

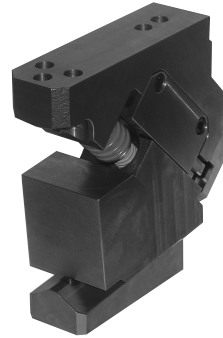
SACE [Overview]

Compact Type

For Pierce

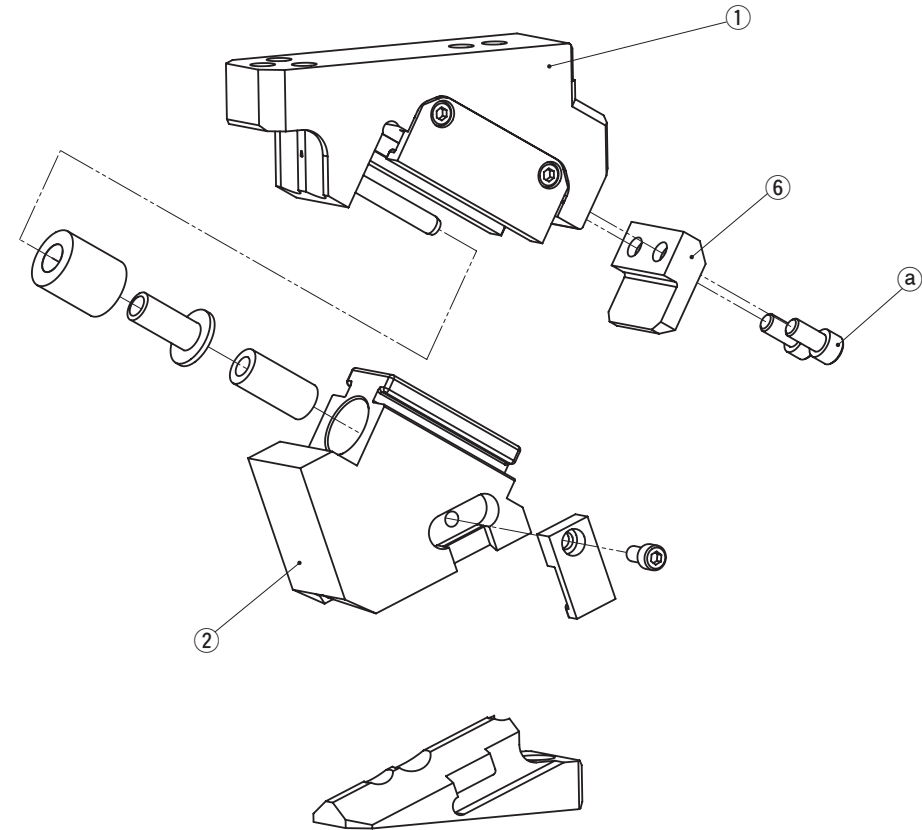
Product Information

- Mount face width 52 mm.
- Working angles from 0° to 60° in 5° increments.
- V-shaped guide.
- Optimum for high tensile strength steel sheets and thick plate piercing.
- A spring force just under 10% of the working force is attained.



Mount face		Working Angle	Travel	Working Force [kN (tonf)]		Spring Force N (kgf)
W	H			Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	
		00	30.2			
		05	33.4			
		10	36.6			
		15	39.9			
		20	43.3			
		25	47.0			
52	75	30	51.0	29.4 (3.0)	58.8 (6.0)	1425.5 (145.5)
		35	55.4			
		40	60.4			
		45	66.2			
		50	73.1			
		55	64.5			
		60	54.0			

SACE Assembly Instructions



● Disassembly

- 1) Remove Hexagon Socket Head Bolts (a), to pull out Stopper Plate (6).
- 2) Pull out and remove Cam Slider (2) from Cam Holder (1) to the rear.

● Assembly

Assembly is the reverse procedure of disassembly.

- Ensure that all parts are clean, particularly the sliding components to which a small amount of lubricant is applied and is then placed in position.
- Take care that the respective tolerances are observed when assembling Cam Slider and Cam Holder, which also should be identified by the same serial number.
- Make sure that all bolts are tighten to the recommended torque after assembly and disassembly.

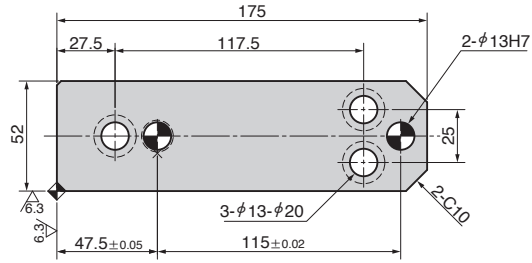
SACE

Compact Type

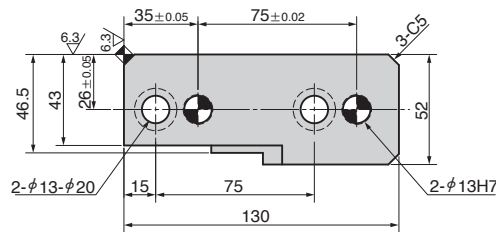
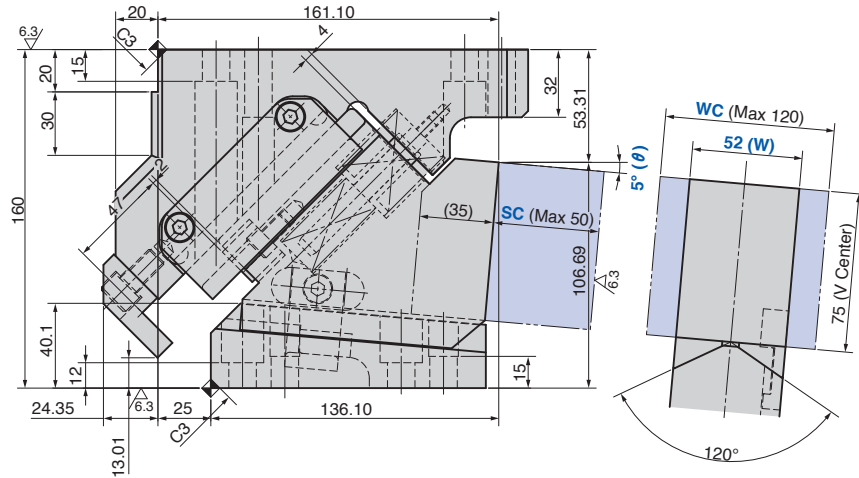
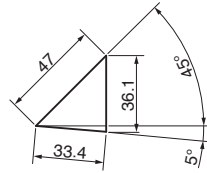
For Pierce

Aerial Cam Unit

SACE52-05



● Cam Diagram



Travel S	Working Force [kN (tonf)]		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ
	Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load				
33.4	29.4 (3.0)	58.8 (6.0)	14.0 (1.4)	1425.5 (145.5)	8.6	SACE	52	05



Catalog No.	W	θ	Option
SACE	52	05	
SACE	52	05	- SC40
SACE	52	05	- WC120
SACE	52	05	- SC40 - WC120 - N12



Option Code	Specification
SC	Mount face length is extended from 1 to 50 mm in increments of 1 mm.
WC	The width of the mount face is extended from 53 to 120 mm in increments of 1 mm.
N12	Dowel holes of Cam Holder and Cam Driver are changed to φ12H7.

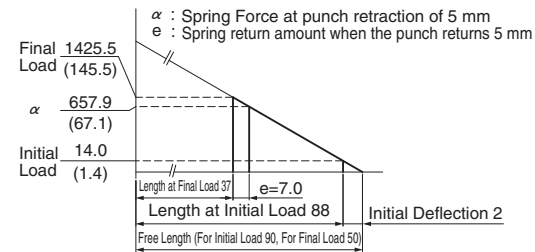
Refer to page 377 for the machining details of tapped holes and dowel holes for retainer mounting.

Spring Specification

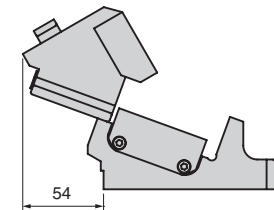
No.	Spring Model	Qty	Remark
10	TF20-90	1	For Initial Load 7.01 N/mm (0.72 kgf/mm)
11	TM30-50	1	For Final Load 109.65 N/mm (11.18 kgf/mm)

Life expectancy of Coil Spring is approximately 1,000,000 strokes.

Spring Diagram



Rear Removal Space



Refer to page 685 for Table of Components.

