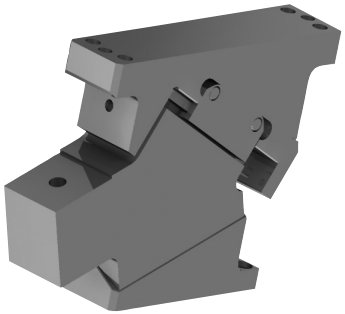
OUTLINE OF SULNC

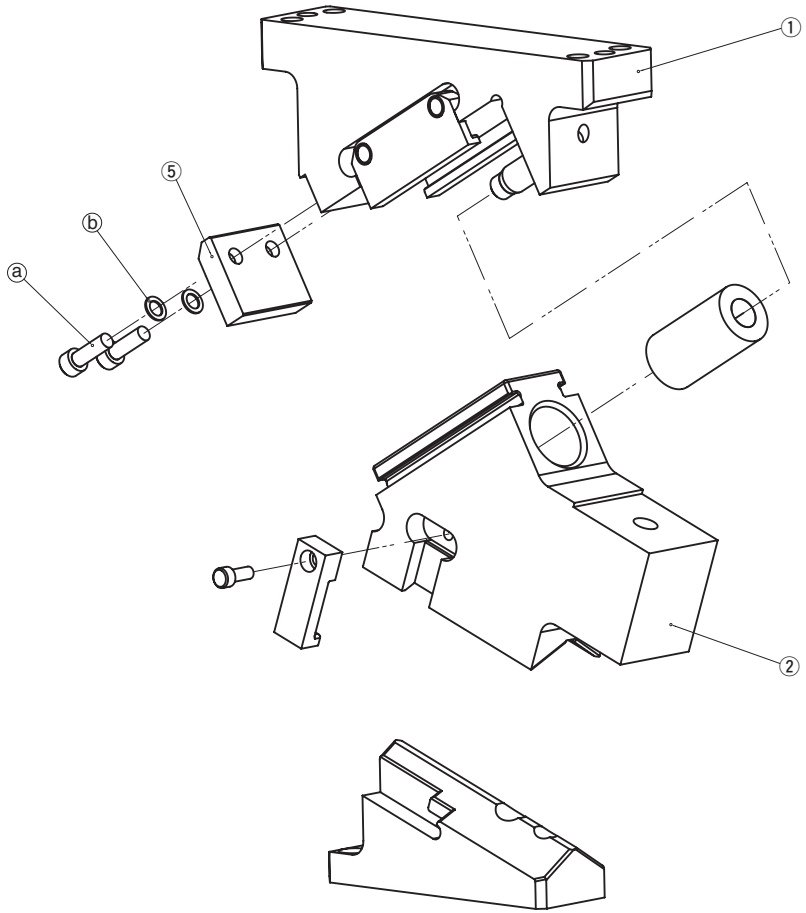


- Mounting width: 65mm.
- Mounting surface maximum extension is 150mm.
- V-shaped guide.
- Working Force (300,000 strokes) 14.7kN
- Available angle is 0° to 25° at increments of 5°

■ SULNC Specifications

Mounting Surface W	Mounting Surface H	Working Angle	Travel	Working Force kN(tonf) (300,000 strokes)	Spring Force N(kgf)
65	80	00	30.2	14.7(1.5)	2115.0(215.7)
		05	31.9		
		10	35.0		
		15	31.4		
		20	32.3		
		25	35.0		

■Structure and Assembly/Disassembly of SULNC.



- Disassembly method of SULNC

  1) Remove hexagon socket head bolt (ⓐ) and washer (ⓑ), and remove stopper plate (⑤).

  2)Pull and remove cam sliderW from cam holder(①) to the rear.

- Assembly method of SULNC

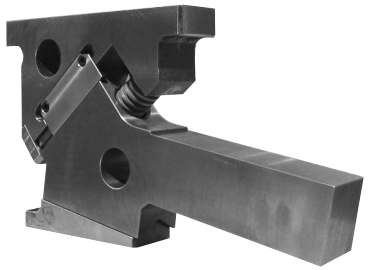
  1)Assemble components in the reverse order of disassembly.

  - 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.

Aerial Cam Unit- General Description of SULNC

PIERCING LONG NOSE TYPE

Durability test for 300,000 strokes: No problem



A long nose type cam slider may cause run-out of the nose end due to wear.
If run-out occurs, the product may have burrs. In a worst case, the punch may not fit with the button die, resulting in damage to the die.
These may be attributable to wear resistance, accuracy of components and degree of total accuracy.
Sankyo's long nose type cam has achieved the durability test of 300,000 strokes to ensure higher quality product and customer satisfaction.

■Durability test and result

●Contents of the test

1. Load of 14.7 kN (1.5 tonf) was applied to the mount of the long nose type cam and the durability test of 300,000 strokes was performed. (Photo 1)
2. After the durability test in 1, a panel pierceing test was performed to check run-out at the end. (Photo 2)

●Testing conditions

a. Cam specification used in the test
SULNC65-10-SC150
(A nose length of 150 mm and machining angle of 10° was used.)

b. Testing conditions
(1) Durability test

Load	14.7kN(1.5tonf)
Number of strokes	300,000 strokes
Press speed	35spm
Entry	5mm
Grease	Albania EP grease

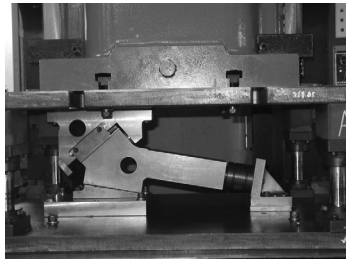


Photo 1(Lower Dead Point)

