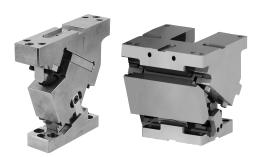


Aerial Cam Unit General Description of UCMSG

FOR PIERCE AND FLANGE

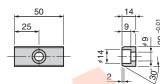


- Highly rigid structure with the overseas automobile manufacturer specification
- ●50, 65, 80, 150, 200mm and 300mm are available for the mounting width.
- Angle 0° to 65° increments of 5° is available.
 (For 65 mm wide, angle 20° to 60° is in increments of 10°).
- ●ISO springs are used.

■ Option for UCMSG

Metric Key Specification(-K)
 UCMSG50/65

LKU20-50 (with 3-M8 \times 15 bolts)

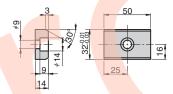


UCMSG80

LKU32-50 (with 3-M8 imes 15 bolts)

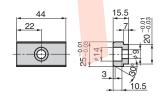
UCMSG150/200/300

LKU32-50 (with $6-M8 \times 15$ bolts)



Metric Key Specification(-KA) UCMSG50

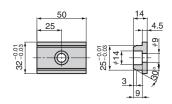
LKA25-20-44 (with 3-M8 \times 15 bolts)



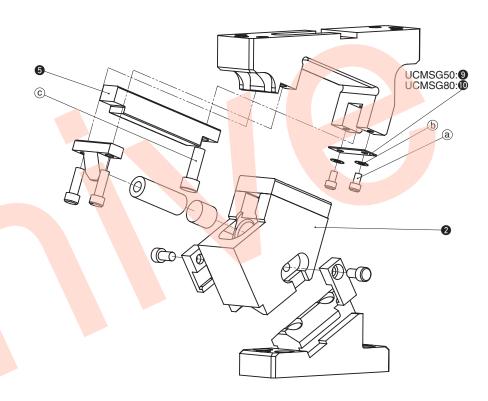
UCMSG80

LKE25-32-50 (with 3-M8 × 15 bolts) UCMSG150/200/300

LKE25-32-50 (with 6-M8 \times 15 bolts)



■UCMSG50 (UCMSG80) Structure and Assembly / Disassembly



- Disassembly method of UCMSG50 (same for UCMSG80)
 - 1) Remove hexagon socket head bolt (ⓐ) and washer (ⓑ) and remove safety plate (UCMSG50: ① UCMSG80: ①).
 - 2) Remove hexagon socket head bolt (©).
 - 3) Shift guide bar (5) to the back then remove cam slider (2) from cam holder.
- Assembly method of UCMSG50 (same for UCMSG80)
 - 1) Assemble components in the reverse order of disassembly.
 - Make sure that there is no foreign matter on the sliding area and assemble components.
 - The clearance between the guide bar/cam slider and the cam holder is controlled. Match the stamped serial number on the holder and slider before assembly.
 - When cam is disassembled and then reassembled, please do not forget to assemble all bolts provided

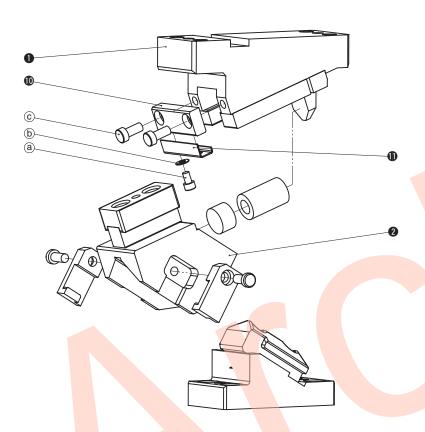
UCMSG 50



Aerial Cam Unit General Description of UCMSG

FOR PIERCE AND FLANGE

■UCMSG65 Structure and Assembly / Disassembly



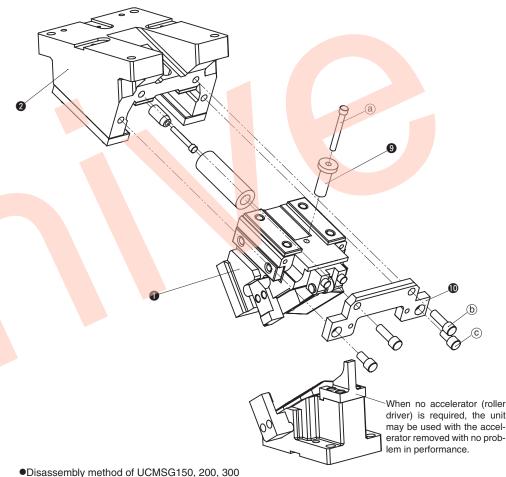
Disassembly method of UCMSG65

- 1) Remove hexagon socket head bolt (a) and washer (b), and remove safety plate (1).
- 2) Loosen hexagon socket head bolt (©). Remove stopper plate (10).
- 3) Pull cam slider (1) from cam holder (2) to the rear.