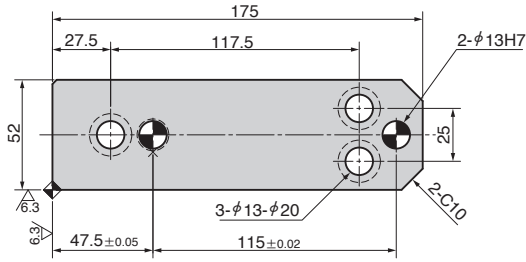
SACE

Compact Type

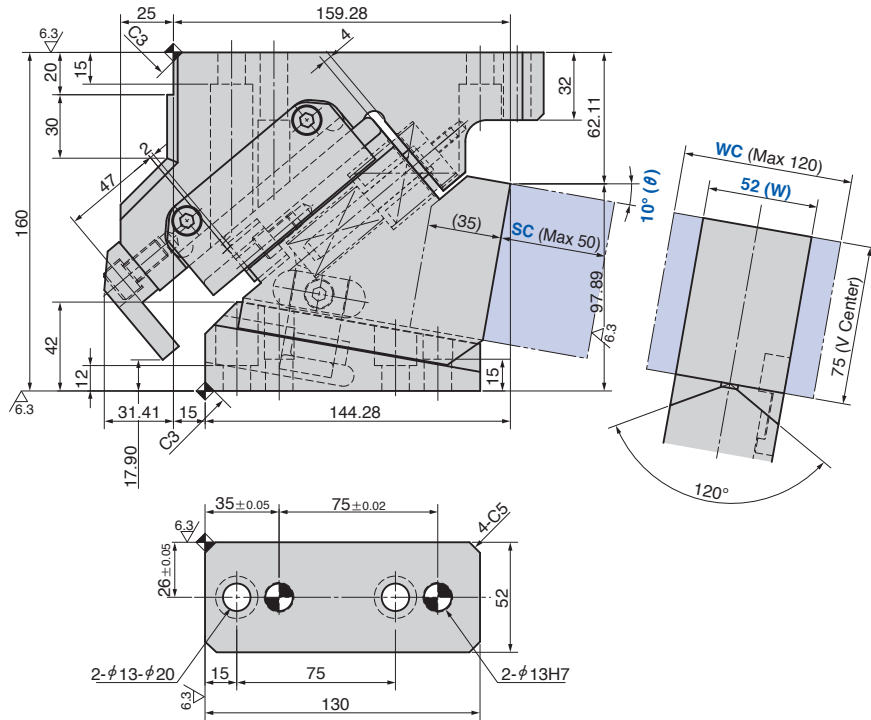
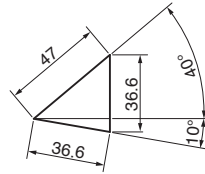
For Pierce

Aerial Cam Unit

SACE52-10



● Cam Diagram



Travel S	Working Force [kN (tonf)]		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ
	Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load				
36.6	29.4 (3.0)	58.8 (6.0)	14.0 (1.4)	1425.5 (145.5)	8.7	SACE	52	10



Catalog No.	W	θ	Option
SACE	52	10	
SACE	52	10	- SC40
SACE	52	10	- WC120
SACE	52	10	- SC40 - WC120 - N12



Option Code	Specification
SC	Mount face length is extended from 1 to 50 mm in increments of 1 mm.
WC	The width of the mount face is extended from 53 to 120 mm in increments of 1 mm.
N12	Dowel holes of Cam Holder and Cam Driver are changed to φ12H7.

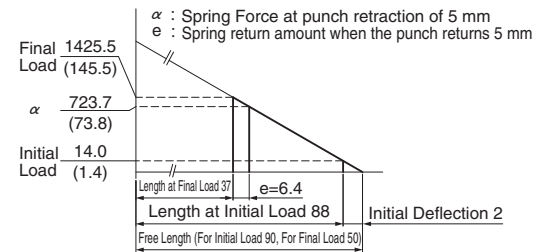
Refer to page 377 for the machining details of tapped holes and dowel holes for retainer mounting.

Spring Specification

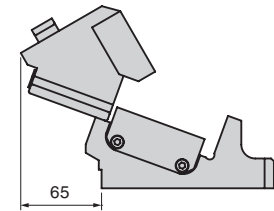
No.	Spring Model	Qty	Remark
10	TF20-90	1	For Initial Load 7.01 N/mm (0.72 kgf/mm)
11	TM30-50	1	For Final Load 109.65 N/mm (11.18 kgf/mm)

Life expectancy of Coil Spring is approximately 1,000,000 strokes.

Spring Diagram



Rear Removal Space



Refer to page 685 for Table of Components.

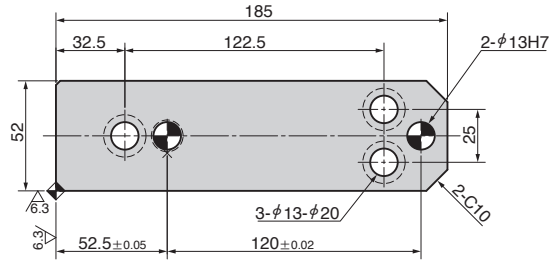
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Compact Type

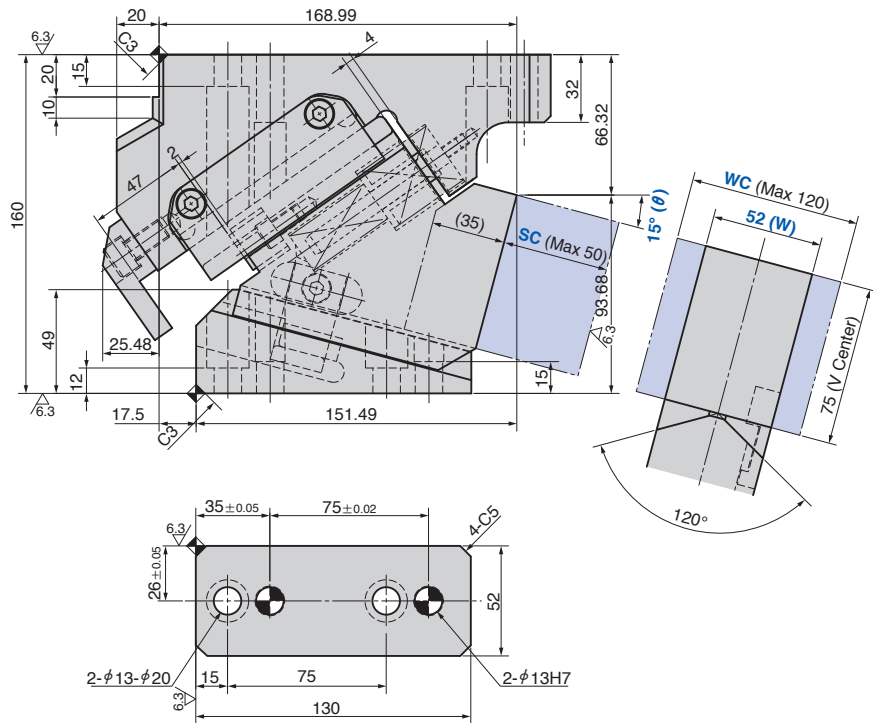
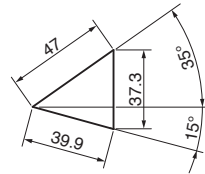
For Pierce

Aerial Cam Unit

SACE52-15



● Cam Diagram



Travel S	Working Force [kN (tonf)]		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ
	Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load				
39.9	29.4 (3.0)	58.8 (6.0)	14.0 (1.4)	1425.5 (145.5)	8.7	SACE	52	15



Catalog No.	W	θ	Option
SACE	52	15	
SACE	52	15	SC40
SACE	52	15	WC120
SACE	52	15	SC40 - WC120 - N12



Option Code	Specification
SC	Mount face length is extended from 1 to 50 mm in increments of 1 mm.
WC	The width of the mount face is extended from 53 to 120 mm in increments of 1 mm.
N12	Dowel holes of Cam Holder and Cam Driver are changed to φ12H7.

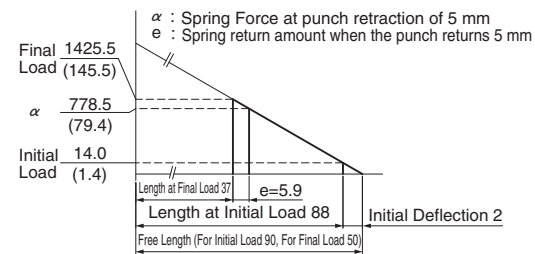
Refer to page 377 for the machining details of tapped holes and dowel holes for retainer mounting.

