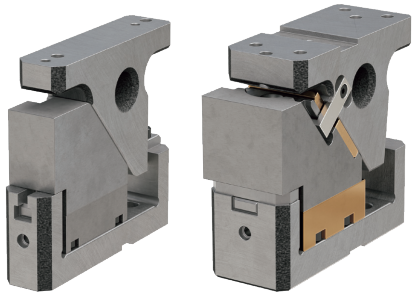
NEW Die Mounted Cam Unit CMSD·CMSDG

OUTLINE OF CMSD·CMSDG

- **CMSD** :Cast iron and solid lubricant sliding, Coil spring type
- **CMSDG**:Bronze and solid lubricant sliding, Gas spring type Higher working force
- Ensured rigidity and durability by CAE analysis and endurance test
- Interchangeable between CMSD and CMSDG



Catalog No.	Mounting Surface		Angle	Stroke S	Working Force kN (tonf)	
	Width	Height			Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes
CMSD	52	75	00	55	19.6(2.0)	39.2(4.0)
			05			
			10			
			15			
			20			
	90	82	00		38.2(3.9)	76.4(7.8)
			05			
			10			
			15			
CMSDG	52	75	00	55	39.2(4.0)	58.8(6.0)
			05			
			10			
			15			
			20			
	90	82	00		58.8(6.0)	88.2(9.0)
			05			
			10			
			15			

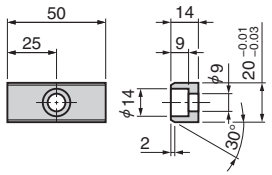
Refer to page 3 for CMSDG working force distribution diagram.

■Option of CMSD·CMSDG

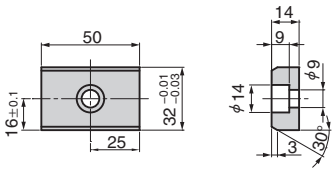
- **Key Specification (−K)**

CMSD52
LKU20-50 (2 pcs, with M8x15 bolts)

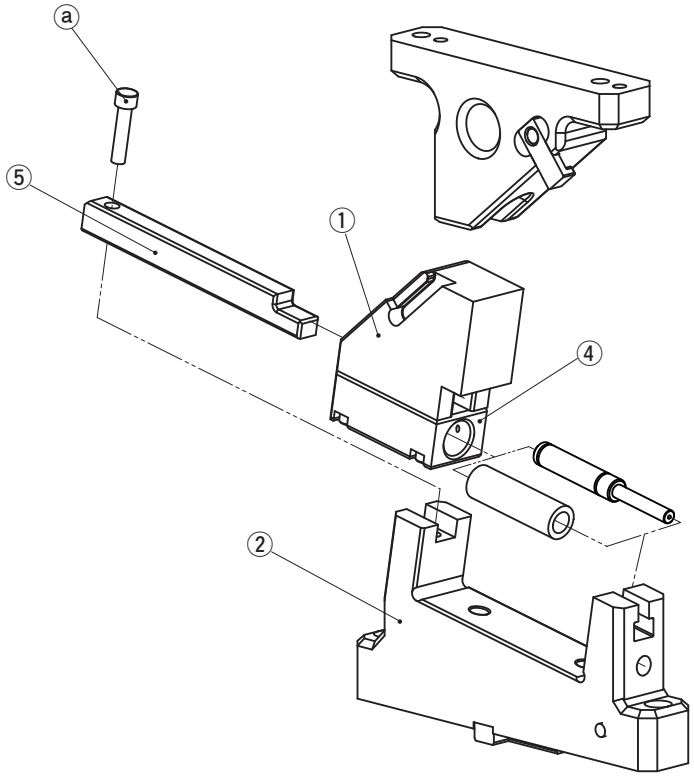
CMSDG52
LKU20-50 (3 pcs, with M8x15 bolts)



CMSD90·CMSDG90
LKU32-50 (2 pcs, with M8x15 bolts)



■CMSD·CMSDG Assembly Instructions



● Disassembly

1) Remove Hexagon Socket Head Bolt(ⓐ), pull out Guide Bar(⑤) from Cam Holder(②) to the rear for 30 mm, and then remove Guide Bar and Cam Slider(①④).
2) Pull up Guide Bar to remove from Cam Slider.

● Assembly

Assembly is the reverse procedure of disassembly.

- Ensure that all parts are clean, particularly the sliding components, to which a small amount of grease is applied and is then placed on position.
- Take care the respective tolerances are observed when assembling Guide Bar, Cam Slider and Cam Holder, which also should be identified by the same serial number.
- Ensure that all bolts are tightened to the recommended torque.

Gas Spring
Please contact your local sales representative if you prefer to use a gas spring not specified in our catalog. For use and maintenance of gas spring, please contact the manufacturer directly.