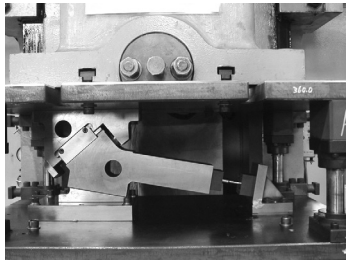


Photo 2(Lower Dead Point)

(2) Panel piercing test

Press speed	35spm
Working Force	7.5kN
Material	SPCC
Thickness	0.8mm

Number of shots	30
Punch diameter	ϕ10.00
Button die diameter	ϕ10.08

●Test result

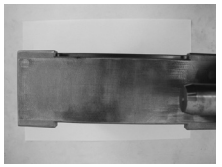
After the durability test of 300,000 strokes, performance sliding is good. It was found that there was no problem for run-out of the long nose in the panel stamping test.

1. Durability test result
   - There was no scoring in the durability test (300,000 strokes) and the sliding surface was good. (Refer to the photo in the right.)
   - Total wear (Change of nose end height) was approximately 12 μm.

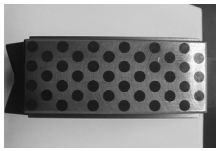
2. Panel stamping test result
   - The worn out amount (lateral) checked by hand at the lower dead point is:
     Before durability test - 10 μm.
     After durability test ----- 2 μm.
     The backlash was reduced because of initial fitting in sliding.
   - The panel stamping test was performed 30 times. No burr was observed.

(Status of sliding surface after test)

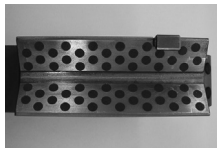
Holder



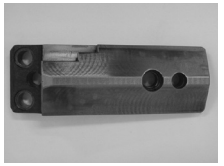
Slider (holder side)



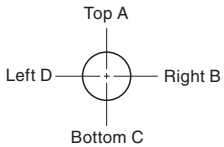
Slider (driver side)



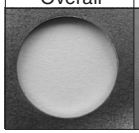
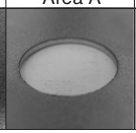
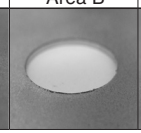
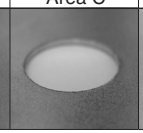
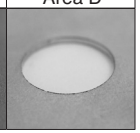
Driver



(Status of pierce hole surface)



Status of pierce hole at 30th shot

Overall	Area A	Area B	Area C	Area D
				

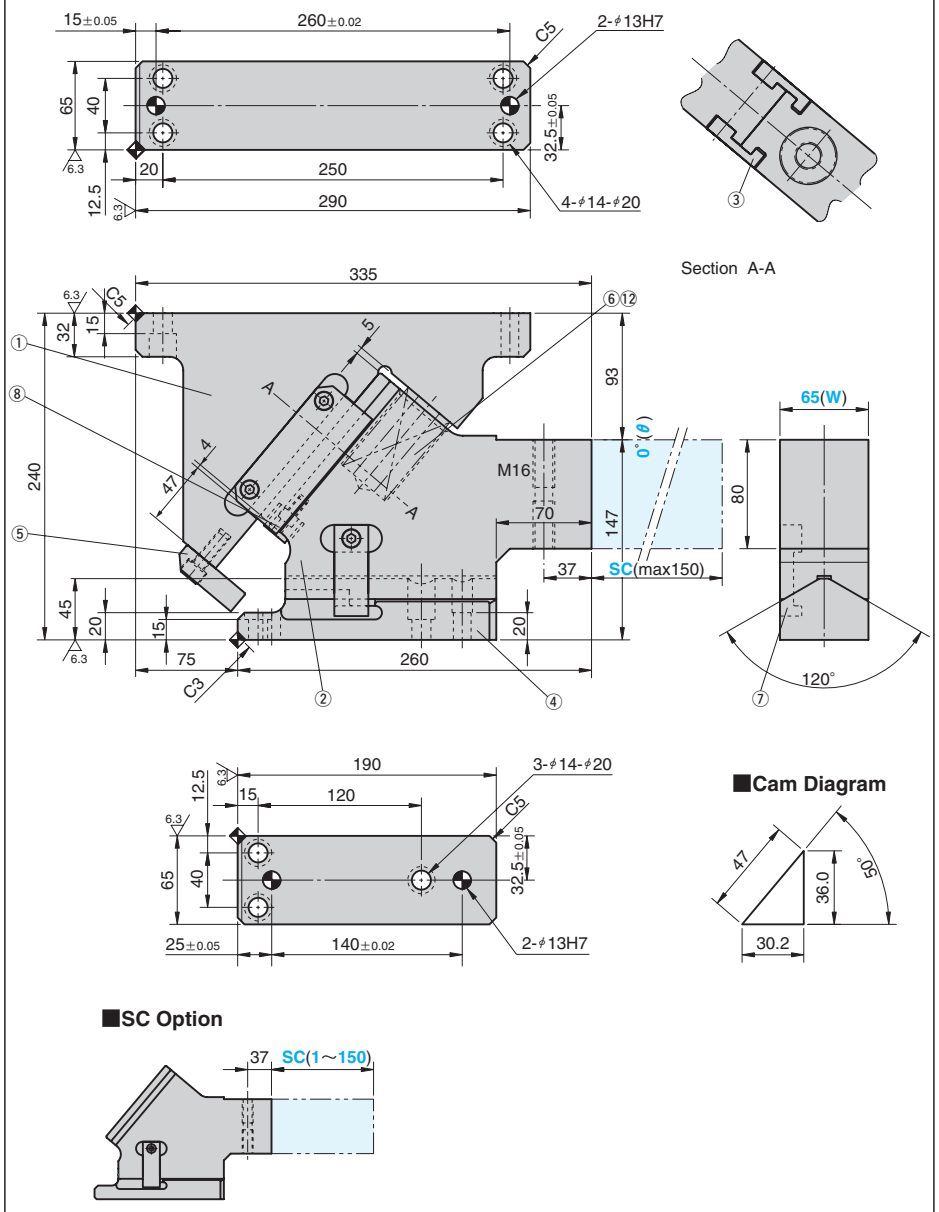
- There was no burr.
- Minor flash was felt with hand. (Areas A and B)

