strap	S45C	1
⑦	V-Block	Bronze with Graphite	1
⑧	Spring Stopper	SS400	1
⑨	Safety Plate	SS400	1
⑩	Coil Spring	$\phi 27 \times 90$ ( $\theta=65$ ) $\phi 27 \times 65$ ( $\theta=70$ )	1
⑪	Bumper	Urethane	2
⑫	Dowel Pin	$\phi 8 \times 30$	4
⑬	Disc Spring	For M6	2
⑭	Cap Screw	M8 $\times$ 15	1
⑮	Cap Screw	M6 $\times$ 10	2
⑯	Cap Screw	M8 $\times$ 20	4
⑰	Cap Screw	M8 $\times$ 25	4
⑱	Cap Screw	M10 $\times$ 35	1

### ■LGFV65

No.	Part Name	Material and Remark	Quantity
①	Cam Base	FCD450	1
②	Cam Slide	FC250	1
③	Cam Driver	FC250	1
④	Wear Plate	Bronze with Graphite	2
⑤	Positive Return Strap A	S45C	1
⑥	Positive Return Strap B	S45C	1
⑦	V-Block	Bronze with Graphite	1
⑧	Stop Plate	SS400	1
⑨	Spring Guide Pin	SCM435	2
⑩	Safety Plate	SS400	1
⑪	Coil Spring	$\phi 25 \times 90$ ( $\theta=00-05$ ) $\phi 25 \times 80$ ( $\theta=10-70$ )	1
⑫	Bumper	Urethane	2
⑬	Dowel Pin	$\phi 8 \times 30$	2
⑭	Disc Spring	For M6	2
⑮	Cap Screw	M8 $\times$ 15	6
⑯	Cap Screw	M6 $\times$ 10	2
⑰	Cap Screw	M10 $\times$ 30	2
⑱	Cap Screw	M8 $\times$ 16	2



■ LGFV80(θ=00-60)

No.	Part Name	Material and Remark	Quantity
①	Cam Base	FCD450	1
②	Cam Slide	FC250	1
③	Cam Lower Slide	FCD450 with Graphite	1
④	Cam Driver	FC250	1
⑤	Wear Plate	Bronze with Graphite	2
⑥	Positive Return Strap A	S45C	1
⑦	Positive Return Strap B	S45C	1
⑧	V-Block	Bronze with Graphite	1
⑨	Stop Plate	SS400	1
⑩	Spring Guide Pin	SCM435	2
⑪	Safety Plate	SS400	1
⑫	Key	S45C	1
⑬	Bumper	Urethane	2
⑭	Coil Spring	φ 35×150	1
⑮	Dowel Pin	φ 10×40	2
⑯	Disc Spring	For M6	2
⑰	Cap Screw	M8×15	2
⑱	Cap Screw	M8×20	6
⑲	Cap Screw	M10×35	4
⑳	Cap Screw	M10×30	2
㉑	Cap Screw	M6×10	2

■ LGFV80(θ=65)

No.	Part Name	Material and Remark	Quantity
①	Cam Base	FCD450	1
②	Cam Slide	FC250	1
③	Cam Lower Slide	FCD450 with Graphite	1
④	Cam Driver	FC250	1
⑤	Wear Plate	Bronze with Graphite	2
⑥	Positive Return Strap A	S45C	1
⑦	Positive Return Strap B	S45C	1
⑧	V-Block	Bronze with Graphite	1
⑨	Stop Plate	SS400	1
⑩	Spring Guide Pin	SCM435	1
⑪	Safety Plate	SS400	1
⑫	Key	S45C	1
⑬	Bumper	Urethane	2
⑭	Coil Spring	φ 35×125	1
⑮	Dowel Pin	φ 10×40	2
⑯	Disc Spring	For M6	2
⑰	Cap Screw	M8×15	2
⑱	Cap Screw	M8×20	6
⑲	Cap Screw	M10×35	4
⑳	Cap Screw	M10×30	2
㉑	Cap Screw	M6×10	2
㉒	Spacer	SS400	1
㉓	Cap Screw	M10×25	1

■ LGFV80(θ=70)

No.	Part Name	Material and Remark	Quantity
①	Cam Base	FCD450	1
②	Cam Slide	FC250	1
③	Cam Lower Slide	FCD450 with Graphite	1
④	Cam Driver	FC250	1
⑤	Wear Plate	Bronze with Graphite	2
⑥	Positive Return Strap A	S45C	1
⑦	Positive Return Strap B	S45C	1
⑧	V-Block	Bronze with Graphite	1
⑨	Stop Plate	SS400	1
⑩	Spring Guide Pin	SCM435	1
⑪	Safety Plate	SS400	1
⑫	Key	S45C	1
⑬	Bumper	Urethane	2
⑭	Coil Spring	φ 35×100	1
⑮	Dowel Pin	φ 10×40	2
⑯	Disc Spring	For M6	2
⑰	Cap Screw	M8×15	2
⑱	Cap Screw	M8×20	6
⑲	Cap Screw	M10×35	4
⑳	Cap Screw	M10×30	2
㉑	Cap Screw	M6×10	2
㉒	Spacer	SS400	1
㉓	Cap Screw	M10×45	1

■ LGFV150

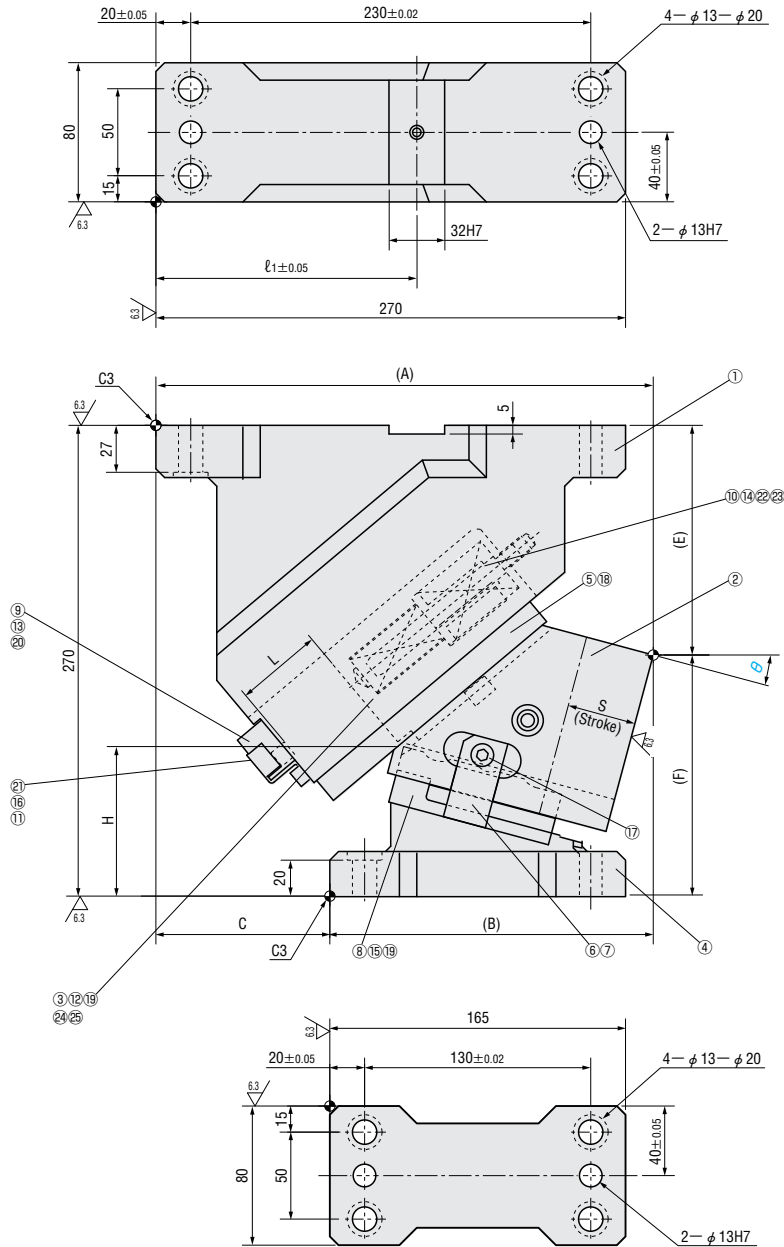
No.	Part Name	Material and Remark	Quantity
①	Cam Driver	FC250	1
②	Cam Slide	FC250	1
③	Cam Base	FC250	1
④	Wear Plate	Bronze with Graphite	2
⑤	Spring Guide Pin	SCM435	1
⑥	Stop Plate	SS400	1
⑦	Spring Guide Block	FCD450 with Graphite	1
⑧	Positive Return Strap	S45C	2
⑨	V-Block	Bronze with Graphite	1
⑩	Key	S45C	1
⑪	Safety Plate	SS400	1
⑫	Bumper	Urethane	2
⑬	Coil Spring	φ 60×150	1
⑭	Dowel Pin	φ 10×40	2
⑮	Disc Spring	For M6	2
⑯	Cap Screw	M12×30	4
⑰	Cap Screw	M10×25	8
⑱	Cap Screw	M10×35	2
⑲	Cap Screw	M16×35	2
㉑	Cap Screw	M6×15	2

# AERIAL CAM UNITS FOR HEAVY LOAD PIERCE

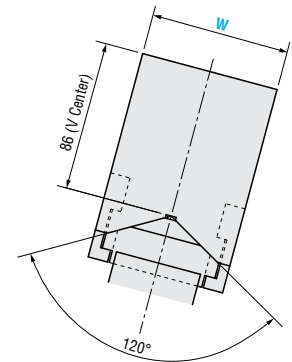
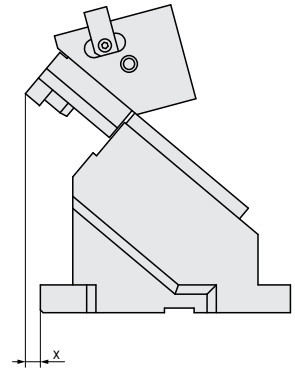
— LGFVS —

— With additional slide clearance —

LGFVS80 ( $\theta=00-60$ )



■ Rear removal space



■ Components table P.41

W	$\theta$	A	B	C	E	F	H	L	$\ell_1$	x
80	00	260	160	100	99	171	83	50	130	12
	05	272.93	172.93		109.39	160.61	83.8			
	10	279.92	179.92		120.43	149.57	84.6			
	15	285.93	185.93		132.04	137.96	85.3			
	20	285.9	195.9	90	129.12	140.88	100.9		170	27
	25	289.8	199.8		141.6	128.4	101.5			
	30	282.59	207.59	75	134.36	135.64	121.9			36
	35	284.27	209.27		147.32	122.68	122.3			
	40	274.8	214.8	60	140.38	129.62	142.6			45
	45	274.2	214.2		153.44	116.56	142.7			
	50	262.46	227.46	35	151.39	118.61	157.8			57
	55	259.6	224.6		164.14	105.86				
	60	240.64	240.64		0	176.59				

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
32.1	54.9 (5.6)	109.8 (11.2)	123 (12.5)	1300(132.6)	3250 (331.4)	25.9	—With additional side clearance— LGFVS	80	00
38.4				1625(165.7)		26.3			05
38.9				1650(168.3)		26.6			10
39.7				1675(170.8)		25.1			15
46.1				1900(193.7)		25.3			20
47.8				1950(198.8)		25.3			25
54.3				2100(214.1)		23.2			30
57.4				2150(219.2)		23.4			35
64.3				2275(232.0)		22.4			40
69.6				2350(239.6)		22.4			45
77.8				2450(249.8)		21.6			50
87.2				2525(257.5)		21.7			55
98.5				2625(267.7)		23.2			60



Order

Catalog No. **LGFVS** W **80** —  $\theta$  **40**



Alterations



Catalog No. **LGFVS** W **80** —  $\theta$  **15** — (N12 · N16...etc.) **N12**

Alterations	Code	Spec.
	<b>N12</b>	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 12H7
	<b>N16</b>	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 16H7
	<b>K</b>	Add locating key (With 1 hexagon socket head cap screw M8×15)
	<b>SC</b>	Move forward mounting surface $0 \leq SC \leq 60$ 1mm increment
	<b>WC</b>	Change the width of mounting surface W=80 $\Rightarrow$ W=100 or 120 ☺ Only 100 or 120 can be specified.



W	$\theta$	A	B	C	E	F	H	L	$\ell_1$	x
80	65	235.61	240.61	5	188.65	81.35	157.4	35	170	74
	70	227.83	237.83	10	195.53	74.47	157.1	30		75

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
81.6	54.9 (5.6)	109.8 (11.2)	94 (9.6)	2725 (277.9)	3250 (331.4)	23.7	—With additional slide clearance— <b>LGFS</b>	80	65
86.4			152 (15.5)	2825 (288.1)		23.9			70



Order

Catalog No.	W	—	$\theta$
LGFS	80	—	70



Alterations



Catalog No.	W	—	$\theta$	— (N12 · N16...etc.)
LGFS	80	—	65	— WC100

Alterations	Code	Spec.
	N12	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 12H7
	N16	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 16H7
	K	Add locating key (With 1 hexagon socket head cap screw M8×15)
	SC	Move forward mounting surface $0 \leq SC \leq 60$ 1mm increment
	WC	Change the width of mounting surface $W=80 \Rightarrow W=100$ or $120$ Only 100 or 120 can be specified.



W	$\theta$	A	B	C	E	F	H	L	$\ell_1$	x
150	00	280	160	120	85	185	94	50	100	20
	05	288.26	173.26	115	95.84	174.16	94			41
	10	285.54	180.54	105	102.36	167.64	98.9			
	15	291.79	186.79		114.47	155.53	98.7			
	20	286.97	196.97	90	122.07	147.93	103.5		57	
	25	291.02	201.02		135.08	134.92	103.2			
	30	283.92	213.92	70	138.4	131.6	112.8		69	
	35	285.66	215.66		151.91	118.09	112.4			
	40	276.2	231.2	45	155.53	114.47	121.9		75	
	45	275.56	230.56		169.14	100.86	121.4			
	50	263.74	238.74	25	167.65	102.35	137			77
	55	260.74	235.74		180.94	89.06	137.6			
	60	246.6	246.6	0	193.92	76.08	138.2		100	
	65	241.35	241.35		206.49	63.51	138.6		40	104

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
32.1	123.6 (12.6)	185.3 (18.9)	215(21.9)	3822(389.7)	9555 (974.3)	45.4	—Without additional slide clearance— <b>LGFVS</b>	150	00
32.3				3896(397.2)		45.9			05
38.9				4851(494.7)		44.4			10
39.7				4925(502.2)		44.9			15
46.1				5586(569.6)		43.2			20
47.8				5733(584.6)		43.7			25
54.3				6174(629.6)		42.2			30
57.4				6321(644.6)		42.7			35
64.3				6689(682.0)		41.0			40
69.6				6909(704.5)		41.4			45
77.8				7203(734.5)		40.5			50
87.2				7424(757.0)		40.9			55
98.5				7718(787.0)		41.5			60
93.2				484(49.3)		8012(816.9)			42.2

Order   —   
**LGFVS 150 — 30**

Alterations   —  — (N12 · N16... etc.)  
**LGFVS 150 — 15 — N12**

Alterations	Code	Spec.
	N12	Change dowel hole diameter $\phi 13H7 \Rightarrow \phi 12H7$
	N16	Change dowel hole diameter $\phi 13H7 \Rightarrow \phi 16H7$
	S	With collars, screws and nuts to fix bottom dead center.

Alterations	Code	Spec.
	K	Add 2 locating keys (With 2 hexagon socket head cap screws M8×15)
	TK	T-keywaying Add 6 locating keys (With 6 hexagon socket head cap screws M8×15)





Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	θ
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
86.4	123.6 (12.6)	185.3 (18.9)	753 (76.7)	8306 (846.9)	9555 (974.3)	43.5	—Without additional slide clearance— <b>LGFS</b>	<b>150</b>	<b>70</b>



Order

Catalog No.	W	—	θ
<b>LGFS</b>	<b>150</b>	—	<b>70</b>



Alterations

Catalog No.	W	—	θ	—	(N12 · N16 ···etc.)
<b>LGFS</b>	<b>150</b>	—	<b>70</b>	—	<b>TK</b>

Alterations	Code	Spec.
	<b>N12</b>	Change dowel hole diameter $\phi 13H7 \Rightarrow \phi 12H7$
	<b>N16</b>	Change dowel hole diameter $\phi 13H7 \Rightarrow \phi 16H7$
	<b>S</b>	With collars, screws and nuts to fix bottom dead center.
	<b>K</b>	Add 2 locating keys (With 2 hexagon socket head cap screws M8×15)
	<b>TK</b>	T-keywaying Add 6 locating keys (With 6 hexagon socket head cap screws M8×15)

# AERIAL CAM UNITS FOR HEAVY LOAD PIERCE

## —LGFVS— CAM DIAGRAM COMPONENTS TABLE

Cam diagram

■LGFVS

<p><b>80-00</b></p>	<p><b>80-05</b></p>	<p><b>80-10</b></p>	<p><b>80-15</b></p>	<p><b>80-20</b></p>
<p><b>80-25</b></p>	<p><b>80-30</b></p>	<p><b>80-35</b></p>	<p><b>80-40</b></p>	<p><b>80-45</b></p>
<p><b>80-50</b></p>	<p><b>80-55</b></p>	<p><b>80-60</b></p>	<p><b>80-65</b></p>	<p><b>80-70</b></p>
<p><b>150-00</b></p>	<p><b>150-05</b></p>	<p><b>150-10</b></p>	<p><b>150-15</b></p>	<p><b>150-20</b></p>
<p><b>150-25</b></p>	<p><b>150-30</b></p>	<p><b>150-35</b></p>	<p><b>150-40</b></p>	<p><b>150-45</b></p>
<p><b>150-50</b></p>	<p><b>150-55</b></p>	<p><b>150-60</b></p>	<p><b>150-65</b></p>	<p><b>150-70</b></p>

## Components table

### ■ LGFVS80(θ=00-60)

No.	Part Name	Material and Remark	Quantity
①	Cam Base	FCD450	1
②	Cam Slide	FC250	1
③	Spring Guide Block	FCD450 with Graphite	1
④	Cam Driver	FC250	1
⑤	Wear Plate	SS400 with Special Sintered Alloy	2
⑥	Positive Return Strap A	S45C	1
⑦	Positive Return Strap B	S45C	1
⑧	V-Block	Bronze with Graphite	1
⑨	Stop Plate	SS400	1
⑩	Spring Guide Pin	S45C	1
⑪	Safety Plate	SS400	1
⑫	Key	S45C	1
⑬	Bumper	Urethane	2
⑭	Coil Spring	φ 25×100	1
⑮	Dowel Pin	φ 10×40	2
⑯	Disc Spring	For M6	2
⑰	Cap Screw	M8×15	2
⑱	Cap Screw	M8×20	6
⑲	Cap Screw	M10×35	2
⑳	Cap Screw	M10×30	2
㉑	Cap Screw	M6×10	2
㉒	Bushing / (Washer)	Bronze with Graphite	1
㉓	Coil Spring	φ 35×60	1
㉔	Cap Screw	M12×35	2
㉕	Spring Washer	For M12	2

### ■ LGFVS80(θ=65-70)

No.	Part Name	Material and Remark	Quantity
①	Cam Base	FCD450	1
②	Cam Slide	FC250	1
③	Spring Guide Block	FCD450 with Graphite	1
④	Cam Driver	FC250	1
⑤	Wear Plate	SS400 with Special Sintered Alloy	2
⑥	Positive Return Strap L	S45C	1
⑦	Positive Return Strap R	S45C	1
⑧	V-Block	Bronze with Graphite	1
⑨	Stop Plate	SS400	1
⑩	Spring Guide Pin	S45C	1
⑪	Safety Plate	SS400	1
⑫	Key	S45C	1
⑬	Bumper	Urethane	2
⑭	Coil Spring	φ 25×80	1
⑮	Dowel Pin	φ 10×40	2
⑯	Disc Spring	For M6	2
⑰	Cap Screw	M8×15	2
⑱	Cap Screw	M8×20	6
⑲	Cap Screw	M10×35	2
⑳	Cap Screw	M10×30	2
㉑	Cap Screw	M6×10	2
㉒	Bushing / (Washer)	Bronze with Graphite	1
㉓	Coil Spring	φ 35×60	1
㉔	Cap Screw	M12×35	2
㉕	Spring Washer	For M12	2

### ■ LGFVS150

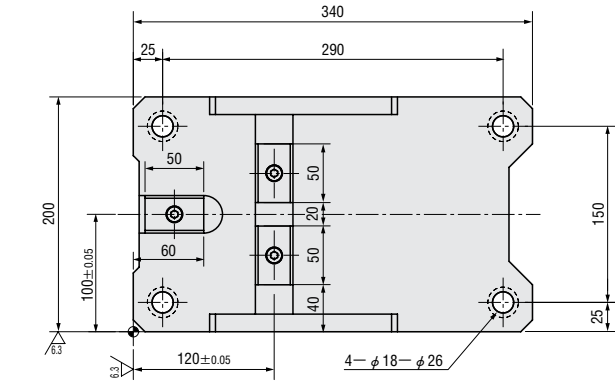
No.	Part Name	Material and Remark	Quantity
①	Cam Driver	FC250	1
②	Cam Slide	FC250	1
③	Cam Base	FC250	1
④	Wear Plate	Bronze with Graphite	2
⑤	Spring Guide Pin	S45C	1
⑥	Stop Plate	SS400	1
⑦	Spring Guide Block	FCD450 with Graphite	1
⑧	Positive Return Strap	S45C	2
⑨	V-Block	Bronze with Graphite	1
⑩	Key	S45C	1
⑪	Safety Plate	SS400	1
⑫	Bumper	Urethane	2
⑬	Coil Spring	φ 60×60	1
⑭	Dowel Pin	φ 10×40	2
⑮	Disc Spring	For M6	2
⑯	Cap Screw	M12×30	4
⑰	Cap Screw	M10×25	8
⑱	Cap Screw	M10×35	2
⑲	Cap Screw	M16×35	2
㉑	Cap Screw	M6×15	2
㉒	Coil Spring	φ 40×90	1
㉓	Bushing / (Washer)	Bronze with Graphite	1

# WIDE AERIAL CAM UNITS FOR PIERCE

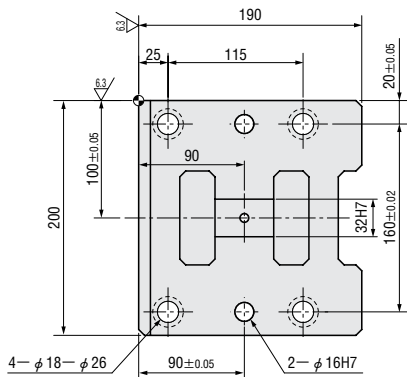
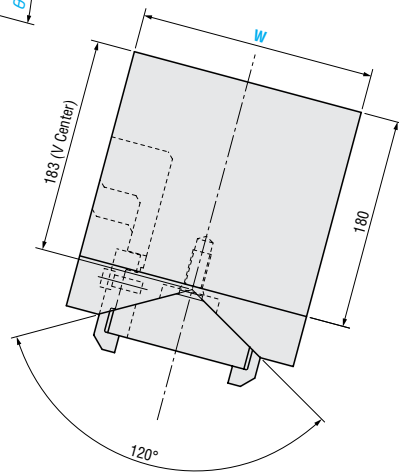
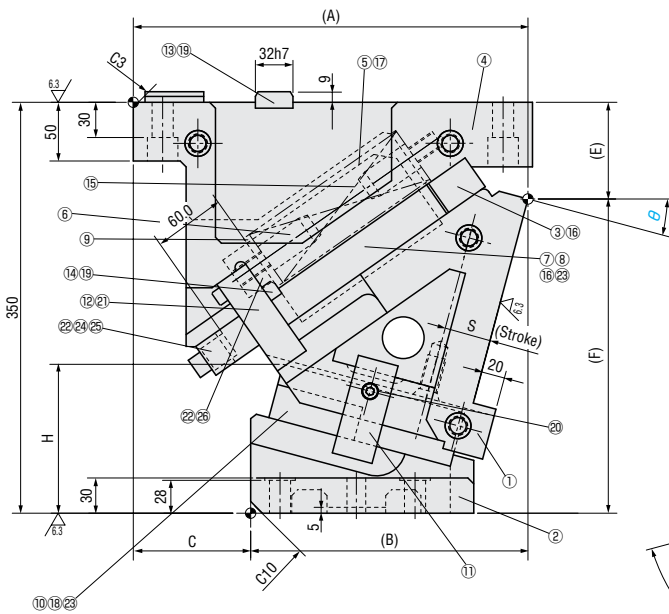
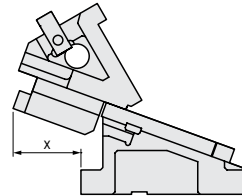
— LGFW —

— With additional slide clearance —

LGFW200 ( $\theta=00-40$ )



■ Rear removal space



■ Components table P.64

W	$\theta$	A	B	C	E	F	H	x
200	00	313	175	138	58	292	102	47
	05	320.64	195.64	125	64.34	285.66	110.8	61
	10	331.08	216.08	115	72.47	277.53	119.1	70
	15	336.17	236.17	100	82.37	267.63	126.8	80
	20	340.76	255.76	85	94	256	133.9	88
	30	347.83	292.83	55	112.25	237.75	155.7	103
	40	351.17	326.17	25	136.66	213.34	173.9	116

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
38.6	117.7 (12.0)	235.4 (24.0)	817 (83.3)	4372 (445.8)	4903 (500.0)	95.0	— With additional slide clearance — LGFVW	200	00
42.6				4427 (451.4)		94.8			05
46.7				4467 (455.5)		94.6			10
50.9				4501 (459.0)		93.3			15
55.3				4535 (462.5)		92.7			20
65.1				4590 (468.0)		92.7			30
77.1				4638 (472.9)		94.2			40



Order

Catalog No. **LGFVW** W **200** —  $\theta$  **10**



Alterations



Catalog No. **LGFVW** W **200** —  $\theta$  **20** — (N · K · FK) **N**

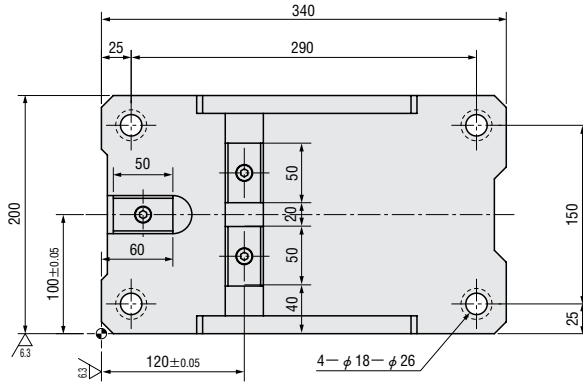
Alterations	Code	Spec.
	<b>N</b>	Add dowel hole Add 2 $\phi$ 16H7 dowel holes on cam base
	<b>K</b>	Add locating key (With 1 hexagon socket head cap screw M8X15)
	<b>FK</b>	Move key position Move forward the locating key on cam base.

# WIDE AERIAL CAM UNITS FOR PIERCE

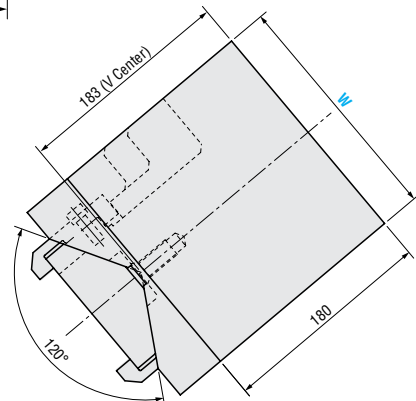
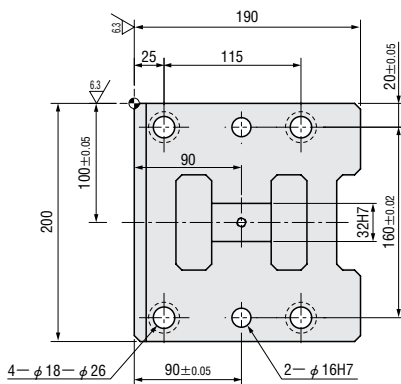
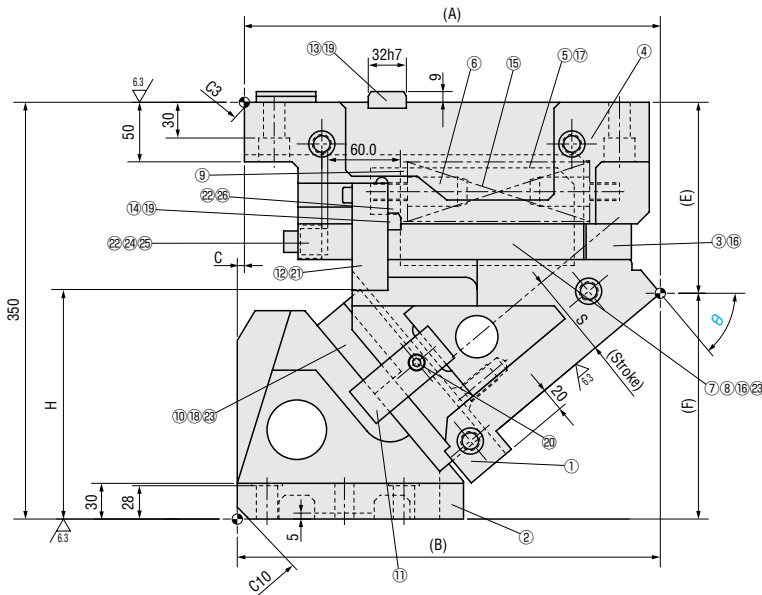
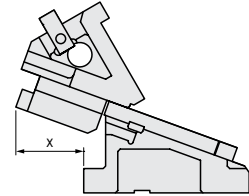
— LGFVW —

— With additional side clearance —

LGFVW200 ( $\theta=50-60$ )



■ Rear removal space



■ Components table P.64

W	$\theta$	A	B	C	E	F	H	x
200	50	348.77	354.77	6	161.49	188.51	192.8	126
	60	332.75	377.75	45	195.83	154.17	202.1	152

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
93.3	117.7 (12.0)	235.4 (24.0)	817 (83.3)	4685 (477.8)	4903 (500.0)	93.7	—With additional slide clearance— <b>LGFVW</b>	200	50
120.0				4733 (482.6)					60



Order

Catalog No. **LGFVW**    W **200**    —     $\theta$  **50**



Alterations

Catalog No. **LGFVW**    W **200**    —     $\theta$  **50**    —    (N · K · FK) **K**

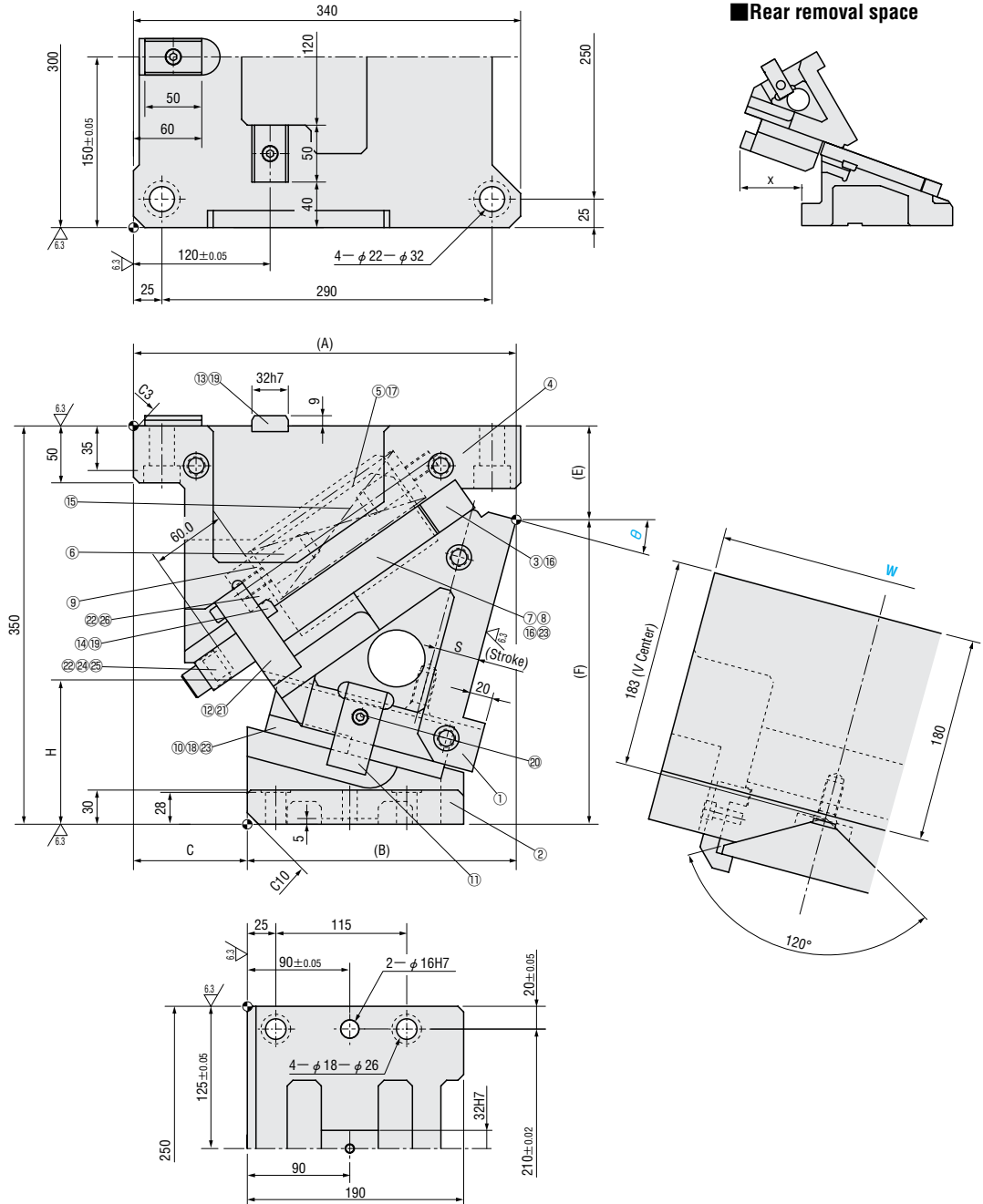
Alterations	Code	Spec.
	<b>N</b>	Add dowel hole Add 2 $\phi$ 16H7 dowel holes on cam base
	<b>K</b>	Add locating key (With 1 hexagon socket head cap screw M8×15)
	<b>FK</b>	Move key position Move forward the locating key on cam base.

# WIDE AERIAL CAM UNITS FOR PIERCE

— LGFVW —

— With additional slide clearance —

LGFVW300 ( $\theta=00-40$ )



Components table P.64



W	$\theta$	A	B	C	E	F	H	x
300	00	313	175	138	58	292	102	47
	05	320.64	195.64	125	64.34	285.66	110.8	61
	10	331.08	216.08	115	72.47	277.53	119.1	70
	15	336.17	236.17	100	82.37	267.63	126.8	80
	20	340.76	255.76	85	94	256	133.9	88
	30	347.83	292.83	55	112.25	237.75	155.7	103
	40	351.17	326.17	25	136.66	213.34	173.9	116

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
38.6	196.1 (20.0)	392.3 (40.0)	1634 (166.7)	8744 (891.6)	9806 (1000.0)	137.2	— With additional slide clearance— LGFVW	300	00
42.6				8853 (902.8)		135.9			05
46.7				8935 (911.1)		135.7			10
50.9				9003 (918.0)		133.0			15
55.3				9071 (925.0)		131.5			20
65.1				9180 (936.1)		131.0			30
77.1				9275 (945.8)		133.3			40



Order Catalog No. **LGFVW** W **300** —  $\theta$  **10**



Alterations Catalog No. **LGFVW** W **300** —  $\theta$  **15** — (N · K · FK) **N**

Alterations	Code	Spec.
	<b>N</b>	Add dowel hole Add 2 φ 16H7 dowel holes on cam base
	<b>K</b>	Add locating key (With 1 hexagon socket head cap screw M8×15)
	<b>FK</b>	Move key position Move forward the locating key on cam base.



W	$\theta$	A	B	C	E	F	H	x
300	50	348.77	354.77	6	161.49	188.51	192.8	126
	60	332.75	377.75	45	195.83	154.17	202.1	152

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
93.3	196.1 (20.0)	392.3 (40.0)	1634 (166.7)	9371 (955.5)	9806 (1000.0)	130.9	— With additional slide clearance — <b>LGFVW</b>	300	50
120.0				9466 (965.3)					60



Order

Catalog No. **LGFVW** W **300** —  $\theta$  **50**



Alterations

Catalog No. **LGFVW** W **300** —  $\theta$  **60** — (N · K · FK) **FK**

Alterations	Code	Spec.
	<b>N</b>	Add dowel hole Add 2 $\phi$ 16H7 dowel holes on cam base
	<b>K</b>	Add locating key (With 1 hexagon socket head cap screw M8×15)
	<b>FK</b>	Move key position Move forward the locating key on cam base.



W	$\theta$	A	B	C	E	F	H	x
400	00	313	175	138	58	292	102	47
	05	320.64	195.64	125	64.34	285.66	110.8	61
	10	331.08	216.08	115	72.47	277.53	119.1	70
	15	336.17	236.17	100	82.37	267.63	126.8	80
	20	340.76	255.76	85	94	256	133.9	88
	30	347.83	292.83	55	112.25	237.75	155.7	103
	40	351.17	326.17	25	136.66	213.34	173.9	116

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
38.6	245.2 (25.0)	490.3 (50.0)	1634 (166.7)	8744 (891.6)	9806 (1000.0)	191.1	—With additional slide clearance— LGFVW	400	00
42.6				8853 (902.8)		189.3			05
46.7				8935 (911.1)		188.0			10
50.9				9003 (918.0)		186.1			15
55.3				9071 (925.0)		185.3			20
65.1				9180 (936.1)		185.8			30
77.1				9275 (945.8)		191.9			40



Order

Catalog No. **LGFVW** W **400** —  $\theta$  **10**



Alterations



Catalog No. **LGFVW** W **400** —  $\theta$  **30** — (N · K · FK) **K**

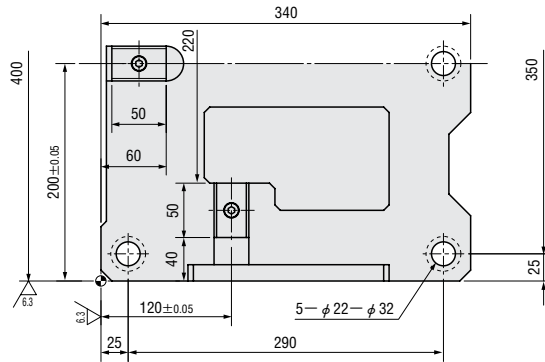
Alterations	Code	Spec.
	<b>N</b>	Add dowel hole Add 2 $\phi$ 16H7 dowel holes on cam base
	<b>K</b>	Add locating key (With 1 hexagon socket head cap screw M8×15)
	<b>FK</b>	Move key position Move forward the locating key on cam base.

# WIDE AERIAL CAM UNITS FOR PIERCE

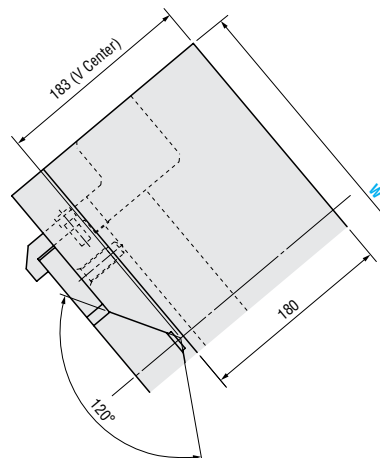
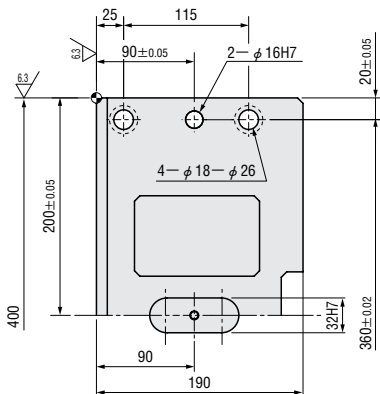
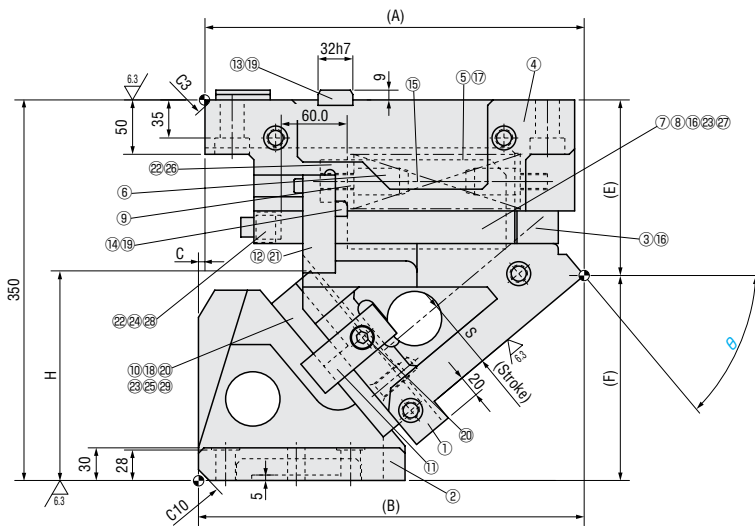
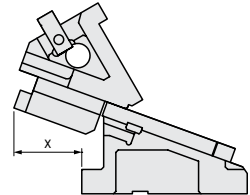
— LGFVW —

— With additional slide clearance —

LGFVW400 ( $\theta = 50-60$ )



■ Rear removal space



■ Components table P.64

W	$\theta$	A	B	C	E	F	H	x
400	50	348.77	354.77	6	161.49	188.51	192.8	126
	60	332.75	377.75	45	195.83	154.17	202.1	152

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
93.3	245.2 (25.0)	490.3 (50.0)	1634 (166.7)	9371 (955.5)	9806 (1000.0)	191.8	—With additional slide clearance— <b>LGFWW</b>	400	50
120.0				9466 (965.3)					60



Order

Catalog No.	W	—	$\theta$
LGFWW	400	—	50



Alterations



Catalog No.	W	—	$\theta$	—	(N · K · FK)
LGFWW	400	—	50	—	FK

Alterations	Code	Spec.
	N	Add dowel hole Add 2 $\phi$ 16H7 dowel holes on cam base
	K	Add locating key (With 1 hexagon socket head cap screw M8×15)
	FK	Move key position Move forward the locating key on cam base.