Assembly method of UCMSG65

- 1) Assemble components in the reverse order of disassembly.
- Make sure that there is no foreign matter on the sliding area and assemble components.
- The clearance between the guide bar/cam slider and the cam holder is controlled. Match the stamped serial number on the holder and slider before assembly.
- · When cam is disassembled and then reassembled, please do not forget to assemble all bolts provided

UCMSG150, 200, 300 Structure and Assembly / Disassembly



- 1) Loosen hexagon socket head bolt (a) and remove hanger bolt sleeve (9).
- 2) Loosen hexagon socket head bolt ((b), (c)) and remove backup plate (10).
- 3) Pull cam slider (1) from cam holder (2) to the rear.

Assembly method of UCMSG150, 200, 300

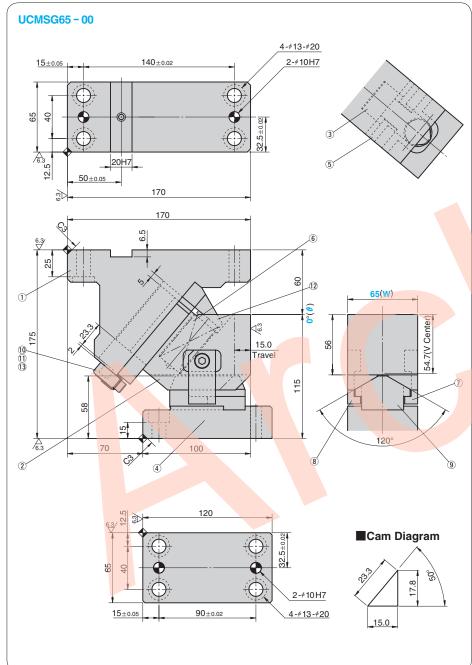
- 1) Assemble components in the reverse order of disassembly.
- Make sure that there is no foreign matter on the sliding area and assemble components.
- The clearance between the cam slider and the cam holder is controlled. Match the stamped serial number on the holder and slider before assembly.
- · When cam is disassembled and then reassembled, please do not forget to assemble all bolts provided

UCMSG 50



FOR PIERCE





Travel S	Working Fo	rce kN(tonf)	Spring Fo	ng Force N(kgf) R		Total			
		Allowable Working Force (300,000 strokes)		Final Load	Force N(kgf)	Weight kg	Catalog No.	(W)	(θ)
15.0	29.4 (3.0)	58.8 (6.0)	245.4 (25.0)	834.9 (85.1)	1159 (118.3)	10.7	UCMSG	65	00



(W) Catalog No. **UCMSG**

65

 (θ) 00

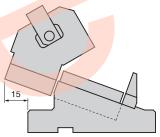
Option Code	Specific	cation		
	Dedicated key is at			
K	(It is not assembled	to the	main u	nit.)



UCMSG65 - 00 - K

For machining details or tapping hole and dowel hole (prepared hole and finished hole) for mounting of the retainer, refer to page 561. For detailed specification of the key, refer to page 1259.





■Table of Components

۷o.	Description	Qty	Material and Remark
1	Cam Holder	1	FCD450
2	Cam Slider	1	S45C with Graphite
3	Lower Slider	1	FC250 with Graphite
4	Cam Driver	1	S45C(1045)
5	Slide Plate	2	Bronze
6	Coil Spring	1	TJL25-89
7	Positive Return Follower A	1	S45C(1045)
8	Positive Return Follower B	1	S45C(1045)
9	Slide Guide	1	Bronze with Graphite
10	Stopper Plate	1	S45C(1045)
11)	Safety Plate	1	SS400(1020)
12)	Spring Block	1	SS400(1020)
13	Stopper	2	Urethane
	1) 2) 3) 4) 5) 6) 7) 8) 9) 10) 11)	1 Cam Holder 2 Cam Slider 3 Lower Slider 4 Cam Driver 5 Slide Plate 6 Coil Spring 7 Positive Return Follower A 8 Positive Return Follower B 9 Slide Guide 10 Stopper Plate 11 Safety Plate 12 Spring Block	1 Cam Holder 1 2 Cam Slider 1 3 Lower Slider 1 4 Cam Driver 1 5 Slide Plate 2 6 Coil Spring 1 7 Positive Return Follower A 1 8 Positive Return Follower B 1 9 Slide Guide 1 10 Stopper Plate 1 11 Safety Plate 1 12 Spring Block 1

Bolts for assembly are not indicated.