Aerial Cam Unit

PIERCING LONG NOSE TYPE

CAD FILE

SULNC65 – 00



■SC Option

Travel S	Working Force kN(tonf) (300,000 strokes)	Spring Force N(kgf) Initial Load	Spring Force N(kgf) Final Load	Return Force N(kgf)	Total Weight kg	Catalog No.	W	θ
30.2	14.7 (1.5)	126.9 (12.9)	2115.0 (215.7)	2881 (294.0)	33.7	SULNC	65	00

Order

Catalog No.	W	–	θ
SULNC	65	–	00

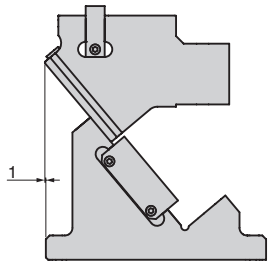
Option

Option Code	Specification
SC	The mount surface is extended in the range from 1 to 150 mm (in the increments of 1 mm).
N12	Dowel pin holes of cam holder and cam driver are changed to φ12H7

Order SULNC65 – 00 – SC120 – N12

Refer to page 389 for detailed specifications of tapped holes and dowel pin holes (prepared hole,finished hole) for retainer.

■Space for removing



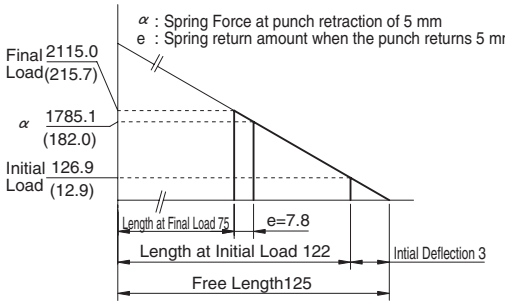
■Table of Components

No.	Description	Qty	Material and Remark
①	Cam Holder	1	FC250
②	Cam Slider	1	FC250 with Graphite
③	Slide Keeper	2	S45C with Graphite
④	Cam Driver	1	SF700
⑤	Stopper Plate	1	SS400(1020)
⑥	Coil Spring	1	TL40-125
⑦	Positive Return Follower	1	S45C(1045)
⑧	Stopper	1	Rubber
⑫	Spring Guide Pin	1	SPRG19-60

Bolts for assembly are not indicated.

■Spring Diagram

- Spring Used TL40-125 (1 piece)
- Spring Constant 42.3N/mm (4.31kgf/mm)
- Guideline of spring durability 300,000 strokes

