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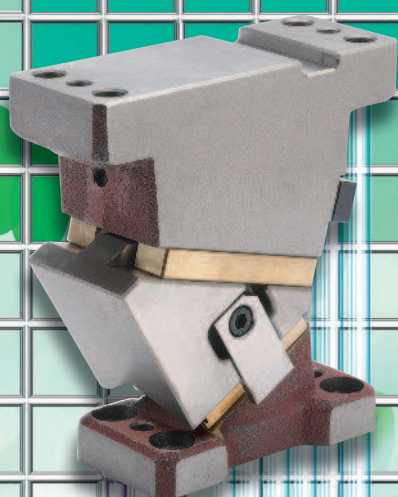
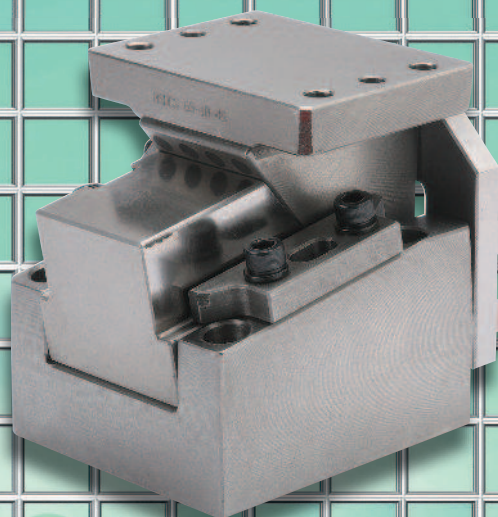
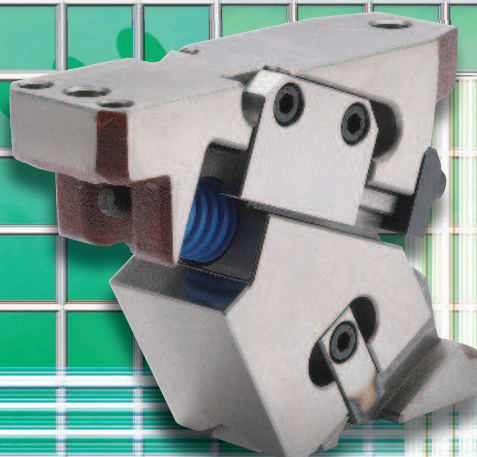
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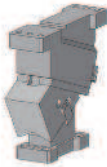
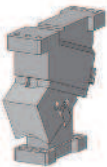
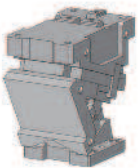
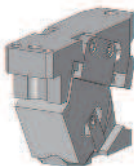
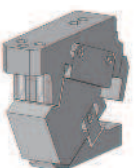
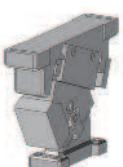
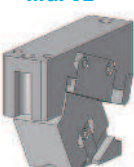


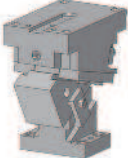
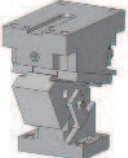
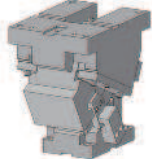
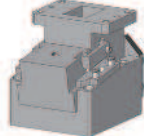
Advanced Technologies

ein Unternehmen der MISUMI Gruppe



CAM UNIT TYPE SUMMARY TABLE

Type	Catalogue No.		Applicable process			Automatic alignment	Mount surface width (mm)	Features and applications
	Type	Page	Pierce	Trim	Flange			
Flying cam	MGFV 	P.14~33	●			With	50-150	Standard flying cam type
	MGFVS 	P.34~43	●			With	80,150	Reinforced acting force type of MGFV Return force is reinforced by twofold spring force Slider material reinforced For machining of high-tensile steel and heavy load pierce
	MGFVW 	P.44~67	●			With	200-600	Wide type; multiple holes can be made at a time by one cam
	MGFVC 	P.68~73	●			With	52	Compact (low height) type; width 52 only
	MGFVA 	P.74~79	●			With	52	Reinforced acting force type of MGFVC Return force is reinforced by spring force of 300kgf (three times as strong as MGFVC) Slider material reinforced For machining of high-tensile steel and heavy load pierce
	MGFVH 	P.80~85	●			With	65	MGFVA acting force reinforced; width: 52→65 Return force is reinforced by spring force of 600kgf (twice as strong as MGFVA) Slider material reinforced For machining of high-tensile steel and heavy load pierce
	MGFVL 	P.86~91	●			With	52	Long stroke type of MGFVC; 1.5 times stroke Used when large relief is required for pad

Type	Catalogue No.		Applicable process			Automatic alignment	Mount surface width (mm)	Features and applications
	Type	Page	Pierce	Trim	Flange			
Flying cam	MGFTT 	P.92~101	●	●	●	W/O	65-200	Not for V shape guide; primarily used for trim and flange Used when three-dimensional shaped blade and punch are mounted
	MGFVT 	P.102~111	●			With	65-200	V shape guide type of MGFTT Replaceable with MGFTT without design change
	MGFLL 	P.112~141	●	●	●	W/O	50-300	High-rigidity structure with a completely thicker wall
	MGFNS 	P.142~165	●	●	●	W/O	70-400	NAAMS standard product High-rigidity structure with a completely thicker wall
Under cam	MGDC MGDCA 	P.166~189	●	●	●	W/O	52-600	Standard under cam type MGDC...Drilled dowel hole MGDCA...Finished dowel hole
	MGDCC 	P.190~195	●			W/O	52,90	Compact (small area) type; width 52 and 90 only

CAM UNITS — GUIDE —

■ Flying cam unit standard categories and specifications

Page	Type	Mounting surface width mm	Machining angle	Allowable acting force KN (ton)	Return spring force N (kgf)	Shut-height mm	Disassembled view No. page
P.14~33	Standard flying cam units for pierce – With automatic alignment – MGFV	50	00-70	39.2(4.0)	981.0-981.2 (100.1)	200	P.8
		65			1186.1-1220.1 (121.0-124.5)	180-200	P.8
		80		78.4(8.0)	1461.2-1623.6 (149.1-165.7)	270	
		150		132.3(13.5)	4607.5(470.2)	270	
P.34~43	Flying cam units for heavy load pierce – With automatic alignment – MGFVS	80	00-70	109.8(11.2)	3250.0(331.4)	270	P.8
		150		185.2(18.9)	9540.0(973.4)	270	
P.44~67	Wide flying cam units for pierce – With automatic alignment – MGFVW	200	00-60	235.2(24.0)	4903.2(499.7)	350	P.9
		300		392.0(40.0)	9806.4(999.4)	350	
		400		490.0(50.0)	9806.4(999.4)	350	
		500		627.2(64.0)	14709.6(1499.0)	350	
		600		784.0(79.9)	19612.8(1998.7)	350	
P.68~73	Compact flying cam units for pierce – With automatic alignment – MGFVC	52	00-80	29.4(3.0)	980.0(100.0)	125-150	P.9
P.74~79	Compact flying cam units for heavy load pierce – With automatic alignment – MGFVA	52	00-60	58.8(6.0)	3110.8(317.2)	160	P.9
P.80~85	Flying cam units for heavy load pierce – With automatic alignment – MGFVH	65	00-75	137.3(14.0)	5257.8-5988.5 (536.1-610.7)	125-150	P.9
P.86~91	Compact long stroke flying cam units for pierce – With automatic alignment – MGFVL	52	00-50	29.4(3.0)	980.0-981.2 (99.9-100.1)	230	P.9

Page	Type	Mounting surface width mm	Machining angle	Allowable acting force KN (ton)	Return spring force N (kgf)	Shut-height mm	Disassembled view No. page
P.92~101	Flying cam units for trim and flange MGFTT	65	00-70	39.2-58.8 (4.0-6.0)	888.8-1139.9 (90.6-116.2)	210	P.10
		100		88.2-98.0 (9.0-10.0)	2740.0-3074.4 (279.5-313.3)	280	
		200		196.2-235.4 (20.0-24.0)	5480.0-6148.8 (559.0-626.6)	280	
P.102~111	V shape guide flying cam units for trim and flange – With automatic alignment – MGFVT	65	00-70	39.2(4.0)	891.0-1137.6 (90.9-116.1)	210	P.10
		100		88.2(9.0)	2562.0-2817.0 (261.4-287.4)	280	
		200		186.2(19.0)	5124.0-5634.0 (522.9-574.9)	280	
P.112~141	Rigid flying cam units MGFL	50	00-65	58.8(6.0)	1097.6-1167.4 (111.7-118.8)	180	P.8
		65	00-60	58.8(6.0)	809.6-834.9 (82.6-85.1)	175	P.8
		80	00-65	98.0(10.0)	1842.4-1914.0 (187.6-194.9)	270	P.8
		150		294.0(30.0)	7022.4(715.9)	355	P.10
		200		294.0(30.0)	7022.4(715.9)	355	
		300		588.0(60.0)	14044.8(1431.8)	355	
P.142~165	NAAMS standard flying cam units MGFNS	70	00-60	98.1(10.0)	Gas spring 2350.0(239.6) Coil spring 578.2-657.0 (59.0-67.0)	225	P.11
		80		166.7(17.0)	Gas spring 2350.0(239.6) Coil spring 993.6-1223.6 (101.3-124.8)	275	
		165		294.2(30.0)	Gas spring 3430.0(349.8) Coil spring 2694.0 (274.7)	300	P.9
		200		353.0(36.0)	Gas spring 6125.0(624.6) Coil spring 4494.0 (458.3)	300	
		300		451.1(46.0)	Gas spring 10668.0(1087.8) Coil spring 8015.4-9198.0 (817.9-937.9)	375	
		400		451.1(46.0)	Gas spring 10668.0(1087.8) Coil spring 8015.4-9198.0 (817.9-937.9)	375	

CAM UNITS — GUIDE —

■ Under cam unit standard categories and specifications

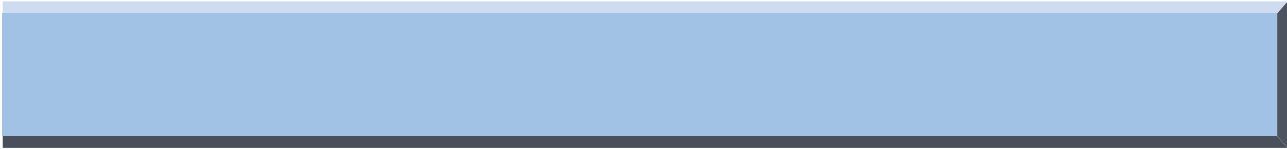
Page	Type	Mounting surface width mm	Machining angle	Stroke mm	Allowable acting force KN (ton)	Return spring force N (kgf)	Shut-height mm	Disassembled view No. page
P.166~189	Standard under cam units — Drilled dowel hole — Finished dowel hole — MGDC MGDCA	52	00	25-60	29.4(3.0)	594.0-613.2 60.7-62.8	140	P.11
		65	00-20	40-70	39.2(4.0)	743.4-974.4 75.5-99.2	160-170	
		100		40-80	58.8-78.4 (6.0-8.0)	1109.2-1306.4 113.3-132.5	200	
		150		40-70	88.2-98.0 (9.0-10.0)	1805.4-1854.2 184.1-189.8	220-230	
		200	00	40-60	117.6(12.0)	2764.8-2781.3 282.2-284.7	240	
		250			147.0(15.0)	3614.4-3657.3 368.6-372.3	270	
		300			176.4(18.0)	3614.4-3657.3 368.6-372.3	270	
		400		60	205.8(21.0)	9349.6 952.3	250	P.12
		500						
		600						
P.190~195	Compact under cam units MGDCC	52	00-20	55	39.2(4.0)	606.7(62.1)	215-255	P.12
		90	00-15		76.4(7.8)	1213.4(124.2)	220-225	

■ Relationship of plate thickness and hole size to punching force

Units: KN (ton)

Punch diameter \ Plate 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)
Φ10	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)
Φ13	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)
Φ16	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)
Φ20	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)
Φ25	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)
Φ32	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)
Φ38	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)

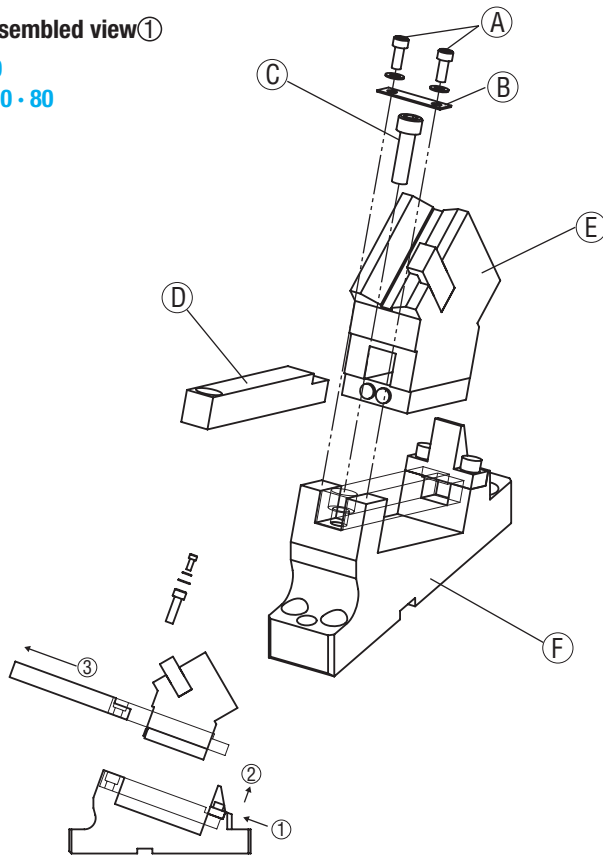
● Punching force KN(ton) = Punch periphery(mm)×Plate thickness(t)×Shear stress 392N/mm²(40kgf/mm²) ÷1000



CAM UNITS — DISASSEMBLY FEATURE —

■ Disassembled view①

MGFV50
MGFLL50 · 80



How to remove the guide bar

<Disassembly procedures>

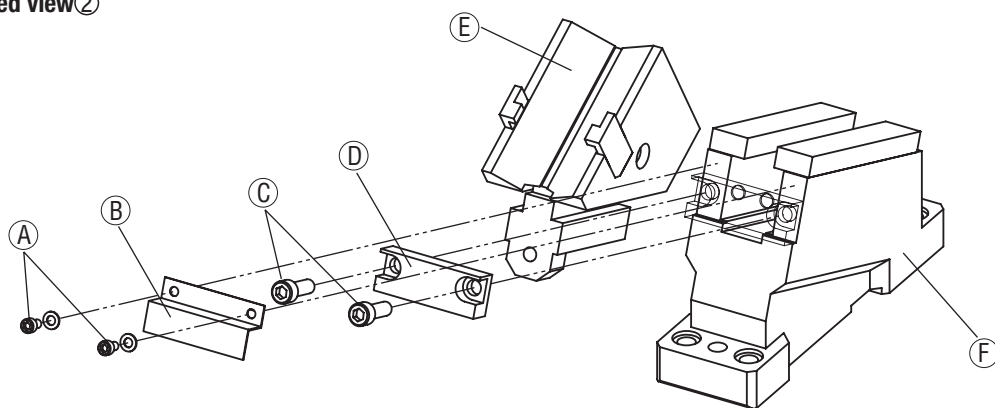
- Remove bolts (A), then remove the safety plate (B).
- Remove the bolt (C).
- Slide the guide bar (D) backward to remove it from the cam holder (F) together with the cam slider (E).

<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 grease before assembly.
- * Fully tighten the bolts.

■ Disassembled view②

MGFV65-150
MEVN65-150
MGFVS
MEVSN
MGFLL65
MEFLL65



<Disassembly procedures>

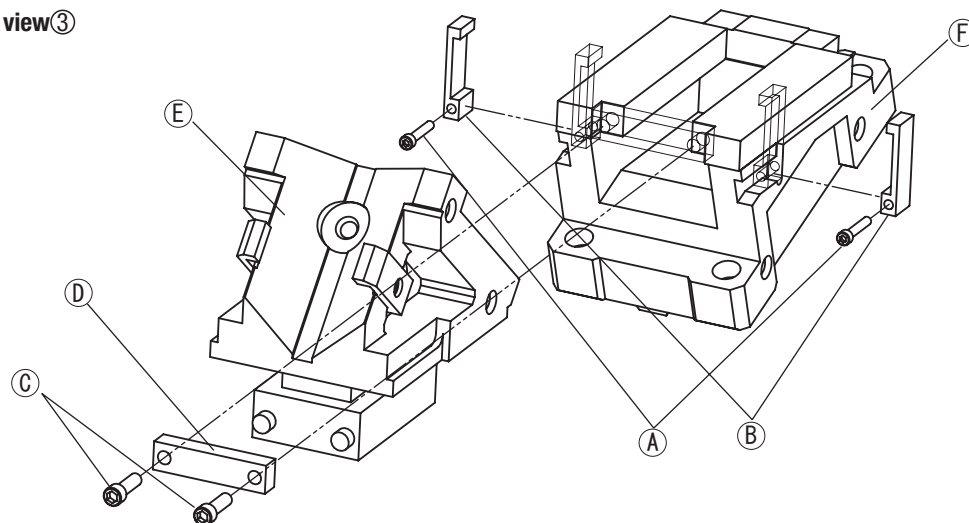
- Remove bolts (A), then remove the safety plate (B).
- Remove bolts (C), then remove the stopper plate (D).
- Slide the cam slider (E) backward to remove it from the cam holder (F).

<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 grease before assembly.
- * Fully tighten the bolts.

■Disassembled view③

MGFVW
MGFNS165-400



<Disassembly procedures>

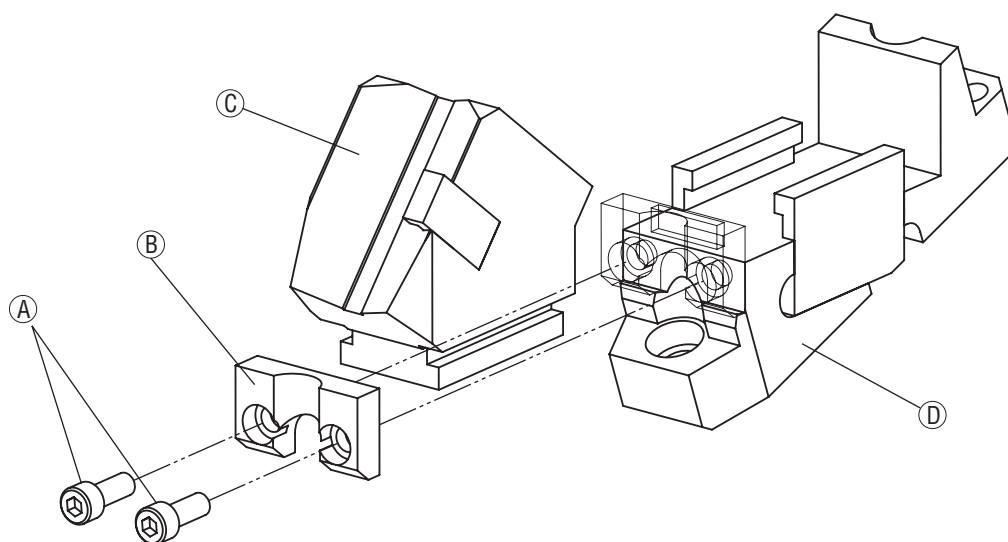
- Remove bolts (A), then remove safety plates (B).
- Remove bolts (C), then remove the stopper plate (D).
- Slide the cam slider (E) backward to remove it from the cam holder (F).

<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 grease before assembly.
- ※ Fully tighten the bolts.

■Disassembled view④

MGFVC
MGFVA
MGFVH
MGFVL



<Disassembly procedures>

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

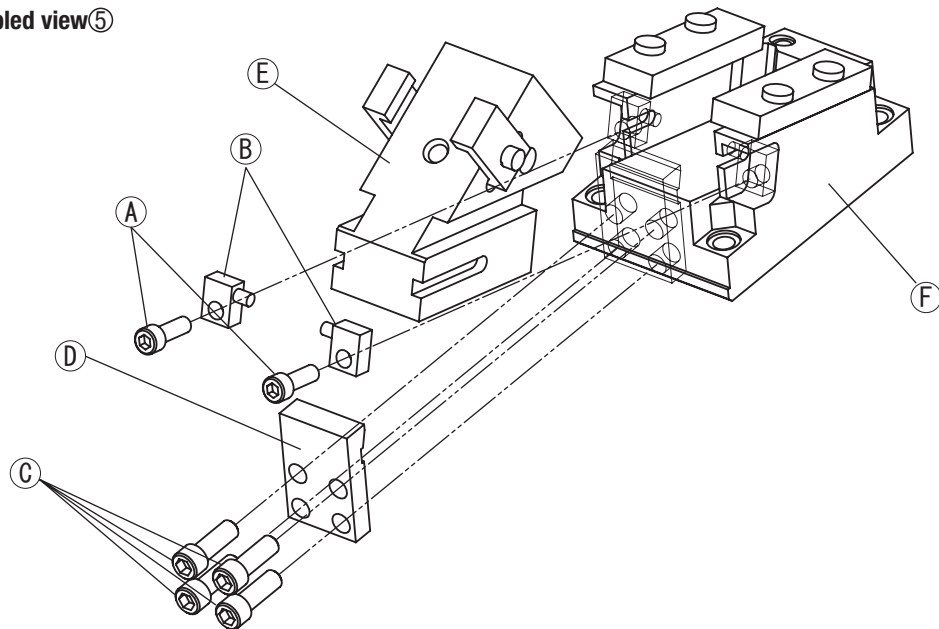
<Reassembly procedures>

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

CAM UNITS — DISASSEMBLY FEATURE —

■Disassembled view⑤

MGFTT
MGFVT



<Disassembly procedures>

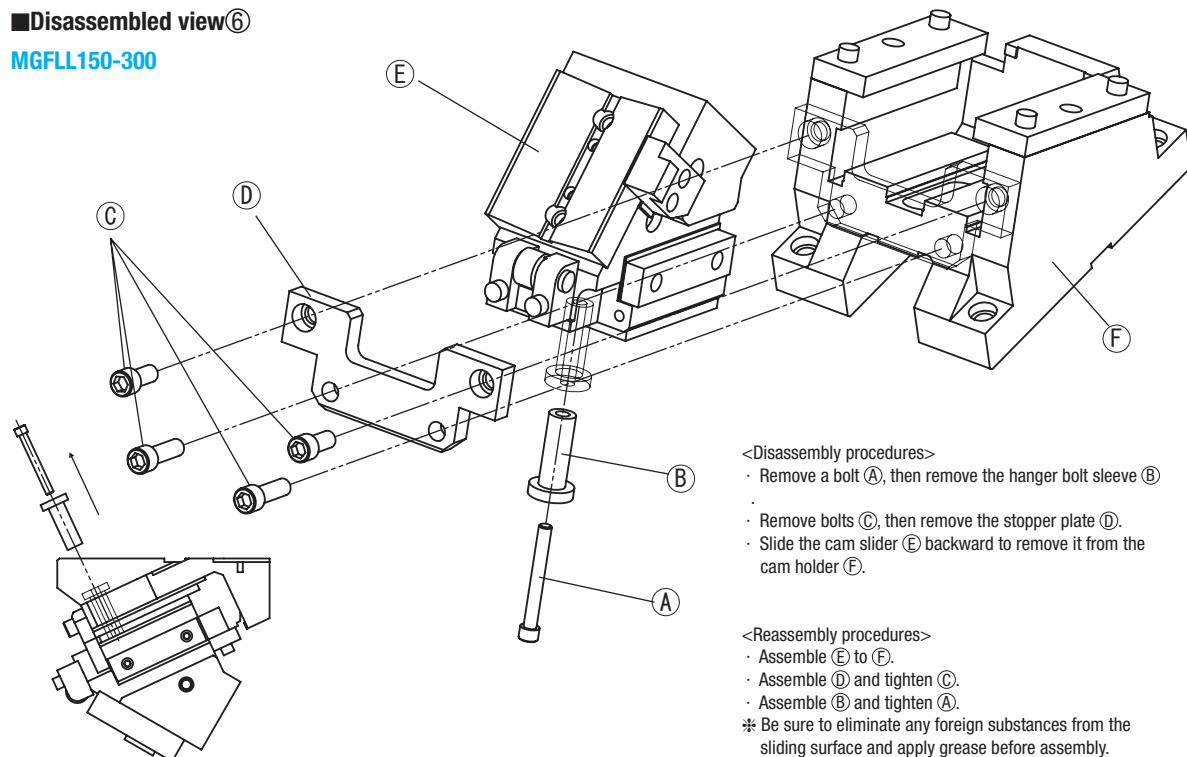
- Remove bolts (A), then remove safety plates (B).
- Remove bolts (C), then remove the stopper plate (D).
- Slide the cam slider (E) backward to remove it from the cam holder (F).

<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 grease before assembly.
- ※ Fully tighten the bolts.

■Disassembled view⑥

MGFLL150-300



<Disassembly procedures>

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

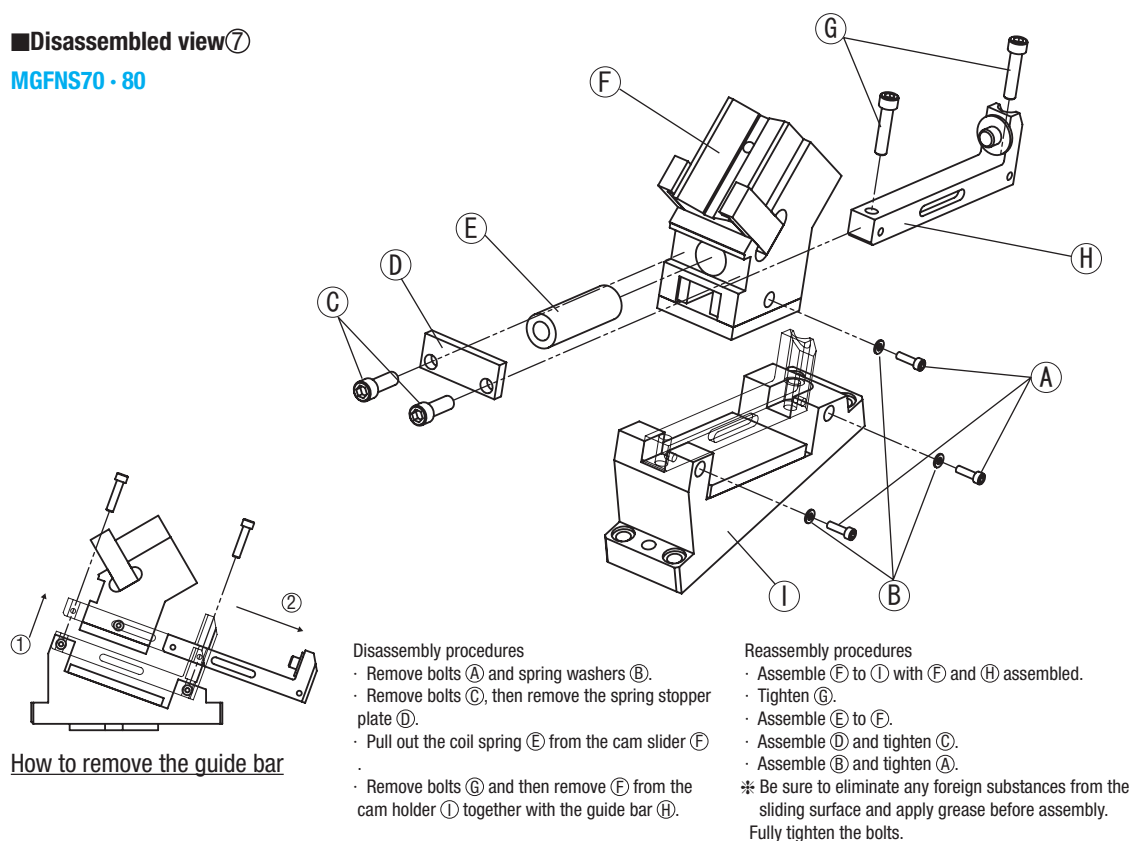
<Reassembly procedures>

- 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 grease before assembly.
- ※ Fully tighten the bolts.

How to remove the hanger bolt sleeve

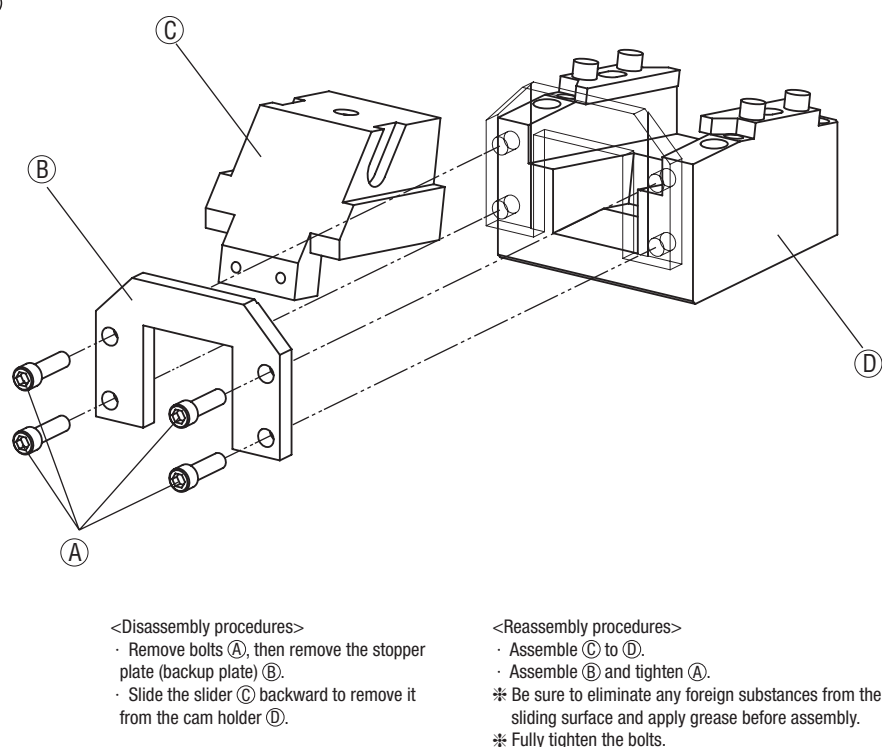
■Disassembled view⑦

MGFNS70・80



■Disassembled view⑧

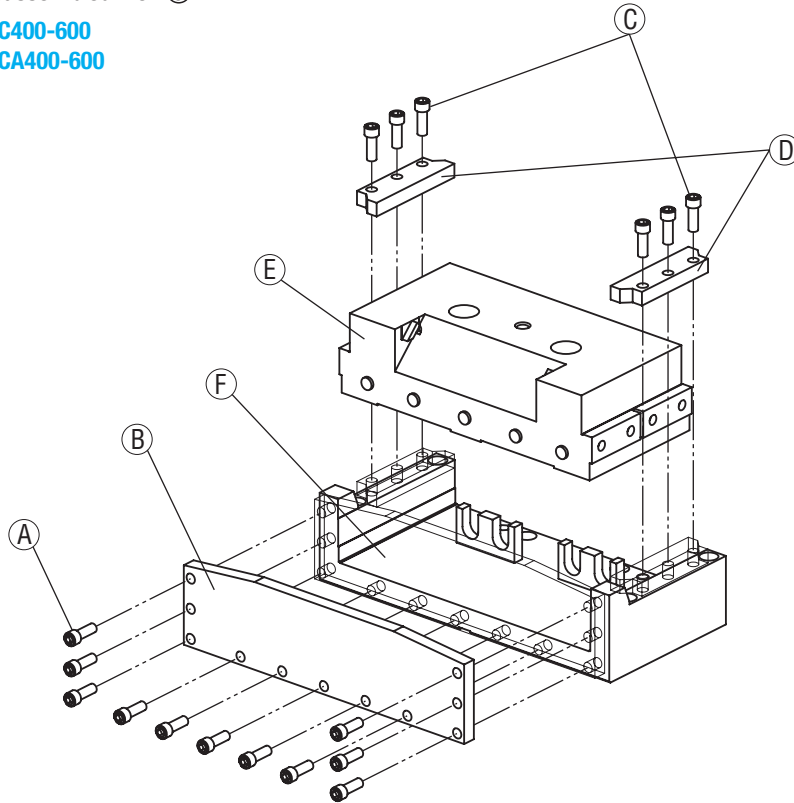
MGDC52-300
MGDCA52-300



CAM UNITS — DISASSEMBLY FEATURE —

■Disassembled view⑨

MGDC400-600
MGDCA400-600

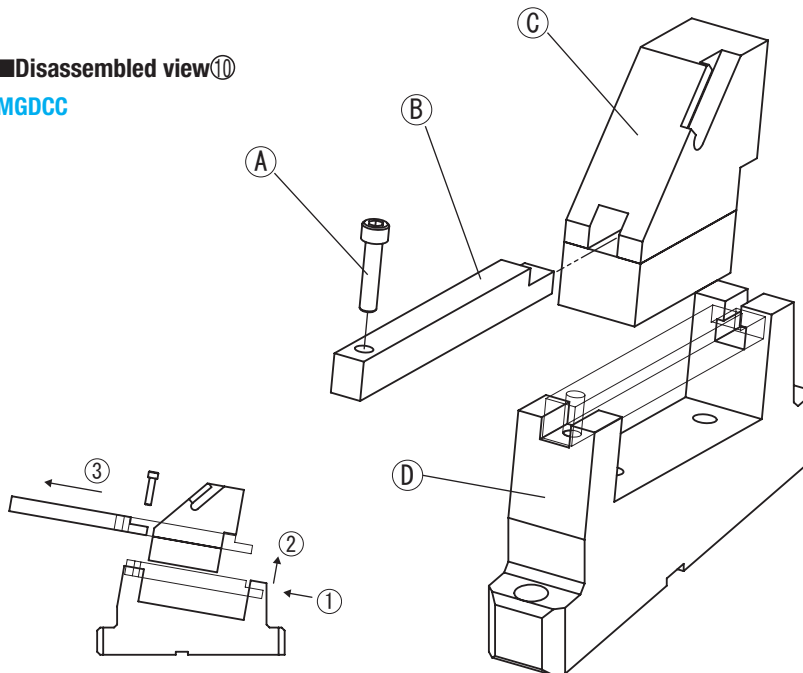


- <Disassembly procedures>
- Remove bolts (A), then remove the backup plate (B).
 - Remove bolts (C), then remove upper plates (D).
 - Slide the slider (E) upward to remove it from the cam holder (F).

- <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 grease before assembly.
- * Fully tighten the bolts.

■Disassembled view⑩

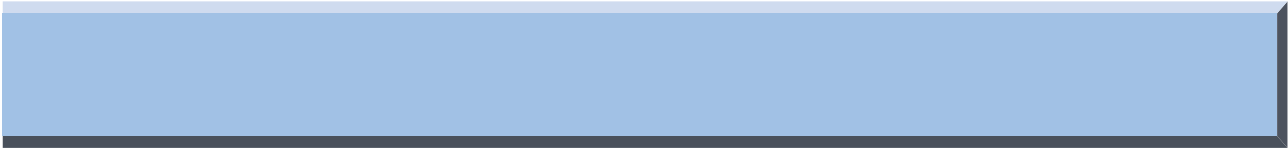
MGDCC



How to remove the guide bar

- <Disassembly procedures>
- Remove the bolt (A).
 - Slide the guide bar (B) backward to remove it from the cam holder (D) together with the cam slider (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 grease before assembly.
- * Fully tighten the bolts.