NEW Die Mounted Cam Unit CMSD·CMSDG

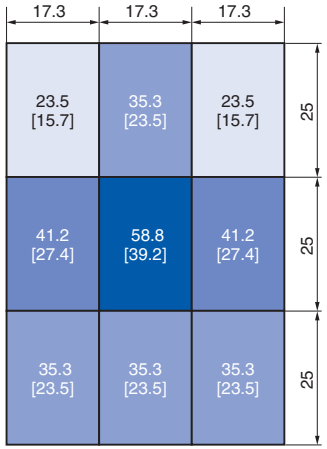
OUTLINE OF CMSD·CMSDG

■CMSDG Working Force Distribution Diagram

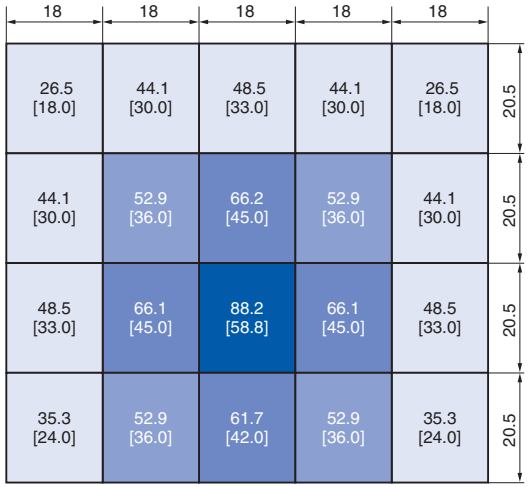
The working forces indicated in the cam slider mounting surface distribution diagram are reached by putting the tooling center of gravity within each area for the following pictures.

:Working force (kN) allowed for up to 300,000 strokes
[ ]:Working force (kN) allowed for up to 1,000,000 strokes

CMSDG52

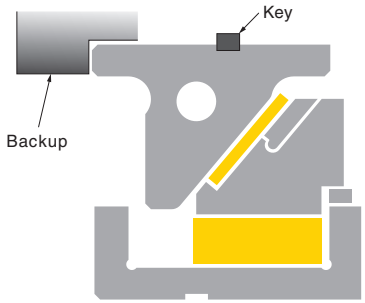


CMSDG90



■CMSDG Backup Settings with Increased Working Force

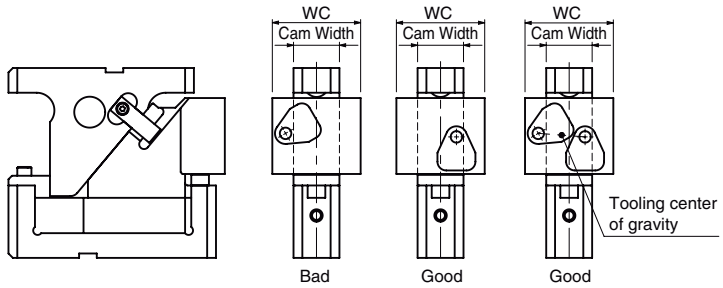
Set a backup or a key for the cam driver when using CMSDG at more than following working force.



W	Working Force kN (tonf)
	Standard Working Force 1,000,000 strokes
52	39.2 (4.0)
90	58.8 (6.0)

■CMSD·CMSDG Installation Range of Piercing Punch

Make sure to mount a tool not to stick out of the cam unit and to keep tooling center of gravity within cam slider width.

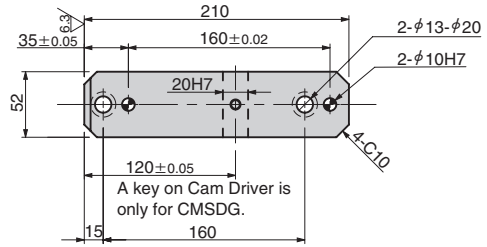


NEW Die Mounted Cam Unit

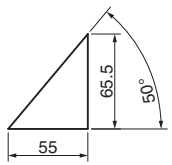
FOR PIERCING

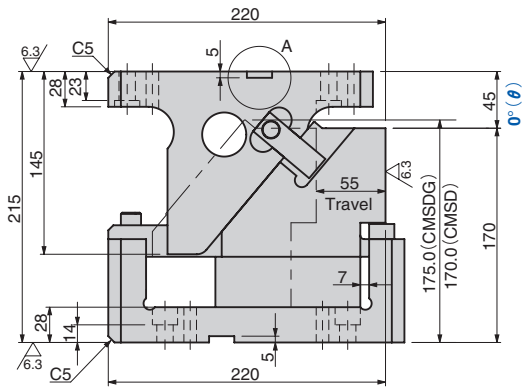
CMSD52-00-55
CMSDG52-00-55

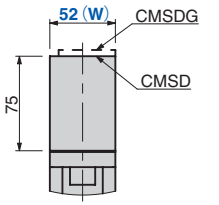
CAD FILE

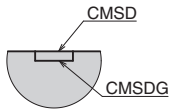


● Cam Diagram

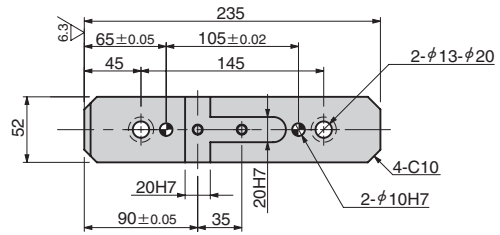


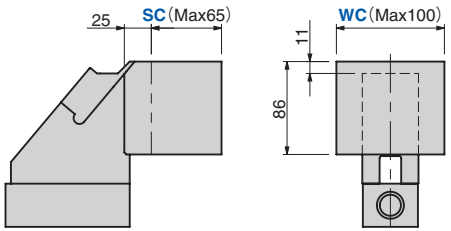






A:No key groove on CMSD Cam Driver.