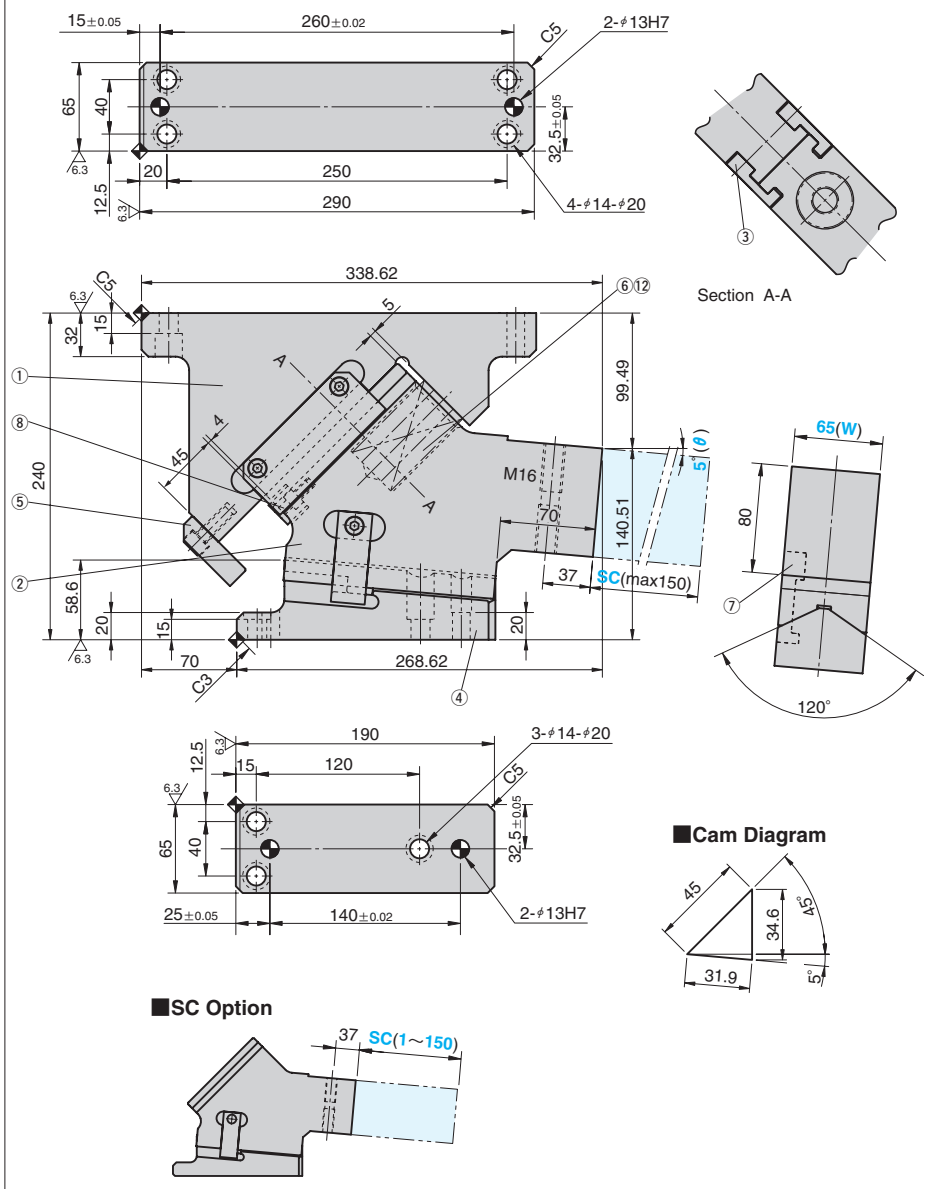


Aerial Cam Unit

PIERCING LONG NOSE TYPE

CAD FILE

SULNC65 – 05



■Cam Diagram

■SC Option

Travel S	Working Force kN(tonf) (300,000 strokes)	Spring Force N(kgf) Initial Load	Spring Force N(kgf) Final Load	Return Force N(kgf)	Total Weight kg	Catalog No.	W	θ
31.9	14.7 (1.5)	211.5 (21.6)	2115.0 (215.7)	2872 (293.1)	33.2	SULNC	65	05

Order

Catalog No.	W	–	θ
SULNC	65	–	05

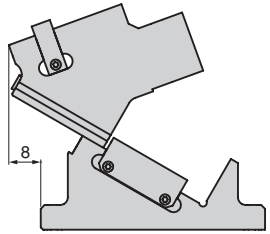
Option

Option Code	Specification
SC	The mount surface is extended in the range from 1 to 150 mm (in the increments of 1 mm).
N12	Dowel pin holes of cam holder and cam driver are changed to φ12H7

Order SULNC65 – 05 – SC120 – N12

Refer to page 389 for detailed specifications of tapped holes and dowel pin holes (prepared hole,finished hole) for retainer.

■Space for removing



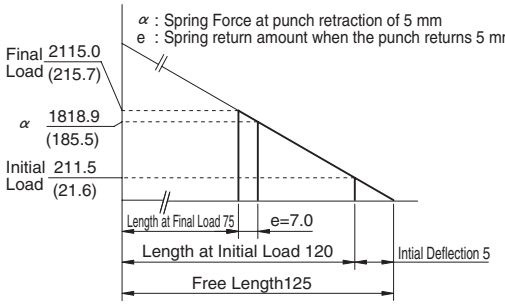
■Table of Components

No.	Description	Qty	Material and Remark
①	Cam Holder	1	FC250
②	Cam Slider	1	FC250 with Graphite
③	Slide Keeper	2	S45C with Graphite
④	Cam Driver	1	SF700
⑤	Stopper Plate	1	SS400(1020)
⑥	Coil Spring	1	TL40-125
⑦	Positive Return Follower	1	S45C(1045)
⑧	Stopper	1	Rubber
⑫	Spring Guide Pin	1	SPRG19-60

Bolts for assembly are not indicated.

■Spring Diagram

- Spring Used TL40-125 (1 piece)
- Spring Constant 42.3N/mm (4.31kgf/mm)
- Guideline of spring durability 300,000 strokes