Spring Specification

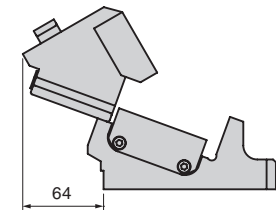
No.	Spring Model	Qty	Remark
10	TF20-90	1	For Initial Load 7.01 N/mm (0.72 kgf/mm)
11	TM30-50	1	For Final Load 109.65 N/mm (11.18 kgf/mm)

Life expectancy of Coil Spring is approximately 1,000,000 strokes.

Spring Diagram



Rear Removal Space



Refer to page 685 for Table of Components.

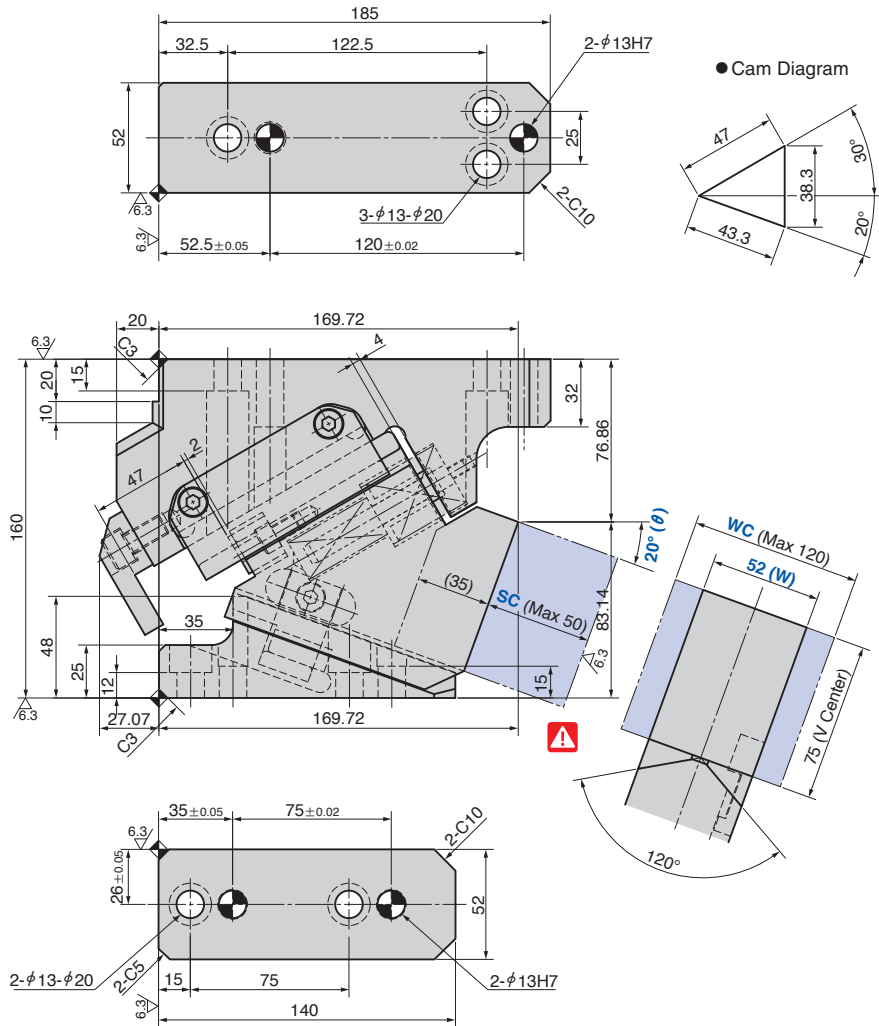
SACE

Compact Type

For Pierce

Aerial Cam Unit

SACE52-20



⚠ When the slider interferes with the die due to the protrusion length, you will need to machine the die for clearance.

▶ Refer to page 685 for Table of Components.

Travel S	Working Force [kN (tonf)]		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ
	Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load				
43.3	29.4 (3.0)	58.8 (6.0)	14.0 (1.4)	1425.5 (145.5)	8.9	SACE	52	20



Catalog No.	W	θ	Option
SACE	52	20	
SACE	52	20	- SC40
SACE	52	20	- WC120
SACE	52	20	- SC40 - WC120 - N12



Option Code	Specification
SC	Mount face length is extended from 1 to 50 mm in increments of 1 mm.
WC	The width of the mount face is extended from 53 to 120 mm in increments of 1 mm.
N12	Dowel holes of Cam Holder and Cam Driver are changed to φ12H7.

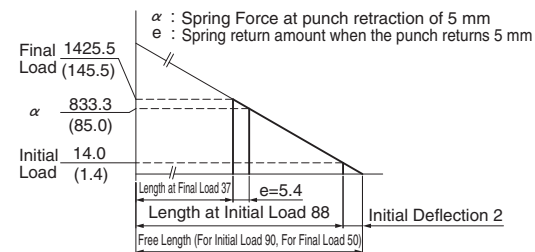
▶ Refer to page 377 for the machining details of tapped holes and dowel holes for retainer mounting.

Spring Specification

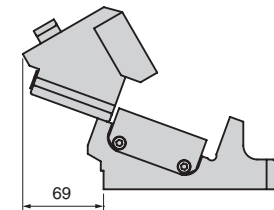
No.	Spring Model	Qty	Remark
10	TF20-90	1	For Initial Load 7.01 N/mm (0.72 kgf/mm)
11	TM30-50	1	For Final Load 109.65 N/mm (11.18 kgf/mm)

Life expectancy of Coil Spring is approximately 1,000,000 strokes.

Spring Diagram



Rear Removal Space



Standard Cam Units

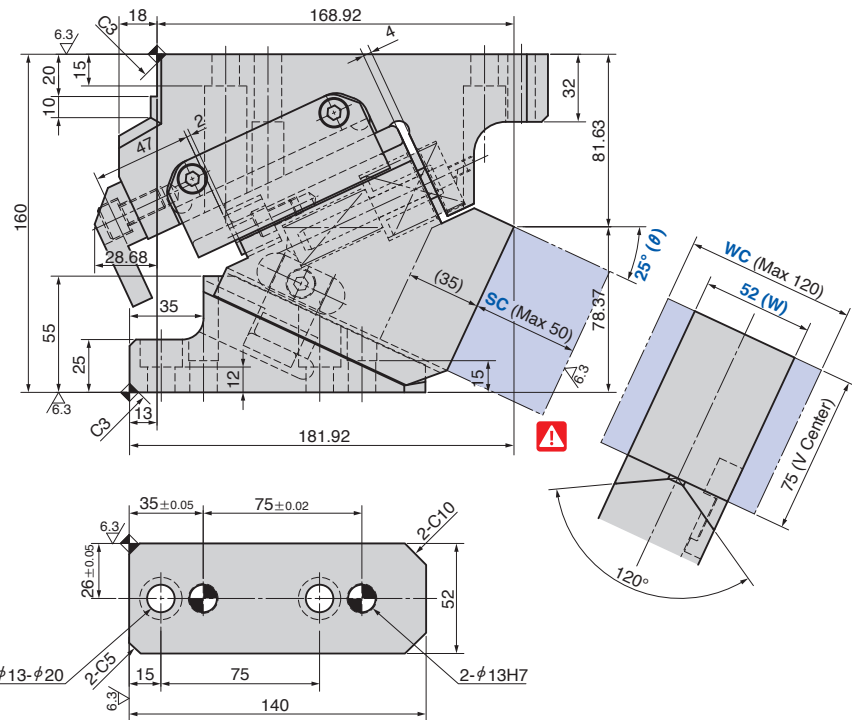
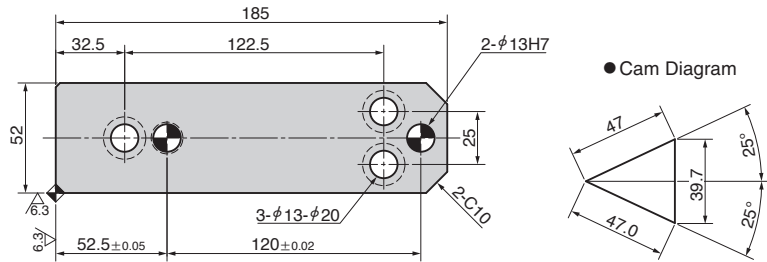
SACE

Compact Type

For Pierce

Aerial Cam Unit

SACE52-25



Travel S	Working Force [kN (tonf)]		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ
	Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load				
47.0	29.4 (3.0)	58.8 (6.0)	14.0 (1.4)	1425.5 (145.5)	8.8	SACE	52	25



Catalog No.	W	θ	Option
SACE	52	25	
SACE	52	25	- SC40
SACE	52	25	- WC120
SACE	52	25	- SC40 - WC120 - N12



Option Code	Specification
SC	Mount face length is extended from 1 to 50 mm in increments of 1 mm.
WC	The width of the mount face is extended from 53 to 120 mm in increments of 1 mm.
N12	Dowel holes of Cam Holder and Cam Driver are changed to φ12H7.