Refer to page 15-16 for parts lists.

Working Force kN (tonf)		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ	Stroke S	Spring Type PS
Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load						
19.6 (2.0)	39.2 (4.0)	85.3 (8.7)	606.7 (62.1)	14.2	CMSD	52	00	55	No Code (Coil Spring)
39.2 (4.0)	58.8 (6.0)	—	2465.0 (251.5)	13.7	CMSDG	52	00	55	GK NGK GD NGD

No Code:Coil Spring GK:Gas Spring(KALLER) GD:Gas Spring(DADCO)
NGK/NGD:Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W	–	θ	–	S	–	PS	–	Option
CMSD	52	–	00	–	55				
CMSD	52	–	00	–	55			–	SC5 – WC100
CMSDG	52	–	00	–	55	–	GK	–	NF – SC10 – WC100 – K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
SC	Mounting surface length is extended from 0 to 65 mm (in increments of 1 mm).
WC	The width of the mounting surface is extended from 53 to 100 mm (in increments of 1 mm).
K	Key attached.

Refer to page 389 for the machining details of tapped holes and dowel pin holes for retainer mounting.
Refer to page 1 for key specification.

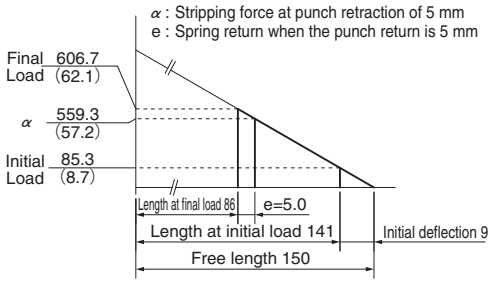
■Spring Specification

No.	PS	Model	Qty	Remark
	No Code	SWS26-150	1	Coil Spring
9	GK	X320-63-TD	1	Gas Spring(KALLER)
	GD	U.0325.063.TO	1	Gas Spring(DADCO)

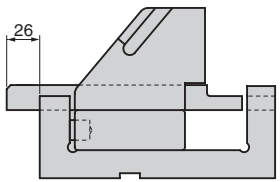
Gas filling pressure is 10 MPa.

■Spring Diagram (Stripping force at punch retraction of 5 mm)

- Spring used SWS26-150 (1 piece)
- Spring constant 9.48 N/mm (0.97 kgf/mm)
- Guideline of spring durability 500,000 strokes