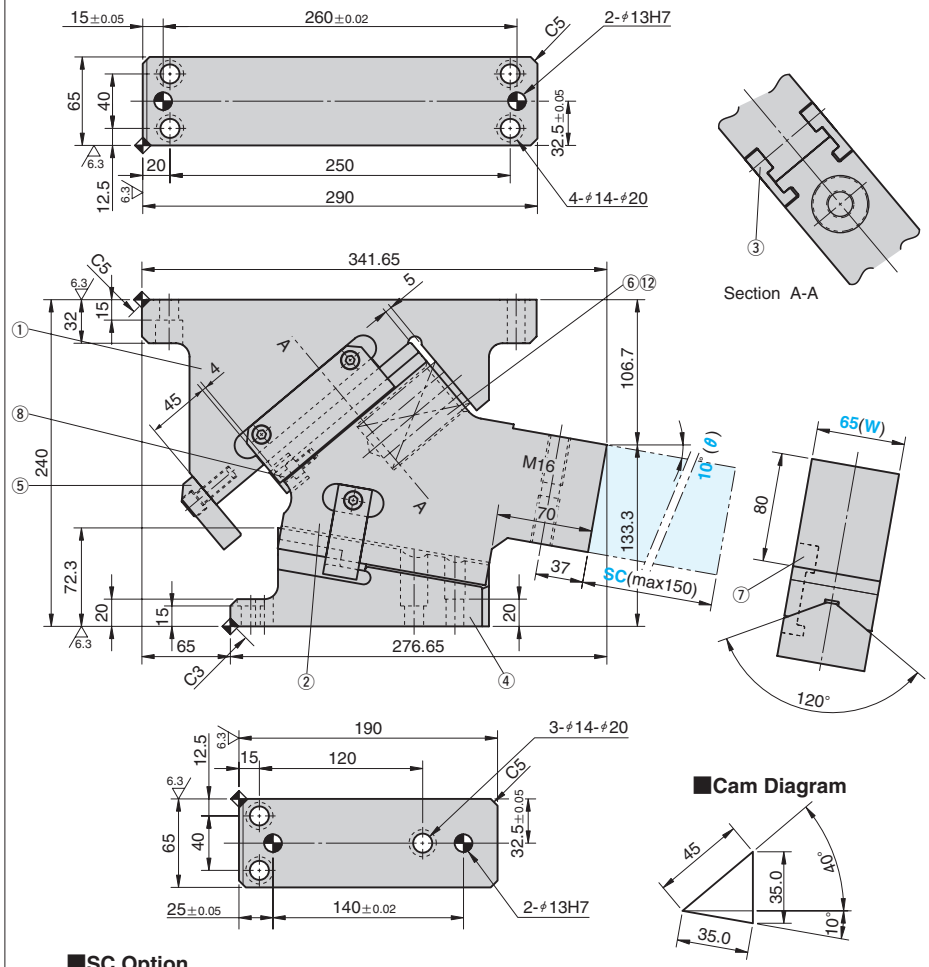


Aerial Cam Unit

PIERCING LONG NOSE TYPE

CAD FILE

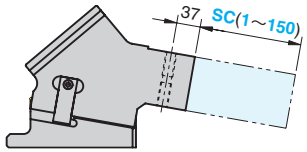
SULNC65 – 10



Section A-A

■Cam Diagram

■SC Option



Travel S	Working Force kN(tonf) (300,000 strokes)	Spring Force N(kgf) Initial Load	Spring Force N(kgf) Final Load	Return Force N(kgf)	Total Weight kg	Catalog No.	W	θ
35.0	14.7 (1.5)	211.5 (21.6)	2115.0 (215.7)	2862 (292.0)	32.7	SULNC	65	10

Order

Catalog No.	W	–	θ
SULNC	65	–	10

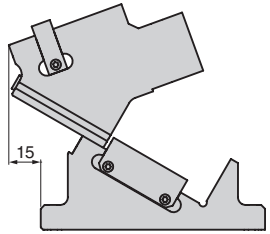
Option

Option Code	Specification
SC	The mount surface is extended in the range from 1 to 150 mm (in the increments of 1 mm).
N12	Dowel pin holes of cam holder and cam driver are changed to φ12H7

Order SULNC65 – 10 – SC120 – N12

Refer to page 389 for detailed specifications of tapped holes and dowel pin holes (prepared hole,finished hole) for retainer.

■Space for removing



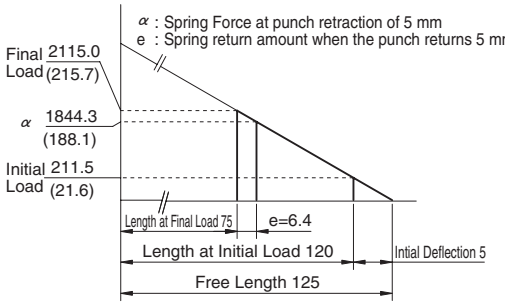
■Table of Components

No.	Description	Qty	Material and Remark
①	Cam Holder	1	FC250
②	Cam Slider	1	FC250 with Graphite
③	Slide Keeper	2	S45C with Graphite
④	Cam Driver	1	SF700
⑤	Stopper Plate	1	SS400(1020)
⑥	Coil Spring	1	TL40-125
⑦	Positive Return Follower	1	S45C(1045)
⑧	Stopper	1	Rubber
⑫	Spring Guide Pin	1	SPRG19-60

Bolts for assembly are not indicated.

■Spring Diagram

- Spring Used TL40-125 (1 piece)
- Spring Constant 42.3N/mm (4.31kgf/mm)
- Guideline of spring durability 300,000 strokes