W	$\theta$	A	B	C	E	F	H	x
500	00	313	175	138	58	292	102	47
	05	320.64	195.64	125	64.34	285.66	110.8	61
	10	331.08	216.08	115	72.47	277.53	119.1	70
	15	336.17	236.17	100	82.37	267.63	126.8	80
	20	340.76	255.76	85	94	256	133.9	88
	30	347.83	292.83	55	112.25	237.75	155.7	103
	40	351.17	326.17	25	136.66	213.34	173.9	116

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
38.6	313.8 (32.0)	627.6 (64.0)	2452 (250.0)	13116 (1337.5)	14710 (1500.0)	222.3	—With additional slide clearance— <b>LGFVW</b>	500	00
42.6				13280 (1354.1)		220.4			05
46.7				13402 (1366.6)		218.8			10
50.9				13504 (1377.0)		216.3			15
55.3				13606 (1387.5)		215.1			20
65.1				13770 (1404.1)		216.1			30
77.1				13913 (1418.7)		220.4			40



Order

Catalog No. **LGFVW** W **500** —  $\theta$  **10**



Alterations



Catalog No. **LGFVW** W **500** —  $\theta$  **05** — (N · K · FK) **N**

Alterations	Code	Spec.
	<b>N</b>	Add dowel hole Add 2 $\phi$ 16H7 dowel holes on cam base
	<b>K</b>	Add locating key (With 1 hexagon socket head cap screw M8X15)
	<b>FK</b>	Move key position Move forward the locating key on cam base.



W	$\theta$	A	B	C	E	F	H	x
500	50	348.77	354.77	6	161.49	188.51	192.8	126
	60	332.75	377.75	45	195.83	154.17	202.1	152

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
93.3	313.8 (32.0)	627.6 (64.0)	2452 (250.0)	14056 (1433.3)	14710 (1500.0)	220.1	—With additional slide clearance— <b>LGFVW</b>	500	50
120.0				14199 (1447.9)					60



Order

Catalog No. **LGFVW** W **500** —  $\theta$  **50**



Alterations

Catalog No. **LGFVW** W **500** —  $\theta$  **60** — (N · K · FK) **K**

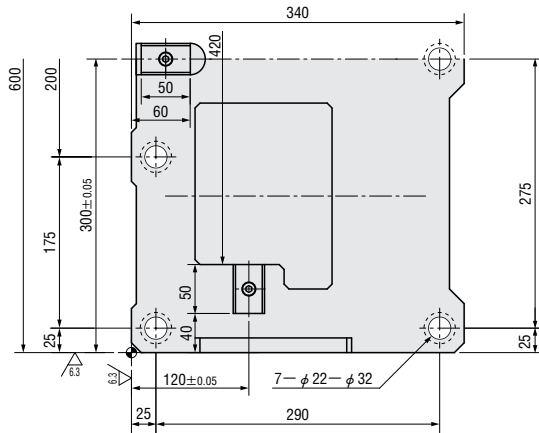
Alterations	Code	Spec.
	<b>N</b>	Add dowel hole Add 2 $\phi$ 16H7 dowel holes on cam base
	<b>K</b>	Add locating key (With 1 hexagon socket head cap screw M8×15)
	<b>FK</b>	Move key position Move forward the locating key on cam base.

# WIDE AERIAL CAM UNITS FOR PIERCE

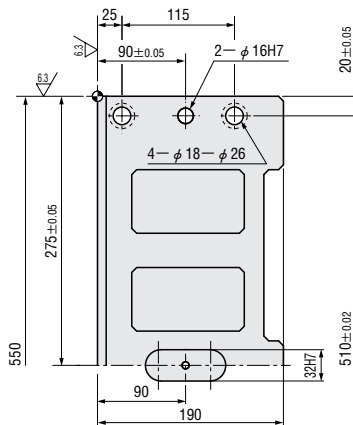
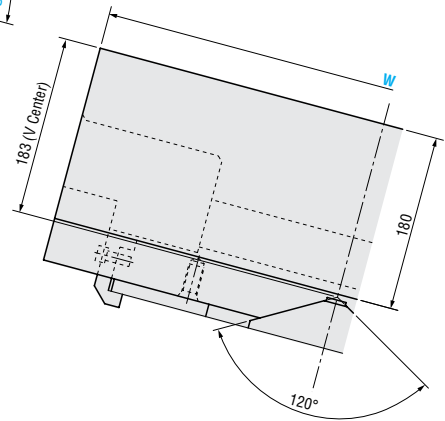
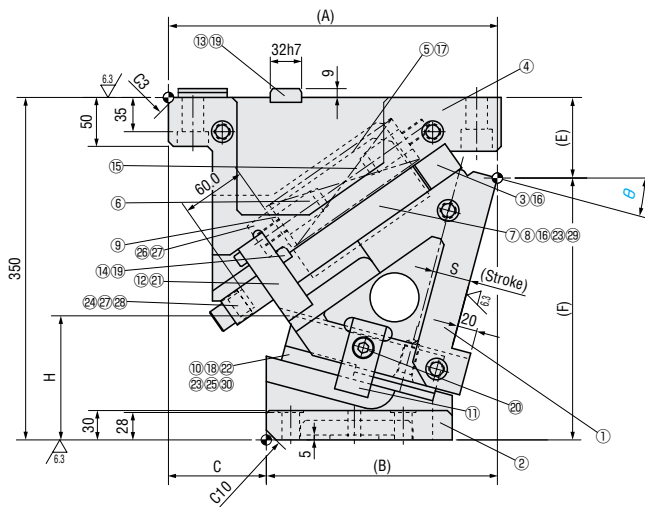
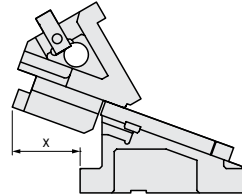
— LGFW —

— With additional slide clearance —

LGFW600 ( $\theta=00-40$ )



■ Rear removal space



■ Components table P.64

W	$\theta$	A	B	C	E	F	H	x
600	00	313	175	138	58	292	102	47
	05	320.64	195.64	125	64.34	285.66	110.8	61
	10	331.08	216.08	115	72.47	277.53	119.1	70
	15	336.17	236.17	100	82.37	267.63	126.8	80
	20	340.76	255.76	85	94	256	133.9	88
	30	347.83	292.83	55	112.25	237.75	155.7	103
	40	351.17	326.17	25	136.66	213.34	173.9	116

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
38.6	392.3 (40.0)	783.6 (79.9)	3269 (333.3)	17488 (1783.3)	19613 (1999.9)	281.4	—With additional slide clearance— <b>LGFW</b>	600	00	
42.6				17706 (1805.5)					277.9	05
46.7				17869 (1822.2)					274.1	10
50.9				18006 (1836.1)					272.3	15
55.3				18142 (1850.0)					268.8	20
65.1				18360 (1872.2)					276.6	30
77.1				18550 (1891.6)					285.2	40



Order Catalog No. **LGFW** W **600** —  $\theta$  **10**



Alterations Catalog No. **LGFW** W **600** —  $\theta$  **10** — (N · K · FK) **N**

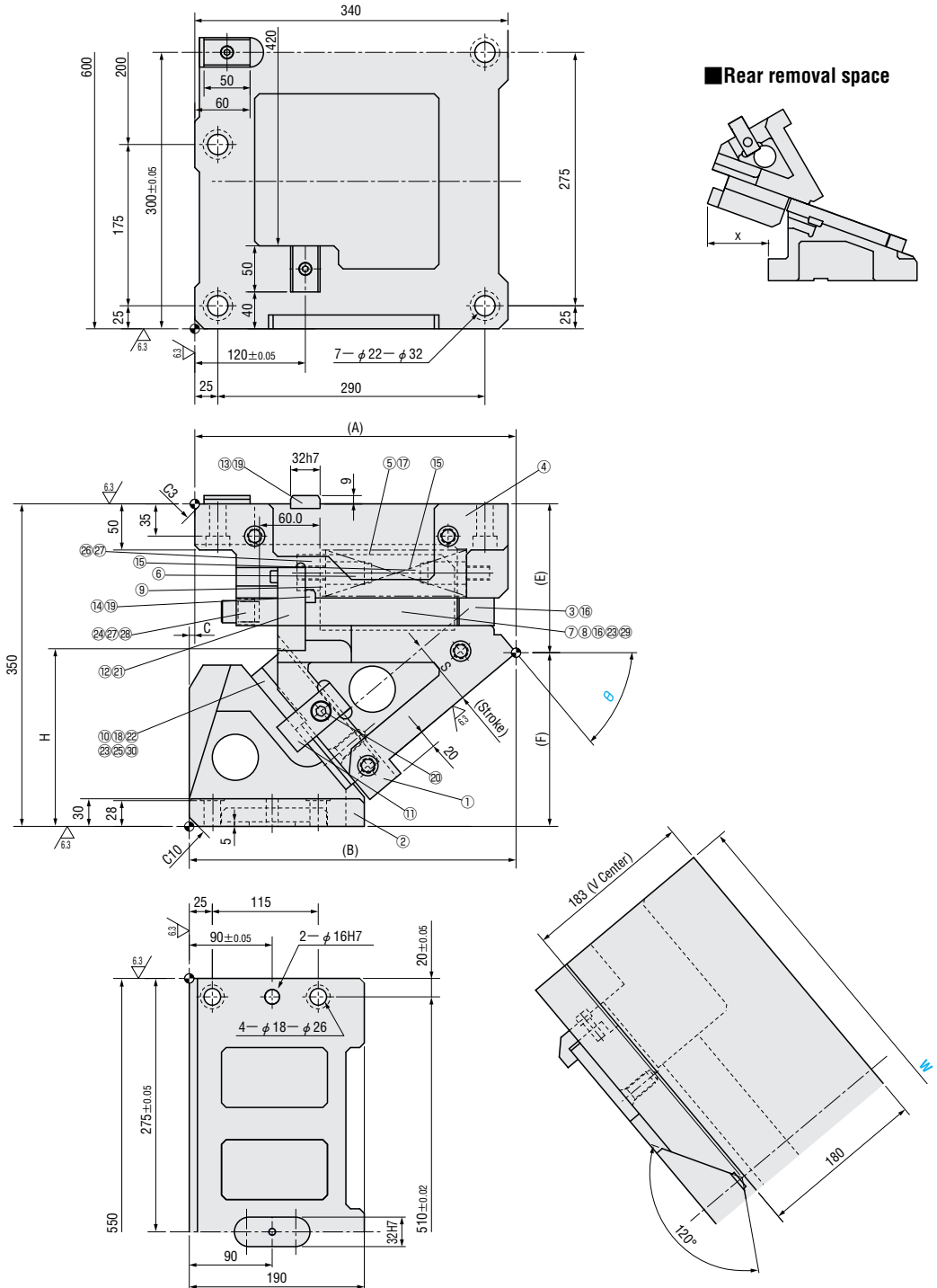
Alterations	Code	Spec.
	<b>N</b>	Add dowel hole Add 2 $\phi$ 16H7 dowel pin holes on cam base.
	<b>K</b>	Add locating key (With 1 hexagon socket head cap screw M8X15)
	<b>FK</b>	Move key position Move forward the locating key on cam base.

# WIDE AERIAL CAM UNITS FOR PIERCE

—LGFVW—

— With additional slide clearance —

LGFVW600 ( $\theta=50-60$ )



■ Components table P.64

W	$\theta$	A	B	C	E	F	H	x
600	50	348.77	354.77	6	161.49	188.51	192.8	126
	60	332.75	377.75	45	195.83	154.17	202.1	152

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
93.3	392.3 (40.0)	783.6 (79.9)	3269 (333.3)	18741 (1911.1)	19613 (1999.9)	283.5	— With additional slide clearance— <b>LGFVW</b>	600	50
120.0				18932 (1930.5)					60



Order

Catalog No.	W	—	$\theta$
LGFVW	600	—	50



Alterations

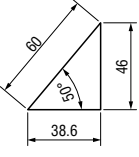
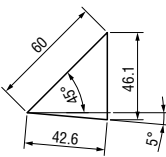
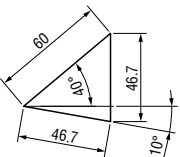
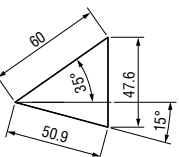
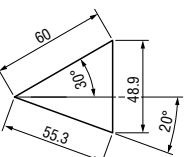
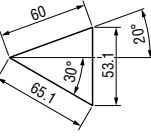
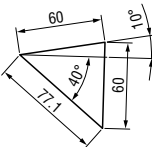
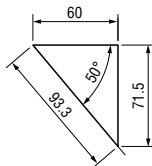
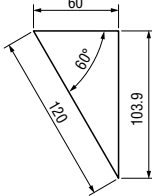
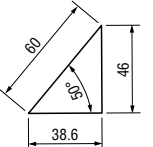
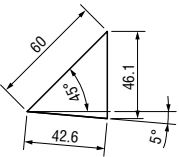
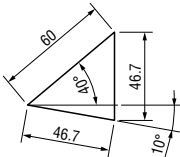
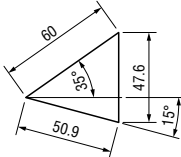
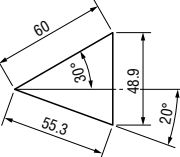
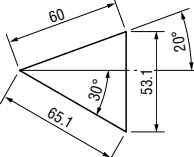
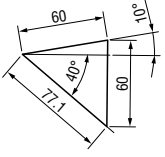
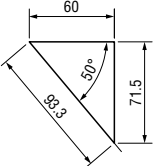
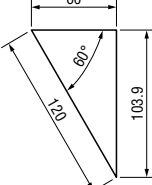
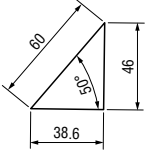
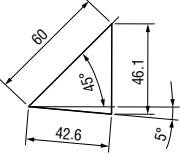
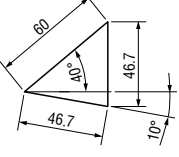
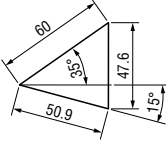
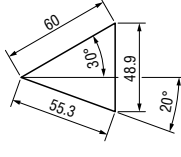
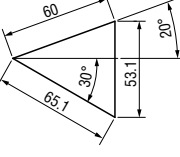
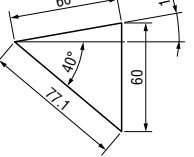
Catalog No.	W	—	$\theta$	—	(N · K · FK)
LGFVW	600	—	50	—	K

Alterations	Code	Spec.
	N	Add dowel hole Add 2 $\phi$ 16H7 dowel holes on cam base
	K	Add locating key (With 1 hexagon socket head cap screw M8×15)
	FK	Move key position Move forward the locating key on cam base.

# WIDE AERIAL CAM UNITS FOR PIERCE

—LGFVW— CAM DIAGRAM

■LGFVW

<p><b>200-00</b></p> 	<p><b>200-05</b></p> 	<p><b>200-10</b></p> 	<p><b>200-15</b></p> 	<p><b>200-20</b></p> 
<p><b>200-30</b></p> 	<p><b>200-40</b></p> 	<p><b>200-50</b></p> 	<p><b>200-60</b></p> 	<p><b>300-00</b></p> 
<p><b>300-05</b></p> 	<p><b>300-10</b></p> 	<p><b>300-15</b></p> 	<p><b>300-20</b></p> 	<p><b>300-30</b></p> 
<p><b>300-40</b></p> 	<p><b>300-50</b></p> 	<p><b>300-60</b></p> 	<p><b>400-00</b></p> 	<p><b>400-05</b></p> 
<p><b>400-10</b></p> 	<p><b>400-15</b></p> 	<p><b>400-20</b></p> 	<p><b>400-30</b></p> 	<p><b>400-40</b></p> 



<p><b>400-50</b></p>	<p><b>400-60</b></p>	<p><b>500-00</b></p>	<p><b>500-05</b></p>	<p><b>500-10</b></p>
<p><b>500-15</b></p>	<p><b>500-20</b></p>	<p><b>500-30</b></p>	<p><b>500-40</b></p>	<p><b>500-50</b></p>
<p><b>500-60</b></p>	<p><b>600-00</b></p>	<p><b>600-05</b></p>	<p><b>600-10</b></p>	<p><b>600-15</b></p>
<p><b>600-20</b></p>	<p><b>600-30</b></p>	<p><b>600-40</b></p>	<p><b>600-50</b></p>	<p><b>600-60</b></p>

# WIDE AERIAL CAM UNITS FOR PIERCE

## — LGFVW — COMPONENTS TABLE

### ■ LGFVW200

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250	1
②	Cam Driver	FC250	1
③	Base Plate A	Bronze with Graphite	1
④	Cam Base	FC250	1
⑤	Spring Guide Block	Bronze with Graphite	1
⑥	Spring Guide Pin	S45C	2
⑦	Base Plate CR	Bronze with Graphite	1
⑧	Base Plate CL	Bronze with Graphite	1
⑨	Washer	S45C	1
⑩	V-Block	SS400 with Special Sintered Alloy	1
⑪	Positive Return Strap	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	3
⑭	Key B	SS400	2
⑮	Coil Spring	φ 50×225	1
⑯	Cap Screw	M16×45	6
⑰	Cap Screw	M20×50	2
⑱	Cap Screw	M12×35	4
⑲	Cap Screw	M8×15	5
⑳	Cap Screw	M10×25	2
㉑	Cap Screw	M8×45	2
㉒	Cap Screw	M12×40	4
㉓	Dowel Pin	φ 13×40	6
㉔	Bumper	Urethane	1
㉕	Stop Plate	SS400	1
㉖	Spring Guide Plate	SS400	1

### ■ LGFVW300

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250	1
②	Cam Driver	FC250	1
③	Gib Plate a	Bronze with Graphite	1
④	Cam Base	FC250	1
⑤	Spring Guide Block	Bronze with Graphite	1
⑥	Spring Guide Pin	S45C	4
⑦	Gib Plate r	Bronze with Graphite	1
⑧	Gib Plate ℓ	Bronze with Graphite	1
⑨	Washer	S45C	2
⑩	V-Block	SS400 with Special Sintered Alloy	1
⑪	Positive Return Strap	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	3
⑭	Key B	SS400	2
⑮	Coil Spring	φ 50×225	2
⑯	Cap Screw	M16×45	6
⑰	Cap Screw	M20×50	4
⑱	Cap Screw	M12×35	4
⑲	Cap Screw	M8×15	5
⑳	Cap Screw	M10×25	2
㉑	Cap Screw	M8×45	2
㉒	Cap Screw	M16×50	4
㉓	Dowel Pin	φ 13×40	6
㉔	Bumper	Urethane	2
㉕	Stop Plate	SS400	1
㉖	Spring Guide Plate	SS400	1

### ■ LGFVW400

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250	1
②	Cam Driver	FC250	1
③	Base Plate A	Bronze with Graphite	2
④	Cam Base	FC250	1
⑤	Spring Guide Block	Bronze with Graphite	2
⑥	Spring Guide Pin	S45C	4
⑦	Base Plate CR	Bronze with Graphite	1
⑧	Base Plate CL	Bronze with Graphite	1
⑨	Washer	S45C	2
⑩	V-Block	SS400 with Special Sintered Alloy	1
⑪	Positive Return Strap	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	3
⑭	Key B	SS400	3
⑮	Coil Spring	φ 50×225	2

No.	Part Name	Material and Remark	Quantity
⑯	Cap Screw	M16×45	11
⑰	Cap Screw	M20×50	4
⑱	Cap Screw	M12×35	4
⑲	Cap Screw	M8×15	6
⑳	Cap Screw	M10×25	8
㉑	Cap Screw	M8×45	2
㉒	Cap Screw	M12×40	8
㉓	Dowel Pin	φ 13×40	6
㉔	Bumper	Urethane	2
㉕	Wear Plate R	SS400 with Special Sintered Alloy	1
㉖	Spring Guide Plate	SS400	2
㉗	Base Plate CL	Bronze with Graphite	1
㉘	Stop Plate	SS400	2
㉙	Wear Plate L	SS400 with Special Sintered Alloy	1

### ■ LGFVW500

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250	1
②	Cam Driver	FC250	1
③	Base Plate A	Bronze with Graphite	2
④	Cam Base	FC250	1
⑤	Spring Guide Block	Bronze with Graphite	3
⑥	Spring Guide Pin	S45C	6
⑦	Base Plate CR	Bronze with Graphite	1
⑧	Base Plate F	Bronze with Graphite	2
⑨	Washer	S45C	3
⑩	V-Block	SS400 with Special Sintered Alloy	1
⑪	Positive Return Strap	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	3
⑭	Key B	SS400	4
⑮	Coil Spring	φ 50×225	3
⑯	Cap Screw	M16×45	14
⑰	Cap Screw	M20×50	6
⑱	Cap Screw	M12×35	4
⑲	Cap Screw	M8×15	7
⑳	Cap Screw	M10×25	8
㉑	Cap Screw	M8×45	2
㉒	Cap Screw	M12×40	12
㉓	Dowel Pin	φ 13×40	6
㉔	Bumper	Urethane	3
㉕	Wear Plate R	SS400 with Special Sintered Alloy	1
㉖	Spring Guide Plate	SS400	3
㉗	Base Plate CL	Bronze with Graphite	1
㉘	Stop Plate	SS400	3
㉙	Wear Plate L	SS400 with Special Sintered Alloy	1

### ■ LGFVW600

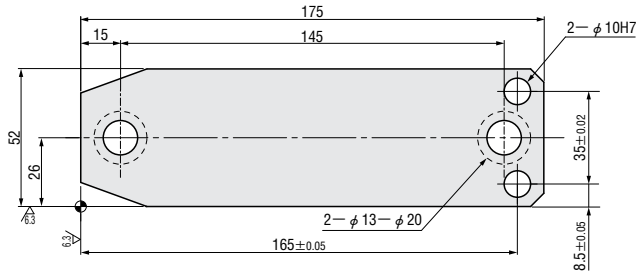
No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250	1
②	Cam Driver	FC250	1
③	Base Plate B	Bronze with Graphite	2
④	Cam Base	FC250	1
⑤	Spring Guide Block	Bronze with Graphite	2
⑥	Spring Guide Pin	S45C	8
⑦	Base Plate GR	Bronze with Graphite	1
⑧	Base Plate H	Bronze with Graphite	1
⑨	Washer	S45C	4
⑩	V-Block	SS400 with Special Sintered Alloy	1
⑪	Positive Return Strap	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	3
⑭	Key B	SS400	3
⑮	Coil Spring	φ 50×225	4
⑯	Cap Screw	M16×45	11
⑰	Cap Screw	M20×50	8
⑱	Cap Screw	M12×35	4
⑲	Cap Screw	M8×15	6
㉑	Cap Screw	M10×25	2
㉑	Cap Screw	M8×45	2
㉒	Cap Screw	M10×20	8
㉓	Dowel Pin	φ 13×40	6
㉔	Bumper	Urethane	4
㉕	Wear Plate R	SS400 with Special Sintered Alloy	1
㉖	Spring Guide Plate	SS400	2
㉗	Cap Screw	M16×50	8
㉘	Stop Plate	SS400	2
㉙	Base Plate GL	Bronze with Graphite	1
㉚	Wear Plate L	SS400 with Special Sintered Alloy	1

# COMPACT AERIAL CAM UNITS FOR PIERCE

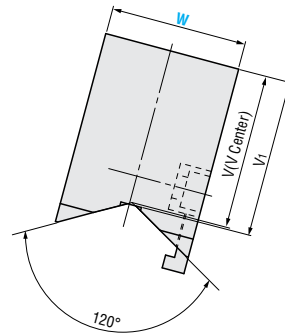
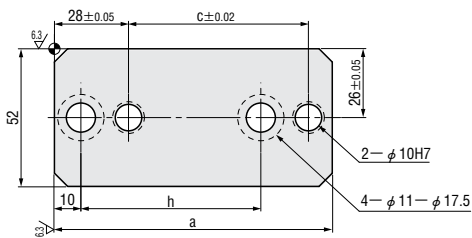
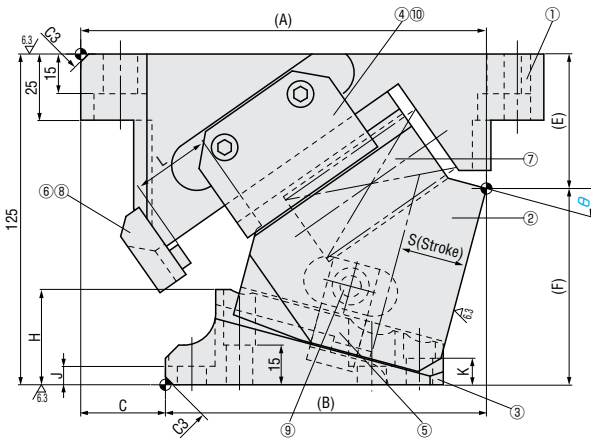
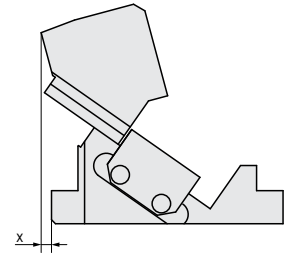
— LGFVC —

— With additional slide clearance —

LGFVC52 ( $\theta=00-40$ )



■ Rear removal space



■ Components table P.71

W	$\theta$	A	B	C	E	F	H	J	K	L	V	V <sub>1</sub>	a	c	h	x
52	00	150	105	45	43	82	21	7	15	30	59	60	105	68	68	0
	05	153.1	111.1	42	45.21	79.79	26									
	10	153.55	116.55	37	47.83	77.17	31									
	15	153.32	121.32	32	50.82	74.18	36									
	20	153.38	126.38	27	55.10	69.90	40									
	25	154.71	134.71	20	58.62	66.38	45									
	30	153.28	136.28	17	63.31	61.69	49									
	35	152.09	142.09	10	67.1	57.9	54									
40	149.14	145.14	4	71.93	53.07	58										

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
19.3	14.7 (1.5)	29.4 (3.0)	245 (25.0)	789 (80.4)	980 (99.9)	5.3	—With additional slide clearance— <b>LGFC</b>	52	00	
21.3				809 (82.4)					5.2	05
23.3				823 (83.9)					5.1	10
25.4				835 (85.2)					5.0	15
27.6				848 (86.4)					5.0	20
30.0				858 (87.4)					5.0	25
32.6				867 (88.4)					5.0	30
35.4				877 (89.4)					4.9	35
38.6				884 (90.2)					5.0	40



Order

Catalog No. **LGFC** W **52** —  $\theta$  **15**



Alterations

Catalog No. **LGFC** W **52** —  $\theta$  **20** — (SC) **SC60**

Alteration	Code	Spec.
	<b>SC</b>	Move forward mounting surface $1 \leq SC \leq 60$ 1mm increment



W	$\theta$	A	B	C	E	F	G	H	J	K	L	V	V <sub>1</sub>	a	c	h	x
52	45	145.41	149.41	4	75.73	49.27	125	63	7	7	30	59	60	105	68	68	31
	50	143.92	152.92	9	79.43	45.57		67	32								
	55	144.67	154.67	10	82.97	42.03		73	33								
	60	150.69	159.69	9	90.28	34.72		74	26								
	65	130.16	175.16	45	99.54	25.46	150	73	12	15	20	70	70	111	55	55	43
	70	133.62	173.62	40	106.97	18.03		72.5	38								
	75	148.74	178.74	30	124.59	25.41		83	12								47
	80			30					10								110

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
42.3	14.7 (1.5)	29.4 (3.0)	245 (25.0)	894 (91.2)	980 (99.9)	5.0	— With additional slide clearance — LGFVC	52	45	
46.7				902 (91.9)		5.0			50	
52.3				909 (92.7)		5.0			55	
60.0				919 (93.7)		5.2			60	
47.3			327 (33.3)	912 (93.0)	981 (100.0)	5.9			65	
58.5						925 (94.4)			5.9	70
46.3						910 (92.8)			7.8	75
57.5						436 (44.5)			556 (56.7)	7.7



Order

Catalog No. **LGFVC** W **52** —  $\theta$  **50**



Alterations

Catalog No. **LGFVC** W **52** —  $\theta$  **65** — (SC) **SC30**

Alteration	Code	Spec.
	SC	Move forward mounting surface 1 ≤ SC ≤ 60 1mm increment

# COMPACT AERIAL CAM UNITS FOR PIERCE

## —LGFVC— CAM DIAGRAM COMPONENTS TABLE

Cam diagram

■LGFVC

<p><b>52-00</b></p>	<p><b>52-05</b></p>	<p><b>52-10</b></p>	<p><b>52-15</b></p>
<p><b>52-20</b></p>	<p><b>52-25</b></p>	<p><b>52-30</b></p>	<p><b>52-35</b></p>
<p><b>52-40</b></p>	<p><b>52-45</b></p>	<p><b>52-50</b></p>	<p><b>52-55</b></p>
<p><b>52-60</b></p>	<p><b>52-65</b></p>	<p><b>52-70</b></p>	<p><b>52-75</b></p>
<p><b>52-80</b></p>			



### Components table

#### ■ LGFVC52( $\theta=00-40$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Base	FC250	1
②	Cam Slide	FC250 with Graphite	1
③	Cam Driver	FC250	1
④	Slide Retention Plate	S50C with Graphite	2
⑤	Positive Return Strap	S45C	1
⑥	Cap Screw	M8×20	2
⑦	Coil Spring	$\phi 27 \times 100$	1
⑧	Stopper	SS400 with Urethane	1
⑨	Cap Screw	M8×15	1
⑩	Cap Screw	M6×16	4

#### ■ LGFVC52( $\theta=45-70$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Base	FC250	1
②	Cam Slide	FC250 with Graphite	1
③	Cam Driver	FC250	1
④	Slide Retention Plate	S50C with Graphite	2
⑤	Positive Return Strap	S45C	1
⑥	Cap Screw	M6×20	2
⑦	Coil Spring	$\phi 27 \times 100$ ( $\theta=45-60$ ) $\phi 27 \times 75$ ( $\theta=65-70$ )	1
⑧	Stopper	SS400 with Urethane	1
⑨	Cap Screw	M8×15	1
⑩	Stop Plate	SS400	1
⑪	Cap Screw	M8×25	2
⑫	Spring Plate	SS400	1
⑬	Cap Screw	M6×12	1
⑭	Cap Screw	M6×16	4

#### ■ LGFVC52( $\theta=75-80$ )

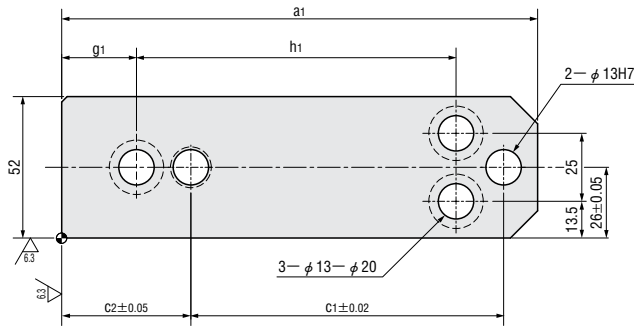
No.	Part Name	Material and Remark	Quantity
①	Cam Base	FC250	1
②	Cam Slide	FC250 with Graphite	1
③	Cam Driver	FC250	1
④	Slide Retention Plate	S50C with Graphite	2
⑤	Positive Return Strap	S45C	1
⑥	Cap Screw	M6×20	3
⑦	Coil Spring	$\phi 27 \times 45$	1
⑧	Stopper	SS400 with Urethane	1
⑨	Cap Screw	M8×15	1
⑩	Stop Plate	SS400	1
⑪	Cap Screw	M8×25	2
⑫	Spring Plate	SS400	1
⑭	Cap Screw	M6×16	4

# COMPACT AERIAL CAM UNITS FOR HEAVY LOAD PIERCE

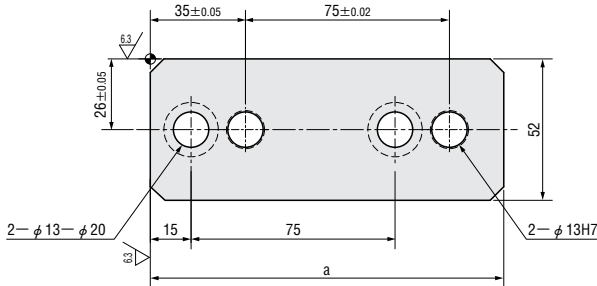
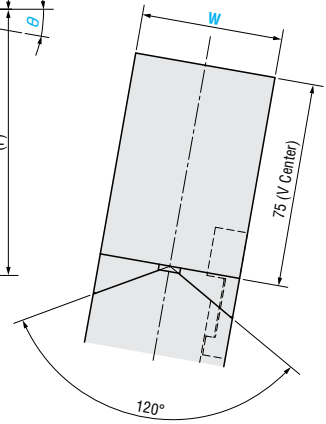
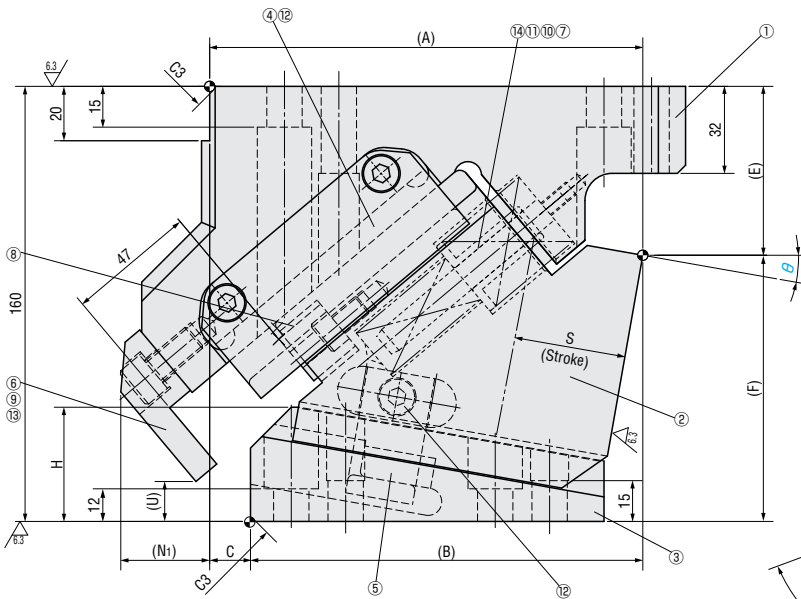
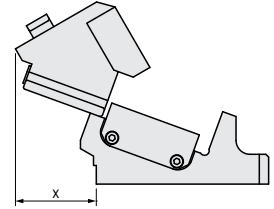
— LGFVA —

— With additional slide clearance —

LGFVA52 ( $\theta=00-20$ )



■ Rear removal space



■ Components table P.77

W	$\theta$	A	B	C	E	F	H	N <sub>1</sub>	U	a	a <sub>1</sub>	c <sub>1</sub>	c <sub>2</sub>	g <sub>1</sub>	h <sub>1</sub>	x
52	00	160	125	35	42	118	41	21.5	10.73	125	175	115	47.5	27.5	117.5	43
	05	161.1	136.1	25	53.31	106.69	40.1	24.35	13.01	130						54
	10	159.28	144.28	15	62.11	97.89	42	31.41	17.9							65
	15	168.99	151.49	17.5	66.32	93.68	49	25.48	25.1	185	120	52.5	32.5	122.5	64	
	20	169.72	169.72	0	76.86	83.14	48	27.07	29.7						140	69

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
30.2	29.4 (3.0)	58.8 (6.0)	30 (3.1)	1378(140.5)	3111 (317.2)	8.8	—With additional slide clearance— <b>LGVA</b>	52	00	
33.4				1555(158.6)					8.6	05
36.6				1689(172.2)					8.7	10
39.9				1800(183.5)					9.0	15
43.3				1911(194.9)					8.9	20



Order

Catalog No.	W	—	$\theta$
LGVA	52	—	10



Alterations

Catalog No.	W	—	$\theta$	—	(N12 · SC · WC)
LGVA	52	—	15	—	SC15

Alterations	Code	Spec.
<p>2-<math>\phi</math>12H7</p>	N12	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 12H7
	SC	Move forward mounting surface 1 $\leq$ SC $\leq$ 50 1mm increment
	WC	Change the width of mounting surface W=52 $\Rightarrow$ W=80 or 120 Ⓢ Only 80 or 120 can be specified.



W	$\theta$	A	B	C	E	F	H	L	N <sub>1</sub>	U <sub>1</sub>	a	c	c <sub>1</sub>	c <sub>2</sub>	g <sub>1</sub>	h	h <sub>1</sub>	x
52	25	168.92	181.92	13	81.63	78.37	55	47	28.68	20	140	75	120	52.5	32.5	75	122.5	78
	30	166.59	184.09	17.5	85.55	74.45	63		30.31									87
	35	163.72	193.72	30	92.52	67.48	68		30.99									94
	40	163.80	173.80	10	98.47	61.53	70		27.24									96
	45	157.35	180.35	23	104.78	55.22	78.5	93	28.57	10	115	60	115	57.5	37.5	60	103	
	50	159.37	174.37	15	103.89	56.11			20								99	
	55	152.53	182.53	30	111.09	48.91			37								15	100
	60	142.95	157.95	15	113.10	46.90			27								15	105

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
47.0	29.4 (3.0)	58.8 (6.0)	30 (3.1)	2000(203.9)	3111 (317.2)	8.8	—With additional slide clearance— <b>LGFVA</b>	52	25	
51.0				2089(213.0)		8.6			30	
55.4				2178(222.0)		8.8			35	
60.4				2244(228.8)		8.9			40	
66.2				2333(237.9)		9.1			45	
73.1				2400(244.7)		8.8			50	
64.5				61(6.2)		2466(251.5)			8.9	55
54.0				92(9.3)		2555(260.6)			8.5	60



Order

Catalog No. **LGFVA**    W **52**    —     $\theta$  **55**



Alterations

Catalog No. **LGFVA**    W **52**    —     $\theta$  **45**    —    (N12 · SC · WC) **WC120**

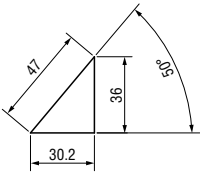
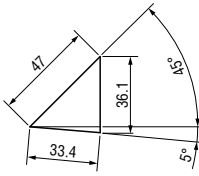
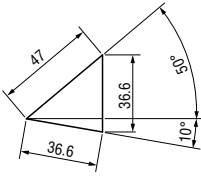
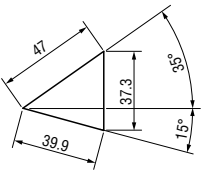
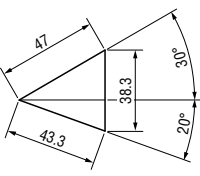
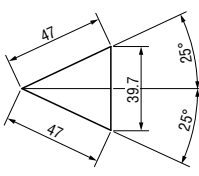
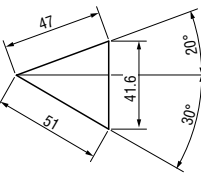
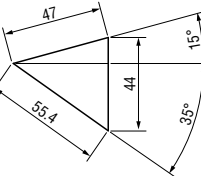
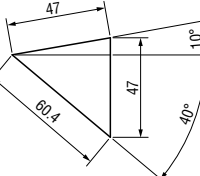
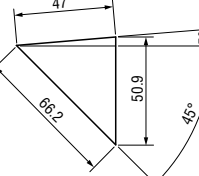
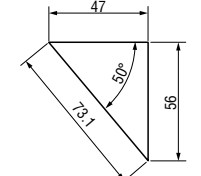
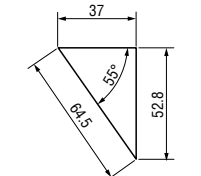
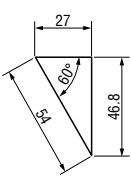
Alterations	Code	Spec.
<p>2-<math>\phi</math>12H7</p>	<b>N12</b>	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 12H7
<p>SC</p>	<b>SC</b>	Move forward mounting surface 1 $\leq$ SC $\leq$ 50 1mm increment
<p>WC</p>	<b>WC</b>	Change the width of mounting surface W=52 $\Rightarrow$ W=80 or 120 ⚠ Only 80 or 120 can be specified.