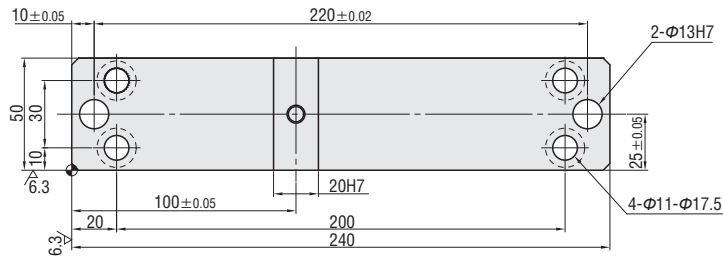


STANDARD FLYING CAM UNITS FOR PIERCE

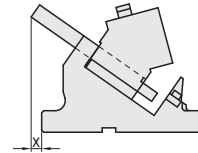
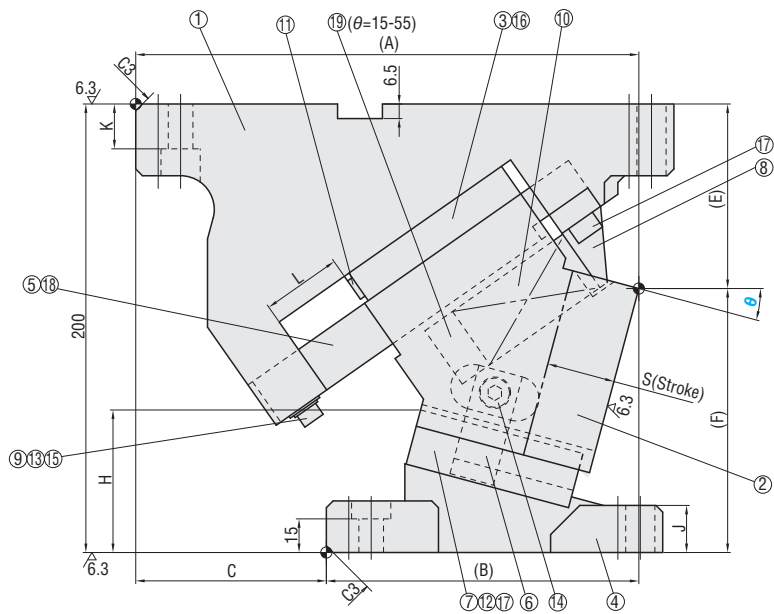
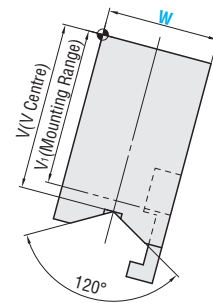
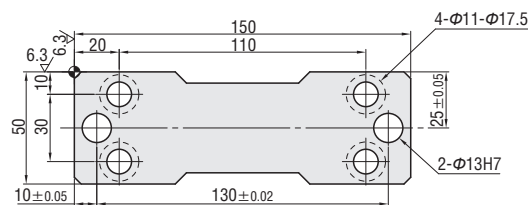
— MGFV —



— With automatic alignment —
MGFV50 ($\theta=00-55$)



■ Rear removal space



■ Components table P.32

W	θ	A	B	C	E	F	H	J	K	L	V	V ₁	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	21		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			30			
	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
30.2	19.6 (2.0)	39.2 (4.0)	58.9(6.0)	981.0 (100.1)	12.7	– With automatic alignment – MGFV	50	00	
30.5			137.3(14.0)		12.3			05	
30.3			215.8(22.0)		11.8			10	
30.5			98.1(10.0)	981.2 (100.1)	11.8			15	
30.4			171.7(17.5)		11.5			20	
30.0			163.5 (16.7)		981.0 (100.1)			11.3	25
32.6								11.1	30
35.4								10.9	35
38.6								10.9	40
42.3								10.6	45
46.7								10.6	50
52.1								10.8	



Order

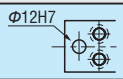
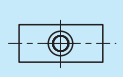
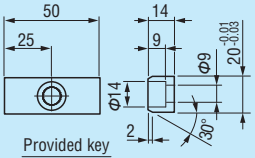
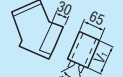
Catalogue No. **MGFV** W **50** – θ **40**



AI



Catalogue No. **MGFV** W **50** – θ **40** – (N12-K--etc.) **N12**

Alteration	Code	Spec.
	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$
	K	Addition of locating key (With 1 hexagon socket head cap screw M8-15) 
	SC	Forward relocation of mount surface $1 \leq SC \leq 30$ 1mm increments
	WC	Mount surface width change W=50 $\Rightarrow$ W=65

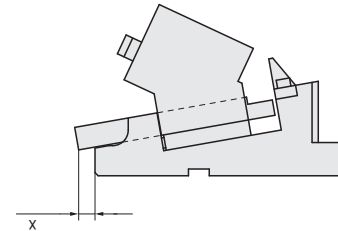
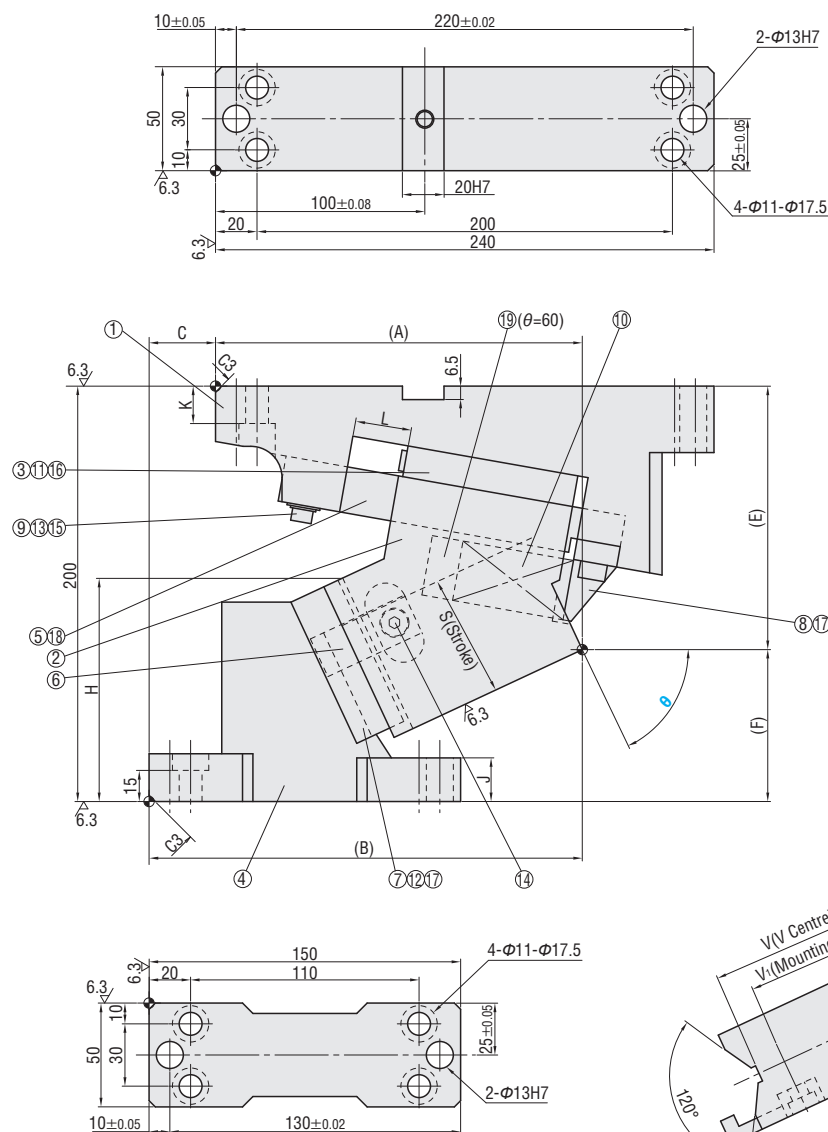
STANDARD FLYING CAM UNITS FOR PIERCE

— MGFV —



— With automatic alignment —
MGFV50 ($\theta=60-70$)

■ Rear removal space



■ Components table ■ P.32

W	θ	A	B	C	E	F	H	J	K	L	V	V ₁	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
59.1	19.6 (2.0)	39.2 (4.0)	163.5 (16.7)	981.0 (100.1)	11.2	– With automatic alignment – MGFV	50	60
58.3			299.8 (30.6)		11.6			65
57.6			226.4 (23.1)	981.2 (100.1)	12.0			70



Order

Catalogue No.	W	—	θ
MGFV	50	—	65

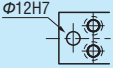
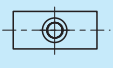
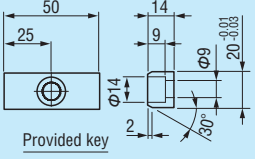
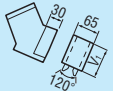


AI



Catalogue No.	W	—	θ	—	(N12-K...etc.)
MGFV	50	—	65	—	K

t

Alteration	Code	Spec.
	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$
	K	Addition of locating key (With 1 hexagon socket head cap screw M8-15) 
	SC	Forward relocation of mount surface $1 \leq SC \leq 30$ 1mm increments
	WC	Mount surface width change $W=50 \Rightarrow W=65$



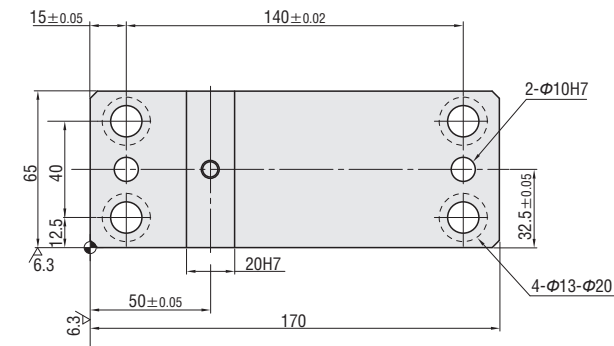
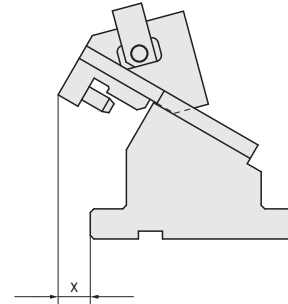
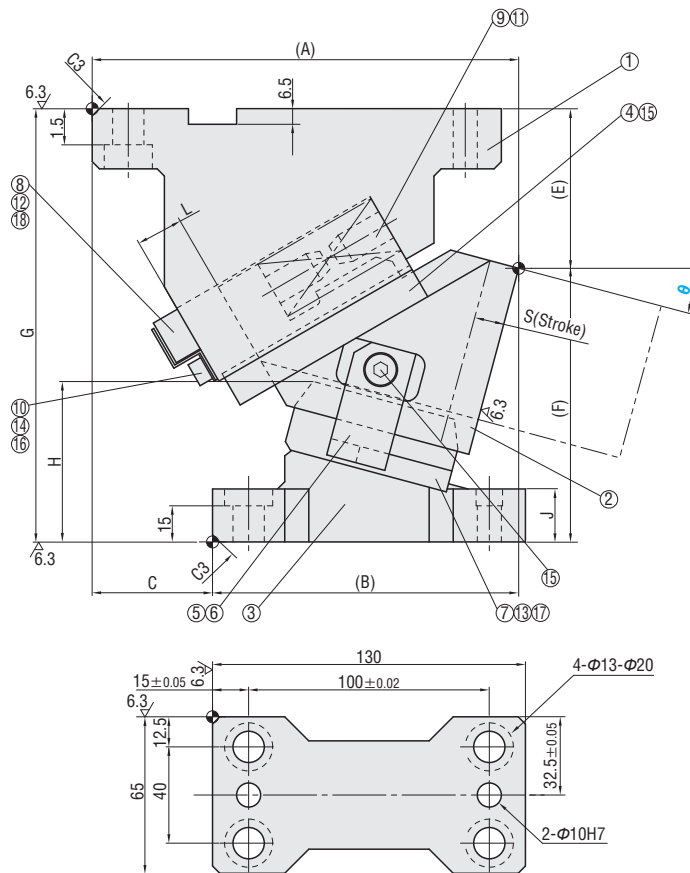
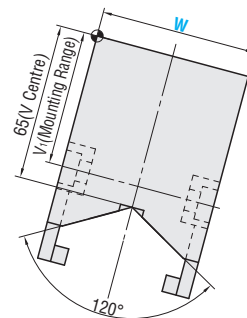
STANDARD FLYING CAM UNITS FOR PIERCE

— MGFV —



— With automatic alignment —
MGFV65 ($\theta=00-45$)

■ Rear removal space



■ Components table ■ P.32

W	θ	A	B	C	E	F	G	H	J	L	V ₁	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				
	30	177.78	147.78	30	78.32	101.68		80.7		16.6		31
	35	173.29	153.29	20	83.25	96.75		84.5				
	40	170.78	160.78	10	82.44	97.56		96.0		16.5		35
	45	165.5	163	2.5	86.51	93.49		100.9				

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
15.0	19.6 (2.0)	39.2 (4.0)	288.0 (29.4)	1186.1 (121.0)	9.5	– With automatic alignment – MGFV	65	00
15.1			355.8 (36.3)		9.3			05
15.2			347.9 (35.5)	1220.1 (124.5)	9.0			10
15.5			395.6 (40.3)		8.8			15
16.5			405.1 (41.3)		8.6			20
17.1					8.5			25
18.5			428.9 (43.8)		8.3			30
19.6					8.3			35
21.5			433.7 (44.3)		8.1			40
23.3					8.1			45



Order

Catalogue No. **MGFV** W **65** – θ **35**



Alterations



Catalogue No. **MGFV** W **65** – θ **20** – (K-SC) **SC30**

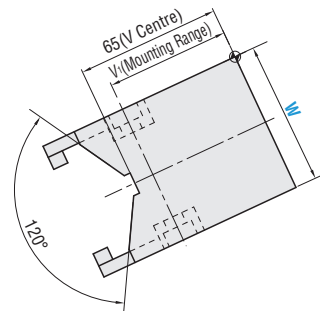
Alteration	Code	Spec.
	K	<p>Addition of locating key (With 1 hexagon socket head cap screw M8-15)</p> <p>Provided key</p>
	SC	<p>Forward relocation of mount surface $1 \leq SC \leq 60$ 1mm increments</p>

— MGFV —



MGFV65 ($\theta=50-70$)

A diagram of a mechanical assembly, possibly a microscope or a similar instrument. It features a base with a horizontal surface. A vertical rod extends upwards from the base. A horizontal distance X is indicated between the vertical rod and a vertical line passing through the center of a circular component at the top of the assembly.

**■Components table** P.32

W	θ	A	B	C	E	F	G	H	J	L	V ₁	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	55

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
26.5	19.6 (2.0)	39.2 (4.0)	405.1 (41.3)	1220.1 (124.5)	8.4	– With automatic alignment – MGFV	65	50	
29.7					8.4			55	
35.0			357.5 (36.5)		9.3			60	
41.4					9.3			65	
51.1					9.5			70	



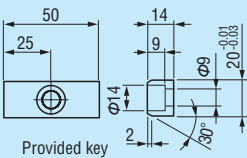
Order

Catalogue No.	W	—	θ
MGFV	65	—	60



Alterations

Catalogue No.	W	—	θ	— (K-SC)
MGFV	65	—	60	K

Alteration	Code	Spec.
	K	<p>Addition of locating key (With 1 hexagon socket head cap screw M8-15)</p>  <p>Provided key</p>
	SC	<p>Forward relocation of mount surface 1 ≤ SC ≤ 60 1mm increments</p>

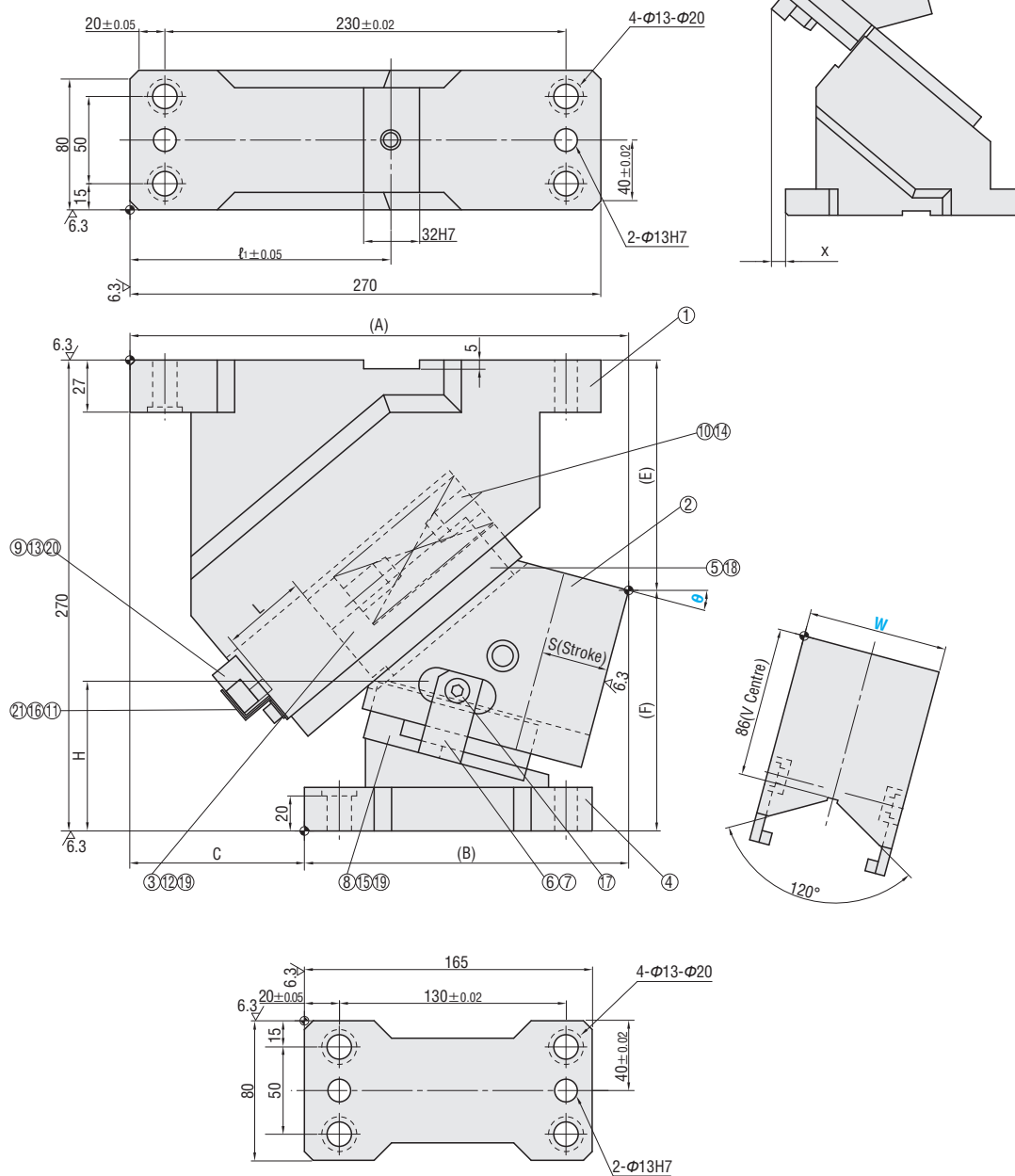
STANDARD FLYING CAM UNITS FOR PIERCE

— MGFV —



— With automatic alignment —
MGFV80 ($\theta=00-60$)

■ Rear removal space



■ Components table ■ P.33

W	θ	A	B	C	E	F	H	L	ℓ_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		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				56
	60	240.64	240.64	0	176.59	93.41	157.7			75

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
32.1	39.2 (4.0)	78.4 (8.0)	270.6 (27.6)	1623.6 (165.7)	25.9	– With automatic alignment – MGFV	80	00
38.4					26.3			05
38.9					26.6			10
39.7					25.1			15
46.1					25.3			20
47.8					25.3			25
54.3					23.2			30
57.4					23.4			35
64.3					22.4			40
69.6					22.4			45
77.8					21.6			50
87.2					21.7			55
98.5					23.2			60



Order

Catalogue No. **MGFV** **80** — **25**



Alterations



Catalogue No. **MGFV** **80** — **15** — **N12** (N12-N16---etc.)

Alteration	Code	Spec.
	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$
	N16	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 16H7$
	K	Addition of locating key (With 1 hexagon socket head cap screw M8-15)
	SC	Forward relocation of mount surface $1 \leq SC \leq 60$ 1mm increments
	WC	Mount surface width change $W=80 \Rightarrow W=100$ or 120 Only 100 or 120 can be selected.



— MGFV —



MGFV80 ($\theta=65-70$)

■Rear removal space

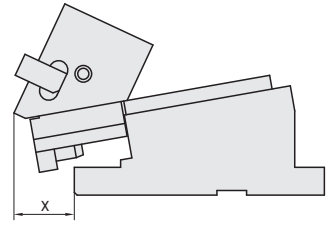
**■Components table** **P.33**

Diagram of a 120° V-groove. The angle of the groove is 120°. The width of the groove is labeled W . The depth of the groove is labeled 85(V Centre).

26

W	θ	A	B	C	E	F	H	L	ℓ_1	x
150	00	280	160	120	85	185	94.0	50	100	20
	05	288.26	173.26	115	95.84	174.16				41
	10	285.54	180.54	105	102.36	167.64				
	15	291.79	186.79		114.47	155.53	98.7		135	57
	20	286.97	196.97		122.07	147.93	103.5			69
	25	291.02	201.02	90	135.08	134.92	103.2			
	30	283.92	213.92		138.4	131.6	112.8		170	75
	35	285.66	215.66		151.91	118.09	112.4			
	40	276.20	231.20	45	155.53	114.47	121.9			77
	45	275.56	230.56		169.14	100.86	121.4			
	50	263.74	238.74		167.65	102.35	137.0		100	104
	55	260.74	235.74	25	180.94	89.06	137.6			
	60	246.6	246.6		193.92	76.08	138.2			
	65	241.35	241.35	0	206.49	63.51	138.6	40		

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
32.1	88.2 (9.0)	132.3 (13.5)	635.5 (64.8)	4607.5 (470.2)	45.4	– With automatic alignment – MGFV	150	00
32.3					45.9			05
38.9					44.4			10
39.7					44.9			15
46.1					43.2			20
47.8					43.7			25
54.3					42.2			30
57.4					42.7			35
64.3					41.0			40
69.6					41.4			45
77.8					40.5			50
87.2					40.9			55
98.5					41.5			60
93.2			1429.2 (145.8)		42.2			65



Order

Catalogue No.

MGFV

W

150

θ

25



Alterations



Catalogue No.

MGFV

W

150

θ

15

– (N12-N16...etc.)

N12

Alteration	Code	Spec.
	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$
	N16	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 16H7$
	K	Addition of 2 locating keys (With 2 hexagon socket head cap screws M8-15)
	TK	Machining of T-shaped key groove Addition of 6 locating keys (With 6 hexagon socket head cap screws M8-15)

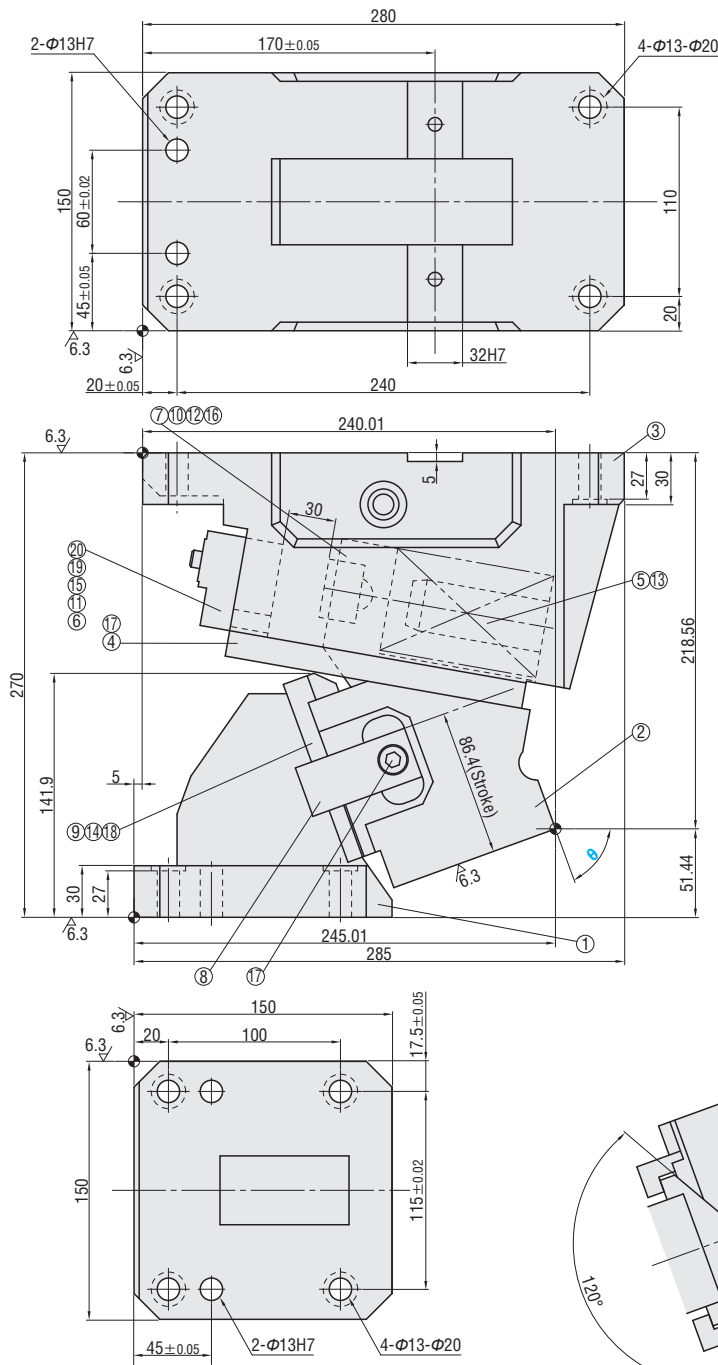
STANDARD FLYING CAM UNITS FOR PIERCE

— MGFV —



— With automatic alignment —
MGFV150-70

■ Rear removal space



■ Components table ■ P.33

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
86.4	88.2 (9.0)	132.3 (13.5)	2223.2 (226.8)	4607.5 (470.2)	43.5	– With automatic alignment – MGFV	150	70



Order

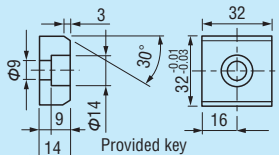
Catalogue No.	W	—	θ
MGFV	150	—	70



Alterations

Catalogue No.	W	—	θ	—	(N12-N16---etc.)
MGFV	150	—	70	—	TK

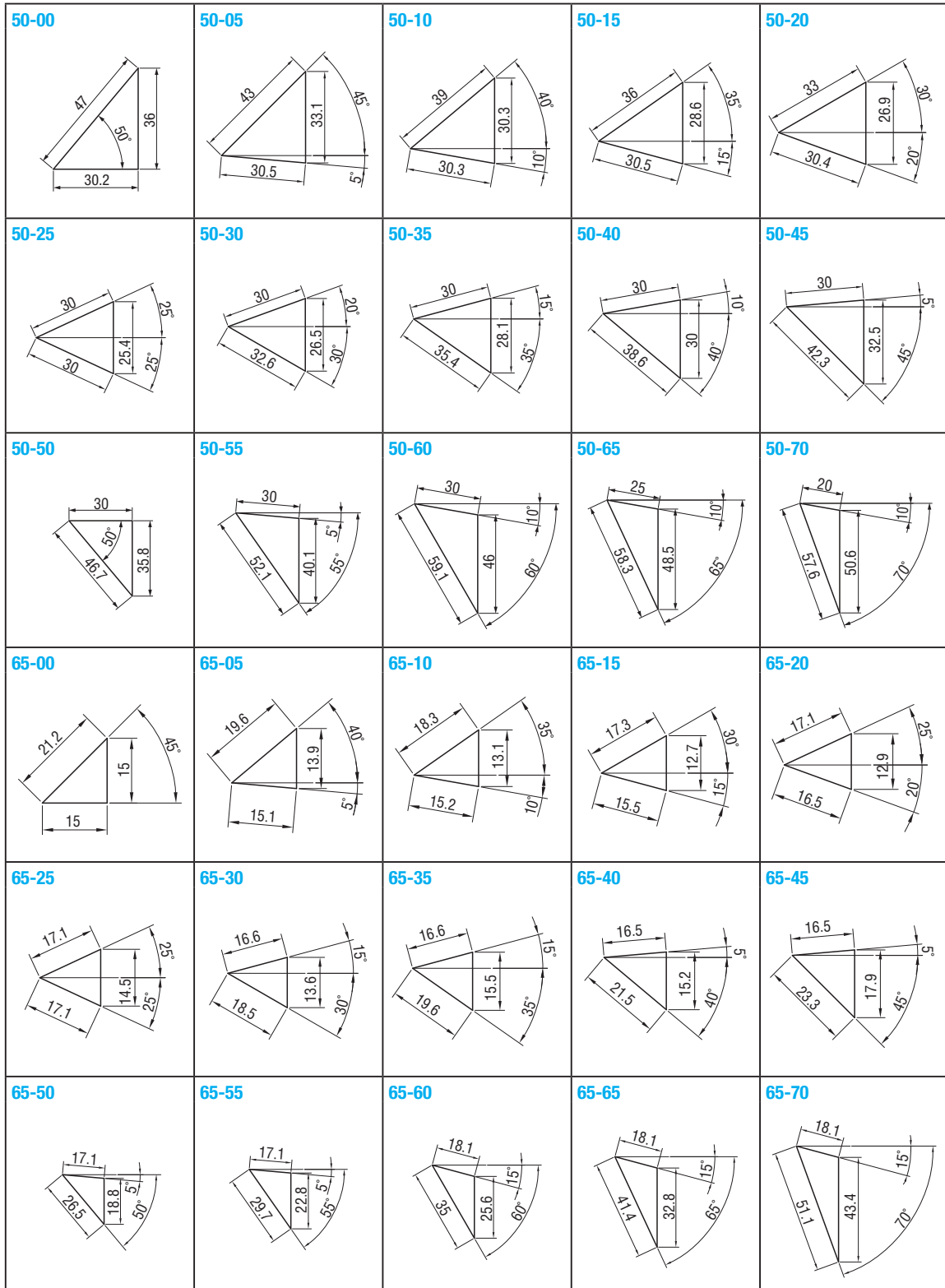
Alteration	Code	Spec.
	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$
	N16	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 16H7$
	K	Addition of 2 locating keys (With 2 hexagon socket head cap screws M8-15)
	TK	Machining of T-shaped key groove Addition of 6 locating keys (With 6 hexagon socket head cap screws M8-15)



STANDARD FLYING CAM UNITS FOR PIERCE

— MGFV — CAM DIAGRAM

MGFV



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

STANDARD FLYING CAM UNITS FOR PIERCE

— MGFV • MEVN — COMPONENTS TABLE

■MGFV50(θ =00-10)

No.	Part Name	Marterial and Remark	Quantity
①	Cam Holder	FCD540	1
②	Cam Slider	FCD540	1
③	Cam Lower Plate	S45C with Special Sintered alloy	1
④	Cam Driver	FC250	1
⑤	Guide Bar	Copper Alloy with Graphite	1
⑥	Cam Compulsory Returning Plate	S45C	1
⑦	Cam Slide Guide	Copper Alloy with Graphite	1
⑧	Spring Plate	SS400	1
⑨	Safety Plate	SS400	1
⑩	Coil Spring	$\Phi 27 \times 125$	1
⑪	Silent Stopper	Urethane	2
⑫	Dowel Pin	$\Phi 8 \times 30$	4
⑬	Disc Spring	For M6	2
⑭	Cap Screw	M8x15	1
⑮	Cap Screw	M6x10	2
⑯	Cap Screw	M8x20	4
⑰	Cap Screw	M8x25	4
⑱	Cap Screw	M10x35	1

■MGFV50(θ =15-60)

No.	Part Name	Marterial and Remark	Quantity
①	Cam Holder	FCD540	1
②	Cam Slider	FCD540	1
③	Cam Lower Plate	S45C with Special Sintered alloy	1
④	Cam Driver	FC250	1
⑤	Guide Bar	Copper Alloy with Graphite	1
⑥	Cam Compulsory Returning Plate	S45C	1
⑦	Cam Slide Guide	Copper Alloy with Graphite	1
⑧	Spring Plate	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	Silent Stopper	Urethane	2
⑫	Dowel Pin	$\Phi 8 \times 30$	4
⑬	Disc Spring	For M6	2
⑭	Cap Screw	M8x15	1
⑮	Cap Screw	M6x10	2
⑯	Cap Screw	M8x20	4
⑰	Cap Screw	M8x25	4
⑱	Cap Screw	M10x35	1
⑲	Spacer	SS400	1

■MGFV50(θ =65-70)

No.	Part Name	Marterial and Remark	Quantity
①	Cam Holder	FCD540	1
②	Cam Slider	FCD540	1
③	Cam Lower Plate	S45C with Special Sintered alloy	1
④	Cam Driver	FC250	1
⑤	Guide Bar	Copper Alloy with Graphite	1
⑥	Cam Compulsory Returning Plate	S45C	1
⑦	Cam Slide Guide	Copper Alloy with Graphite	1
⑧	Spring Plate	SS400	1
⑨	Safety Plate	SS400	1
⑩	Coil Spring	$\Phi 27 \times 90$ ($\theta=65$) $\Phi 27 \times 65$ ($\theta=70$)	1
⑪	Silent Stopper	Urethane	2
⑫	Dowel Pin	$\Phi 8 \times 30$	4
⑬	Disc Spring	For M6	2
⑭	Cap Screw	M8x15	1
⑮	Cap Screw	M6x10	2
⑯	Cap Screw	M8x20	4
⑰	Cap Screw	M8x25	4
⑱	Cap Screw	M10x35	1

■MGFV65

No.	Part Name	Marterial and Remark	Quantity
①	Cam Holder	FCD450	1
②	Cam Slider	FC250	1
③	Cam Driver	FC250	1
④	Slide Plate	Copper Alloy with Graphite	2
⑤	Cam Compulsory Returning plate A	S45C	1
⑥	Cam Compulsory Returning plate B	S45C	1
⑦	Cam Slide Guide	Copper Alloy with Graphite	1
⑧	Stopper 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	Silent Stopper	Urethane	2
⑬	Dowel Pin	$\Phi 8 \times 30$	2
⑭	Disc Spring	For M6	2
⑮	Cap Screw	M8x15	6
⑯	Cap Screw	M6x10	2
⑰	Cap Screw	M10x30	2
⑱	Cap Screw	M8x16	2

■MGFV80(θ =00-60)

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FCD450	1
②	Cam Slider	FC250	1
③	Cam Lower Slider	FCD450 with Graphite	1
④	Cam Driver	FC250	1
⑤	Slide Plate	Copper Alloy with Graphite	2
⑥	Cam Compulsory Returning plate A	S45C	1
⑦	Cam Compulsory Returning plate B	S45C	1
⑧	Cam Slide Guide	Copper Alloy with Graphite	1
⑨	Stopper Plate	SS400	1
⑩	Spring Guide Pin	SCM435	2
⑪	Safety Plate	SS400	1
⑫	Key	S45C	1
⑬	Silent Stopper	Urethane	2
⑭	Coil Spring	Φ 35x150	1
⑮	Dowel Pin	Φ 10x40	2
⑯	Disc Spring	For M6	2
⑰	Cap Screw	M8x15	2
⑱	Cap Screw	M8x20	6
⑲	Cap Screw	M10x35	4
⑳	Cap Screw	M10x30	2
㉑	Cap Screw	M6x10	2

■MGFV80(θ =65)

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FCD450	1
②	Cam Slider	FC250	1
③	Cam Lower Slider	FCD450 with Graphite	1
④	Cam Driver	FC250	1
⑤	Slide Plate	Copper Alloy with Graphite	2
⑥	Cam Compulsory Returning plate A	S45C	1
⑦	Cam Compulsory Returning plate B	S45C	1
⑧	Cam Slide Guide	Copper Alloy with Graphite	1
⑨	Stopper Plate	SS400	1
⑩	Spring Guide Pin	SCM435	1
⑪	Safety Plate	SS400	1
⑫	Key	S45C	1
⑬	Silent Stopper	Urethane	2
⑭	Coil Spring	Φ 35x125	1
⑮	Dowel Pin	Φ 10x40	2
⑯	Disc Spring	For M6	2
⑰	Cap Screw	M8x15	2
⑱	Cap Screw	M8x20	6
⑲	Cap Screw	M10x35	4
⑳	Cap Screw	M10x30	2
㉑	Cap Screw	M6x10	2
㉒	Spacer	SS400	1
㉓	Cap Screw	M10x25	1

■MGFV80(θ =70)

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FCD450	1
②	Cam Slider	FC250	1
③	Cam Lower Slider	FCD450 with Graphite	1
④	Cam Driver	FC250	1
⑤	Slide Plate	Copper Alloy with Graphite	2
⑥	Cam Compulsory Returning plate A	S45C	1
⑦	Cam Compulsory Returning plate B	S45C	1
⑧	Cam Slide Guide	Copper Alloy with Graphite	1
⑨	Stopper Plate	SS400	1
⑩	Spring Guide Pin	SCM435	1
⑪	Safety Plate	SS400	1
⑫	Key	S45C	1
⑬	Silent Stopper	Urethane	2
⑭	Coil Spring	Φ 35x100	1
⑮	Dowel Pin	Φ 10x40	2
⑯	Disc Spring	For M6	2
⑰	Cap Screw	M8x15	2
⑱	Cap Screw	M8x20	6
⑲	Cap Screw	M10x35	4
⑳	Cap Screw	M10x30	2
㉑	Cap Screw	M6x10	2
㉒	Spacer	SS400	1
㉓	Cap Screw	M10x45	1

■MGFV150

No.	Part Name	Material and Remark	Quantity
①	Cam Driver	FC250	1
②	Cam Slider	FC250	1
③	Cam Holder	FC250	1
④	Slide Plate	Copper Alloy with Graphite	2
⑤	Spring Guide Pin	SCM435	1
⑥	Stopper Plate	SS400	1
⑦	Spring Guide Block	FCD450 with Graphite	1
⑧	Cam Compulsory Returning plate	S45C	2
⑨	Cam Slide Guide	Copper Alloy with Graphite	1
⑩	Key	S45C	1
⑪	Safety Plate	SS400	1
⑫	Silent Stopper	Urethane	2
⑬	Coil Spring	Φ 60x150	1
⑭	Dowel Pin	Φ 10x40	2
⑮	Disc Spring	For M6	2
⑯	Cap Screw	M12x30	4
⑰	Cap Screw	M10x25	8
⑱	Cap Screw	M10x35	2
⑲	Cap Screw	M16x35	2
㉑	Cap Screw	M6x15	2

— MGFVS —

MGFVS80 ($\theta=00-60$)**■Components table** P.43

W	θ	A	B	C	E	F	H	L	ℓ_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		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				56
	60	240.64	240.64	0	176.59	93.41	157.7			75

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
32.1	54.9 (5.6)	109.8 (11.2)	127.4 (13.0)	3250.0 (331.4)	25.9	– With automatic alignment – MGFVS	80	00
38.4					26.3			05
38.9					26.6			10
39.7					25.1			15
46.1					25.3			20
47.8					25.3			25
54.3					23.2			30
57.4					23.4			35
64.3					22.4			40
69.6					22.4			45
77.8					21.6			50
87.2					21.7			55
98.5					23.2			60



Order

Catalogue No. **MGFVS** **80** — **40**



Catalogue No. **MGFVS** **80** — **15** — **N12** (N12-N16---etc.)

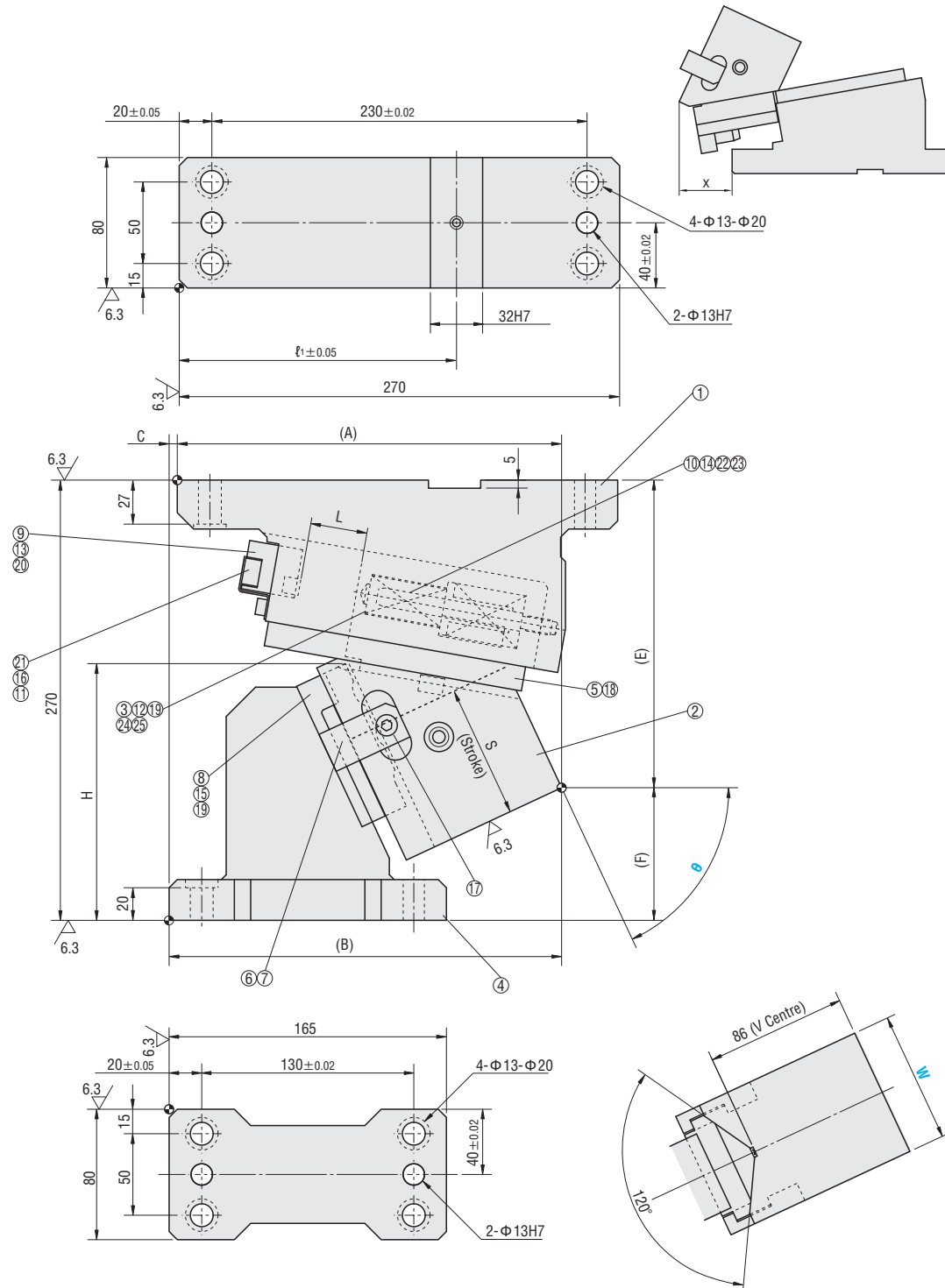
Alterations	Code	Spec.
$\Phi 12H7$ or $\Phi 16H7$	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$
	N16	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 16H7$
	K	Addition of locating key (With 1 hexagon socket head cap screw M8-15)
	SC	Forward relocation of mount surface $1 \leq SC \leq 60$ 1mm increments
	WC	Mount surface width change $W=80 \Rightarrow W=100$ or 120 Only 100 or 120 can be selected.



— MGFVS —

MGFVS80 ($\theta=65-70$)

■Rear removal space

**■Components table**  **P.43**

W	θ	A	B	C	E	F	H	L	ℓ_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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
81.6	54.9 (5.6)	109.8 (11.2)	98.0 (10.0)	3250.0 (331.4)	23.7	– With automatic alignment – MGFVS	80	65
86.4			159.3 (16.3)		23.9			70



Order

Catalogue No.	W	θ
MGFVS	80	70



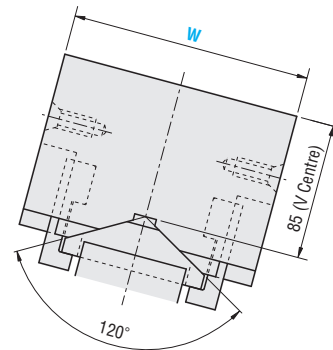
Alterations



Catalogue No.	W	θ	(N12-N16...etc.)
MGFVS	80	65	WC100

Alterations	Code	Spec.
	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$
	N16	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 16H7$
	K	Addition of locating key (With 1 hexagon socket head cap screw M8-15)
	SC	Forward relocation of mount surface $1 \leq SC \leq 60$ 1mm increments
	WC	Mount surface width change $W=80 \Rightarrow W=100$ or 120 Only 100 or 120 can be selected.