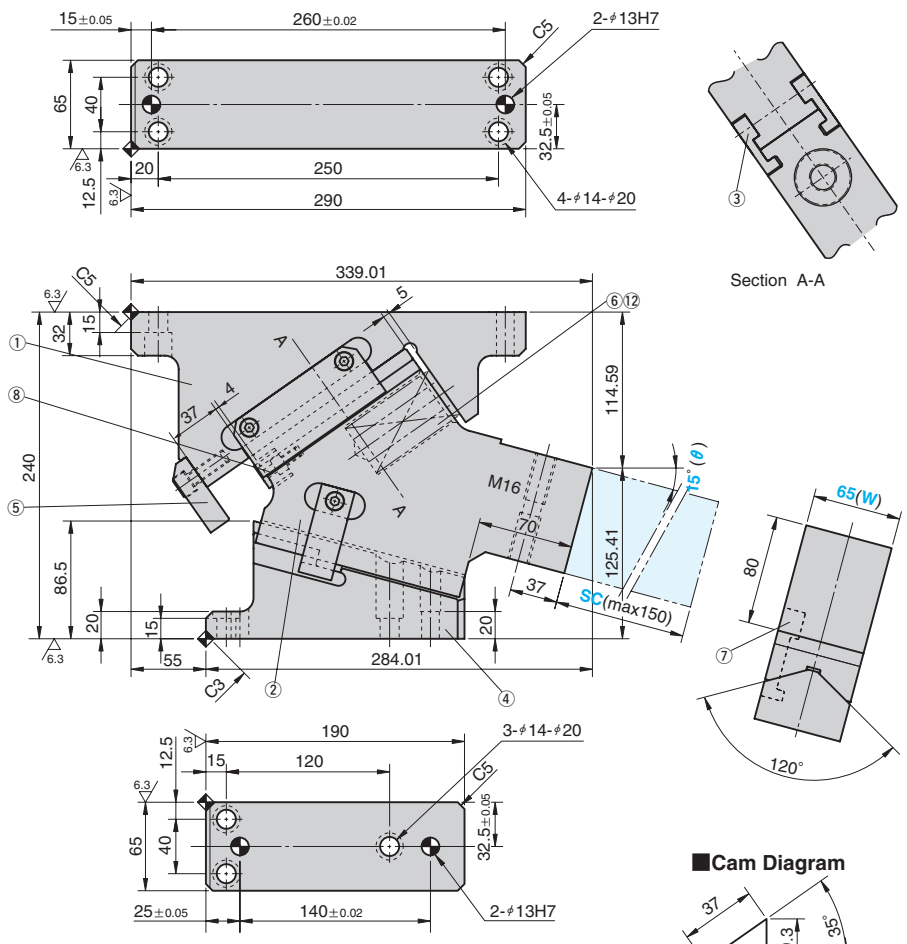


Aerial Cam Unit

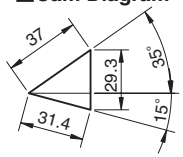
PIERCING LONG NOSE TYPE

CAD FILE

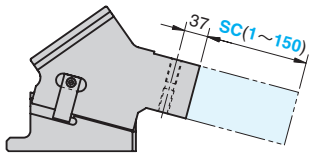
SULNC65 – 15



■Cam Diagram



■SC Option



Travel S	Working Force kN(tonf) (300,000 strokes)	Spring Force N(kgf) Initial Load	Spring Force N(kgf) Final Load	Return Force N(kgf)	Total Weight kg	Catalog No.	W	θ
31.4	14.7 (1.5)	550.0 (56.1)	2115.0 (215.7)	2851 (291.0)	32.1	SULNC	65	15

Order

Catalog No.	W	–	θ
SULNC	65	–	15

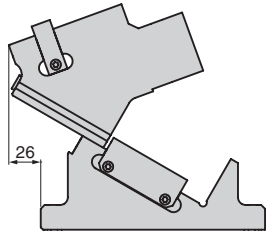
Option

Option Code	Specification
SC	The mount surface is extended in the range from 1 to 150 mm (in the increments of 1 mm).
N12	Dowel pin holes of cam holder and cam driver are changed to φ12H7

Order SULNC65 – 15 – SC120 – N12

Refer to page 389 for detailed specifications of tapped holes and dowel pin holes (prepared hole,finished hole) for retainer.

■Space for removing



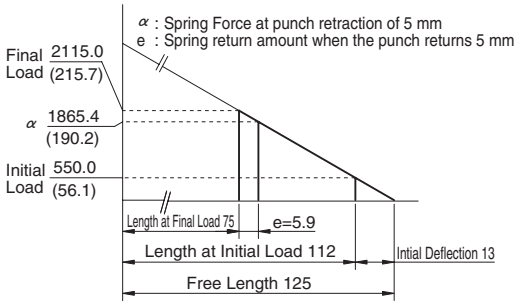
■Table of Components

No.	Description	Qty	Material and Remark
①	Cam Holder	1	FC250
②	Cam Slider	1	FC250 with Graphite
③	Slide Keeper	2	S45C with Graphite
④	Cam Driver	1	SF700
⑤	Stopper Plate	1	SS400(1020)
⑥	Coil Spring	1	TL40-125
⑦	Positive Return Follower	1	S45C(1045)
⑧	Stopper	1	Rubber
⑫	Spring Guide Pin	1	SPRG19-60

Bolts for assembly are not indicated.

■Spring Diagram

- Spring Used TL40-125 (1 piece)
- Spring Constant 42.3N/mm (4.31kgf/mm)
- Guideline of spring durability 300,000 strokes