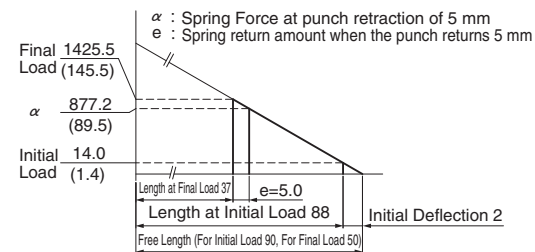
Refer to page 377 for the machining details of tapped holes and dowel holes for retainer mounting.

Spring Specification

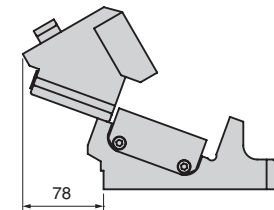
No.	Spring Model	Qty	Remark
10	TF20-90	1	For Initial Load 7.01 N/mm (0.72 kgf/mm)
11	TM30-50	1	For Final Load 109.65 N/mm (11.18 kgf/mm)

Life expectancy of Coil Spring is approximately 1,000,000 strokes.

Spring Diagram



Rear Removal Space



⚠ When the slider interferes with the die due to the protrusion length, you will need to machine the die for clearance.

▶ Refer to page 685 for Table of Components.

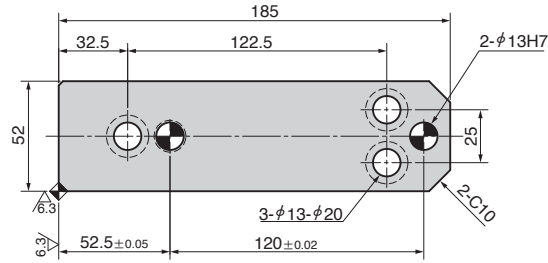
SACE

Compact Type

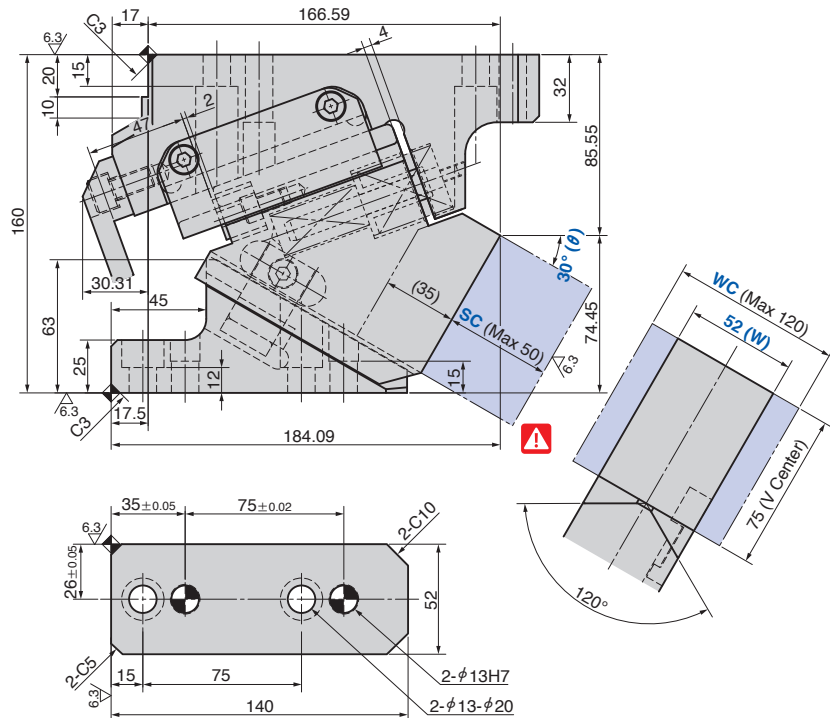
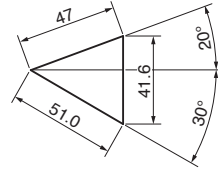
For Pierce

Aerial Cam Unit

SACE52-30



● Cam Diagram



When the slider interferes with the die due to the protrusion length, you will need to machine the die for clearance.

Refer to page 685 for Table of Components.

Travel S	Working Force [kN (tonf)]		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ
	Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load				
51.0	29.4 (3.0)	58.8 (6.0)	14.0 (1.4)	1425.5 (145.5)	8.6	SACE	52	30



Catalog No.	W	θ	Option
SACE	52	30	
SACE	52	30	- SC40
SACE	52	30	- WC120
SACE	52	30	- SC40 - WC120 - N12



Option Code	Specification
SC	Mount face length is extended from 1 to 50 mm in increments of 1 mm.
WC	The width of the mount face is extended from 53 to 120 mm in increments of 1 mm.
N12	Dowel holes of Cam Holder and Cam Driver are changed to φ12H7.

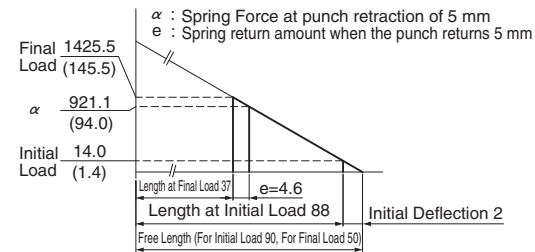
Refer to page 377 for the machining details of tapped holes and dowel holes for retainer mounting.

Spring Specification

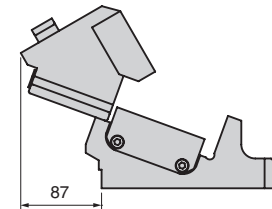
No.	Spring Model	Qty	Remark
10	TF20-90	1	For Initial Load 7.01 N/mm (0.72 kgf/mm)
11	TM30-50	1	For Final Load 109.65 N/mm (11.18 kgf/mm)

Life expectancy of Coil Spring is approximately 1,000,000 strokes.

Spring Diagram



Rear Removal Space



Standard Cam Units

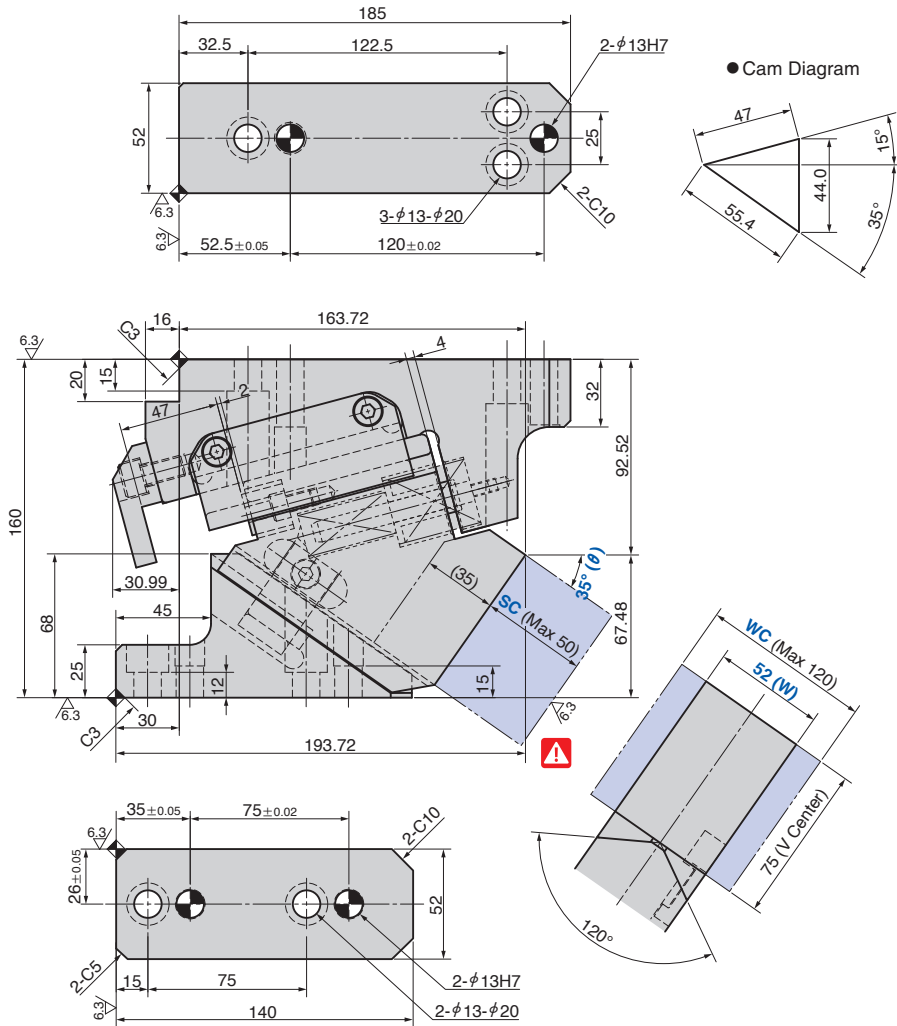
SACE

Compact Type

For Pierce

Aerial Cam Unit

SACE52-35



Travel S	Working Force [kN (tonf)]		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ
	Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load				
55.4	29.4 (3.0)	58.8 (6.0)	14.0 (1.4)	1425.5 (145.5)	8.8	SACE	52	35