■Rear Removal Space



Cam Units

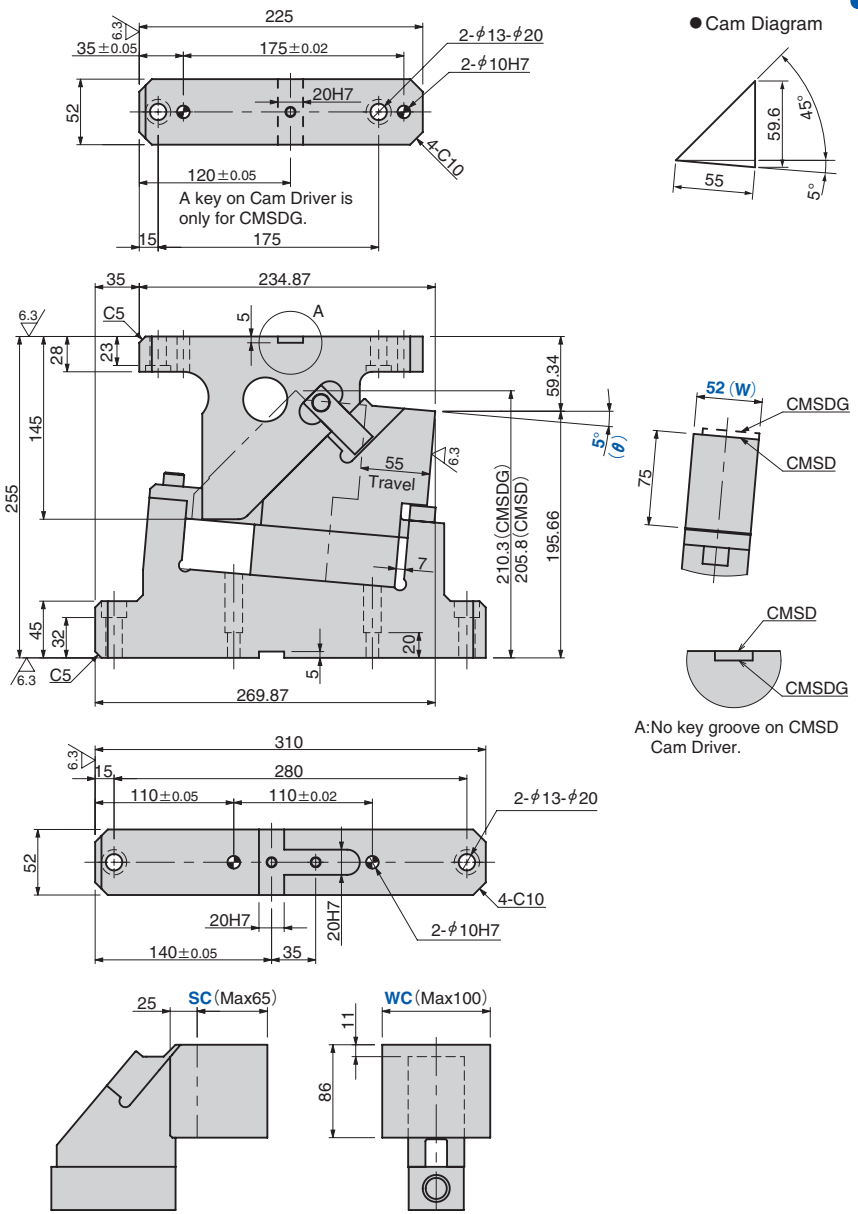
CMSD
CMSDG
52

NEW Die Mounted Cam Unit

FOR PIERCING

CMSD52-05-55
CMSDG52-05-55

CAD FILE



● Cam Diagram

A:No key groove on CMSD Cam Driver.

Working Force kN (tonf)		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ	Stroke S	Spring Type PS
Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load						
19.6 (2.0)	39.2 (4.0)	85.3 (8.7)	606.7 (62.1)	18.5	CMSD	52	05	55	No Code (Coil Spring)
39.2 (4.0)	58.8 (6.0)	—	2465.0 (251.5)	19.2	CMSDG	52	05	55	GK NGK GD NGD

No Code:Coil Spring GK:Gas Spring(KALLER) GD:Gas Spring(DADCO)
NGK/NGD:Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W		θ		S		PS		Option
CMSD	52	—	05	—	55				
CMSD	52	—	05	—	55				— SC5 — WC100
CMSDG	52	—	05	—	55	—	GK		— NF — SC10 — WC100 — K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
SC	Mounting surface length is extended from 0 to 65 mm (in increments of 1 mm).
WC	The width of the mounting surface is extended from 53 to 100 mm (in increments of 1 mm).
K	Key attached.

Refer to page 389 for the machining details of tapped holes and dowel pin holes for retainer mounting.
Refer to page 1 for key specification.

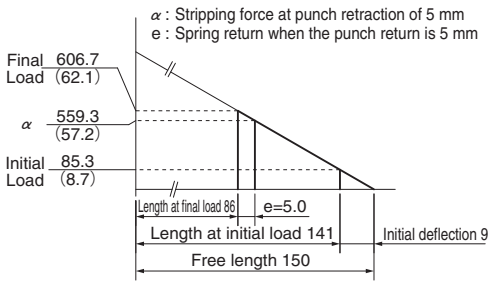
■Spring Specification

No.	PS	Model	Qty	Remark
	No Code	SWS26-150	1	Coil Spring
9	GK	X320-63-TD	1	Gas Spring(KALLER)
	GD	U.0325.063.TO	1	Gas Spring(DADCO)

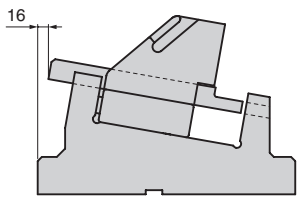
Gas filling pressure is 10 MPa.

■Spring Diagram (Stripping force at punch retraction of 5 mm)

- Spring used SWS26-150 (1 piece)
- Spring constant 9.48 N/mm (0.97 kgf/mm)
- Guideline of spring durability 500,000 strokes



■Rear Removal Space



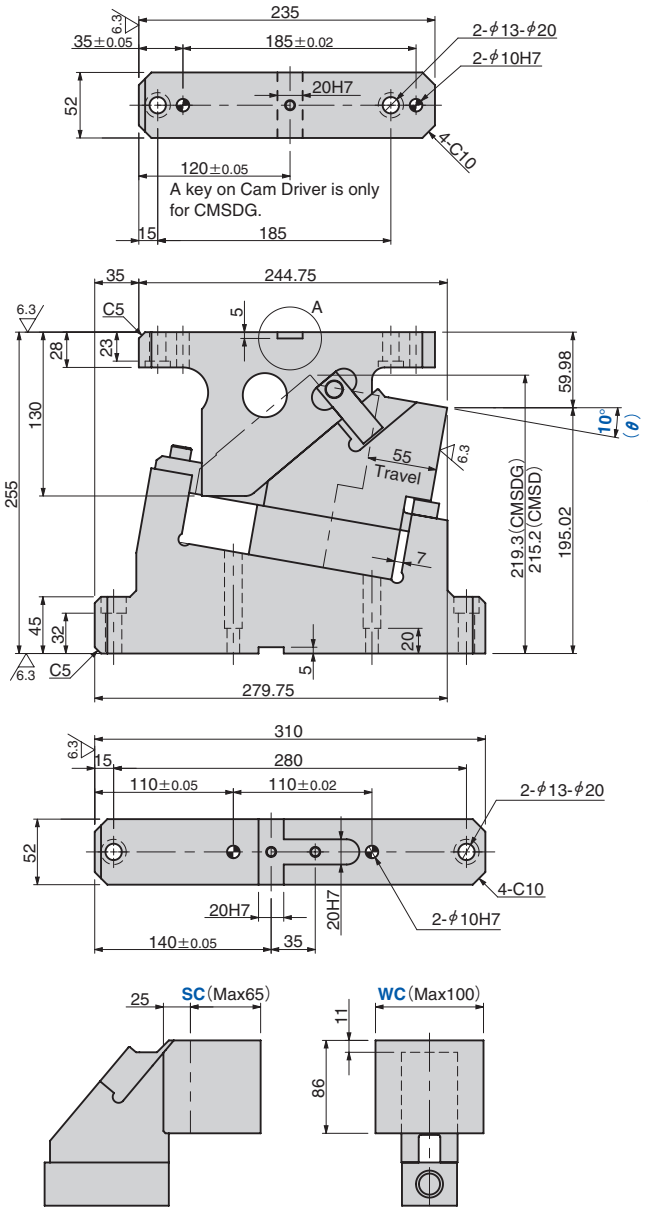
Refer to page 15-16 for parts lists.