# COMPACT AERIAL CAM UNITS FOR HEAVY LOAD PIERCE

—LGFVA— CAM DIAGRAM COMPONENTS TABLE

Cam diagram

■LGFVA

<p><b>52-00</b></p> 	<p><b>52-05</b></p> 	<p><b>52-10</b></p> 	<p><b>52-15</b></p> 
<p><b>52-20</b></p> 	<p><b>52-25</b></p> 	<p><b>52-30</b></p> 	<p><b>52-35</b></p> 
<p><b>52-40</b></p> 	<p><b>52-45</b></p> 	<p><b>52-50</b></p> 	<p><b>52-55</b></p> 
<p><b>52-60</b></p> 			

## Components table

### ■ LGFVA52

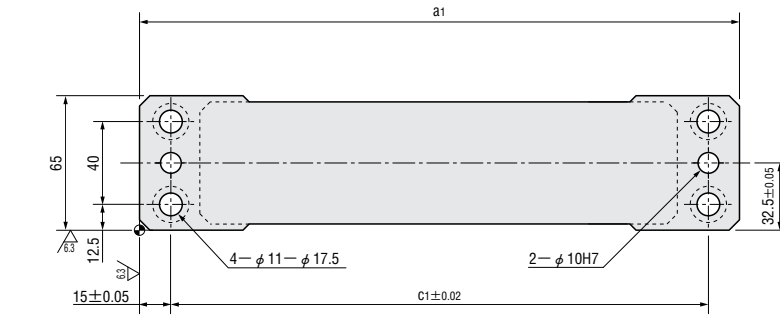
No.	Part Name	Material and Remark	Quantity
①	Cam Base	FCD550	1
②	Cam Slide	FCD550 with Graphite	1
③	Cam Driver	FC250	1
④	Slide Retention Plate	S45C with Graphite	2
⑤	Positive Return Strap	Bronze	1
⑥	Stop Plate	SS400	1
⑦	Spring Guide Pin	S45C	1
⑧	Bumper	Urethane	1
⑨	Spring Washer	For M10	2
⑩	Coil Spring	$\phi 20 \times 80$ ( $\theta = 00-50$ ) $\phi 20 \times 70$ ( $\theta = 55$ ) $\phi 20 \times 45$ ( $\theta = 60$ )	1
⑪	Coil Spring	$\phi 32 \times 51$	1
⑫	Cap Screw	M8 $\times$ 16	5
⑬	Cap Screw	M10 $\times$ 20	2
⑭	Spring Guide Bush	Bronze	1

# AERIAL CAM UNITS FOR HEAVY LOAD PIERCE

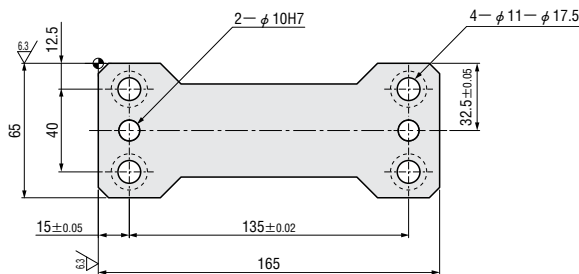
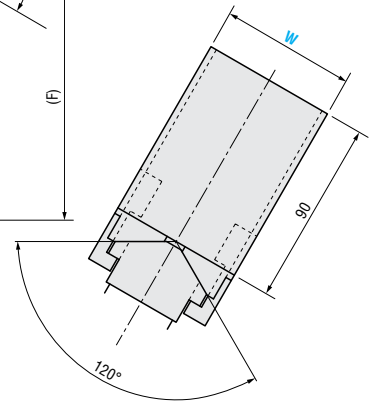
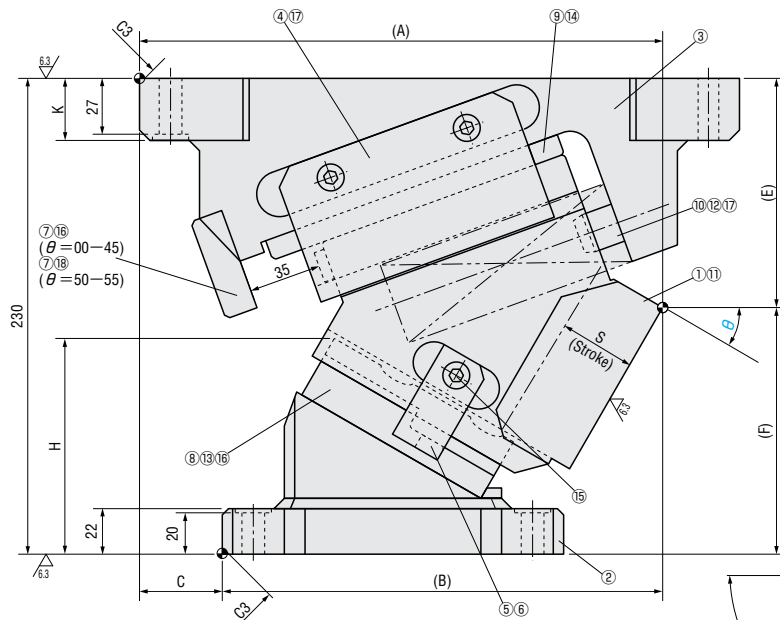
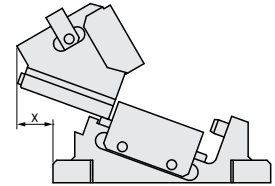
— LGFVH —

— With additional slide clearance —

LGFVH65 ( $\theta=00-55$ )



■ Rear removal space



■ Components table P.83



W	$\theta$	A	B	C	E	F	H	K	a1	c1	x
65	00	255	160	95	79.2	150.8	58.5	30	275	245	0
	05	265.68	170.68		82.29	147.71	67.1				
	10	256.04	181.04	75	86.29	143.71	75.4				19
	15	266.02	191.02		91.18	138.82	83.3				
	20	255.53	195.53	60	96.93	133.07	90.8				36
	25	264.51	204.51		103.48	126.52	97.8				
	30	252.88	212.88	40	110.79	119.21	104.3		48		
	35	260.58	220.58		118.8	111.2	110.2		47		
	40	242.56	222.56	20	122.45	107.55	120.4		66		
	45	248.75	228.75		131.67	98.33	125		59		
	50	236.28	236.28		125.98	104.02	148.1		71		
	55	240.78	240.78	0	136.14	93.86	153.1		39	290	260

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
22.5	68.6 (7.0)	137.3 (14.0)	0 (0.0)	4654(474.6)	5989 (610.7)	18.4	—With additional slide clearance— <b>LGFVH</b>	65	00
22.6				4671(476.3)		18.6			05
27.2				4893(499.0)		17.4			10
27.8				4911(500.7)		17.5			15
32.3				5065(516.4)		16.6			20
33.4				5099(519.9)		16.8			25
38.0				5201(530.4)		16.9			30
40.2				5236(533.9)		17.0			35
45.0				5321(542.6)		16.4			40
48.7				5373(547.8)		16.6			45
54.5				5441(554.8)		15.9			50
61.0				5492(560.1)		16.1			55



Order

Catalog No. **LGFVH**    W **65**    —     $\theta$  **10**

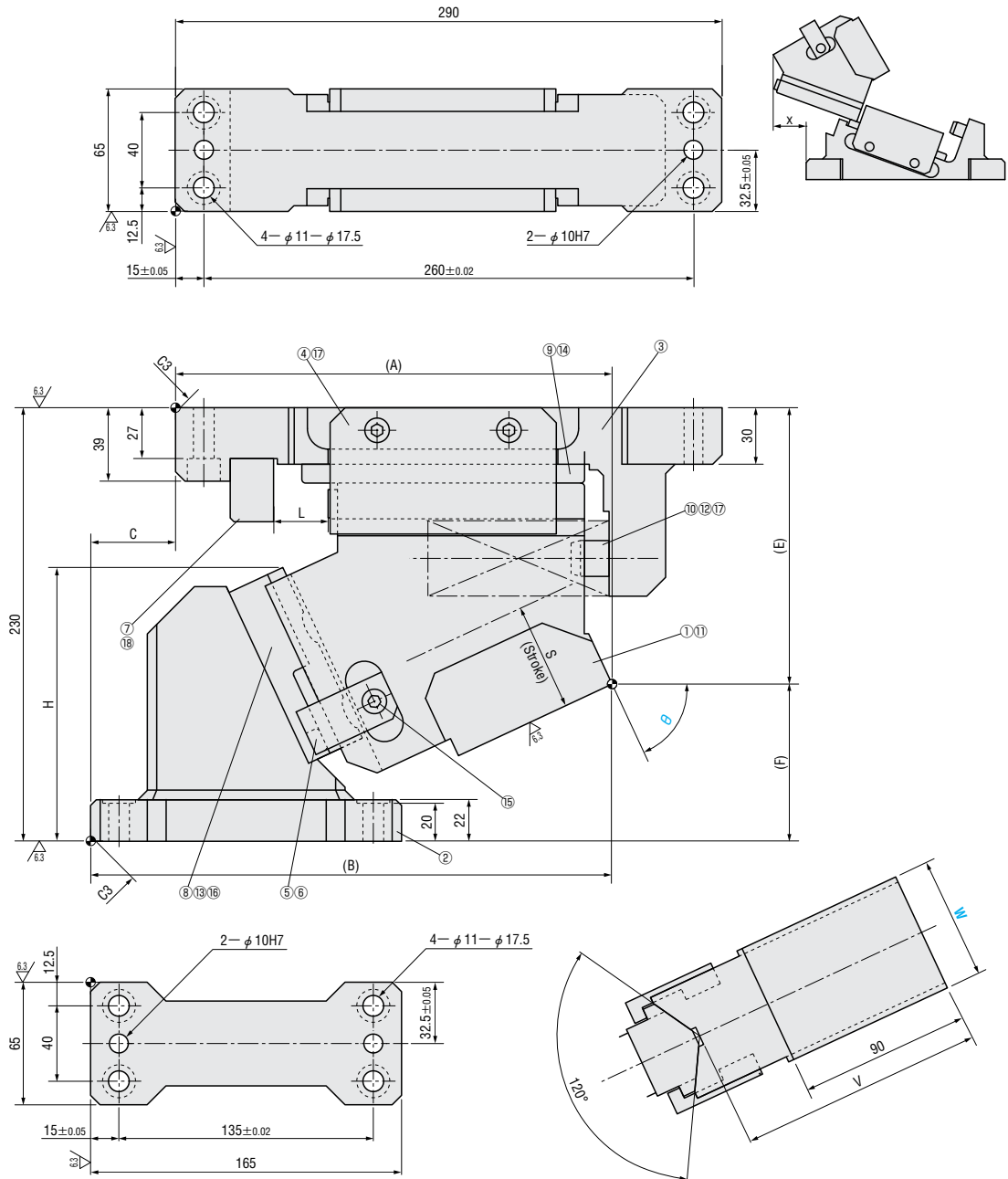
# AERIAL CAM UNITS FOR HEAVY LOAD PIERCE

—LGFVH—

— With additional slide clearance —

LGFVH65 ( $\theta=60-75$ )

■ Rear removal space



■ Components table P. 83

W	$\theta$	A	B	C	E	F	H	L	V	x
65	60	234.5	244.5	10	145.31	84.69	159.8	35	90	64
	65	231.79	276.79	45	146.72	83.28	145.2	29	130	86
	70	228.97	273.97		147.89	82.11	159	23		85
	75	233.82	278.82		167.79	62.21	153.5	18		80

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
70.0	68.6 (7.0)	137.3 (14.0)	0 (0.0)	5561(567.0)	5989(610.7)	16.4	—With additional slide clearance— <b>LGFVH</b>	65	60
68.5				5506(561.5)	5936(605.3)	18.0			65
67.2				5429(553.6)	5863(597.8)	18.0			70
69.5				4878(497.4)	5258(536.1)	20.0			75



Order

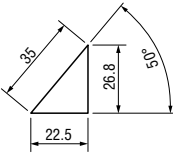
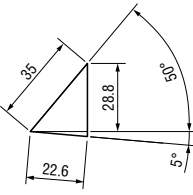
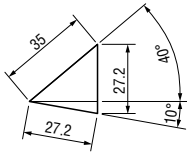
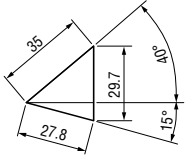
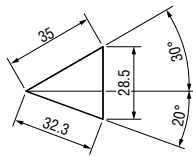
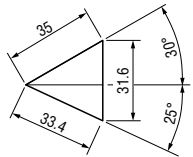
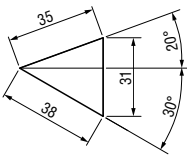
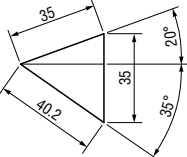
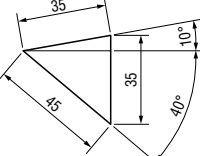
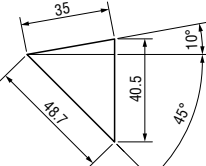
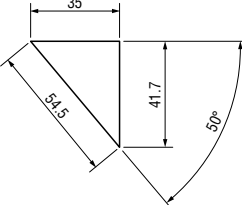
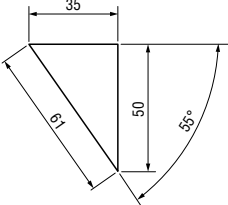
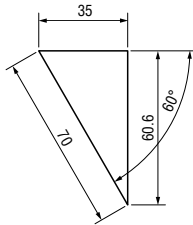
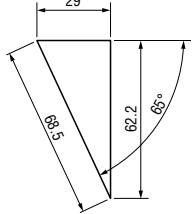
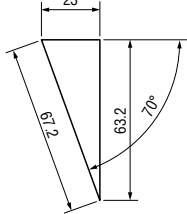
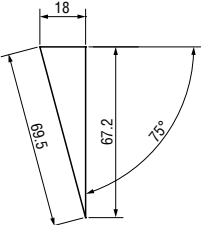
Catalog No.	W	—	$\theta$
LGFVH	65	—	60

# AERIAL CAM UNITS FOR HEAVY LOAD PIERCE

## — LGFVH — CAM DIAGRAM COMPONENTS TABLE

Cam diagram

■ LGFVH

<p><b>65-00</b></p> 	<p><b>65-05</b></p> 	<p><b>65-10</b></p> 	<p><b>65-15</b></p> 
<p><b>65-20</b></p> 	<p><b>65-25</b></p> 	<p><b>65-30</b></p> 	<p><b>65-35</b></p> 
<p><b>65-40</b></p> 	<p><b>65-45</b></p> 	<p><b>65-50</b></p> 	<p><b>65-55</b></p> 
<p><b>65-60</b></p> 	<p><b>65-65</b></p> 	<p><b>65-70</b></p> 	<p><b>65-75</b></p> 

### Components table

#### ■ LGFVH65 ( $\theta = 00-45$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FCD500 with Graphite	1
②	Cam Driver	FCD500	1
③	Cam Base	FCD500	1
④	Slide Retention Plate	S45C with Graphite	2
⑤	Positive Return Strap L	S45C	1
⑥	Positive Return Strap R	S45C	1
⑦	Stop Plate	SS400	1
⑧	V-Block	Bronze with Graphite	1
⑨	Wear Plate	Bronze with Graphite	1
⑩	Spring Guide Pin	SS400	1
⑪	Bumper	Urethane	2
⑫	Coil Spring	$\phi 40 \times 152$	1
⑬	Dowel Pin	$\phi 10 \times 30$	2
⑭	Cap Screw	M10 $\times$ 20	2
⑮	Cap Screw	M8 $\times$ 15	2
⑯	Cap Screw	M10 $\times$ 30	4
⑰	Cap Screw	M8 $\times$ 20	5

#### ■ LGFVH65 ( $\theta = 50-75$ )

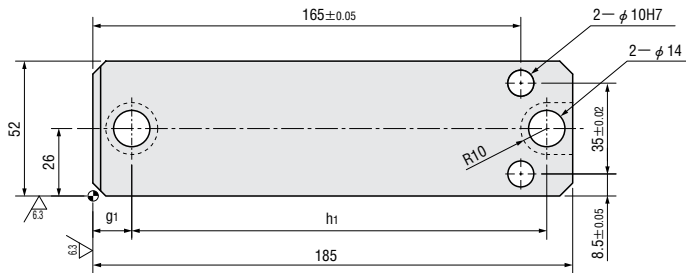
No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FCD500 with Graphite	1
②	Cam Driver	FCD500	1
③	Cam Base	FCD500	1
④	Slide Retention Plate	S45C with Graphite	2
⑤	Positive Return Strap L	S45C	1
⑥	Positive Return Strap R	S45C	1
⑦	Stop Plate	SS400	1
⑧	V-Block	Bronze with Graphite	1
⑨	Wear Plate	Bronze with Graphite	1
⑩	Spring Guide Pin	SS400	1
⑪	Bumper	Urethane	2
⑫	Coil Spring	$\phi 40 \times 152$ ( $\theta = 50-60$ ) $\phi 40 \times 127$ ( $\theta = 65$ ) $\phi 40 \times 102$ ( $\theta = 70$ ) $\phi 40 \times 89$ ( $\theta = 75$ )	1
⑬	Dowel Pin	$\phi 10 \times 30$	2
⑭	Cap Screw	M10 $\times$ 20	2
⑮	Cap Screw	M8 $\times$ 15	2
⑯	Cap Screw	M10 $\times$ 30	2
⑰	Cap Screw	M8 $\times$ 20	5
⑱	Cap Screw	M10 $\times$ 40	2

# COMPACT LONG STROKE AERIAL CAM UNITS FOR PIERCE

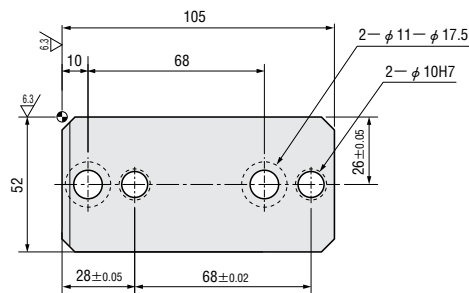
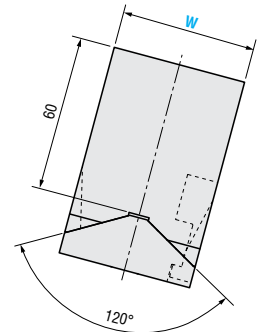
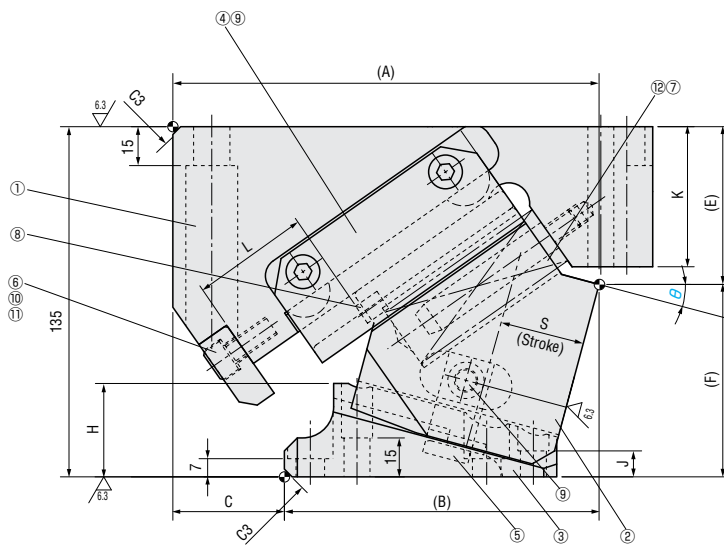
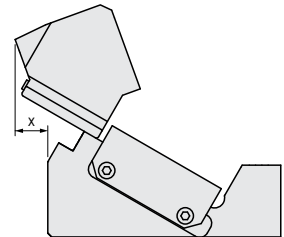
— LGFVL —

— With additional slide clearance —

LGFVL52 ( $\theta=00-40$ )



■ Rear removal space



■ Components table P. 89

W	$\theta$	A	B	C	E	F	H	J	K	L	g1	h1	x
52	00	161	105	56	53	82	21	15	49	45	15	160	7
	05	162.1	111.1	51	55.21	79.79	26		50				0
	10	162.55	116.55	46	57.83	77.17	31		52				7
	15	164.32	121.32	43	60.82	74.18	36	10	54				12
	20	164.38	126.38	38	65.1	69.9	40		57				21
	25	162.71	134.71	28	68.62	66.38	45	7	60				30
	30	160.28	136.28	24	73.31	61.69	49		64				38
	35	158.09	142.09	16	77.1	57.9	54		67				44
40	153.14	145.14	8	81.93	53.07	58	72		52				

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
30.2	14.7 (1.5)	29.4 (3.0)	0(0.0)	768(78.3)	921(93.9)	6.4	— With additional slide clearance— <b>LGFVL</b>	52	00
31.9			764(77.9)	902(91.9)	6.1	05			
35.0			776(79.1)		6.0	10			
38.2			786(80.1)		5.8	15			
41.5			796(81.1)		5.7	20			
45.0			804(81.9)		5.5	25			
48.8			811(82.7)		5.5	30			
53.1			819(83.5)		5.4	35			
57.9			825(84.1)		5.5	40			



Order

Catalog No.	W	—	$\theta$
LGFVL	52	—	25



Alterations

Catalog No.	W	—	$\theta$	—	(SC · WC)
LGFVL	52	—	15	—	SC50

Alterations	Code	Spec.
	SC	Move forward mounting surface $1 \leq SC \leq 60$ 1mm increment
	WC	Change the width of mounting surface W=52 $\Rightarrow$ W=65





W	$\theta$	A	B	C	E	F	H	J <sub>1</sub>	K	g <sub>1</sub>	h <sub>1</sub>	x
52	45	139.41	149.41	10	85.73	49.27	63	7	74	27	133	67
	50	135.92	152.92	17	89.43	45.57	68	12	78	30	130	70

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
54.9	14.7 (1.5)	29.4 (3.0)	137 (14.0)	833(84.9)	902 (91.9)	5.3	— With additional slide clearance— <b>LGFVL</b>	52	45
60.7				839(85.5)					5.4



Order

Catalog No.	W	—	$\theta$
LGFVL	52	—	50



Alterations



Catalog No.	W	—	$\theta$	—	(SC · WC)
LGFVL	52	—	50	—	WC

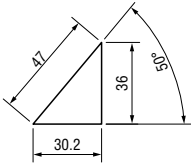
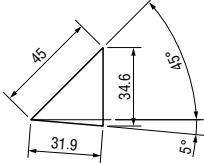
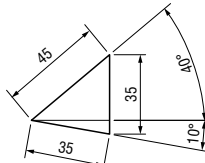
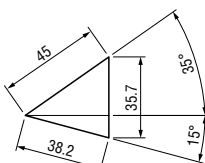
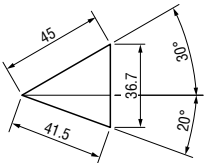
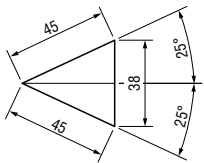
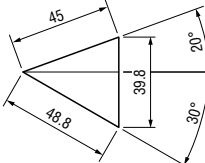
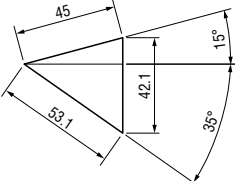
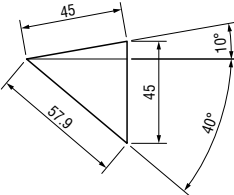
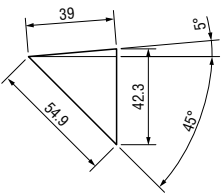
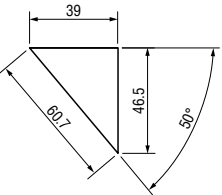
Alterations	Code	Spec.
	SC	Move forward mounting surface $1 \leq SC \leq 60$ 1mm increment
	WC	Change the width of mounting surface $W=52 \Rightarrow W=65$

# COMPACT LONG STROKE AERIAL CAM UNITS FOR PIERCE

—LGFVL— CAM DIAGRAM COMPONENTS TABLE

Cam diagram

■LGFVL

<p><b>52-00</b></p> 	<p><b>52-05</b></p> 	<p><b>52-10</b></p> 	<p><b>52-15</b></p> 
<p><b>52-20</b></p> 	<p><b>52-25</b></p> 	<p><b>52-30</b></p> 	<p><b>52-35</b></p> 
<p><b>52-40</b></p> 	<p><b>52-45</b></p> 	<p><b>52-50</b></p> 	

## Components table

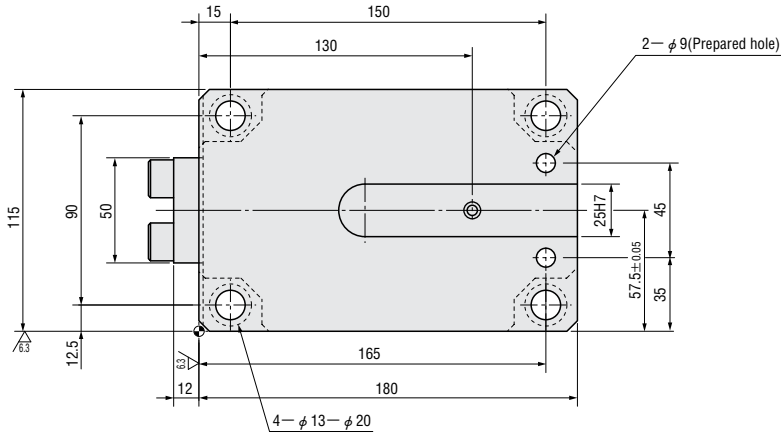
### ■ LGFVL52

No.	Part Name	Material and Remark	Quantity
①	Cam Base	FC250	1
②	Cam Slide	FC250 with Graphite	1
③	Cam Driver	FC250	1
④	Slide Retention Plate	S45C with Graphite	2
⑤	Positive Return Strap	S45C	1
⑥	Cap Screw	M8×20	2
⑦	Coil Spring	φ 25×115	1
⑧	Bumper	Urethane	2
⑨	Cap Screw	M8×15	5
⑩	Stop Plate	SS400	1
⑪	Spring Washer	For M8	2
⑫	Spring Guide Pin	S45C	1

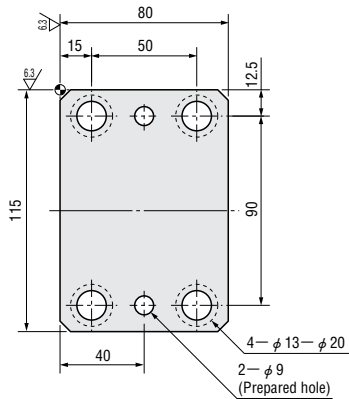
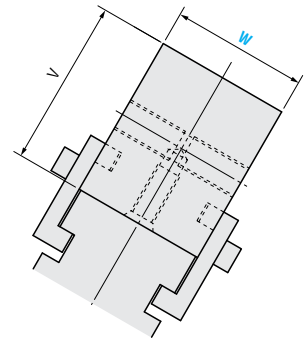
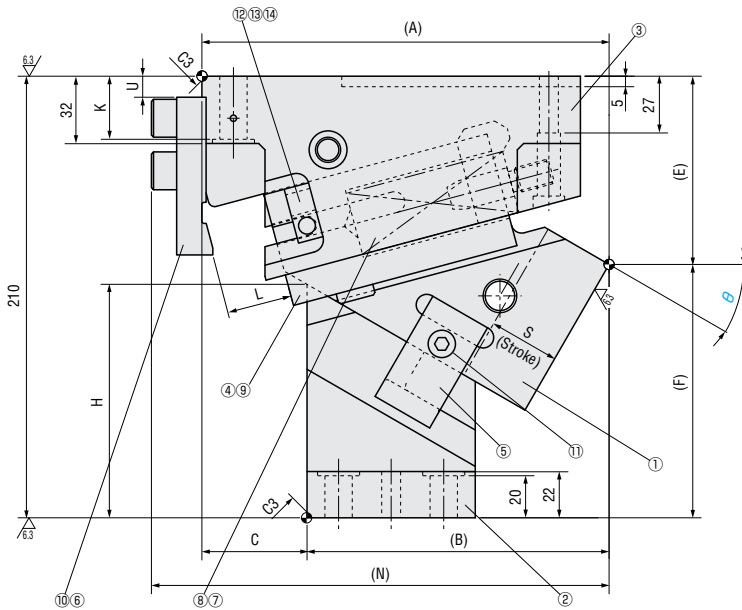
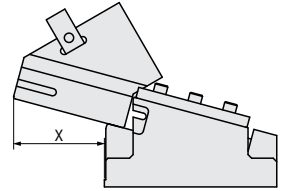
# AERIAL CAM UNITS FOR TRIM & FLANGE

—LGFTT—

LGFTT65



■ Rear removal space



■ Components table P.98

W	$\theta$	A	B	C	E	F	H	K	L	N	V	U	X		
65	00	185.94	110.94	75	56.57	153.43	73.4	30	38	209.94	80	55	52		
	05	193.01	123.01	70			73.9			217.01	90				
	10	196.8	126.8	70	67.58	142.42	83.5			220.8	80	40	61		
	15	203.77	136.77	67	68.81	141.19	84.7			227.77	90				
	20	198.1	138.1	60	74.31	135.69	100.8			222.1	80	10	71		
	25	204.75	149.75	55	76.73	133.27	103.8			228.75	90				
	30	193.63	143.63	50	89.52	120.48	111		217.63	80	30	79			
	35	199.76	154.76	45	93.06	116.94	105		223.76	90					
	40	188.72	148.72	40	99.62	110.38	120		212.72	80	25	15			
	45	194.13	160.13	34	104.16	105.84	115		218.13	90					
	50	190	160	30	110	100	130		18	35	214	100	10	77	
	55		170	20	115	95				25					
	60		190	0	130	80				20					110
	65		190	0	130	80				20					110
70	190		0	130	80	20		110							

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure				
26.9	19.6(2.0)	39.2(4.0)	166(16.9)	898( 91.6)	1067(108.8)	19.5	LGFTT	65	00
27.0			237(24.2)	972( 99.1)	1138(116.0)	19.8			05
31.6			308(31.4)	995(101.5)		19.3			10
32.2				998(101.7)		19.6			15
33.8			1014(103.4)	18.1		20			
35.0			1019(103.9)	18.4		25			
33.5	23.5(2.4)	47.1(4.8)	427(43.5)	1031(105.1)		17.7			30
35.4			1038(105.9)	18.0	35				
42.9			356(36.3)	1048(106.8)	16.9	40			
46.5			1055(107.5)	17.1	45				
54.5	29.4(3.0)	58.8(6.0)	308(31.4)	1062(108.3)	16.8	50			
43.6			297(30.3)	953( 97.2)	1040(106.0)	17.8			55
50.0				965( 98.4)	17.3	60			
47.3				829( 84.5)	891( 90.9)	18.5			65
58.5				841( 85.7)	18.4	70			



Order

Catalog No. **LGFTT** W **65** -  $\theta$  **40**



Alterations

Catalog No. **LGFTT** W **65** -  $\theta$  **15** - (HK · DK · etc.) **HDK10**

Alterations	Code	Spec.
	HK	Finish dowel hole on holder Only 10, 12 or 13 can be specified $\phi$ 9(Prepared hole) $\Rightarrow$ $\phi$ 10H7, $\phi$ 12H7 or $\phi$ 13H7
	DK	Finish dowel hole on driver Only 10, 12 or 13 can be specified $\phi$ 9(Prepared hole) $\Rightarrow$ $\phi$ 10H7, $\phi$ 12H7 or $\phi$ 13H7

Alterations	Code	Spec.
	HDK	Finish dowel holes on driver & holder Only 10, 12 or 13 can be specified $\phi$ 9(Prepared hole) $\Rightarrow$ $\phi$ 10H7, $\phi$ 12H7 or $\phi$ 13H7
	K	Add locating key (With 1 hexagon socket head cap screw M8×15)



W	$\theta$	A	B	C	E	F	H	K	L	N	V	U	t <sub>i</sub>	X	
100	00	240	180	60	85	195	95	38	40	273	100	55	17	83	
	05	236.89	176.89		73.82	206.18	81.1			269.89	140				
	10	240	180		90	190	120.2			273	100				
	15	254.35	194.35		81.51	198.49	105.6			287.35	140				
	20	240	190	50	110	170	130		32	274	100	15	18	115	
	25	253.26	203.26		102.60	177.40	113			287.26	140				
	30	240	210	30	110	170	150		20	30	273	120	10	17	126
	35	252.34	222.34		109.69	170.31	140				285.34	140			
	40	240	210		115	165	160				273	120			
	45	247.41	217.41		114.68	165.32	155				280.41	120			
	50	240	240	230	10	120	160			170	272	140	16	132	
	55			0	145	135	180								
	60														
	65														
70	20	20	142												

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$									
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure													
28.3	44.1(4.5)	88.3(9.0)	315(32.1)	2388(243.5)	2835(289.1)	47.0	LGFTT	100	00									
28.4				2576(262.7)					3091(315.2)	05								
33.3				147(15.0)						2650(270.2)	10							
33.9										2657(270.9)	15							
30.9			176(18.0)	2999(305.8)	2540(259.0)				2999(305.8)	44.8	46.5	44.1	20					
32.0													2558(260.8)	2822(287.8)	41.2	25		
33.5													2426(247.3)			2822(287.8)	41.7	30
35.4													2452(250.0)					2822(287.8)
39.0													2487(253.6)			2760(281.4)	43.0	
42.3													2514(256.3)	2760(281.4)	41.8			45
46.7			2540(259.0)	552(56.3)	2528(257.8)				43.0	50								
52.3			49.0(5.0)							98.1(10.0)	2567(261.7)	42.5	55					
60.0				2602(265.3)	2572(262.3)				41.8				60					
47.3			552(56.3)	98.1(10.0)						2528(257.8)	43.0	65						
58.5	2572(262.3)	2760(281.4)			41.8	70												



Order

Catalog No.	W	$\theta$
LGFTT	100	15



Alterations

Catalog No.	W	$\theta$	(HK - DK...etc.)
LGFTT	100	15	HK12

Alterations	Code	Spec.
	HK	Finish dowel hole on holder Only 12 or 13 can be specified $\phi 11$ (Prepared hole) $\Rightarrow \phi 12H7$ or $\phi 13H7$
	DK	Finish dowel hole on driver Only 12 or 13 can be specified $\phi 11$ (Prepared hole) $\Rightarrow \phi 12H7$ or $\phi 13H7$

Alterations	Code	Spec.
	HDK	Finish dowl holes on driver & holder Only 12 or 13 can be specified $\phi 11$ (Prepared hole) $\Rightarrow \phi 12H7$ or $\phi 13H7$
	K	Add locating key (With 1 hexagon socket head cap screw M8×15)





W	$\theta$	A	B	C	E	F	H	K	L	N	V	U	t <sub>r</sub>	X					
200	00	240	180	60	90	190	90	38	40	273	100	60	17	83					
	05	236.82	176.82		78.84	201.16	86.1			269.82	130								
	10	240	180		90	190	120.2			273	100								
	15	254.35	194.35	81.51	198.49	116	287.35			130	35								
	20	240	190	110	170	130	274			100									
	25	253.27	203.27	102.6	177.4	125	287.27			130	15	18		115					
	30	240	210	110	170	150	273		120										
	35	252.34	222.34	109.69	170.31	160	285.34		140	30	10	17	126						
	40	240	210	115	165		273		120										
	45	247.41	217.41	114.68	165.32		280.41		140					16	130				
	50	240	230	10	120	160	272				140		10			16	132		
	55		240	240	0	145			135					170	20			180	142
	60																		
	65																		
70																			

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$			
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure							
28.3	98.1(10.0)	196.1(20.0)	630( 64.2)	4775(487.0)	5670(578.2)	81.5	LGFTT	200	00			
28.4				5152(525.4)					6182(630.4)	82.3	05	
33.3			294( 30.0)	5299(540.4)	75.7					10		
33.9				5314(541.9)					80.5	15		
30.9			353( 36.0)	5998(611.6)	5080(518.0)				76.1	20		
32.0					5116(521.6)					80.1	25	
33.5					4851(494.7)					77.0	30	
35.4					4904(500.1)						80.9	35
39.0					4974(507.3)					5645(575.6)	71.4	40
42.3					5027(512.7)						74.7	45
46.7			117.7(12.0)	235.4(24.0)	5080(518.0)				71.6	50		
52.3					5133(523.4)					78.6	55	
60.0					5204(530.6)					73.9	60	
47.3					1104(112.6)					5056(515.6)	77.2	65
58.5	5145(524.6)	72.2	70									



Order

Catalog No. **LGFTT** W **200** -  $\theta$  **30**



Alterations

Catalog No. **LGFTT** W **200** -  $\theta$  **15** - (HK · DK...etc.) **K**

Alterations	Code	Spec.	Alterations	Code	Spec.
	<b>HK</b>	Finish dowel hole on holder Only 12, 13 or 16 can be specified $\phi$ 11 (Prepared hole) $\Rightarrow$ $\phi$ 12H7, $\phi$ 13H7 or $\phi$ 16H7		<b>HDK</b>	Finish dowl holes on driver & holder Only 12, 13 or 16 can be specified $\phi$ 11 (Prepared hole) $\Rightarrow$ $\phi$ 12H7, $\phi$ 13H7 or $\phi$ 16H7
	<b>DK</b>	Finish dowel hole on driver Only 12, 13 or 16 can be specified $\phi$ 11 (Prepared hole) $\Rightarrow$ $\phi$ 12H7, $\phi$ 13H7 or $\phi$ 16H7		<b>K</b>	Add locating key (With 1 hexagon socket head cap screw M8x15)

# AERIAL CAM UNITS FOR TRIM & FLANGE

—LGFTT— CAM DIAGRAM

■ LGFTT

<p><b>65-00</b></p>	<p><b>65-05</b></p>	<p><b>65-10</b></p>	<p><b>65-15</b></p>	<p><b>65-20</b></p>
<p><b>65-25</b></p>	<p><b>65-30</b></p>	<p><b>65-35</b></p>	<p><b>65-40</b></p>	<p><b>65-45</b></p>
<p><b>65-50</b></p>	<p><b>65-55</b></p>	<p><b>65-60</b></p>	<p><b>65-65</b></p>	<p><b>65-70</b></p>
<p><b>100-00</b></p>	<p><b>100-05</b></p>	<p><b>100-10</b></p>	<p><b>100-15</b></p>	<p><b>100-20</b></p>
<p><b>100-25</b></p>	<p><b>100-30</b></p>	<p><b>100-35</b></p>	<p><b>100-40</b></p>	<p><b>100-45</b></p>

<p><b>100-50</b></p>	<p><b>100-55</b></p>	<p><b>100-60</b></p>	<p><b>100-65</b></p>	<p><b>100-70</b></p>
<p><b>200-00</b></p>	<p><b>200-05</b></p>	<p><b>200-10</b></p>	<p><b>200-15</b></p>	<p><b>200-20</b></p>
<p><b>200-25</b></p>	<p><b>200-30</b></p>	<p><b>200-35</b></p>	<p><b>200-40</b></p>	<p><b>200-45</b></p>
<p><b>200-50</b></p>	<p><b>200-55</b></p>	<p><b>200-60</b></p>	<p><b>200-65</b></p>	<p><b>200-70</b></p>

# AERIAL CAM UNITS FOR TRIM & FLANGE

## — LGFTT — COMPONENTS TABLE

### ■ LGFTT65( $\theta=00-35$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Wear Plate	FC250 with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Stop Plate	SS400	1
⑦	Spring Guide Pin	SCM435	1
⑧	Coil Spring	$\phi 30 \times 125$	1
⑨	Cap Screw	M12 $\times$ 25	4
⑩	Cap Screw	M12 $\times$ 35	4
⑪	Cap Screw	M8 $\times$ 25	2
⑫	Safety Plate	S45C	2
⑬	Dowel Pin	$\phi 8 \times 30$	2
⑭	Cap Screw	M10 $\times$ 35	2

### ■ LGFTT65( $\theta=40-70$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Wear Plate	FC250 with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Stop Plate	SS400	1
⑦	Spring Guide Pin	SCM435	1
⑧	Coil Spring	$\phi 30 \times 125$ ( $\theta=40-50$ ) $\phi 30 \times 100$ ( $\theta=55-70$ )	1
⑨	Cap Screw	M12 $\times$ 25	4
⑩	Cap Screw	M12 $\times$ 35	2
⑪	Cap Screw	M8 $\times$ 25	2
⑫	Safety Plate	S45C	2
⑬	Dowel Pin	$\phi 8 \times 30$	2
⑭	Cap Screw	M10 $\times$ 35	2

### ■ LGFTT100( $\theta=00-20, 30$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Wear Plate	S45C with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Stop Plate	SS400	1
⑦	Spring Guide Pin	SCM435	2
⑧	Coil Spring	$\phi 30 \times 175$ ( $\theta=00$ ) $\phi 30 \times 150$ ( $\theta=05-15$ ) $\phi 30 \times 125$ ( $\theta=20,30$ )	2
⑨	Bumper	Urethane	2
⑩	Cap Screw	M12 $\times$ 35	6
⑪	Cap Screw	M8 $\times$ 25	2
⑫	Cap Screw	M16 $\times$ 45	4
⑬	Safety Plate	S45C	2
⑭	Dowel Pin	$\phi 8 \times 35$	2
⑮	Cap Screw	M10 $\times$ 30	2

### ■ LGFTT100( $\theta=25, 35$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Wear Plate	S45C with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Stop Plate	SS400	1
⑦	Spring Guide Pin	SCM435	2
⑧	Coil Spring	$\phi 30 \times 125$	2
⑨	Bumper	Urethane	2
⑩	Cap Screw	M12 $\times$ 35	6
⑪	Cap Screw	M8 $\times$ 25	2
⑫	Cap Screw	M16 $\times$ 45	4
⑬	Safety Plate	S45C	2
⑭	Dowel Pin	$\phi 8 \times 35$	2
⑮	Cap Screw	M10 $\times$ 30	2
⑯	Spacer	SS400	2

### ■ LGFTT100( $\theta=40, 50-70$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Wear Plate	S45C with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Stop Plate	SS400	1
⑦	Spring Guide Pin	SCM435	2
⑧	Coil Spring	$\phi 30 \times 125$ ( $\theta=40, 50-60$ ) $\phi 30 \times 100$ ( $\theta=65-70$ )	2
⑨	Bumper	Urethane	2
⑩	Cap Screw	M12 $\times$ 35	6
⑪	Cap Screw	M8 $\times$ 25	2
⑫	Cap Screw	M16 $\times$ 45	2
⑬	Safety Plate	S45C	2
⑭	Dowel Pin	$\phi 8 \times 35$	2
⑮	Cap Screw	M10 $\times$ 30	2