Catalog No.	W	θ	Option
SACE	52	35	
SACE	52	35	- SC40
SACE	52	35	- WC120
SACE	52	35	- SC40 - WC120 - N12



Option Code	Specification
SC	Mount face length is extended from 1 to 50 mm in increments of 1 mm.
WC	The width of the mount face is extended from 53 to 120 mm in increments of 1 mm.
N12	Dowel holes of Cam Holder and Cam Driver are changed to φ12H7.

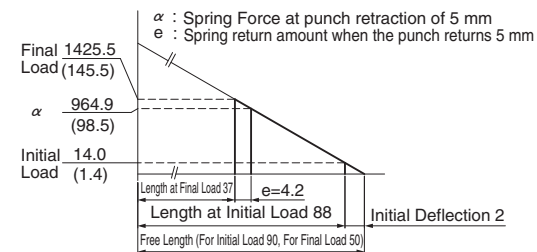
Refer to page 377 for the machining details of tapped holes and dowel holes for retainer mounting.

Spring Specification

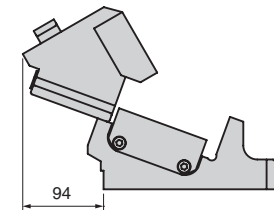
No.	Spring Model	Qty	Remark
10	TF20-90	1	For Initial Load 7.01 N/mm (0.72 kgf/mm)
11	TM30-50	1	For Final Load 109.65 N/mm (11.18 kgf/mm)

Life expectancy of Coil Spring is approximately 1,000,000 strokes.

Spring Diagram



Rear Removal Space



When the slider interferes with the die due to the protrusion length, you will need to machine the die for clearance.

Refer to page 685 for Table of Components.

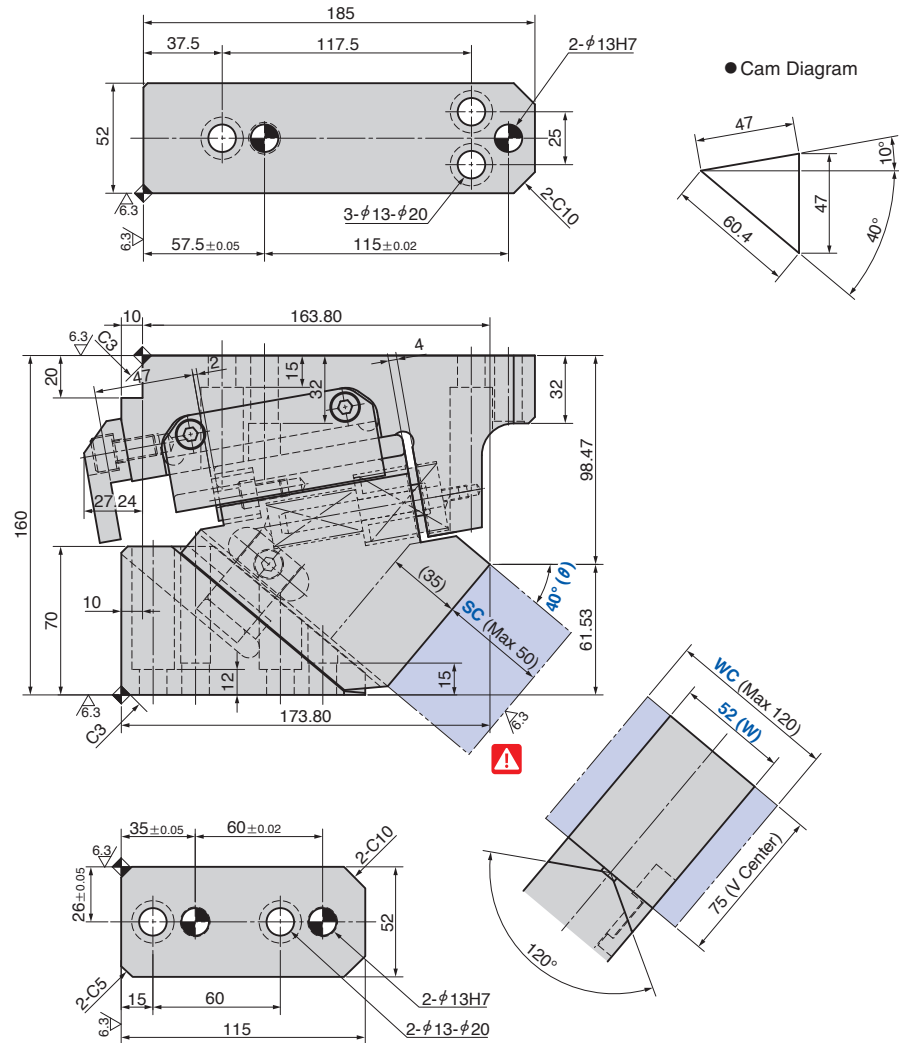
SACE

Compact Type

For Pierce

Aerial Cam Unit

SACE52-40



● Cam Diagram

Travel S	Working Force [kN (tonf)]		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ
	Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load				
60.4	29.4 (3.0)	58.8 (6.0)	14.0 (1.4)	1425.5 (145.5)	8.9	SACE	52	40



Catalog No.	W	θ	Option
SACE	52	40	
SACE	52	40	- SC40
SACE	52	40	- WC120
SACE	52	40	- SC40 - WC120 - N12



Option Code	Specification
SC	Mount face length is extended from 1 to 50 mm in increments of 1 mm.
WC	The width of the mount face is extended from 53 to 120 mm in increments of 1 mm.
N12	Dowel holes of Cam Holder and Cam Driver are changed to φ12H7.

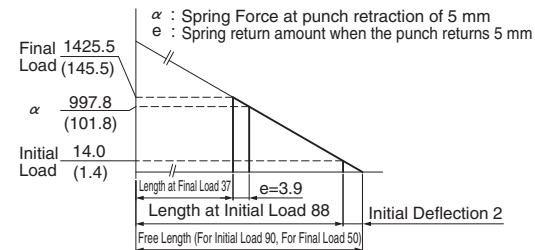
Refer to page 377 for the machining details of tapped holes and dowel holes for retainer mounting.

Spring Specification

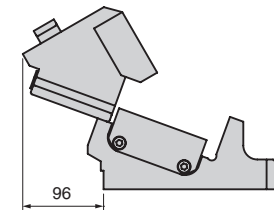
No.	Spring Model	Qty	Remark
10	TF20-90	1	For Initial Load 7.01 N/mm (0.72 kgf/mm)
11	TM30-50	1	For Final Load 109.65 N/mm (11.18 kgf/mm)

Life expectancy of Coil Spring is approximately 1,000,000 strokes.

Spring Diagram



Rear Removal Space



⚠ When the slider interferes with the die due to the protrusion length, you will need to machine the die for clearance.

▶ Refer to page 685 for Table of Components.