NEW Die Mounted Cam Unit

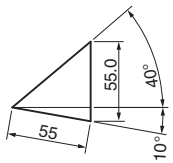
FOR PIERCING

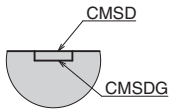
CMSD52-10-55
CMSDG52-10-55

CAD FILE

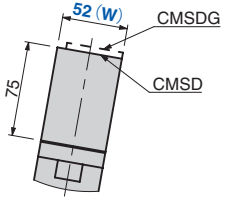


● Cam Diagram





A:No key groove on CMSD Cam Driver.



Refer to page 15-16 for parts lists.

Working Force kN (tonf)		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ	Stroke S	Spring Type PS
Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load						
19.6 (2.0)	39.2 (4.0)	85.3 (8.7)	606.7 (62.1)	19.4	CMSD	52	10	55	No Code (Coil Spring)
39.2 (4.0)	58.8 (6.0)	—	2465.0 (251.5)	20.1	CMSDG	52	10	55	GK NGK GD NGD

No Code:Coil Spring GK:Gas Spring(KALLER) GD:Gas Spring(DADCO)
NGK/NGD:Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W		θ		S		PS		Option
CMSD	52	—	10	—	55				
CMSD	52	—	10	—	55				— SC5 — WC100
CMSDG	52	—	10	—	55	—	GK		— NF — SC10 — WC100 — K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
SC	Mounting surface length is extended from 0 to 65 mm (in increments of 1 mm).
WC	The width of the mounting surface is extended from 53 to 100 mm (in increments of 1 mm).
K	Key attached.

Refer to page 389 for the machining details of tapped holes and dowel pin holes for retainer mounting.
Refer to page 1 for key specification.

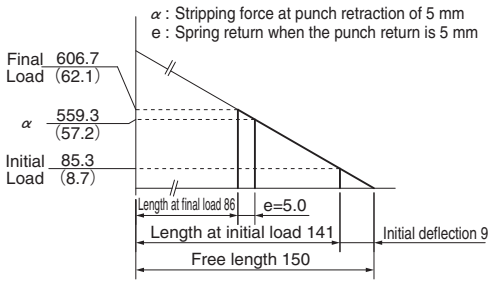
■Spring Specification

No.	PS	Model	Qty	Remark
	No Code	SWS26-150	1	Coil Spring
9	GK	X320-63-TD	1	Gas Spring(KALLER)
	GD	U.0325.063.TO	1	Gas Spring(DADCO)

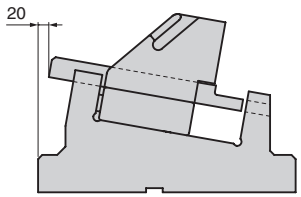
Gas filling pressure is 10 MPa.

■Spring Diagram (Stripping force at punch retraction of 5 mm)

- Spring used SWS26-150(1 piece)
- Spring constant 9.48 N/mm (0.97 kgf/mm)
- Guideline of spring durability 500,000 strokes



■Rear Removal Space



Cam Units

CMSD CMSDG 52

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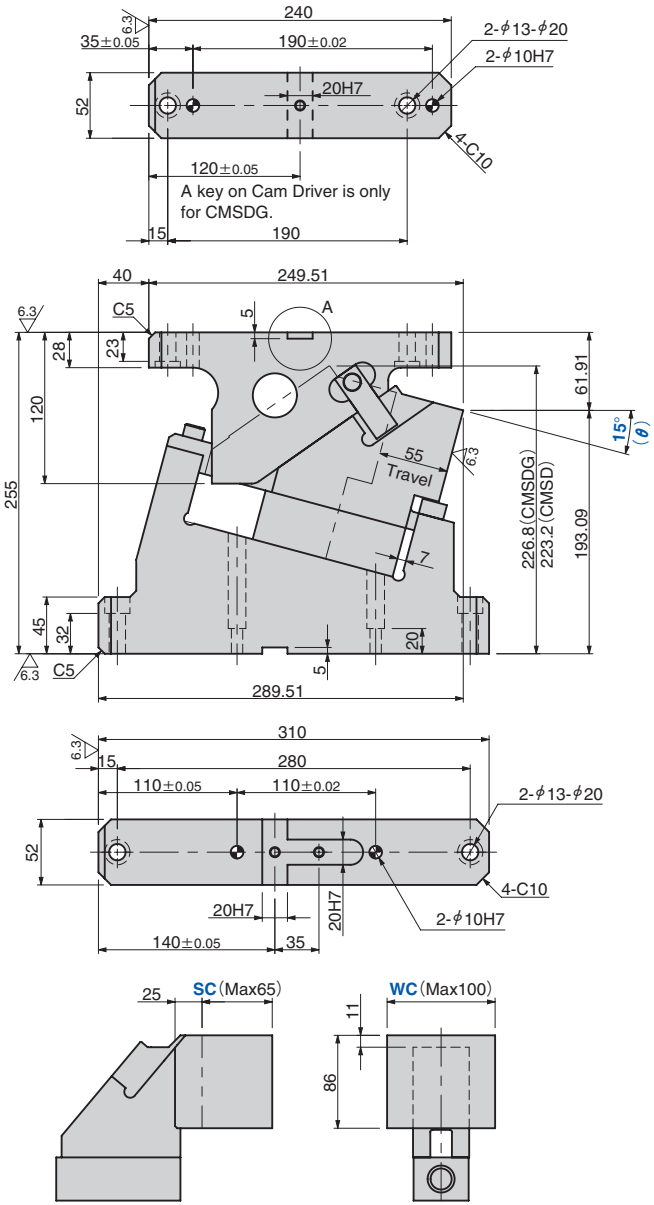
NEW Die Mounted Cam Unit