### ■ LGFTT100( $\theta=45$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Wear Plate	S45C with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Stop Plate	SS400	1
⑦	Spring Guide Pin	SCM435	2
⑧	Coil Spring	$\phi 30 \times 125$	2
⑨	Bumper	Urethane	2
⑩	Cap Screw	M12 $\times$ 35	6
⑪	Cap Screw	M8 $\times$ 25	2
⑫	Cap Screw	M16 $\times$ 45	2
⑬	Safety Plate	S45C	2
⑭	Dowel Pin	$\phi 8 \times 35$	2
⑮	Cap Screw	M10 $\times$ 30	2
⑯	Spacer	SS400	2

■ LGFTT200( $\theta=00-20,30-35$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Wear Plate	S45C with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Stop Plate	SS400	1
⑦	Spring Guide Pin	SCM435	4
⑧	Coil Spring	$\phi 30 \times 175$ ( $\theta=00$ ) $\phi 30 \times 150$ ( $\theta=05-15$ ) $\phi 30 \times 125$ ( $\theta=20,30-35$ )	4
⑨	Bumper	Urethane	4
⑩	Cap Screw	M12 $\times$ 35	6
⑪	Cap Screw	M8 $\times$ 25	2
⑫	Cap Screw	M16 $\times$ 45	8
⑬	Safety Plate	S45C	2
⑭	Dowel Pin	$\phi 10 \times 35$	2
⑮	Cap Screw	M10 $\times$ 35	2

■ LGFTT200( $\theta=25$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Wear Plate	S45C with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Stop Plate	SS400	1
⑦	Spring Guide Pin	SCM435	4
⑧	Coil Spring	$\phi 30 \times 125$	4
⑨	Bumper	Urethane	4
⑩	Cap Screw	M12 $\times$ 35	6
⑪	Cap Screw	M8 $\times$ 25	2
⑫	Cap Screw	M16 $\times$ 45	8
⑬	Safety Plate	S45C	2
⑭	Dowel Pin	$\phi 10 \times 35$	2
⑮	Cap Screw	M10 $\times$ 35	2
⑯	Spacer	SS400	4

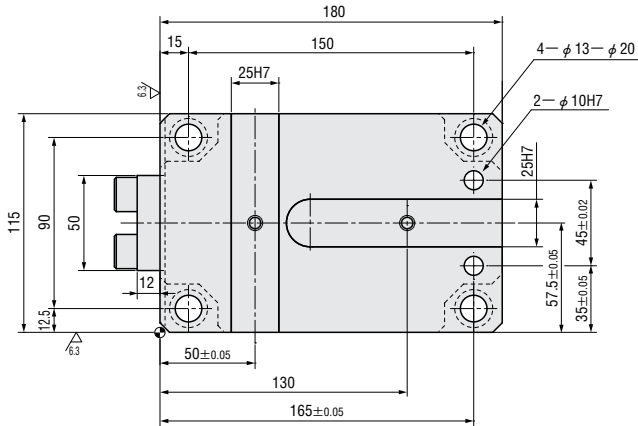
■ LGFTT200( $\theta=40-70$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Wear Plate	S45C with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Stop Plate	SS400	1
⑦	Spring Guide Pin	SCM435	4
⑧	Coil Spring	$\phi 30 \times 125$ ( $\theta=40-60$ ) $\phi 30 \times 100$ ( $\theta=65-70$ )	4
⑨	Bumper	Urethane	4
⑩	Cap Screw	M12 $\times$ 35	6
⑪	Cap Screw	M8 $\times$ 25	2
⑫	Cap Screw	M16 $\times$ 45	4
⑬	Safety Plate	S45C	2
⑭	Dowel Pin	$\phi 10 \times 35$	2
⑮	Cap Screw	M10 $\times$ 35	2

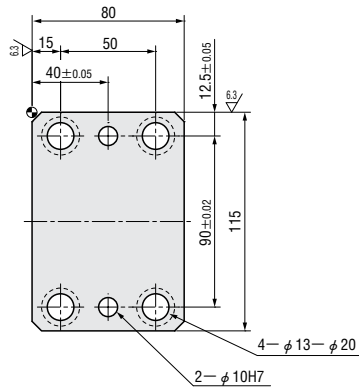
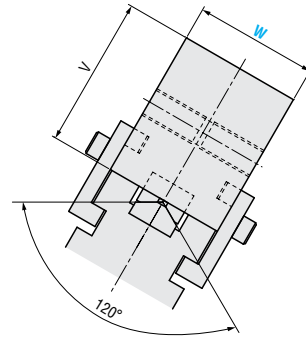
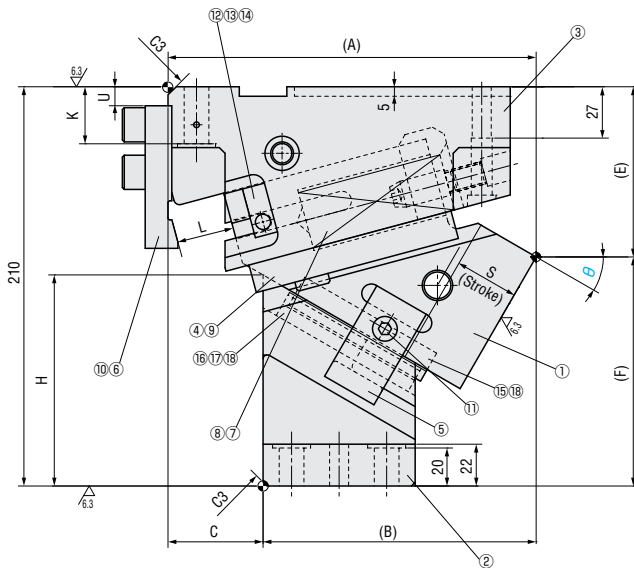
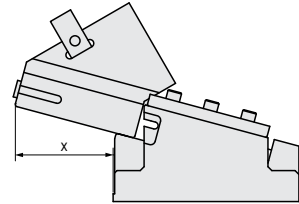
# V SHAPE GUIDE AERIAL CAM UNITS FOR TRIM & FLANGE

— LGFVT —

LGFVT65 ( $\theta=00-70$ )



■ Rear removal space



■ Components table  P.108

W	$\theta$	A	B	C	E	F	H	K	L	U	V	x	
65	00	185.94	110.94	75	56.57	153.43	73.4	30	38	55	80	52	
	05	193.01	123.01	70			73.9				90		
	10	196.8	126.8		67	67.58	142.42			83.5	80	40	80
	15	203.77	113.47	60	68.81	141.19	84.7			90			
	20	198.1	138.1	55	74.31	135.69	100.8		35	10	80	71	
	25	204.75	149.75	50	76.73	133.27	103.8				90		
	30	193.63	143.63	45	89.52	120.48	111		30	15	80	79	
	35	199.76	154.76	40	93.06	116.94	105				90		
	40	188.72	148.72	34	99.62	110.38	120		25	33	80		
	45	194.13	160.13	30	104.16	105.84	115		30	35	90		77
	50	190	160	20	110	100	130		18	25	10	100	87
	55		170	115	95	110							
	60		190	0	130	80				20	110	92	
	65		190	0	130	80				20	110	92	
70	190	0	130	80	20	110	92						

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
26.9	19.6 (2.0)	39.2 (4.0)	166(16.9)	898( 91.6)	1067(108.8)	19.5	LGFVT	65	00	
27.0			237(24.2)	972( 99.1)	1138(116.0)	19.8			05	
31.6			308(31.4)	995(101.5)		19.3			10	
32.2				998(101.7)		19.6			15	
33.8			427(43.5)	1014(103.4)		18.1			20	
35.0				1019(103.9)		18.4			25	
33.5			356(36.3)	1031(105.1)		17.7			30	
35.4				1038(105.9)		18.0			35	
42.9			308(31.4)	1048(106.8)		16.9			40	
46.5				1055(107.5)		17.1			45	
54.5			297(30.3)	1062(108.3)		16.8			50	
43.6				953( 97.2)		1040(106.0)			17.8	55
50.0				965( 98.4)					17.3	60
47.3				829( 84.5)		891( 90.9)			18.5	65
58.5	841( 85.7)	18.4	70							



Order

Catalog No. **LGFVT** W **65** -  $\theta$  **40**



Alterations

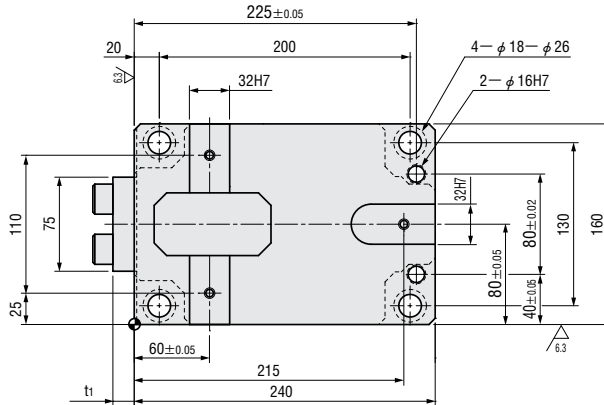
Catalog No. **LGFVT** W **65** -  $\theta$  **30** - (K) **K**

Alteration	Code	Spec.
	<b>K</b>	<p>Add 2 locating keys (With 2 hexagon socket head cap screws M8×15)</p>

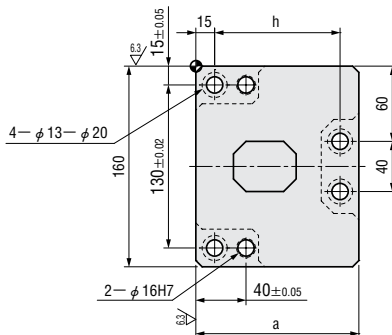
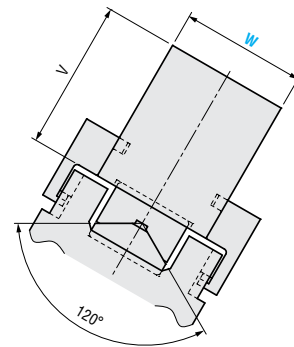
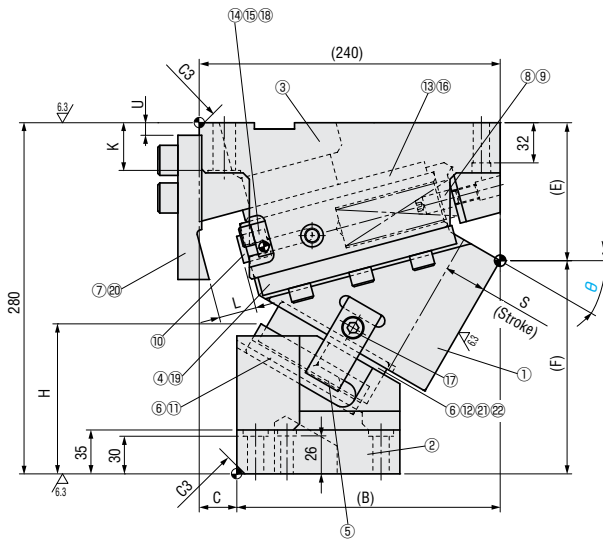
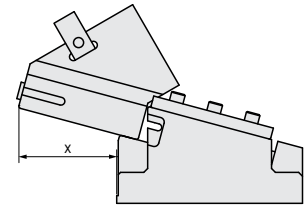
# V SHAPE GUIDE AERIAL CAM UNITS FOR TRIM & FLANGE

—LGFVT—

LGFVT100 ( $\theta=00-70$ )



■ Rear removal space



■ Components table  P.108



W	$\theta$	B	C	E	F	H	K	L	U	V	a	h	t <sub>1</sub>	x
100	00	160	80	85	195	90	38	40	55	100	140	110	17	83
	10	180	60	90	190	100			35					96
	20	190	50	110	170	109.5		32	15				18	116
	30	210	30			120		10	120				130	100
	40			115	165	145.3	120			90	16	130		
	50	230	10	120	160	153.6						110	80	16
	60	240	0	145	135	168.1	25			0	140			
	70							179.3	20			132		

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
28.3	44.1 (4.5)	88.3 (9.0)	315(32.1)	2388(243.5)	2835(289.1)	49.4	LGFVT	100	00	
33.3				2457(250.5)		47.3			10	
30.9			221(22.5)	2193(223.7)	2576(262.7)	47.2			20	
33.5			176(18.0)	2426(247.3)	2822(287.8)	46.5			30	
39.0						2487(253.6)			47.8	40
46.7						2540(259.0)			43.6	50
60.0						2602(265.3)			44.9	60
58.5			552(56.3)	2572(262.3)	2760(281.4)	44.2			70	



Order

Catalog No.	W	-	$\theta$
LGFVT	100	-	30



Alterations

Catalog No.	W	-	$\theta$	-	(K · KA)
LGFVT	100	-	10	-	K

Alterations	Code	Spec.
	K	<p>Add 3 locating keys (With 3 hexagon socket head cap screws M8×15)</p>
	KA	<p>Add 3 stepped locating keys (With 3 hexagon socket head cap screws M8×15)</p>



W	$\theta$	B	C	E	F	H	K	L	U	V	t <sub>i</sub>	x	
200	00	160	80	85	195	90	38	40	55	100	17	83	
	10	180	60	90	190	113.8			35			96	
	20	190	50	110	170	118.2		32	15		18	116	
	30	210	30			125.4			127				
	40			115	165	139.8	30	10	120	17	130		
	50	230	10	120	160	149.7		30	0	140	16	132	
	60	240	0	145	135	155.1	179.3					20	142
	70					179.3	20					142	

Stroke S	Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
28.3	93.2 (9.5)	186.3 (19.0)	630 (64.2)	4775(487.0)	5670(578.2)	82.9	LGFVT	200	00	
33.3				4914(501.1)		77.1			10	
30.9			442 (45.0)	4387(447.3)	5152(525.4)	77.5			20	
33.5			353 (36.0)	4851(494.7)	5645(575.6)	78.4			30	
39.0						4974(507.3)			72.8	40
46.7						5080(518.0)			73.0	50
60.0						5204(530.6)			75.3	60
58.5			1104(112.6)	5145(524.6)	5520(562.9)	73.6			70	



Order

Catalog No. **LGFVT** W **200** -  $\theta$  **20**



Alterations

Catalog No. **LGFVT** W **200** -  $\theta$  **30** - (K · KA) **KA**

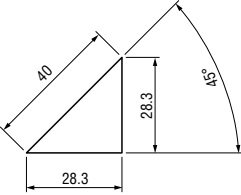
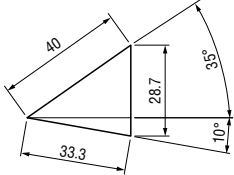
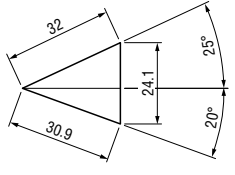
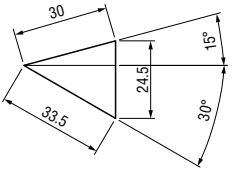
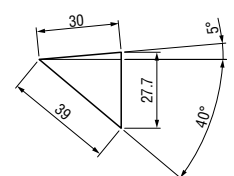
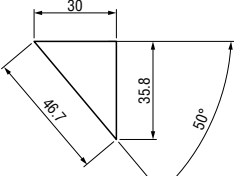
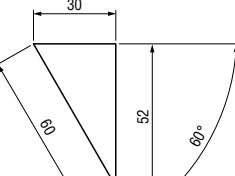
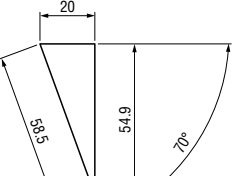
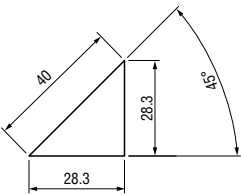
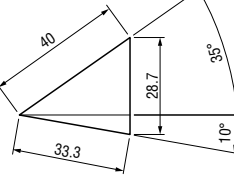
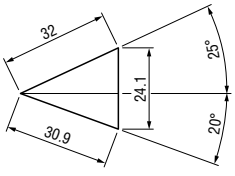
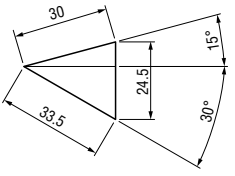
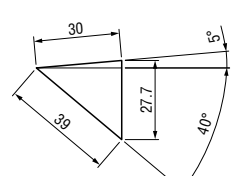
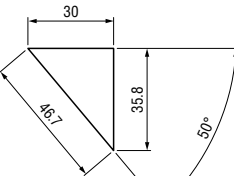
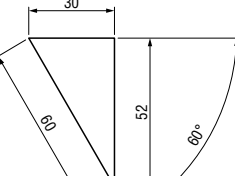
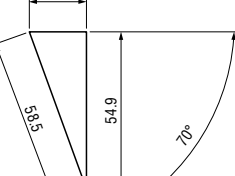
Alterations	Code	Spec.
	<b>K</b>	<p>Add 3 locating keys (With 3 hexagon socket head cap screws M8×15)</p>
	<b>KA</b>	<p>Add 3 stepped locating keys (With 3 hexagon socket head cap screws M8×15)</p>

# V SHAPE GUIDE AERIAL CAM UNITS FOR TRIM & FLANGE

—LGFVT— CAM DIAGRAM

■LGFVT

<p><b>65-00</b></p>	<p><b>65-05</b></p>	<p><b>65-10</b></p>	<p><b>65-15</b></p>
<p><b>65-20</b></p>	<p><b>65-25</b></p>	<p><b>65-30</b></p>	<p><b>65-35</b></p>
<p><b>65-40</b></p>	<p><b>65-45</b></p>	<p><b>65-50</b></p>	<p><b>65-55</b></p>
<p><b>65-60</b></p>	<p><b>65-65</b></p>	<p><b>65-70</b></p>	

<p><b>100-00</b></p> 	<p><b>100-10</b></p> 	<p><b>100-20</b></p> 	<p><b>100-30</b></p> 
<p><b>100-40</b></p> 	<p><b>100-50</b></p> 	<p><b>100-60</b></p> 	<p><b>100-70</b></p> 
<p><b>200-00</b></p> 	<p><b>200-10</b></p> 	<p><b>200-20</b></p> 	<p><b>200-30</b></p> 
<p><b>200-40</b></p> 	<p><b>200-50</b></p> 	<p><b>200-60</b></p> 	<p><b>200-70</b></p> 

# V SHAPE GUIDE AERIAL CAM UNITS FOR TRIM & FLANGE

## —LGFVT— COMPONENTS TABLE

### ■LGFVT65( $\theta=00-35$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Cam Upper Plate	FC250 with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Stop Plate	SS400	1
⑦	Spring Guide Pin	SCM435	1
⑧	Coil Spring	$\phi 30 \times 125$	1
⑨	Cap Screw	M12 $\times$ 25	4
⑩	Cap Screw	M12 $\times$ 35	4
⑪	Cap Screw	M8 $\times$ 25	2
⑫	Safety Plate	S45C	2
⑬	Dowel Pin	$\phi 8 \times 30$	2
⑭	Cap Screw	M10 $\times$ 30	2
⑮	Cam Bottom Guide Plate	Bronze with Graphite	1
⑯	Cam Bottom Wear Plate	S45C	1
⑰	Dowel Pin	$\phi 6 \times 20$	1
⑱	Cap Screw	M6 $\times$ 15	4

### ■LGFVT65( $\theta=40-70$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Cam Upper Plate	FC250 with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Stop Plate	SS400	1
⑦	Spring Guide Pin	SCM435	1
⑧	Coil Spring	$\phi 30 \times 125$ ( $\theta=40-50$ ) $\phi 30 \times 100$ ( $\theta=55-70$ )	1
⑨	Cap Screw	M12 $\times$ 25	4
⑩	Cap Screw	M12 $\times$ 35	2
⑪	Cap Screw	M8 $\times$ 25	2
⑫	Safety Plate	S45C	2
⑬	Dowel Pin	$\phi 8 \times 30$	2
⑭	Cap Screw	M10 $\times$ 30	2
⑮	Cam Bottom Guide Plate	Bronze with Graphite	1
⑯	Cam Bottom Wear Plate	S45C	1
⑰	Dowel Pin	$\phi 6 \times 20$	1
⑱	Cap Screw	M6 $\times$ 15	4

### ■LGFVT100( $\theta=00-30$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250	1
③	Cam Base	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Cap Screw	M10 $\times$ 30	4
⑦	Stop Plate	SS400	1
⑧	Spring Guide Pin	S45C	2
⑨	Coil Spring	$\phi 30 \times 175$ ( $\theta=00-10$ ) $\phi 30 \times 150$ ( $\theta=20$ ) $\phi 30 \times 125$ ( $\theta=30$ )	2
⑩	Bumper	Urethane	2
⑪	Cam Bottom Wear Plate	S45C	1
⑫	Cam Bottom Guide Plate	Bronze with Graphite	1
⑬	Cam Lower Plate	Bronze with Graphite	2
⑭	Safety Plate	SS400	2
⑮	Dowel Pin	$\phi 8 \times 35$	2
⑯	Cap Screw	M10 $\times$ 20	4
⑰	Cap Screw	M10 $\times$ 40	2
⑱	Cap Screw	M10 $\times$ 30	2
⑲	Cap Screw	M12 $\times$ 35	6
⑳	Cap Screw	M16 $\times$ 45	4
㉑	Dowel Pin	$\phi 10 \times 25$	4
㉒	Screw Plug	M12	2

### ■LGFVT100( $\theta=40-70$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250	1
③	Cam Base	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Cap Screw	M10 $\times$ 30	4
⑦	Stop Plate	SS400	1
⑧	Spring Guide Pin	S45C	2
⑨	Coil Spring	$\phi 30 \times 125$ ( $\theta=40-60$ ) $\phi 30 \times 100$ ( $\theta=70$ )	2
⑩	Bumper	Urethane	2
⑪	Cam Bottom Wear Plate	S45C	1
⑫	Cam Bottom Guide Plate	Bronze with Graphite	1
⑬	Cam Lower Plate	Bronze with Graphite	2
⑭	Safety Plate	SS400	2
⑮	Dowel Pin	$\phi 8 \times 35$	2
⑯	Cap Screw	M10 $\times$ 20	4
⑰	Cap Screw	M10 $\times$ 40	2
⑱	Cap Screw	M10 $\times$ 30	2
⑲	Cap Screw	M12 $\times$ 35	6
⑳	Cap Screw	M16 $\times$ 45	2
㉑	Dowel Pin	$\phi 10 \times 25$	4
㉒	Screw Plug	M12	2

■ LGFVT200 ( $\theta=00-30$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250	1
③	Cam Base	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Stop Plate	SS400	1
⑦	Spring Guide Pin	SCM435	4
⑧	Coil Spring	$\phi 30 \times 175$ ( $\theta=00-10$ ) $\phi 30 \times 150$ ( $\theta=20$ ) $\phi 30 \times 125$ ( $\theta=30$ )	4
⑨	Bumper	Urethane	4
⑩	Cam Bottom Wear Plate	S45C	1
⑪	Cam Bottom Guide Plate	Bronze with Graphite	1
⑫	Cam Lower Plate	Bronze with Graphite	2
⑬	Safety Plate	S45C	2
⑭	Driver Plate	Bronze with Graphite	2
⑮	Dowel Pin	$\phi 10 \times 35$	2
⑯	Cap Screw	M10 $\times$ 20	8
⑰	Cap Screw	M10 $\times$ 35	2
⑱	Cap Screw	M12 $\times$ 35	6
⑲	Cap Screw	M16 $\times$ 45	8
⑳	Cap Screw	M10 $\times$ 30	6
㉑	Dowel Pin	$\phi 10 \times 25$	4
㉒	Screw Plug	M12	2

■ LGFVT200 ( $\theta=40-70$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250	1
③	Cam Base	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Positive Return Strap	S45C	2
⑥	Stop Plate	SS400	1
⑦	Spring Guide Pin	SCM435	4
⑧	Coil Spring	$\phi 30 \times 125$ ( $\theta=40-60$ ) $\phi 30 \times 100$ ( $\theta=70$ )	4
⑨	Bumper	Urethane	4
⑩	Cam Bottom Wear Plate	S45C	1
⑪	Cam Bottom Guide Plate	Bronze with Graphite	1
⑫	Cam Lower Plate	Bronze with Graphite	2
⑬	Safety Plate	S45C	2
⑭	Driver Plate	Bronze with Graphite	2
⑮	Dowel Pin	$\phi 10 \times 35$	2
⑯	Cap Screw	M10 $\times$ 20	8
⑰	Cap Screw	M10 $\times$ 35	2
⑱	Cap Screw	M12 $\times$ 35	6
⑲	Cap Screw	M16 $\times$ 45	4
㉑	Cap Screw	M10 $\times$ 30	6
㉑	Dowel Pin	$\phi 10 \times 25$	4
㉒	Screw Plug	M12	2





W	θ	A	B	C	E	F	H	L	V <sub>1</sub>	k	x
50	00	195	115	80	67.5	112.5	46	23.3	65	72.5	0
	05	198.04	123.04	75	68.29	111.71	52.4	22			
	10	195.99	130.99	65	69.77	110.23	58.6	20			
	15	198.77	133.77		71.95	108.05	64.5				
	20	196.34	141.34	55	74.79	105.21	70.1	18			
	25	191.62	150.62	41	80.28	99.72	73.3				
	30	190.58	150.58	40	85.39	94.61	77.0	16			
	35	187.15	162.15	25	90.1	89.9	81.3				
	40	183.29	160.79	22.5	95.35	84.65	85.1				
	45	179.94	169.94	10	98.13	81.87	91.4				
50	174.07	169.07	5	99.37	80.63	99.2	15	55	72.5		

Stroke S	Working force KN (ton)		Spring force N (kgf)		Total weight kg	Catalog No.	W	θ
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	Final pressure				
15.0	29.4 (3.0)	58.8 (6.0)	184.2(18.8)	1097.6(111.7)	10.6	KACG	50	00
15.6			179.6(18.3)	1167.4 (118.8)	10.3			05
15.6			269.4 (27.4)		9.9			10
17.0					9.7			15
18.4			359.2(36.6)		9.4			20
18.0				263.0 (26.8)	9.4			25
17.4					9.2			30
18.9				1104.6 (112.6)	9.2			35
20.6			9.1		40			
22.5			9.1		45			
23.3		315.6(32.2)		9.0			50	



Order

Catalog No. **KACG** W **50** - **θ** **35**



Alteration



Catalog No. **KACG** W **50** - **θ** **15** - (N12-N13...etc.) **N12**

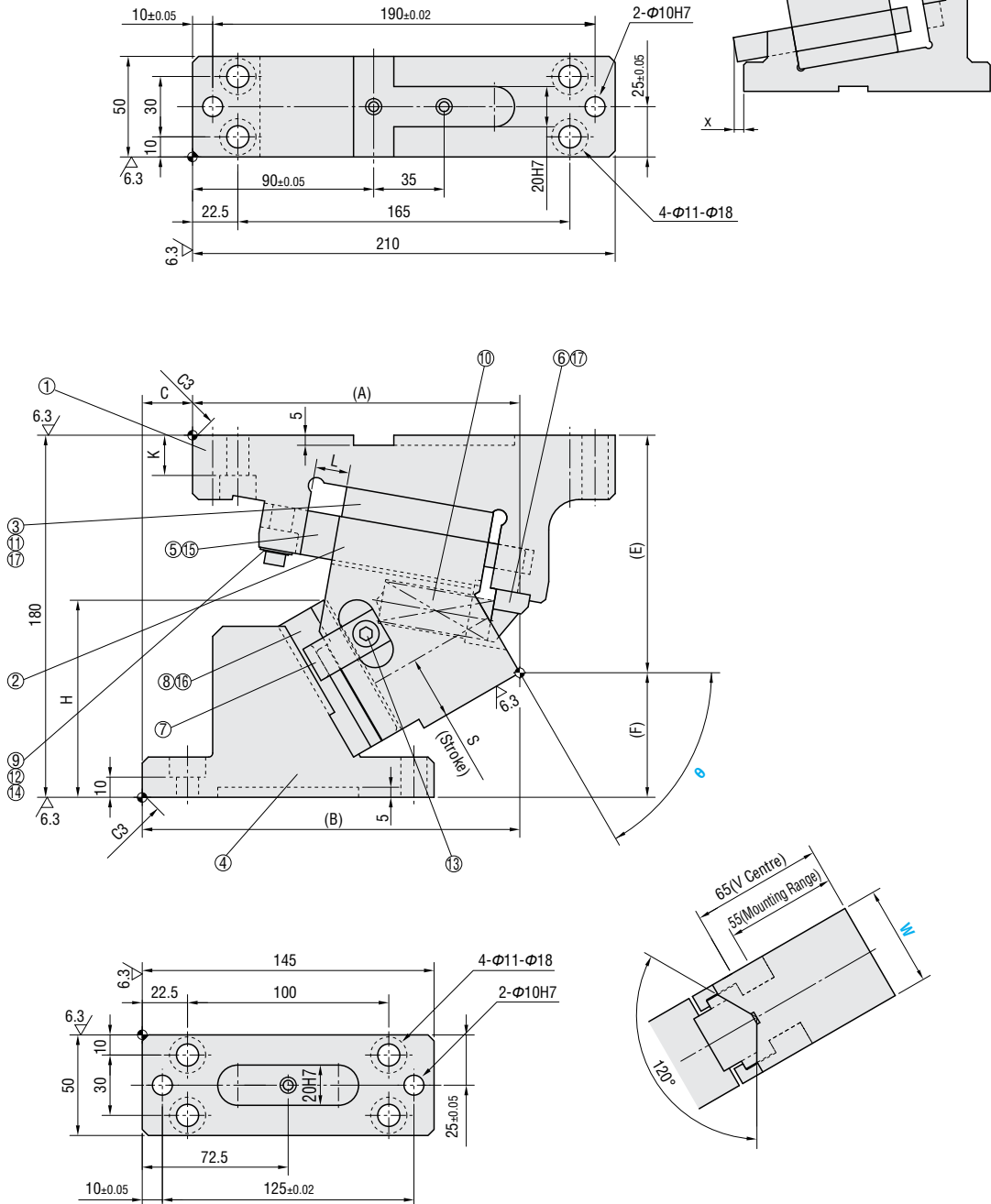
Alterations	Code	Spec.
<p>φ12H7 or φ13H7</p>	<b>N12</b>	Dowel hole diameter change φ10H7 ⇒ φ12H7
	<b>N13</b>	Dowel hole diameter change φ10H7 ⇒ φ13H7
	<b>K</b>	Addition of 3 locating keys (With 3 hexagon socket head cap screws M8-15) <p>Provided key</p>
	<b>KA</b>	Addition of 3 stepped locating keys (With 3 hexagon socket head cap screws M8-15) <p>Provided key</p>

# RIGID AERIAL CAM UNITS

—KACG—

KACG50 ( $\theta=55-65$ )

■ Rear removal space



■ Components table P. 138







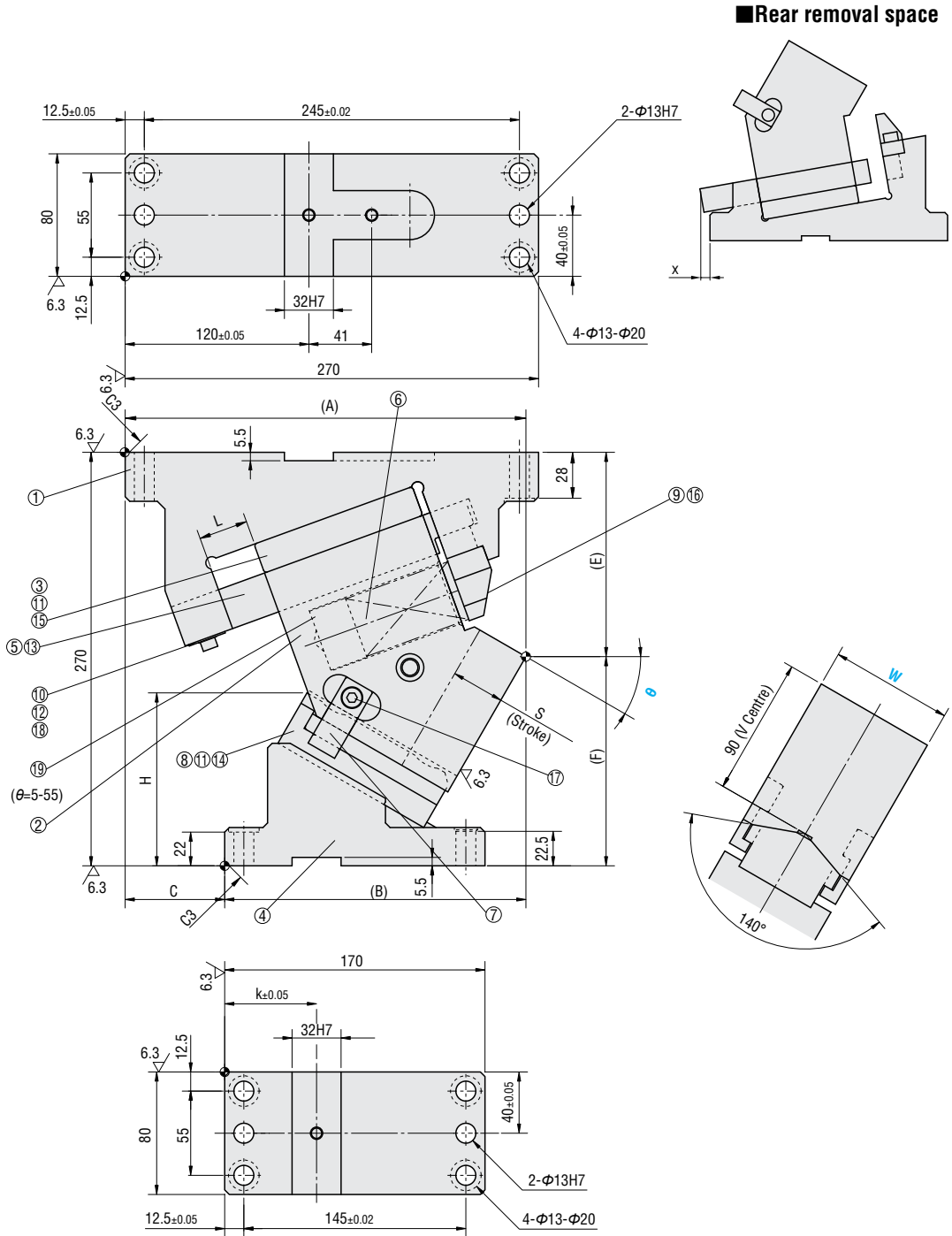




# RIGID AERIAL CAM UNITS

—KACG—

KACG80 ( $\theta=00-55$ )



■ Components table P.138



W	θ	A	B	C	E	F	H	L	k	x
80	00	277	142	135	110	160	68	47	65	0
	05	278.32	153.32	125	115.67	154.33	72.4	43		
	10	274.54	164.54	110	117.32	152.68	81.5	40		
	15	277.58	172.58	105	119.95	150.05	90.2	35	55	
	20	273.34	178.34	95	123.52	146.48	98.3			
	25	268.75	188.75	80	128.03	141.97	105.9	32	60	
	30	261.73	196.73	65	133.42	136.58	112.9			
	35	258.2	203.2	55	139.66	130.34	119.2	31	50	7
	40	245.09	210.09	35	146.7	123.3	124.8			
	45	245.34	215.34	30	154.49	115.51	129.7			
	50	225.87	220.87	5	162.97	107.03	133.7	30	60	10
	55	229.64	229.64	0	172.07	97.93	136.9	31		5

Stroke S	Working force KN (ton)		Spring force N (kgf)		Total weight kg	Catalog No.	W	θ
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	Final pressure				
30.2	49.0 (5.0)	98.0 (10.0)	296.1(30.2)	1842.4(187.6)	34.0	KACG	80	00
30.5			324.0(33.0)	1872.0 (190.8)	32.0			05
31.1			432.0 (44.0)		32.0			10
33.9			391.5 (39.9)	1914.0 (194.9)	32.0			15
32.3					30.0			20
35.0			522.0 (53.2)	30.0	25			
34.7			565.5 (57.6)	1914.0 (194.9)	30.0			30
37.7					29.0			35
39.9			609.0(62.0)	29.0	40			
43.7			565.5(57.6)	1914.0 (194.9)	30.0			45
46.7					30.0			50
53.8			30.0	30.0	55			



Order

Catalog No. **KACG** W **80** - θ **05**



Alteration



Catalog No. **KACG** W **80** - θ **30** - (N12-K-KA) **N12**

Alterations	Code	Spec.
	N12	Dowel hole diameter change $\phi 13H7 \Rightarrow \phi 12H7$
	K	Addition of 3 locating keys (With 3 hexagon socket head cap screws M8-15) 
	KA	Addition of 3 stepped locating keys (With 3 hexagon socket head cap screws M8-15) 



W	$\theta$	A	B	C	E	F	H	x
80	60	208.58	228.58	20	181.73	88.27	139.3	23
	65	203.67	233.67	30	191.87	78.13	140.8	

Stroke S	Working force KN (ton)		Spring force N (kgf)		Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	Final pressure				
61.1	49.0 (5.0)	98.0 (10.0)	565.5 (57.6)	1914.0 (194.9)	31.0	KACG	80	60
70.9					32.0			65




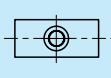
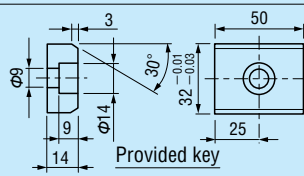
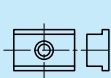
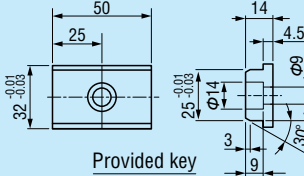
Order

Catalog No. **KACG** W **80** -  $\theta$  **60**



Alteration

Catalog No. **KACG** W **80** -  $\theta$  **60** - (N12-K-KA) **K**

Alterations	Code	Spec.
	N12	Dowel hole diameter change $\phi 13H7 \Rightarrow \phi 12H7$
	K	Addition of 3 locating keys (With 3 hexagon socket head cap screws M8-15) 
	KA	Addition of 3 stepped locating keys (With 3 hexagon socket head cap screws M8-15) 







W	$\theta$	A	B	C	E	F	H	x
150	35	322.08	337.08	15	192.95	162.05	220	159
	40	312.26	347.26	35	204.06	150.94	240	170
	45	306.42	356.42	50	216.01	138.99	260	174
	50	294.51	364.51	70	228.71	126.29	280	181
	55	281.46	371.46	90	242.07	112.93	295	185
	60	272.22	377.22	105	255.98	99.02	315	184
	65	261.75	381.75	120	270.34	84.66	340	182

Stroke S	Working force KN (ton)		Spring force N (kgf)		Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	Final pressure				
57.3	147.0 (15.0)	294.0 (30.0)	862.4 (87.9)	7022.4 (715.9)	113.1	KACG	150	35
63.0					114.7			40
69.6					115.8			45
77.4					117.5			50
87.1					117.5			55
99.6					122.0			60
116.5					126.0			65



Order

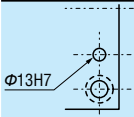
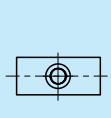
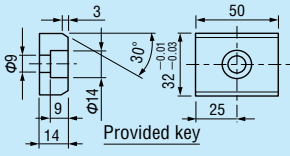
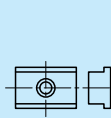
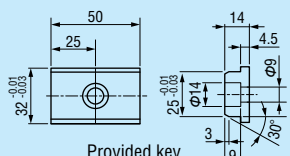
Catalog No. **KACG** W **150** -  $\theta$  **55**



Alteration



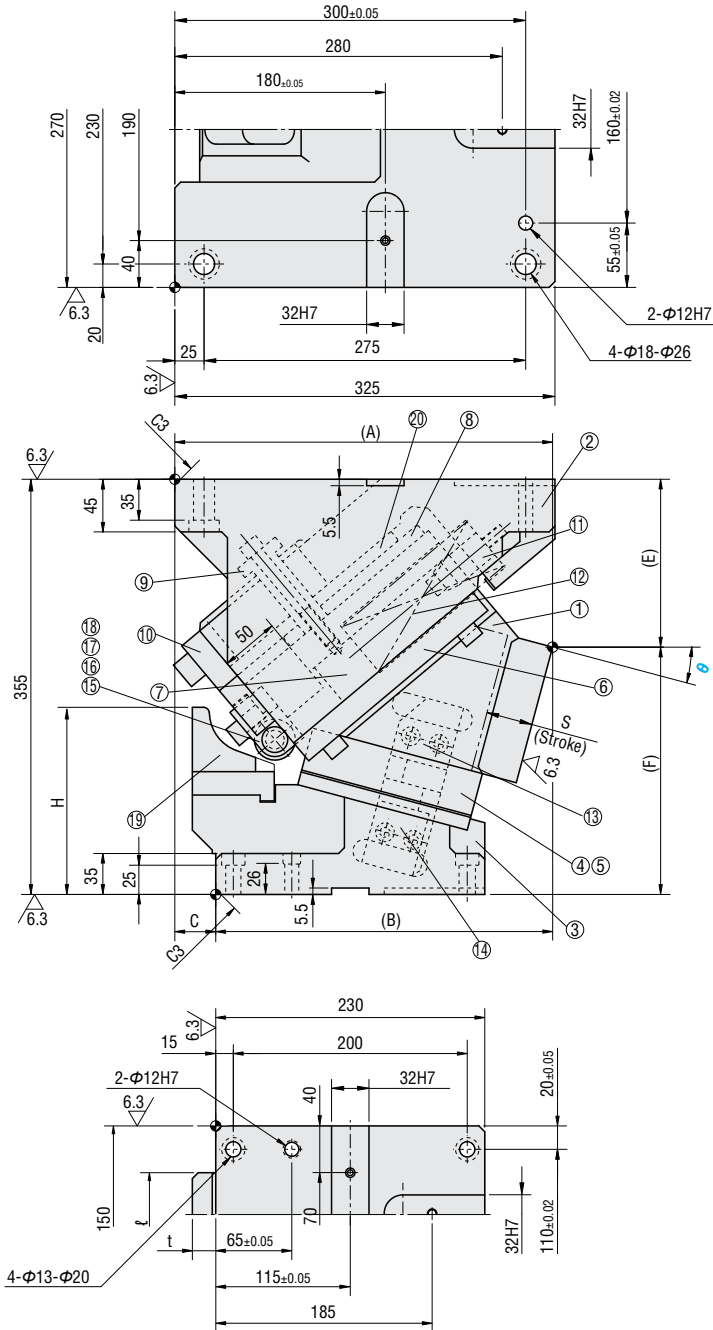
Catalog No. **KACG** W **150** -  $\theta$  **45** - (N13-K-KA)