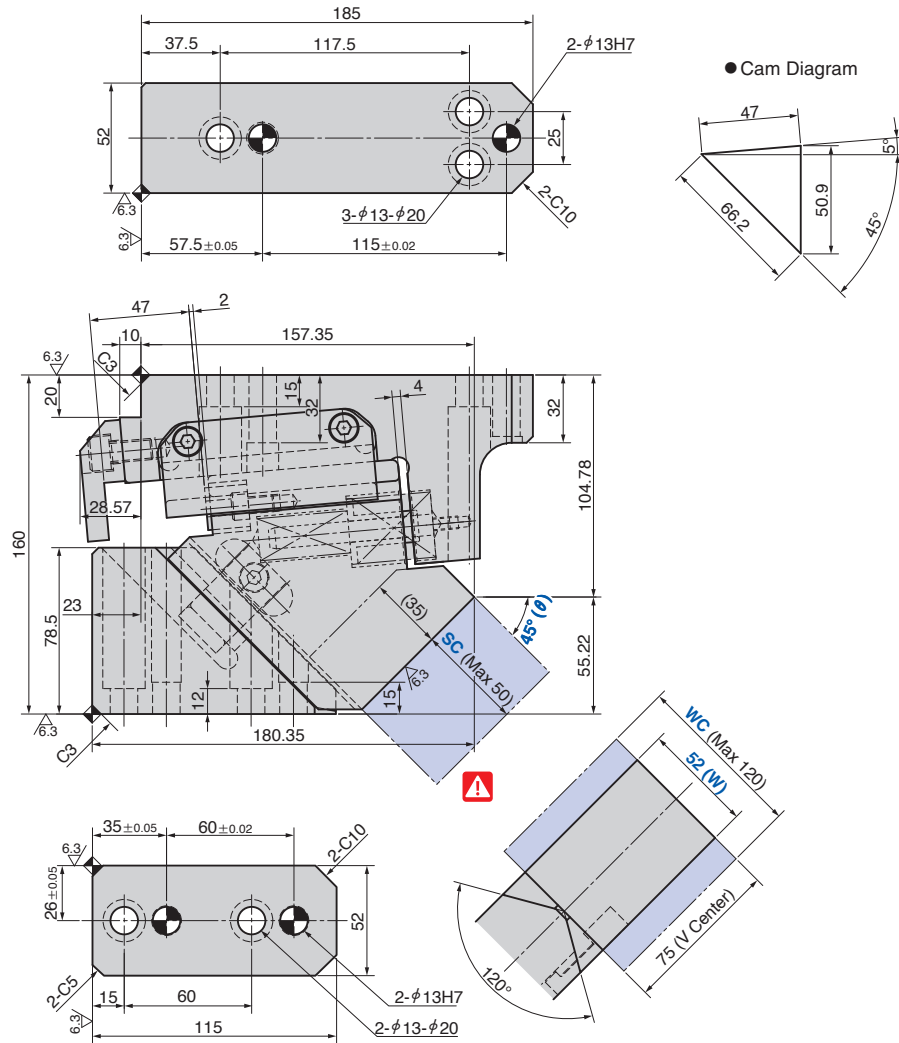
SACE

Compact Type

For Pierce

Aerial Cam Unit

SACE52-45



● Cam Diagram

Travel S	Working Force [kN (tonf)]		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ
	Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load				
66.2	29.4 (3.0)	58.8 (6.0)	14.0 (1.4)	1425.5 (145.5)	9.1	SACE	52	45



Catalog No.	W	θ	Option
SACE	52	45	
SACE	52	45	- SC40
SACE	52	45	- WC120
SACE	52	45	- SC40 - WC120 - N12



Option Code	Specification
SC	Mount face length is extended from 1 to 50 mm in increments of 1 mm.
WC	The width of the mount face is extended from 53 to 120 mm in increments of 1 mm.
N12	Dowel holes of Cam Holder and Cam Driver are changed to φ12H7.

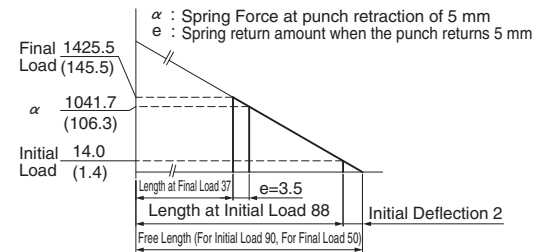
Refer to page 377 for the machining details of tapped holes and dowel holes for retainer mounting.

Spring Specification

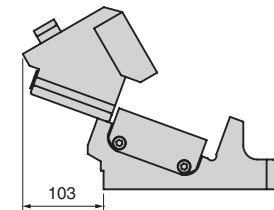
No.	Spring Model	Qty	Remark
10	TF20-90	1	For Initial Load 7.01 N/mm (0.72 kgf/mm)
11	TM30-50	1	For Final Load 109.65 N/mm (11.18 kgf/mm)

Life expectancy of Coil Spring is approximately 1,000,000 strokes.

Spring Diagram



Rear Removal Space



⚠ When the slider interferes with the die due to the protrusion length, you will need to machine the die for clearance.

▶ Refer to page 685 for Table of Components.

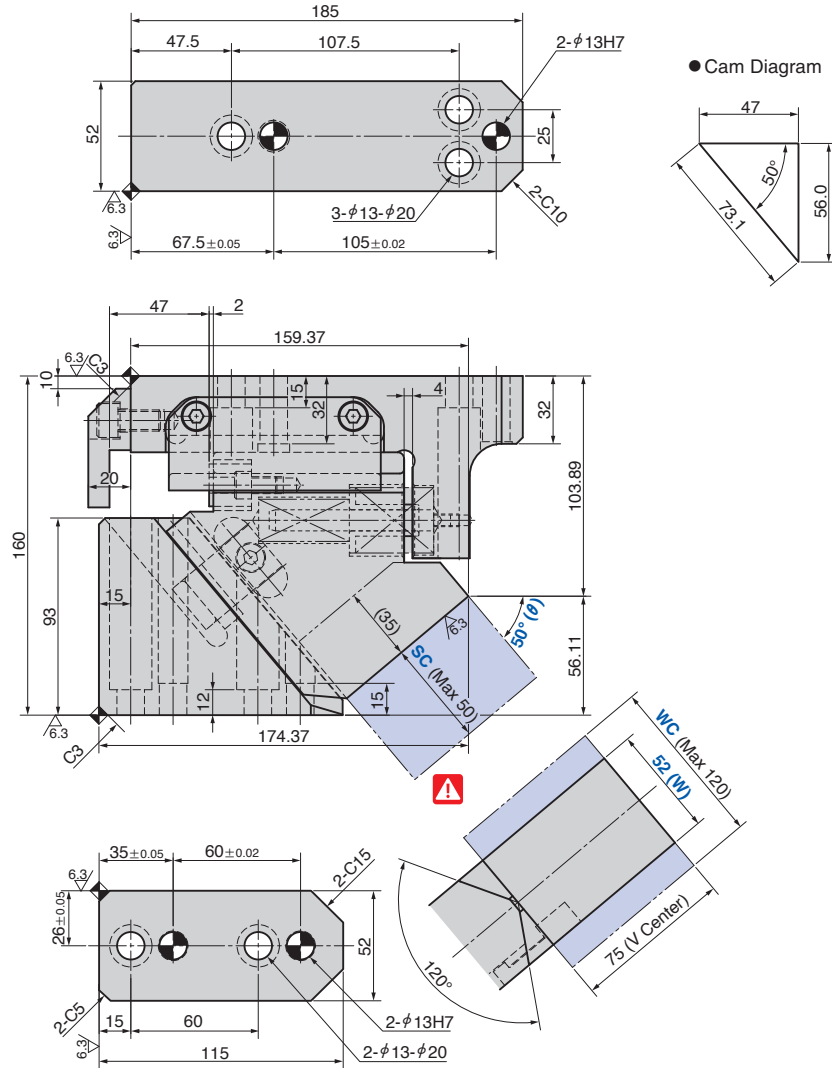
SACE

Compact Type

For Pierce

Aerial Cam Unit

SACE52-50



● Cam Diagram

Travel S	Working Force [kN (tonf)]		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ
	Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load				
73.1	29.4 (3.0)	58.8 (6.0)	14.0 (1.4)	1425.5 (145.5)	8.8	SACE	52	50



Catalog No.	W	θ	Option
SACE	52	50	
SACE	52	50	SC40
SACE	52	50	WC120
SACE	52	50	SC40 - WC120 - N12



Option Code	Specification
SC	Mount face length is extended from 1 to 50 mm in increments of 1 mm.
WC	The width of the mount face is extended from 53 to 120 mm in increments of 1 mm.
N12	Dowel holes of Cam Holder and Cam Driver are changed to φ12H7.

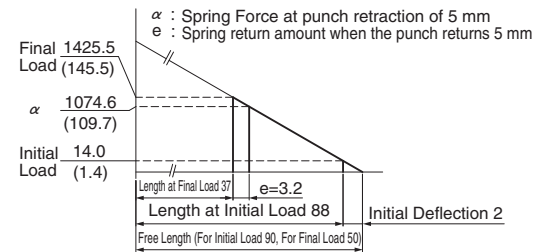
Refer to page 377 for the machining details of tapped holes and dowel holes for retainer mounting.