■Spring Diagram

TJL25-89 (1 piece) Spring used •Spring constant 25.3N/mm(2.58kgf/mm) •Guideline of spring durability 300,000 strokes

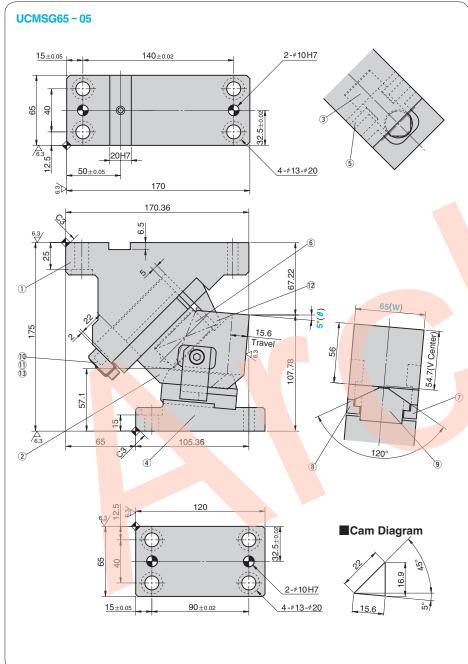
 α : Spring Force at punch retraction of 5 mm e : Spring return amount when the punch returns 5 mm Final 834.9 Load (85.1) (65.0) Initial 245.4 Load (25.0) Length at final load 56 e=7.8 Length at initial load 79.3 Initial deflection 9.7 Free length 89

UCMSG



FOR PIERCE





Travel S	Working Force kN(tonf) Spring Force N(kgf)			Return	Total				
		Allowable Working Force (300,000 strokes)	Initial Load	Final Load	Force N(kgf)	Weight kg	Catalog No.	(θ)	
15.6	29.4 (3.0)	58.8 (6.0)	278.3 (28.4)	834.9 (85.1)	1153 (117.7)	10.4	UCMSG	65	05



Catalog No. **UCMSG**

(W) (θ) 05

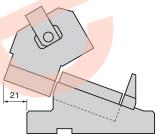
Option Code	Specific	cation	1	
K	Dedicated key is at			ni



UCMSG65 - 05 - K

For machining details or tapping hole and dowel hole (prepared hole and finished hole) for mounting of the retainer, refer to page 561. For detailed specification of the key, refer to page 1259.





■ Table of Components

		_	
No.	Description	Qty	Material and Remark
1	Cam Holder	1	FCD450
2	Cam Slider	1	S45C with Graphite
3	Lower Slider	1	FC250 with Graphite
4	Cam Driver	1	S45C(1045)
(5)	Slide Plate	2	Bronze
6	Coil Spring	1	TJL25-89
7	Positive Return Follower A	1	S45C(1045)
8	Positive Return Follower B	1	S45C(1045)
9	Slide Guide	1	Bronze with Graphite
10	Stopper Plate	1	S45C(1045)
11)	Safety Plate	1	SS400(1020)
12	Spring Block	1	SS400(1020)
13	Stopper	2	Urethane

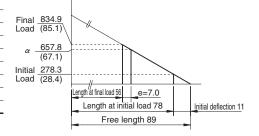
Bolts for assembly are not indicated.

■Spring Diagram

•Spring used TJL25-89 (1 piece) •Spring constant 25.3N/mm(2.58kgf/mm)

• Guideline of spring durability 300,000 strokes

lpha : Spring Force at punch retraction of 5 mm e : Spring return amount when the punch returns 5 mm