Alterations	Code	Spec.
	N13	Dowel hole diameter change $\Phi 12H7 \Rightarrow \Phi 13H7$
	K	Addition of 6 locating keys (With 6 hexagon socket head cap screws M8-15) 
	KA	Addition of 6 stepped locating keys (With 6 hexagon socket head cap screws M8-15) 

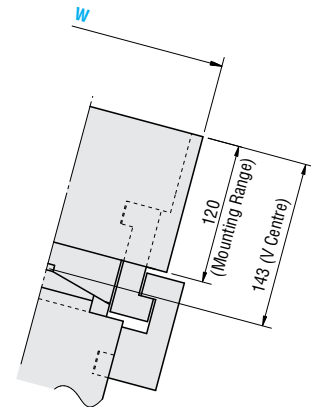
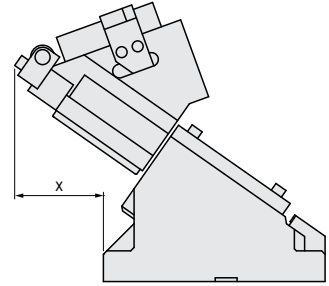
# RIGID AERIAL CAM UNITS

—KACG—

KACG200 ( $\theta=00-30$ )



■ Rear removal space



■ Components table ■ P.138



W	θ	A	B	C	E	F	H	ℓ	t	x
200	00	325	245	80	130	225	105	70	25	46
	05	319.7	259.7	60	133.26	221.74	125			75
	10	319.06	274.06	45	137.79	217.21	145			99
	15	322.98	288.06	35	143.56	211.44	160		20	114
	20	326.33	301.33	25	150.51	204.49	180		15	127
	25	329.03	314.03	15	158.61	196.39	200		10	137
	30	325.98	325.98	0	167.78	187.22	215		-	-

Stroke S	Working force KN (ton)		Spring force N (kgf)		Total weight kg	Catalog No.	W	θ
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	Final pressure				
28.6	147.0 (15.0)	294.0 (30.0)	862.4 (87.9)	7022.4 (715.9)	129.7	KACG	200	00
32.2					126.6			05
35.9					124.8			10
39.6					127.4			15
43.5					123.2			20
47.7					123.0			25
52.3					121.7			30



Order

Catalog No. **KACG** W **200** - θ **00**



Alteration



Catalog No. **KACG** W **200** - θ **15** - **K** (N13-K-KA)

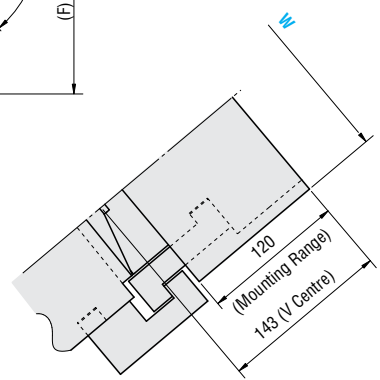
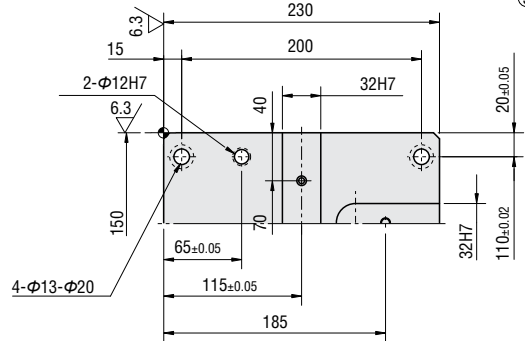
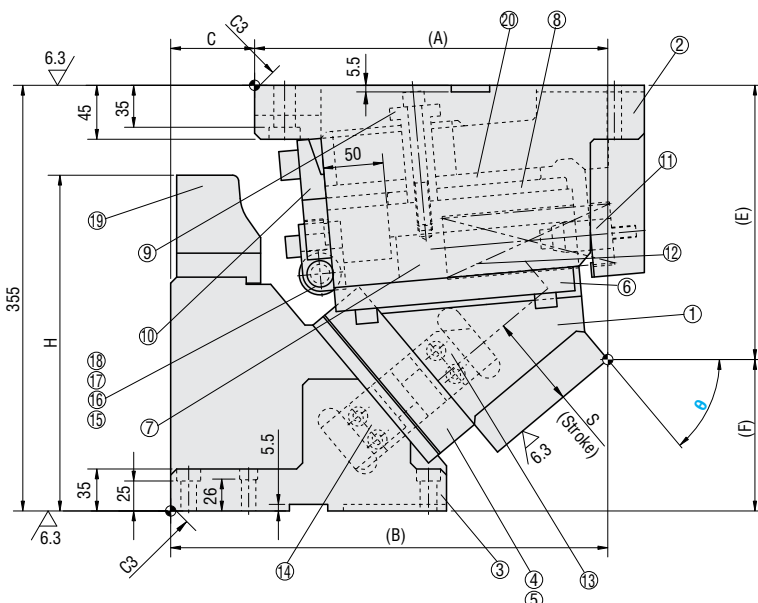
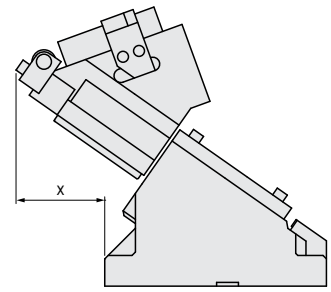
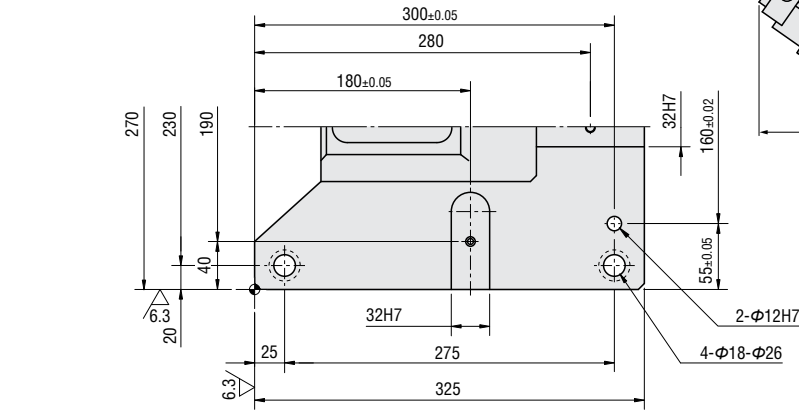
Alterations	Code	Spec.
	N13	Dowel hole diameter change $\Phi 12H7 \Rightarrow \Phi 13H7$
	K	Addition of 6 locating keys (With 6 hexagon socket head cap screws M8-15) 
	KA	Addition of 6 stepped locating keys (With 6 hexagon socket head cap screws M8-15) 

# RIGID AERIAL CAM UNITS

—KACG—

KACG200 ( $\theta=35-65$ )

■ Rear removal space



■ Components table P. 138

W	$\theta$	A	B	C	E	F	H	x
200	35	322.08	337.08	15	192.95	162.05	220	159
	40	312.26	347.26	35	204.06	150.94	240	170
	45	306.42	356.42	50	216.01	138.99	260	174
	50	294.51	364.51	70	228.71	126.29	280	181
	55	281.46	371.46	90	242.07	112.93	295	185
	60	272.22	377.22	105	255.98	99.02	315	184
	65	261.75	381.75	120	270.34	84.66	340	182

Stroke S	Working force KN (ton)		Spring force N (kgf)		Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	Final pressure				
57.3	147.0 (15.0)	294.0 (30.0)	862.4 (87.9)	7022.4 (715.9)	125.3	KACG	200	35
63.0					126.8			40
69.6					127.9			45
77.4					129.8			50
87.1					132.6			55
99.6					135.1			60
116.5					138.9			65



Order

Catalog No. **KACG** W **200** -  $\theta$  **45**



Alteration



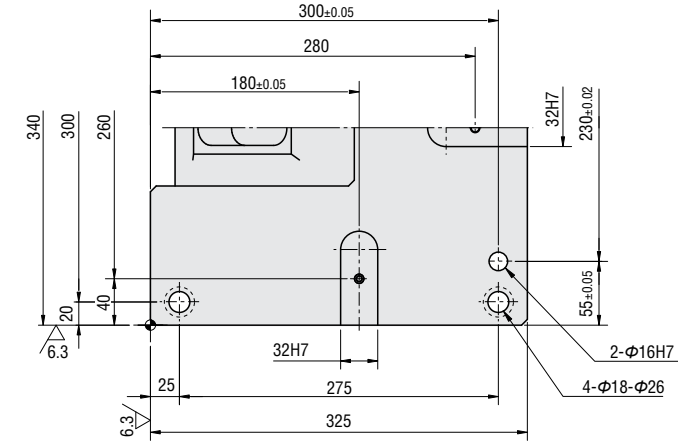
Catalog No. **KACG** W **200** -  $\theta$  **50** - (N13-K-KA) **N13**

Alterations	Code	Spec.
	N13	Dowel hole diameter change $\phi 12H7 \Rightarrow \phi 13H7$
	K	Addition of 6 locating keys (With 6 hexagon socket head cap screws M8-15) Provided key
	KA	Addition of 6 stepped locating keys (With 6 hexagon socket head cap screws M8-15) Provided key

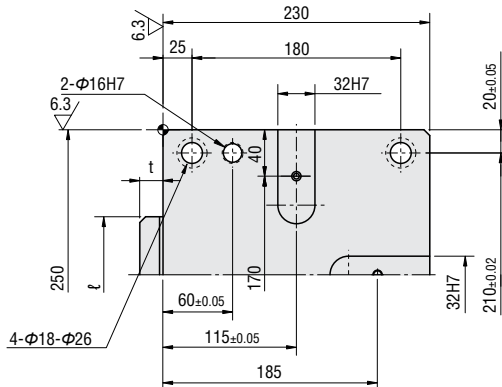
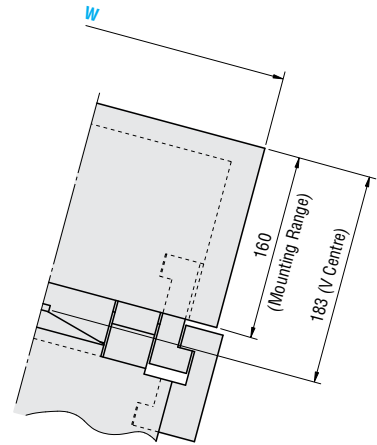
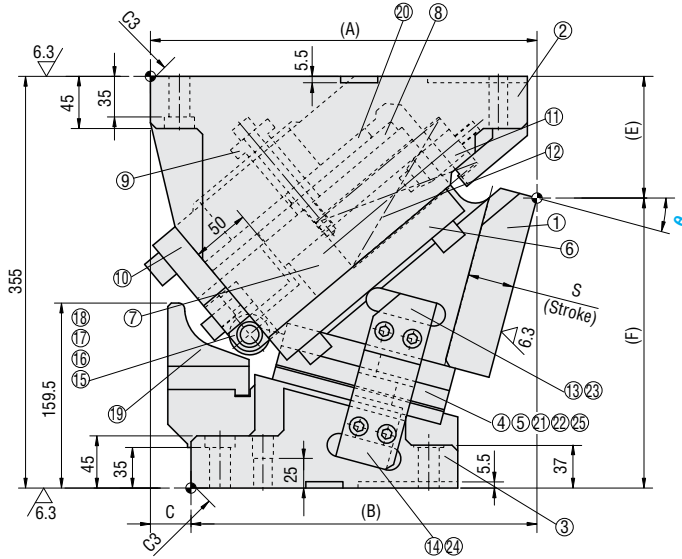
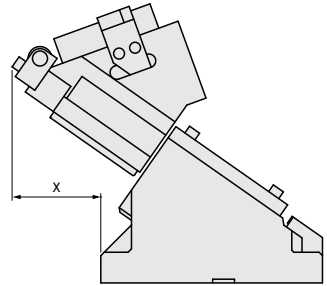
# RIGID AERIAL CAM UNITS

—KACG—

KACG300 ( $\theta=00-30$ )



■ Rear removal space



■ Components table ■ P.138

W	θ	A	B	C	E	F	ε	t	x
300	00	325	245	80	90	265	100	25	46
	05	323.19	263.19	60	93.41	261.59			75
	10	326.01	281.01	45	98.4	256.6			99
	15	333.33	298.33	35	104.92	250.08		20	114
	20	340.02	315.02	25	112.93	242.07		15	127
	25	345.94	330.94	15	122.35	232.65		10	137
	30	345.98	345.98	0	133.13	221.87		-	-

Stroke S	Working force KN (ton)		Spring force N (kgf)		Total weight kg	Catalog No.	W	θ
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	Final pressure				
28.6	294.0 (30.0)	588.0 (60.0)	1724.8 (175.8)	14044.8 (1431.8)	184.5	KACG	300	00
32.2					181.0			05
35.9					178.7			10
39.6					177.3			15
43.5					176.0			20
47.7					174.9			25
52.3					173.8			30



Order

Catalog No. **KACG** W **300** - θ **25**



Alteration



Catalog No. **KACG** W **300** - θ **15** - (K-KA) **K**

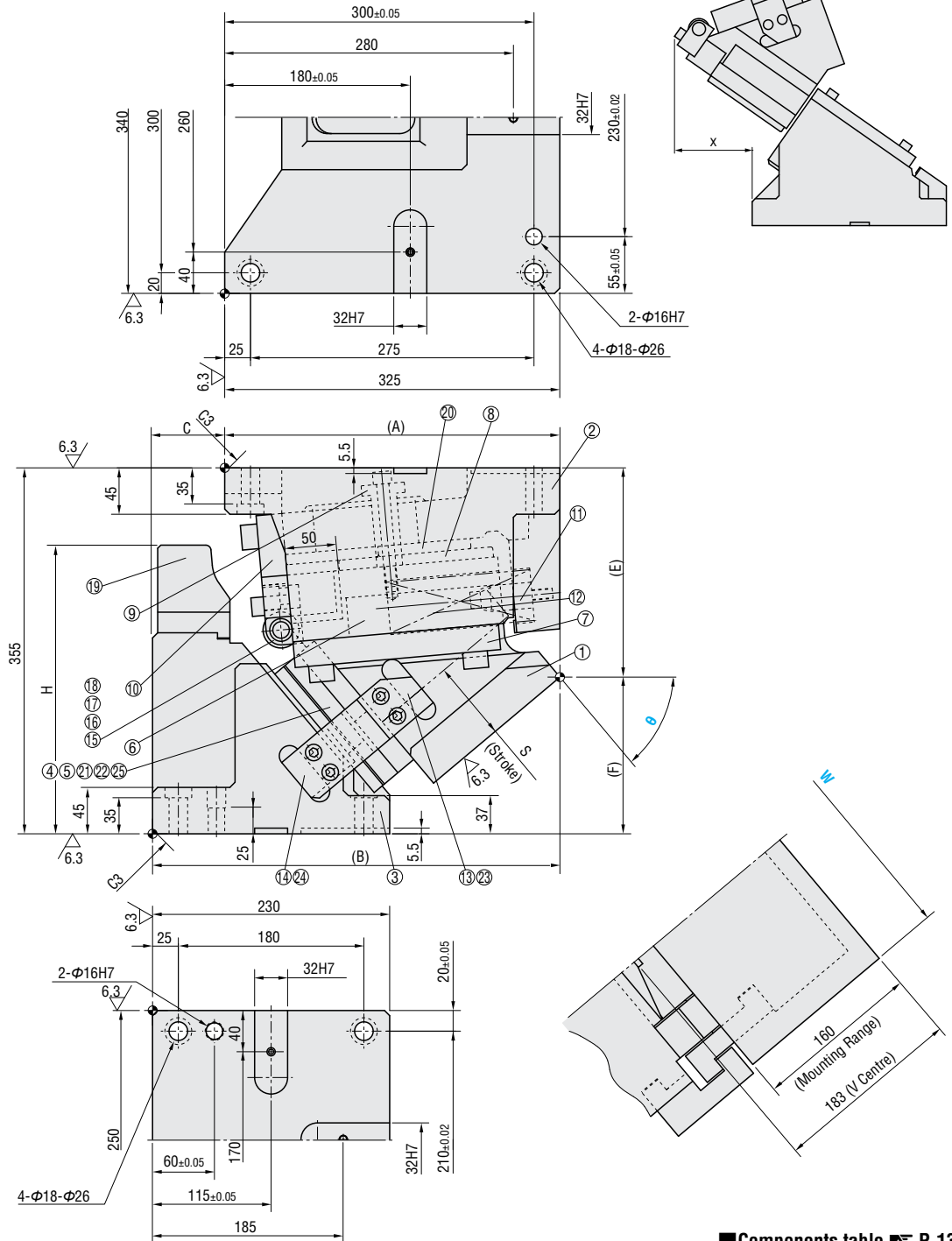
Alterations	Code	Spec.
	<b>K</b>	<p>Addition of 6 locating keys (With 6 hexagon socket head cap screws M8-15)</p>
	<b>KA</b>	<p>Addition of 6 stepped locating keys (With 6 hexagon socket head cap screws M8-15)</p>

# RIGID AERIAL CAM UNITS

—KACG—

KACG300 ( $\theta=35-65$ )

■ Rear removal space



■ Components table P. 138

W	$\theta$	A	B	C	E	F	H	x
300	35	345.03	360.03	15	160.19	194.81	220	159
	40	337.97	372.97	35	173.41	181.59	240	170
	45	334.71	384.71	50	187.72	167.28	260	174
	50	325.15	395.15	70	203	152	280	181
	55	314.23	404.23	90	219.12	135.88	295	185
	60	306.87	411.87	105	235.98	119.02	315	184
	65	298	418	120	253.44	101.56	340	183

Stroke S	Working force KN (ton)		Spring force N (kgf)		Total weight kg	Catalog No.	W	$\theta$
	Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	Final pressure				
57.3	294.0 (30.0)	588.0 (60.0)	1724.8 (175.8)	14044.8 (1431.8)	178.7	KACG	300	35
63.0					181.6			40
69.6					184.5			45
77.4					188.1			50
87.1					193.4			55
99.6					197.6			60
116.5					202.9			65



Order


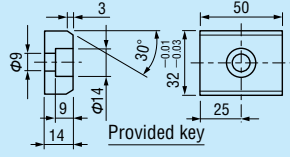
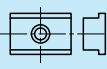
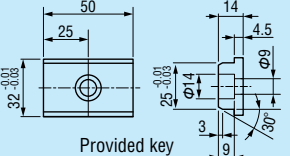
Catalog No. **KACG** W **300** -  $\theta$  **60**



Alteration



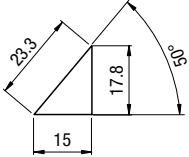
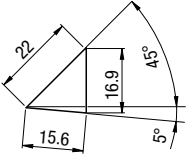
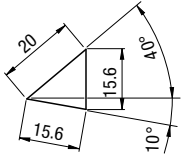
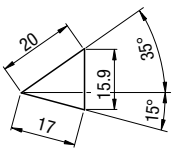
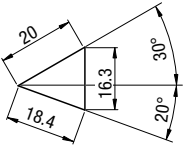
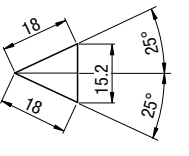
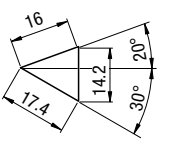
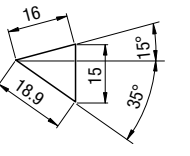
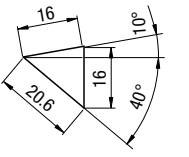
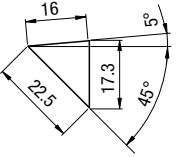
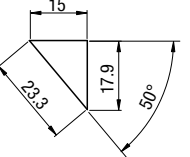
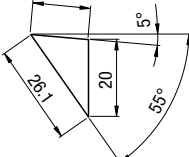
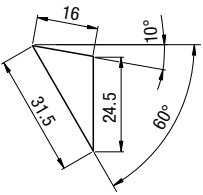
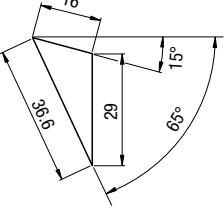
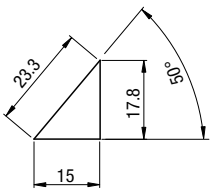
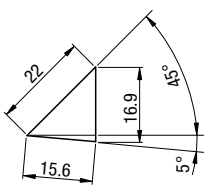
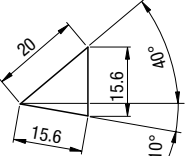
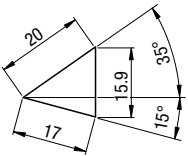
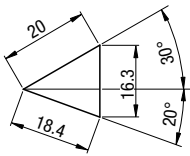
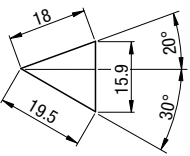
Catalog No. **KACG** W **300** -  $\theta$  **60** - (K-KA) **KA**

Alterations	Code	Spec.
	<b>K</b>	<p>Addition of 6 locating keys (With 6 hexagon socket head cap screws M8-15)</p>  <p>Provided key</p>
	<b>KA</b>	<p>Addition of 6 stepped locating keys (With 6 hexagon socket head cap screws M8-15)</p>  <p>Provided key</p>

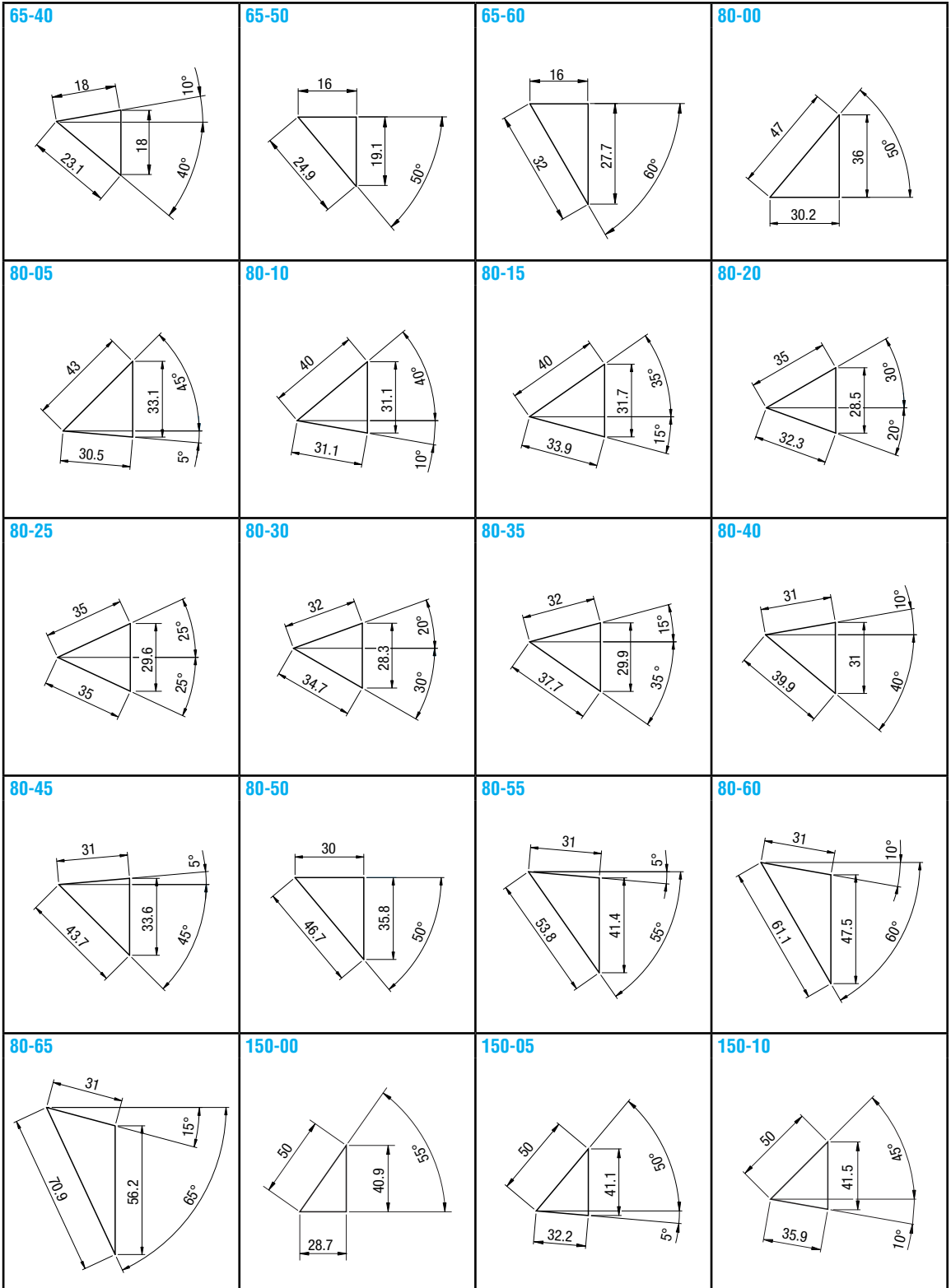
# RIGID AERIAL CAM UNITS

—KACG— CAM DIAGRAM

## ■KACG

<p><b>50-00</b></p> 	<p><b>50-05</b></p> 	<p><b>50-10</b></p> 	<p><b>50-15</b></p> 
<p><b>50-20</b></p> 	<p><b>50-25</b></p> 	<p><b>50-30</b></p> 	<p><b>50-35</b></p> 
<p><b>50-40</b></p> 	<p><b>50-45</b></p> 	<p><b>50-50</b></p> 	<p><b>50-55</b></p> 
<p><b>50-60</b></p> 	<p><b>50-65</b></p> 	<p><b>65-00</b></p> 	<p><b>65-05</b></p> 
<p><b>65-10</b></p> 	<p><b>65-15</b></p> 	<p><b>65-20</b></p> 	<p><b>65-30</b></p> 



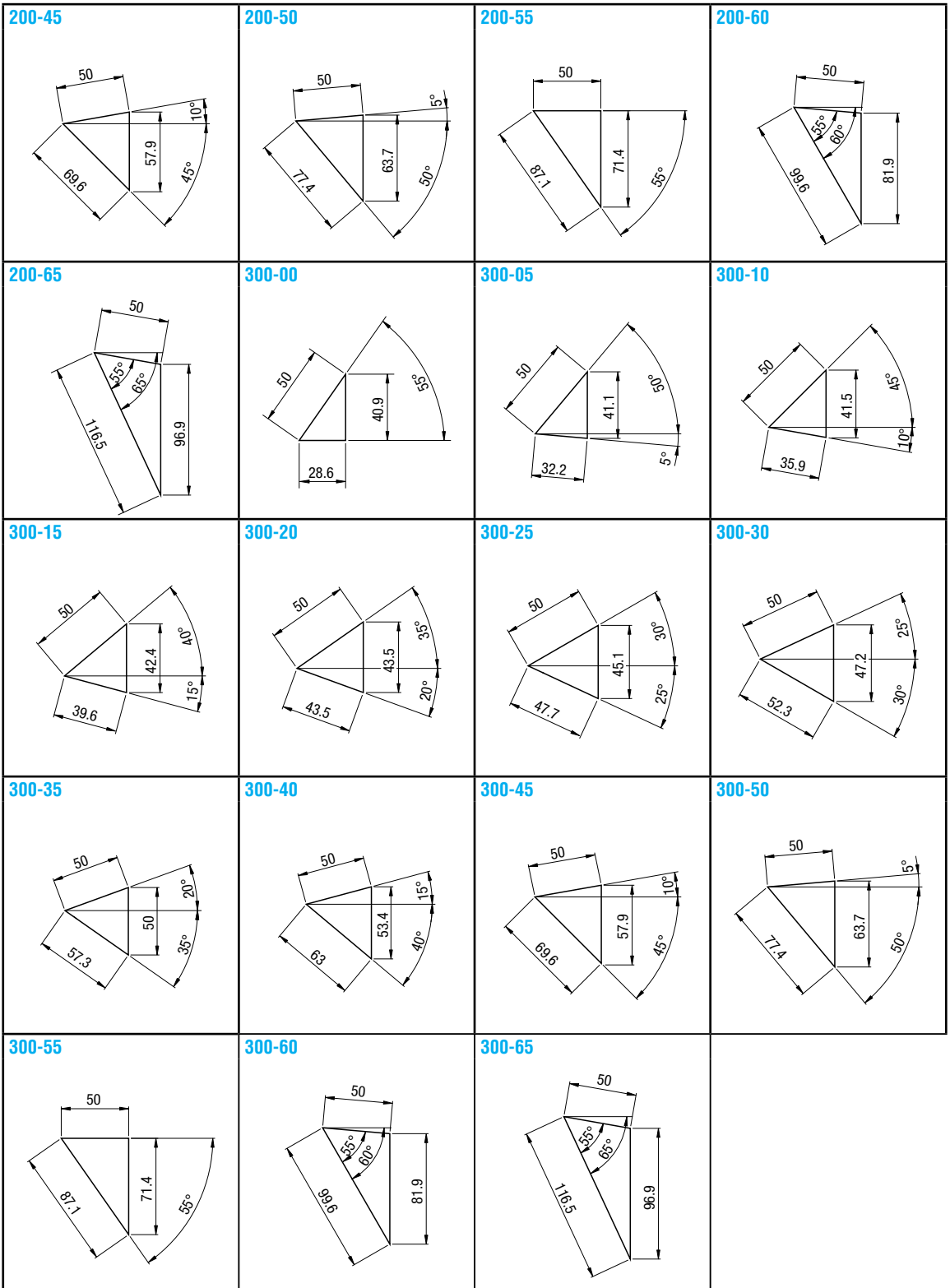


# RIGID AERIAL CAM UNITS

—KACG— CAM DIAGRAM

## ■KACG

<p><b>150-15</b></p>	<p><b>150-20</b></p>	<p><b>150-25</b></p>	<p><b>150-30</b></p>
<p><b>150-35</b></p>	<p><b>150-40</b></p>	<p><b>150-45</b></p>	<p><b>150-50</b></p>
<p><b>150-55</b></p>	<p><b>150-60</b></p>	<p><b>150-65</b></p>	<p><b>200-00</b></p>
<p><b>200-05</b></p>	<p><b>200-10</b></p>	<p><b>200-15</b></p>	<p><b>200-20</b></p>
<p><b>200-25</b></p>	<p><b>200-30</b></p>	<p><b>200-35</b></p>	<p><b>200-40</b></p>



# RIGID AERIAL CAM UNITS

## — KACG — COMPONENTS TABLE

### ■KACG50( $\theta=00,40-65$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Base	QT450	1
②	Cam Slide	QT450	1
③	Wear Plate	Bronze with Graphite	1
④	Cam Driver	QT450	1
⑤	Guide Bar	Bronze	1
⑥	Spring Bracket	SS400	1
⑦	Positive Return Strap	S45C	2
⑧	Slide Guide	Bronze with Graphite	1
⑨	Safety Plate	SS400	1
⑩	Coil Spring	$\phi 20 \times 102$ ( $\theta=00$ ) $\phi 20 \times 76$ ( $\theta=40-65$ )	1
⑪	Dowel Pin	$\phi 8 \times 30$	2
⑫	Disc Spring	For M6	2
⑬	Cap Screw	M8×15	2
⑭	Cap Screw	M6×10	2
⑮	Cap Screw	M10×30	1
⑯	Cap Screw	M10×25	2
⑰	Cap Screw	M8×20	6

### ■KACG50( $\theta=05-35$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Base	QT450	1
②	Cam Slide	QT450	1
③	Wear Plate	Bronze with Graphite	1
④	Cam Driver	QT450	1
⑤	Guide Bar	Bronze	1
⑥	Spring Bracket	SS400	1
⑦	Positive Return Strap	S45C	2
⑧	Slide Guide	Bronze with Graphite	1
⑨	Safety Plate	SS400	1
⑩	Coil Spring	$\phi 20 \times 89$ ( $\theta=05-25$ ) $\phi 20 \times 76$ ( $\theta=30-35$ )	1
⑪	Dowel Pin	$\phi 8 \times 30$	2
⑫	Disc Spring	For M6	2
⑬	Cap Screw	M8×15	2
⑭	Cap Screw	M6×10	2
⑮	Cap Screw	M10×30	1
⑯	Cap Screw	M10×25	2
⑰	Cap Screw	M8×20	6
⑱	Spacer	SS400	1

### ■KACG65( $\theta=00-05,60$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Base	QT450	1
②	Cam Slide	QT450	1
③	Wear Plate	Bronze with Graphite	1
④	Cam Driver	QT450	1
⑤	Keeper Plate	Bronze	2
⑥	Coil Spring	$\phi 25 \times 89$ ( $\theta=00-05$ ) $\phi 25 \times 64$ ( $\theta=60$ )	1
⑦	Positive Return Strap A	S45C	1
⑧	Positive Return Strap B	S45C	1
⑨	Slide Guide	Copper Alloy with Graphite	1
⑩	Stop Plate	SS400	1
⑪	Safety Plate	SS400	1
⑫	Spring Bracket	SS400	1
⑬	Bumper	Urethane	2
⑭	Disc Spring	For M6	1
⑮	Dowel Pin	$\phi 8 \times 30$	1
⑯	Cap Screw	M8×15	4
⑰	Cap Screw	M8×20	2
⑱	Cap Screw	M10×30	2
⑲	Cap Screw	M8×16	4
⑳	Cap Screw	M10×20	2
㉑	Cap Screw	M6×10	1

### ■KACG65( $\theta=10-50$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Base	QT450	1
②	Cam Slide	QT450	1
③	Wear Plate	Bronze with Graphite	1
④	Cam Driver	QT450	1
⑤	Keeper Plate	Bronze	2
⑥	Coil Spring	$\phi 25 \times 76$ ( $\theta=10-20$ ) $\phi 25 \times 64$ ( $\theta=30-50$ )	1
⑦	Positive Return Strap A	S45C	1
⑧	Positive Return Strap B	S45C	1
⑨	Slide Guide	Bronze with Graphite	1
⑩	Stop Plate	SS400	1
⑪	Safety Plate	SS400	1
⑫	Spring Bracket	SS400	1
⑬	Bumper	Urethane	2
⑭	Disc Spring	For M6	1
⑮	Dowel Pin	$\phi 8 \times 30$	1
⑯	Cap Screw	M8×15	4
⑰	Cap Screw	M8×20	2
⑱	Cap Screw	M10×30	2
⑲	Cap Screw	M8×16	4
㉑	Cap Screw	M10×20	2
㉑	Cap Screw	M6×10	1
㉒	Spacer	SS400	1

### ■KACG80( $\theta=00$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Base	QT450	1
②	Cam Slide	QT450	1
③	Wear Plate	Bronze with Graphite	1
④	Cam Driver	QT450	1
⑤	Guide Bar	Bronze	1
⑥	Coil Spring	$\phi 40 \times 152$	1
⑦	Positive Return Strap	S45C	2
⑧	Slide Guide	Bronze with Graphite	1
⑨	Spring Bracket	SS400	1
⑩	Safety Plate	SS400	1
⑪	Dowel Pin	$\phi 8 \times 30$	4
⑫	Disc Spring	For M6	2
⑬	Cap Screw	M12×35	1
⑭	Cap Screw	M12×40	2
⑮	Cap Screw	M10×25	4
⑯	Cap Screw	M10×30	2
⑰	Cap Screw	M8×15	2
⑱	Cap Screw	M6×10	2

### ■KACG80( $\theta=05-65$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Base	QT450	1
②	Cam Slide	QT450	1
③	Wear Plate	Bronze with Graphite	1
④	Cam Driver	QT450	1
⑤	Guide Bar	SCM440 with Graphite	1
⑥	Coil Spring	$\phi 40 \times 139$ ( $\theta=05-15$ ) $\phi 40 \times 115$ ( $\theta=20-65$ )	1
⑦	Positive Return Strap	S45C	2
⑧	Slide Guide	Bronze with Graphite	1
⑨	Spring Bracket	SS400	1
⑩	Safety Plate	SS400	1
⑪	Dowel Pin	$\phi 8 \times 30$	4
⑫	Disc Spring	For M6	2
⑬	Cap Screw	M12×35	1
⑭	Cap Screw	M12×40	2
⑮	Cap Screw	M10×25	4
⑯	Cap Screw	M10×30	2
⑰	Cap Screw	M8×15	2
⑱	Cap Screw	M6×10	2
⑲	Spacer	SS400	1

### ■KACG150

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	HT300	1
②	Cam Base	HT300	1
③	Cam Driver	HT300	1
④	V-block A	S45C	1
⑤	V-block B	Bronze with Graphite	1
⑥	Cam Upper Plate	42CrMo	2
⑦	Cam Slide Plate	Bronze with Graphite	2
⑧	Wear Plate A	Bronze with Graphite	2
⑨	Hanger Bolt Sleeve	S45C	1
⑩	Stop Plate	SS400	1
⑪	Spring Guide Pin	FC250	1
⑫	Coil Spring	Φ50x203	1
⑬	Driver For Positive Return	Bronze with Graphite	1
⑭	Positive Return Strap	S45C	1
⑮	Roller	S45C	1
⑯	Shaft	S45C	1
⑰	Roller Bracket	S45C	1
⑱	Bushing	Bronze with Graphite	1
⑲	Accelerator Ramp	S45C	1
⑳	Wear Plate B	S45C	4

⚠ Assembly bolts and dowel pins are not shown.

### ■KACG200

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	HT300	1
②	Cam Base	HT300	1
③	Cam Driver	HT300	1
④	V-block A	S45C	1
⑤	V-block B	Bronze with Graphite	1
⑥	Cam Upper Plate	42CrMo	2
⑦	Cam Slide Plate	Bronze with Graphite	2
⑧	Wear Plate A	Bronze with Graphite	2
⑨	Hanger Bolt Sleeve	S45C	1
⑩	Stop Plate	SS400	1
⑪	Spring Guide Pin	FC250	1
⑫	Coil Spring	Φ50x203	1
⑬	Driver For Positive Return	Bronze with Graphite	1
⑭	Positive Return Strap	S45C	1
⑮	Roller	S45C	1
⑯	Shaft	S45C	1
⑰	Roller Bracket	S45C	1
⑱	Bushing	Bronze with Graphite	1
⑲	Accelerator Ramp	S45C	1
⑳	Wear Plate B	S45C	4

⚠ Assembly bolts and dowel pins are not shown.

### ■KACG300

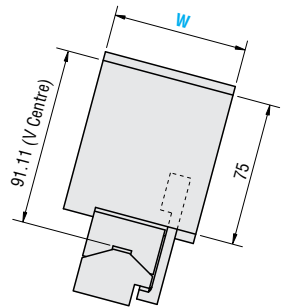
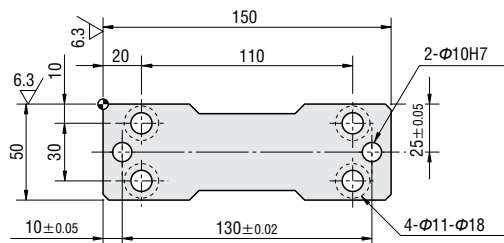
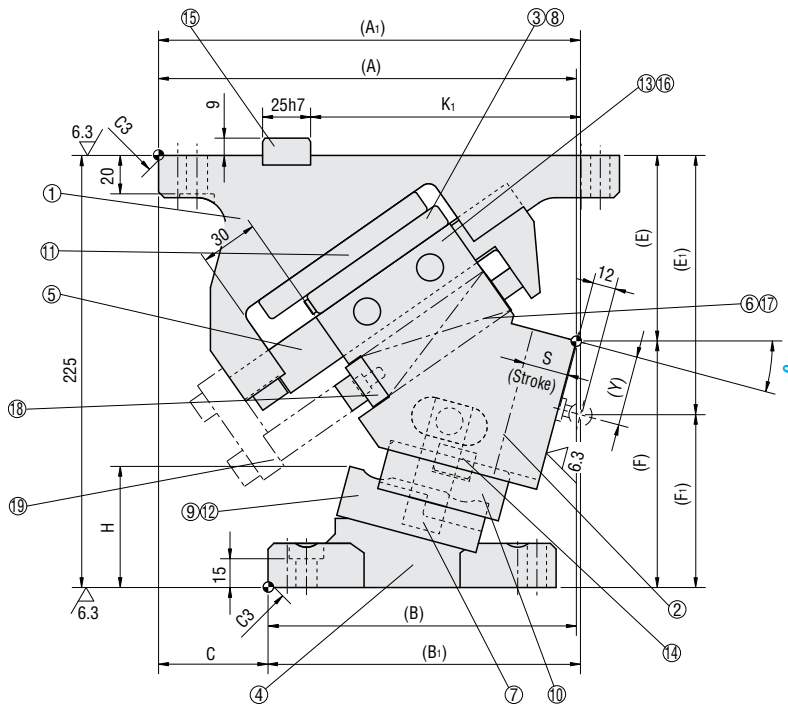
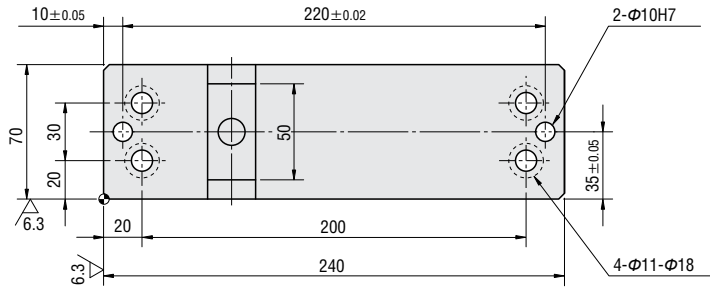
No.	Part Name	Material and Remark	Quantity
①	Cam Slide	HT300	1
②	Cam Base	HT300	1
③	Cam Driver	HT300	1
④	V-block A	S45C	1
⑤	V-block B	Bronze with Graphite	1
⑥	Cam Upper Plate	42CrMo	2
⑦	Cam Slide Plate	Bronze with Graphite	2
⑧	Wear Plate A	Bronze with Graphite	2
⑨	Hanger Bolt Sleeve	S45C	1
⑩	Stop Plate	SS400	1
⑪	Spring Guide Pin	FC250	2
⑫	Coil Spring	Φ50x203	2
⑬	Driver For Positive Return	Bronze with Graphite	1
⑭	Positive Return Strap A	S45C	1
⑮	Roller	S45C	1
⑯	Shaft	S45C	1
⑰	Roller Bracket	S45C	1
⑱	Bushing	Bronze with Graphite	1
⑲	Accelerator Ramp	S45C	1
⑳	Lower Plate B	S45C	4
㉑	Wear Plate	Bronze with Graphite	2
㉒	Keeper Plate A	S45C	1
㉓	Driver For Positive Return	Bronze with Graphite	1
㉔	Positive Return Strap B	S45C	1
㉕	Wear Plate B	S45C	1

⚠ Assembly bolts and dowel pins are not shown.