Spring Specification

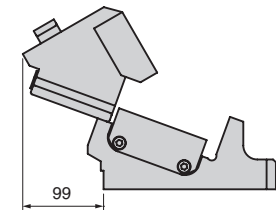
No.	Spring Model	Qty	Remark
10	TF20-90	1	For Initial Load 7.01 N/mm (0.72 kgf/mm)
11	TM30-50	1	For Final Load 109.65 N/mm (11.18 kgf/mm)

Life expectancy of Coil Spring is approximately 1,000,000 strokes.

Spring Diagram



Rear Removal Space



⚠ When the slider interferes with the die due to the protrusion length, you will need to machine the die for clearance.

▶ Refer to page 685 for Table of Components.

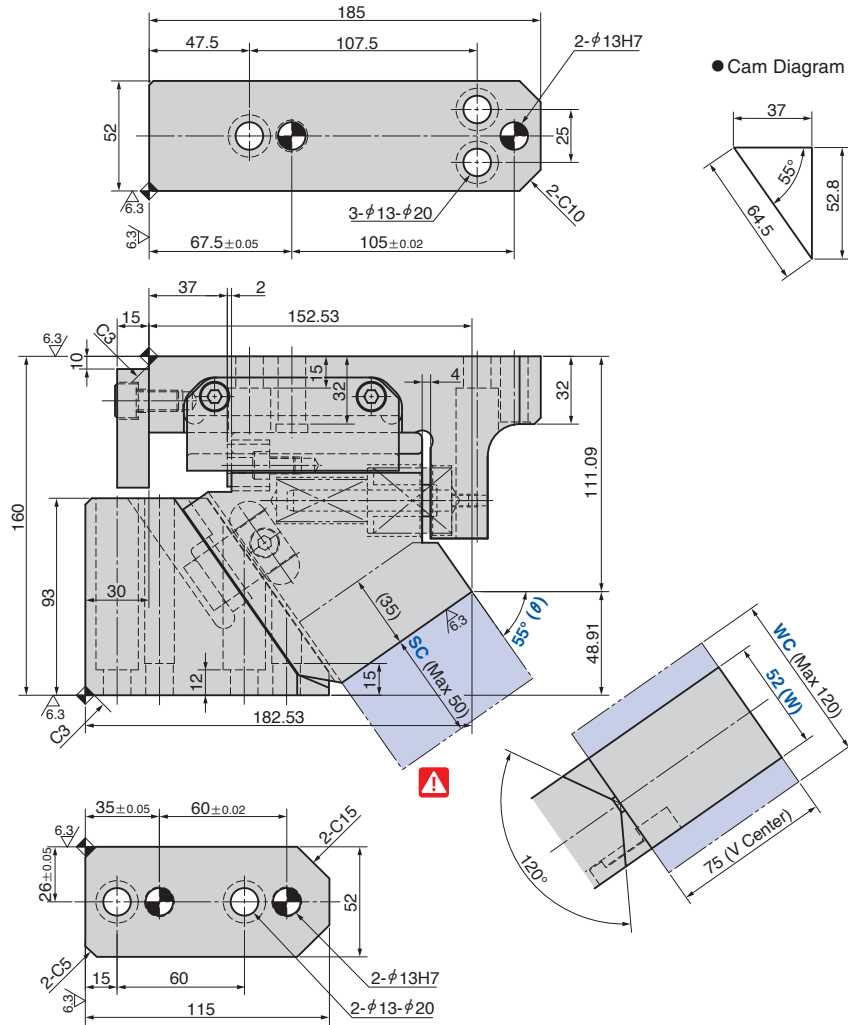
SACE

Compact Type

For Pierce

Aerial Cam Unit

SACE52-55



● Cam Diagram

Travel S	Working Force [kN (tonf)]		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ
	Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load				
64.5	29.4 (3.0)	58.8 (6.0)	36.1 (3.7)	1425.5 (145.5)	8.9	SACE	52	55



Catalog No.	W	θ	Option
SACE	52	55	
SACE	52	55	SC40
SACE	52	55	WC120
SACE	52	55	SC40 - WC120 - N12



Option Code	Specification
SC	Mount face length is extended from 1 to 50 mm in increments of 1 mm.
WC	The width of the mount face is extended from 53 to 120 mm in increments of 1 mm.
N12	Dowel holes of Cam Holder and Cam Driver are changed to φ12H7.

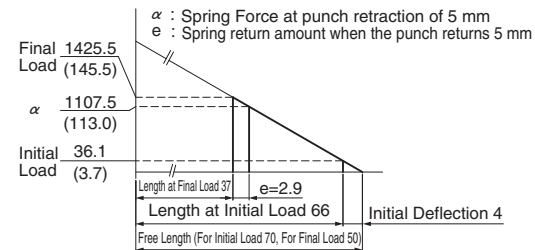
Refer to page 377 for the machining details of tapped holes and dowel holes for retainer mounting.

Spring Specification

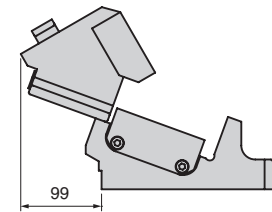
No.	Spring Model	Qty	Remark
10	TF20-70	1	For Initial Load 9.02 N/mm (0.92 kgf/mm)
11	TM30-50	1	For Final Load 109.65 N/mm (11.18 kgf/mm)

Life expectancy of Coil Spring is approximately 1,000,000 strokes.

Spring Diagram



Rear Removal Space



⚠ When the slider interferes with the die due to the protrusion length, you will need to machine the die for clearance.

▶ Refer to page 685 for Table of Components.

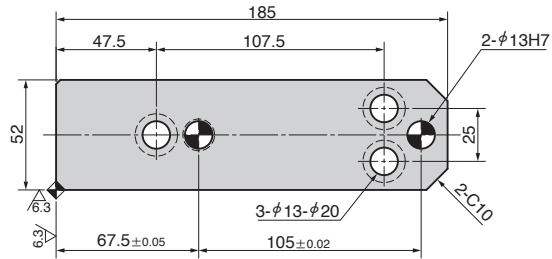
SACE

Compact Type

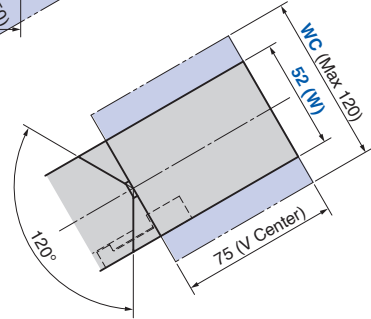
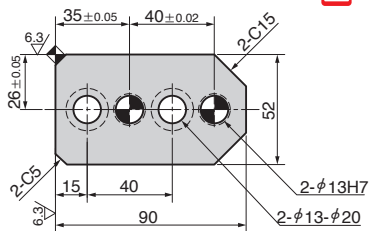
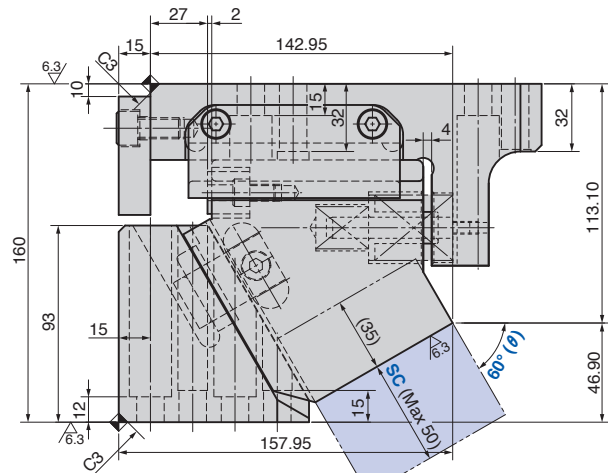
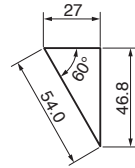
For Pierce

Aerial Cam Unit

SACE52-60



● Cam Diagram



Travel S	Working Force [kN (tonf)]		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ
	Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load				
54.0	29.4 (3.0)	58.8 (6.0)	75.7 (7.7)	1425.5 (145.5)	8.5	SACE	52	60



Catalog No.	W	θ	Option
SACE	52	60	
SACE	52	60	- SC40
SACE	52	60	- WC120
SACE	52	60	- SC40 - WC120 - N12



Option Code	Specification
SC	Mount face length is extended from 1 to 50 mm in increments of 1 mm.
WC	The width of the mount face is extended from 53 to 120 mm in increments of 1 mm.
N12	Dowel holes of Cam Holder and Cam Driver are changed to φ12H7.