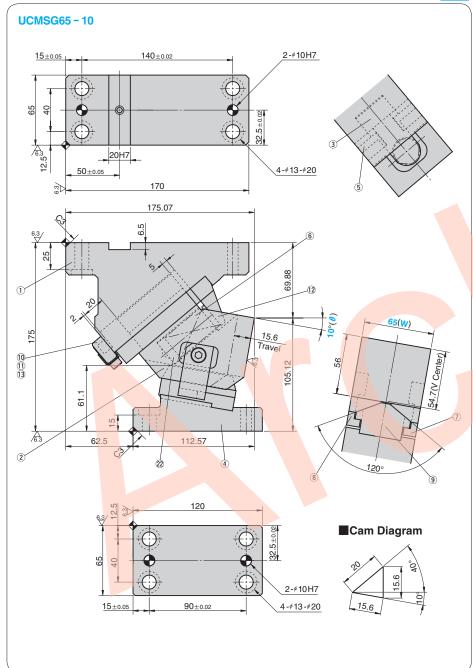


UCMSG



FOR PIERCE

CAD FILE



		Working Force kN(tonf) Spring Force N(kgf) Return Total							
Travel S	Working Force	Allowable Working Force (300,000 strokes)		Final Load	Force N(kgf)	Weight kg	Catalog No.	(W)	(θ)
15.6	29.4 (3.0)	58.8 (6.0)	236.8 (24.1)	828.8 (84.3)	1137 (116.0)	10.2	UCMSG	65	10

 (θ)



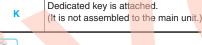
Catalog No. **UCMSG**

Option

Code

(W)

65 10 Specification

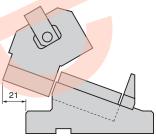




UCMSG65 - 10 - K

For machining details or tapping hole and dowel hole (prepared hole and finished hole) for mounting of the retainer, refer to page 561. For detailed specification of the key, refer to page 1259.





■ Table of Components

		_	
No.	Description	Qty	Material and Remark
1	Cam Holder	1	FCD450
2	Cam Slider	1	S45C with Graphite
3	Lower Slider	1	FC250 with Graphite
4	Cam Driver	1	S45C(1045)
(5)	Slide Plate	2	Bronze
6	Coil Spring	1	TJL25-76
7	Positive Return Follower A	1	S45C(1045)
8	Positive Return Follower B	1	S45C(1045)
9	Slide Guide	1	Bronze with Graphite
10	Stopper Plate	1	S45C(1045)
11)	Safety Plate	1	SS400(1020)
12	Spring Block	1	SS400(1020)
13	Stopper	2	Urethane
22	Spacer	1	SS400(1020)

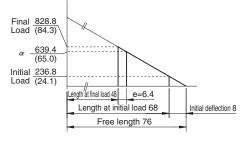
Bolts for assembly are not indicated.

■Spring Diagram

 Spring used TJL25-76 (1 piece) •Spring constant 29.6N/mm(3.01kgf/mm) • Guideline of spring durability 300,000 strokes

 α : Spring Force at punch retraction of 5 mm

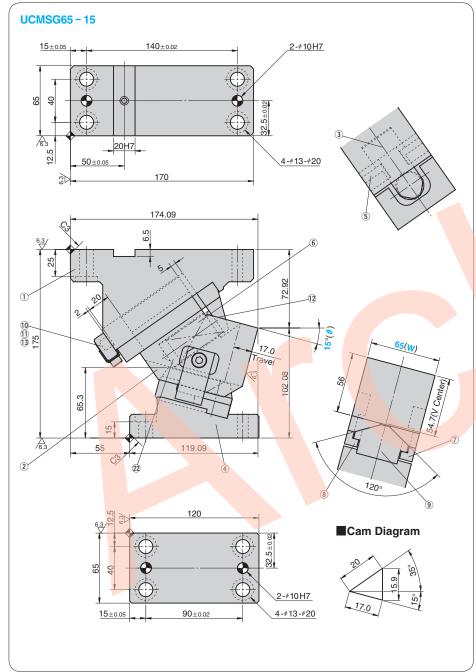
e: Spring return amount when the punch returns 5 mm





FOR PIERCE





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	Travel S		rce kN(tonf)	Spring Fo	Spring Force N(kgf)		Total			
		Standard Working Force (one million strokes)			Final Load	Force N(kgf)	Weight kg	Catalog No.	(W)	(θ)
	17.0	29.4 (3.0)	58.8 (6.0)	236.8 (24.1)	828.8 (84.3)	1130 (115.3)	9.9	UCMSG	65	15

15

(It is not assembled to the main unit.)



Order

Catalog No. **UCMSG**

(W) $- \mid (\theta)$ 65

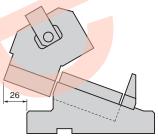
Option Specification Code Dedicated key is attached.



UCMSG65 - 15 - K

For machining details or tapping hole and dowel hole (prepared hole and finished hole) for mounting of the retainer, refer to page 561. For detailed specification of the key, refer to page 1259.