— MGFVS —

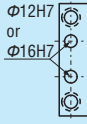
MGFVS150 ($\theta=00-65$)

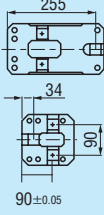
W	θ	A	B	C	E	F	H	L	ℓ_1	x	
150	00	280	160	120	85	185	94	50	100	20	
	05	288.26	173.26	115	95.84	174.16	94			41	
	10	285.54	180.54	105	102.36	167.64	98.9				
	15	291.79	186.79		114.47	155.53	98.7				
	20	286.97	196.97	90	122.07	147.93	103.5		135	57	
	25	291.02	201.02		135.08	134.92	103.2			69	
	30	283.92	213.92	70	138.4	131.6	112.8		170		
	35	285.66	215.66		151.91	118.09	112.4				
	40	276.20	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
32.1	123.5 (12.6)	185.2 (18.9)	222.8 (22.7)	9540.0 (973.4)	45.4	- With automatic alignment – MGFVS	150	00
32.3					45.9			05
38.9					44.4			10
39.7					44.9			15
46.1					43.2			20
47.8					43.7			25
54.3					42.2			30
57.4					42.7			35
64.3					41.0			40
69.6					41.4			45
77.8					40.5			50
87.2					40.9			55
98.5					41.5			60
93.2			501.3(51.2)		42.2			65

	Order	Catalogue No.	W	—	θ
		MGFVS	150	—	30

	Alterations	Catalogue No.	W	—	θ	—	(N12-N16...etc.)
		MGFVS	150	—	15	—	N12

Alterations	Code	Spec.
	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$
	N16	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 16H7$

Alterations	Code	Spec.
	K	Addition of 2 locating keys (With 2 hexagon socket head cap screws M8-15)
	TK	Machining of T-shaped key groove Addition of 6 locating keys (With 6 hexagon socket head cap screws M8-15)

CAM DIAGRAM

 P.42

■Components table  **P.43**

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
86.4	123.5 (12.6)	185.2 (18.9)	779.8 (79.6)	9540.0 (973.4)	43.5	– With automatic alignment – MGFVS	150	70



Order

Catalogue No.	W	—	θ
MGFVS	150	—	70



Alterations

Catalogue No.	W	—	θ	—	(N12-N16...etc.)
MGFVS	150	—	70	—	TK

Alterations	Code	Spec.
	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$
	N16	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 16H7$
	K	Addition of 2 locating keys (With 2 hexagon socket head cap screws M8-15)
	TK	Machining of T-shaped key groove Addition of 6 locating keys (With 6 hexagon socket head cap screws M8-15)

FLYING CAM UNITS FOR HEAVY LOAD PIERCE

— MGFVS — CAM DIAGRAM COMPONENTS TABLE

Cam diagram

■ MGFVS

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

Components table

■MGFVS80(θ=00-60)

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FCD450	1
②	Cam Slider	FC250	1
③	Spring Guide Block	FCD450 with Graphite	1
④	Cam Driver	FC250	1
⑤	Slide Plate	SS400 with Special Sintered Alloy	2
⑥	Cam Compulsory Returning plate A	S45C	1
⑦	Cam Compulsory Returning plate B	S45C	1
⑧	Cam Slide Guide	Copper Alloy with Graphite	1
⑨	Stopper Plate	SS400	1
⑩	Spring Guide Pin	SCM435	1
⑪	Safety Plate	SS400	1
⑫	Key	S45C	1
⑬	Silent Stopper	Urethane	2
⑭	Coil Spring	Φ25×100	1
⑮	Dowel Pin	Φ10×40	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	Copper Alloy with Graphite(S45C)	1
㉓	Coil Spring	Φ35×60	1
㉔	Cap Screw	M12×35	2
㉕	Spring Washer	For M12	2

■MGFVS80(θ=65-70)

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FCD450	1
②	Cam Slider	FC250	1
③	Spring Guide Block	FCD450 with Graphite	1
④	Cam Driver	FC250	1
⑤	Slide Plate	SS400 with Special Sintered Alloy	2
⑥	Cam Compulsory Returning plate A	S45C	1
⑦	Cam Compulsory Returning plate B	S45C	1
⑧	Cam Slide Guide	Copper Alloy with Graphite	1
⑨	Stopper Plate	SS400	1
⑩	Spring Guide Pin	SCM435	1
⑪	Safety Plate	SS400	1
⑫	Key	S45C	1
⑬	Silent Stopper	Urethane	2
⑭	Coil Spring	Φ25×80	1
⑮	Dowel Pin	Φ10×40	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	Copper Alloy with Graphite(S45C)	1
㉓	Coil Spring	Φ35×60	1
㉔	Cap Screw	M12×35	2
㉕	Spring Washer	For M12	2

■MGFVS/MEVSN150

No.	Part Name	Material and Remark	Quantity
①	Cam Driver	FC250	1
②	Cam Slider	FC250	1
③	Cam Holder	FC250	1
④	Slide Plate	Copper Alloy with Graphite	2
⑤	Spring Guide Pin	SCM435	1
⑥	Stopper Plate	SS400	1
⑦	Spring Guide Block	FCD450 with Graphite	1
⑧	Cam Compulsory Returning Plate	S45C	2
⑨	Cam Slide Guide	Copper Alloy with Graphite	1
⑩	Key	S45C	1
⑪	Safety Plate	SS400	1
⑫	Silent Stopper	Urethane	2
⑬	Coil Spring	Φ60×60	1
⑭	Dowel Pin	Φ10×40	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
⑳	Cap Screw	M6×15	2
㉑	Coil Spring	Φ40×90	1
㉒	Bushing	Copper Alloy with Graphite(S45C)	1

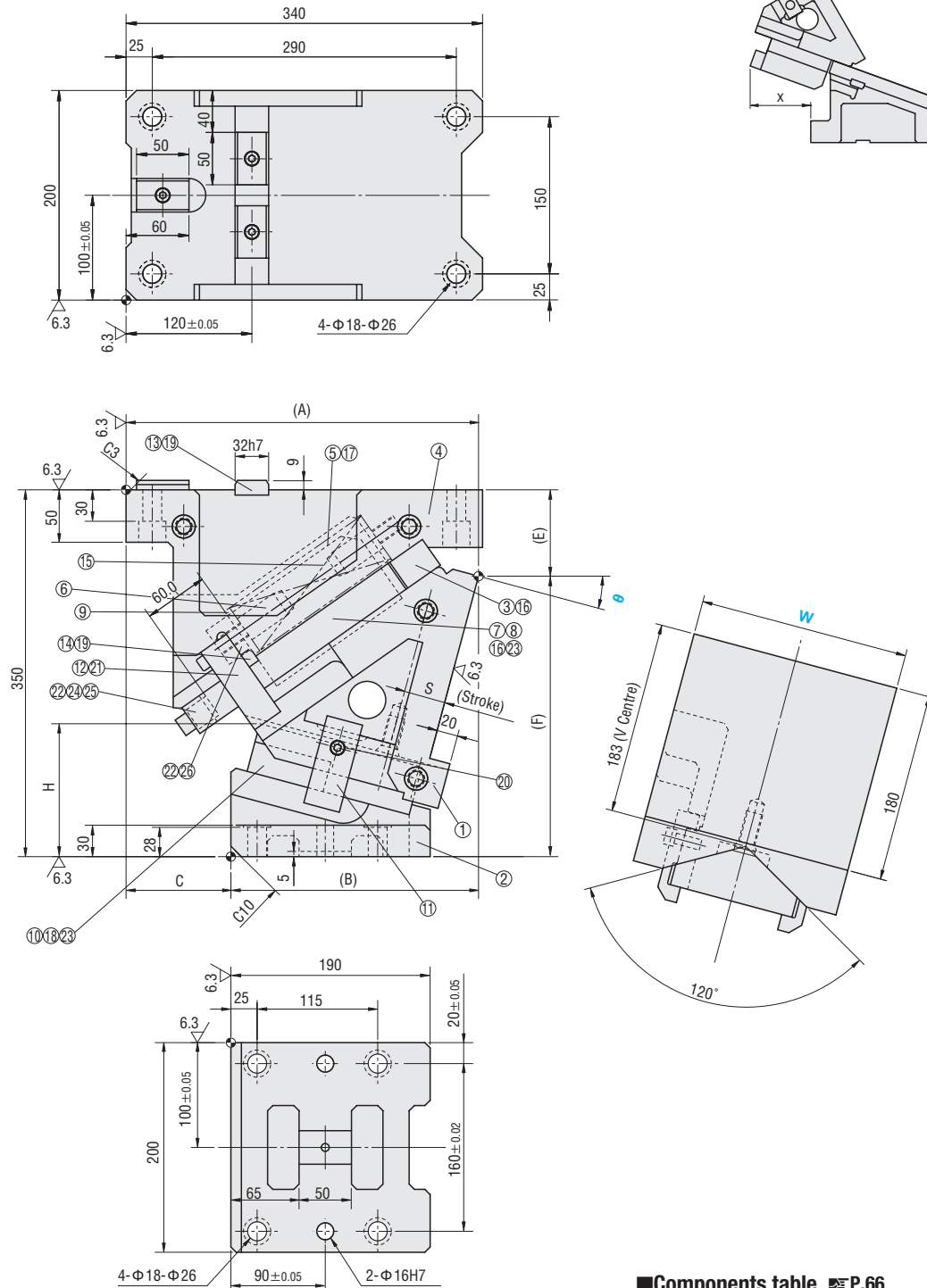
WIDE FLYING CAM UNITS FOR PIERCE

— MGFVW —



— With automatic alignment —
MGFVW200 ($\theta=00-40$)

■ Rear removal space



■ Components table ■ P.66

W	θ	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
38.6	117.6 (12.0)	235.2 (24.0)	817.2 (83.3)	4903.2 (499.7)	95.0	– With automatic alignment – MGFVW	200	00
42.6					94.8			05
46.7					94.6			10
50.9					93.3			15
55.3					92.7			20
65.1					92.7			30
77.1					94.2			40



Order

Catalogue No. **MGFVW** W **200** – θ **10**



Alterations



Catalogue No. **MGFVW** W **200** – θ **20** – (N-K-FK) **N**

Alterations	Code	Spec.
	N	Machining of locating dowel holes 2 dowel holes (Φ16H7) are machined on the cam holder.
	K	Addition of locating key (With 1 hexagon socket head cap screw M8-15) Provided key
	FK	Relocation of key position Locating key on the cam holder is relocated forward.

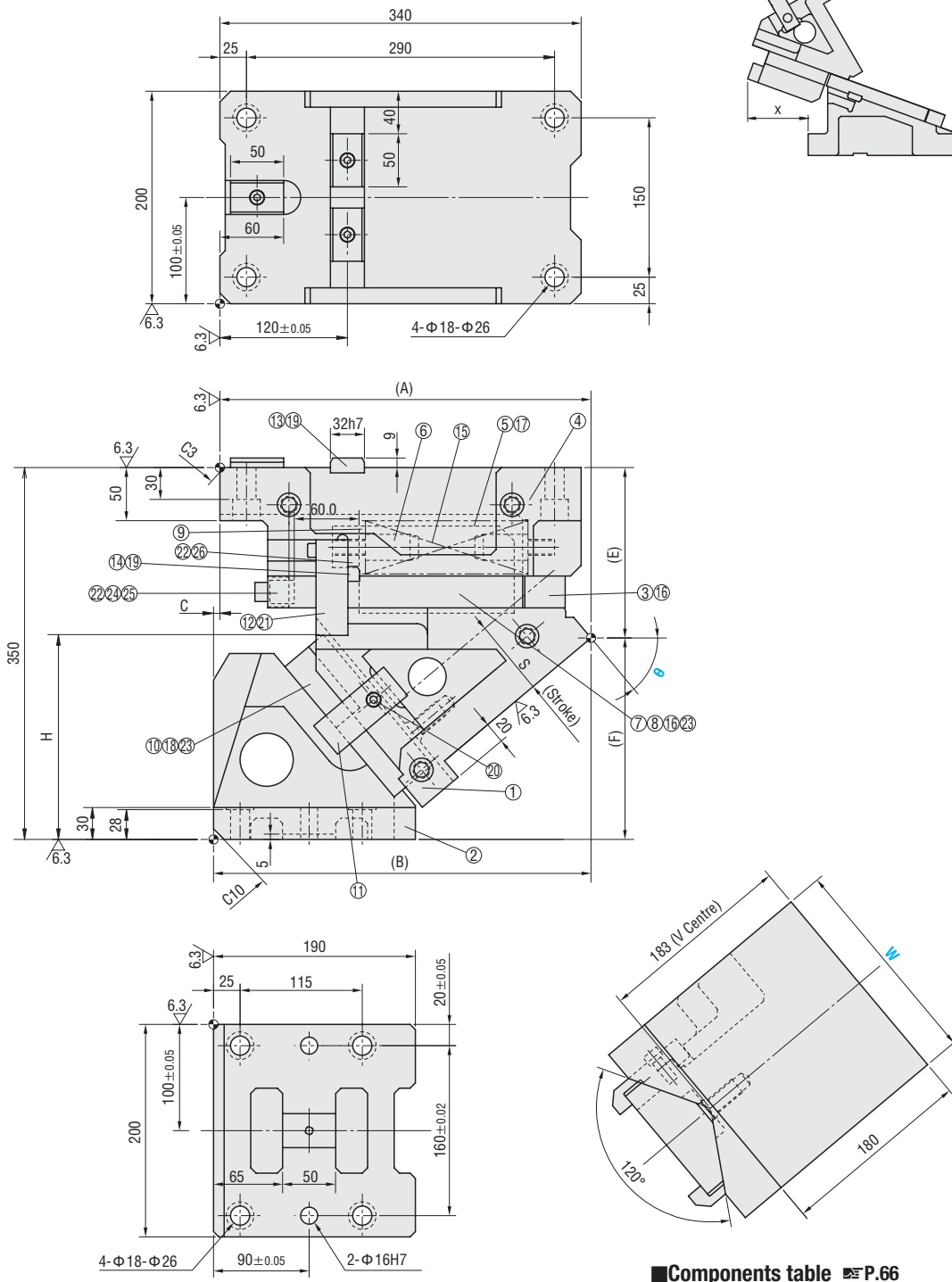
WIDE FLYING CAM UNITS FOR PIERCE

— MGFVW —



— With automatic alignment —
MGFVW200 ($\theta=50-60$)

■ Rear removal space

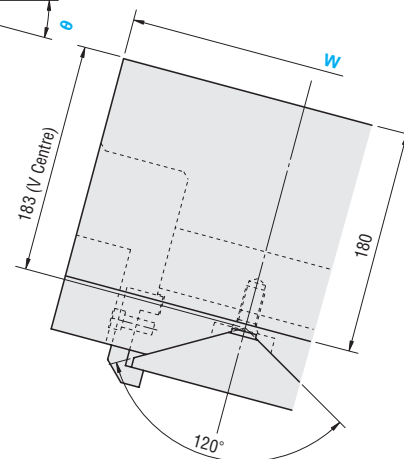
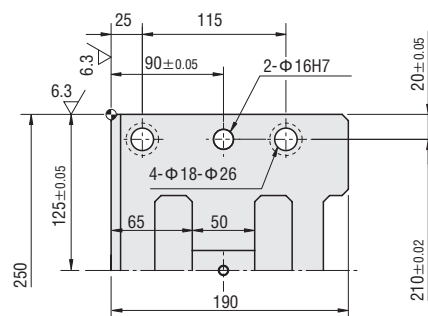


■ Components table ■ P.66

CAM DIAGRAM

 P.64

A technical drawing of a mechanical assembly, possibly a valve or a pump component. It shows a complex arrangement of parts including a main body, a rotating shaft, and various seals and bearings. A dimension line labeled 'X' indicates a specific distance or length within the assembly.



48

W	θ	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
38.6	196.0 (20.0)	392.0 (40.0)	1634.4 (166.6)	9806.4 (999.4)	137.2	– With automatic alignment – MGFVW	300	00
42.6					135.9			05
46.7					135.7			10
50.9					133.0			15
55.3					131.5			20
65.1					131.0			30
77.1					133.3			40



Order

Catalogue No. **MGFVW** W **300** – θ **10**



Alterations



Catalogue No. **MGFVW** W **300** – θ **15** – (N-K-FK) **N**

Alterations	Code	Spec.
	N	Machining of locating dowel holes 2 dowel holes (Φ16H7) are machined on the cam holder.
	K	Addition of locating key (With 1 hexagon socket head cap screw M8-15) Provided key
	FK	Relocation of key position Locating key on the cam holder is relocated forward.

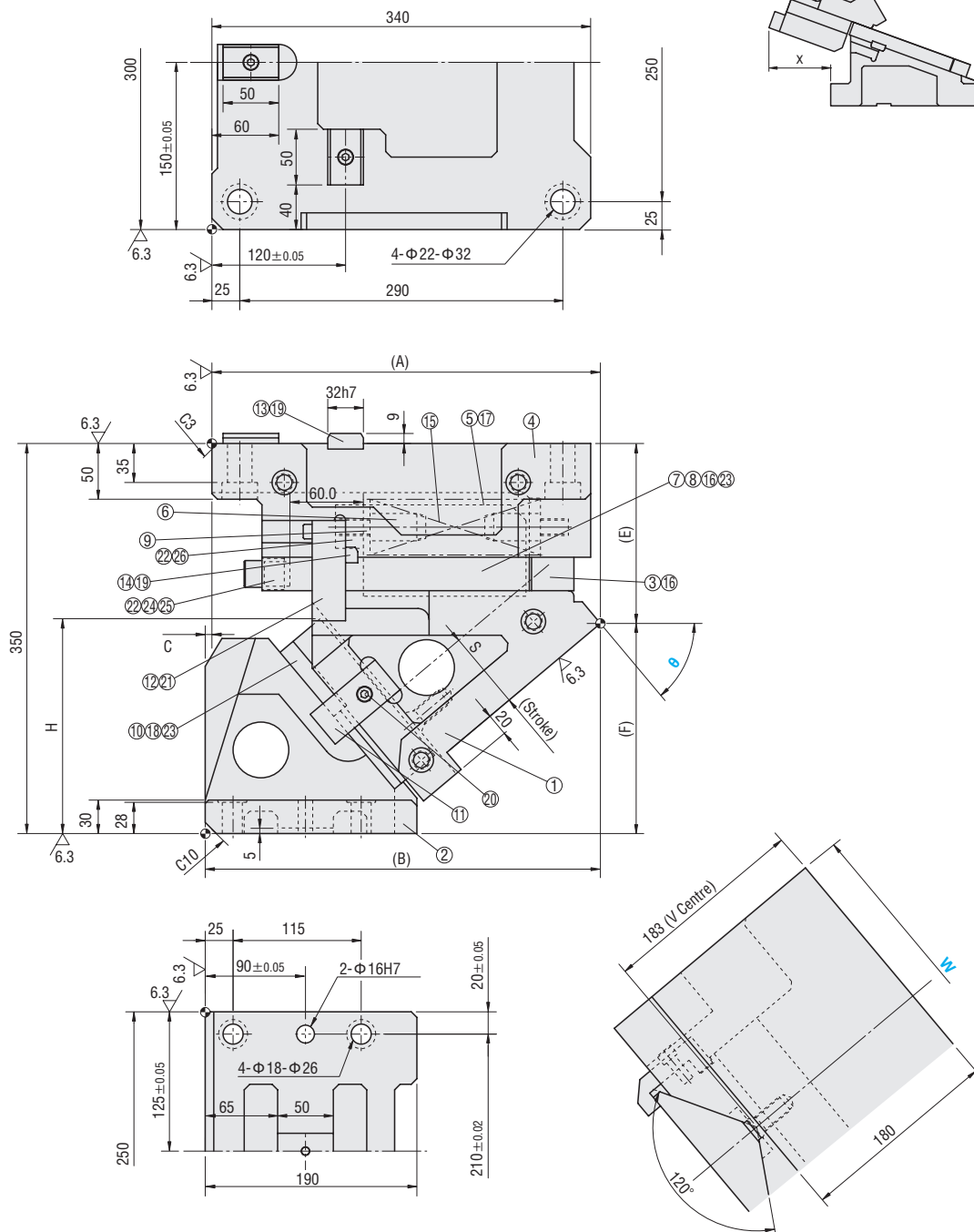
WIDE FLYING CAM UNITS FOR PIERCE

— MGFVW —



— With automatic alignment —
MGFVW300 ($\theta=50-60$)

■ Rear removal space



■ Components table ■ P.66

W	θ	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
93.3	196.0 (20.0)	392.0 (40.0)	1634.4 (166.6)	9806.4 (999.4)	130.9	– With automatic alignment – MGFVW	300	50
120.0					136.1			60



Order

Catalogue No.	W	—	θ
MGFVW	300	—	50



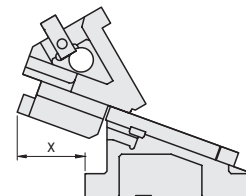
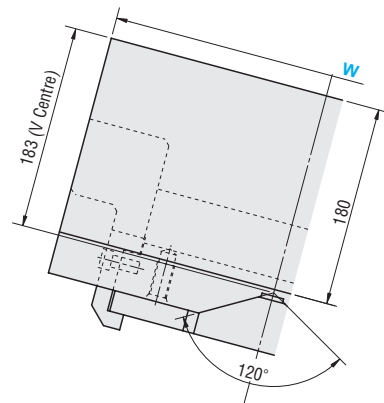
Alterations

Catalogue No.	W	—	θ	—	(N-K-FK)
MGFVW	300	—	60	—	FK

Alterations	Code	Spec.
	N	<p>Machining of locating dowel holes 2 dowel holes ($\Phi 16H7$) are machined on the cam holder.</p>
	K	<p>Addition of locating key (With 1 hexagon socket head cap screw M8-15)</p>
	FK	<p>Relocation of key position Locating key on the cam holder is relocated forward.</p>

CAM DIAGRAM
P.64

■Rear removal space

**■Components table** P.66

W	θ	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
38.6	245.0 (25.0)	490.0 (50.0)	1634.4 (166.6)	9806.4 (999.4)	191.1	– With automatic alignment – MGFVW	400	00
42.6					189.3			05
46.7					188.0			10
50.9					186.1			15
55.3					185.3			20
65.1					185.8			30
77.1					191.9			40



Order

Catalogue No. **MGFVW** W **400** – θ **10**



Alterations



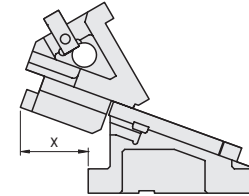
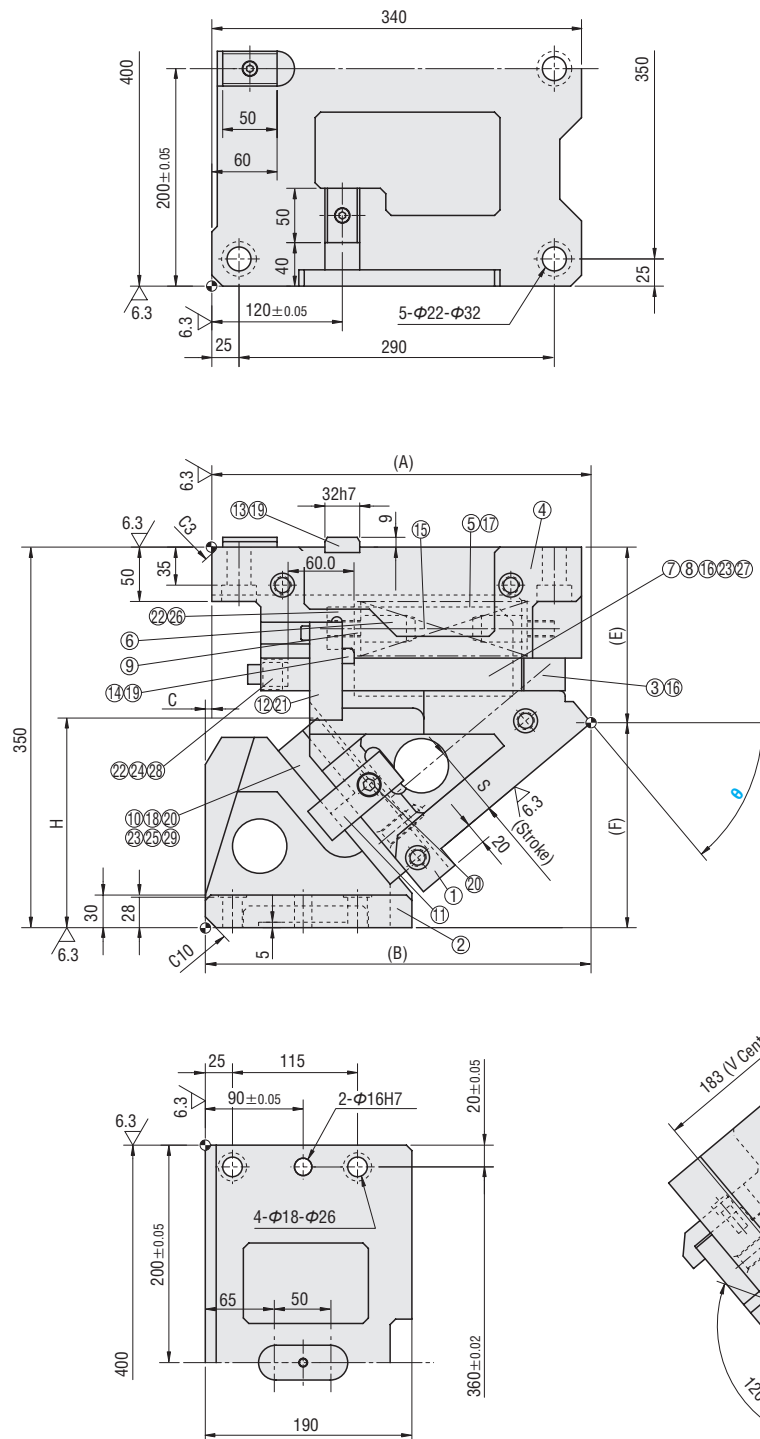
Catalogue No. **MGFVW** W **400** – θ **30** – (N-K-FK) **K**

Alterations	Code	Spec.
	N	Machining of locating dowel holes 2 dowel holes (Ø16H7) are machined on the cam holder.
	K	Addition of locating key (With 1 hexagon socket head cap screw M8-15) Provided key
	FK	Relocation of key position Locating key on the cam holder is relocated forward.

— MGFVW —

MGFW400 ($\theta=50-60$)

■Rear removal space



■ Components table P.66

W	θ	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
93.3	245.0 (25.0)	490.0 (50.0)	1634.4 (166.6)	9806.4 (999.4)	191.8	– With automatic alignment – MGFVW	400	50
120.0					201.1			60



Order

Catalogue No. **MGFVW** W **400** – θ **50**



Alterations



Catalogue No. **MGFVW** W **400** – θ **50** – (N-K-FK) **FK**

Alterations	Code	Spec.
	N	Machining of locating dowel holes 2 dowel holes (Φ16H7) are machined on the cam holder.
	K	Addition of locating key (With 1 hexagon socket head cap screw M8-15) Provided key
	FK	Relocation of key position Locating key on the cam holder is relocated forward.

CAM DIAGRAM
P.65

W	θ	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
38.6	313.6 (32.0)	627.2 (64.0)	2451.6 (249.8)	14709.6 (1499.0)	222.3	– With automatic alignment – MGFVW	500	00
42.6					220.4			05
46.7					218.8			10
50.9					216.3			15
55.3					215.1			20
65.1					216.1			30
77.1					220.4			40



Order

Catalogue No. **MGFVW** W **500** – θ **10**



Alterations



Catalogue No. **MGFVW** W **500** – θ **05** – (N-K-FK) **N**

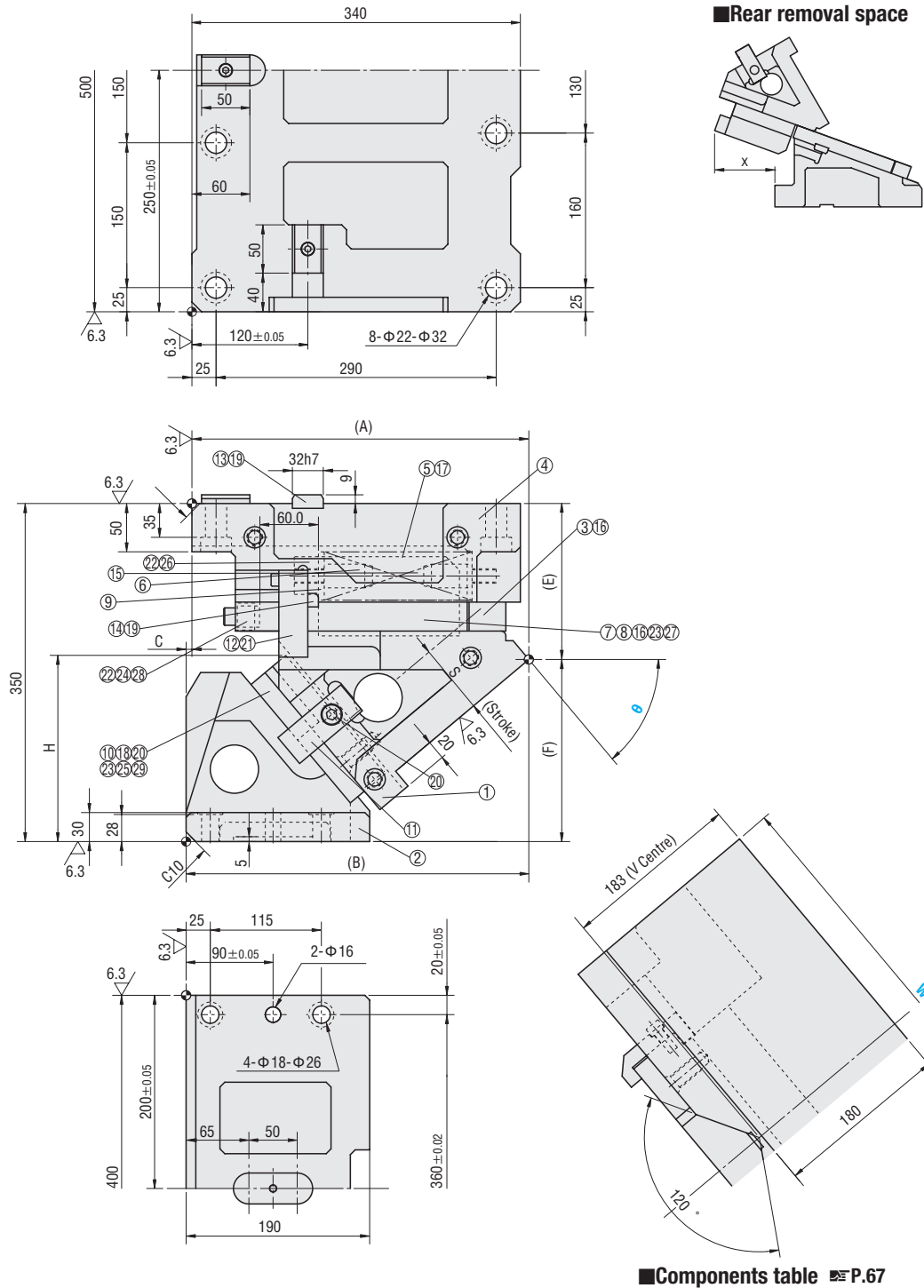
Alterations	Code	Spec.
	N	Machining of locating dowel holes 2 dowel holes (Ø16H7) are machined on the cam holder.
	K	Addition of locating key (With 1 hexagon socket head cap screw M8-15) Provided key
	FK	Relocation of key position Locating key on the cam holder is relocated forward.

WIDE FLYING CAM UNITS FOR PIERCE

— MGFVW —



— With automatic alignment —
MGFVW500 ($\theta=50-60$)



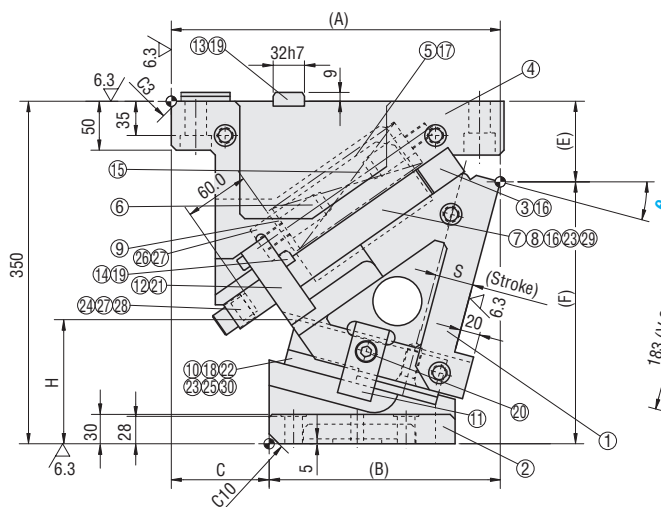
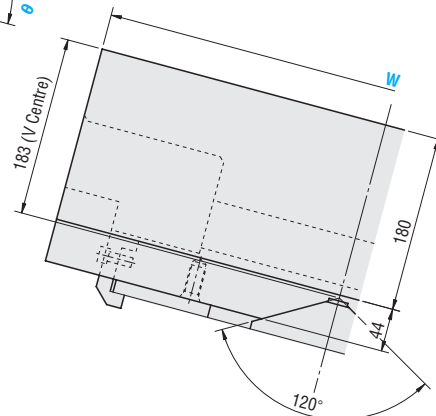
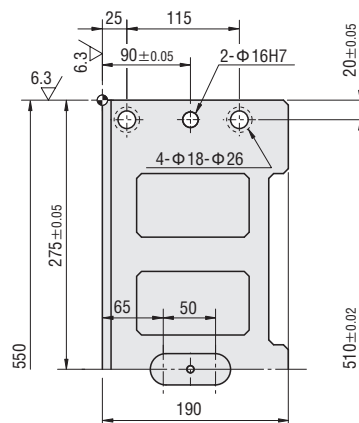
CAM DIAGRAM

 P.65

Technical drawing of a rectangular plate with the following dimensions and features:

- Overall width: 340
- Overall height: 275
- Top edge features:
 - Top-left corner: 50 (width of a small rectangular feature), 60 (width of a larger rectangular feature).
 - Top-right corner: 200 (height of a small rectangular feature).
- Left edge features:
 - Top-left corner: 600 (total height), 200 (height of a small rectangular feature).
 - Bottom-left corner: 175 (height of a small rectangular feature), 25 (height of a small rectangular feature).
- Internal features:
 - Central rectangular cutout.
 - Bottom-center rectangular feature: 50 (width), 40 (height).
 - Bottom-left corner: 6.3 (width of a small rectangular feature), 6.3 (width of a small rectangular feature).
- Bottom edge features:
 - Bottom-left corner: 25 (width of a small rectangular feature), 120 ± 0.05 (width of a small rectangular feature).
 - Bottom-right corner: 290 (width of a small rectangular feature), 25 (width of a small rectangular feature).
- Other features:
 - 7-Φ 22-Φ 32 (7 holes with diameter 22 and 32).

A technical drawing of a mechanical assembly, likely a part of a machine tool. It shows a complex arrangement of components including a base, a vertical support, and a horizontal arm. A dimension line labeled 'X' indicates the distance from the base to the center of a circular feature on the horizontal arm.



60

W	θ	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
38.6	392.0 (40.0)	784.0 (79.9)	3268.8 (333.1)	19612.8 (1998.7)	281.4	– With automatic alignment – MGFVW	600	00
42.6					277.9			05
46.7					274.1			10
50.9					272.3			15
55.3					268.8			20
65.1					276.6			30
77.1					285.2			40



Order

Catalogue No. **MGFVW** W **600** – θ **10**



Alterations



Catalogue No. **MGFVW** W **600** – θ **10** – (N-K-FK) **N**

Alterations	Code	Spec.
	N	Machining of locating dowel holes 2 dowel holes (Φ16H7) are machined on the cam holder.
	K	Addition of locating key (With 1 hexagon socket head cap screw M8-15) Provided key
	FK	Relocation of key position Locating key on the cam holder is relocated forward.

CAM DIAGRAM

 P.65

Figure 1 shows the technical drawing of a mechanical assembly, including three views: (A) Top view, (B) Front view, and (C) Side view. The drawing includes dimensions in millimeters and degrees, as well as feature callouts.

View (A) Top View: Shows the top of the assembly. Dimensions include overall width 340, overall height 275, and a central rectangular cutout. Key features include 7 holes with diameter $\Phi 22$ and hole $\Phi 32$, and a central slot with width 120 ± 0.05 and depth 290. Surface finish requirements are indicated by 6.3 and 12.5 symbols.

View (B) Front View: Shows the front of the assembly. Dimensions include overall height 350, overall width 190, and a central rectangular cutout. Key features include 4 holes with diameter $\Phi 18$ and hole $\Phi 26$, and a central slot with width 120 ± 0.05 and depth 290. Surface finish requirements are indicated by 6.3 and 12.5 symbols.

View (C) Side View: Shows the side of the assembly. Dimensions include overall width 190, overall height 275, and a central rectangular cutout. Key features include 2 holes with diameter $\Phi 16$ and hole $\Phi 7$, and a central slot with width 120 ± 0.05 and depth 290. Surface finish requirements are indicated by 6.3 and 12.5 symbols.

Feature Callouts: The drawing includes numerous feature callouts for identification:

- 1: 183 (V Centre)
- 2: 183 (V Centre)
- 3: 183 (V Centre)
- 4: 183 (V Centre)
- 5: 183 (V Centre)
- 6: 183 (V Centre)
- 7: 183 (V Centre)
- 8: 183 (V Centre)
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- 88: 183 (V Centre)
- 89: 183 (V Centre)
- 90: 183 (V Centre)
- 91: 183 (V Centre)
- 92: 183 (V Centre)
- 93: 183 (V Centre)
- 94: 183 (V Centre)
- 95: 183 (V Centre)
- 96: 183 (V Centre)
- 97: 183 (V Centre)
- 98: 183 (V Centre)
- 99: 183 (V Centre)
- 100: 183 (V Centre)

A technical drawing of a mechanical assembly, likely a part of a machine tool. It shows a complex arrangement of components, including a large, angled block with a circular feature. A dimension line labeled 'X' indicates a specific distance or length within the assembly.