# NAAMS STANDARD AERIAL CAM UNITS

—KACNR—

## KACNR70 ( $\theta=00-40$ )



W	θ	A	A <sub>1</sub>	B	B <sub>1</sub>	C	E	E <sub>1</sub>	F	F <sub>1</sub>	H	K <sub>1</sub>	Y
70	00	237.37	249.37	135.37	147.37	102	85	120	140	105	46.4	155.5	35
	05	234.87	243.53	142.87	151.53	92	86.28	125	138.72	100	53.9	149.5	37.82
	10	232.82	237.74	151.82	156.74	81	88.76	130	136.24	95	60.9	145	39.76
	15	217.54	219.67	160.54	162.67	57	96.59	135	128.41	90	63.1	140.5	36.55
	20	224.52	222.62	172.52	170.62	52	99.67	140	125.33	85	70.5	134.5	38.55
	25	223.46	218.26	181.46	176.26	42	105.45	145	119.55	80	75.7	130	38.04
	30	211.54	204.03	181.54	174.03	30	112.99	150	112.01	75	79.4	125.5	35.81
	35	210.68	198.86	193.68	181.86	17	117.2	155	107.8	70	86.8	119.5	37.74
40	204.84	191.19	200.84	187.19	4	125.07	160	99.93	65	90.6	115	35.53	

Stroke S	Working force KN (ton)	Total weight kg	Catalog No.	W	θ	Spring type
19.3	98.1 (10.0)	16.1	KACNR	70	00	GK ISO NGK NISO
21.3		15.4			05	
23.3		14.8			10	
25.4		14.1			15	
27.6		14.1			20	
30.0		14.0			25	
32.6		13.8			30	
35.4		13.7			35	
38.6		13.8			40	

### Spring Specifications

Spring type	Spring catalog No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	M150-38.1	-	2350.0 (239.6)	KALLER gas spring
ISO	φ25x115	68.6 (7.0)	657.0 (67.0)	Coil spring (Constant=19.6N/mm)
NGK	-	-	-	No gas spring
NISO	-	-	-	No coil spring



Order

Catalog No. **KACNR** W **70** - θ **30** - Spring type **ISO**



Alteration



Catalog No. **KACNR** W **70** - θ **15** - Spring type **GK** - (NF)

Alterations	Code	Spec.
	NF	Gas spring without nitrogen gas charging ⚠ Applicable for spring type GK only.





W	θ	A	A <sub>1</sub>	B	B <sub>1</sub>	C	E	E <sub>1</sub>	F	F <sub>1</sub>	H	K <sub>1</sub>	L	Y
70	45	198.15	181.4	200.15	183.4	2	131.28	165	93.72	60	96.1	110.5	30	35.68
	50	190.95	168.09	211.95	189.09	21	135.15	170	89.85	55	104	106		39.92
	55	190.51	170.02	213.51	193.02	23	146	175	79	50	104.8	101.5	25	33.41
	60	185.81	167.99	220.81	202.99	35	155.86	180	69.14	45	106.3	98.5		27.5

Stroke S	Working force KN (ton)	Total weight kg	Catalog No.	W	θ	Spring type
42.3	98.1 (10.0)	13.8	KACNR	70	45	GK ISO NGK NISO
46.7		13.9			50	
43.6		14.1			55	
50.0		14.5			60	

**Spring Specifications**

Spring type	Spring catalog No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	M150-38.1	–	2350.0 (239.6)	KALLER gas spring
ISO	φ25x115	68.6(7.0)(θ=45-50) 88.2(9.0)(θ=55-60)	657.0(67.0)(θ=45-50) 578.2(59.0)(θ=55-60)	Coil spring (Constant=19.6N/mm)
NGK	–	–	–	No gas spring
NISO	–	–	–	No coil spring



Order

Catalog No.	W	–	θ	–	Spring type
KACNR	70	–	55	–	ISO



Alteration

Catalog No.	W	–	θ	–	Spring type	– (NF)
KACNR	70	–	50	–	GK	– NF

Alterations	Code	Spec.
	NF	Gas spring without nitrogen gas charging ⚠ Applicable for spring type GK only.



W	θ	A	A <sub>1</sub>	B	B <sub>1</sub>	C	E	E <sub>1</sub>	F	F <sub>1</sub>	H	L	K <sub>1</sub>	Y
80	00	280	292	145	157	135	110	155	165	120	69	50	180	45
	05	281.31	289.5	156.31	164.5	125	115.93	160	159.07	115	73.5		160.5	43.19
	10	277.5	281.37	167.5	171.37	110	117.84	165	157.16	110	82.6		153	45.77
	15	280.48	279.7	175.48	174.7	105	120.72	170	154.28	105	91.3		144	47.8
	20	276.16	270.57	181.16	175.57	95	124.55	175	150.45	100	99.6		136.5	49.32
	25	271.47	261.07	191.47	181.07	80	129.29	180	145.71	95	107.3		127.5	50.35
	30	264.33	249.27	199.33	184.27	65	134.92	185	140.08	90	114.5		120	50.9
	35	260.66	241.26	205.66	186.26	55	141.38	190	133.62	85	120.9		112.5	50.95
	40	252.32	228.34	217.32	193.34	35	147.76	195	127.24	80	126.8		105	51.6
	45	247.46	221.04	217.46	191.04	30	156.61	200	118.39	75	131.8		99	49.36
	50	237.8	209.12	222.8	194.12	15	165.27	205	109.73	70	136.1		93	47.51
	55	231.36	201.62	231.36	201.62	0	174.53	210	100.47	65	139.6	45	72	44.7
60	233.95	207.53	233.95	207.53	185.89		215	89.11	60	140.7	40	79	37.43	

Stroke S	Working force KN (ton)	Total weight kg	Catalog No.	W	θ	Spring type
32.1	166.7 (17.0)	27.9	KACNR	80	00	GK ISO NGK NISO
35.5		27.5			05	
38.9		26.9			10	
42.4		26.5			15	
46.1		26.0			20	
50.0		25.9			25	
54.3		25.3			30	
59.0		25.0			35	
64.3		24.7			40	
70.4		24.7			45	
77.8		24.9			50	
78.5		25.8			55	
80.0		26.2			60	

**Spring Specifications**

Spring type	Spring catalog No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	M150-50	-	2350.0 (239.6)	KALLER gas spring
ISO	φ32x152	73.6 (7.5)	1223.6(124.8)(θ=00-50) 1108.6(113.0)(θ=55) 993.6(101.3)(θ=60)	Coil spring (Constant=23.0N/mm)
NGK	-	-	-	No gas spring
NISO	-	-	-	No coil spring



Order Catalog No. **KACNR** W **80** - θ **30** - Spring type **ISO**



Alteration Catalog No. **KACNR** W **80** - θ **05** - Spring type **GK** - (NF) **NF**

Alterations	Code	Spec.
	NF	Gas spring without nitrogen gas charging ⚠ Applicable for spring type GK only.



W	θ	A	A <sub>1</sub>	B	B <sub>1</sub>	C	E	E <sub>1</sub>	F	F <sub>1</sub>	H	K <sub>1</sub>	N <sub>1</sub>	Y	x
165	00	335.84	347.84	207.84	219.84	128	96.98	170	203.02	130	80	180.5	55	73.02	21
	05	335.25	340.82	222.25	227.82	113	100.91	175	199.09	125	98	173		73.32	37
	10	337.27	337.3	236.27	236.3	101	111.09	180	188.91	120	109	165.5		50	67.86
	15	329.78	325.45	249.78	245.45	80	122.46	185	177.54	115	120	156.5	45	61.53	66
	20	332.68	323.61	262.68	253.61	70	129.99	190	170.01	110	137	149	42	59.49	71
	25	332.88	319.83	274.88	261.83	58	138.62	195	161.38	105	154	140	37	56.61	83
	30	334.28	315.39	286.28	267.39	48	148.28	205	151.72	95	125	132.5	30	58.57	90
	35	329.8	305.16	296.8	272.16	33	158.89	215	141.11	85	135	125	25	60.1	100
	40	321.35	291.18	306.35	276.18	15	170.38	225	129.62	75	155	117.5		61.23	111
	45	314.86	279.49	314.86	279.49	0	182.66	235	117.34	65	111.5	62.03		116	

Stroke S	Working force KN (ton)	Total weight kg	Catalog No.	W	θ	Spring type
32.1	294.2 (30.0)	76.1	KACNR	165	00	GK ISO NGK NISO
35.5		74.2			05	
38.9		73.8			10	
42.4		73.1			15	
46.1		72.3			20	
50.0		72.1			25	
54.3		71.9			30	
59.0		72.2			35	
64.3		72.4			40	
70.4		65.5			45	

**Spring Specifications**

Spring type	Spring catalog No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	TU250-63.5	-	3430.0 (349.8)	KALLER gas spring
ISO	φ40x178	449.1 (45.8)	2694.0 (274.7)	Coil spring (Constant=44.9N/mm)
NGK	-	-	-	No gas spring
NISO	-	-	-	No coil spring



Order Catalog No. **KACNR** W **165** - θ **35** - Spring type **ISO**



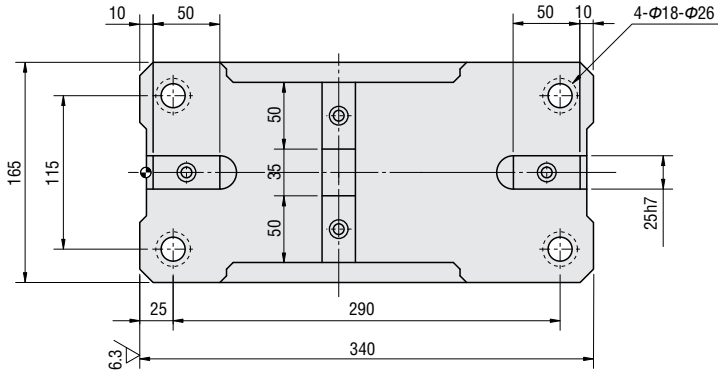
Alteration Catalog No. **KACNR** W **165** - θ **30** - Spring type **ISO** - (N-NF)

Alterations	Code	Spec.
	N	Machining of locating dowel holes 2 dowel holes (φ16H7) are machined on the cam holder.
	NF	Gas spring without nitrogen gas charging ⚠ Applicable for spring type GK only.

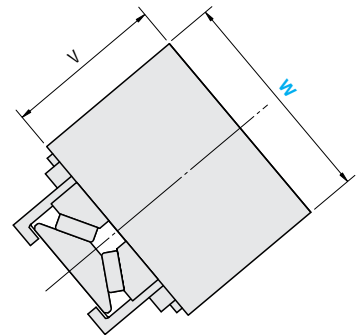
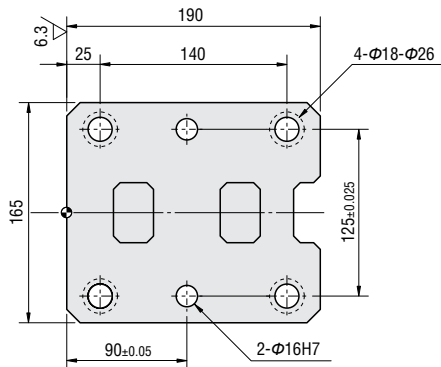
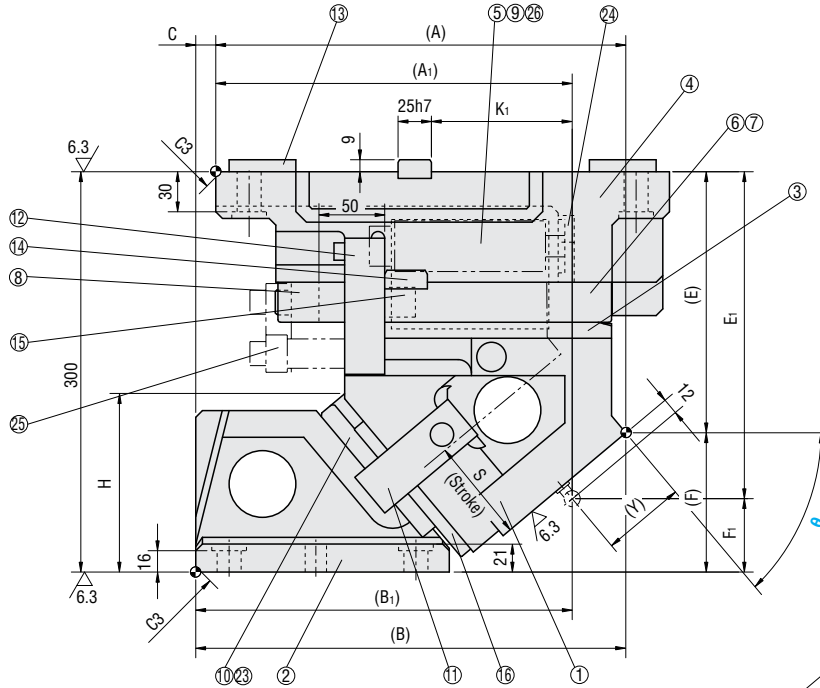
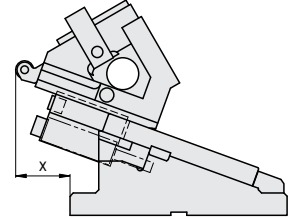
# NAAMS STANDARD AERIAL CAM UNITS


— KACNR —

KACNR ( $\theta=50-60$ )



■ Rear removal space



■ Components table  P.162

W	θ	A	A <sub>1</sub>	B	B <sub>1</sub>	C	E	E <sub>1</sub>	F	F <sub>1</sub>	H	K <sub>1</sub>	V	Y	x
70	50	307.27	267.1	322.27	282.1	15	195.63	245	104.37	55	136.3	105.5	120	62.51	81
	55	296.59	253.67	328.59	285.67	32	210.3	255	89.7	45	139.6	120	125	60.8	88
	60	288.56	238.54	333.56	283.54	45	222.26	265	77.74	35	143.2	113		64.69	95

Stroke S	Working force KN (ton)	Total weight kg	Catalog No.	W	θ	Spring type
77.8	294.2 (30.0)	64.3	KACNR	165	50	GK ISO NGK NISO
87.2		65.2			55	
100.0		66.6			60	

**Spring Specifications**

Spring type	Spring catalog No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	TU250-63.5	-	3430.0 (349.8)	KALLER gas spring
ISO	Φ40x178	449.1 (45.8)	2694.0 (274.7)	Coil spring (Constant=44.9N/mm)
NGK	-	-	-	No gas spring
NISO	-	-	-	No coil spring



Order

Catalog No. **KACNR** W **165** - θ **60** - Spring type **ISO**



Alteration

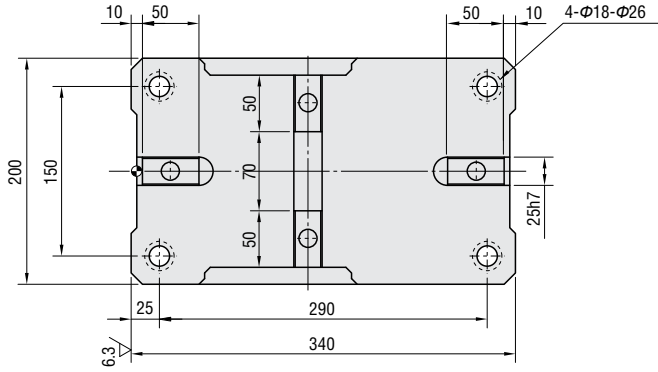
Catalog No. **KACNR** W **165** - θ **60** - Spring type **GK** - (N-NF) **NF**

Alterations	Code	Spec.
	<b>N</b>	Machining of locating dowel holes 2 dowel holes (Φ16H7) are machined on the cam holder.
	<b>NF</b>	Gas spring without nitrogen gas charging ⚠ Applicable for spring type GK only.

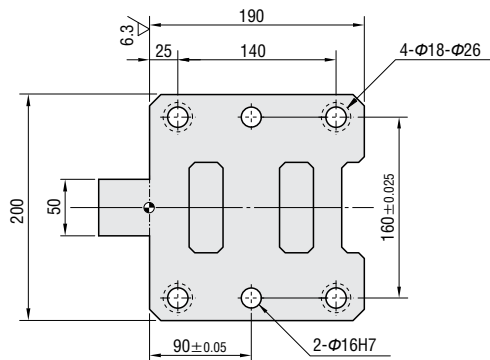
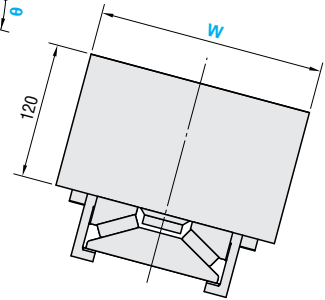
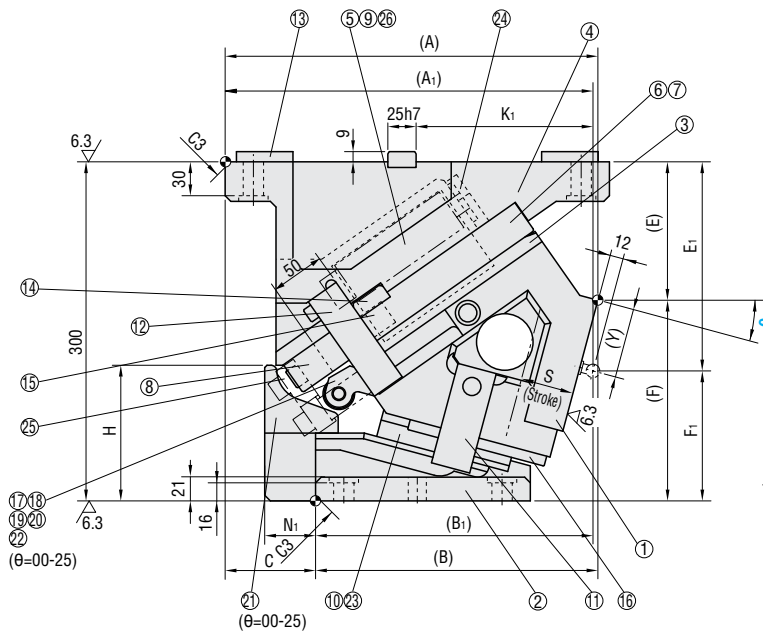
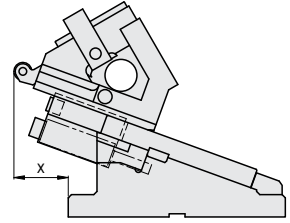
# NAAMS STANDARD AERIAL CAM UNITS

—KACNR—

## KACNR200 ( $\theta=00-45$ )



■ Rear removal space



■ Components table  P.162



W	θ	A	A <sub>1</sub>	B	B <sub>1</sub>	C	E	E <sub>1</sub>	F	F <sub>1</sub>	H	K <sub>1</sub>	N <sub>1</sub>	Y	x
200	00	335.84	347.84	207.84	219.84	128	96.98	170	203.02	130	80	180.5	55	73.02	21
	05	335.25	340.82	222.25	227.82	113	100.91	175	199.09	125	98	173		73.32	37
	10	337.27	337.3	236.27	236.3	101	111.09	180	188.91	120	109	165.5		50	67.86
	15	329.78	325.45	249.78	245.45	80	122.46	185	177.54	115	120	156.5	45	61.53	66
	20	332.68	323.61	262.68	253.61	70	129.99	190	170.01	110	137	149	42	59.49	71
	25	332.88	319.83	274.88	261.83	58	138.62	195	161.38	105	154	140	37	56.61	83
	30	334.28	315.39	286.28	267.39	48	148.28	205	151.72	95	125	132.5	30	58.57	90
	35	329.8	305.16	296.8	272.16	33	158.89	215	141.11	85	135	125	25	60.1	100
	40	321.35	291.18	306.35	276.18	15	170.38	225	129.62	75	155	117.5		61.23	111
	45	314.86	279.49	314.86	279.49	0	182.66	235	117.34	65	111.5	62.03		116	

Stroke S	Working force KN (ton)	Total weight kg	Catalog No.	W	θ	Spring type
32.1	353.0 (36.0)	90.3	KACNR	200	00	GK ISO NGK NISO
35.5		88.0			05	
38.9		87.5			10	
42.4		87.0			15	
46.1		85.8			20	
50.0		86.2			25	
54.3		85.6			30	
59.0		86.2			35	
64.3		86.6			40	
70.4		88.0			45	

**Spring Specifications**

Spring type	Spring catalog No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	K500-63.5	-	6125.0 (624.6)	KALLER gas spring
ISO	φ50x178	749.2 (76.4)	4494.0 (458.3)	Coil spring (Constant=74.9N/mm)
NGK	-	-	-	No gas spring
NISO	-	-	-	No coil spring



Order Catalog No. **KACNR** W **200** - θ **15** - Spring type **ISO**



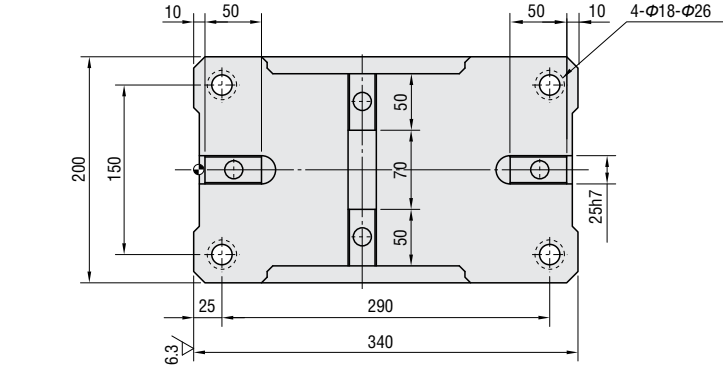
Alteration Catalog No. **KACNR** W **200** - θ **05** - Spring type **NGK** - (N-NF) **N**

Alterations	Code	Spec.
	N	Machining of locating dowel holes 2 dowel holes (φ16H7) are machined on the cam holder.
	NF	Gas spring without nitrogen gas charging ⊕ Applicable for spring type GK only.

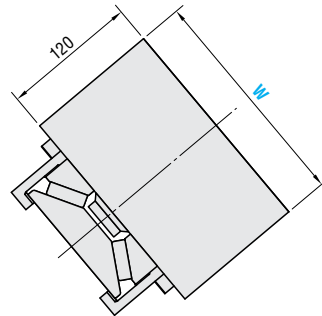
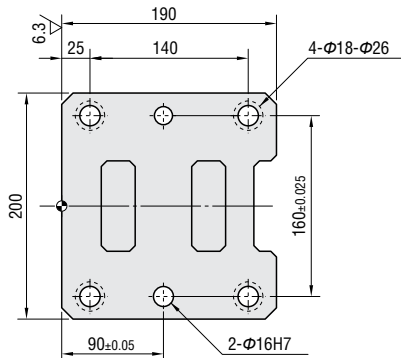
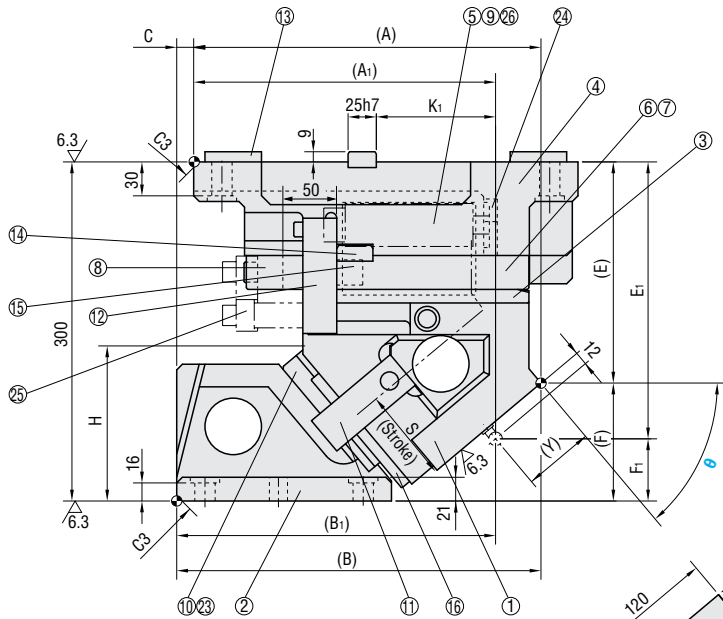
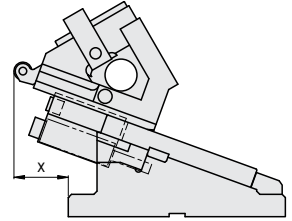
# NAAMS STANDARD AERIAL CAM UNITS

— KACNR —

## KACNR200 ( $\theta=50-60$ )



■ Rear removal space



■ Components table P.162

W	$\theta$	A	A <sub>1</sub>	B	B <sub>1</sub>	C	E	E <sub>1</sub>	F	F <sub>1</sub>	H	K <sub>1</sub>	Y	x
200	50	307.27	267.1	322.27	282.1	15	195.63	245	104.37	55	137	105.5	62.51	91
	55	296.59	253.67	328.59	285.67	32	210.3	255	89.7	45	140.3	120	60.8	99
	60	288.56	238.54	333.56	283.54	45	222.26	265	77.74	35	145.7	113	64.69	103

Stroke S	Working force KN (ton)	Total weight kg	Catalog No.	W	$\theta$	Spring type
77.8	353.0 (36.0)	78.2	KACNR	200	50	GK ISO NGK NISO
87.2		80.5			55	
100.0		82.4			60	

**Spring Specifications**

Spring type	Spring catalog No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	K500-63.5	-	6125.0 (624.6)	KALLER gas spring
ISO	$\phi 50 \times 178$	749.2 (76.4)	4494.0 (458.3)	Coil spring (Constant=74.9N/mm)
NGK	-	-	-	No gas spring
NISO	-	-	-	No coil spring



Order Catalog No. **KACNR** W **200** -  $\theta$  **50** - Spring type **ISO**



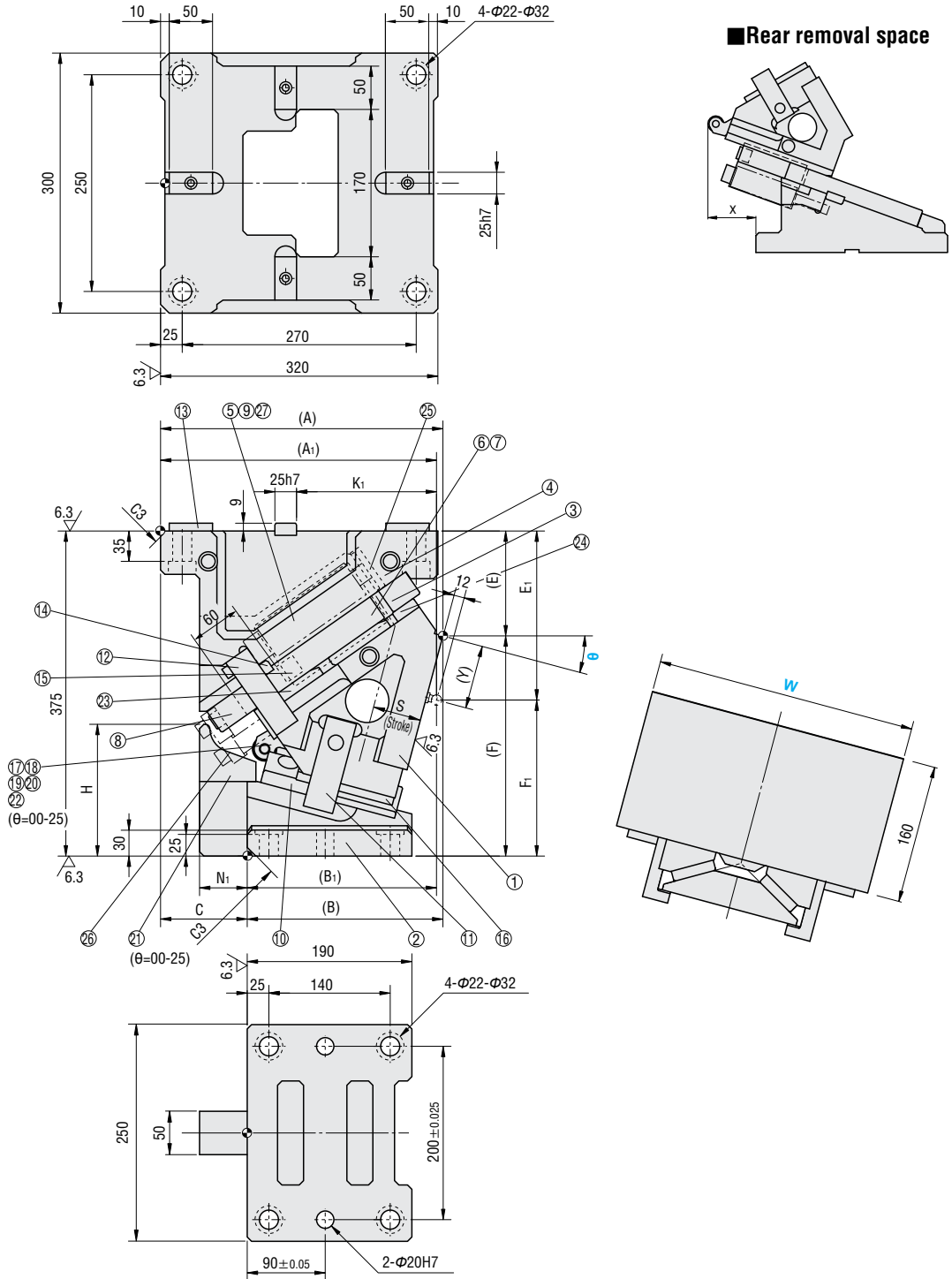
Alteration Catalog No. **KACNR** W **200** -  $\theta$  **55** - Spring type **GK** - (N-NF) **NF**

Alterations	Code	Spec.
	N	Machining of locating dowel holes 2 dowel holes ( $\phi 16H7$ ) are machined on the cam holder.
	NF	Gas spring without nitrogen gas charging ⚠ Applicable for spring type GK only.

# NAAMS STANDARD AERIAL CAM UNITS

—KACNR—

KACNR300/400 ( $\theta=00-45$ )



Components table P.162

W	θ	A	A <sub>1</sub>	B	B <sub>1</sub>	C	E	E <sub>1</sub>	F	F <sub>1</sub>	H	K <sub>1</sub>	N <sub>1</sub>	Y	x
300 400	00	313	325	175	187	138	98	180	277	195	114	193	55	82	45
	05	317.15	322.13	192.15	197.13	125	104.18	185	270.82	190	127	182.5		80.07	59
	10	324.13	322.54	209.13	207.54	115	111.86	190	263.14	185	139	172		77.23	67
	15	325.82	318.41	225.82	218.41	100	121.01	195	253.99	180	152	161.5		73.39	77
	20	327.08	314.95	242.08	229.95	85	131.59	200	243.41	175	164	151		68.43	85
	25	334.71	317.01	259.71	242.01	75	138.65	205	236.35	170	182	140.5	50	67.61	88
	30	327.83	302.37	272.83	247.37	55	146.89	215	228.11	160	152	130	45	71.72	108
	35	334.51	303.07	289.51	258.07	45	159.17	225	215.83	150	159.7	121	35	71.97	113
	40	325.46	284.32	300.46	259.32	25	167.3	235	207.7	140	167.7	112	30	78.3	129
	45	324.84	276.04	317.84	269.04	7	179.23	245	195.77	130	178.3	103		81.01	134

Stroke S	Working force KN (ton)	Total weight kg		Catalog No.	W	θ	Spring type
		W=300	W=400				
38.6	451.1 (46.0)	153.2	160.2	KACNR	300 400	00	GK ISO NGK NISO
42.6		152.5	159.5			05	
46.7		151.4	158.4			10	
50.9		154.1	161.1			15	
55.3		148.2	155.2			20	
60.0		150.2	157.3			25	
65.1		147.3	154.3			30	
70.8		148.0	155.0			35	
77.1		146.2	153.3			40	
84.5		148.6	155.6			45	

**Spring Specifications**

Spring type	Spring catalog No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	K500-80	-	10668.0 (1087.8)	KALLER gas spring
ISO	φ50x203	1314.1 (134.0)	9198.0 (937.9)	Coil spring (Constant=65.7N/mm)
NGK	-	-	-	No gas spring
NISO	-	-	-	No coil spring



Order

Catalog No. **KACNR** W **300** - θ **40** - Spring type **GK**



Alteration



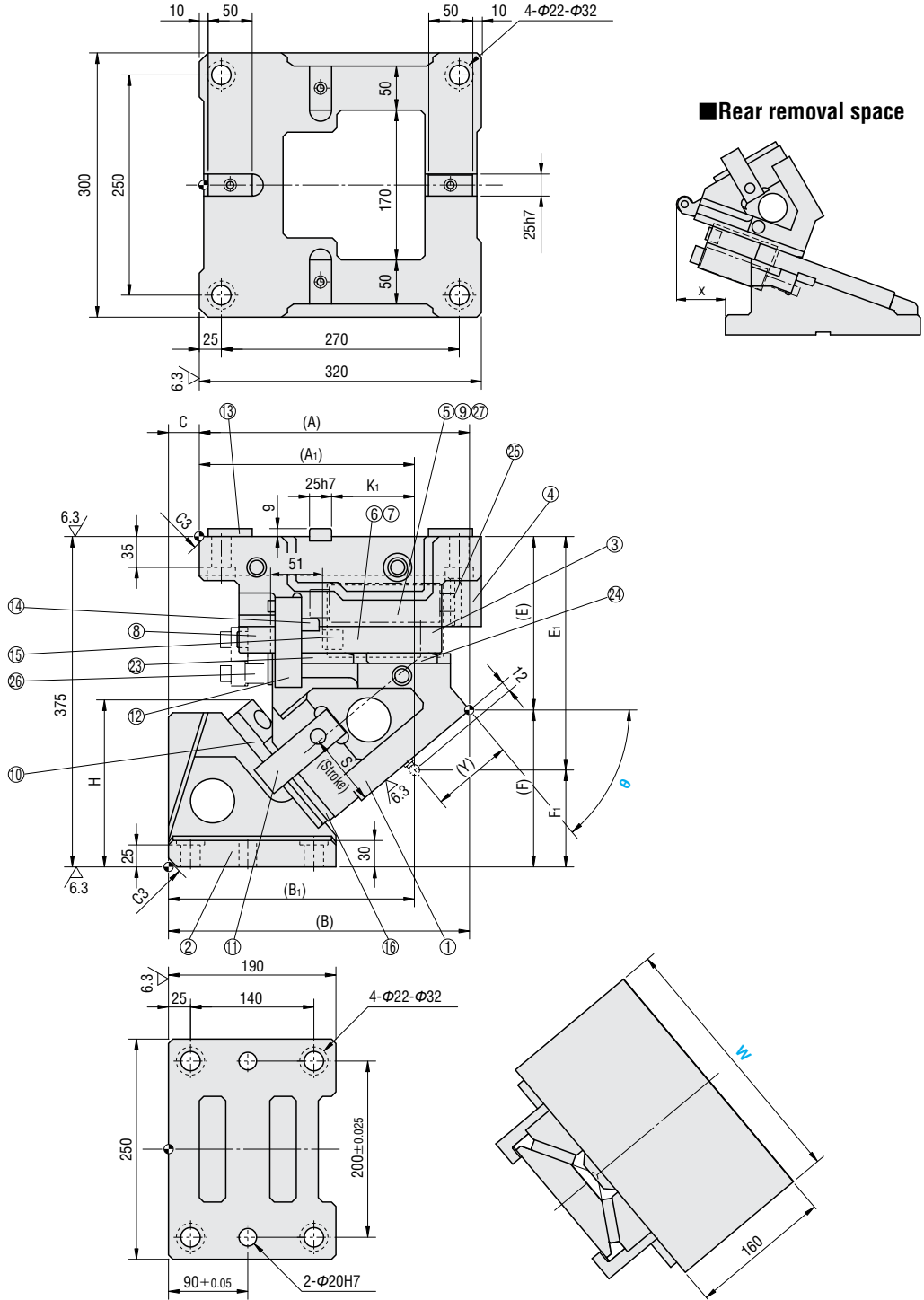
Catalog No. **KACNR** W **300** - θ **15** - Spring type **NISO** - (N-NF) **N**

Alterations	Code	Spec.
	N	Machining of locating dowel holes 2 dowel holes (φ 16H7) are machined on the cam holder.
	NF	Gas spring without nitrogen gas charging ⊕ Applicable for spring type GK only.

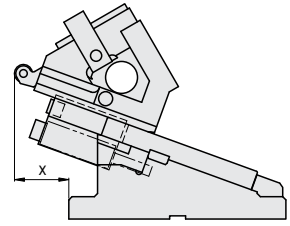
# NAAMS STANDARD AERIAL CAM UNITS

—KACNR—

KACNR300/400 ( $\theta=50-60$ )



■ Rear removal space



■ Components table P.162

W	$\theta$	A	A <sub>1</sub>	B	B <sub>1</sub>	C	E	E <sub>1</sub>	F	F <sub>1</sub>	H	K <sub>1</sub>	Y	x
300 400	50	306.63	244.08	341.63	279.08	35	196.84	265	178.16	110	193.1	94	91.73	131
	55	277.93	219.29	362.93	304.29	85	229.29	285	145.71	90	190.7	86.5	79.99	169
	60	286.45	216.29	371.45	301.29		245.64	300	129.36	75	195.6	79	87.94	163

Stroke S	Working force KN (ton)	Total weight kg		Catalog No.	W	$\theta$	Spring type
		W=300	W=400				
79.3	451.1 (46.0)	122.5	127.7	KACNR	300 400	50	GK ISO NGK NISO
88.9		130.9	135.9			55	
102.0		135.3	140.4			60	

### Spring Specifications

Spring type	Spring catalog No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	K500-80	–	10668.0 (1087.8)	KALLER gas spring
ISO	$\phi 50 \times 203$	1314.1 (134.0)	8015.4 (817.9)	Coil spring (Constant=65.7N/mm)
NGK	–	–	–	No gas spring
NISO	–	–	–	No coil spring



Order

Catalog No. **KACNR** W **400** –  $\theta$  **60** – Spring type **ISO**



Alteration



Catalog No. **KACNR** W **300** –  $\theta$  **50** – Spring type **GK** – (N-NF) **NF**

Alterations	Code	Spec.
	N	Machining of locating dowel holes 2 dowel holes ( $\phi 16H7$ ) are machined on the cam holder.
	NF	Gas spring without nitrogen gas charging ⚠ Applicable for spring type GK only.