■ Table of Components

	=:	and to the position		
	No.	Description	Qty	Material and Remark
	1	Cam Holder	1	FCD450
	2	Cam Slider	1	S45C with Graphite
	3	Lower Slider	1	FC250 with Graphite
	4	Cam Driver	1	S45C(1045)
	(5)	Slide Plate	2	Bronze
	6	Coil Spring	1	TJL25-76
	7	Positive Return Follower A	1	S45C(1045)
	8	Positive Return Follower B	1	S45C(1045)
	9	Slide Guide	1	Bronze with Graphite
	10	Stopper Plate	1	S45C(1045)
	11)	Safety Plate	1	SS400(1020)
	12	Spring Block	1	SS400(1020)
	13	Stopper	2	Urethane
	22	Spacer	1	SS400(1020)

Bolts for assembly are not indicated.

■Spring Diagram

 Spring used TJL25-76 (1 piece) •Spring constant 29.6N/mm(3.01kgf/mm)

•Guideline of spring durability 300,000 strokes

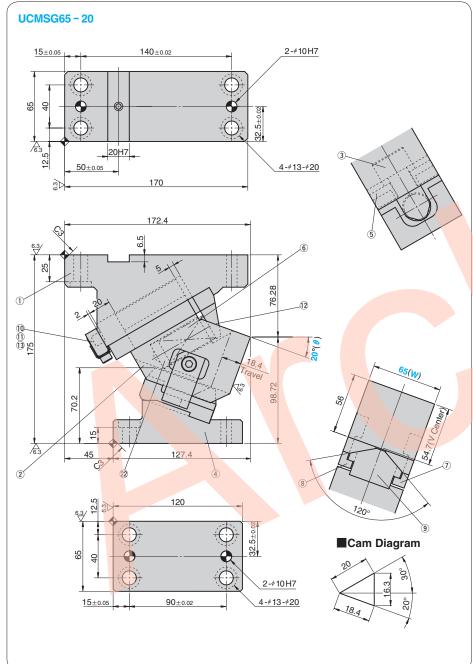
 α : Spring Force at punch retraction of 5 mm e : Spring return amount when the punch returns 5 mm Final <u>828.8</u> Load (84.3) Initial 236.8 Load (24.1) Length at final load 48 Length at initial load 68 Initial deflection 8 Free length 76

UCMSG



FOR PIERCE





Travel S	Working Fo	rce kN(tonf)	Spring Fo	ring Force N(kgf) F		Total			
	Standard Working Force (one million strokes)			Final Load	Force N(kgf)	Weight kg	Catalog No.	(W)	(θ)
18.4	29.4 (3.0)	58.8 (6.0)	236.8 (24.1)	828.8 (84.3)	1123 (114.6)	9.9	UCMSG	65	20

(θ)

20



Catalog No. **UCMSG**

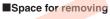
(W) 65

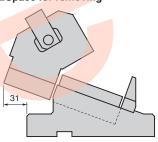
Option Code	Specific	ation	ı	
	Dedicated key is at	tache	d.	
K	(It is not assembled	to the	e main u	nit.



UCMSG65 - 20 - K

For machining details or tapping hole and dowel hole (prepared hole and finished hole) for mounting of the retainer, refer to page 561. For detailed specification of the key, refer to page 1259.





■ Table of Components

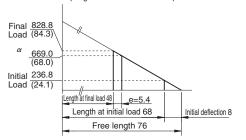
۱o.	Description	Qty	Material and Remark
1	Cam Holder	1	FCD450
2	Cam Slider	1	S45C with Graphite
3	Lower Slider	1	FC250 with Graphite
4	Cam Driver	1	S45C(1045)
5	Slide Plate	2	Bronze
6	Coil Spring	1	TJL25-76
7)	Positive Return Follower A	1	S45C(1045)
8	Positive Return Follower B	1	S45C(1045)
9	Slide Guide	1	Bronze with Graphite
10	Stopper Plate	1	S45C(1045)
11)	Safety Plate	1	SS400(1020)
12)	Spring Block	1	SS400(1020)
13	Stopper	2	Urethane
22)	Spacer	1	SS400(1020)
	1) 2) 3) 4) 5) 6) 7) 8) 9) 10) 11) 12)	1 Cam Holder 2 Cam Slider 3 Lower Slider 4 Cam Driver 5 Slide Plate 6 Coil Spring 7 Positive Return Follower A 8 Positive Return Follower B 9 Slide Guide 0 Stopper Plate 1 Safety Plate 2 Spring Block 3 Stopper	1 Cam Holder 1 2 Cam Slider 1 3 Lower Slider 1 4 Cam Driver 1 5 Slide Plate 2 6 Coil Spring 1 7 Positive Return Follower A 1 8 Positive Return Follower B 1 9 Slide Guide 1 1 Stopper Plate 1 1 Safety Plate 1 2 Spring Block 1 3 Stopper 2

Bolts for assembly are not indicated.