■Components table P.67

W	θ	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Type	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
93.3	392.0 (40.0)	784.0 (79.9)	3268.8 (333.1)	19612.8 (1998.7)	283.5	– With automatic alignment – MGFVW	600	50
120.0					295.6			60



Order

Catalogue No. **W** – **θ**
MGFVW **600** – **50**



Alterations

Catalogue No. **W** – **θ** – (N-K-FK)
MGFVW **600** – **50** – **K**

Alterations	Code	Spec.
	N	<p>Machining of locating dowel holes 2 dowel holes (Φ16H7) are machined on the cam holder.</p>
	K	<p>Addition of locating key (With 1 hexagon socket head cap screw M8-15)</p> <p>Provided key</p>
	FK	<p>Relocation of key position Locating key on the cam holder is relocated forward.</p>

WIDE FLYING CAM UNITS FOR PIERCE

— MGFVW — CAM DIAGRAM

MGFVW

200-00	200-05	200-10	200-15	200-20
200-30	200-40	200-50	200-60	300-00
300-05	300-10	300-15	300-20	300-30
300-40	300-50	300-60	400-00	400-05
400-10	400-15	400-20	400-30	400-40

400-50	400-60	500-00	500-05	500-10
500-15	500-20	500-30	500-40	500-50
500-60	600-00	600-05	600-10	600-15
600-20	600-30	600-40	600-50	600-60

WIDE FLYING CAM UNITS FOR PIERCE

— MGFVW · MEVWN — COMPONENTS TABLE

■MGFVW200

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Driver	FC250	1
③	Base Plate A	Copper Alloy with Graphite	1
④	Cam Holder	FC250	1
⑤	Spring Guide Block	Copper Alloy with Graphite	1
⑥	Spring Guide Pin	S45C	2
⑦	Base Plate C R	Copper Alloy with Graphite	1
⑧	Base Plate C L	Copper Alloy with Graphite	1
⑨	Washer	S45C	1
⑩	Slide Guide	SS400 with Special Sintered Alloy	1
⑪	Cam Compulsory Returning Plate	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	3
⑭	Key B	SS400	2
⑮	Coil Spring	Φ50×225	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	Φ13×40	6
㉔	Silent Stopper	Urethane	1
㉕	Stopper Plate	SS400	1
㉖	Spring Guide Plate	SS400	1

■MGFVW300

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Driver	FC250	1
③	Base Plate B	Copper Alloy with Graphite	1
④	Cam Holder	FC250	1
⑤	Spring Guide Block	Copper Alloy with Graphite	1
⑥	Spring Guide Pin	S45C	4
⑦	Base Plate D R	Copper Alloy with Graphite	1
⑧	Base Plate D L	Copper Alloy with Graphite	1
⑨	Washer	S45C	2
⑩	Slide Guide	SS400 with Special Sintered Alloy	1
⑪	Cam Compulsory Returning Plate	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	3
⑭	Key B	SS400	2
⑮	Coil Spring	Φ50×225	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	Φ13×40	6
㉔	Silent Stopper	Urethane	2
㉕	Stopper Plate	SS400	1
㉖	Spring Guide Plate	SS400	1

■MGFVW400

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Driver	FC250	1
③	Base Plate A	Copper Alloy with Graphite	2
④	Cam Holder	FC250	1
⑤	Spring Guide Block	Copper Alloy with Graphite	2
⑥	Spring Guide Pin	S45C	4
⑦	Base Plate C R	Copper Alloy with Graphite	1
⑧	Base Plate E	Copper Alloy with Graphite	1
⑨	Washer	S45C	2
⑩	Slide Guide	SS400 with Special Sintered Alloy	1
⑪	Cam Compulsory Returning Plate	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	3
⑭	Key B	SS400	3
⑮	Coil Spring	Φ50×225	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	Φ13×40	6
㉔	Silent Stopper	Urethane	2
㉕	Slide Plate R	SS400 with Special Sintered Alloy	1
㉖	Spring Guide Plate	SS400	2
㉗	Base Plate C L	Copper Alloy with Graphite	1
㉘	Stopper Plate	SS400	2
㉙	Slide Plate L	SS400 with Special Sintered Alloy	1

■MGFVW500

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Driver	FC250	1
③	Base Plate A	Copper Alloy with Graphite	2
④	Cam Holder	FC250	1
⑤	Spring Guide Block	Copper Alloy with Graphite	3
⑥	Spring Guide Pin	S45C	6
⑦	Base Plate C R	Copper Alloy with Graphite	1
⑧	Base Plate F	Copper Alloy with Graphite	2
⑨	Washer	S45C	3
⑩	Slide Guide	SS400 with Special Sintered Alloy	1
⑪	Cam Compulsory Returning Plate	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	3
⑭	Key B	SS400	4
⑮	Coil Spring	Φ50×225	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	Φ13×40	6
㉔	Silent Stopper	Urethane	3
㉕	Slide Plate R	SS400 with Special Sintered Alloy	1
㉖	Spring Guide Plate	SS400	3
㉗	Base Plate C L	Copper Alloy with Graphite	1
㉘	Stopper Plate	SS400	3
㉙	Slide Plate L	SS400 with Special Sintered Alloy	1

■MGFVW600

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Driver	FC250	1
③	Base Plate B	Copper Alloy with Graphite	2
④	Cam Holder	FC250	1
⑤	Spring Guide Block	Copper Alloy with Graphite	2
⑥	Spring Guide Pin	S45C	8
⑦	Base Plate G R	Copper Alloy with Graphite	1
⑧	Base Plate H	Copper Alloy with Graphite	1
⑨	Washer	S45C	4
⑩	Slide Guide	SS400 with Special Sintered Alloy	1
⑪	Cam Compulsory Returning Plate	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	3
⑭	Key B	SS400	3
⑮	Coil Spring	Φ50×225	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
⑳	Cap Screw	M10×25	2
㉑	Cap Screw	M8×45	2
㉒	Cap Screw	M10×20	8
㉓	Dowel Pin	Φ13×40	6
㉔	Silent Stopper	Urethane	4
㉕	Slide Plate R	SS400 with Special Sintered Alloy	1
㉖	Spring Guide Plate	SS400	2
㉗	Cap Screw	M16×50	8
㉘	Stopper Plate	SS400	2
㉙	Base Plate G L	Copper Alloy with Graphite	1
㉚	Slide Plate L	SS400 with Special Sintered Alloy	1

CAM DIAGRAM
P.72

W	θ	A	B	C	E	F	H	J	K	L	V	V ₁	a	c	h	x
52	00	150	105	45	43	82	21	7	15	30	59	60	105	68	68	0
	05	153.10	111.1	42	45.21	79.79	26		10							
	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
19.3	14.7 (1.5)	29.4 (3.0)	245.0 (25.0)	980.0 (100.0)	5.3	– With automatic alignment – MGFVC	52	00
21.3					5.2			05
23.3					5.1			10
25.4					5.0			15
27.6					5.0			20
30.0					5.0			25
32.6					5.0			30
35.4					4.9			35
38.6					5.0			40



Order

Catalogue No.	W	—	θ
MGFVC	52	—	15



AI

Catalogue No.	W	—	θ	—	(SC)
MGFVC	52	—	20	—	SC60

Alteration	Code	Spec.
	SC	Forward relocation of mount surface 1 SC 60 1mm increments

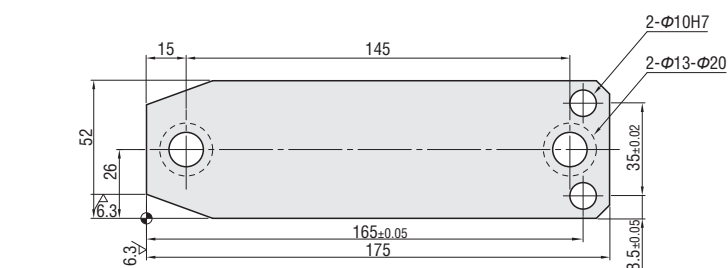
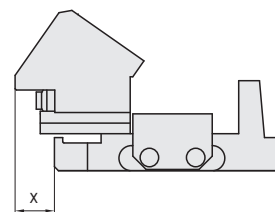
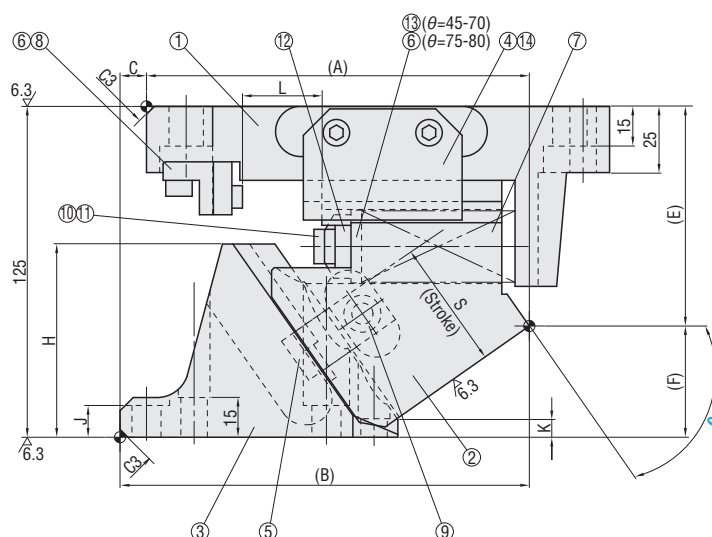
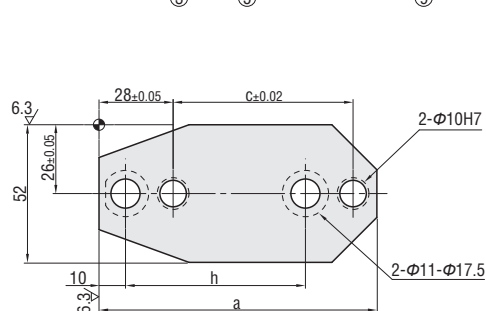
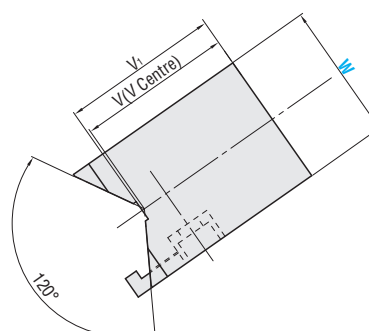
COMPACT FLYING CAM UNITS FOR PIERCE

— MGFVC —



— With automatic alignment —
MGFVC52 ($\theta=45-80$)

■ Rear removal space



■ Components table ■ P.73

W	θ	A	B	C	E	F	H	J	K	L	V	V ₁	a	c	h	x	
52	45	145.41	149.41	4	75.73	49.27	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	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
42.3	14.7 (1.5)	29.4 (3.0)	245.0 (25.0)	980.0 (100.0)	5.0	– With automatic alignment – MGFVC	52	45
46.7					5.0			50
52.3					5.0			55
60.0					5.2			60
47.3			327.0 (33.3)	981.0 (99.9)	5.9			65
58.5					5.9			70
46.3			327.1 (33.4)	981.2 (100.1)	7.8			75
57.5			436.1 (44.5)		7.7			80



Order

Catalogue No. **MGFVC** W **52** – θ **50**



Alterations



Catalogue No. **MGFVC** W **52** – θ **65** – (SC) **SC30**

Alteration	Code	Spec.
	SC	Forward relocation of mount surface 1 ≤ SC ≤ 60 1mm increments

COMPACT FLYING CAM UNITS FOR PIERCE

— MGFVC — CAM DIAGRAM COMPONENTS TABLE

Cam diagram

■ MGFVC

52-00 	52-05 	52-10 	52-15
52-20 	52-25 	52-30 	52-35
52-40 	52-45 	52-50 	52-55
52-60 	52-65 	52-70 	52-75
52-80 			

Components table

■MGFVC52(θ =00-40)

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FC250	1
②	Cam Slider	FC250 with Graphite	1
③	Cam Driver	FC250	1
④	Slide Retention Plate	S50C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	1
⑥	Cap Screw	M8x20	2
⑦	Coil Spring	ϕ 27x100	1
⑧	Stopper	SS400 with Urethane	1
⑨	Cap Screw	M8x15	1
⑩	Cap Screw	M6x16	4

■MGFVC52(θ =45-70)

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FC250	1
②	Cam Slider	FC250 with Graphite	1
③	Cam Driver	FC250	1
④	Slide Retention Plate	S50C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	1
⑥	Cap Screw	M6x20	2
⑦	Coil Spring	ϕ 27x100 (θ =45-60) ϕ 27x75 (θ =65-70)	1
⑧	Stopper	SS400 with Urethane	1
⑨	Cap Screw	M8x15	1
⑩	Stopper Plate	SS400	1
⑪	Cap Screw	M8x25	2
⑫	Spring Plate	SS400	1
⑬	Cap Screw	M6x12	1
⑭	Cap Screw	M6x16	4

■MGFVC52(θ =75-80)

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FC250	1
②	Cam Slider	FC250 with Graphite	1
③	Cam Driver	FC250	1
④	Slide Retention Plate	S50C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	1
⑥	Cap Screw	M6x20	3
⑦	Spring	ϕ 27x45	1
⑧	Stopper	SS400 with Urethane	1
⑨	Cap Screw	M8x15	1
⑩	Stopper Plate	SS400	1
⑪	Cap Screw	M8x25	2
⑫	Spring Plate	SS400	1
⑭	Cap Screw	M6x16	4

CAM DIAGRAM

 P.78

Components table P.79

W	θ	A	B	C	E	F	H	N ₁	U	a	a ₁	c ₁	c ₂	g ₁	h ₁	x
52	00	160	125	35	42	118	41	21.5	10.73	125	175	115	47.5	27.5	117.5	43
	05	161.10	136.10	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	140	185	120	52.5	32.5	122.5	64
	20	169.72	169.72	0	76.86	83.14	48	27.07	29.7							69

Stroke S	Acting force kN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
30.2	29.4 (3.0)	58.8 (6.0)	31.6 (3.2)	3110.8 (317.2)	8.8	– With automatic alignment – MGFVA	52	00
33.4					8.6			05
36.6					8.7			10
39.9					9.0			15
43.3					8.9			20



Order

Catalogue No. **MGFVA** W **52** – θ **10**



AI

Catalogue No. **MGFVA** W **52** – θ **15** – (N12-SC-WC) **SC15**

Alterations	Code	Spec.
	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$
	SC	Forward relocation of mount surface $1 \leq SC \leq 50$ 1mm increments
	WC	Mount surface width change $W=52 \Rightarrow W=80$ or 120 ⚠ Only 80 or 120 can be selected.

CAM DIAGRAM

 P.78

■Components table  P.79

W	θ	A	B	C	E	F	H	L	N ₁	U ₁	a	c	c ₁	c ₂	g ₁	h	h ₁	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	117.5	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				105	67.5	47.5	40	107.5	100
	60	142.95	157.95	15	113.10	46.90	27		15									105

Stroke S	Acting force kN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
47.0	29.4 (3.0)	58.8 (6.0)	31.6 (3.2)	3110.8 (317.2)	8.8	– With automatic alignment – MGFVA	52	25
51.0					8.6			30
55.4					8.8			35
60.4					8.9			40
66.2					9.1			45
73.1					8.8			50
64.5			36.1(3.7)		8.9			55
54.0			98.1(10.0)		8.5			60



Order

Catalogue No. **MGFVA** W **52** – θ **55**



Alterations

Catalogue No. **MGFVA** W **52** – θ **45** – (N12-SC-WC) **WC120**

Alterations	Code	Spec.
	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$
	SC	Forward relocation of mount surface $1 \leq SC \leq 50$ 1mm increments
	WC	Mount surface width change $W=52 \Rightarrow W=80$ or 120 Only 80 or 120 can be selected.

COMPACT FLYING CAM UNITS FOR HEAVY LOAD PIERCE

— MGFVA — CAM DIAGRAM COMPONENTS TABLE

Cam diagram

■ MGFVA

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

Components table

■MGFVA52

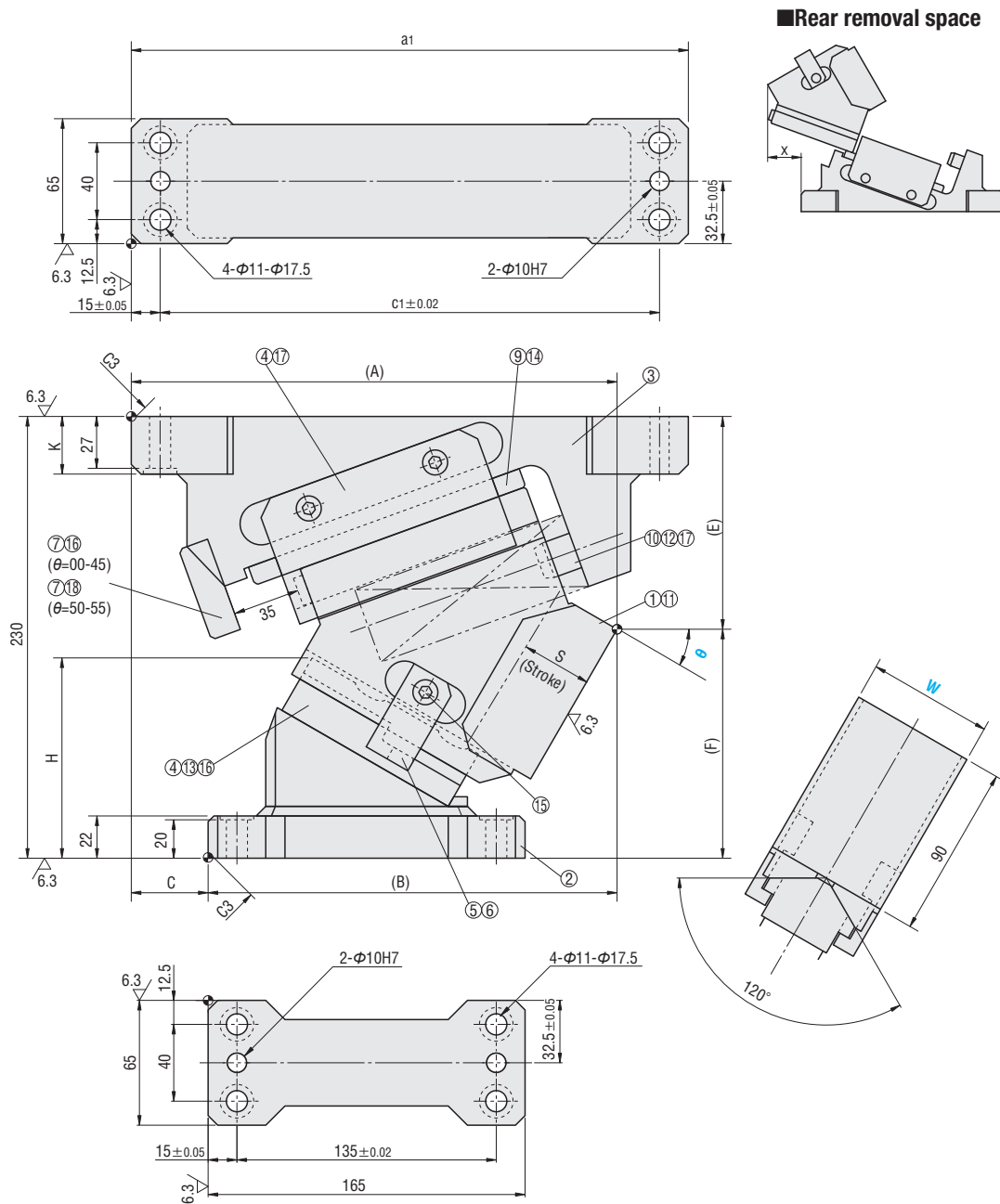
No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FCD550	1
②	Cam Slider	FCD550 with Graphite	1
③	Cam Driver	FC250	1
④	Slide Retention Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate	Copper Alloy	1
⑥	Stopper Plate	SS400	1
⑦	Spring Guide Pin	S45C	1
⑧	Silent Stopper	Urethane	1
⑨	Spring 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	M8×16	5
⑬	Cap Screw	M10×20	2
⑭	Spring Guide Bush	Copper Alloy (S45C)	1

FLYING CAM UNITS FOR HEAVY LOAD PIERCE

— MGFVH —



— With automatic alignment —
MGFVH65 ($\theta=00-55$)



■ Components table ■ P.85

W	θ	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	290	260	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	0	125.98	104.02	148.1			39	71
	55	240.78	240.78		136.14	93.86	153.1				63

Stroke S	Acting force kN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
22.5	68.7 (7.0)	137.3 (14.0)	0.0 (0.0)	5988.5 (610.7)	18.4	– With automatic alignment – MGFVH	65	00
22.6					18.6			05
27.2					17.4			10
27.8					17.5			15
32.3					16.6			20
33.4					16.8			25
38.0					16.9			30
40.2					17.0			35
45.0					16.4			40
48.7					16.6			45
54.5					15.9			50
61.0					16.1			55



Order

Catalogue No. **MGFVH** W **65** – θ **10**

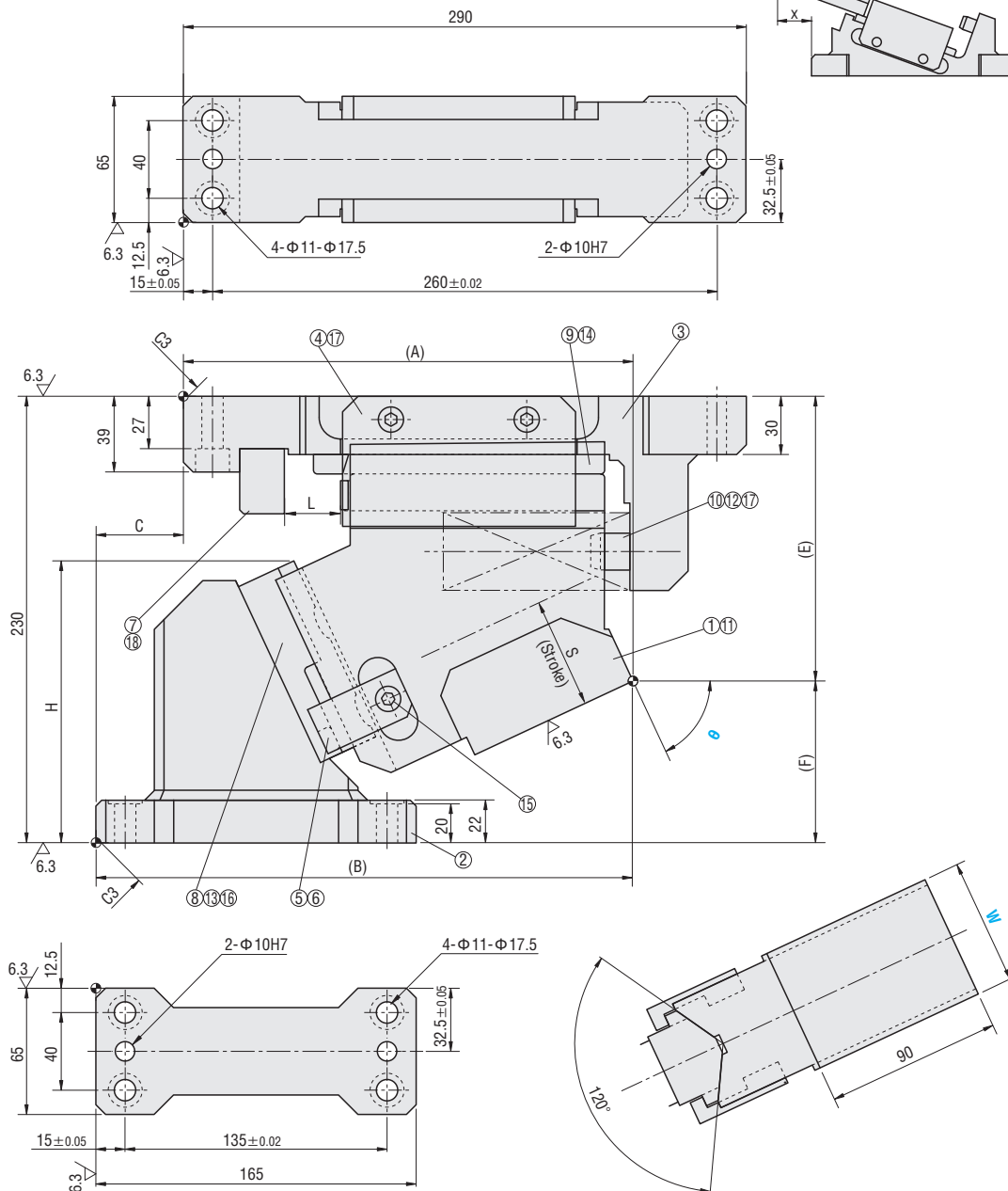
FLYING CAM UNITS FOR HEAVY LOAD PIERCE

— MGFVH —



— With automatic alignment —
MGFVH65 ($\theta=60-75$)

■ Rear removal space



■ Components table ■ P.85

W	θ	A	B	C	E	F	H	L	x
65	60	234.5	244.5	10	145.31	84.69	159.8	35	64
	65	231.79	276.79	45	146.72	83.28	145.2	29	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
70.0	68.7 (7.0)	137.3 (14.0)	0.0 (0.0)	5988.5(610.7)	16.4	– With automatic alignment – MGFVH	65	60
68.5				5936.3(605.3)	18.0			65
67.2				5862.7(597.8)	18.0			70
69.5				5257.8(536.1)	20.0			75



Order

Catalogue No.	W	—	θ
MGFVH	65	—	60

FLYING CAM UNITS FOR HEAVY LOAD PIERCE

— MGFVH — CAM DIAGRAM COMPONENTS TABLE

Cam diagram

■MGFVH

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

Components table

■MGFVH65($\theta=00-45$)

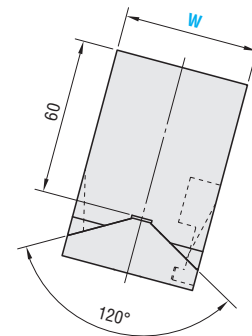
No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FCD500 with Graphite	1
②	Cam Driver	FCD500	1
③	Cam Holder	FCD500	1
④	Slide Retention Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate B	S45C	1
⑥	Cam Compulsory Returning Plate A	S45C	1
⑦	Stopper Plate	SS400	1
⑧	Cam Slide Guide	Copper Alloy with Graphite	1
⑨	Cam Lower Plate	Copper Alloy with Graphite	1
⑩	Spring Guide Pin	SS400	1
⑪	Silent Stopper	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

■MGFVH65($\theta=50-75$)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FCD500 with Graphite	1
②	Cam Driver	FCD500	1
③	Cam Holder	FCD500	1
④	Slide Retention Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate B	S45C	1
⑥	Cam Compulsory Returning Plate A	S45C	1
⑦	Stopper Plate	SS400	1
⑧	Cam Slide Guide	Copper Alloy with Graphite	1
⑨	Cam Lower Plate	Copper Alloy with Graphite	1
⑩	Spring Guide Pin	SS400	1
⑪	Silent Stopper	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

CAM DIAGRAM
P.90

A schematic diagram of a mechanical assembly. It shows a base plate with a horizontal surface. A component with two circular features (possibly rivets or bolts) is mounted on the base. Another component is positioned above it, with a horizontal gap between them. A dimension line labeled 'X' indicates the horizontal distance from the base to the point of contact or alignment between the two components.



86

W	θ	A	B	C	E	F	H	J	K	L	g ₁	h ₁	x
52	00	161	105	56	53	82	21	15	49	47	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	10	52	7			
	15	164.32	121.32	43	60.82	74.18	36		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	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	35	140	44		
	40	153.14	145.14	8	81.93	53.07	58	72			52		

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
30.2	14.7 (1.5)	29.4 (3.0)	0	901.6 (91.9)	6.4	– With automatic alignment – MGFVL	52	00
31.9			19.6 (2.0)		6.1			05
35.0					6.0			10
38.2					5.8			15
41.5					5.7			20
45.0					5.5			25
48.8					5.5			30
53.1					5.4			35
57.9					5.5			40



Order

Catalogue No. **MGFVL** W **52** – θ **25**



AI



Catalogue No. **MGFVL** W **52** – θ **15** – (SC-WC) **SC50**

Alterations	Code	Spec.
	SC	Forward relocation of mount surface $1 \leq SC \leq 60$ 1mm increments
	WC	Mount surface width change W=52 $\Rightarrow$ W=65

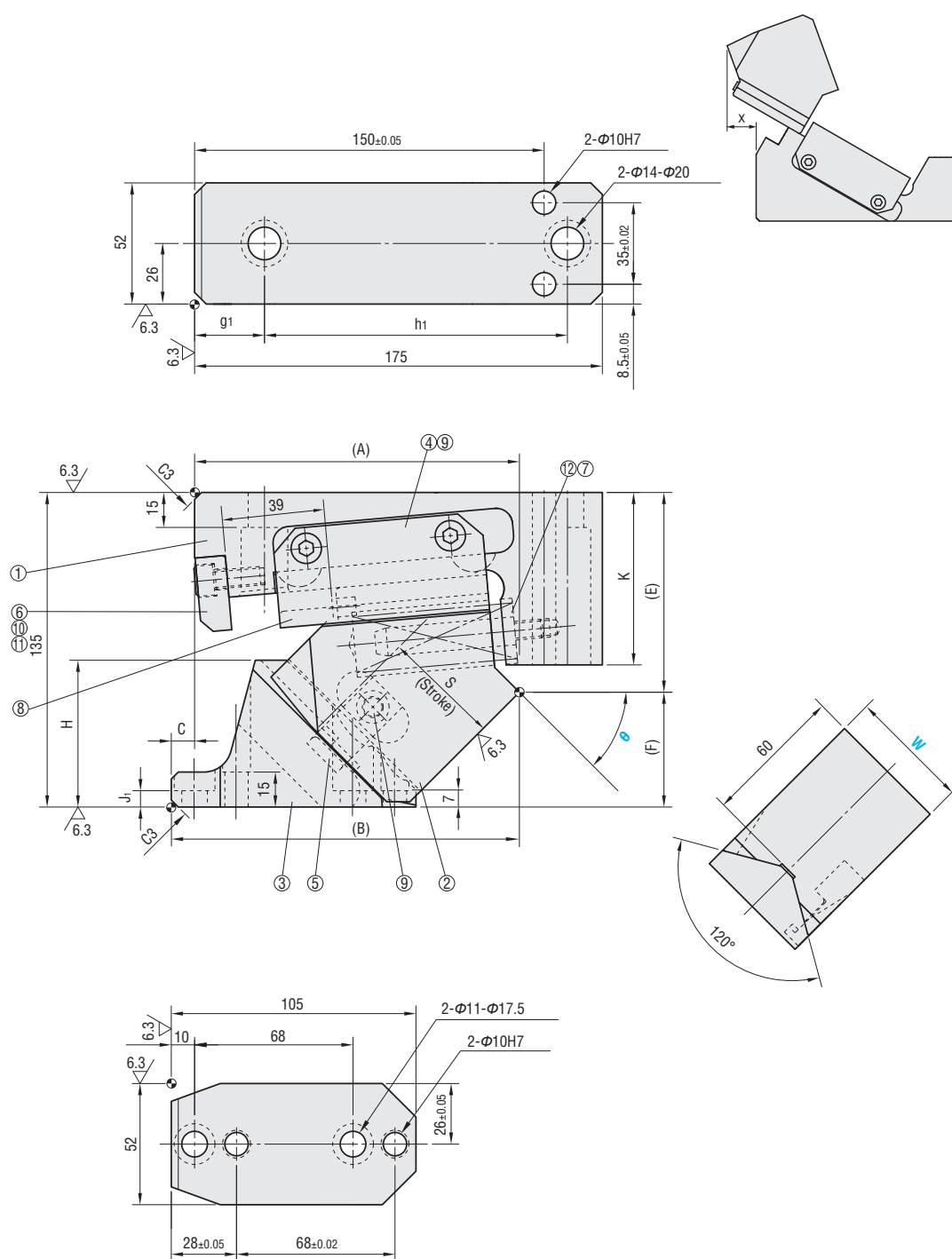
COMPACT LONG STROKE FLYING CAM UNITS FOR PIERCE

— MGFVL —



— With automatic alignment —
MGFVL52 ($\theta=45-50$)

■ Rear removal space



■ Components table ■ P.91

W	θ	A	B	C	E	F	H	J ₁	K	g ₁	h ₁	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
54.9	14.7 (1.5)	29.4 (3.0)	137.2 (14.0)	901.6 (91.9)	5.3	– With automatic alignment – MGFVL	52	45
60.7					5.4			50



Order

Catalogue No. W – θ
MGFVL 52 – 50



Alterations

Catalogue No. W – θ – (SC-WC)
MGFVL 52 – 50 – WC

Alterations	Code	Spec.
	SC	Forward relocation of mount surface $1 \leq SC \leq 60$ 1mm increments
	WC	Mount surface width change W=52 $\Rightarrow$ W=65

COMPACT LONG STROKE FLYING CAM UNITS FOR PIERCE

— MGFVL — CAM DIAGRAM COMPONENTS TABLE

Cam diagram

■ MGFVL

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

Components table

■MGFVL52

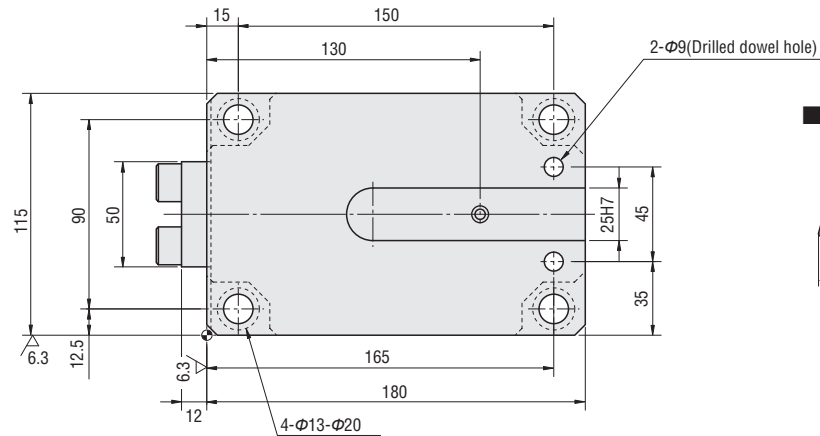
No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FC250	1
②	Cam Slider	FC250 with Graphite	1
③	Cam Driver	FC250	1
④	Slide Retention Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	1
⑥	Cap Screw	M8X20	2
⑦	Coil Spring	Φ25x115	1
⑧	Silent Stopper	Urethane	2
⑨	Cap Screw	M8X15	5
⑩	Stopper Plate	SS400	1
⑪	Spring Washer	For M8	2
⑫	Spring Guide Pin	S45C	1

FLYING CAM UNITS FOR TRIM AND FLANGE

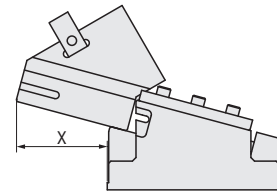
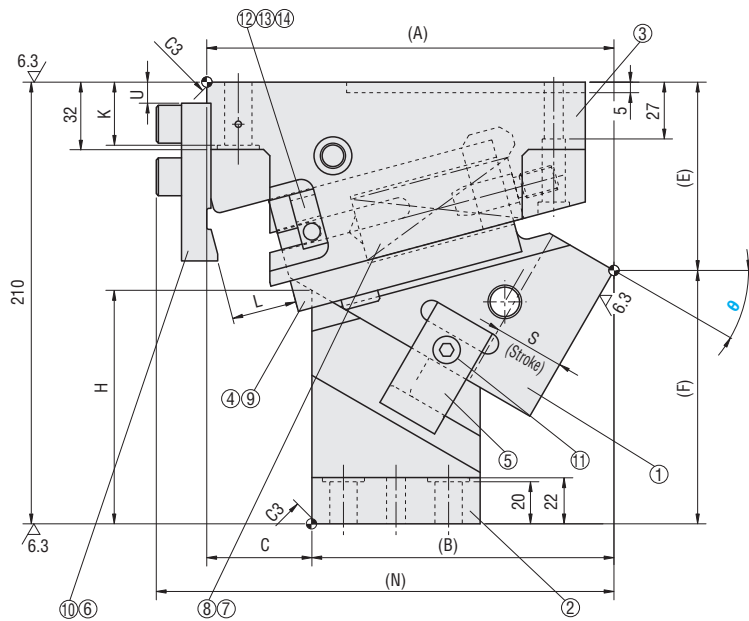
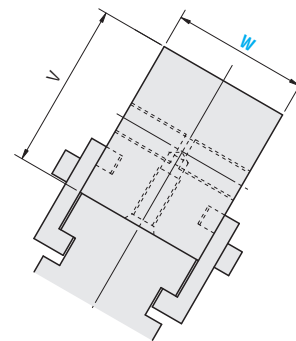
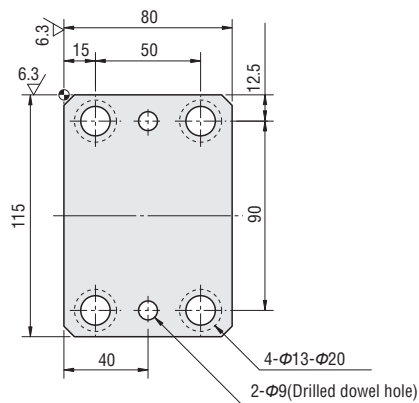
— MGFTT —



MGFTT65



■Rear removal space



■Components table P.100

W	θ	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		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		35	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	110.0	30	217.63	80	15		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	25	33	212.72		80		90
	45	194.13	160.13	34	104.16	105.84	115			218.13				
	50	190	160	30	110	100	130	18	35	214	100	10	77	
	55		170	20	115	95			25		110		87	
	60													
	65		190	0	130	80			20		110		92	
	70													

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
26.9	19.6(2.0)	39.2(4.0)	166.2(16.9)	1068.3(108.9)	19.5	MGFTT	65	00
27.0			237.4(24.2)	1139.9(116.2)	19.8			05
31.6					19.3			10
32.2					19.6			15
33.8					308.6(31.5)			18.1
35.0	18.4	25						
33.5	23.5(2.4)	47.0(4.8)	427.7(43.6)		17.7			30
35.4			356.1(36.3)		18.0			35
42.9					16.9			40
46.5					17.1			45
54.5			29.4(3.0)		58.8(6.0)			308.6(31.5)
43.6	296.3(30.2)	1036.9(105.7)		17.8				55
50.0				17.3				60
47.3		888.8(90.6)		18.5				65
58.5				18.4				70



Order

Catalogue No. **MGFTT** W **65** — θ **40**



AI

Catalogue No. **MGFTT** W **65** — θ **15** — (HK-DK---etc.) **HDK10**

Alterations	Code	Spec.
	HK	Finishing of dowel hole on cam holder Only 10, 12 or 13 can be selected. Φ9 (Drilled hole) ⇒ Φ10H7, Φ12H7 or Φ13H7
	DK	Finishing of dowel hole on cam driver Only 10, 12 or 13 can be selected. Φ9 (Drilled hole) ⇒ Φ10H7, Φ12H7 or Φ13H7

Alterations	Code	Spec.
	HDK	Finishing of dowel holes on cam holder and cam driver Only 10, 12 or 13 can be selected. Φ9 (Drilled hole) ⇒ Φ10H7, Φ12H7 or Φ13H7
	K	Addition of locating key (With 1 hexagon socket head cap screw M8-20)



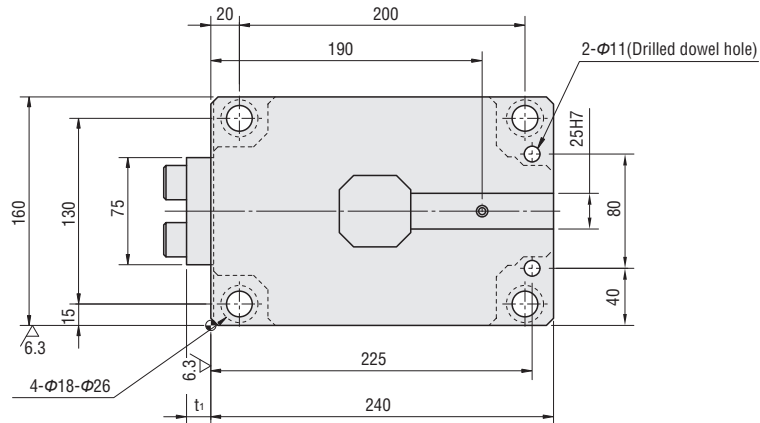
D +49 6171 924201 • CZ +420 326375911 • F +3301 60247301 • UK +4401 926484192

FLYING CAM UNITS FOR TRIM AND FLANGE

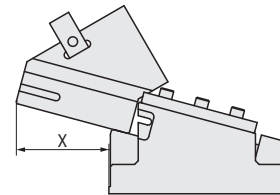
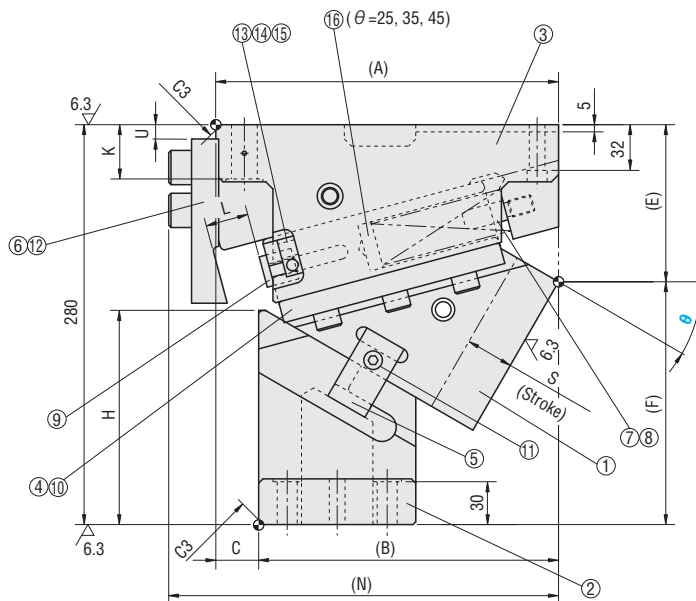
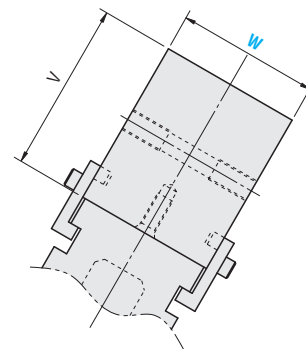
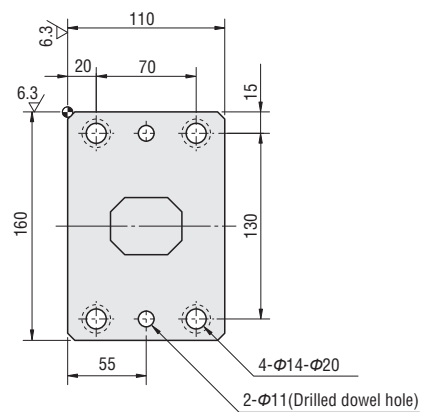
— MGFTT —