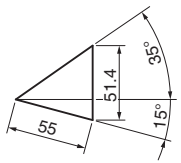
FOR PIERCING

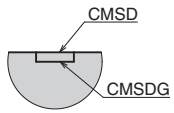
CMSD52-15-55
CMSDG52-15-55

CAD FILE

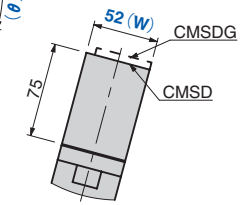


● Cam Diagram





A:No key groove on CMSD Cam Driver.



Refer to page 15-16 for parts lists.

Working Force kN (tonf)		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ	Stroke S	Spring Type PS
Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load						
19.6 (2.0)	39.2 (4.0)	85.3 (8.7)	606.7 (62.1)	20.0	CMSD	52	15	55	No Code (Coil Spring)
39.2 (4.0)	58.8 (6.0)	—	2465.0 (251.5)	20.7	CMSDG	52	15	55	GK NGK GD NGD

No Code:Coil Spring GK:Gas Spring (KALLER) GD:Gas Spring (DADCO)
NGK/NGD:Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W		θ		S		PS		Option
CMSD	52	—	15	—	55				
CMSD	52	—	15	—	55				— SC5 — WC100
CMSDG	52	—	15	—	55	—	GK		— NF — SC10 — WC100 — K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
SC	Mounting surface length is extended from 0 to 65 mm (in increments of 1 mm).
WC	The width of the mounting surface is extended from 53 to 100 mm (in increments of 1 mm).
K	Key attached.

Refer to page 389 for the machining details of tapped holes and dowel pin holes for retainer mounting.
Refer to page 1 for key specification.

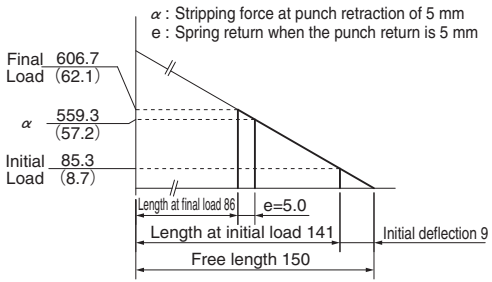
■Spring Specification

No.	PS	Model	Qty	Remark
	No Code	SWS26-150	1	Coil Spring
9	GK	X320-63-TD	1	Gas Spring (KALLER)
	GD	U.0325.063.TO	1	Gas Spring (DADCO)

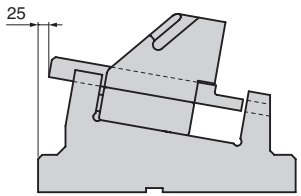
Gas filling pressure is 10 MPa.

■Spring Diagram (Stripping force at punch retraction of 5 mm)

- Spring used SWS26-150 (1 piece)
- Spring constant 9.48 N/mm (0.97 kgf/mm)
- Guideline of spring durability 500,000 strokes