■Spring Diagram

 Spring used TJL25-76 (1 piece) •Spring constant 29.6N/mm(3.01kgf/mm) • Guideline of spring durability 300,000 strokes

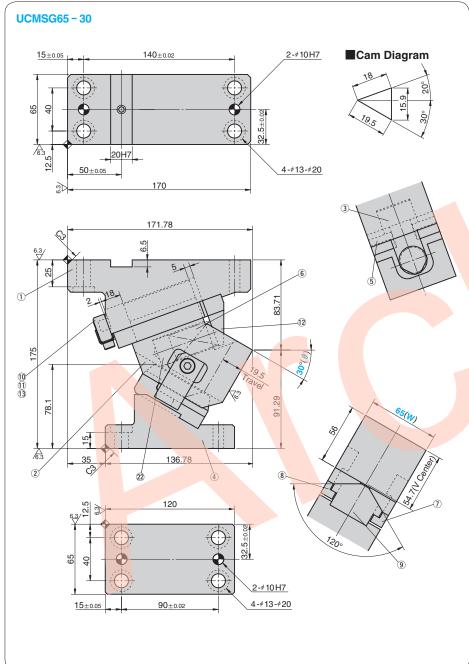
 α : Spring Force at punch retraction of 5 mm e : Spring return amount when the punch returns 5 mm





FOR PIERCE





Tuesda		rce kN(tonf)	Spring Fo	rce N(kgf)	Return	Total			
Travel S	Standard Working Force (one million strokes)			Final Load	Force N(kgf)	Weight kg	Catalog No.	(W)	(θ)
19.5	29.4 (3.0)	58.8 (6.0)	176.0 (18.0)	809.6 (82.6)	1086 (110.8)	9.6	UCMSG	65	30



Catalog No. **UCMSG**

(W)

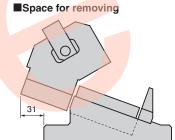
 (θ) 30

Option Code	Specific	ation	1	
	Dedicated key is at	tache	d.	
K	(It is not assembled	to th	e main ι	unit.)



UCMSG65 - 30 - K

For machining details or tapping hole and dowel hole (prepared hole and finished hole) for mounting of the retainer, refer to page 561. For detailed specification of the key, refer to page 1259.



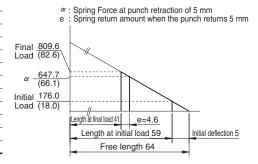
■ Table of Components

=:			
No.	Description	Qty	Material and Remark
1	Cam Holder	1	FCD450
2	Cam Slider	1	S45C with Graphite
3	Lower Slider	1	FC250 with Graphite
4	Cam Driver	1	S45C(1045)
(5)	Slide Plate	2	Bronze
6	Coil Spring	1	TJL25-64
7	Positive Return Follower A	1	S45C(1045)
8	Positive Return Follower B	1	S45C(1045)
9	Slide Guide	1	Bronze with Graphite
10	Stopper Plate	1	S45C(1045)
11)	Safety Plate	1	SS400(1020)
12	Spring Block	1	SS400(1020)
13	Stopper	2	Urethane
22	Spacer	1	SS400(1020)

Bolts for assembly are not indicated.

■Spring Diagram

 Spring used TJL25-64 (1 piece) Spring constant 35.2N/mm(3.59kgf/mm) • Guideline of spring durability 300,000 strokes