MGFTT100



■Rear removal space



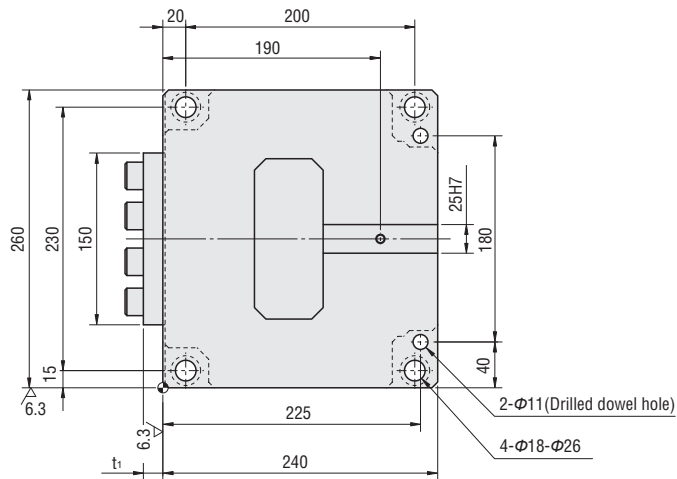
■Components table P.100

FLYING CAM UNITS FOR TRIM AND FLANGE

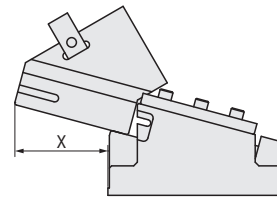
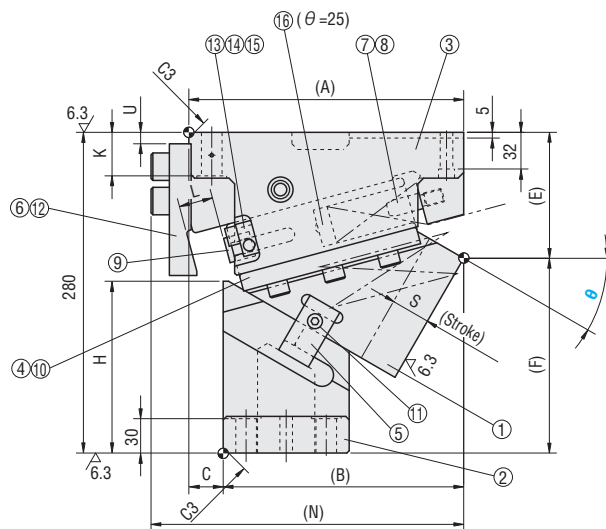
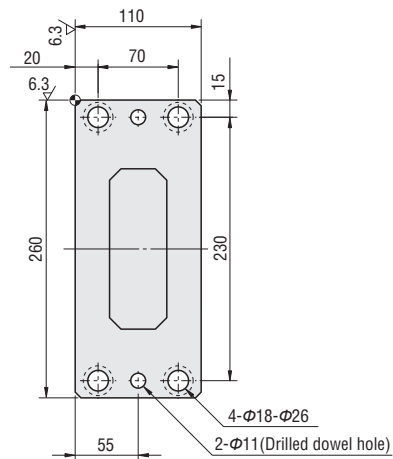
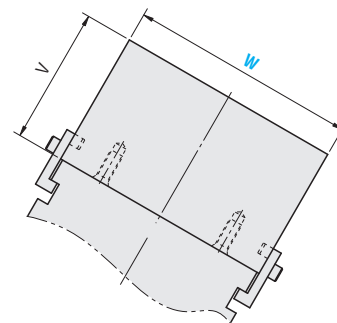
— MGFTT —



MGFTT200



■Rear removal space



■Components table ■P.101

W	θ	A	B	C	E	F	H	K	L	N	V	U	t ₁	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	35		95
	15	254.35	194.35		81.51	198.49	116.0			287.35	130			
	20	240	190	50	110	170	130		32	274	100	15	18	115
	25	253.27	203.27		102.6	177.4	125			287.27	130			
	30	240	210	30	110	170	150		30	273	120	10	17	126
	35	252.34	222.34		109.69	170.31				285.34	140			
	40	240	210		115	165		273		120	130			
	45	247.41	217.41		114.68	165.32		280.41						
	50	240	230	10	120	160	20	20		272	140		16	132
	55													
	60													
	65													
	70													

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
28.3	98.1(10.0)	196.2(20.0)	626.0(63.8)	5634.0(574.2)	81.5	MGFTT	200	00	
28.4			292.8(29.8)	6148.8(626.6)	82.3			05	
33.3					75.7			10	
33.9					80.5			15	
30.9			350.4(35.8)	5956.8(607.9)	76.1			20	
32.0					80.1			25	
33.5					77.0			30	
35.4					80.9			35	
39.0					71.4			40	
42.3					74.7			45	
46.7	117.7(12.0)	235.4(24.0)		5606.4(572.2)	71.6			50	
52.3					78.6			55	
60.0					73.9			60	
47.3		1096.0(111.8)	5480.0(559.0)	77.2	65				
58.5				72.2	70				



Order

Catalogue No.	W	—	θ
MGFTT	200	—	30



Alterations

Catalogue No.	W	—	θ	—	(HK-DK...etc.)
MGFTT	200	—	15	—	K

Alterations	Code	Spec.
	HK	Finishing of dowel hole on cam holder Only 12, 13 or 16 can be selected. Φ11 (Drilled hole) ⇒ Φ12H7, Φ13H7 or Φ16H7
	DK	Finishing of dowel hole on cam driver Only 12, 13 or 16 can be selected. Φ11 (Drilled hole) ⇒ Φ12H7, Φ13H7 or Φ16H7

Alterations	Code	Spec.
	HDK	Finishing of dowel holes on cam holder and cam driver Only 12, 13 or 16 can be selected. Φ11 (Drilled hole) ⇒ Φ12H7, Φ13H7 or Φ16H7
	K	Addition of locating key (With 1 hexagon socket head cap screw M8-20) Provided key



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FLYING CAM UNITS FOR TRIM AND FLANGE

— MGFTT — CAM DIAGRAM

■ MGFTT

65-00 	65-05 	65-10 	65-15 	65-20
65-25 	65-30 	65-35 	65-40 	65-45
65-50 	65-55 	65-60 	65-65 	65-70
100-00 	100-05 	100-10 	100-15 	100-20
100-25 	100-30 	100-35 	100-40 	100-45

100-50 	100-55 	100-60 	100-65 	100-70
200-00 	200-05 	200-10 	200-15 	200-20
200-25 	200-30 	200-35 	200-40 	200-45
200-50 	200-55 	200-60 	200-65 	200-70

FLYING CAM UNITS FOR TRIM AND FLANGE

— MGFTT — COMPONENTS TABLE

■MGFTT65(θ =00-35)

No.	Part Name	Marterial and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	FC250 with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Stopper Plate	SS400	1
⑦	Spring Guide Pin	$\Phi 14 \times 50$	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

■MGFTT65(θ =40-70)

No.	Part Name	Marterial and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	FC250 with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Stopper Plate	SS400	1
⑦	Spring Guide Pin	$\Phi 14 \times 50$	1
⑧	Coil Spring	$\Phi 30 \times 125$ (θ =40-50) $\Phi 30 \times 100$ (θ =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

■MGFTT100(θ =00-20,30)

No.	Part Name	Marterial and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Stopper Plate	SS400	1
⑦	Spring Guide Pin	SCM435	2
⑧	Coil Spring	$\Phi 30 \times 175$ (θ =00) $\Phi 30 \times 150$ (θ =05-15) $\Phi 30 \times 125$ (θ =20,30)	2
⑨	Silent Stopper	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

■MGFTT100(θ =25,35)

No.	Part Name	Marterial and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Stopper Plate	SS400	1
⑦	Spring Guide Pin	SCM435	2
⑧	Coil Spring	$\Phi 30 \times 125$	2
⑨	Silent Stopper	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

■MGFTT100(θ =40,50-70)

No.	Part Name	Marterial and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Stopper Plate	SS400	1
⑦	Spring Guide Pin	SCM435	2
⑧	Coil Spring	$\Phi 30 \times 125$ (θ =40, 50-60) $\Phi 30 \times 100$ (θ =65-70)	2
⑨	Silent Stopper	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

■MGFTT100(θ =45)

No.	Part Name	Marterial and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Stopper Plate	SS400	1
⑦	Spring Guide Pin	SCM435	2
⑧	Coil Spring	$\Phi 30 \times 125$	2
⑨	Silent Stopper	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

■MGFTT200($\theta=00-20,30-35$)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Stopper 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	Silent Stopper	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

■MGFTT200($\theta=25$)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Stopper Plate	SS400	1
⑦	Spring Guide Pin	SCM435	4
⑧	Coil Spring	$\Phi 30 \times 125$	4
⑨	Silent Stopper	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

■MGFTT200($\theta=40-70$)

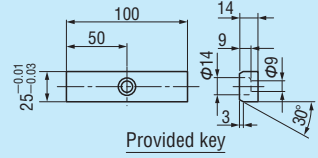
No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Stopper Plate	SS400	1
⑦	Spring Guide Pin	SCM435	4
⑧	Coil Spring	$\Phi 30 \times 125$ ($\theta=40-60$) $\Phi 30 \times 100$ ($\theta=65-70$)	4
⑨	Silent Stopper	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

■Components table  P.110

W	θ	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				67.58			142.42	83.5	40	80
	15	203.77	113.47	67	68.81	141.19							84.7
	20	198.1	138.1	60	74.31	135.69	100.8		35	10	80	71	
	25	204.75	149.75	55	76.73	133.27	103.8				90		
	30	193.63	143.63	50	89.52	120.48	111		30		80	79	
	35	199.76	154.76	45	93.06	116.94	105				90		
	40	188.72	148.72	40	99.62	110.38	120	25	33	15	80		
	45	194.13	160.13	34	104.16	105.84	115	30			90		
	50	190	160	30	110	100	130	18	35	10	100	77	
	55		170	20	115	95							
	60												
	65		190	0	130	80			20				
	70												

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
26.9	19.6 (2.0)	39.2 (4.0)	165.9(16.9)	1066.5(108.8)	19.5	– With automatic alignment – MGFVT	65	00	
27.0			237.0 (24.2)	1137.6 (116.1)	19.8			05	
31.6					19.3			10	
32.2					19.6			15	
33.8					18.1			20	
35.0			308.1 (31.4)		18.4			25	
33.5					426.6 (43.5)			17.7	30
35.4								18.0	35
42.9								16.9	40
46.5			17.1					45	
54.5			308.1(31.4)		16.8			50	
43.6			297.0 (30.3)	1039.5 (106.1)	17.8			55	
50.0					17.3			60	
47.3				891.0 (90.9)	18.5			65	
58.5					18.4			70	

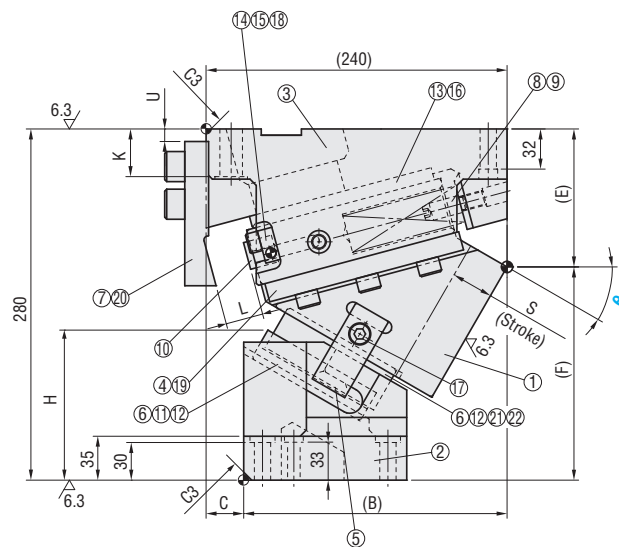
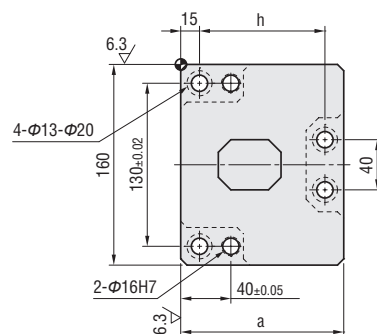
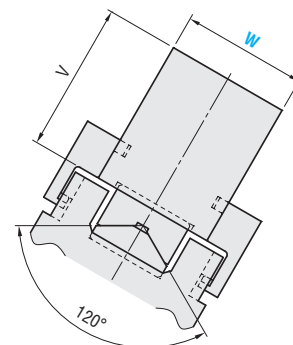
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 Catalogue No. **MGFVT**
 W **65**
 —
 θ **40**
  AI
 Catalogue No. **MGFVT**
 W **65**
 —
 θ **30**
 —
 (K) **K**

Alterations	Code	Spec.
	K	Addition of 2 locating keys (With 2 hexagon socket head cap screws M8-15) 

CAM DIAGRAM

 P.109

A technical drawing of a mechanical assembly. It shows a base component with a vertical flange on the left. A horizontal plate is mounted on top of this flange. A dimension line, labeled 'X', indicates the horizontal distance from the vertical face of the flange to the center of a circular feature on the horizontal plate. The horizontal plate has a small rectangular slot on its top surface. The base component has several other features, including a small rectangular protrusion and a larger, more complex structure on the right side.



104

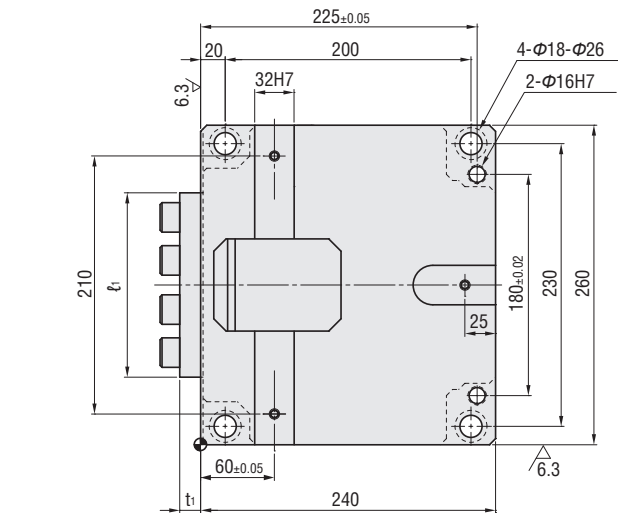
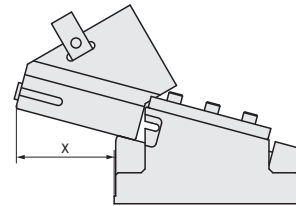
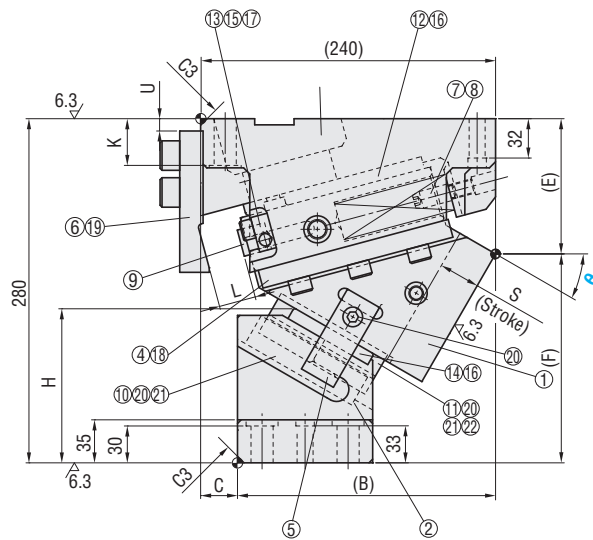
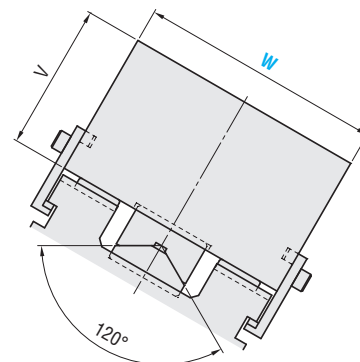
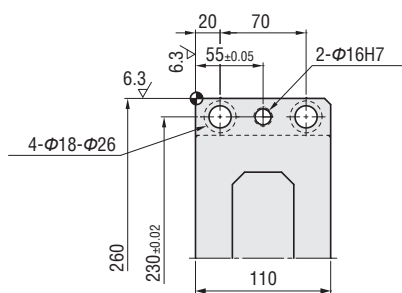
V SHAPE GUIDE FLYING CAM UNITS FOR TRIM AND FLANGE

— MGFVT —



— With automatic alignment —
MGFVT200 ($\theta=00-70$)

■ Rear removal space



■ Components table ■ P.111

V SHAPE GUIDE FLYING CAM UNITS FOR TRIM AND FLANGE

— MGFVT — CAM DIAGRAM

MGFVT

65-00	65-05	65-10	65-15
65-20	65-25	65-30	65-35
65-40	65-45	65-50	65-55
65-60	65-65	65-70	

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

V SHAPE GUIDE FLYING CAM UNITS FOR TRIM AND FLANGE

— MGFVT — COMPONENTS TABLE

■MGFVT65($\theta=00-35$)

No.	Part Name	Marterial and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	FC250 with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Stopper 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	Copper Alloy with Graphite	1
⑯	Cam Bottom Slide Plate	S45C	1
⑰	Dowel Pin	$\Phi 6 \times 20$	1
⑱	Cap Screw	M6 $\times$ 15	4

■MGFVT65($\theta=40-70$)

No.	Part Name	Marterial and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	FC250 with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Stopper 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	Copper Alloy with Graphite	1
⑯	Cam Bottom Slide Plate	S45C	1
⑰	Dowel Pin	$\Phi 6 \times 20$	1
⑱	Cap Screw	M6 $\times$ 15	4

■MGFVT100($\theta=00-30$)

No.	Part Name	Marterial and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Cap Screw	M10 $\times$ 30	4
⑦	Stopper 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	Silent Stopper	Urethane	2
⑪	Cam Bottom Slide Plate	S45C	1
⑫	Cam Bottom Guide Plate	Copper Alloy with Graphite	1
⑬	Cam Lower Plate	Copper Alloy 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

■MGFVT100($\theta=40-70$)

No.	Part Name	Marterial and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Cap Screw	M10 $\times$ 30	4
⑦	Stopper 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	Silent Stopper	Urethane	2
⑪	Cam Bottom Slide Plate	S45C	1
⑫	Cam Bottom Guide Plate	Copper Alloy with Graphite	1
⑬	Cam Lower Plate	Copper Alloy 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

■MGFVT200(θ =00-30)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Stopper 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	Silent Stopper	Urethane	4
⑩	Cam Bottom Slide Plate	S45C	1
⑪	Cam Bottom Guide Plate	Copper Alloy with Graphite	1
⑫	Cam Lower Plate	Copper Alloy with Graphite	2
⑬	Safety Plate	S45C	2
⑭	Driver Plate	Copper Alloy with Graphite	2
⑮	Dowel Pin	$\Phi 10 \times 35$	2
⑯	Cap Screw	M10x20	8
⑰	Cap Screw	M10x35	2
⑱	Cap Screw	M12x35	6
⑲	Cap Screw	M16x45	8
⑳	Cap Screw	M10x30	6
㉑	Dowel Pin	$\Phi 10 \times 25$	4
㉒	Screw Plug	M12	2

■MGFVT200(θ =40-70)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Cam Compulsory Returning Plate	S45C	2
⑥	Stopper 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	Silent Stopper	Urethane	4
⑩	Cam Bottom Slide Plate	S45C	1
⑪	Cam Bottom Guide Plate	Copper Alloy with Graphite	1
⑫	Cam Lower Plate	Copper Alloy with Graphite	2
⑬	Safety Plate	S45C	2
⑭	Driver Plate	Copper Alloy with Graphite	2
⑮	Dowel Pin	$\Phi 10 \times 35$	2
⑯	Cap Screw	M10x20	8
⑰	Cap Screw	M10x35	2
⑱	Cap Screw	M12x35	6
⑲	Cap Screw	M16x45	4
⑳	Cap Screw	M10x30	6
㉑	Dowel Pin	$\Phi 10 \times 25$	4
㉒	Screw Plug	M12	2

— MGFL —



P.136

MGFLL50 ($\theta=00-50$)**■Components table**  P.140

— MGFL —

P.136

■Components table **P.140**

W	θ	A	B	C	E	F	H	K	L	x
50	55	168.64	183.64	15	111.04	68.96	96.4	20	15	0
	60	162.61	187.61	25	118.08	61.92	98		16	
	65	155.95	190.95	35	125.44	54.56	99	15		

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
26.1	29.4 (3.0)	58.8 (6.0)	315.6 (32.2)	1104.6 (112.6)	9.5	MGFLL	50	55	
31.5			263.0 (26.8)		9.7			60	
36.6					10.0			65	



Order

Catalogue No. **MEFLL** W **50** — θ **60**



Alterations



Catalogue No. **MGFLL** W **50** — θ **60** — (N12-N13---etc.) **K**

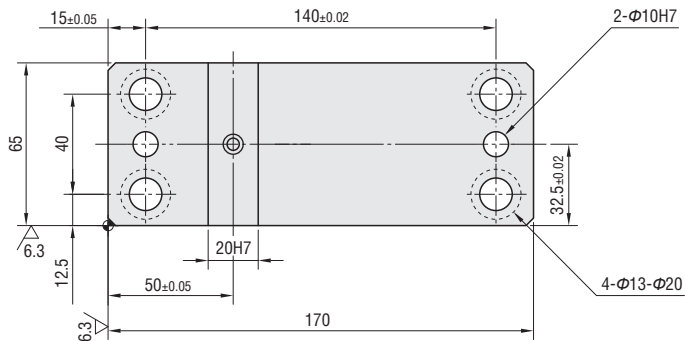
Alterations	Code	Spec.
$\phi 12H7$ or $\phi 13H7$	N12	Dowel hole diameter change $\phi 10H7 \Rightarrow \phi 12H7$
	N13	Dowel hole diameter change $\phi 10H7 \Rightarrow \phi 13H7$
	K	Addition of 3 locating keys (With 3 hexagon socket head cap screws M8-15)
	KA	Addition of 3 stepped locating keys (With 3 hexagon socket head cap screws M8-15)

RIGID FLYING CAM UNITS

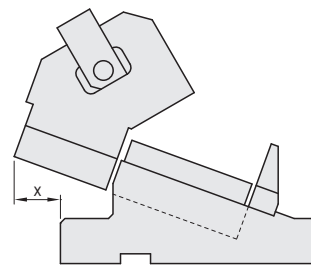
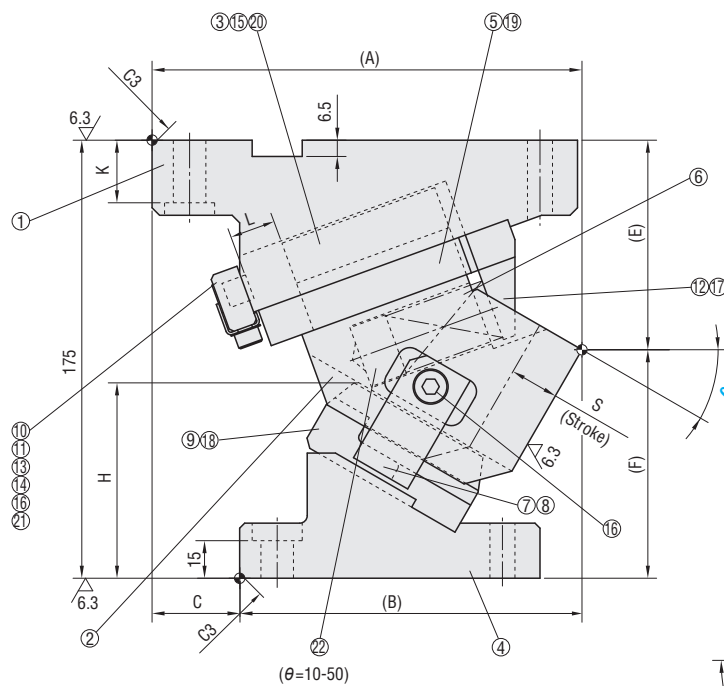
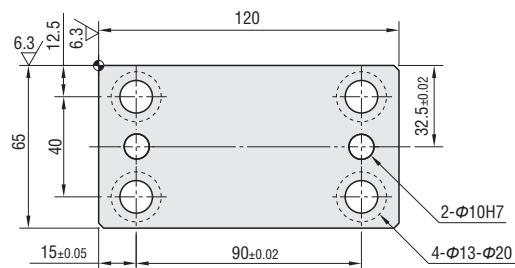
— MGFL —



MGFL65 ($\theta=00-50$)



Rear removal space



Components table P.140

— MGFL —



MGFL65-60

**■Components table**  P.140

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
32.0	29.4 (3.0)	58.8 (6.0)	246.4 (25.1)	809.6 (82.6)	11.1	MGFLL	65	60



Order

Catalogue No. **MGFLL** W **65** — θ **60**



Alterations

Catalogue No. **MGFLL** W **65** — θ **60** — (K) **K**

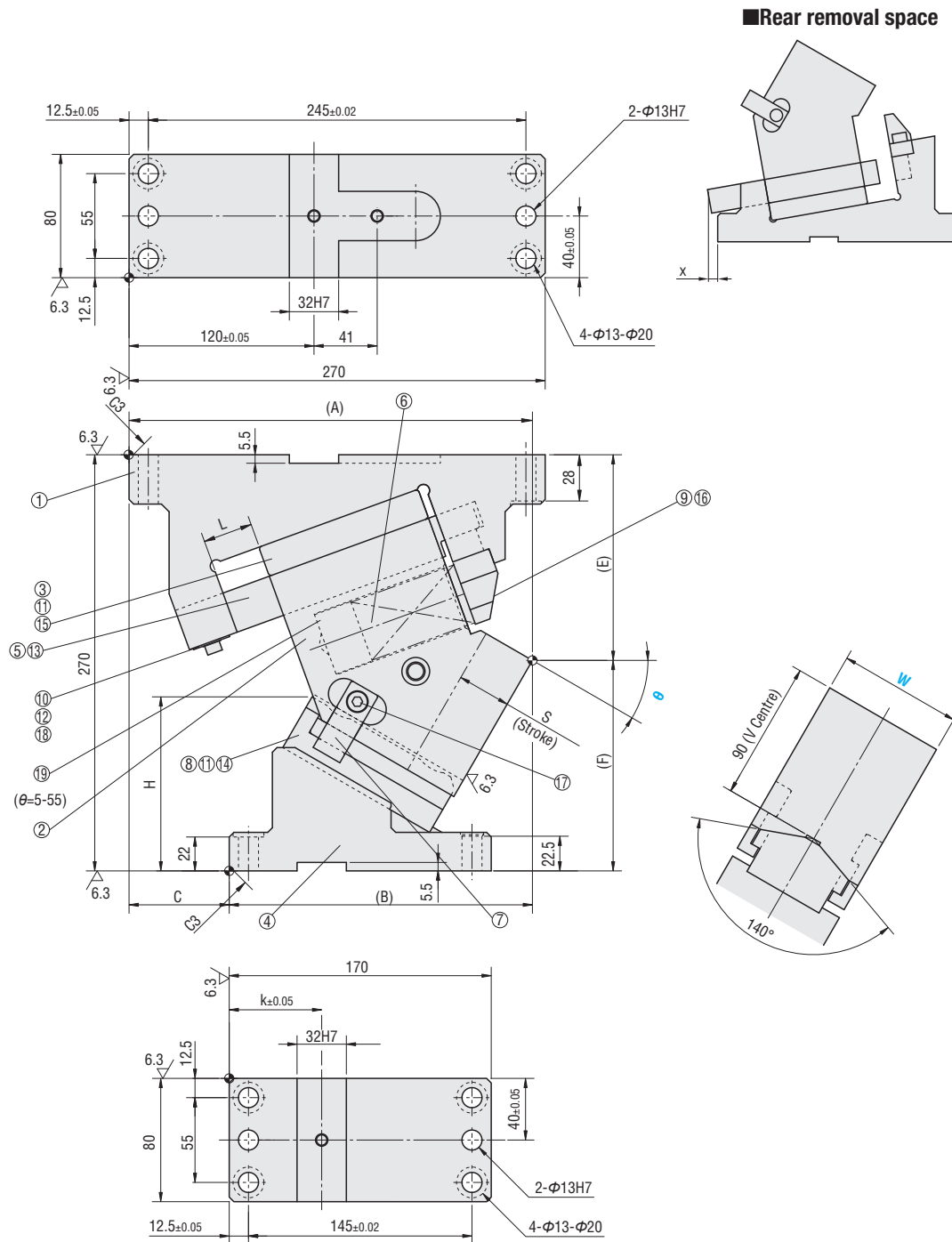
Alterations	Code	Spec.
	K	<p>Addition of locating key (With 1 hexagon socket head cap screw M8-15)</p> <p>Provided key</p>

RIGID FLYING CAM UNITS

— MGFL —



MGFL80 ($\theta=00-55$)



■Components table ■P.140

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			
	20	273.34	178.34	95	123.52	146.48	98.3	35	55	
	25	268.75	188.75	80	128.03	141.97	105.9			
	30	261.73	196.73	65	133.42	136.58	112.9			
	35	258.2	203.2	55	139.66	130.34	119.2			
	40	245.09	210.09	35	146.7	123.3	124.8	31	60	
	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
	55	229.64	229.64	0	172.07	97.93	136.9	31	60	7

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
30.2	49.0 (5.0)	98.0 (10.0)	296.1(30.2)	1842.4(187.6)	34.0	MGFLL	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					32.0			15	
32.3				391.5 (39.9)	1914.0 (194.9)			32.0	20
35.0								30.0	25
34.7				522.0 (53.2)				30.0	30
37.7								30.0	35
39.9				565.5 (57.6)				29.0	40
43.7								29.0	45
46.7				609.0(62.0)				30.0	50
53.8				565.5(57.6)				30.0	55



Order

Catalogue No.

MGFLL

W

80

θ

05



Alterations



Catalogue No.

MGFLL

W

80

θ

30

(N12-K-KA)

N12

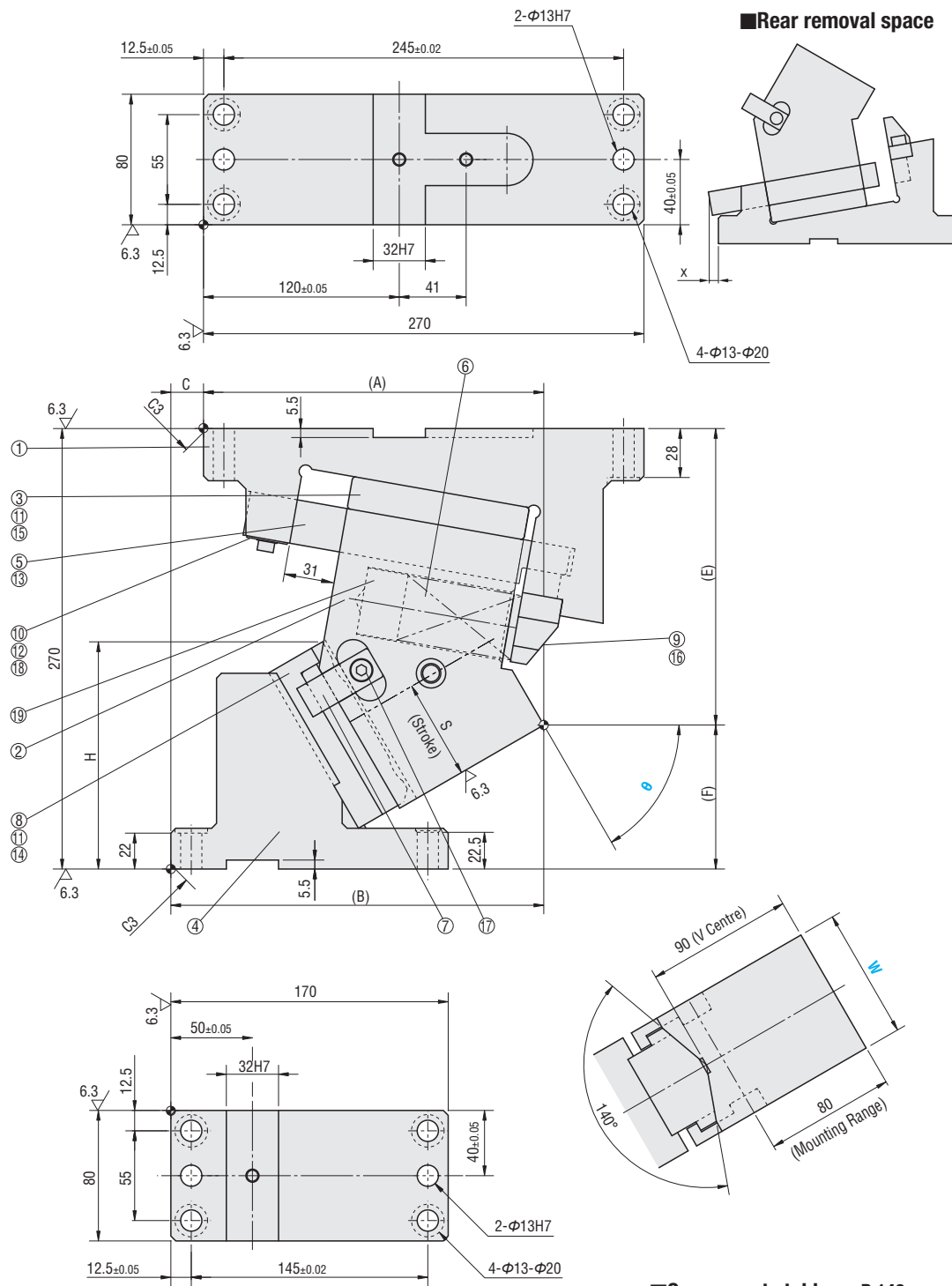
Alterations	Code	Spec.
	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$
	K	Addition of 3 locating keys (With 3 hexagon socket head cap screws M8-15)
	KA	Addition of 3 stepped locating keys (With 3 hexagon socket head cap screws M8-15)

RIGID FLYING CAM UNITS

— MGFL —



MGFL80 ($\theta=60-65$)



W	θ	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
61.1	49.0 (5.0)	98.0 (10.0)	565.5 (57.6)	1914.0 (194.9)	31.0	MGFLL	80	60
70.9					32.0			65



Order

Catalogue No.	W	—	θ
MGFLL	80	—	60



Alterations

Catalogue No.	W	—	θ	—	(N12-K-KA)
MGFLL	80	—	60	—	K

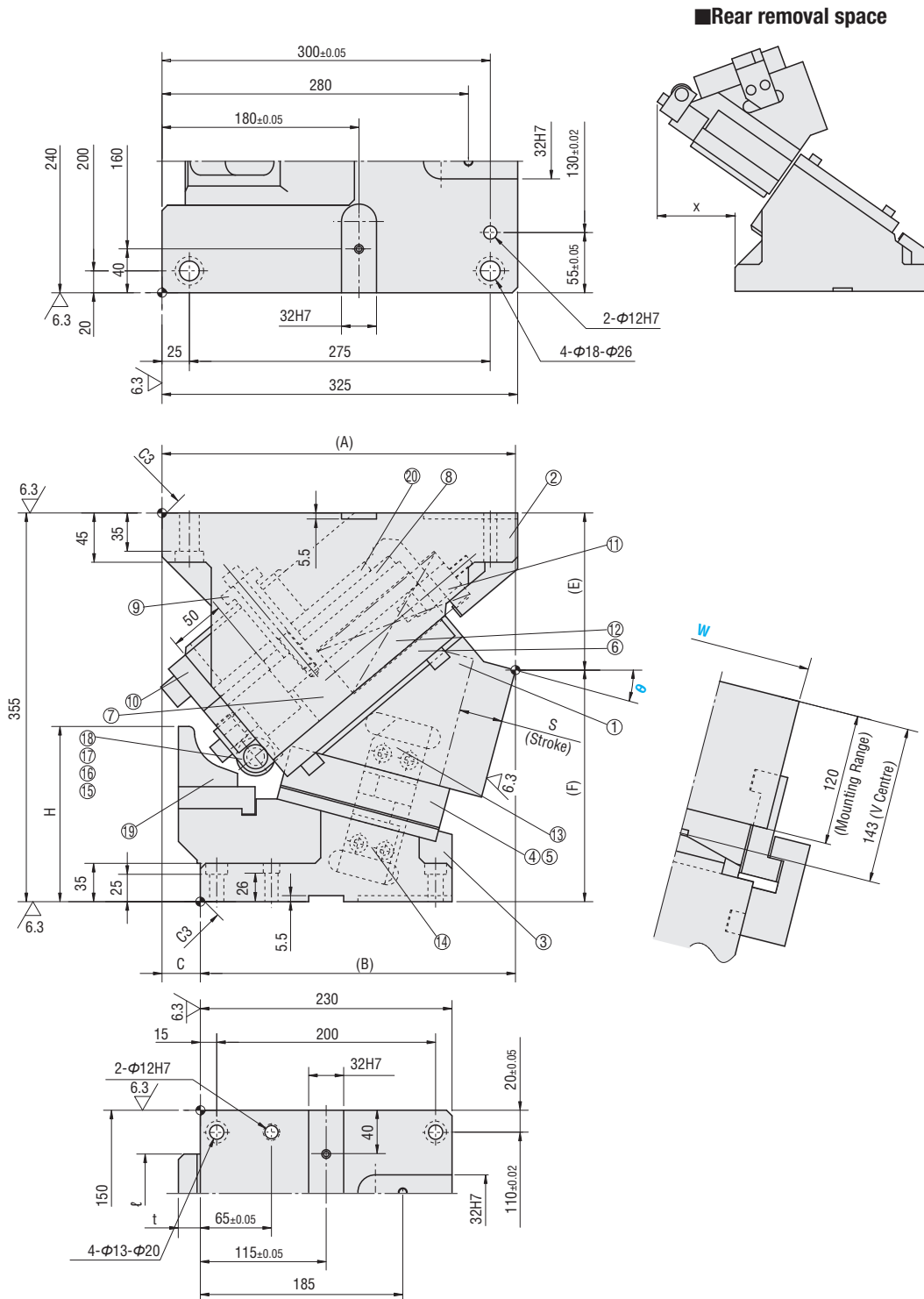
Alterations	Code	Spec.
	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$
	K	Addition of 3 locating keys (With 3 hexagon socket head cap screws M8-15)
	KA	Addition of 3 stepped locating keys (With 3 hexagon socket head cap screws M8-15)

RIGID FLYING CAM UNITS

— MGFL —



MGFL150 ($\theta=00-30$)



W	θ	A	B	C	E	F	H	ℓ	t	x
150	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	287.98	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	—	—	149

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
28.7	147.0 (15.0)	294.0 (30.0)	862.4 (87.9)	7022.4 (715.9)	117.6	MGFLL	150	00
32.2					114.0			05
35.9					113.4			10
39.6					111.9			15
43.5					111.3			20
47.7					111.2			25
52.3					110.2			30



Order

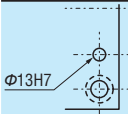
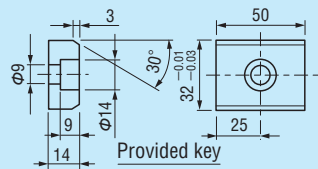
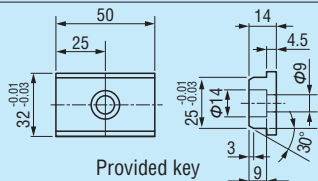
Catalogue No. **MGFLL** W **150** — θ **25**