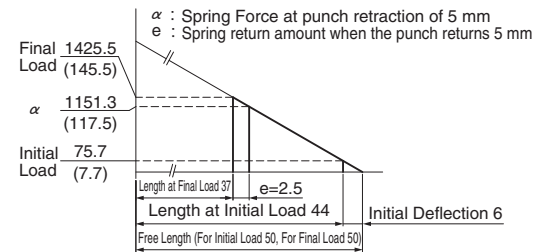
Refer to page 377 for the machining details of tapped holes and dowel holes for retainer mounting.

Spring Specification

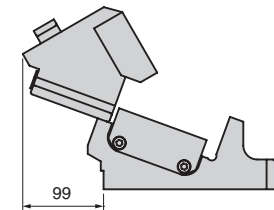
No.	Spring Model	Qty	Remark
10	TF20-50	1	For Initial Load 12.62 N/mm (1.29 kgf/mm)
11	TM30-50	1	For Final Load 109.65 N/mm (11.18 kgf/mm)

Life expectancy of Coil Spring is approximately 1,000,000 strokes.

Spring Diagram



Rear Removal Space



When the slider interferes with the die due to the protrusion length, you will need to machine the die for clearance.

Refer to page 685 for Table of Components.

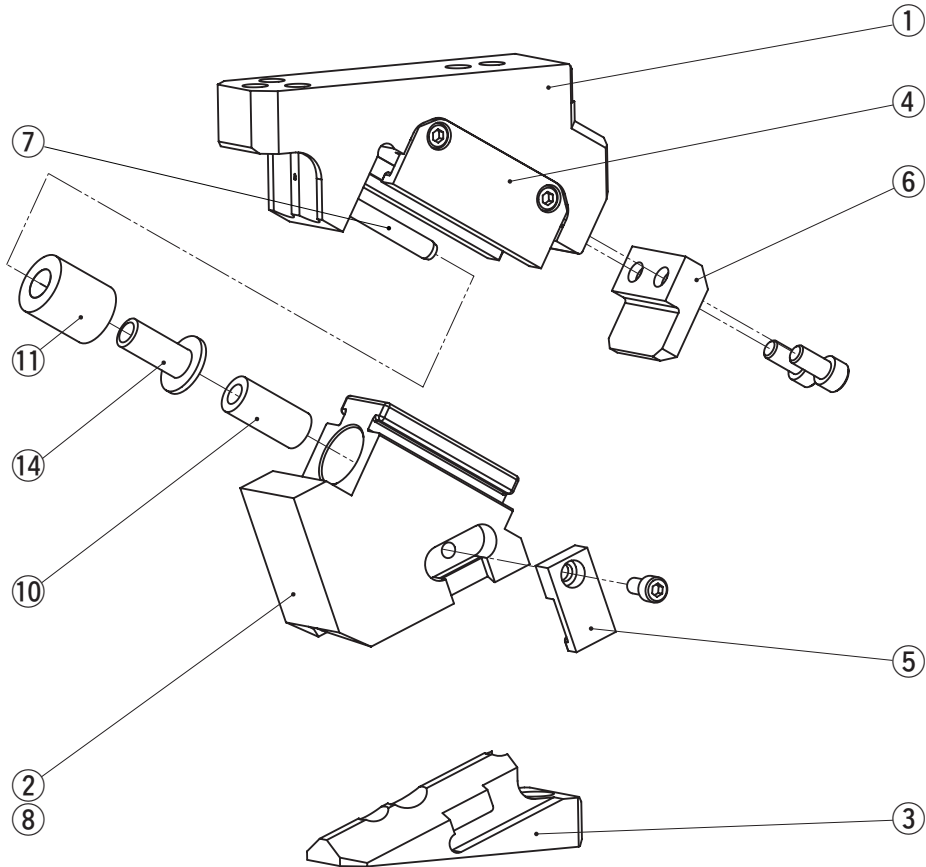
SACE [Table of Components]

Compact Type

For Pierce

Aerial Cam Unit

SACE52



No.	Description	Qty	Material and Remark
1	Cam Holder	1	Cast Iron
2	Cam Slider	1	Cast Iron with Graphite
3	Cam Driver	1	Cast Iron
4	Slide Keeper	2	Steel with Graphite
5	Positive Return Follower	1	Bronze
6	Stopper Plate	1	Steel
7	Spring Guide Pin	1	Steel
8	Stopper	1	—
10	Coil Spring	1	TF20-90 0°~50°
10	Coil Spring	1	TF20-70 55°
10	Coil Spring	1	TF20-50 60°
11	Coil Spring	1	TM30-50
14	Spring Guide Bush	1	Bronze

Bolts, nuts, dowels, and washers for assembly are not indicated.

Cam Units [Overview]

Information

■ Tapped Hole and Dowel Hole (Prepared Hole, Finish) Machining for Retainer Mounting

Instruction method for machining

Indicate the tapped hole diameter and the dowel hole (or prepared hole) diameter with the XY coordinates.

To indicate the coordinates

- The origin is positioned at the upper left corner of the mount face. (However, machining uses our machining datum as the reference.)

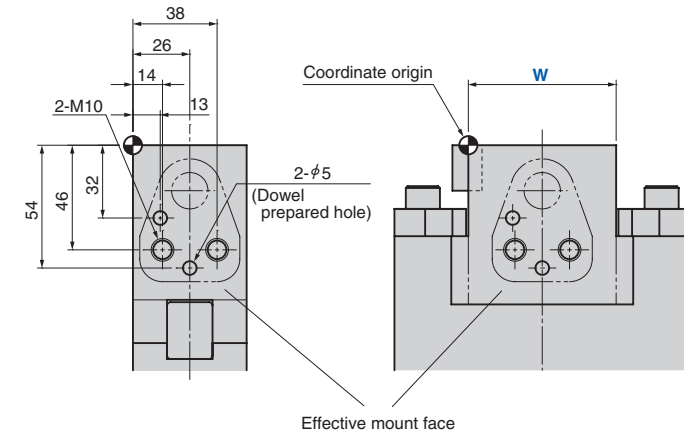
· Indication symbol

—M···Tapped hole, —N···Dowel prepared hole, —K···Dowel finish hole

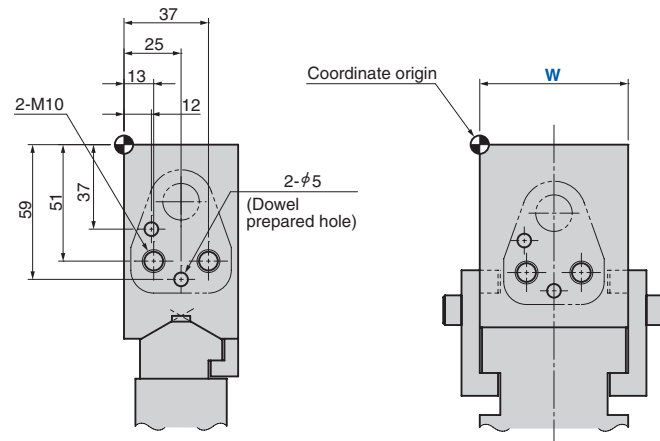
Machining standard

- Tapped holes and dowel prepared holes are machined to general tolerances.
- The hole depth is 2.5 times the diameter for both tapped holes and dowel holes. The dowel pilot hole is processed for 2 times the diameter.
- The dowel hole spacing is machined to the tolerance of ± 0.02 . The hole tolerance is H7.

(Example of Die Mounted Cam Unit)



(Example of Aerial Cam Unit)



Order

Catalog No.	W	θ	S	Additional Machining
CMSD	52	00	55	— M10 — X (14.0) — Y (—46.0) — M10 — X (38.0) — Y (—46.0) — K5.0 — X (13.0) — Y (—32.0) — K5.0 — X (26.0) — Y (—54.0)

■ Other machining

Please give instructions on a separate drawing for drilling or cutting other than tapped holes and dowel holes.



Order

Catalog No.	W	θ	Additional Machining
SACE	52	00	— M10 — X (13.0) — Y (—51.0) — M10 — X (37.0) — Y (—51.0) — K5.0 — X (12.0) — Y (—37.0) — K5.0 — X (25.0) — Y (—59.0)