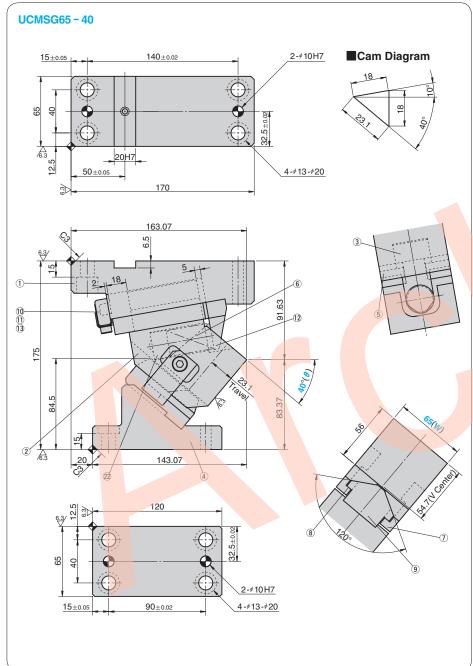


UCMSG



FOR PIERCE





	Working Fo	rce kN(tonf)	Spring Fo	rce N(kgf)	Return	Total			
	Standard Working Force (one million strokes)			Final Load	Force N(kgf)	Weight kg	Catalog No.	(W)	(θ)
23.1	29.4 (3.0)	58.8 (6.0)	176.0 (18.0)	809.6 (82.6)	1071 (109.2)	9.5	UCMSG	65	40

40



Catalog No. **UCMSG**

(W) (θ)

Option Code	Specific	cation		
	Dedicated key is at	tache	d.	
K	(It is not assembled	to the	e main u	nit.



UCMSG65 - 40 - K

For machining details or tapping hole and dowel hole (prepared hole and finished hole) for mounting of the retainer, refer to page 561. For detailed specification of the key, refer to page 1259.

■Space for removing

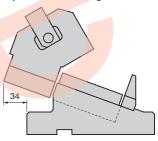


Table of Components

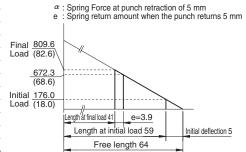
_ 11	able of Componen	เร	
No.	Description	Qty	Material and Remark
1	Cam Holder	1	FCD450
2	Cam Slider	1	S45C with Graphite
3	Lower Slider	1	FC250 with Graphite
4	Cam Driver	1	S45C(1045)
(5)	Slide Plate	2	Bronze
6	Coil Spring	1	TJL25-64
7	Positive Return Follower A	1	S45C(1045)
8	Positive Return Follower B	1	S45C(1045)
9	Slide Guide	1	Bronze with Graphite
10	Stopper Plate	1	S45C(1045)
11)	Safety Plate	1	SS400(1020)
12 Spring Block		1	SS400(1020)
13	Stopper	2	Urethane
22	Spacer	1	SS400(1020)

Bolts for assembly are not indicated.

■Spring Diagram

 Spring used TJL25-64 (1 piece) •Spring constant 35.2N/mm(3.59kgf/mm)

• Guideline of spring durability 300,000 strokes

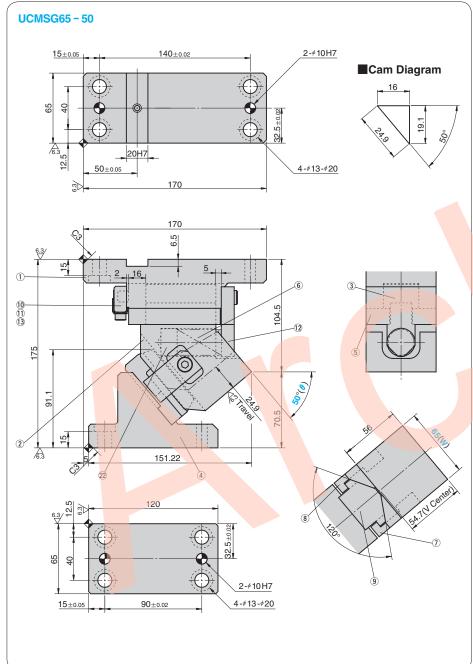


UCMSG



FOR PIERCE





	Travel S	Working Fo	rce kN(tonf)	Spring Fo	rce N(kgf)	Return	Total			
			Allowable Working Force (300,000 strokes)	Initial Load	Final Load	Force N(kgf)	Weight kg	Catalog No.	(W)	(θ)
	24.9	29.4 (3.0)	58.8 (6.0)	246.4 (25.1)	809.6 (82.6)	1055 (107.7)	9.9	UCMSG	65	50



Order

Catalog No. **UCMSG**

(W) 65

(θ) **50**

K	Option	

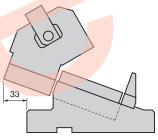
Option Code	Specific	cation		
K	Dedicated key is at			
"	(It is not assembled	to the	main u	nit.



UCMSG65 - 50 - K

For machining details or tapping hole and dowel hole (prepared hole and finished hole) for mounting of the retainer, refer to page 561. For detailed specification of the key, refer to page 1259.