■Rear Removal Space

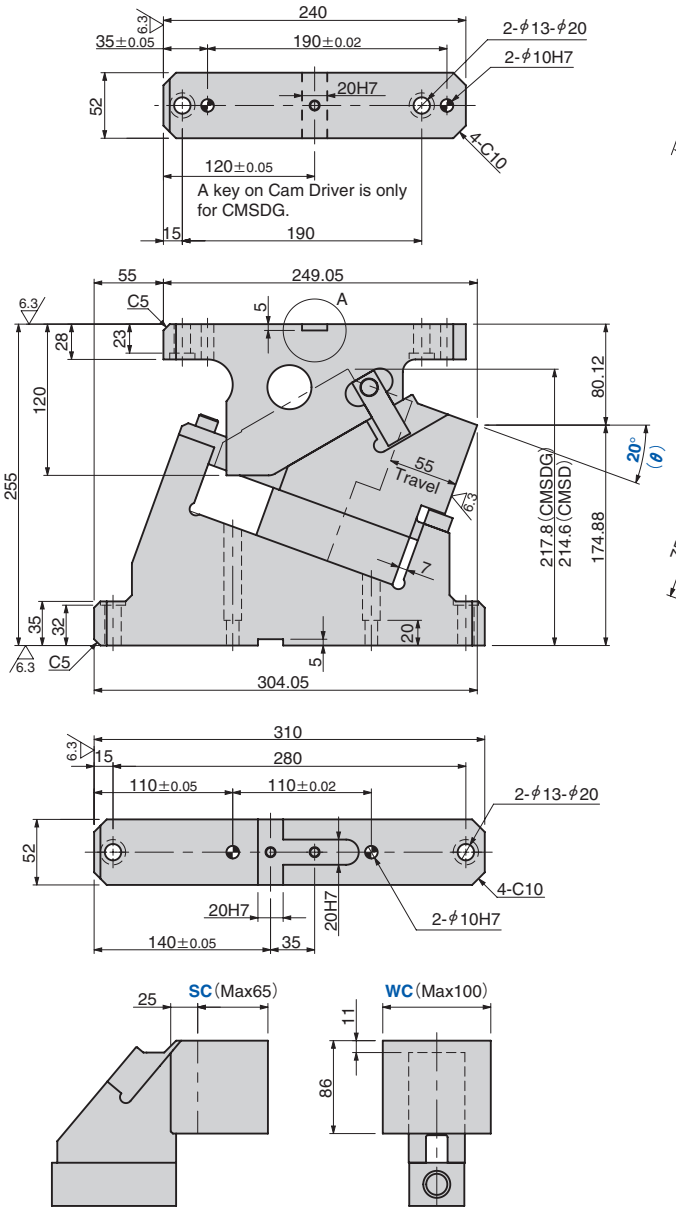


NEW Die Mounted Cam Unit

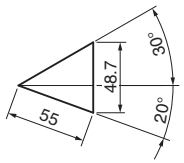
FOR PIERCING

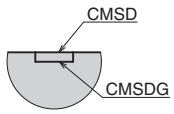
CMSD52-20-55
CMSDG52-20-55

CAD FILE

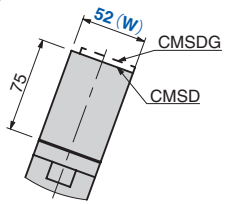


● Cam Diagram





A:No key groove on CMSD Cam Driver.



Refer to page 15-16 for parts lists.

Working Force kN (tonf)		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ	Stroke S	Spring Type PS
Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load						
19.6 (2.0)	39.2 (4.0)	85.3 (8.7)	606.7 (62.1)	19.5	CMSD	52	20	55	No Code (Coil Spring)
39.2 (4.0)	58.8 (6.0)	—	2465.0 (251.5)	20.3	CMSDG	52	20	55	GK NGK GD NGD

No Code:Coil Spring GK:Gas Spring (KALLER) GD:Gas Spring (DADCO)
NGK/NGD:Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W		θ		S		PS		Option
CMSD	52	–	20	–	55				
CMSD	52	–	20	–	55				– SC5 – WC100
CMSDG	52	–	20	–	55	–	GK		– NF – SC10 – WC100 – K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
SC	Mounting surface length is extended from 0 to 65 mm (in increments of 1 mm).
WC	The width of the mounting surface is extended from 53 to 100 mm (in increments of 1 mm).
K	Key attached.

Refer to page 389 for the machining details of tapped holes and dowel pin holes for retainer mounting.
Refer to page 1 for key specification.

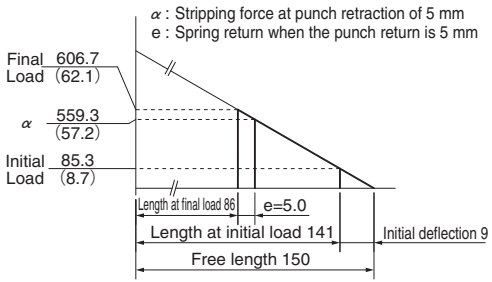
■Spring Specification

No.	PS	Model	Qty	Remark
	No Code	SWS26-150	1	Coil Spring
9	GK	X320-63-TD	1	Gas Spring (KALLER)
	GD	U.0325.063.TO	1	Gas Spring (DADCO)

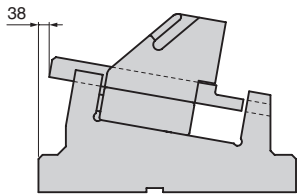
Gas filling pressure is 10 MPa.