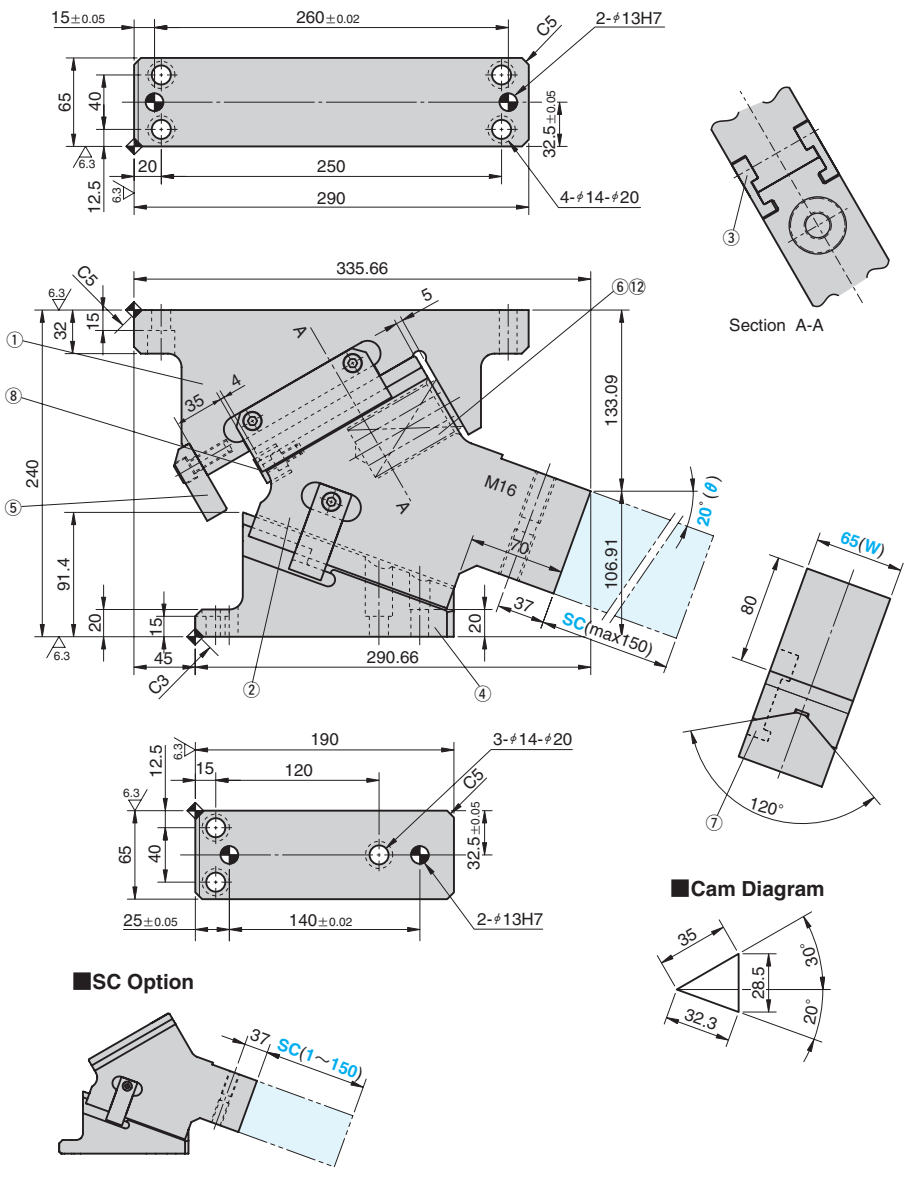


Aerial Cam Unit

PIERCING LONG NOSE TYPE

CAD FILE

SULNC65 – 20



Travel S	Working Force kN(tonf) (300,000 strokes)	Spring Force N(kgf) Initial Load	Spring Force N(kgf) Final Load	Return Force N(kgf)	Total Weight kg	Catalog No.	W	θ
32.3	14.7 (1.5)	634.5 (64.7)	2115.0 (215.7)	2840 (289.8)	32.1	SULNC	65	20

Order

Catalog No.	W	–	θ
SULNC	65	–	20

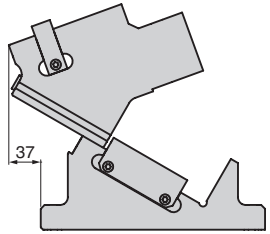
Option

Option Code	Specification
SC	The mount surface is extended in the range from 1 to 150 mm (in the increments of 1 mm).
N12	Dowel pin holes of cam holder and cam driver are changed to φ12H7

Order SULNC65 – 20 – SC120 – N12

Refer to page 389 for detailed specifications of tapped holes and dowel pin holes (prepared hole,finished hole) for retainer.

■Space for removing



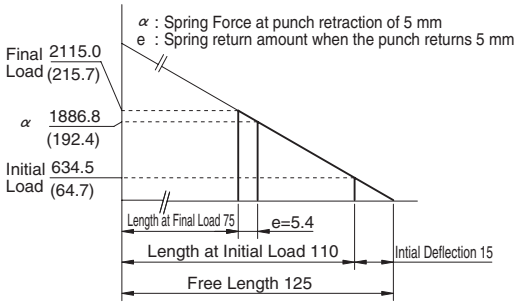
■Table of Components

No.	Description	Qty	Material and Remark
①	Cam Holder	1	FC250
②	Cam Slider	1	FC250 with Graphite
③	Slide Keeper	2	S45C with Graphite
④	Cam Driver	1	SF700
⑤	Stopper Plate	1	SS400(1020)
⑥	Coil Spring	1	TL40-125
⑦	Positive Return Follower	1	S45C(1045)
⑧	Stopper	1	Rubber
⑫	Spring Guide Pin	1	SPRG19-60

Bolts for assembly are not indicated.