■ Table of Components

		_	_
No.	Description	Qty	Material and Remark
1	Cam Holder	1	FCD450
2	Cam Slider	1	S45C with Graphite
3	Lower Slider	1	FC250 with Graphite
4	Cam Driver	1	S45C(1045)
(5)	Slide Plate	2	Bronze
6	Coil Spring	1	TJL25-64
7	Positive Return Follower A	1	S45C(1045)
8	Positive Return Follower B	1	S45C(1045)
9	Slide Guide	1	Bronze with Graphite
10	Stopper Plate	1	S45C(1045)
11)	Safety Plate	1	SS400(1020)
12	12 Spring Block		SS400(1020)
13	Stopper	2	Urethane
22	Spacer	1	SS400(1020)

Bolts for assembly are not indicated.

■Spring Diagram

 Spring used TJL25-64 (1 piece) Spring constant 35.2N/mm(3.59kgf/mm) • Guideline of spring durability 300,000 strokes

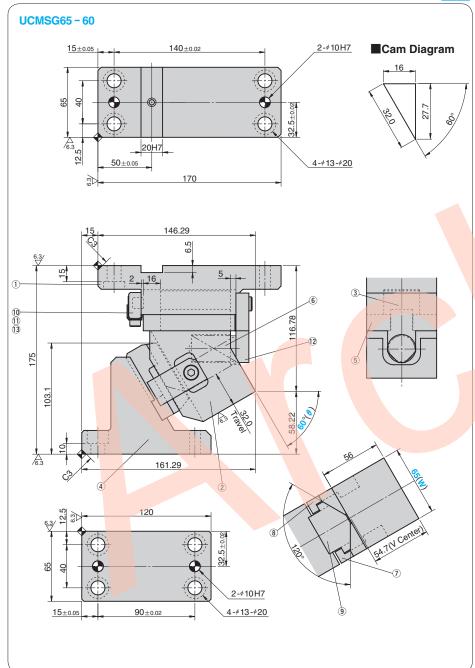
 α : Spring Force at punch retraction of 5 mm e : Spring return amount when the punch returns 5 mm Final 809.6 Load (82.6) Initial <u>246.4</u> Load (25.1) | Length at final load 41 | _e=3.2 Length at initial load 57 Initial deflection 7 Free length 64

UCMSG



FOR PIERCE

CAD FILE



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	Working Fo	rce kN(tonf)	Spring Fo	rce N(kgf)	Return	Total			
Travel S	Standard Working Force (one million strokes)			Final Load	Force N(kgf)	Weight kg	Catalog No.	(W)	(θ)
32.0	29.4 (3.0)	58.8 (6.0)	246.4 (25.1)	809.6 (82.6)	1269 (129.5)	11.1	UCMSG	65	60



Catalog No. **UCMSG**

(W) (θ)

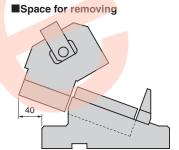
Dedicated key is attached. (It is not assembled to the main unit.)

65 60 Option Specification Code



UCMSG65 - 60 - K

For machining details or tapping hole and dowel hole (prepared hole and finished hole) for mounting of the retainer, refer to page 561. For detailed specification of the key, refer to page 1259.



■ Table of Components

- rabie of compositorite				
	No.	Description	Qty	Material and Remark
	1	Cam Holder	1	FCD450
	2	Cam Slider	1	S45C with Graphite
	3	Lower Slider	1	FC250 with Graphite
	4	Cam Driver	1	S45C(1045)
	(5)	Slide Plate	2	Bronze
	6	Coil Spring	1	TJL25-64
	7	Positive Return Follower A	1	S45C(1045)
	8	Positive Return Follower B	1	S45C(1045)
	9	Slide Guide	1	Bronze with Graphite
	10	Stopper Plate	1	S45C(1045)
	11)	Safety Plate	1	SS400(1020)
	12	Spring Block	1	SS400(1020)
	13	Stopper	2	Urethane

Bolts for assembly are not indicated.

■Spring Diagram

- •Spring used TJL25-64 (1 piece) •Spring constant 35.2N/mm(3.59kgf/mm)
- •Guideline of spring durability 300,000 strokes
 - lpha: Spring Force at punch retraction of 5 mm e: Spring return amount when the punch returns 5 mm
- Final <u>809.6</u> Load (82.6) $\alpha = \frac{721.6}{(73.6)}$ Initial <u>246.4</u> Load (25.1) Length at final load 41 e=2.5 Length at initial load 57 Initial deflection 7 Free length 64

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