# NAAMS STANDARD AERIAL CAM UNITS

—KACNR— CAM DIAGRAM

## ■KACNR

<p><b>70-00</b></p>	<p><b>70-05</b></p>	<p><b>70-10</b></p>	<p><b>70-15</b></p>
<p><b>70-20</b></p>	<p><b>70-25</b></p>	<p><b>70-30</b></p>	<p><b>70-35</b></p>
<p><b>70-40</b></p>	<p><b>70-45</b></p>	<p><b>70-50</b></p>	<p><b>70-55</b></p>
<p><b>70-60</b></p>	<p><b>80-00</b></p>	<p><b>80-05</b></p>	<p><b>80-10</b></p>
<p><b>80-15</b></p>	<p><b>80-20</b></p>	<p><b>80-25</b></p>	<p><b>80-30</b></p>

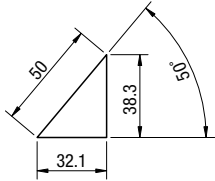
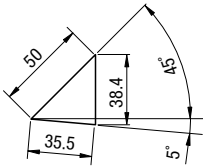
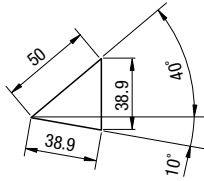
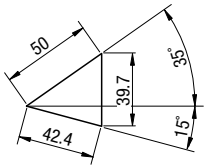
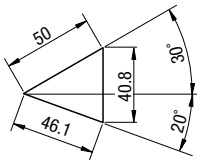
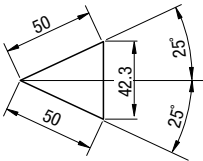
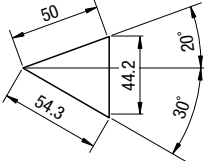
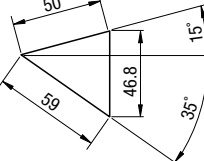
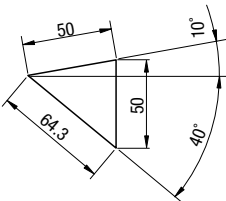
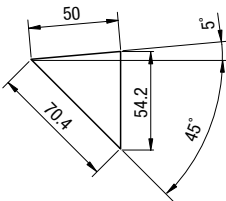
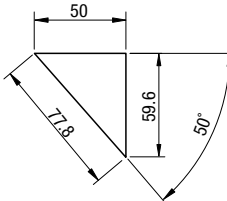
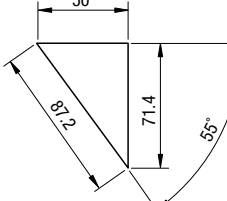
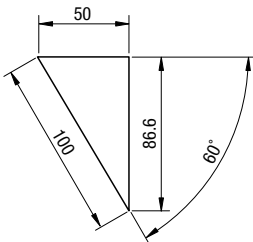
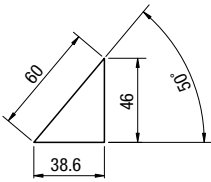
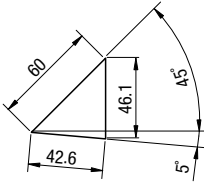
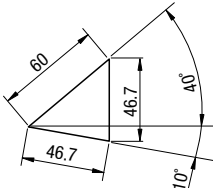
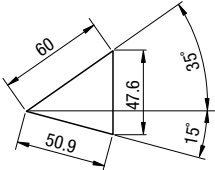
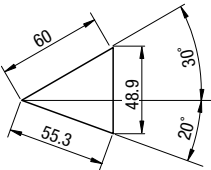
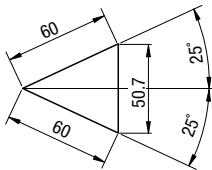
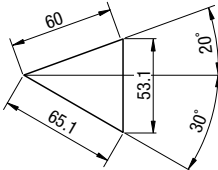


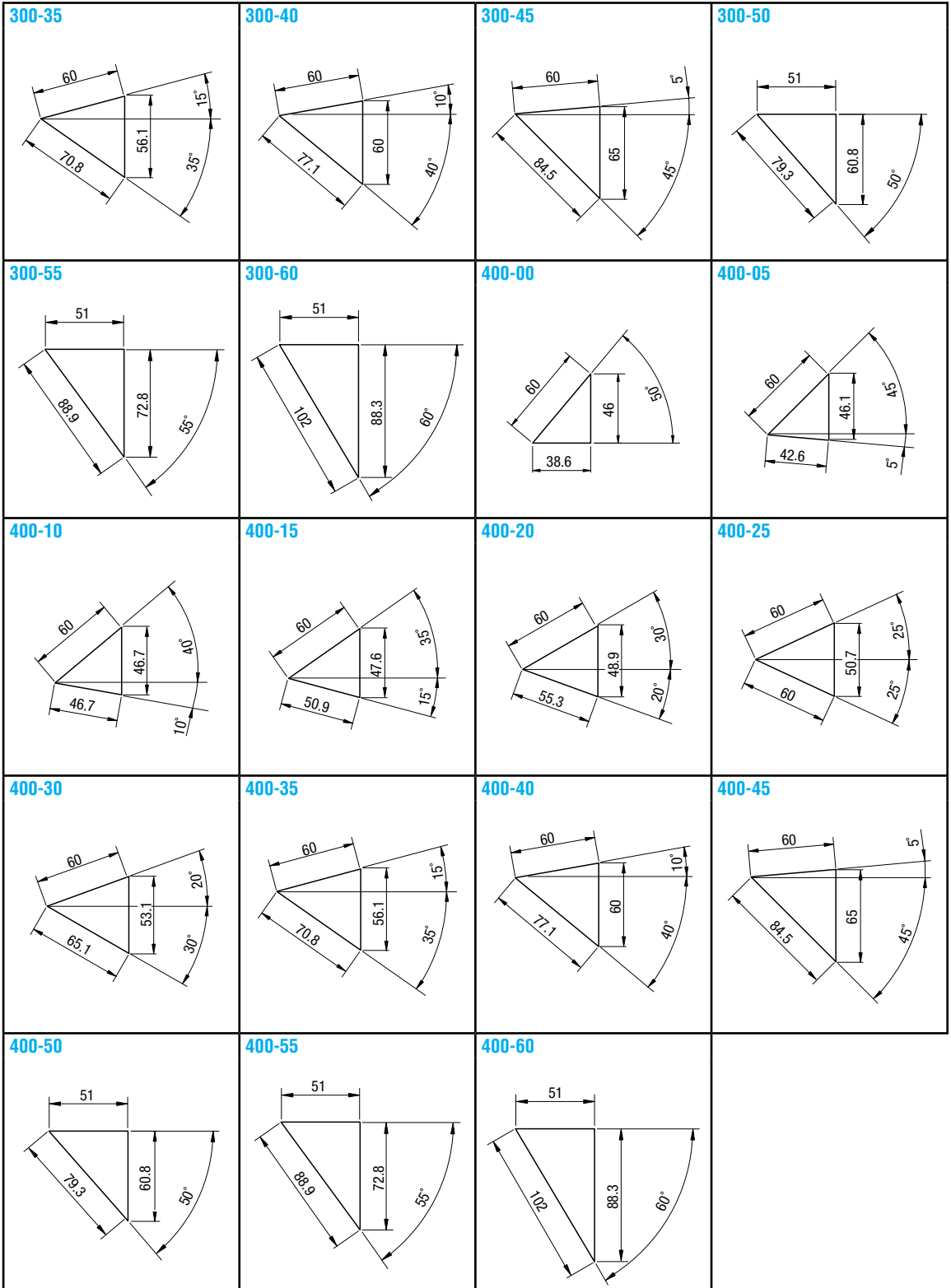
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<p><b>80-55</b></p>	<p><b>80-60</b></p>	<p><b>165-00</b></p>	<p><b>165-05</b></p>
<p><b>165-10</b></p>	<p><b>165-15</b></p>	<p><b>165-20</b></p>	<p><b>165-25</b></p>
<p><b>165-30</b></p>	<p><b>165-35</b></p>	<p><b>165-40</b></p>	<p><b>165-45</b></p>
<p><b>165-50</b></p>	<p><b>165-55</b></p>	<p><b>165-60</b></p>	

# NAAMS STANDARD AERIAL CAM UNITS

— KACNR — CAM DIAGRAM

## ■ KACNR

<p><b>200-00</b></p> 	<p><b>200-05</b></p> 	<p><b>200-10</b></p> 	<p><b>200-15</b></p> 
<p><b>200-20</b></p> 	<p><b>200-25</b></p> 	<p><b>200-30</b></p> 	<p><b>200-35</b></p> 
<p><b>200-40</b></p> 	<p><b>200-45</b></p> 	<p><b>200-50</b></p> 	<p><b>200-55</b></p> 
<p><b>200-60</b></p> 	<p><b>300-00</b></p> 	<p><b>300-05</b></p> 	<p><b>300-10</b></p> 
<p><b>300-15</b></p> 	<p><b>300-20</b></p> 	<p><b>300-25</b></p> 	<p><b>300-30</b></p> 



# NAAMS STANDARD AERIAL CAM UNITS

## — KACNR — COMPONENTS TABLE

### ■ KACNR70

No.	Part Name	Material and Remark	Quantity
①	Cam Base	QT450	1
②	Cam Slide	QT450	1
③	Wear Plate	Bronze with Graphite	1
④	Cam Driver	QT450	1
⑤	Guide Bar	S45C	1
⑥	Spring	Refer to Spring Specification Table	1
⑦	Positive Return Strap	S45C	1
⑧	Bumper	Urethane	2
⑨	V-block A	Bronze with Graphite	1
⑩	V-block B	42CrMo	1
⑪	Slide Plate	S45C	1
⑫	Dowel Pin	φ8×25	1
⑬	Spring Washer	For M6	1
⑭	Key B	SS400	1
⑮	Key A	SS400	1
⑯	Wear Plate	Bronze with Graphite	2
⑰	Spring Guide Pin	S45C (Apply only for ISO and NISO)	1
⑱	Spring Stop Plate	SS400	1
⑲	Slide Lock Plate	SS400	1

Ⓜ Assembly bolts are not shown.

### ■ KACNR80

No.	Part Name	Material and Remark	Quantity
①	Cam Base	QT450	1
②	Cam Slide	QT450	1
③	Wear Plate	Bronze with Graphite	1
④	Cam Driver	QT450	1
⑤	Guide Bar	S45C	1
⑥	Spring	Refer to Spring Specification Table	1
⑦	Positive Return Strap	S45C	2
⑧	Key A	SS400	3
⑨	V-block A	Bronze with Graphite	1
⑩	V-block B	42CrMo	1
⑪	Slide Plate	S45C	1
⑫	Key B	SS400	1
⑬	Dowel Pin	φ8×25	2
⑭	Spring Washer	For M8	3
⑮	Wear Plate	Bronze with Graphite	2
⑯	Spring Guide Pin	S45C (Apply only for ISO and NISO)	1
⑰	Spring Stop Plate	SS400	1
⑱	Slide Lock Plate	SS400	1

Ⓜ Assembly bolts are not shown.

### ■ KACNR165(θ=00-25)

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	HT300	1
②	Cam Driver	HT300	1
③	Wear Plate	Bronze with Graphite	2
④	Cam Base	HT300	1
⑤	Spring Guide	Bronze with Graphite	1
⑥	Base Plate D-R	42CrMo	1
⑦	Base Plate D-L	42CrMo	1
⑧	Stop Plate	SS400	1
⑨	Spring	Refer to Spring Specification Table	1
⑩	V-block	42CrMo	1
⑪	Positive Return Strap	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	4
⑭	Key B	SS400	2
⑮	Bumper	Urethane	1
⑯	Keeper Plate	42CrMo	2
⑰	Roller	S45C	1
⑱	Roller Pin	S45C	1
⑲	Bushing	Bronze with Graphite	1
⑳	Roller Bracket	SS400	1
㉑	Accelerator Ramp	S45C	1
㉒	Snap Ring E type	φ9	2
㉓	Key C	SS400	1
㉔	Spring Support	SS400	1
㉕	Slide Lock Plate	SS400	1
㉖	Spring Guide Plate	SS400	1

Ⓜ Assembly bolts are not shown.

### ■ KACNR165(θ=30-60)

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	HT300	1
②	Cam Driver	HT300	1
③	Wear Plate	Bronze with Graphite	2
④	Cam Base	HT300	1
⑤	Spring Guide	Bronze with Graphite	1
⑥	Base Plate D-R	42CrMo	1
⑦	Base Plate D-L	42CrMo	1
⑧	Stop Plate	SS400	1
⑨	Spring	Refer to Spring Specification Table	1
⑩	V-block	42CrMo	1
⑪	Positive Return Strap	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	4
⑭	Key B	SS400	2
⑮	Bumper	Urethane	1
⑯	Keeper Plate	42CrMo	2
㉓	Key C	SS400	1
㉔	Spring Support	SS400	1
㉕	Slide Lock Plate	SS400	1
㉖	Spring Guide Plate	SS400	1

Ⓜ Assembly bolts are not shown.

### ■ KACNR200( $\theta=00-25$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	HT300	1
②	Cam Driver	HT300	1
③	Wear Plate	Bronze with Graphite	2
④	Cam Base	HT300	1
⑤	Spring Guide	Bronze with Graphite	1
⑥	Base Plate D-R	42CrMo	1
⑦	Base Plate D-L	42CrMo	1
⑧	Stop Plate	SS400	1
⑨	Spring	Refer to Spring Specification Table	1
⑩	V-block	42CrMo	1
⑪	Positive Return Strap	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	4
⑭	Key B	SS400	2
⑮	Bumper	Urethane	1
⑯	Keeper Plate	42CrMo	2
⑰	Roller	S45C	1
⑱	Roller Pin	S45C	1
⑲	Bushing	Bronze with Graphite	1
⑳	Roller Bracket	SS400	1
㉑	Accelerator Ramp	S45C	1
㉒	Snap Ring E type	$\phi 9$	2
㉓	Key C	SS400	1
㉔	Spring Support	SS400	1
㉕	Slide Lock Plate	SS400	1
㉖	Spring Guide Plate	SS400	1

Ⓜ Assembly bolts are not shown.

### ■ KACNR200( $\theta=30-60$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	HT300	1
②	Cam Driver	HT300	1
③	Wear Plate	Bronze with Graphite	2
④	Cam Base	HT300	1
⑤	Spring Guide	Bronze with Graphite	1
⑥	Base Plate D-R	42CrMo	1
⑦	Base Plate D-L	42CrMo	1
⑧	Stop Plate	SS400	1
⑨	Spring	Refer to Spring Specification Table	1
⑩	V-block	42CrMo	1
⑪	Positive Return Strap	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	4
⑭	Key B	SS400	2
⑮	Bumper	Urethane	1
⑯	Keeper Plate	42CrMo	2
㉓	Key C	SS400	1
㉔	Spring Support	SS400	1
㉕	Slide Lock Plate	SS400	1
㉖	Spring Guide Plate	SS400	1

Ⓜ Assembly bolts are not shown.

### ■ KACNR300( $\theta=00-25$ ) ■ KACNR400( $\theta=00-25$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	HT300	1
②	Cam Driver	HT300	1
③	Base Plate C	S45C	1
④	Cam Base	HT300	1
⑤	Spring Guide	Bronze with Graphite	1
⑥	Base Plate F-R	42CrMo	1
⑦	Base Plate F-L	42CrMo	1
⑧	Stop Plate	SS400	1
⑨	Spring	Refer to Spring Specification Table	1
⑩	V-block	42CrMo	1
⑪	Positive Return Strap	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	4
⑭	Key B	SS400	2
⑮	Bumper	Urethane	3
⑯	Keeper Plate	42CrMo	2
⑰	Roller	S45C	1
⑱	Roller Pin	S45C	1
⑲	Bushing	Bronze with Graphite	1
⑳	Roller Bracket	SS400	1
㉑	Accelerator Ramp	S45C	1
㉒	Snap Ring F type	$\phi 9$	2
㉓	Wear Plate A	Bronze with Graphite	4
㉔	Wear Plate B	Bronze with Graphite	1
㉕	Spring Support	SS400	1
㉖	Slide Lock Plate	SS400	1
㉗	Spring Guide Plate	SS400	1

Ⓜ Assembly bolts are not shown.

### ■ KACNR300( $\theta=30-60$ ) ■ KACNR400( $\theta=30-60$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	HT300	1
②	Cam Driver	HT300	1
③	Base Plate C	S45C	1
④	Cam Base	HT300	1
⑤	Spring Guide	Bronze with Graphite	1
⑥	Base Plate F-R	42CrMo	1
⑦	Base Plate F-L	42CrMo	1
⑧	Stop Plate	SS400	1
⑨	Spring	Refer to Spring Specification Table	1
⑩	V-block	42CrMo	1
⑪	Positive Return Strap	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	4
⑭	Key B	SS400	2
⑮	Bumper	Urethane	3
⑯	Keeper Plate	42CrMo	2
㉓	Wear Plate A	Bronze with Graphite	4
㉔	Wear Plate B	Bronze with Graphite	1
㉕	Spring Support	SS400	1
㉖	Slide Lock Plate	SS400	1
㉗	Spring Guide Plate	SS400	1

Ⓜ Assembly bolts are not shown.

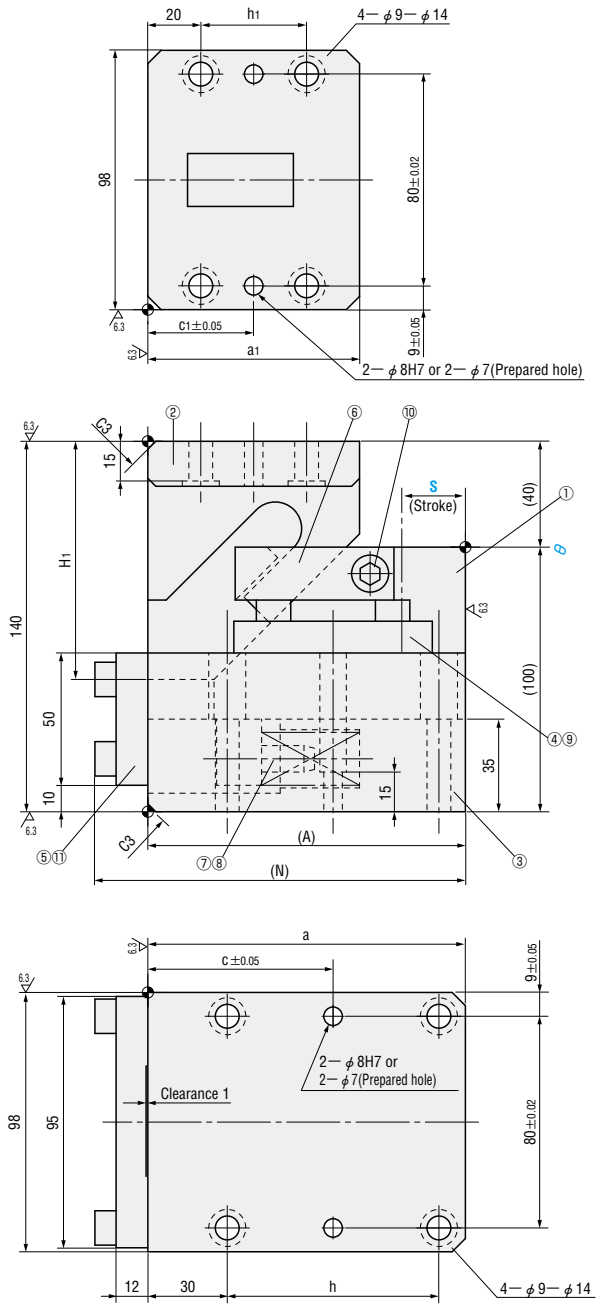
# STANDARD DIE MOUNT CAM UNITS — DRILLED DOWEL HOLES / FINISHED DOWEL HOLES —

— LGDC • LGDCA —

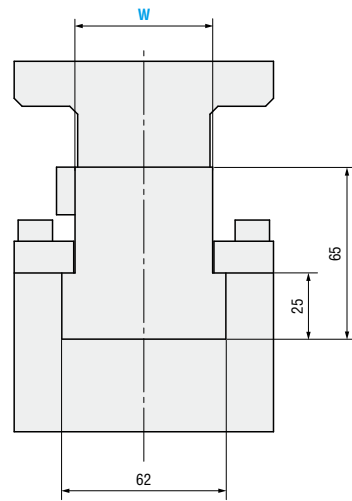
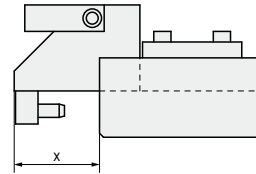
— Drilled dowel holes — — Finished dowel holes —

LGDC52

LGDCA52



■ Rear removal space



W	$\theta$	S	A	H <sub>1</sub>	N	a	a <sub>1</sub>	c	c <sub>1</sub>	h	h <sub>1</sub>	x
52	00	25	120	90	140	120	80	70	40	80	40	68
		40	135	100	155	135	90	80	45	95	50	58
		60	180	120	200	180	110	55	55	140	70	60

Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	Stroke S
Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
14.7 (1.5)	29.4 (3.0)	144 (14.7)	504 (51.4)	594 (60.6)	8.0	— Drilled dowel holes — <b>LGDC</b> — Finished dowel holes — <b>LGDC</b>	52	00	25
		101 (10.3)	542 (55.2)	605 (61.7)	8.0				40
		109 (11.1)	571 (58.2)	613 (62.5)	14.0				60



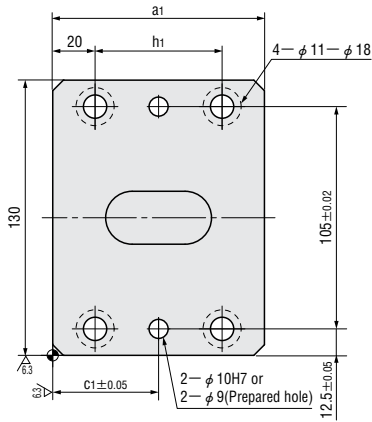
Order

**Catalog No.** **W** —  **$\theta$**  — **S**  
**LGDC** **52** — **00** — **40**

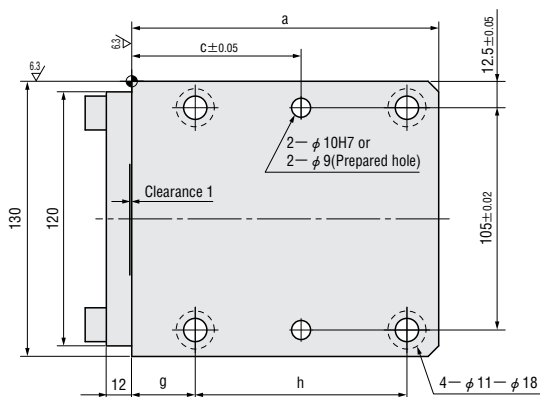
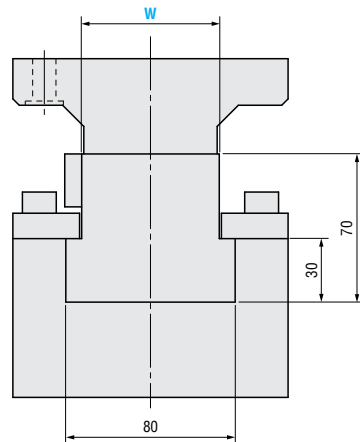
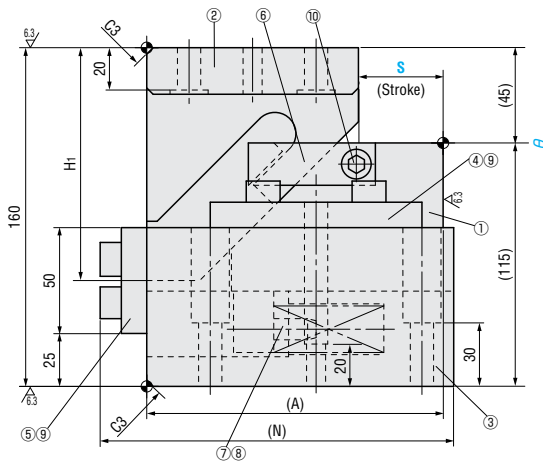
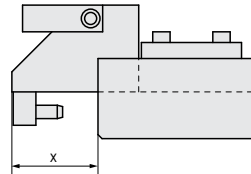
# STANDARD DIE MOUNT CAM UNITS — DRILLED DOWEL HOLES / FINISHED DOWEL HOLES —

— LGDC · LGDCA —

— Drilled dowel holes —    — Finished dowel holes —  
**LGDC65 ( $\theta=00$ )**      **LGDC65 ( $\theta=00$ )**



■ Rear removal space





W	$\theta$	S	A	H <sub>1</sub>	N	a	a <sub>1</sub>	c	c <sub>1</sub>	g	h	h <sub>1</sub>	x
65	00	40	140	110	167	145	100	80	50	30	100	60	75
		60	190	130	212	180	110	105	55	40	125	70	80

Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	Stroke S
Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
19.6 (2.0)	39.2 (4.0)	125 (12.7)	671 (68.4)	749 (76.4)	19.0	— Drilled dowel holes — <b>LGDC</b> — Finished dowel holes — <b>LGDCA</b>	65	00	40
		135 (13.8)	707 (72.1)	759 (77.4)	22.0				60



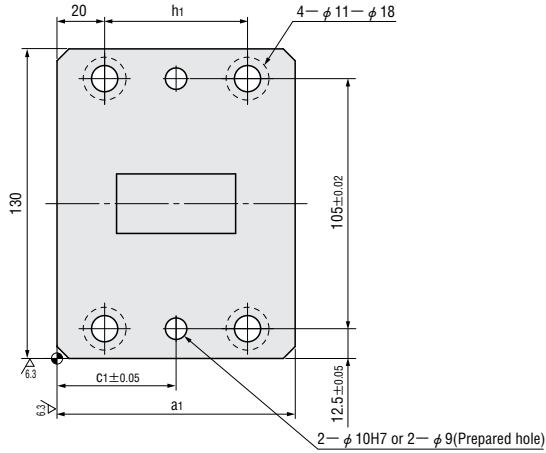
Order

<b>Catalog No.</b>	<b>W</b>	—	<b><math>\theta</math></b>	—	<b>S</b>
<b>LGDCA</b>	<b>65</b>	—	<b>00</b>	—	<b>40</b>

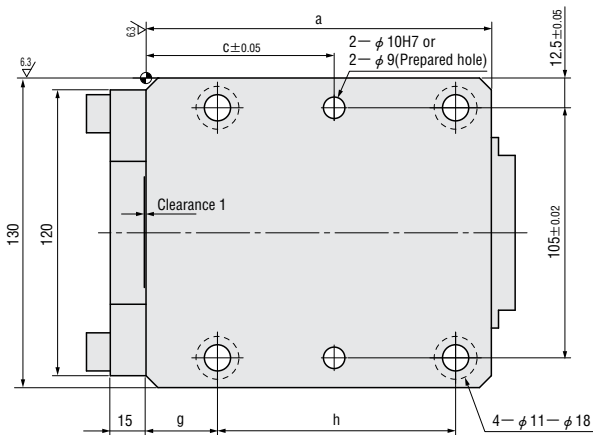
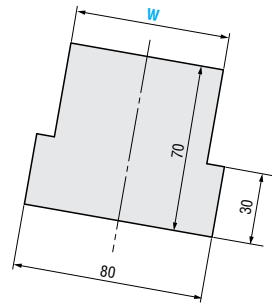
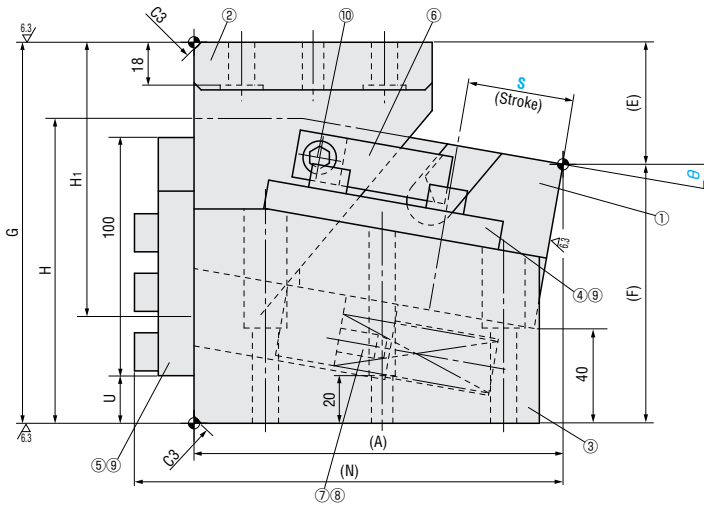
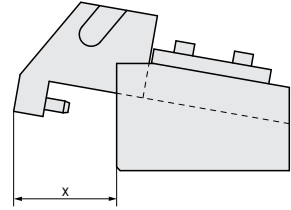
# STANDARD DIE MOUNT CAM UNITS — DRILLED DOWEL HOLES / FINISHED DOWEL HOLES —

— Drilled dowel holes —  
**LGDC65 ( $\theta=05-20$ )**

— Finished dowel holes —  
**LGDC65 ( $\theta=05-20$ )**



■ Rear removal space



■ Components table P.186

W	$\theta$	S	A	E	F	G	H	H <sub>1</sub>	U	N	a	a <sub>1</sub>	c	c <sub>1</sub>	g	h	h <sub>1</sub>	x			
65	05	45	150.55	47.90	112.1	160	121.7	125	12.5	175.55	145	100	80	50	30	100	60	85			
		70	195.38	46.83	123.17	170	158.1	145	25	220.38	180		65		40	125		83			
	10	45	154.95	51.24	108.76	160	129.1	115	20	179.95	145		79		30	100		89			
		70	199.27	59.06	110.94	170	138.9	145	25	224.27	180		65		40	125		85			
	15	45	158.18	64.91	105.09		133.7	115	25	183.18	145		80		30	100		91			
		70	201.64	66.56	103.44		161.5	125	40	226.64	180		110		65	55		40	125	70	88
	20	45	160.2	68.81	101.19		138.9	105	30	185.2	145		100		80	50		30	100	60	93
		70	202.48	74.21	95.79		154.6	120	40	227.48	180		110		65	55		40	125	70	87

Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	Stroke S
Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
19.6 (2.0)	39.2 (4.0)	176 (18.0)	680 (69.4)	743 (75.8)	20.0	— Drilled dowel holes — <b>LGDC</b> — Finished dowel holes — <b>LGDCA</b>	65	05	45
		190 (19.4)	918 (93.7)	974 (99.4)	25.0				70
		176 (18.0)	680 (69.4)	743 (75.8)	20.0			10	45
		190 (19.4)	918 (93.7)	974 (99.4)	25.0				70
		176 (18.0)	680 (69.4)	743 (75.8)	21.0			15	45
		190 (19.4)	918 (93.7)	974 (99.4)	25.0				70
		176 (18.0)	680 (69.4)	743 (75.8)	21.0			20	45
		190 (19.4)	918 (93.7)	974 (99.4)	25.0				70



Order

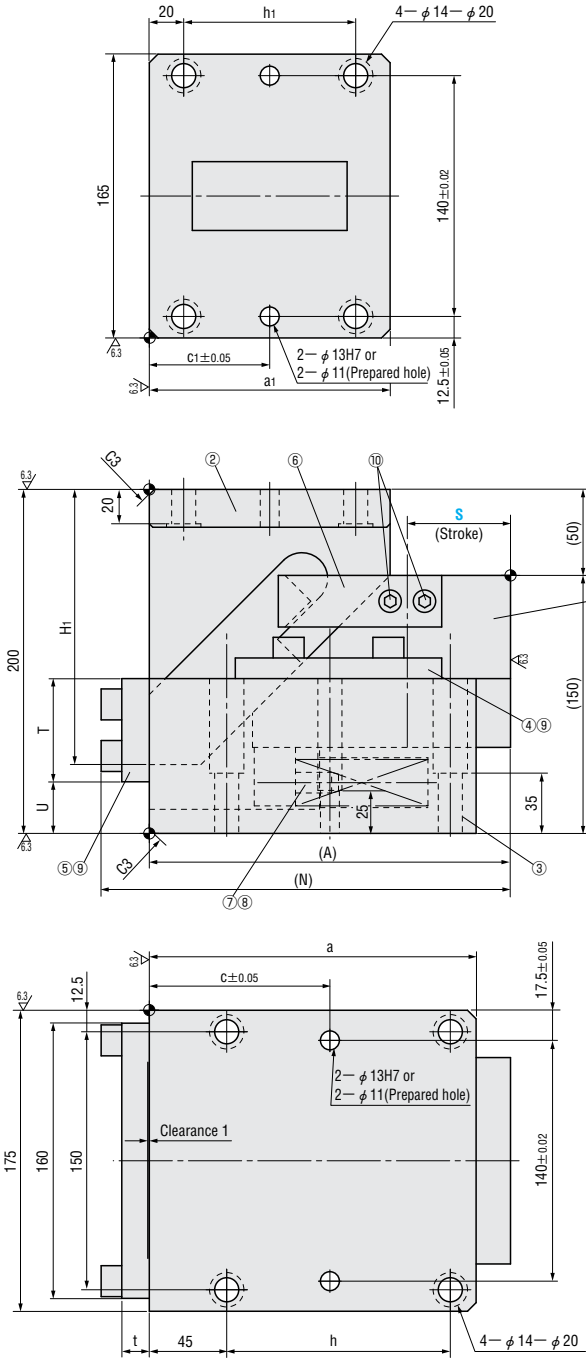
Catalog No. **LGDCA**    W **65**    —     $\theta$  **10**    —    S **45**

# STANDARD DIE MOUNT CAM UNITS — DRILLED DOWEL HOLES / FINISHED DOWEL HOLES —

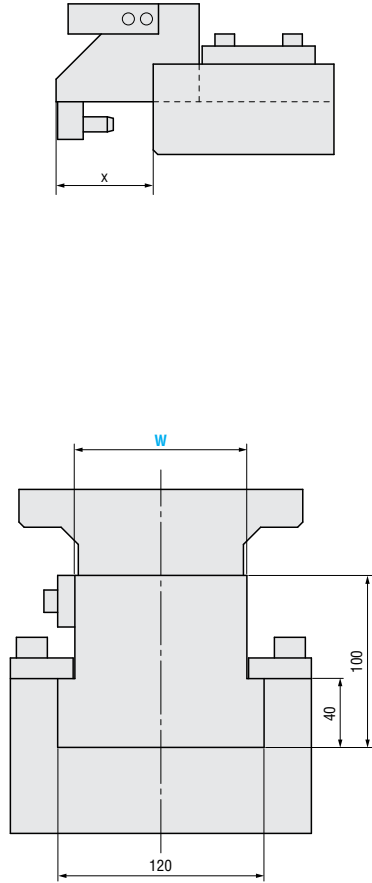
— LGDC • LGDCA —

— Drilled dowel holes —  
**LGDC100 ( $\theta=00$ )**

— Finished dowel holes —  
**LGDC100 ( $\theta=00$ )**



■ Rear removal space



W	$\theta$	S	A	H <sub>1</sub>	N	T	U	a	a <sub>1</sub>	c	c <sub>1</sub>	h	h <sub>1</sub>	t	x
100	00	40	190	140	218	60	30	190	120	105	60	130	80	16	100
		60	210	160	238				140		70		100		
		80	250	170	277	115	10	220	150	135	75	160	110	15	110

Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	Stroke S
Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
29.4 (3.0)	58.8 (6.0)	189 (19.3)	1015 (103.5)	1133 (115.5)	37.0	— Drilled dowel holes — <b>LGDC</b> — Finished dowel holes — <b>LGDCA</b>	100	00	40
		203 (20.7)	1061 (108.2)	1139 (116.1)	38.0				60
		170 (17.4)	1235 (126.0)	1306 (133.2)	44.0				80



Order

Catalog No. **LGDCA**    W **100** —  $\theta$  **00** — S **40**



Alterations

Catalog No. **LGDCA**    W **100** —  $\theta$  **00** — S **60** — (N) **N12**

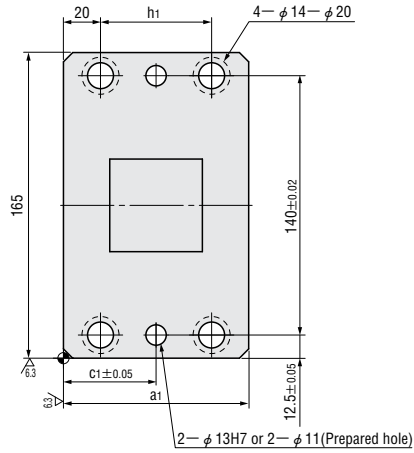
Alteration	Code	Spec.
	<b>N12</b>	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 12H7 ❗ Not applicable for prepared hole type

# STANDARD DIE MOUNT CAM UNITS — DRILLED DOWEL HOLES / FINISHED DOWEL HOLES —

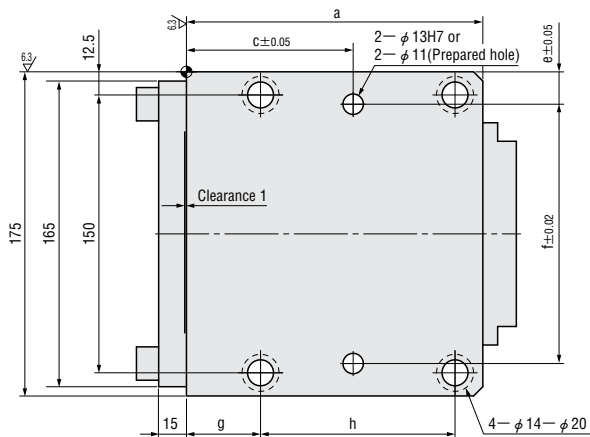
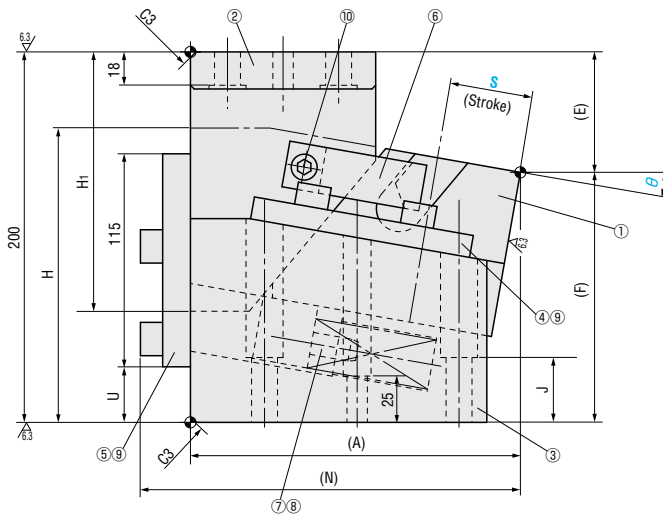
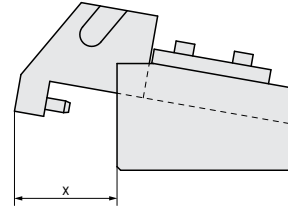
— LGDC • LGDCA —

— Drilled dowel holes —  
**LGDC100 ( $\theta=05-20$ )**

— Finished dowel holes —  
**LGDC100 ( $\theta=05-20$ )**



■ Rear removal space



■ Components table P.186

W	θ	S	A	E	F	H	H <sub>1</sub>	J	N	U	a	a <sub>1</sub>	c	c <sub>1</sub>	e	f	g	h	h <sub>1</sub>	x
100	05	45	172.22	54.72	145.28	155.6	140	35	199.22	27.5	160	100	90	50	17.5	140	40	105	60	98
		70	207.08	52.77	147.23	161.1	160	40	234.08	30	190	120	70	60	12.5	150	45	130	80	90
	10	45	178.12	65.02	134.98	156.8	140	35	205.12		30	160	100	90	50	17.5	140	40	105	60
		70	212.59	66.1	133.9	161.6	160		239.59	35		190	120	70	60	12.5	150	45	130	80
	15	45	182.67	70.77	129.23	160	125		209.67		35	160	110	90	55	17.5	140	40	105	70
		70	216.48	69.83	130.17	171.5	130	40	243.48	35		190	130	70	65	12.5	150	45	130	90
	20	45	185.83	81.86	118.14	161.2	120		212.83		45	160	110	90	55	17.5	140	40	105	70
		70	218.72	78.83	121.17	179.5	130		245.72	190		130	70	65	12.5	150	45	130	90	98

Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	θ	Stroke S	
Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure						
39.2 (4.0)	78.5 (8.0)	263 (26.8)	1015 (103.5)	1109 (113.1)	33.0	— Drilled dowel holes — <b>LGDC</b> — Finished dowel holes — <b>LGDCA</b>	100	05	45	
		194 (19.8)	1065 (108.6)	1132 (115.5)	38.0				70	
		263 (26.8)	1015 (103.5)	1109 (113.1)	33.0				10	45
		194 (19.8)	1065 (108.6)	1132 (115.5)	38.0					70
		263 (26.8)	1015 (103.5)	1109 (113.1)	33.0			15	45	
		194 (19.8)	1065 (108.6)	1132 (115.5)	38.0				70	
		263 (26.8)	1015 (103.5)	1109 (113.1)	32.0			20	45	
		194 (19.8)	1065 (108.6)	1132 (115.5)	39.0				70	



Order

Catalog No. **LGDCA**    **W** 100 — **θ** 15 — **S** 70



Alterations

Catalog No. **LGDCA**    **W** 100 — **θ** 10 — **S** 45 — **(N)** N12

Alteration	Code	Spec.
	N12	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 12H7 ⊗ Not applicable for prepared hole types





W	$\theta$	S	A	H <sub>1</sub>	N	a	a <sub>1</sub>	c	c <sub>1</sub>	h	h <sub>1</sub>	x
150	00	40	190	140	225	190	120	105	60	125	80	108
		60	210	160	245	200	140	110	70	135	100	100

Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	Stroke S
Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
58.8 (6.0)	88.3 (9.0)	307 (31.3)	1651 (168.4)	1843 (188.0)	63.0	— Drilled dowel holes — <b>LGDC</b> — Finished dowel holes — <b>LGDCA</b>	150	00	40
		333 (33.9)	1741 (177.5)	1869 (190.6)	69.0				60



Order

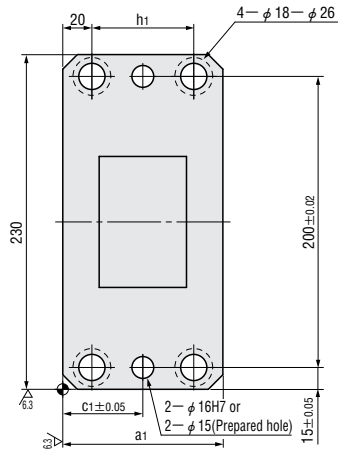
Catalog No. **LGDCA**    W **150** —  $\theta$  **00** — S **60**