Alterations



Catalogue No. **MGFLL** W **150** — θ **10** — (N13-K-KA) **N13**

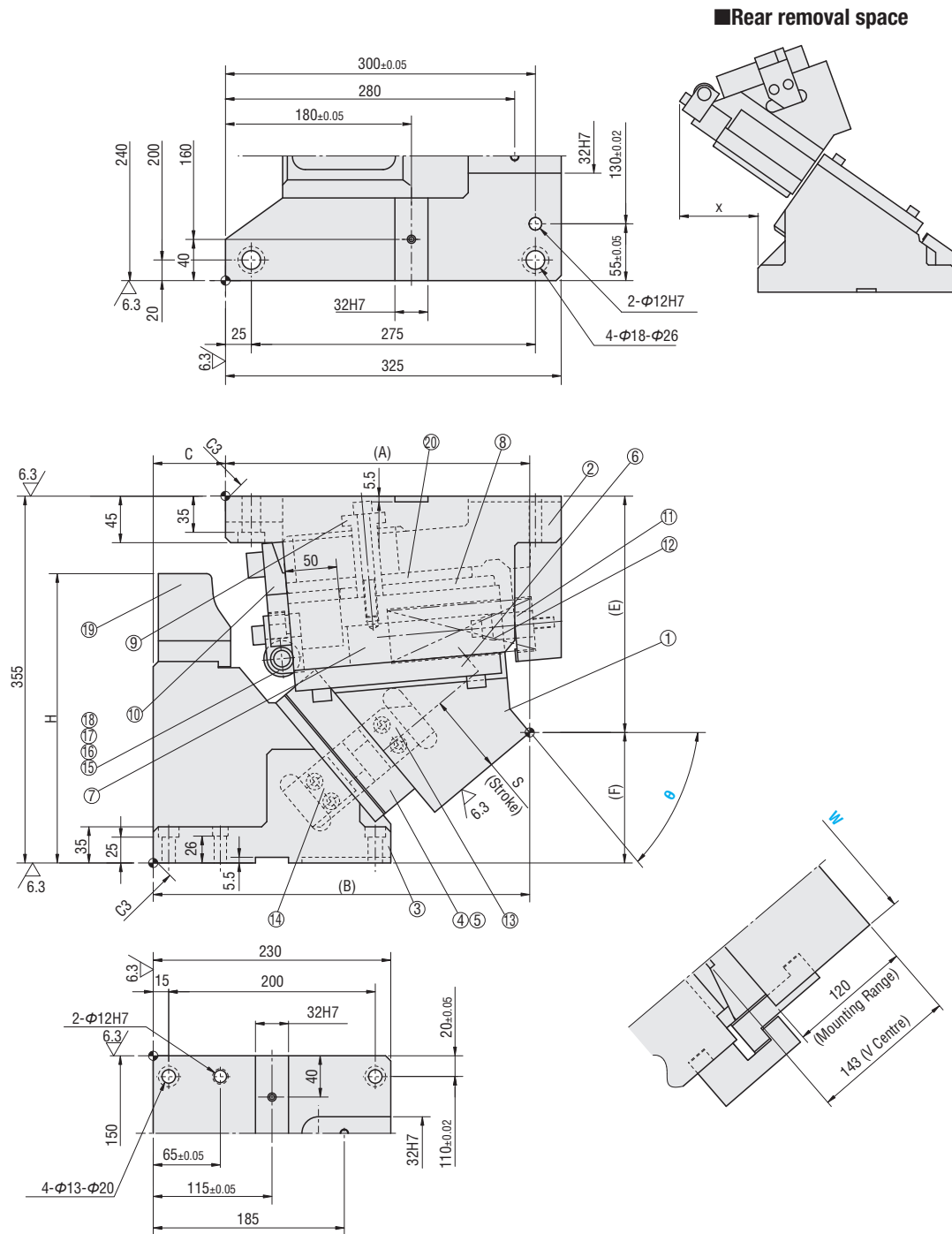
Alterations	Code	Spec.
	N13	Dowel hole diameter change $\Phi 12H7 \Rightarrow \Phi 13H7$
	K	Addition of 6 locating keys (With 6 hexagon socket head cap screws M8-15) 
	KA	Addition of 6 stepped locating keys (With 6 hexagon socket head cap screws M8-15) 

RIGID FLYING CAM UNITS

— MGFL —



MGFL150 ($\theta=35-65$)



■Components table ■P.141

W	θ	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
57.3	147.0 (15.0)	294.0 (30.0)	862.4 (87.9)	7022.4 (715.9)	113.1	MGFLL	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

Catalogue No. **MEFLL** W **150** — θ **55**



Alterations



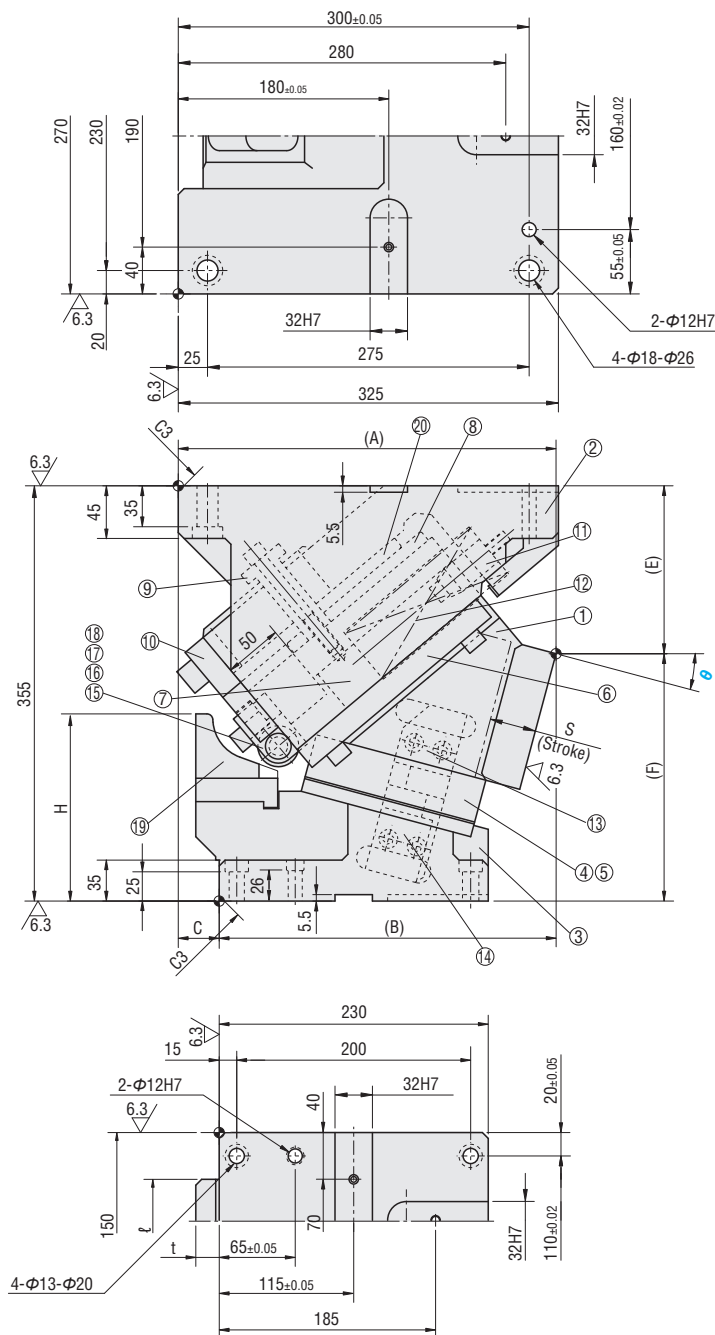
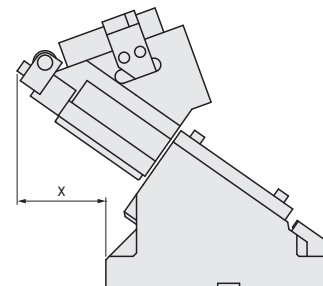
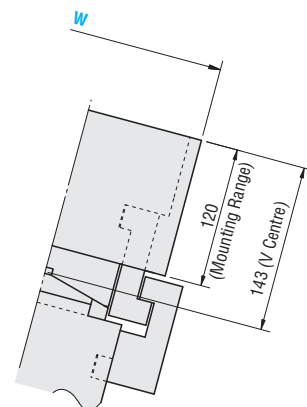
Catalogue No. **MGFLL** W **150** — θ **45** — (N13-K-KA) **KA**

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) Provided key
	KA	Addition of 6 stepped locating keys (With 6 hexagon socket head cap screws M8-15) Provided key

— MGFL —

MGFLL200 ($\theta=00-30$)

■Rear removal space

**■Components table**  P.141

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	—	—	149

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
28.6	147.0 (15.0)	294.0 (30.0)	862.4 (87.9)	7022.4 (715.9)	129.7	MGFLL	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

Catalogue No. **MGFLL** W **200** — θ **00**



Alterations



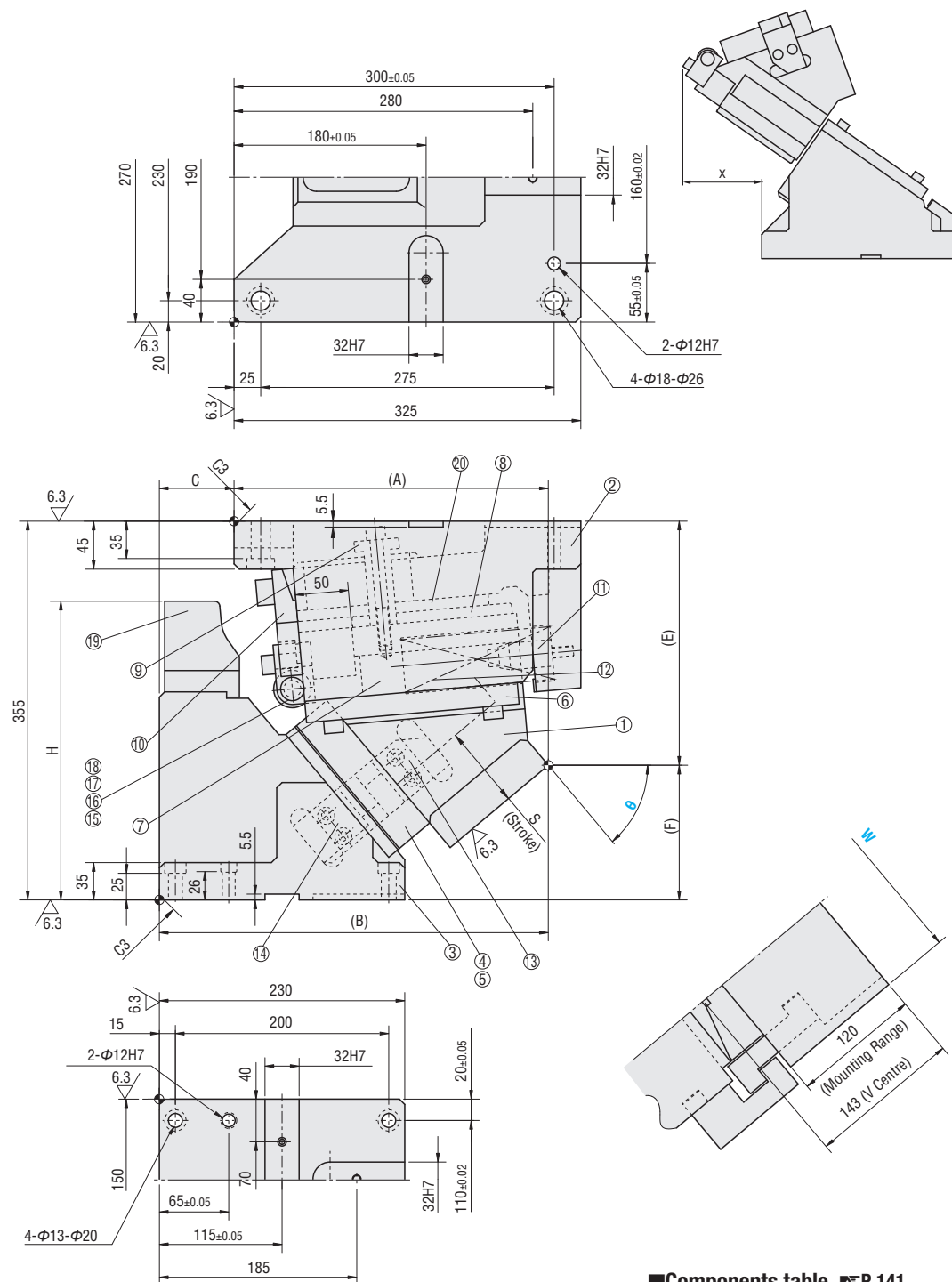
Catalogue No. **MGFLL** W **200** — θ **15** — (N13-K-KA) **K**

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)

— MGFL —

MGFLL200 ($\theta=35-65$)

■Rear removal space

**■Components table** P.141

W	θ	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
57.3	147.0 (15.0)	294.0 (30.0)	862.4 (87.9)	7022.4 (715.9)	125.3	MGFL	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

Catalogue No. **MGFL** W **200** — θ **45**



Alterations



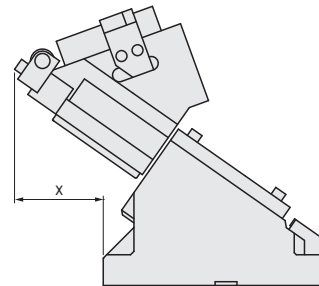
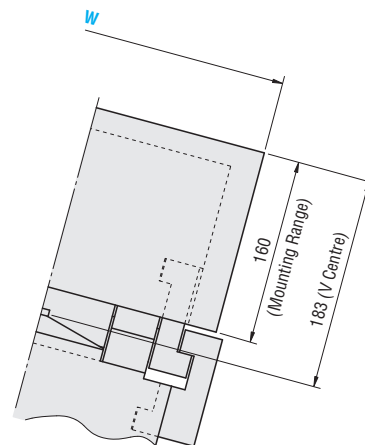
Catalogue No. **MGFL** W **200** — θ **50** — (N13-K-KA) **N13**

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)
	KA	Addition of 6 stepped locating keys (With 6 hexagon socket head cap screws M8-15)

CAM DIAGRAM

 P.139

■Rear removal space



W	θ	A	B	C	E	F	ℓ	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	—	—	149

Stroke S	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
28.6	294.0 (30.0)	588.0 (60.0)	1724.8 (175.8)	14044.8 (1431.8)	184.5	MGFLL	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

Catalogue No. **MGFLL** W **300** — θ **25**



Alterations



Catalogue No. **MGFLL** W **300** — θ **15** — (K-KA) **K**

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

— MGFL —

P.139

■Components table P.141

W	θ	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	Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ
	Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure				
57.3	294.0 (30.0)	588.0 (60.0)	1724.8 (175.8)	14044.8 (1431.8)	178.7	MGFLL	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

Catalogue No. **MEFLL** W **300** — θ **60**



Alterations



Catalogue No. **MGFLL** W **300** — θ **60** — (K-KA) **KA**

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

RIGID FLYING CAM UNITS

— MGFL — CAM DIAGRAM

MGFL

50-00 	50-05 	50-10 	50-15
50-20 	50-25 	50-30 	50-35
50-40 	50-45 	50-50 	50-55
50-60 	50-65 	65-00 	65-05
65-10 	65-15 	65-20 	65-30

65-40	65-50	65-60	80-00
80-05	80-10	80-15	80-20
80-25	80-30	80-35	80-40
80-45	80-50	80-55	80-60
80-65	150-00	150-05	150-10

RIGID FLYING CAM UNITS

— MGFL — CAM DIAGRAM

MGFL

150-15 	150-20 	150-25 	150-30
150-35 	150-40 	150-45 	150-50
150-55 	150-60 	150-65 	200-00
200-05 	200-10 	200-15 	200-20
200-25 	200-30 	200-35 	200-40

200-45 	200-50 	200-55 	200-60
200-65 	300-00 	300-05 	300-10
300-15 	300-20 	300-25 	300-30
300-35 	300-40 	300-45 	300-50
300-55 	300-60 	300-65 	

RIGID FLYING CAM UNITS

— MGFL — COMPONENTS TABLE

■MGFL50($\theta=00,40-65$)

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	S45C	1
②	Cam Slider	S45C	1
③	Cam Lower Plate	S45C with Graphite	1
④	Cam Driver	S45C	1
⑤	Guide Bar	SCM440 with Graphite	1
⑥	Spring Plate	SS400	1
⑦	Cam Compulsory Returning Plate	S45C	2
⑧	Slide Guide	Copper Alloy 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 $\times$ 15	2
⑭	Cap Screw	M6 $\times$ 10	2
⑮	Cap Screw	M10 $\times$ 30	1
⑯	Cap Screw	M10 $\times$ 25	2
⑰	Cap Screw	M8 $\times$ 20	6

■MGFL50($\theta=05-35$)

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	S45C	1
②	Cam Slider	S45C	1
③	Cam Lower Plate	S45C with Graphite	1
④	Cam Driver	S45C	1
⑤	Guide Bar	SCM440 with Graphite	1
⑥	Spring Plate	SS400	1
⑦	Cam Compulsory Returning Plate	S45C	2
⑧	Slide Guide	Copper Alloy 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 $\times$ 15	2
⑭	Cap Screw	M6 $\times$ 10	2
⑮	Cap Screw	M10 $\times$ 30	1
⑯	Cap Screw	M10 $\times$ 25	2
⑰	Cap Screw	M8 $\times$ 20	6
⑱	Spacer	SS400	1

■MGFL65($\theta=00-05,60$)

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FCD450	1
②	Cam Slider	S45C with Graphite	1
③	Cam Lower Plate	FC250 with Graphite	1
④	Cam Driver	S45C	1
⑤	Slide Plate	Copper Alloy	2
⑥	Coil Spring	$\Phi 25 \times 89$ ($\theta=00-05$) $\Phi 25 \times 64$ ($\theta=60$)	1
⑦	Cam Compulsory Returning Plate A	S45C	1
⑧	Cam Compulsory Returning Plate B	S45C	1
⑨	Slide Guide	Copper Alloy with Graphite	1
⑩	Stopper Plate	SS400	1
⑪	Safety Plate	SS400	1
⑫	Spring Plate	SS400	1
⑬	Silent Stopper	Urethane	2
⑭	Disc Spring	For M6	1
⑮	Dowel Pin	$\Phi 8 \times 30$	1
⑯	Cap Screw	M8 $\times$ 15	4
⑰	Cap Screw	M8 $\times$ 20	2
⑱	Cap Screw	M10 $\times$ 30	2
⑲	Cap Screw	M8 $\times$ 16	4
⑳	Cap Screw	M10 $\times$ 20	2
㉑	Cap Screw	M6 $\times$ 10	1

■MGFL65($\theta=10-50$)

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FCD450	1
②	Cam Slider	S45C with Graphite	1
③	Cam Lower Plate	FC250 with Graphite	1
④	Cam Driver	S45C	1
⑤	Slide Plate	Copper Alloy	2
⑥	Coil Spring	$\Phi 25 \times 76$ ($\theta=10-20$) $\Phi 25 \times 64$ ($\theta=30-50$)	1
⑦	Cam Compulsory Returning Plate A	S45C	1
⑧	Cam Compulsory Returning Plate B	S45C	1
⑨	Slide Guide	Copper Alloy with Graphite	1
⑩	Stopper Plate	SS400	1
⑪	Safety Plate	SS400	1
⑫	Spring Plate	SS400	1
⑬	Silent Stopper	Urethane	2
⑭	Disc Spring	For M6	1
⑮	Dowel Pin	$\Phi 8 \times 30$	1
⑯	Cap Screw	M8 $\times$ 15	4
⑰	Cap Screw	M8 $\times$ 20	2
⑱	Cap Screw	M10 $\times$ 30	2
⑲	Cap Screw	M8 $\times$ 16	4
㉑	Cap Screw	M10 $\times$ 20	2
㉑	Cap Screw	M6 $\times$ 10	1
㉒	Spacer	SS400	1

■MGFL80($\theta=00$)

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FCD450	1
②	Cam Slider	S45C	1
③	Cam Lower Plate	Copper Alloy with Graphite	1
④	Cam Driver	FC250	1
⑤	Guide Bar	SCM440 with Graphite	1
⑥	Coil Spring	$\Phi 40 \times 152$	1
⑦	Cam Compulsory Returning Plate	S45C	2
⑧	Slide Guide	Copper Alloy with Graphite	1
⑨	Spring Plate	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 $\times$ 35	1
⑭	Cap Screw	M12 $\times$ 40	2
⑮	Cap Screw	M10 $\times$ 25	4
⑯	Cap Screw	M10 $\times$ 30	2
⑰	Cap Screw	M8 $\times$ 15	2
⑱	Cap Screw	M6 $\times$ 10	2

■MGFL80($\theta=05-65$)

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FCD450	1
②	Cam Slider	S45C	1
③	Cam Lower Plate	Copper Alloy with Graphite	1
④	Cam Driver	FC250	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	Cam Compulsory Returning Plate	S45C	2
⑧	Slide Guide	Copper Alloy with Graphite	1
⑨	Spring Plate	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 $\times$ 35	1
⑭	Cap Screw	M12 $\times$ 40	2
⑮	Cap Screw	M10 $\times$ 25	4
⑯	Cap Screw	M10 $\times$ 30	2
⑰	Cap Screw	M8 $\times$ 15	2
⑱	Cap Screw	M6 $\times$ 10	2
⑲	Spacer	SS400	1

■MGFLL150

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Holder	FC250	1
③	Cam Driver	FC250	1
④	Cam Slide Guide A	S45C	1
⑤	Cam Slide Guide B	Copper Alloy with Graphite	1
⑥	Cam Upper Plate	S45C	2
⑦	Cam Slide Plate	Copper Alloy with Graphite	2
⑧	Cam Lower Plate A	Copper Alloy with Graphite	2
⑨	Hanger Bolt Sleeve	S45C	1
⑩	Stopper Plate	SS400	1
⑪	Spring Guide Pin	FC250	1
⑫	Coil Spring	Φ50x203	1
⑬	Cam Compulsory Returning Driver	Copper Alloy with Graphite	1
⑭	Cam Compulsory Returning Plate	S45C	1
⑮	Roller	S45C	1
⑯	Shaft	S45C	1
⑰	Roller Bracket	S45C	1
⑱	Bushing	Copper Alloy with Graphite	1
⑲	Roller Driver	S45C	1
⑳	Cam Lower Plate B	S45C	4

⚠ Assembly bolts and dowel pins are not shown.

■MGFLL200

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Holder	FC250	1
③	Cam Driver	FC250	1
④	Cam Slide Guide A	S45C	1
⑤	Cam Slide Guide B	Copper Alloy with Graphite	1
⑥	Cam Upper Plate	S45C	2
⑦	Cam Slide Plate	Copper Alloy with Graphite	2
⑧	Cam Lower Plate A	Copper Alloy with Graphite	2
⑨	Hanger Bolt Sleeve	S45C	1
⑩	Stopper Plate	SS400	1
⑪	Spring Guide Pin	FC250	1
⑫	Coil Spring	Φ50x203	1
⑬	Cam Compulsory Returning Driver	Copper Alloy with Graphite	1
⑭	Cam Compulsory Returning Plate	S45C	1
⑮	Roller	S45C	1
⑯	Shaft	S45C	1
⑰	Roller Bracket	S45C	1
⑱	Bushing	Copper Alloy with Graphite	1
⑲	Roller Driver	S45C	1
⑳	Cam Lower Plate B	S45C	4

⚠ Assembly bolts and dowel pins are not shown.

■MGFLL300

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Holder	FC250	1
③	Cam Driver	FC250	1
④	Cam Slide Guide A	S45C	1
⑤	Cam Slide Guide B	Copper Alloy with Graphite	1
⑥	Cam Upper Plate	S45C	2
⑦	Cam Slide Plate	Copper Alloy with Graphite	2
⑧	Cam Lower Plate A	Copper Alloy with Graphite	2
⑨	Hanger Bolt Sleeve	S45C	1
⑩	Stopper Plate	SS400	1
⑪	Spring Guide Pin	FC250	2
⑫	Coil Spring	Φ50x203	2
⑬	Cam Compulsory Returning Driver A	Copper Alloy with Graphite	1
⑭	Cam Compulsory Returning Plate A	S45C	1
⑮	Roller	S45C	1
⑯	Shaft	S45C	1
⑰	Roller Bracket	S45C	1
⑱	Bushing	Copper Alloy with Graphite	1
⑲	Roller Driver	S45C	1
⑳	Lower Plate B	S45C	4
㉑	Wear Plate	Copper Alloy with Graphite	2
㉒	Slide Plate A	S45C	1
㉓	Cam Compulsory Returning Driver B	Copper Alloy with Graphite	1
㉔	Cam Compulsory Returning Plate B	S45C	1
㉕	Cam Lower Plate B	S45C	1

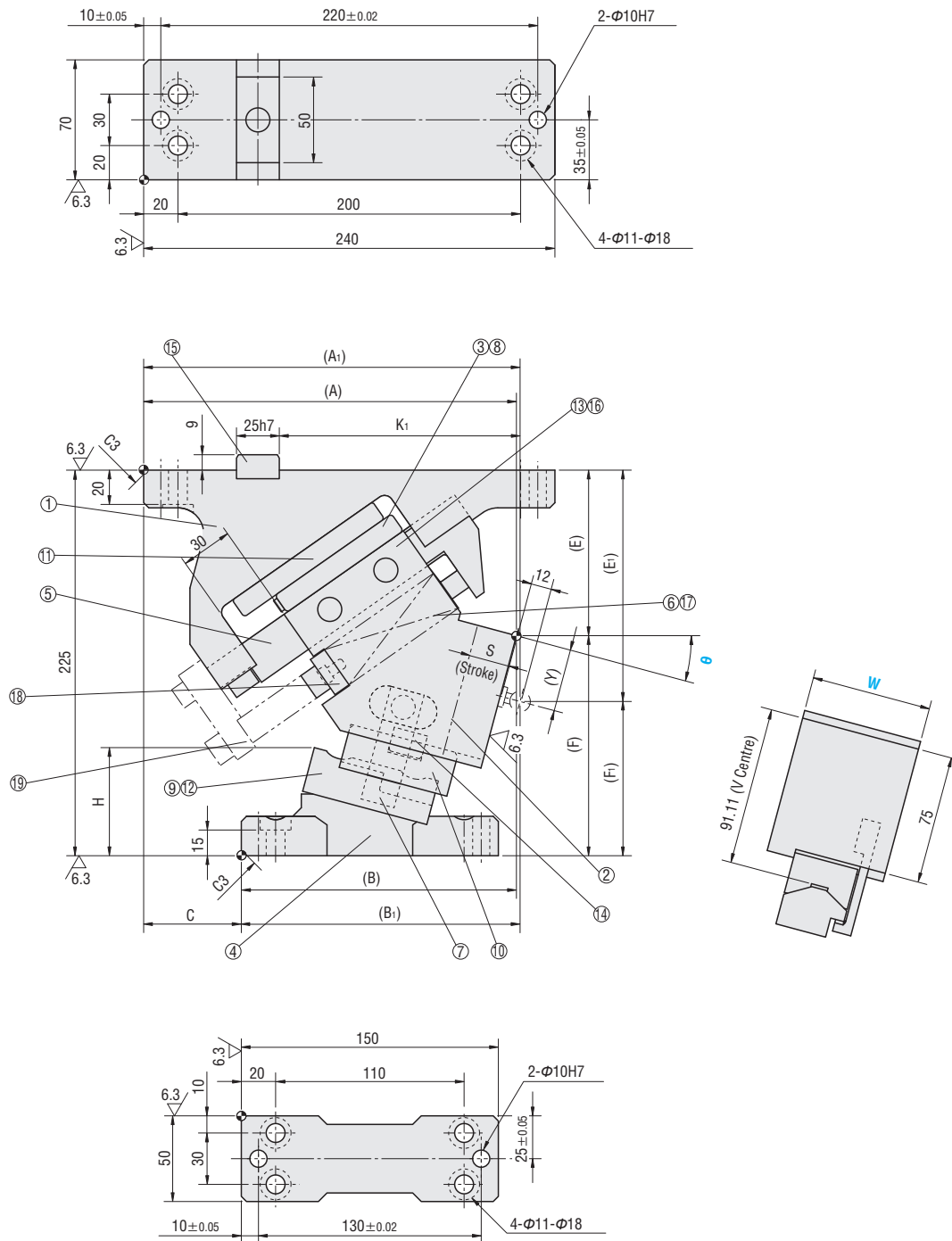
⚠ Assembly bolts and dowel pins are not shown.

NAAMS STANDARD FLYING CAM UNITS

— MGFNS —



MGFNS70 ($\theta=00-40$)



Components table P.164

W	θ	A	A ₁	B	B ₁	C	E	E ₁	F	F ₁	H	K ₁	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	Acting force KN (ton)	Total weight kg	Catalogue No.	W	θ	Spring type
19.3	98.1 (10.0)	16.1	MGFNS	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 catalogue No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	M150-38.1	—	2350.0 (239.6)	KALLER gas spring
ISO	$\phi 25$ 115	68.6 (7.0)	657.0 (67.0)	Coil spring (Constant=19.6N/mm)
NGK	—	—	—	No gas spring
NISO	—	—	—	No coil spring



Order

Catalogue No.	W	θ	Spring type
MGFNS	70	30	ISO



AI



Catalogue No.	W	θ	Spring type	(NF)
MGFNS	70	15	GK	NF

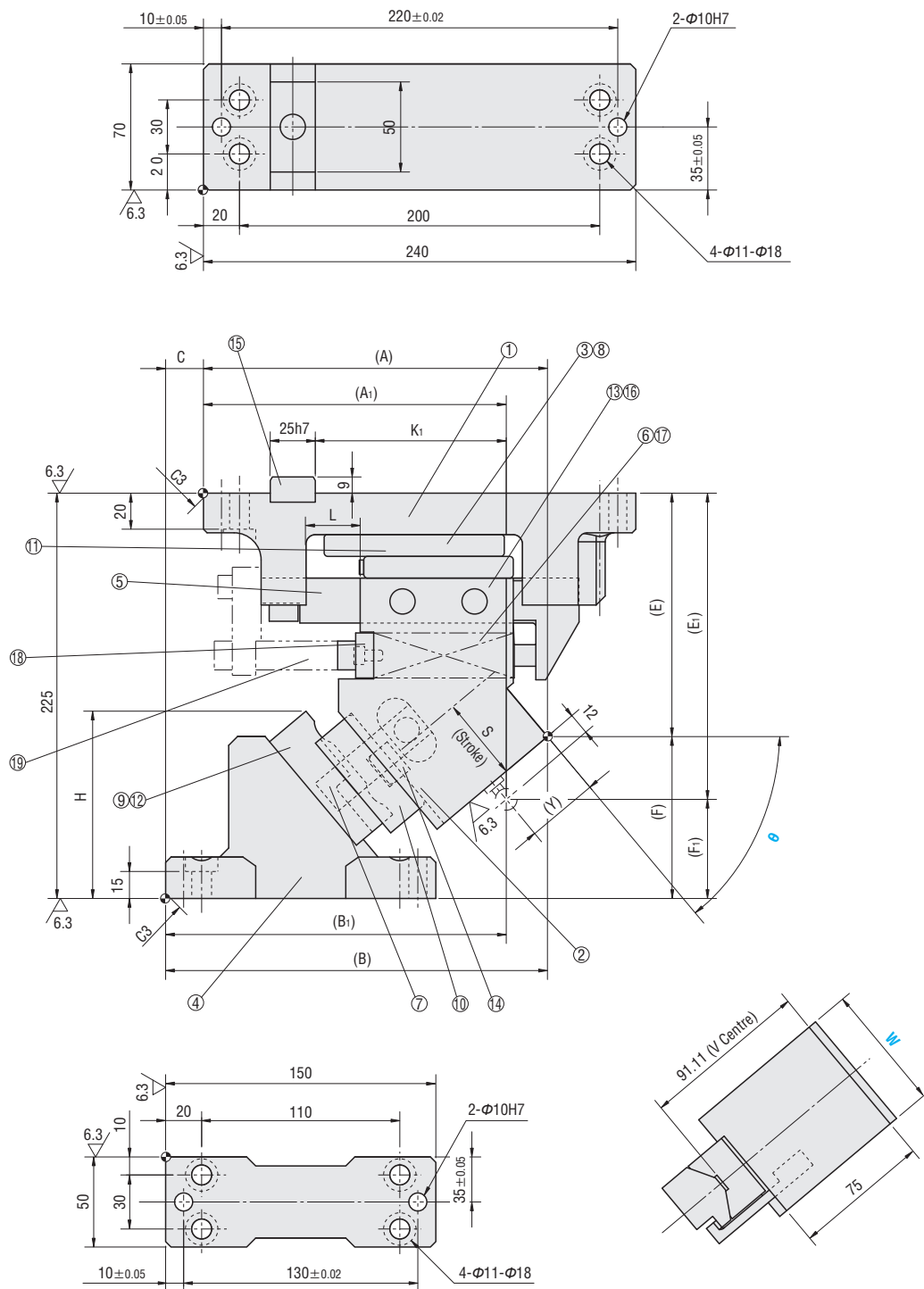
Alterations	Code	Spec.
	NF	Gas spring without nitrogen gas charging Applicable for spring type GK only.

NAAMS STANDARD FLYING CAM UNITS

— MGFNS —



MGFNS70 ($\theta=45-60$)



Components table P.164

W	θ	A	A ₁	B	B ₁	C	E	E ₁	F	F ₁	H	K ₁	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	Acting force KN (ton)	Total weight kg	Catalogue No.	W	θ	Spring type
42.3	98.1 (10.0)	13.8	MGFNS	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 catalogue No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	M150-38.1	—	2350.0 (239.6)	KALLER gas spring
ISO	$\phi 25$ 115	68.6(7.0)($\theta=45-50$) 88.2(9.0)($\theta=55-60$)	657.0(67.0)($\theta=45-50$) 578.2(59.0)($\theta=55-60$)	Coil spring (Constant=19.6N/mm)
NGK	—	—	—	No gas spring
NISO	—	—	—	No coil spring



Order

Catalogue No.	W	θ	Spring type
MGFNS	70	55	ISO



Alterations

Catalogue No.	W	θ	Spring type	(NF)
MGFNS	70	50	GK	NF

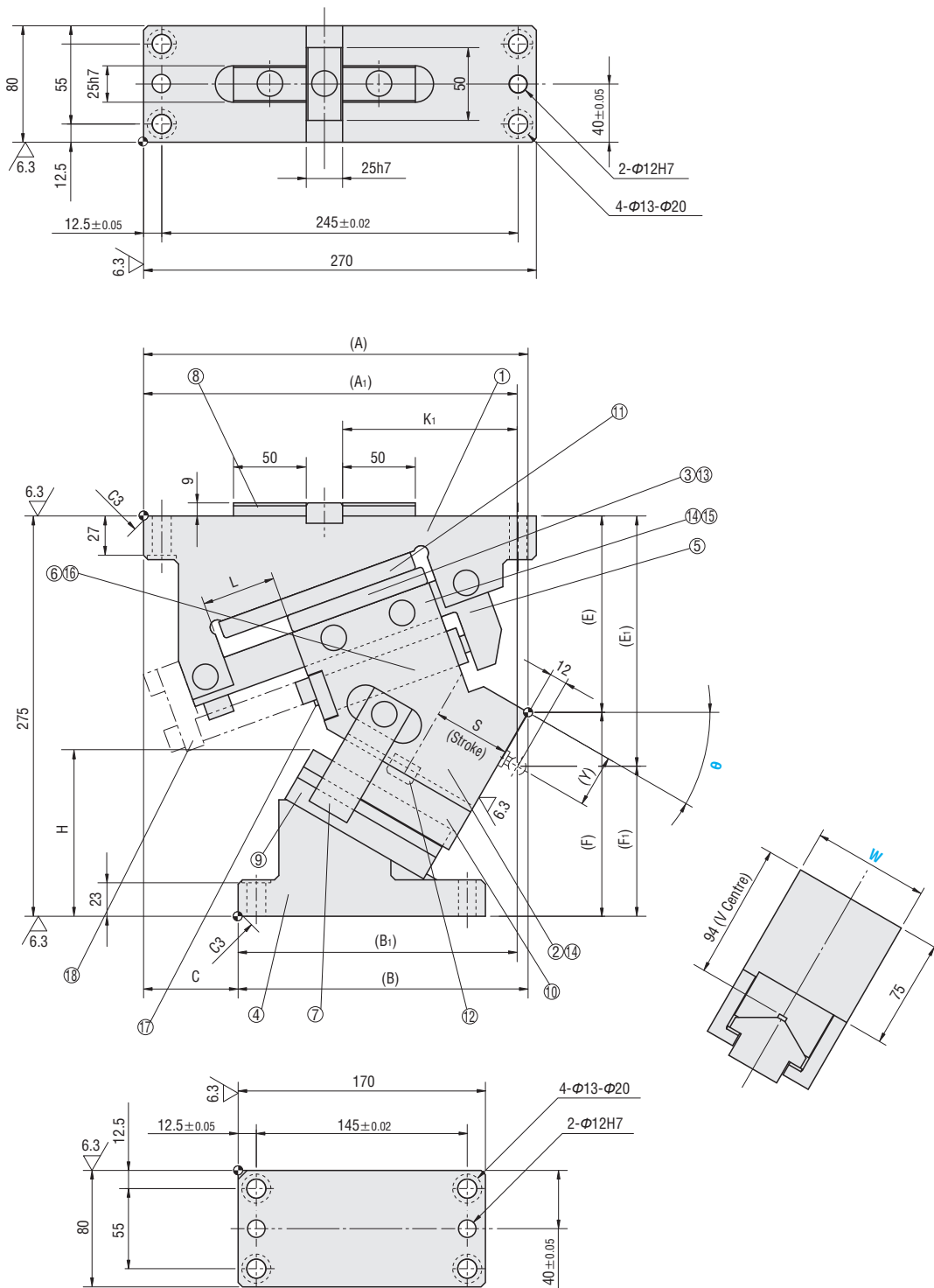
Alterations	Code	Spec.
	NF	Gas spring without nitrogen gas charging Applicable for spring type GK only.

NAAMS STANDARD FLYING CAM UNITS

— MGFNS —



MGFNS80



Components table P.164

W	θ	A	A ₁	B	B ₁	C	E	E ₁	F	F ₁	H	L	K ₁	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	Acting force KN (ton)	Total weight kg	Catalogue No.	W	θ	Spring type
32.1	166.7 (17.0)	27.9	MGFNS	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 catalogue No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	M150-50	—	2350.0 (239.6)	KALLER gas spring
ISO	$\phi 32$ 152	73.6 (7.5)	1223.6(124.8)($\theta=00-50$) 1108.6(113.0)($\theta=55$) 993.6(101.3)($\theta=60$)	Coil spring (Constant=23.0N/mm)
NGK	—	—	—	No gas spring
NISO	—	—	—	No coil spring



Order

Catalogue No. **MGFNS** W **80** — θ **30** — Spring type **ISO**



Alterations



Catalogue No. **MGFNS** W **80** — θ **05** — Spring type **GK** — (NF)

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



— MGFNS —

MGFNS165 ($\theta=00-45$)**■Components table**  P.164

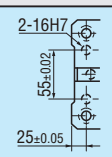
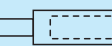
W	θ	A	A ₁	B	B ₁	C	E	E ₁	F	F ₁	H	K ₁	N ₁	Y	x
165	00	335.84	347.84	207.84	219.84	128	96.98	170	203.02	130	80	180.5	55	73.02	21
	05	335.25	340.82	222.25	227.82	113	100.91	175	199.09	125	98	173		73.32	37
	10	337.27	337.3	236.27	236.3	101	111.09	180	188.91	120	109	165.5	50	67.86	48
	15	329.78	325.45	249.78	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	Acting force KN (ton)	Total weight kg	Catalogue No.	W	θ	Spring type
32.1	294.2 (30.0)	76.1	MGFNS	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 catalogue No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	TU250-63.5	—	3430.0 (349.8)	KALLER gas spring
ISO	Φ40 178	449.1 (45.8)	2694.0 (274.7)	Coil spring (Constant=44.9N/mm)
NGK	—	—	—	No gas spring
NISO	—	—	—	No coil spring

 Order Catalogue No. **MGFNS** W **165** θ **35** Spring type **ISO**
  Alterations Catalogue No. **MGFNS** W **165** θ **30** Spring type **ISO** (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.

— MGFNS —

MGFNS165 ($\theta=50-60$)

W	θ	A	A ₁	B	B ₁	C	E	E ₁	F	F ₁	H	K ₁	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	Acting force KN (ton)	Total weight kg	Catalogue No.	W	θ	Spring type
77.8	294.2 (30.0)	64.3	MGFNS	165	50	GK ISO NGK NISO
87.2		65.2			55	
100.0		66.6			60	

■Spring Specifications

Spring type	Spring catalogue No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	TU250-63.5	—	3430.0 (349.8)	KALLER gas spring
ISO	Φ40 178	449.1 (45.8)	2694.0 (274.7)	Coil spring (Constant=44.9N/mm)
NGK	—	—	—	No gas spring
NISO	—	—	—	No coil spring



Order

Catalogue No. **MEFNS** W **165** — θ **60** — Spring type **ISO**



Alterations



Catalogue No. **MGFNS** W **165** — θ **60** — Spring type **GK** — (N-NF)

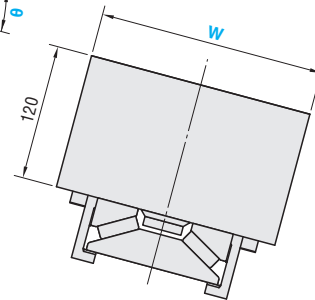
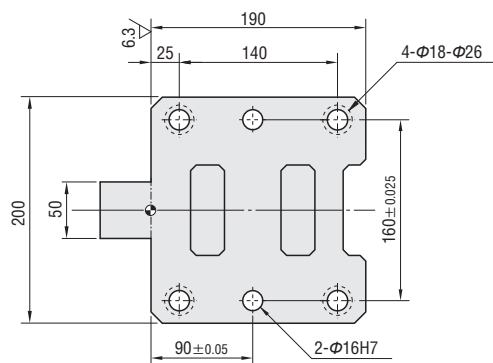
Alterations	Code	Spec.
	N	Machining of locating dowel holes 2 dowel holes (Φ16H7) are machined on the cam holder.
	NF	Gas spring without nitrogen gas charging Applicable for spring type GK only.