■Spring Diagram

- Spring Used TL40-125 (1 piece)
- Spring Constant 42.3N/mm (4.31kgf/mm)
- Guideline of spring durability 300,000 strokes

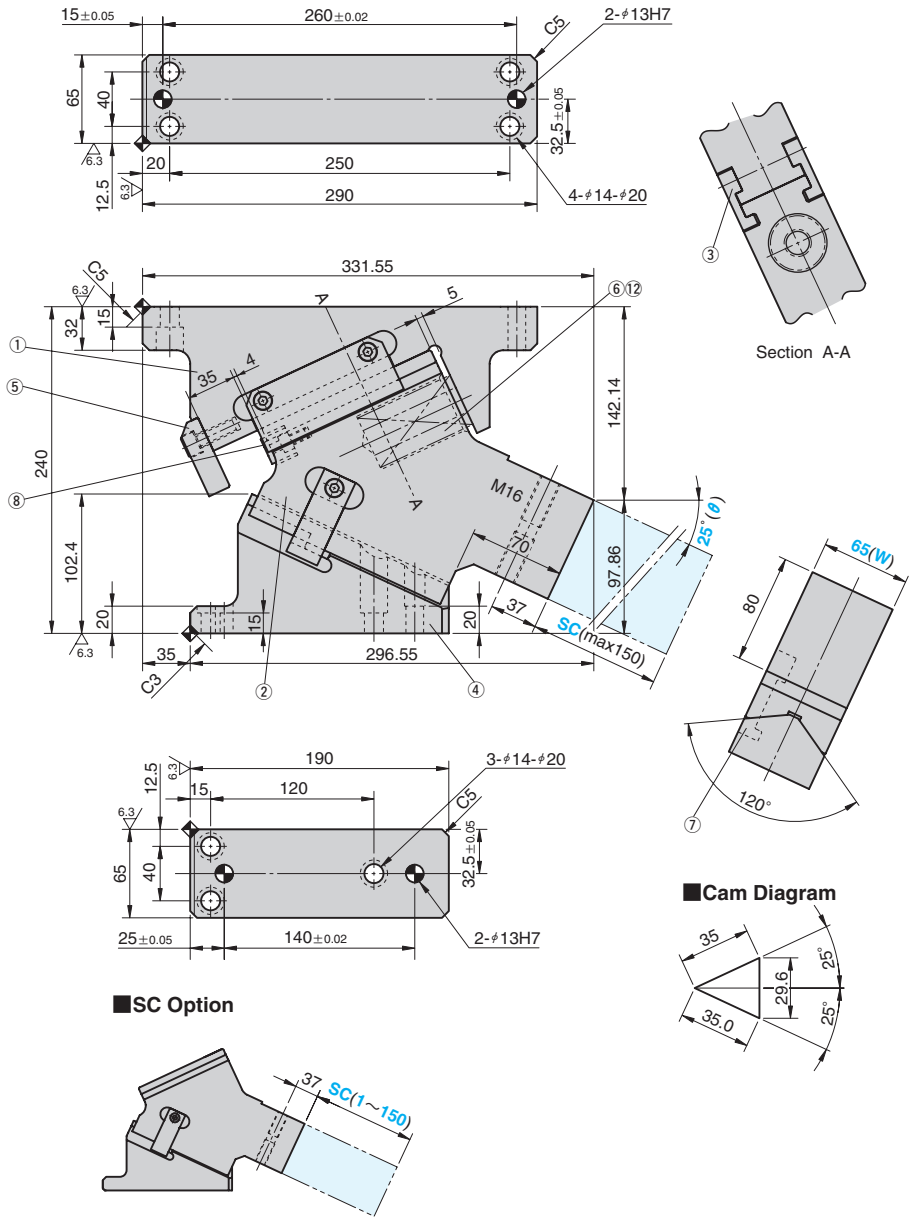


Aerial Cam Unit

PIERCING LONG NOSE TYPE

CAD FILE

SULNC65 – 25



Travel S	Working Force kN(tonf) (300,000 strokes)	Spring Force N(kgf) Initial Load	Spring Force N(kgf) Final Load	Return Force N(kgf)	Total Weight kg	Catalog No.	W	θ
35.0	14.7 (1.5)	634.5 (64.7)	2115.0 (215.7)	2829 (288.7)	31.8	SULNC	65	25

Order

Catalog No.	W	–	θ
SULNC	65	–	25

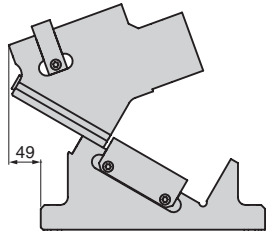
Option

Option Code	Specification
SC	The mount surface is extended in the range from 1 to 150 mm (in the increments of 1 mm).
N12	Dowel pin holes of cam holder and cam driver are changed to φ12H7

Order SULNC65 – 25 – SC120 – N12

Refer to page 389 for detailed specifications of tapped holes and dowel pin holes (prepared hole,finished hole) for retainer.

■Space for removing



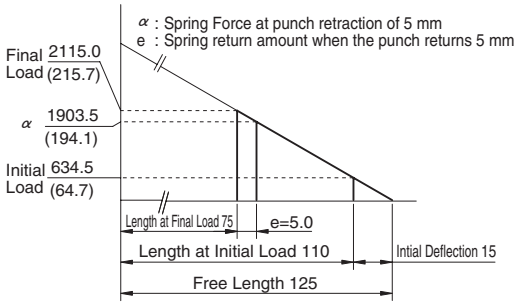
■Table of Components

No.	Description	Qty	Material and Remark
①	Cam Holder	1	FC250
②	Cam Slider	1	FC250 with Graphite
③	Slide Keeper	2	S45C with Graphite
④	Cam Driver	1	SF700
⑤	Stopper Plate	1	SS400(1020)
⑥	Coil Spring	1	TL40-125
⑦	Positive Return Follower	1	S45C(1045)
⑧	Stopper	1	Rubber
⑫	Spring Guide Pin	1	SPRG19-60

Bolts for assembly are not indicated.

■Spring Diagram

- Spring Used TL40-125 (1 piece)
- Spring Constant 42.3N/mm (4.31kgf/mm)
- Guideline of spring durability 300,000 strokes



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