# STANDARD DIE MOUNT CAM UNITS — DRILLED DOWEL HOLES / FINISHED DOWEL HOLES —

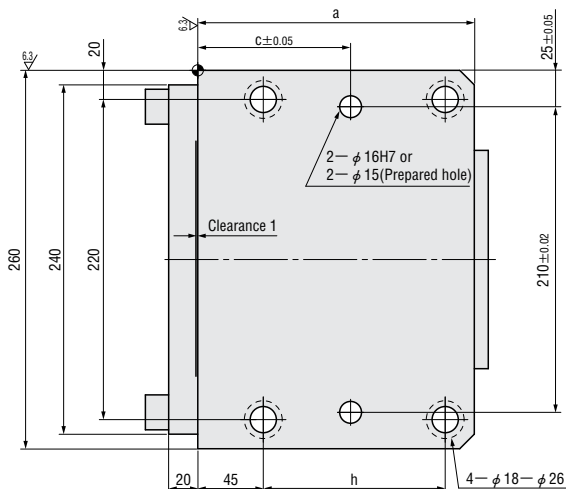
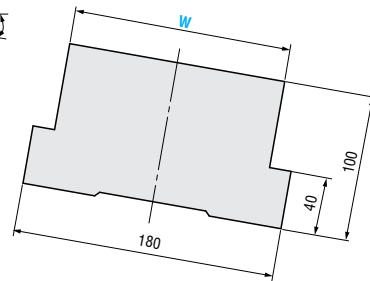
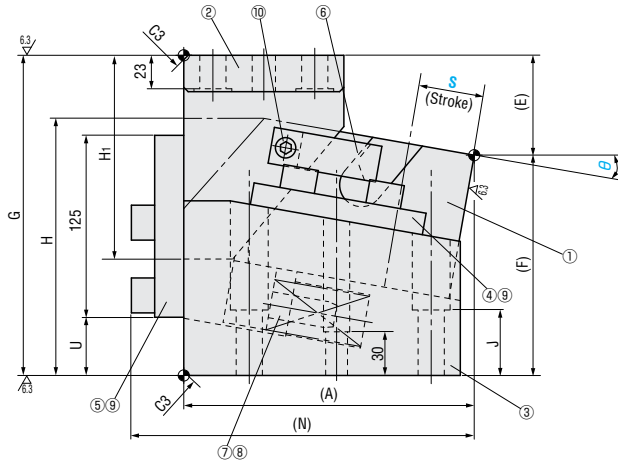
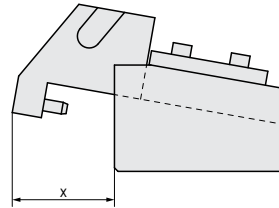
— LGDC • LGDCA —

— Drilled dowel holes —  
**LGDC150 ( $\theta=05-20$ )**

— Finished dowel holes —  
**LGDC150 ( $\theta=05-20$ )**



■ Rear removal space



■ Components table P.186

W	θ	S	A	E	F	G	H	H <sub>1</sub>	J	N	U	a	a <sub>1</sub>	c	c <sub>1</sub>	h	h <sub>1</sub>	x
150	05	45	193.01	61.5	158.5	220	170.2	145	35	229.01	30	190	110	105	55	125	70	115
		70	217.92	53.68	166.32		180.6	170	45	253.92	40	200	130	120	65	135	90	103
	45	199.55	68.64	151.36	176.7		140	235.55				190	110	105	55	125	70	121
	10	70	224.17	67.98	152.02	180.5	170	260.17	200	130	120	65	135	90	110			
		45	204.58	76.29	143.71	179.6	130	240.58	190	120	105	60	125	80	126			
	15	70	228.73	77.76	152.24	230	194.6	155	60	264.73	55	200	140	120	70	135	100	111
		45	208.05	84.3	135.7	220	183.2	130	45	244.05	40	190	120	105	60	125	80	113
	20	70	231.54	92.85	137.15	230	193.2	155	60	267.54	55	200	140	120	70	135	100	

Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	θ	Stroke S
Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
64.7 (6.6)	98.1 (10.0)	431 (44.0)	1663 (169.6)	1817 (185.3)	62.0	— Drilled dowel holes — <b>LGDC</b> — Finished dowel holes — <b>LGDCA</b>	150	05	45
		308 (31.4)	1738 (177.2)	1848 (188.4)	73.0				70
		431 (44.0)	1663 (169.6)	1817 (185.3)	63.0			10	45
		308 (31.4)	1738 (177.2)	1848 (188.4)	73.0				70
		431 (44.0)	1663 (169.6)	1817 (185.3)	65.0			15	45
		308 (31.4)	1738 (177.2)	1848 (188.4)	77.0				70
		431 (44.0)	1663 (169.6)	1817 (185.3)	66.0			20	45
		308 (31.4)	1738 (177.2)	1848 (188.4)	75.0				70



Order

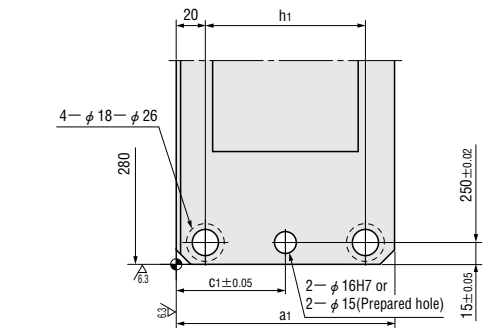
Catalog No. **150** — **20** — **45**  
**LGDCA**

# STANDARD DIE MOUNT CAM UNITS — DRILLED DOWEL HOLES / FINISHED DOWEL HOLES —

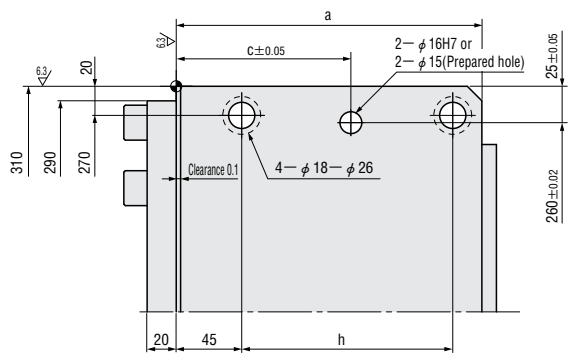
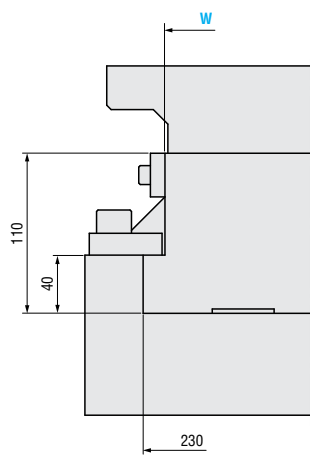
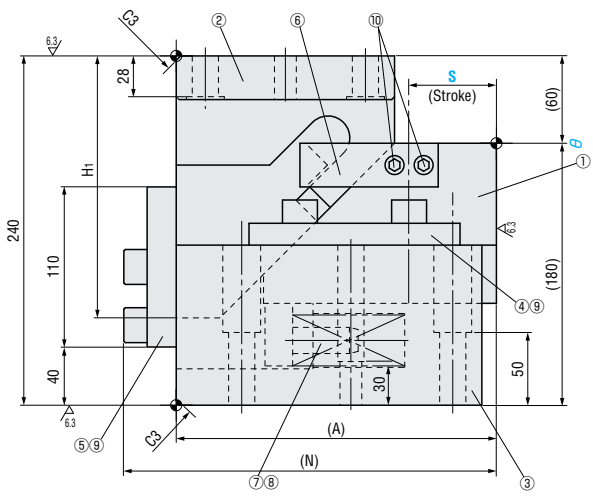
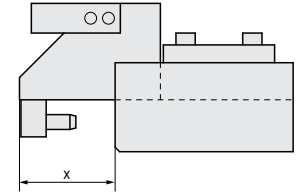
— LGDC • LGDCA —

— Drilled dowel holes —  
**LGDC200**

— Finished dowel holes —  
**LGCA200**



■ Rear removal space



W	$\theta$	S	A	H <sub>1</sub>	N	a	a <sub>1</sub>	c	c <sub>1</sub>	h	h <sub>1</sub>	x
200	00	40	200	160	236	200	130	110	65	135	90	125
		60	220	180	256	210	150	120	75	145	110	115

Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	Stroke S
Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
78.5 (8.0)	117.7 (12.0)	461 (47.0)	2477 (252.6)	2765 (281.9)	82.0	— Drilled dowel holes — <b>LGDC</b> — Finished dowel holes — <b>LGDCA</b>	200	00	40
		499 (50.9)	2611 (266.3)	2803 (285.8)	84.0				60



Order

Catalog No. **LGDCA**    **W** 200 —  **$\theta$**  00 — **S** 60



W	$\theta$	S	A	H <sub>1</sub>	N	W <sub>1</sub>	a	a <sub>1</sub>	b	b <sub>1</sub>	c	c <sub>1</sub>	f	f <sub>1</sub>	h	h <sub>1</sub>	k	$\ell$	x
250	00	40	210	170	246	280	200	140	360	330	105	70	310	300	135	100	320	340	135
		60	230	190	266		220	160			125	80			155	120			115
300		40	210	170	246	330	200	140	410	380	105	70	360	350	135	100	370	390	135
		60	230	190	266		220	160			125	80			155	120			115

Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	Stroke S
Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
98.1 (10.0)	147.1 (15.0)	602 (61.4)	3238 (330.2)	3614 (368.6)	106.0	— Drilled dowel holes — <b>LGDC</b> — Finished dowel holes — <b>LGDCA</b>	250	00	40
		651 (66.4)	3407 (347.4)	3657 (372.9)	127.0				60
117.7 (12.0)	176.5 (18.0)	602 (61.4)	3238 (330.2)	3614 (368.6)	106.0		300		40
		651 (66.4)	3407 (347.4)	3657 (372.9)	128.0				60



Order

Catalog No. **W** —  **$\theta$**  — **S**  
**LGDCA**    **250** — **00** — **60**





W	$\theta$	S	N	W <sub>1</sub>	b	e	f	k	k <sub>0</sub>	$\ell$	t
400	00	60	356	435	525	112.5	300	200	142.5	505	20
500			361	535	625	162.5			192.5	605	25
600				635	725		400	300	705		

Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	Stroke S
Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
137.3 (14.0)	205.9 (21.0)	301 (30.7)	8573 (874.2)	9325 (950.9)	203.0	— Drilled dowel holes — <b>LGDC</b> — Finished dowel holes — <b>LGDCA</b>	400	00	60
					237.0		500		
					279.0		600		



Order

Catalog No. **LGDCA**    W **500**    —     $\theta$  **00**    —    S **60**



Alterations

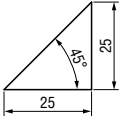
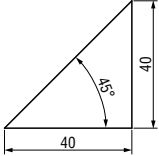
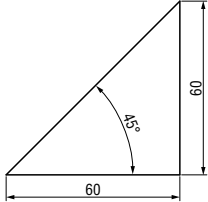
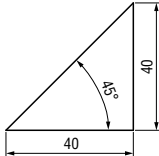
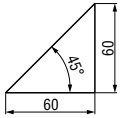
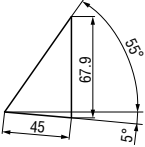
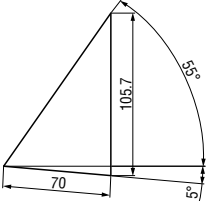
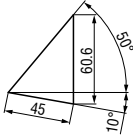
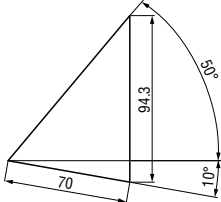
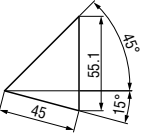
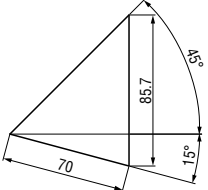
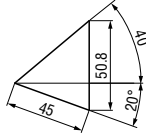
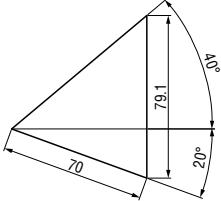
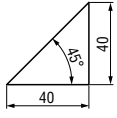
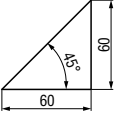
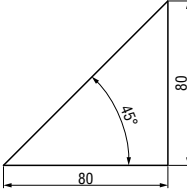
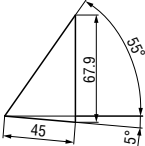
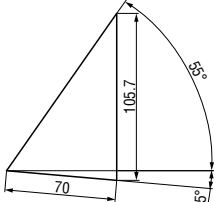
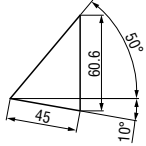
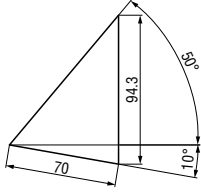
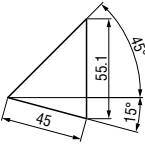
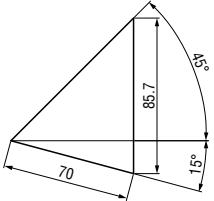
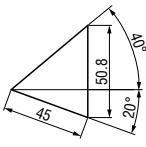
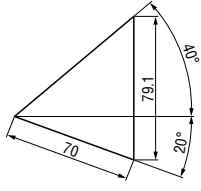
Catalog No. **LGDCA**    W **600**    —     $\theta$  **00**    —    S **60**    —    (K) **K**


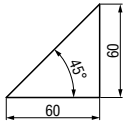
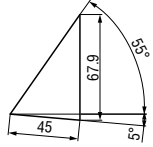
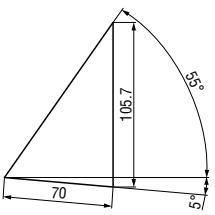
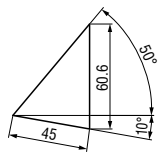
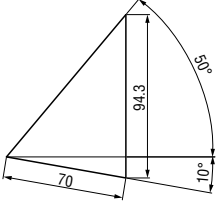
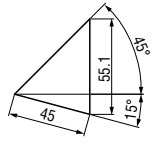
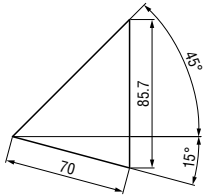
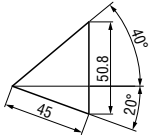
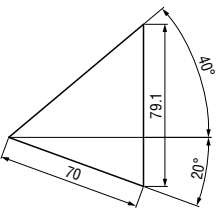
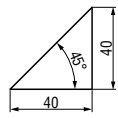
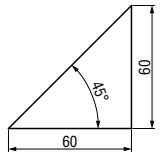
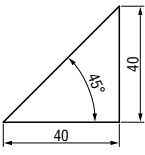
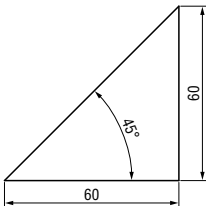
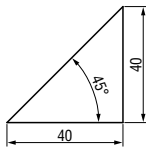
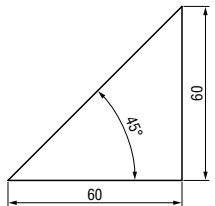
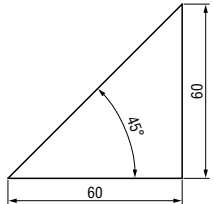
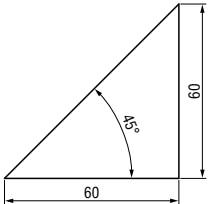
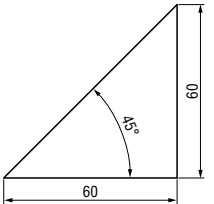
Alteration	Code	Spec.
	<b>K</b>	<p>Add locating key (With 1 hexagon socket head cap screw M8×15)</p>

# STANDARD DIE MOUNT CAM UNITS — DRILLED DOWEL HOLES / FINISHED DOWEL HOLES —

— LGDC • LGDCA — CAM DIAGRAM

■ LGDC/LGDCA

<p><b>52-00-25</b></p> 	<p><b>52-00-40</b></p> 	<p><b>52-00-60</b></p> 	<p><b>65-00-40</b></p> 
<p><b>65-00-60</b></p> 	<p><b>65-05-45</b></p> 	<p><b>65-05-70</b></p> 	<p><b>65-10-45</b></p> 
<p><b>65-10-70</b></p> 	<p><b>65-15-45</b></p> 	<p><b>65-15-70</b></p> 	<p><b>65-20-45</b></p> 
<p><b>65-20-70</b></p> 	<p><b>100-00-40</b></p> 	<p><b>100-00-60</b></p> 	<p><b>100-00-80</b></p> 
<p><b>100-05-45</b></p> 	<p><b>100-05-70</b></p> 	<p><b>100-10-45</b></p> 	<p><b>100-10-70</b></p> 
<p><b>100-15-45</b></p> 	<p><b>100-15-70</b></p> 	<p><b>100-20-45</b></p> 	<p><b>100-20-70</b></p> 

<p><b>150-00-40</b></p> 	<p><b>150-00-60</b></p> 	<p><b>150-05-45</b></p> 	<p><b>150-05-70</b></p> 
<p><b>150-10-45</b></p> 	<p><b>150-10-70</b></p> 	<p><b>150-15-45</b></p> 	<p><b>150-15-70</b></p> 
<p><b>150-20-45</b></p> 	<p><b>150-20-70</b></p> 	<p><b>200-00-40</b></p> 	<p><b>200-00-60</b></p> 
<p><b>250-00-40</b></p> 	<p><b>250-00-60</b></p> 	<p><b>300-00-40</b></p> 	<p><b>300-00-60</b></p> 
<p><b>400-00-60</b></p> 	<p><b>500-00-60</b></p> 	<p><b>600-00-60</b></p> 	

# STANDARD DIE MOUNT CAM UNITS — DRILLED DOWEL HOLES / FINISHED DOWEL HOLES —

— LGDC · LGDCA — COMPONENTS TABLE

## ■ LGDC/LGDCA52

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Cam Upper Plate	Bronze with Graphite	2
⑤	Stop Plate	SS400	1
⑥	Positive Return Strap	S45C	1
⑦	Spring Guide Pin	S45C	2
⑧	Coil Spring	$\phi 20 \times 70$ (S=25) $\phi 20 \times 100$ (S=40) $\phi 20 \times 150$ (S=60)	2
⑨	Cap Screw	M8 $\times$ 25	4
⑩	Cap Screw	M8 $\times$ 20	1
⑪	Cap Screw	M8 $\times$ 30	4

## ■ LGDC/LGDCA65 ( $\theta=00$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Cam Upper Plate	Bronze with Graphite	2
⑤	Stop Plate	SS400	1
⑥	Positive Return Strap	S45C	1
⑦	Spring Guide Pin	S45C	2
⑧	Coil Spring	$\phi 22 \times 100$ (S=40) $\phi 22 \times 150$ (S=60)	2
⑨	Cap Screw	M10 $\times$ 30	8
⑩	Cap Screw	M8 $\times$ 20	1

## ■ LGDC/LGDCA65 ( $\theta=05-20$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Cam Upper Plate	Bronze with Graphite	2
⑤	Stop Plate	SS400	1
⑥	Positive Return Strap	S45C	1
⑦	Spring Guide Pin	S45C	2
⑧	Coil Spring	$\phi 22 \times 125$ (S=45) $\phi 25 \times 175$ (S=70)	2
⑨	Cap Screw	M10 $\times$ 30	10
⑩	Cap Screw	M8 $\times$ 20	1

## ■ LGDC/LGDCA100 ( $\theta=00$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Cam Upper Plate	Bronze with Graphite	2
⑤	Stop Plate	SS400	1
⑥	Positive Return Strap	S45C	1
⑦	Spring Guide Pin	S45C	2
⑧	Coil Spring	$\phi 27 \times 100$ (S=40) $\phi 27 \times 150$ (S=60) $\phi 30 \times 200$ (S=80)	2
⑨	Cap Screw	M12 $\times$ 35	8
⑩	Cap Screw	M8 $\times$ 30	2

## ■ LGDC/LGDCA100 ( $\theta=05-20$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Cam Upper Plate	Bronze with Graphite	2
⑤	Stop Plate	SS400	1
⑥	Positive Return Strap	S45C	2
⑦	Spring Guide Pin	S45C	2
⑧	Coil Spring	$\phi 27 \times 125$ (S=45) $\phi 27 \times 175$ (S=70)	2
⑨	Cap Screw	M12 $\times$ 35	8
⑩	Cap Screw	M8 $\times$ 25	2

## ■ LGDC/LGDCA150 ( $\theta=00$ )

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Cam Upper Plate	Bronze with Graphite	2
⑤	Stop Plate	SS400	1
⑥	Positive Return Strap	S45C	1
⑦	Spring Guide Pin	S45C	2
⑧	Coil Spring	$\phi 35 \times 100$ (S=40) $\phi 35 \times 150$ (S=60)	2
⑨	Cap Screw	M16 $\times$ 45	8
⑩	Cap Screw	M8 $\times$ 30	2

■ LGDC/LGDC150 (θ=05-20)

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Cam Upper Plate	Bronze with Graphite	2
⑤	Stop Plate	SS400	1
⑥	Positive Return Strap	S45C	2
⑦	Spring Guide Pin	S45C	2
⑧	Coil Spring	φ 35×125 (S=45) φ 35×175 (S=70)	2
⑨	Cap Screw	M16×45	8
⑩	Cap Screw	M8×25	2

■ LGDC/LGDC200

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Stop Plate	S45C	1
⑥	Positive Return Strap	S45C	2
⑦	Spring Guide Pin	S45C	3
⑧	Coil Spring	φ 35×100 (S=40) φ 35×150 (S=60)	3
⑨	Cap Screw	M16×45	10
⑩	Cap Screw	M8×30	4

■ LGDC/LGDC250

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Stop Plate	S45C	1
⑥	Positive Return Strap	S45C	2
⑦	Spring Guide Pin	S45C	3
⑧	Coil Spring	φ 40×100 (S=40) φ 40×150 (S=60)	3
⑨	Cap Screw	M16×45	10
⑩	Cap Screw	M8×30	4

■ LGDC/LGDC300

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Stop Plate	S45C	1
⑥	Positive Return Strap	S45C	2
⑦	Spring Guide Pin	S45C	3
⑧	Coil Spring	φ 40×100 (S=40) φ 40×150 (S=60)	3
⑨	Cap Screw	M16×45	12
⑩	Cap Screw	M8×30	4

■ LGDC/LGDC400

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Stop Plate	S45C	1
⑥	Spring Stopper	S45C	2
⑦	Spring Guide Pin	S45C	4
⑧	Positive Return Strap	S45C	1
⑨	Coil Spring	φ 60×150	4
⑩	Side Wear Plate	MWF48—125	4
⑪	Stopper	Urethane	3
⑫	Cap Screw	M16×55	16
⑬	Cap Screw	M10×30	18
⑭	Dowel Pin	φ 10×60	4
⑮	Positive Return Strap	S45C	1

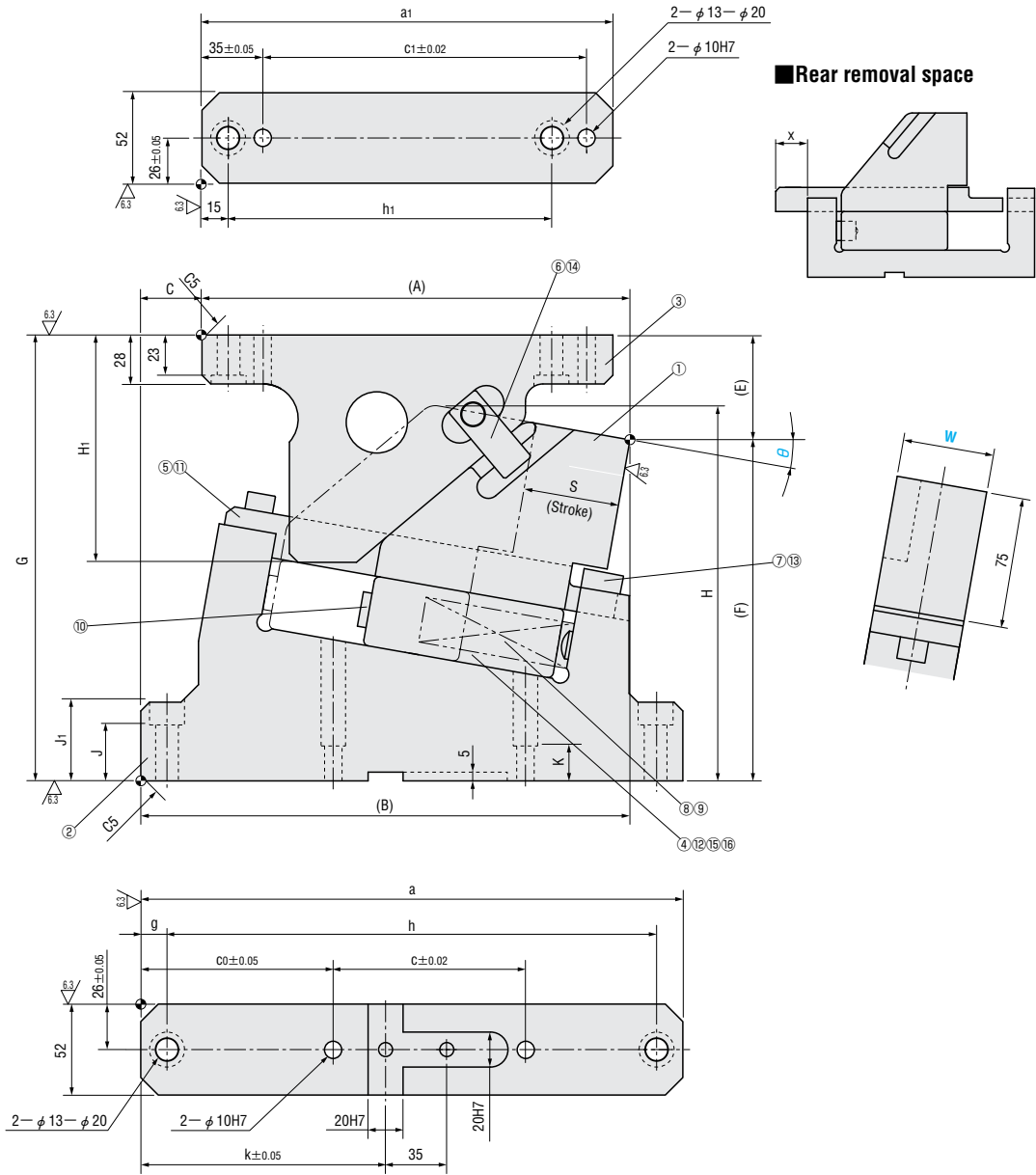
■ LGDC/LGDC500,600

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Base	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Stop Plate	S45C	1
⑥	Spring Stopper	S45C	2
⑦	Spring Guide Pin	S45C	4
⑧	Positive Return Strap	S45C	1
⑨	Coil Spring	φ 60×150	4
⑩	Side Wear Plate	MWF48—125	4
⑪	Stopper	Urethane	5
⑫	Cap Screw	M16×45 (W=500) M16×55 (W=600)	17
⑬	Cap Screw	M10×30	18
⑭	Dowel Pin	φ 10×60	4
⑮	Positive Return Strap	S45C	1

# COMPACT DIE MOUNT CAM UNITS

— LGDCC —

LGDCC52



Components table P.193

W	$\theta$	S	A	B	C	E	F	G	H	H <sub>i</sub>	J	J <sub>i</sub>	K	a	a <sub>1</sub>	c	c <sub>0</sub>	c <sub>1</sub>	g	h	h <sub>1</sub>	k	x
52	00	55	220	220	0	45	170	215	170	145	14	—	28	235	210	105	65	160	45	145	160	90	26
	05		234.87	269.87	35	59.34	195.66	255	205.8		130	32	45	20	310	110	110	15	280	175	185	140	0
	10		244.75	279.75		59.98	195.02		215.2	223.2										235			
	15		249.51	289.51		40	61.91		193.09	120	240									190			
	20		249.05	304.05	55	80.12	174.88		214.6	35													

Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	Stroke S
Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
19.6 (2.0)	39.2 (4.0)	85 (8.7)	559 (57.0)	607 (61.9)	14.2	LGDC	52	00	55
					18.5				
					19.4				
					20.0				
					19.5				



Order

Catalog No. **W** -  **$\theta$**  - **S**  
LGDC 52 - 00 - 55



Alterations

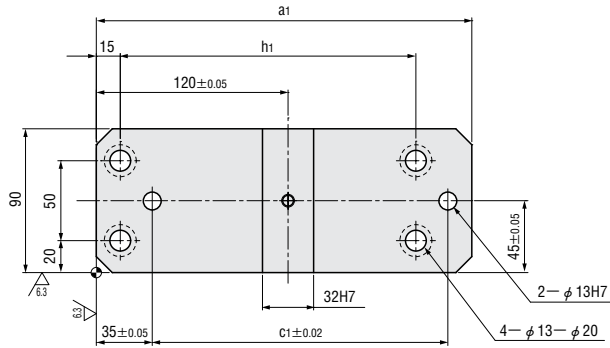
Catalog No. **W** -  **$\theta$**  - **S** - (K · SC · WC)  
LGDC 52 - 00 - 55 - WC

Alterations	Code	Spec.
	<b>K</b>	Add 2 locating keys (With 2 hexagon socket head cap screw M8×15)
	<b>SC</b>	Move forward mounting surface $0 \leq SC \leq 65$ 1mm increment
	<b>WC</b>	Change the width of mounting surface W=52 $\Rightarrow$ W=100

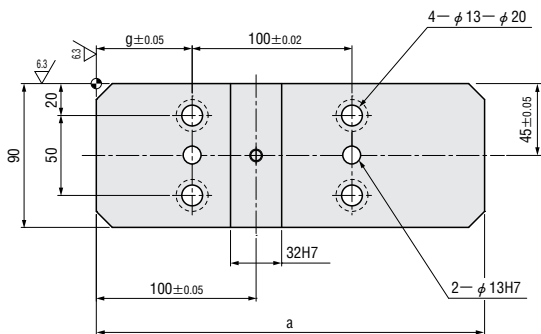
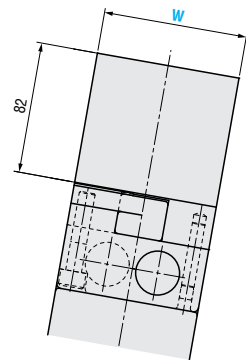
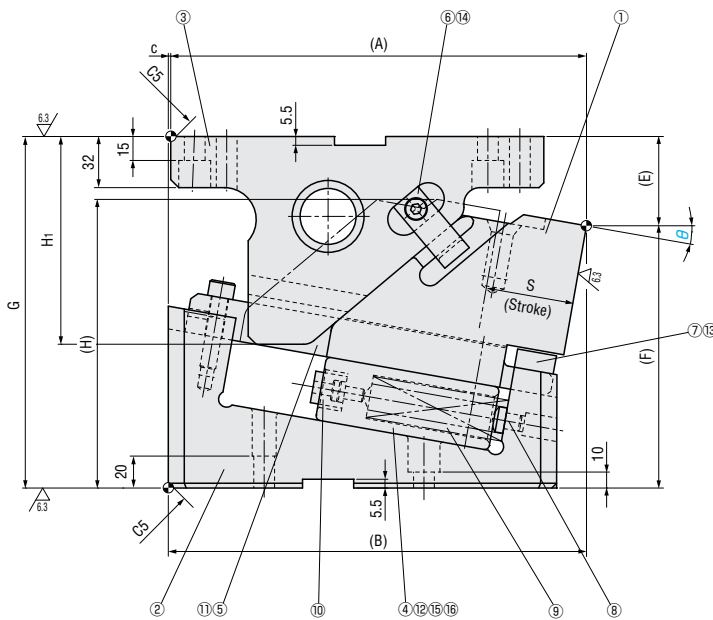
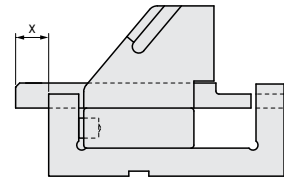
# COMPACT DIE MOUNT CAM UNITS

— LGDCC —

LGDCC90



■ Rear removal space



■ Components table P.193



W	$\theta$	S	A	B	C	E	F	G	H	H <sub>1</sub>	a	a <sub>1</sub>	c <sub>1</sub>	g	h <sub>1</sub>	x
90	00	55	236	236	0	38	182	220	182	145	233	210	160	60	160	30
	05		251.42	251.42		53.76	166.24		174.5		240	225	175		175	23
	10		261.72	261.72		55.86	164.14		180.6	130	243	235	185		185	19
	15		260.82	275.82	15	64.03	160.97	225	188.4	120	248				65	9

Working force KN (ton)		Spring force N (kgf)			Total weight kg	Catalog No.	W	$\theta$	Stroke S
Standard working force (one million cycles)	Allowable working force (300,000 cycles)	Initial pressure	5mm before bottom dead center	Final pressure					
38.2 (3.9)	76.5 (7.8)	171 (17.4)	1119 (114.1)	1213 (123.7)	24.9	LGDCC	90	00	55
					25.9				
					27.3				
					29.3				



Order

Catalog No. **W** -  **$\theta$**  - **S**  
**LGDCC** **90** - **10** - **55**



Alterations

Catalog No. **W** -  **$\theta$**  - **S** - (N · K · WC)  
**LGDCC** **90** - **05** - **55** - **WC120**

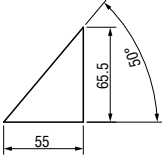
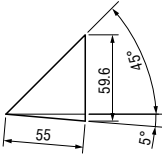
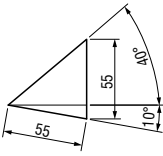
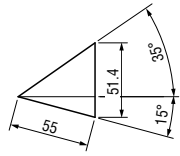
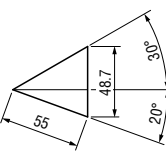
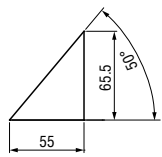
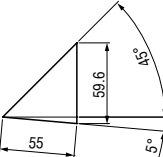
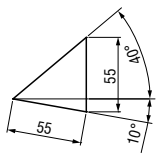
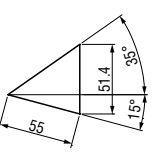
Alterations	Code	Spec.
	<b>N12</b>	Change dowel hole diameter $\phi$ 13H7 $\Rightarrow$ $\phi$ 12H7
	<b>K</b>	Add 2 locating keys (With 2 hexagon socket head cap screws M8×15)
	<b>WC</b>	Change the width of mounting surface W=90 $\Rightarrow$ W=120 or 150 ⚠ Only 120 or 150 can be specified.

# COMPACT DIE MOUNT CAM UNITS

— LGDCC — CAM DIAGRAM COMPONENTS TABLE

Cam diagram

■ LGDCC

<p>52-00-55</p> 	<p>52-05-55</p> 	<p>52-10-55</p> 	<p>52-15-55</p> 
<p>52-20-55</p> 	<p>90-00-55</p> 	<p>90-05-55</p> 	<p>90-10-55</p> 
<p>90-15-55</p> 			

## Components table

### ■ LGDCC52

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250	1
②	Cam Base	FC250	1
③	Cam Driver	FC250 with Graphite	1
④	Spring Guide Block	FC250 with Graphite	1
⑤	Guide Bar	SCM440 with Graphite	1
⑥	Positive Return Strap	S45C	1
⑧	Spring Guide Pin	S45C	1
⑨	Coil Spring	φ 26×150	1
⑫	Bumper	Urethane	1
⑬	Cap Screw	M10×50	1
⑭	Cap Screw	M8×50	4
⑯	Cap Screw	M8×15	1
⑰	Dowel Pin	φ 8×40	2
⑱	Spring Plug	SAE1065 NH8	2

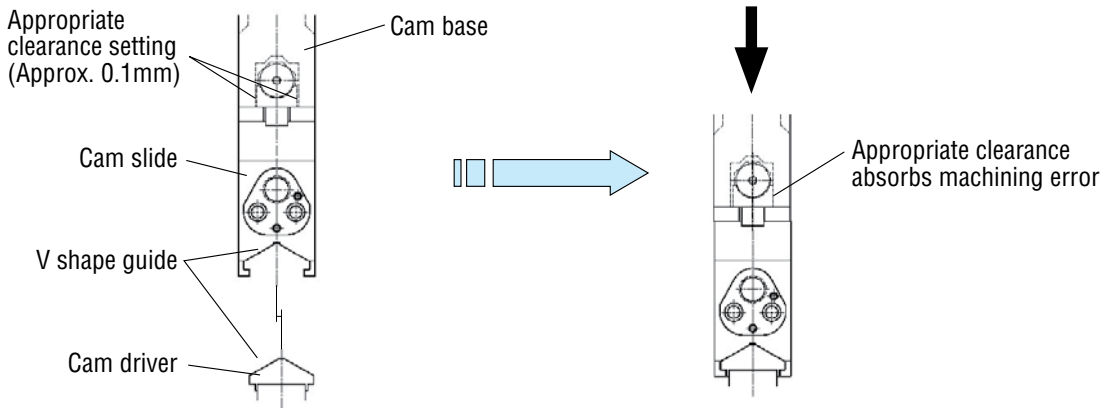
### ■ LGDCC90

No.	Part Name	Material and Remark	Quantity
①	Cam Slide	FC250	1
②	Cam Base	FC250	1
③	Cam Driver	FC250 with Graphite	1
④	Spring Guide Block	FC250 with Graphite	1
⑤	Guide Bar	SCM440 with Graphite	1
⑥	Positive Return Strap	S45C	2
⑧	Spring Guide Pin	S45C	2
⑨	Coil Spring	φ 26×150	2
⑩	Bumper	Urethane	2
⑪	Cap Screw	M10×45	1
⑫	Cap Screw	M10×50	4
⑭	Cap Screw	M8×15	2
⑮	Dowel Pin	φ 8×40	2
⑰	Spring Plug	SAE1065 NH8	2

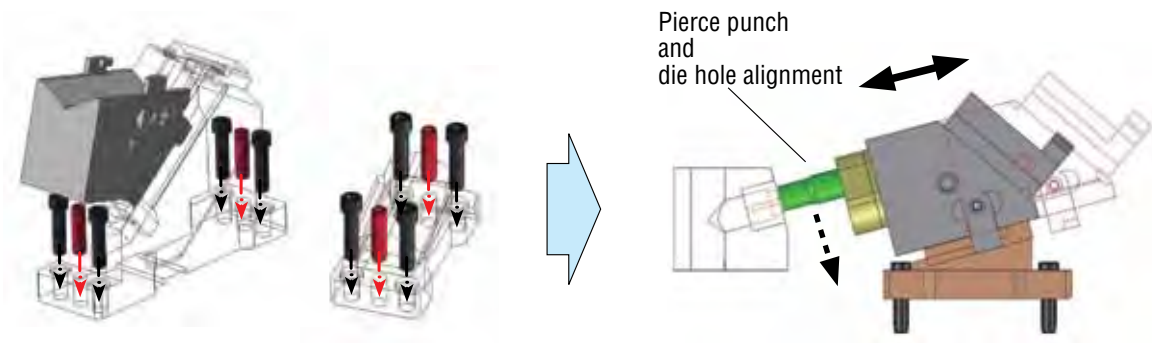
# V GUIDANCE MECHANISM & CAM UNIT ASSEMBLY WORK

## ■ V guidance mechanism

The V guidance mechanism is designed to precisely guide the tool, with a V shape guide for the cam slide and cam driver, and an appropriate guide clearance setting between the cam slide and cam base. Therefore, the cam slide position is determined by the V shape guide of the cam driver, and hence, pierce punch position is always assured.



## ■ Cam unit assembly procedure when there is additional slide clearance



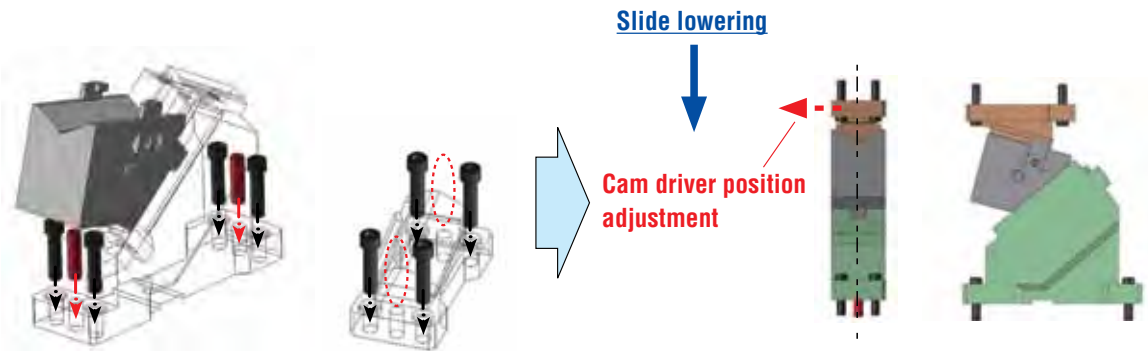
### Cam unit assembly

NC machining of dowel holes for both upper and lower dies and assembly of the cam base and cam driver without position adjustment

### Pierce punch and die hole alignment

Alignment of the pierce punch and die hole with cam slide assembled into cam driver

■ **Cam unit assembly procedure with standard slide clearance**

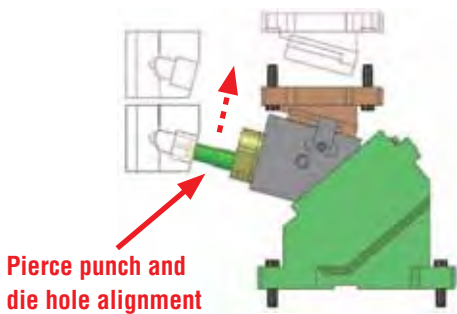


**Cam unit assembly**

NC machining of dowel holes and assembly of cam base for the upper die, and temporary assembly of cam driver for the lower die

**Cam alignment**

Cam driver position adjustment at die spot press



**Pierce punch and die hole alignment**

Pierce punch and die hole alignment at die spot press



**Cam driver assembly**

Finished by machining of dowel holes on the lower die and cam driver and cam driver assembly

## Commitment to Quality & Customer Satisfaction

*Dayton Lamina is a leading manufacturer of tool, die and mold components for the metal-working and plastics industries. As a customer-focused, world-class supplier of choice, we provide the brands, product breadth, distribution network and technical support for all your metal forming needs.*

*Our goal is to give our customers the most innovative and value-added products and services.*



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