CAM DIAGRAM

 P.162

Technical drawing of a mechanical part, likely a bracket or plate, showing dimensions and features. The part is symmetrical about a vertical centerline. Key dimensions include: overall width 340, overall height 200, mounting hole diameter 26 (4 holes), central slot width 25, and various internal dimensions like 10, 50, 150, 70, 50, 25, and 25h7. A note indicates 4-Φ18-Φ26 for the mounting holes.

A schematic diagram of a mechanical assembly. It features a base with a horizontal displacement X indicated by a double-headed arrow. A vertical component is mounted on the base, and a horizontal component is attached to it. A dashed line indicates the initial position of the horizontal component, and a solid line indicates its final position after displacement X .



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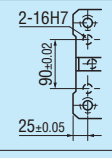
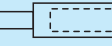
W	θ	A	A ₁	B	B ₁	C	E	E ₁	F	F ₁	H	K ₁	N ₁	Y	x
200	00	335.84	347.84	207.84	219.84	128	96.98	170	203.02	130	80	180.5	55	73.02	21
	05	335.25	340.82	222.25	227.82	113	100.91	175	199.09	125	98	173		73.32	37
	10	337.27	337.3	236.27	236.3	101	111.09	180	188.91	120	109	165.5	50	67.86	48
	15	329.78	325.45	249.78	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	Acting force KN (ton)	Total weight kg	Catalogue No.	W	θ	Spring type
32.1	353.0 (36.0)	90.3	MGFNS	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	

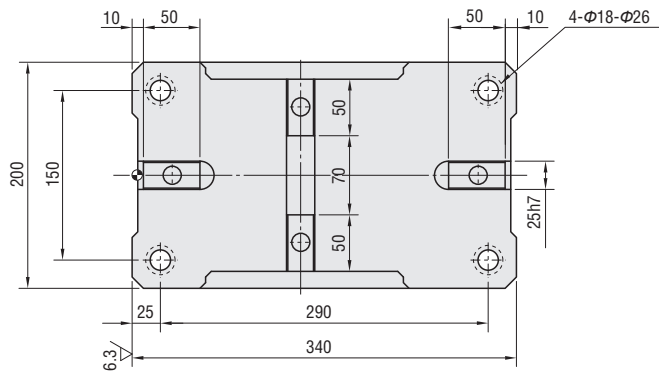
Spring Specifications

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

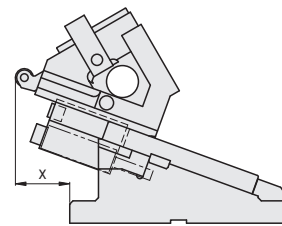
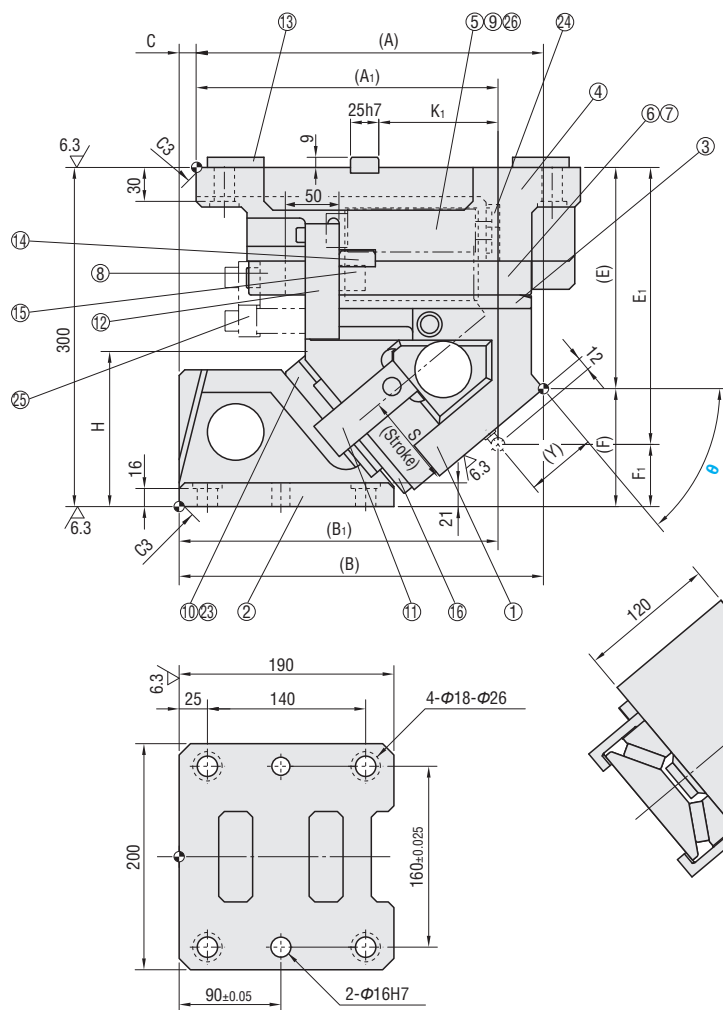
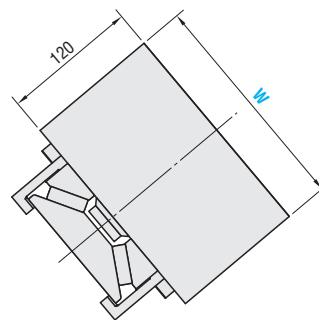
 Order
 Catalogue No. **MGFNS**
 W **200**
 θ **15**
 Spring type **ISO**
 Alterations 
 Catalogue No. **MGFNS**
 W **200**
 θ **05**
 Spring type **NGK**
 (N-NF) **N**

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.

— MGFNS —

MGFNS200 ($\theta=50-60$)

■Rear removal space

**■Components table**  P.165

W	θ	A	A ₁	B	B ₁	C	E	E ₁	F	F ₁	H	K ₁	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	Acting force KN (ton)	Total weight kg	Catalogue No.	W	θ	Spring type
77.8	353.0 (36.0)	78.2	MGFNS	200	50	GK ISO NGK NISO
87.2		80.5			55	
100.0		82.4			60	

■Spring Specifications

Spring type	Spring catalogue No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	K500-63.5	—	6125.0 (624.6)	KALLER gas spring
ISO	Φ50 178	749.2 (76.4)	4494.0 (458.3)	Coil spring (Constant=74.9N/mm)
NGK	—	—	—	No gas spring
NISO	—	—	—	No coil spring



Order

Catalogue No. W — θ — Spring type
MEFNS 200 — 50 — ISO



Alterations



Catalogue No. W — θ — Spring type — (N-NF)
MGFNS 200 — 55 — GK — NF

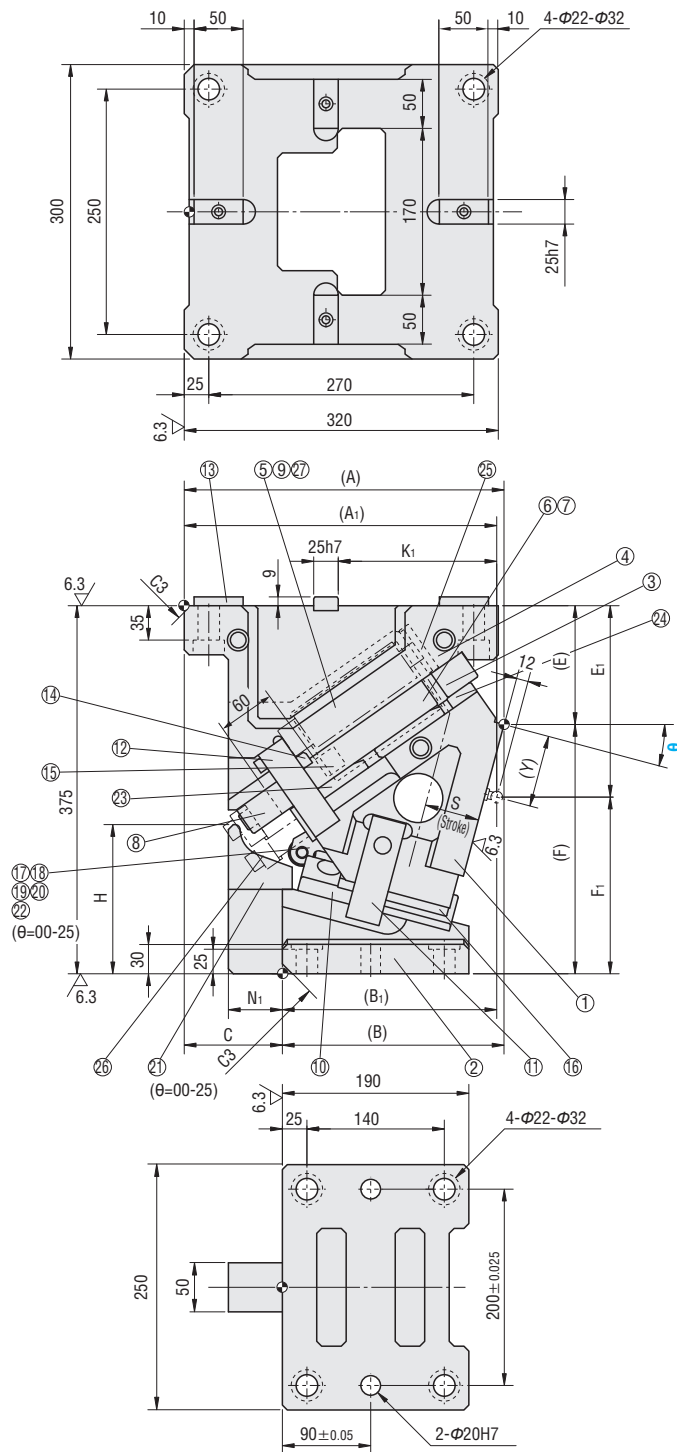
Alterations	Code	Spec.
	N	Machining of locating dowel holes 2 dowel holes (Φ16H7) are machined on the cam holder.
	NF	Gas spring without nitrogen gas charging Applicable for spring type GK only.

NAAMS STANDARD FLYING CAM UNITS

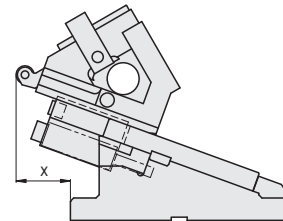
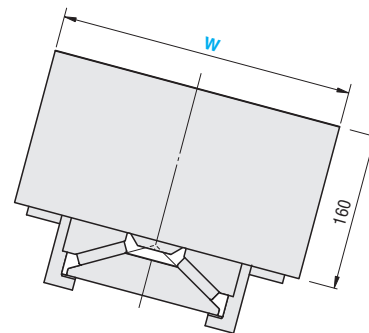
— MGFNS —



MGFNS300/400 ($\theta=00-45$)



■Rear removal space



■Components table ■P.165

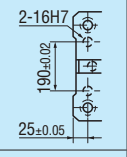
W	θ	A	A ₁	B	B ₁	C	E	E ₁	F	F ₁	H	K ₁	N ₁	Y	x
300 400	00	313	325	175	187	138	98	180	277	195	114	193	55	82	45
	05	317.15	322.13	192.15	197.13	125	104.18	185	270.82	190	127	182.5		80.07	59
	10	324.13	322.54	209.13	207.54	115	111.86	190	263.14	185	139	172		77.23	67
	15	325.82	318.41	225.82	218.41	100	121.01	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	Acting force KN (ton)	Total weight kg		Catalogue No.	W	θ	Spring type
		W=300	W=400				
38.6	451.1 (46.0)	153.2	160.2	MGFNS	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 catalogue No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	K500-80	—	10668.0 (1087.8)	KALLER gas spring
ISO	Φ50 203	1314.1 (134.0)	9198.0 (937.9)	Coil spring (Constant=65.7N/mm)
NGK	—	—	—	No gas spring
NISO	—	—	—	No coil spring

 Order Catalogue No. **MGFNS** W **300** θ **40** Spring type **GK**
  Alterations Catalogue No. **MGFNS** W **300** θ **15** Spring type **NISO** (N-NF) **N**

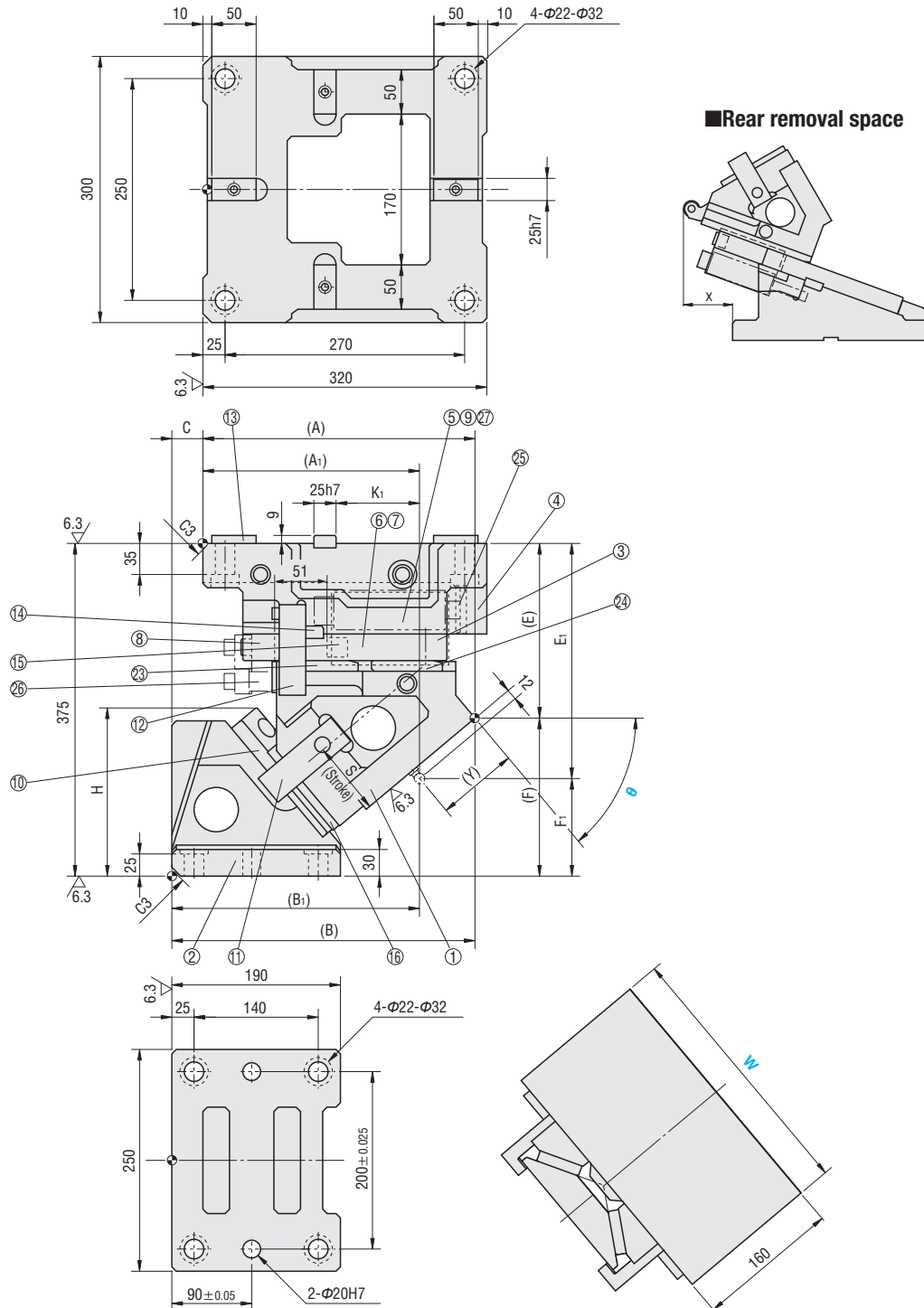
Alterations	Code	Spec.
	N	Machining of locating dowel holes 2 dowel holes (Φ16H7) are machined on the cam holder.
	NF	Gas spring without nitrogen gas charging Applicable for spring type GK only.

NAAMS STANDARD FLYING CAM UNITS

— MGFNS —



MGFNS300/400 ($\theta=50-60$)



Components table P.165

W	θ	A	A ₁	B	B ₁	C	E	E ₁	F	F ₁	H	K ₁	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	Acting force KN (ton)	Total weight kg		Catalogue No.	W	θ	Spring type
		W=300	W=400				
79.3	451.1 (46.0)	122.5	127.7	MGFNS	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 catalogue No.	Spring force N (kgf)		Remarks
		Initial pressure	Final pressure	
GK	K500-80	—	10668.0 (1087.8)	KALLER gas spring
ISO	Φ50 203	1314.1 (134.0)	8015.4 (817.9)	Coil spring (Constant=65.7N/mm)
NGK	—	—	—	No gas spring
NISO	—	—	—	No coil spring



Order

Catalogue No.	W	θ	Spring type
MGFNS	400	60	ISO



Alterations

Catalogue No.	W	θ	Spring type	(N-NF)
MGFNS	300	50	GK	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 FLYING CAM UNITS

— MGFNS — CAM DIAGRAM

MGFNS

70-00 	70-05 	70-10 	70-15
70-20 	70-25 	70-30 	70-35
70-40 	70-45 	70-50 	70-55
70-60 	80-00 	80-05 	80-10
80-15 	80-20 	80-25 	80-30

80-35 	80-40 	80-45 	80-50
80-55 	80-60 	165-00 	165-05
165-10 	165-15 	165-20 	165-25
165-30 	165-35 	165-40 	165-45
165-50 	165-55 	165-60 	

NAAMS STANDARD FLYING CAM UNITS

— MGFNS — CAM DIAGRAM

MGFNS

200-00 	200-05 	200-10 	200-15
200-20 	200-25 	200-30 	200-35
200-40 	200-45 	200-50 	200-55
200-60 	300-00 	300-05 	300-10
300-15 	300-20 	300-25 	300-30

300-35 	300-40 	300-45 	300-50
300-55 	300-60 	400-00 	400-05
400-10 	400-15 	400-20 	400-25
400-30 	400-35 	400-40 	400-45
400-50 	400-55 	400-60 	

NAAMS STANDARD FLYING CAM UNITS

— MGFNS — COMPONENTS TABLE

■MGFNS70

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FCD540	1
②	Cam Slider	FCD540	1
③	Wear Plate	Copper Alloy with Graphite	1
④	Cam Driver	FC250	1
⑤	Guide Bar	S45C	1
⑥	Spring	Refer to Spring Specification Table	1
⑦	Cam Compulsory Returning Plate	S45C	1
⑧	Silent Stopper	Urethane	2
⑨	Cam Slide Guide A	Copper Alloy with Graphite	1
⑩	Cam Slide Guide B	S45C	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	Copper Alloy with Graphite	2
⑰	Spring Guide Pin	S45C (Apply only for ISO and NISO)	1
⑱	Spring Stopper Plate	SS400	1
⑲	Slide Lock Plate	SS400	1
⚠ Assembly bolts are not shown.			

■MGFNS80

No.	Part Name	Material and Remark	Quantity
①	Cam Holder	FCD450	1
②	Cam Slider	FC250	1
③	Wear Plate	Copper Alloy with Graphite	1
④	Cam Driver	FC250	1
⑤	Guide Bar	S45C	1
⑥	Spring	Refer to Spring Specification Table	1
⑦	Cam Compulsory Returning Plate	S45C	2
⑧	Key A	SS400	3
⑨	Cam Slide Guide A	Copper Alloy with Graphite	1
⑩	Cam Slide Guide B	S45C	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	Copper Alloy with Graphite	2
⑯	Spring Guide Pin	S45C (Apply only for ISO and NISO)	1
⑰	Spring Stopper Plate	SS400	1
⑱	Slide Lock Plate	SS400	1
⚠ Assembly bolts are not shown.			

■MGFNS165(θ=00-25)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Driver	FC250	1
③	Wear Plate	Copper Alloy with Graphite	2
④	Cam Holder	FC250	1
⑤	Spring Guide	Copper Alloy with Graphite	1
⑥	Base Plate D-R	S45C	1
⑦	Base Plate D-L	S45C	1
⑧	Stopper Plate	SS400	1
⑨	Spring	Refer to Spring Specification Table	1
⑩	Cam Slide Guide	Copper Alloy with Graphite	1
⑪	Cam Compulsory Returning Plate	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	4
⑭	Key B	SS400	2
⑮	Silent Stopper	Urethane	1
⑯	Slide Plate	S45C	2
⑰	Roller	S45C	1
⑱	Roller Pin	S45C	1
⑲	Bushing	Copper Alloy with Graphite	1
⑳	Roller Bracket	SS400	1
㉑	Roller Driver	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.			

■MGFNS165(θ=30-60)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Driver	FC250	1
③	Wear Plate	Copper Alloy with Graphite	2
④	Cam Holder	FC250	1
⑤	Spring Guide	Copper Alloy with Graphite	1
⑥	Base Plate D-R	S45C	1
⑦	Base Plate D-L	S45C	1
⑧	Stopper Plate	SS400	1
⑨	Spring	Refer to Spring Specification Table	1
⑩	Cam Slide Guide	Copper Alloy with Graphite	1
⑪	Cam Compulsory Returning Plate	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	4
⑭	Key B	SS400	2
⑮	Silent Stopper	Urethane	1
⑯	Slide Plate	S45C	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.			

■MGFNS200(θ =00-25)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Driver	FC250	1
③	Wear Plate	Copper Alloy with Graphite	2
④	Cam Holder	FC250	1
⑤	Spring Guide	Copper Alloy with Graphite	1
⑥	Base Plate D-R	S45C	1
⑦	Base Plate D-L	S45C	1
⑧	Stopper Plate	SS400	1
⑨	Spring	Refer to Spring Specification Table	1
⑩	Cam Slide Guide	Copper Alloy with Graphite	1
⑪	Cam Compulsory Returning Plate	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	4
⑭	Key B	SS400	2
⑮	Silent Stopper	Urethane	1
⑯	Slide Plate	S45C	2
⑰	Roller	S45C	1
⑱	Roller Pin	S45C	1
⑲	Bushing	Copper Alloy with Graphite	1
⑳	Roller Bracket	SS400	1
㉑	Roller Driver	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.

■MGFNS200(θ =30-60)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Driver	FC250	1
③	Wear Plate	Copper Alloy with Graphite	2
④	Cam Holder	FC250	1
⑤	Spring Guide	Copper Alloy with Graphite	1
⑥	Base Plate D-R	S45C	1
⑦	Base Plate D-L	S45C	1
⑧	Stopper Plate	SS400	1
⑨	Spring	Refer to Spring Specification Table	1
⑩	Cam Slide Guide	Copper Alloy with Graphite	1
⑪	Cam Compulsory Returning Plate	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	4
⑭	Key B	SS400	2
⑮	Silent Stopper	Urethane	1
⑯	Slide Plate	S45C	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.

■MGFNS300(θ =00-25) MGFNS400(θ =00-25)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Driver	FC250	1
③	Base Plate C	S45C	1
④	Cam Holder	FC250	1
⑤	Spring Guide	Copper Alloy with Graphite	1
⑥	Base Plate F-R	S45C	1
⑦	Base Plate F-L	S45C	1
⑧	Stopper Plate	SS400	1
⑨	Spring	Refer to Spring Specification Table	1
⑩	Cam Slide Guide	Copper Alloy with Graphite	1
⑪	Cam Compulsory Returning Plate	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	4
⑭	Key B	SS400	2
⑮	Silent Stopper	Urethane	3
⑯	Slide Plate	S45C	2
⑰	Roller	S45C	1
⑱	Roller Pin	S45C	1
⑲	Bushing	Copper Alloy with Graphite	1
⑳	Roller Bracket	SS400	1
㉑	Roller Driver	S45C	1
㉒	Snap Ring F type	$\phi 9$	2
㉓	Wear Plate A	Copper Alloy with Graphite	4
㉔	Wear Plate B	Copper Alloy 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.

■MGFNS300(θ =30-60) MGFNS400(θ =30-60)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Driver	FC250	1
③	Base Plate C	S45C	1
④	Cam Holder	FC250	1
⑤	Spring Guide	Copper Alloy with Graphite	1
⑥	Base Plate F-R	S45C	1
⑦	Base Plate F-L	S45C	1
⑧	Stopper Plate	SS400	1
⑨	Spring	Refer to Spring Specification Table	1
⑩	Cam Slide Guide	Copper Alloy with Graphite	1
⑪	Cam Compulsory Returning Plate	S45C	2
⑫	Safety Plate	SS400	2
⑬	Key A	SS400	4
⑭	Key B	SS400	2
⑮	Silent Stopper	Urethane	3
⑯	Slide Plate	S45C	2
㉓	Wear Plate A	Copper Alloy with Graphite	4
㉔	Wear Plate B	Copper Alloy 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 UNDER CAM UNITS — DRILLED DOWEL HOLE/FINISHED DOWEL HOLE —

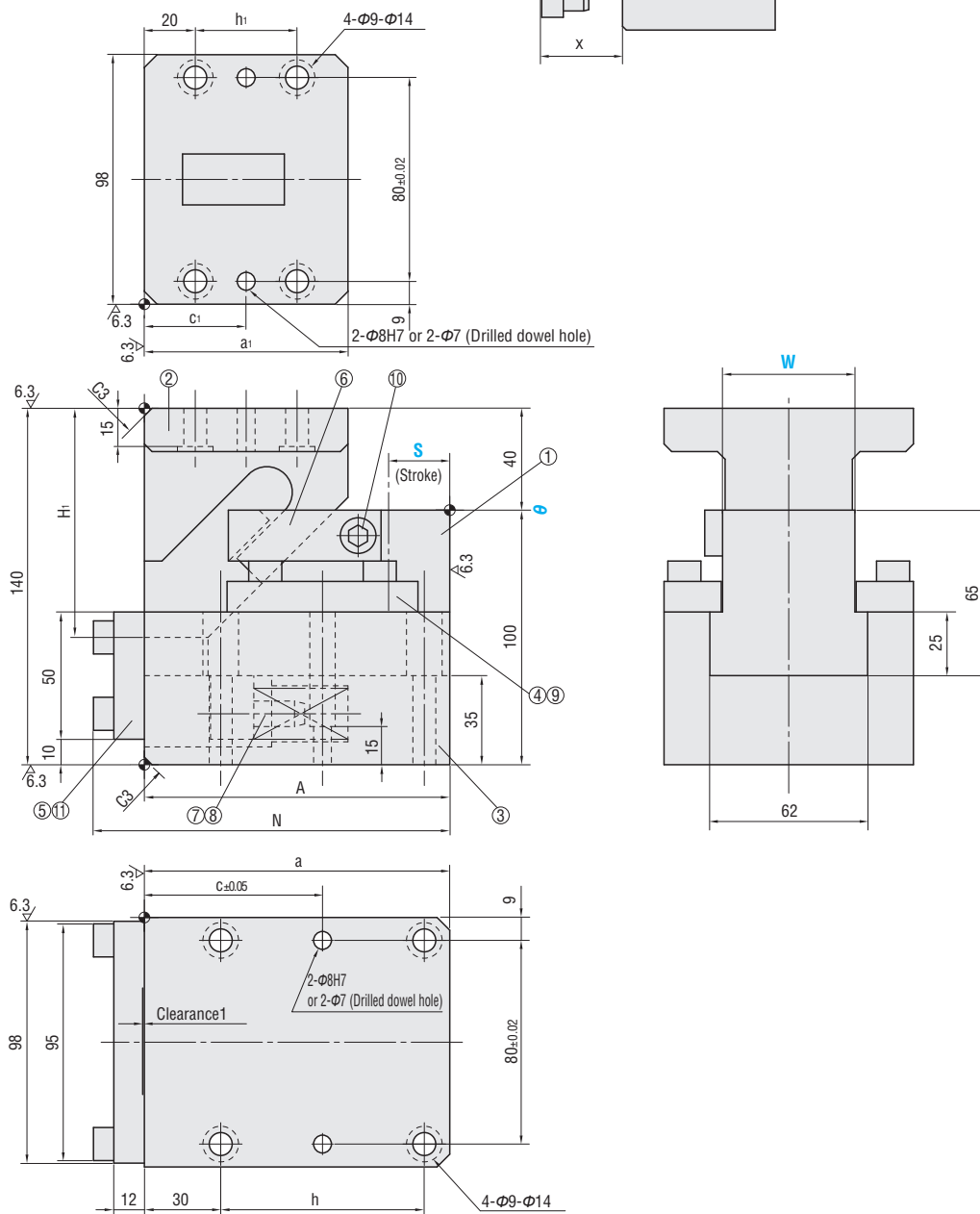
— MGDC · MGDCA —



— Drilled dowel hole —
MGDC52

— Finished dowel hole —
MGDCA52

■ Rear removal space



■ Components table P.188

W	θ	S	A	H ₁	N	a	a ₁	c	c ₁	h	h ₁	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

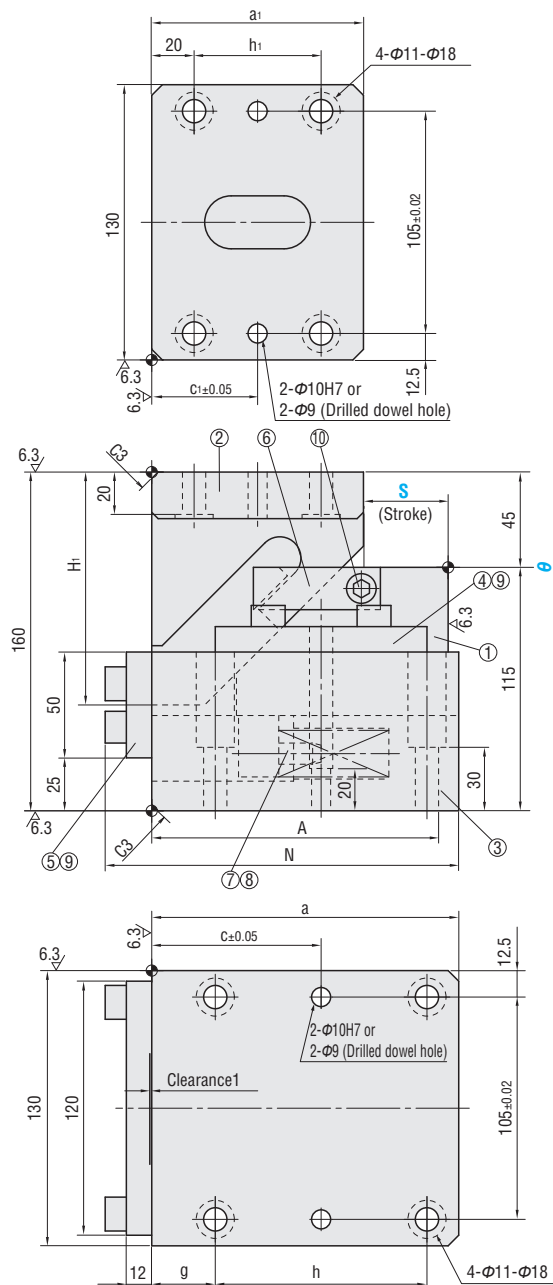
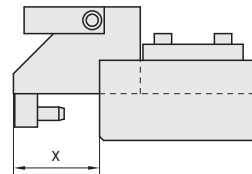
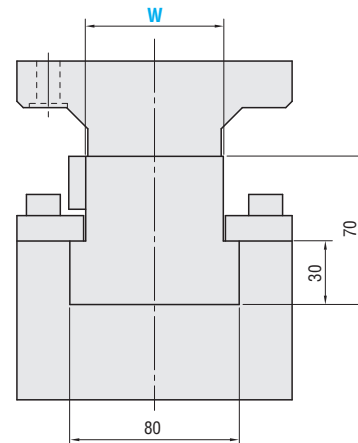
Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	Stroke S
Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
14.7 (1.5)	29.4 (3.0)	144.0(14.7)	594.0(60.7)	8.0	– Drilled dowel hole – MGDC – Finished dowel hole – MGDCA	52	00	25
		100.8(10.2)	604.8(61.4)	8.0				40
		109.2(11.2)	613.2(62.8)	14.0				60



Order

Catalogue No.	W	—	θ	—	S
MGDCA	52	—	00	—	40

■Rear removal space

**■Components table** P.188

W	θ	S	A	H ₁	N	a	a ₁	c	c ₁	g	h	h ₁	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

Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	Stroke S
Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
19.6 (2.0)	39.2 (4.0)	124.8(12.8)	748.8(76.8)	19.0	– Drilled dowel hole – MGDC – Finished dowel hole – MGDCA	65	00	40
		135.2(13.8)	759.2(77.4)	22.0				60



Order

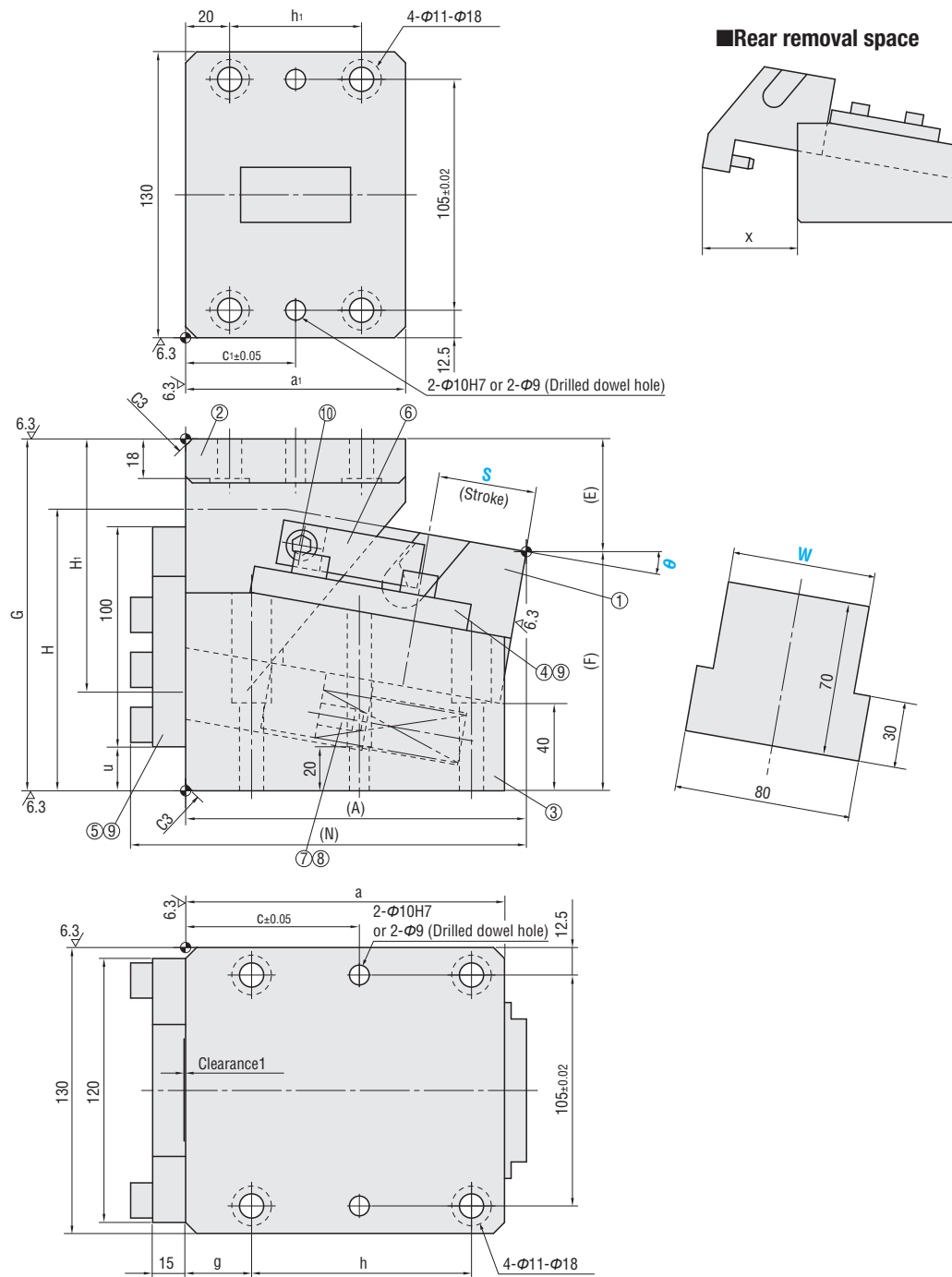
Catalogue No.	W	—	θ	—	S
MGDCA	65	—	00	—	40

STANDARD UNDER CAM UNITS — DRILLED DOWEL HOLE/FINISHED DOWEL HOLE — — MGDC · MGDCA —



— Drilled dowel hole —
MGDC65 ($\theta=05-20$)

— Finished dowel hole —
MGDCA65 ($\theta=05-20$)



■ Components table ■ P.188

W	θ	S	A	E	F	G	H	H ₁	U	N	a	a ₁	c	c ₁	g	h	h ₁	x
65	05	45	150.55	47.90	112.10	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	100	79	50	30	100	60	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	110	80	55	30	100		91
		70	201.64	66.56	103.44		161.5	125	40	226.64	180		65		40	125		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		65		40	125		87

Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	Stroke S
Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
19.6 (2.0)	39.2 (4.0)	176.4(17.9)	743.4(75.5)	20.0	– Drilled dowel hole – MGDC – Finished dowel hole – MGDCA	65	05	45
		190.4(19.4)	974.4(99.2)	25.0				70
		176.4(17.9)	743.4(75.5)	20.0			10	45
		190.4(19.4)	974.4(99.2)	25.0				70
		176.4(17.9)	743.4(75.5)	21.0			15	45
		190.4(19.4)	974.4(99.2)	25.0				70
		176.4(17.9)	743.4(75.5)	21.0			20	45
		190.4(19.4)	974.4(99.2)	25.0				70



Order

Catalogue No. **MGDCA** W **65** – θ **10** – S **45**

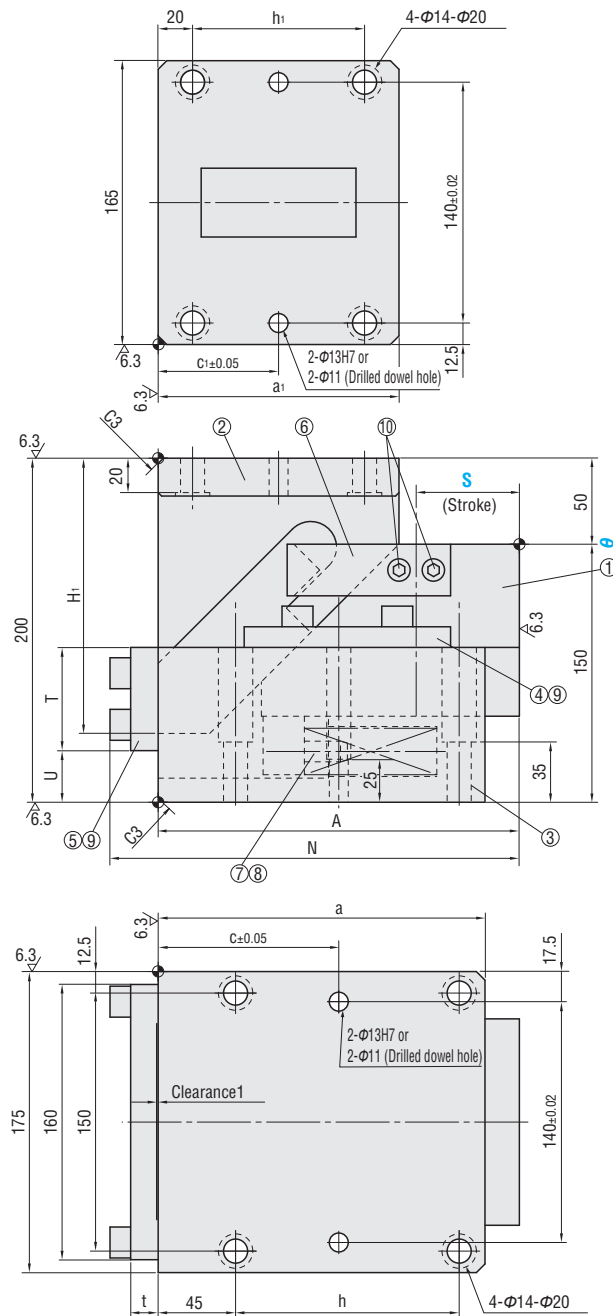
STANDARD UNDER CAM UNITS — DRILLED DOWEL HOLE/FINISHED DOWEL HOLE —

— MGDC • MGDCA —

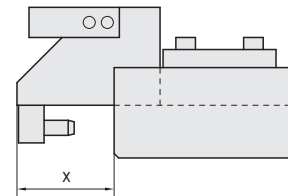
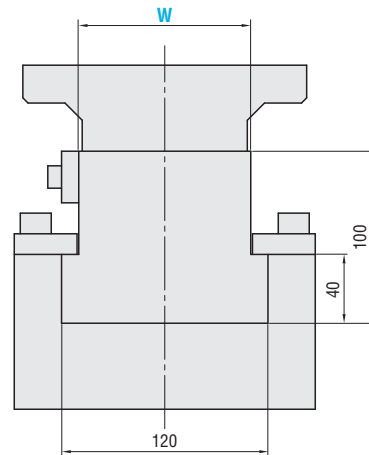


— Drilled dowel hole —
MGDC100 ($\theta=00$)

— Finished dowel hole —
MGDCA100 ($\theta=00$)



■ Rear removal space



■ Components table ■ P.188

W	θ	S	A	H ₁	N	T	U	a	a ₁	c	c ₁	h	h ₁	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

Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	Stroke S
Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
29.4 (3.0)	58.8 (6.0)	188.8(19.2)	1132.8(115.2)	37.0	– Drilled dowel hole – MGDC – Finished dowel hole – MGDCA	100	00	40
		202.8(20.8)	1138.8(116.8)	38.0				60
		170.4(17.3)	1306.4(132.5)	44.0				80



Order

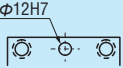
Catalogue No.	W	θ	S
MGDCA	100	00	40



AI

Catalogue No.	W	θ	S	(N12)
MGDCA	100	00	60	N12

t

Alteration	Code	Spec.
	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$ Not applicable for drilled dowel hole types.

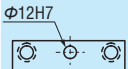


W	θ	S	A	E	F	H	H ₁	J	N	U	a	a ₁	c	c ₁	e	f	g	h	h ₁	x
100	05	45	172.22	54.72	145.28	155.6	140	35	199.22	27.5	160	100	90	50	17.5	140	40	105	60	98
		70	207.08	52.77	147.23	161.1	160	40	234.08		190	120	70	60	12.5	150	45	130	80	90
	10	45	178.12	65.02	134.98	156.8	140	35	205.12	30	160	100	90	50	17.5	140	40	105	60	103
		70	212.59	66.1	133.9	161.6	160		239.59		190	120	70	60	12.5	150	45	130	80	95
	15	45	182.67	70.77	129.23	160.0	125		209.67	32.5	160	110	90	55	17.5	140	40	105	70	106
		70	216.48	69.83	130.17	171.5	130	40	243.48		190	130	70	65	12.5	150	45	130	90	98
	20	45	185.83	81.86	118.14	161.2	120		212.83	35	160	110	90	55	17.5	140	40	105	70	109
		70	218.72	78.83	121.17	179.5	130		245.72	45	190	130	70	65	12.5	150	45	130	90	98

Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	Stroke S
Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
39.2 (4.0)	78.4 (8.0)	263.2(26.9)	1109.2(113.3)	33.0	– Drilled dowel hole – MGDC – Finished dowel hole – MGDCA	100	05	45
		197.2(20.0)	1149.2(116.6)	38.0				70
		263.2(26.9)	1109.2(113.3)	33.0			10	45
		197.2(20.0)	1149.2(116.6)	38.0				70
		263.2(26.9)	1109.2(113.3)	33.0			15	45
		197.2(20.0)	1149.2(116.6)	38.0				70
		263.2(26.9)	1109.2(113.3)	32.0			20	45
		197.2(20.0)	1149.2(116.6)	39.0				70

	Order	Catalogue No.	W	—	θ	—	S
		MGDCA	100	—	15	—	70

	Alterations	Catalogue No.	W	—	θ	—	S	—	(N12)
		MGDCA	100	—	10	—	45	—	N12

Alteration	Code	Spec.
 Φ12H7	N12	Dowel hole diameter change Φ13H7 ⇒ Φ12H7 Not applicable for drilled dowel hole types.



W	θ	S	A	H1	N	a	a1	c	c1	h	h1	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

Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	Stroke S
Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
58.8 (6.0)	88.2 (9.0)	307.2(31.4)	1843.2(188.2)	63.0	– Drilled dowel hole – MGDC – Finished dowel hole – MGDCA	150	00	40
		330.2(33.8)	1854.2(189.8)	69.0				60



Order

Catalogue No.	W	—	θ	—	S
MGDCA	150	—	00	—	60



W	θ	S	A	E	F	G	H	H ₁	J	N	U	a	a ₁	c	c ₁	h	h ₁	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
	10	45	199.55	68.64	151.36		176.7	140		235.55		190	110	105	55	125	70	121
		70	224.174	67.98	152.02		180.5	170		260.174		200	130	120	65	135	90	110
	15	45	204.58	76.29	143.71	230	179.6	130	60	240.58	55	190	120	105	60	125	80	126
		70	228.73	77.76	152.24		194.6	155		264.73		200	140	120	70	135	100	111
	20	45	208.05	84.3	135.7	220	183.2	130	45	244.05	40	190	120	105	60	125	80	113
		70	231.54	92.85	137.15	230	193.2	155	60	267.54	55	200	140	120	70	135	100	

Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	Stroke S
Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
64.7 (6.6)	98.0 (10.0)	428.4(43.7)	1805.4(184.1)	62.0	– Drilled dowel hole – MGDC – Finished dowel hole – MGDCA	150	05	45
		308.0(31.4)	1848.0(188.2)	73.0				70
		428.4(43.7)	1805.4(184.1)	63.0			10	45
		308.0(31.4)	1848.0(188.2)	73.0				70
		428.4(43.7)	1805.4(184.1)	65.0			15	45
		308.0(31.4)	1848.0(188.2)	77.0				70
		428.4(43.7)	1805.4(184.1)	66.0			20	45
		308.0(31.4)	1848.0(188.2)	75.0				70



Order

Catalogue No. **MGDCA** W **150** – θ **20** – S **45**

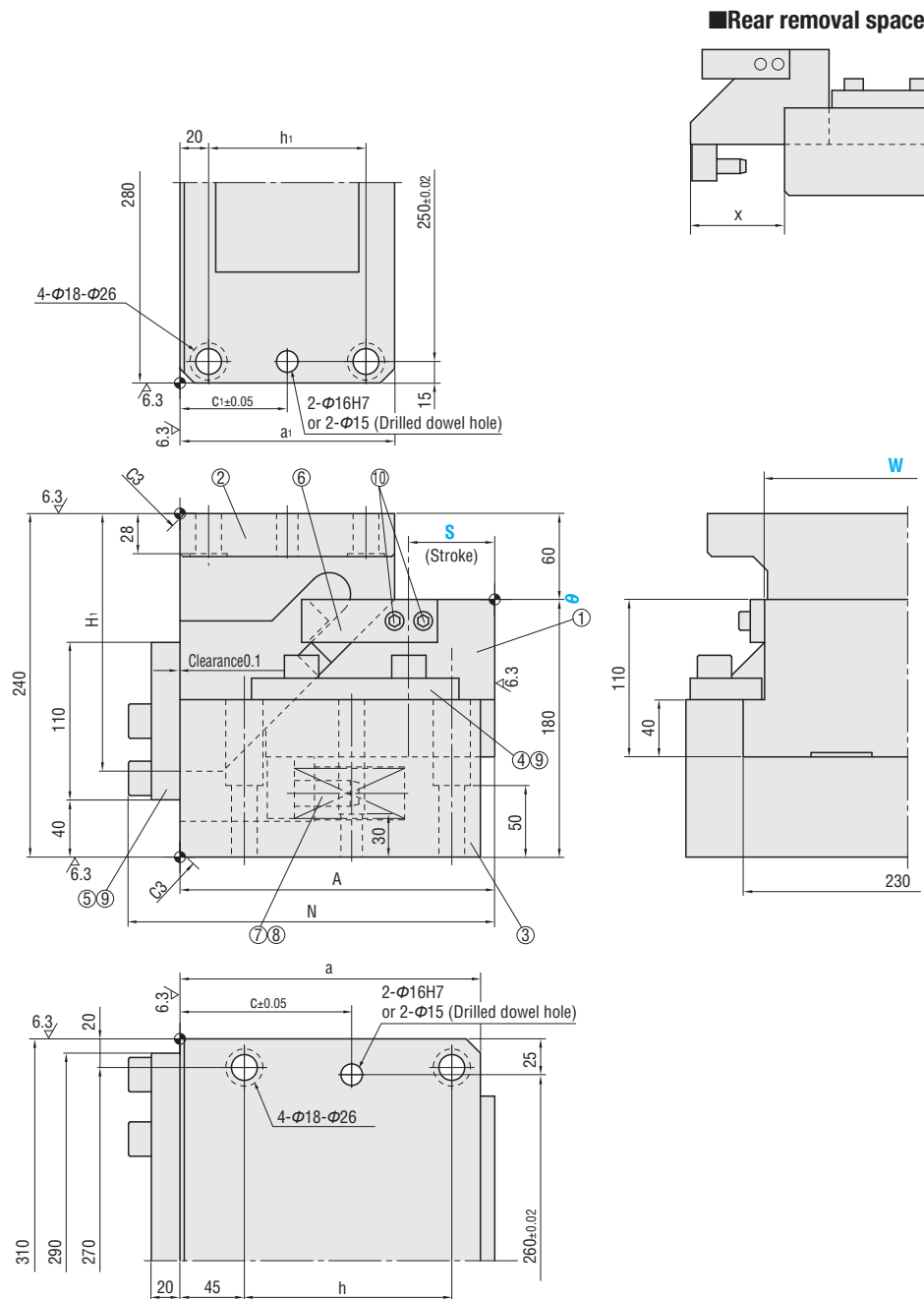
STANDARD UNDER CAM UNITS — DRILLED DOWEL HOLE/FINISHED DOWEL HOLE —

— MGDC • MGDCA —



— Drilled dowel hole —
MGDC200

— Finished dowel hole —
MGDCA200



■ Components table ■ P.189

W	θ	S	A	H ₁	N	a	a ₁	c	c ₁	h	h ₁	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

Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	Stroke S
Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
78.4(8.0)	117.6(12.0)	460.8(47.0)	2764.8(282.2)	82.0	– Drilled dowel hole – MGDC	200	00	40
		495.3(50.7)	2781.3(284.7)	84.0				60



Order

Catalogue No.	W	—	θ	—	S
MGDCA	200	—	00	—	60

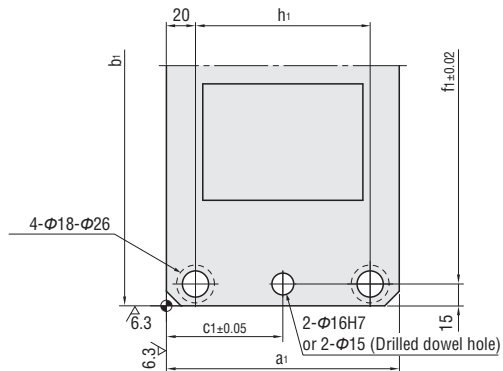
STANDARD UNDER CAM UNITS — DRILLED DOWEL HOLE/FINISHED DOWEL HOLE —

— MGDC • MGDC —

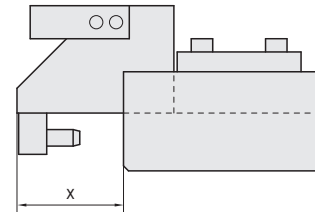
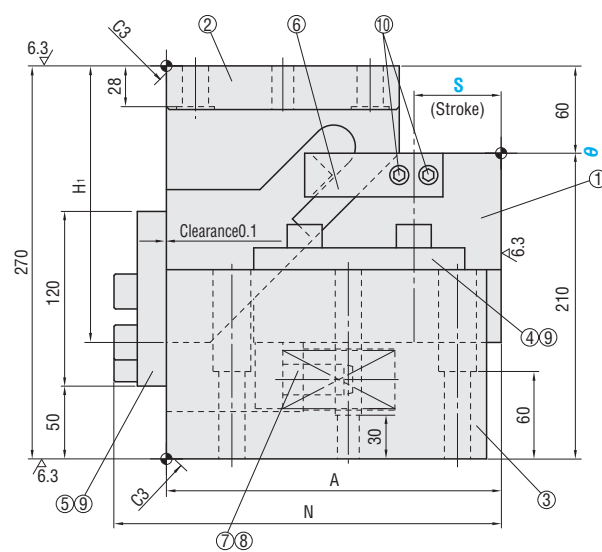
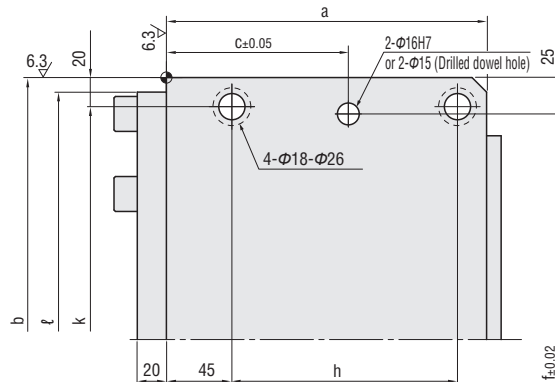


— Drilled dowel hole —
MGDC250/300

— Finished dowel hole —
MGDCA250/300



■ Rear removal space



■ Components table ■ P.189

W	θ	S	A	H ₁	N	W ₁	a	a ₁	b	b ₁	c	c ₁	f	f ₁	h	h ₁	k	ℓ	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

Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	Stroke S
Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
98.0 (10.0)	147.0 (15.0)	602.4(61.4)	3614.4(368.6)	106.0	– Drilled dowel hole – MGDC	250	00	40
		651.3(66.3)	3657.3(372.3)	127.0				60
117.6 (12.0)	176.4 (18.0)	602.4(61.4)	3614.4(368.6)	106.0	– Finished dowel hole – MGDCA	300		40
		651.3(66.3)	3657.3(372.3)	128.0				60



Order

Catalogue No.	W	—	θ	—	S
MGDCA	250	—	00	—	60

CAM DIAGRAM

 P.187



W	θ	S	N	W ₁	b	e	f	k	k ₀	ℓ	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	

Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	Stroke S
Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
137.2 (14.0)	205.8 (21.0)	301.6 (30.7)	9349.6 (952.3)	203.0	– Drilled dowel hole – MGDC – Finished dowel hole – MGDCA	400	00	60
				237.0		500		
				279.0		600		



Order

Catalogue No.	W	θ	S
MGDCA	500	00	60



Alterations

Catalogue No.	W	θ	S	(K)
MGDCA	600	00	60	K

Alteration	Code	Spec.
	K	Addition of locating key (With 1 hexagon socket head cap screw M8-20) Provided key

STANDARD UNDER CAM UNITS — DRILLED DOWEL HOLE/FINISHED DOWEL HOLE —

— MGDC • MGDCA — CAM DIAGRAM

■MGDC/MGDCA

52-00-25 	52-00-40 	52-00-60 	65-00-40
65-00-60 	65-05-45 	65-05-70 	65-10-45
65-10-70 	65-15-45 	65-15-70 	65-20-45
65-20-70 	100-00-40 	100-00-60 	100-00-80
100-05-45 	100-05-70 	100-10-45 	100-10-70
100-15-45 	100-15-70 	100-20-45 	100-20-70

150-00-40 	150-00-60 	150-05-45 	150-05-70
150-10-45 	150-10-70 	150-15-45 	150-15-70
150-20-45 	150-20-70 	200-00-40 	200-00-60
250-00-40 	250-00-60 	300-00-40 	300-00-60
400-00-60 	500-00-60 	600-00-60 	

STANDARD UNDER CAM UNITS — DRILLED DOWEL HOLE/FINISHED DOWEL HOLE —

— MGDC · MGDCA — COMPONENTS TABLE

■MGDC/MGDCA52

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	Copper Alloy with Graphite	2
⑤	Stopper Plate	SS400	1
⑥	Cam Compulsory Returning Plate	S45C	1
⑦	Spring Guide Pin	Φ10x35	2
⑧	Coil Spring	Φ20x70 (S=25) Φ20x100 (S=40) Φ20x150 (S=60)	2
⑨	Cap Screw	M8x25	4
⑩	Cap Screw	M8x20	1
⑪	Cap Screw	M8x30	4

■MGDC/MGDCA65(θ=00)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	Copper Alloy with Graphite	2
⑤	Stopper Plate	SS400	1
⑥	Cam Compulsory Returning Plate	S45C	1
⑦	Spring Guide Pin	Φ10x35	2
⑧	Coil Spring	Φ22x100 (S=40) Φ22x150 (S=60)	2
⑨	Cap Screw	M10x30	8
⑩	Cap Screw	M8x20	1

■MGDC/MGDCA65(θ=05-20)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	Copper Alloy with Graphite	2
⑤	Stopper Plate	SS400	1
⑥	Cam Compulsory Returning Plate	S45C	1
⑦	Spring Guide Pin	Φ10x35 (S=45) Φ12x40 (S=70)	2
⑧	Coil Spring	Φ22x125 (S=45) Φ25x175 (S=70)	2
⑨	Cap Screw	M10x30	10
⑩	Cap Screw	M8x20	1

■MGDC/MGDCA100 (θ=00)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	Copper Alloy with Graphite	2
⑤	Stopper Plate	SS400	1
⑥	Cam Compulsory Returning Plate	S45C	1
⑦	Spring Guide Pin	Φ12x40 (S=40, 60) Φ15x45 (S=80)	2
⑧	Coil Spring	Φ27x100 (S=40) Φ27x150 (S=60) Φ30x200 (S=80)	2
⑨	Cap Screw	M12x35	8
⑩	Cap Screw	M8x30	2

■MGDC/MGDCA100(θ=05-20)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	Copper Alloy with Graphite	2
⑤	Stopper Plate	SS400	1
⑥	Cam Compulsory Returning Plate	S45C	2
⑦	Spring Guide Pin	Φ12x40	2
⑧	Coil Spring	Φ27x125 (S=45) Φ27x175 (S=70)	2
⑨	Cap Screw	M12x35	8
⑩	Cap Screw	M8x25	2

■MGDC/MGDCA150(θ=00)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	Copper Alloy with Graphite	2
⑤	Stopper Plate	SS400	1
⑥	Cam Compulsory Returning Plate	S45C	1
⑦	Spring Guide Pin	Φ18x60	2
⑧	Coil Spring	Φ35x100 (S=40) Φ35x150 (S=60)	2
⑨	Cap Screw	M16x45	8
⑩	Cap Screw	M8x30	2

■MGDC/MGDCA150($\theta=05-20$)

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	Copper Alloy with Graphite	2
⑤	Stopper Plate	SS400	1
⑥	Cam Compulsory Returning Plate	S45C	2
⑦	Spring Guide Pin	$\phi 18 \times 60$	2
⑧	Coil Spring	$\phi 35 \times 125$ (S=45) $\phi 35 \times 175$ (S=70)	2
⑨	Cap Screw	M16x45	8
⑩	Cap Screw	M8x25	2

■MGDC/MGDCA200

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Stopper Plate	S45C	1
⑥	Cam Compulsory Returning Plate	S45C	2
⑦	Spring Guide Pin	$\phi 18 \times 60$	3
⑧	Coil Spring	$\phi 35 \times 100$ (S=40) $\phi 35 \times 150$ (S=60)	3
⑨	Cap Screw	M16x45	10
⑩	Cap Screw	M8x30	4

■MGDC/MGDCA250

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Stopper Plate	S45C	1
⑥	Cam Compulsory Returning Plate	S45C	2
⑦	Spring Guide Pin	$\phi 21 \times 65$	3
⑧	Coil Spring	$\phi 40 \times 100$ (S=40) $\phi 40 \times 150$ (S=60)	3
⑨	Cap Screw	M16x45	10
⑩	Cap Screw	M8x30	4

■MGDC/MGDCA300

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Stopper Plate	S45C	1
⑥	Cam Compulsory Returning Plate	S45C	2
⑦	Spring Guide Pin	$\phi 21 \times 65$	3
⑧	Coil Spring	$\phi 40 \times 100$ (S=40) $\phi 40 \times 150$ (S=60)	3
⑨	Cap Screw	M16x45	12
⑩	Cap Screw	M8x30	4

■MGDC/MGDCA400

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Stopper Plate	S45C	1
⑥	Spring Stopper	S45C	2
⑦	Spring Guide Pin	S45C	4
⑧	Cam Compulsory Returning Plate	S45C	1
⑨	Coil Spring	$\phi 60 \times 150$	4
⑩	Wear Plate	MWF48-125	4
⑪	Stopper	Urethane	3
⑫	Cap Screw	M16x55	16
⑬	Cap Screw	M10x30	18
⑭	Dowel Pin	$\phi 10 \times 60$	4
⑮	Cam Compulsory Returning Plate	S45C	1

■MGDC/MGDCA500,600

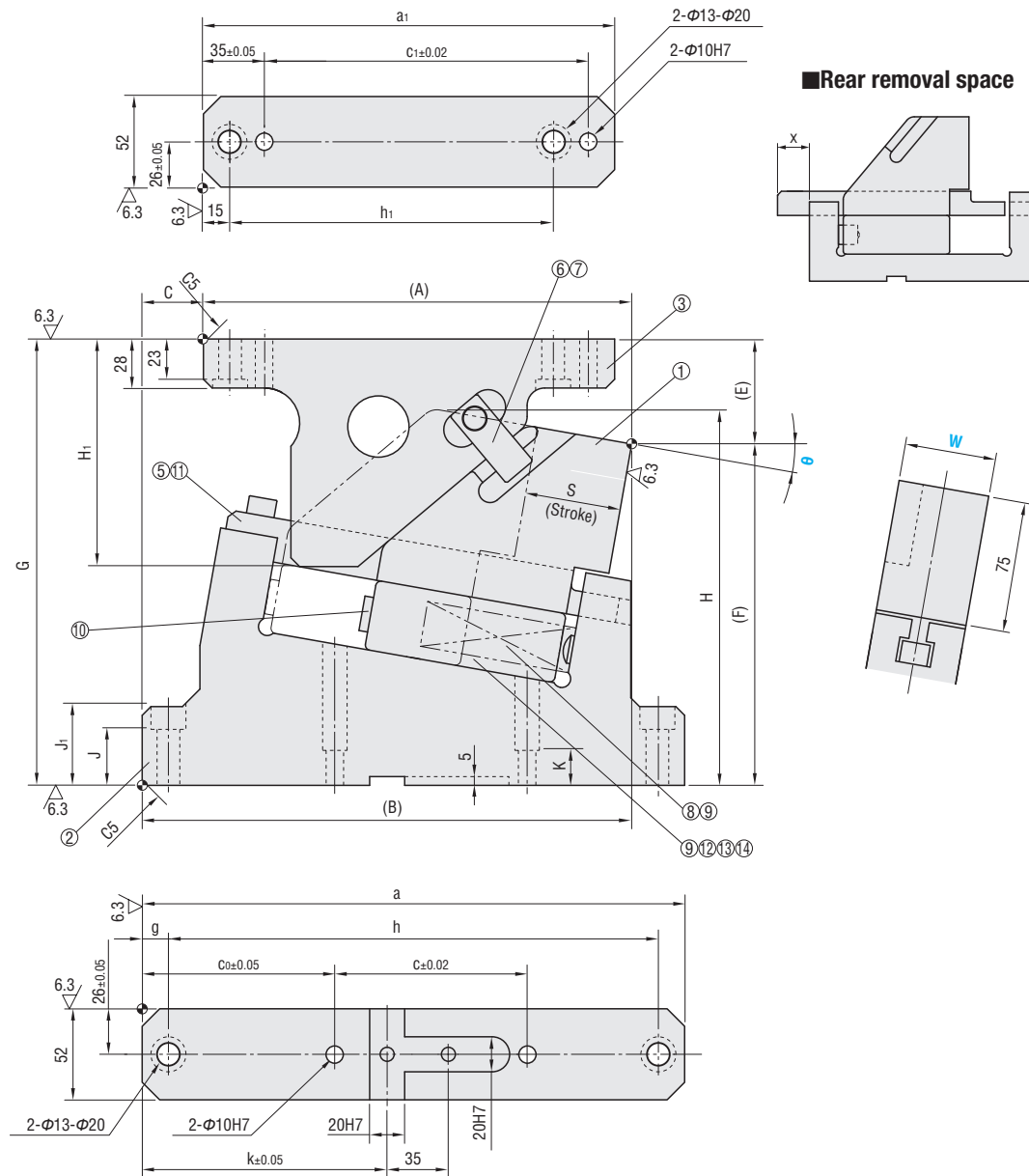
No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250 with Graphite	1
②	Cam Driver	FC250 with Graphite	1
③	Cam Holder	FC250	1
④	Cam Upper Plate	S45C with Graphite	2
⑤	Stopper Plate	S45C	1
⑥	Spring Stopper	S45C	2
⑦	Spring Guide Pin	S45C	4
⑧	Cam Compulsory Returning Plate	S45C	1
⑨	Coil Spring	$\phi 60 \times 150$	4
⑩	Wear Plate	MWF48-125	4
⑪	Stopper	Urethane	5
⑫	Cap Screw	M16x45 (W=500) M16x55 (W=600)	17
⑬	Cap Screw	M10x30	18
⑭	Dowel Pin	$\phi 10 \times 60$	4
⑮	Cam Compulsory Returning Plate	S45C	1

COMPACT UNDER CAM UNITS

— MGDCC —



MGDCC52



■ Components table ■ P.195

W	θ	S	A	B	C	E	F	G	H	H ₁	J	J ₁	K	a	a ₁	c	c ₀	c ₁	g	h	h ₁	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		32 288	45	20	310	225	110	110	175	15	280	175	140	0						
	10		244.75	279.75		59.98	195.02		215.2	130					235			185			185								
	15		249.51	289.51	40	61.91	193.09		223.2	120					240			190											
	20		249.05	304.05	55	80.12	174.88		214.6	35																			

Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	Stroke S
Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
19.6 (2.0)	39.2 (4.0)	85.3 (8.7)	606.7 (61.9)	14.2	MGDCC	52	00	55
				18.5			05	
				19.4			10	
				20.0			15	
				19.5			20	



Order

Catalogue No.	W	—	θ	—	S
MSDCC	52	—	00	—	55



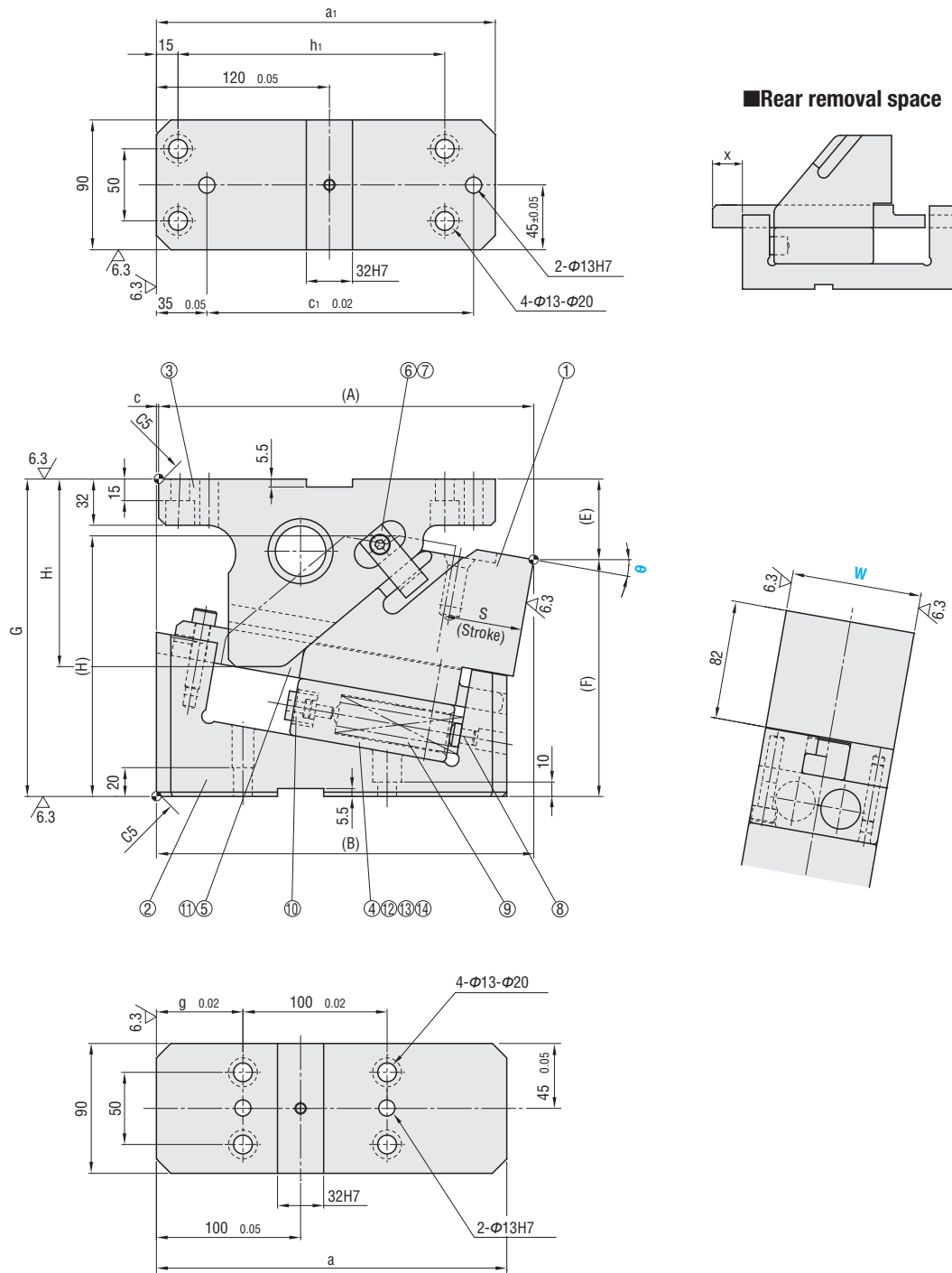
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Catalogue No.	W	—	θ	—	S	—	(K-SC-WC)
MGDCC	52	—	00	—	55	—	WC

t

Alterations	Code	Spec.
	K	Addition of 2 locating keys (With 2 hexagon socket head cap screws M8-15)
	SC	Forward relocation of mount surface $1 \leq SC \leq 65$ 1mm increments
	WC	Mount surface width change W=52 $\Rightarrow$ W=100

■Rear removal space

**■Components table** P.195

W	θ	S	A	B	C	E	F	G	H	H ₁	a	a ₁	c ₁	g	h ₁	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

Acting force KN (ton)		Spring force N (kgf)		Total weight kg	Catalogue No.	W	θ	Stroke S
Standard acting force (one million strokes)	Allowable acting force (300,000 strokes)	Initial pressure	Final pressure					
38.2 (3.9)	76.4 (7.8)	170.6 (17.4)	1213.4 (123.7)	24.9	MGDCC	90	00	55
				25.9			05	
				27.3			10	
				29.3			15	



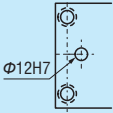
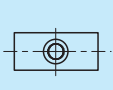
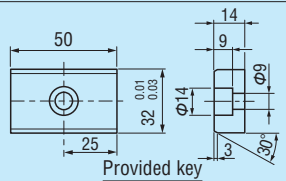
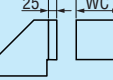
Order

Catalogue No.	W	—	θ	—	S
MSDCC	90	—	10	—	55



Alterations

Catalogue No.	W	—	θ	—	S	—	(N12-K-WC)
MGDCC	90	—	05	—	55	—	WC120

Alterations	Code	Spec.
	N12	Dowel hole diameter change $\Phi 13H7 \Rightarrow \Phi 12H7$
	K	Addition of 2 locating keys (With 2 hexagon socket head cap screws M8-15) 
	WC	Mount surface width change $W=90 \Rightarrow W=120$ or 150 Only 120 or 150 can be selected.

COMPACT UNDER CAM UNITS

— MGDCC — CAM DIAGRAM COMPONENTS TABLE

Cam diagram

■ MGDCC

<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

■MGDCC52

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Holder	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	Cam Compulsory Returning Plate	S45C	1
⑧	Spring Guide Pin	S45C	1
⑨	Coil Spring	Φ26×150	1
⑫	Silent Stopper	Urethane	1
⑬	Cap Screw	M10×50	1
⑭	Cap Screw	M8×50	4
⑯	Cap Screw	M8x15	1
⑱	Dowel Pin	Φ8×40	2
⑲	Spring Plug	SAE1065 NH8	2

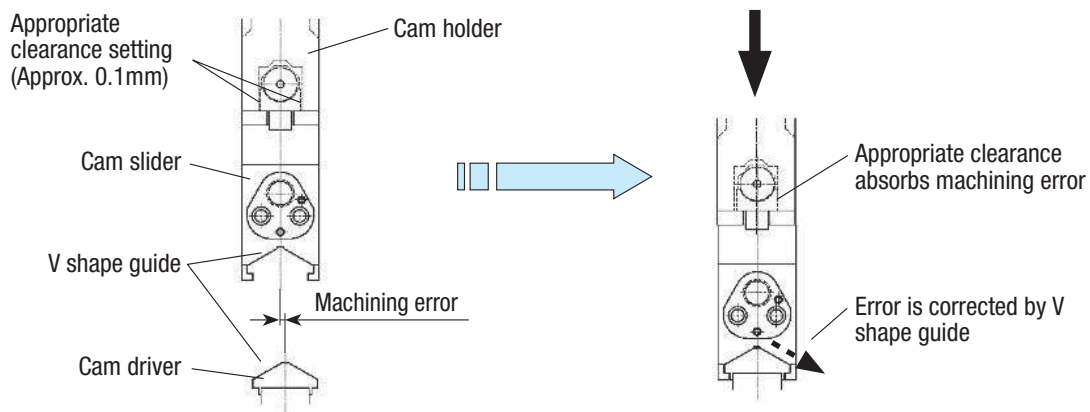
■MGDCCC90

No.	Part Name	Material and Remark	Quantity
①	Cam Slider	FC250	1
②	Cam Holder	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	Cam Compulsory Returning Plate	S45C	2
⑧	Spring Guide Pin	S45C	2
⑨	Coil Spring	Φ26×150	2
⑩	Silent Stopper	Urethane	2
⑪	Cap Screw	M10×45	1
⑫	Cap Screw	M10×50	4
⑭	Cap Screw	M8x15	2
⑮	Dowel Pin	Φ8×40	2
⑰	Spring Plug	SAE1065 NH8	2

Automatic Alignment Mechanism and Cam Unit Assembly Work

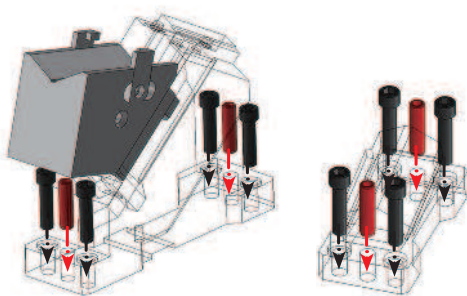
■Automatic alignment mechanism

The automatic alignment mechanism is designed to absorb a machining error between the cam holder and cam driver, with a V shape guide for the cam slider and cam driver, and an appropriate guide clearance setting between the cam slider and cam holder. Therefore, the cam slider position is determined by the V shape guide of the cam driver, regardless of the accuracy of the cam holder position, and hence, pierce punch position is always assured.



■Cam unit assembly work procedure

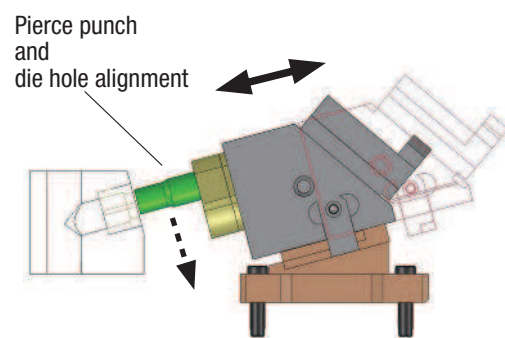
<For flying cam with automatic alignment mechanism>



Cam unit assembly

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

Cam alignment work at die spot press is not necessary

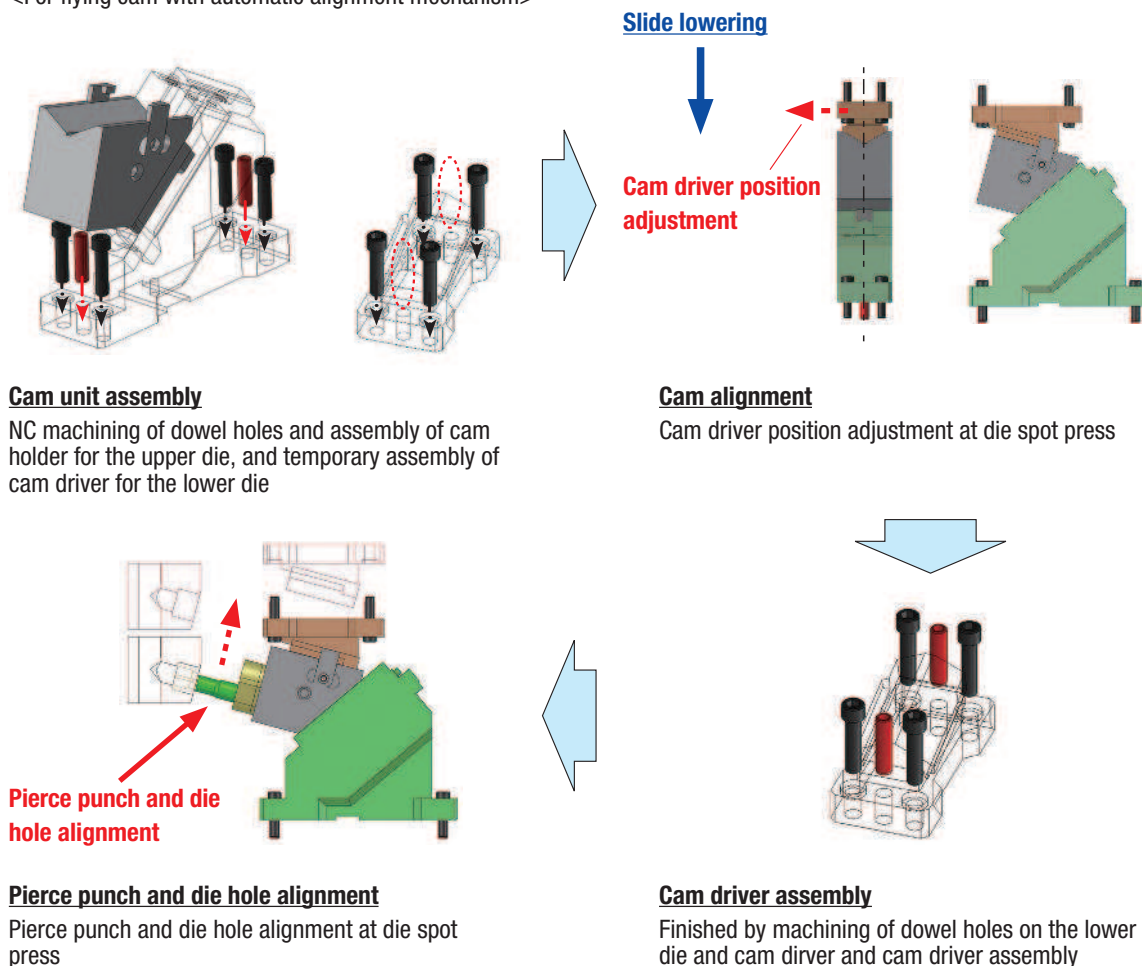


Pierce punch and die hole alignment

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

Pierce punch and die hole alignment work at die spot press is not necessary

<For flying cam with automatic alignment mechanism>



The following steps may be omitted or simplified thanks to the automatic alignment mechanism.

- ① Cam alignment work at die spot press is omitted
- ② Machining of dowel holes on the lower die and cam driver is omitted → Simplified to NC machining
- ③ Pierce punch and die hole alignment work at die spot press is omitted
→ Simplified to alignment work of the lower die only

Thus, automatic alignment mechanism can significantly reduce man-hours in flying cam assembly work and reduce die cost.