■Spring Diagram (Stripping force at punch retraction of 5 mm)

- Spring used SWS26-150 (1 piece)
- Spring constant 9.48 N/mm (0.97 kgf/mm)
- Guideline of spring durability 500,000 strokes



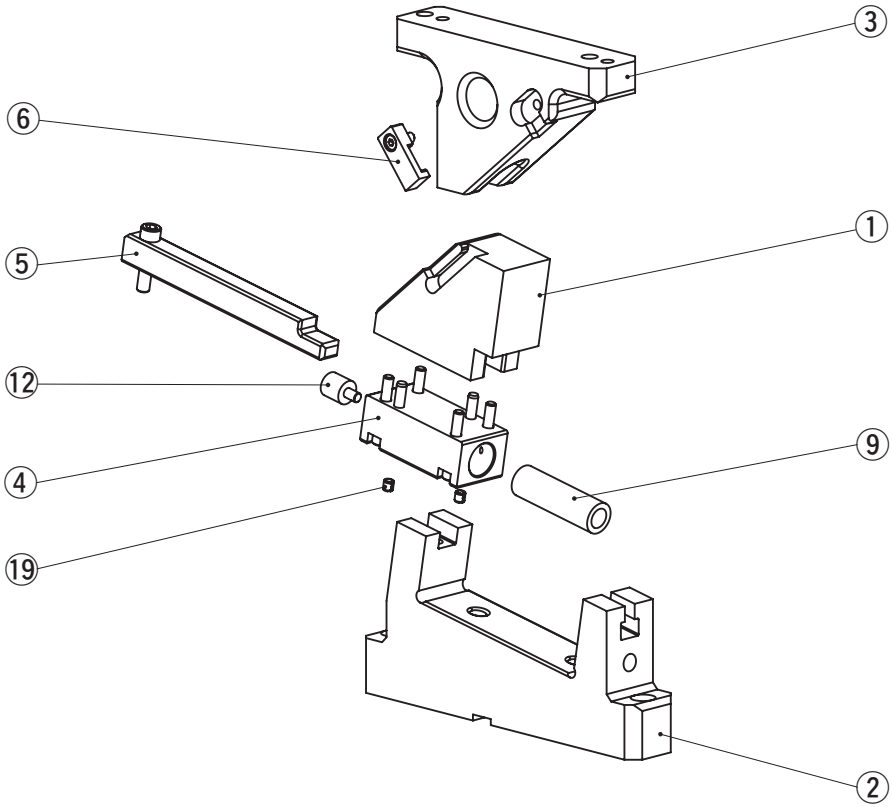
■Rear Removal Space



NEW Die Mounted Cam Unit

FOR PIERCING

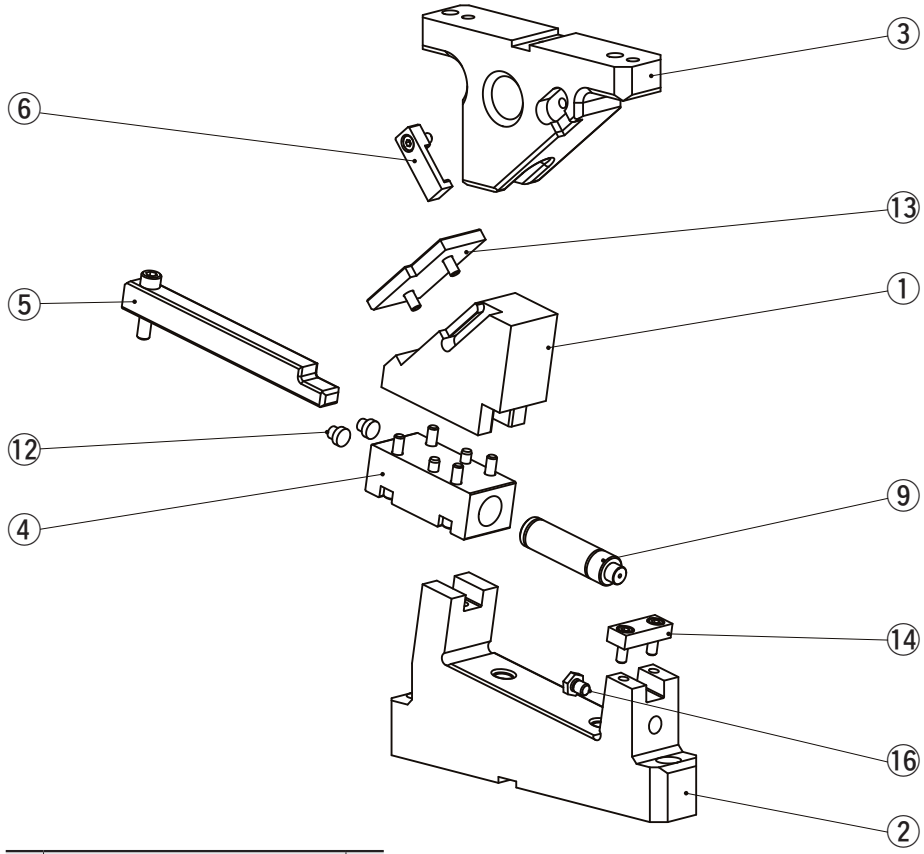
CMSD52



No.	Description	Qty
1	Cam Slider	1
2	Cam Holder	1
3	Cam Driver	1
4	Cam Lower Slider	1
5	Guide Bar	1
6	Positive Return Follower	1
9	Coil Spring	1
12	Stopper	1
19	Spring Plug	2

Bolts, nuts, dowel pins and washers for assembly are not indicated.

CMSDG52



No.	Description	Qty
1	Cam Slider	1
2	Cam Holder	1
3	Cam Driver	1
4	Cam Lower Slider	1
5	Guide Bar	1
6	Positive Return Follower	1
9	Gas Spring	1
12	Stopper	2
13	Wear Plate	1
14	Block	1
16	Stop Pin	1

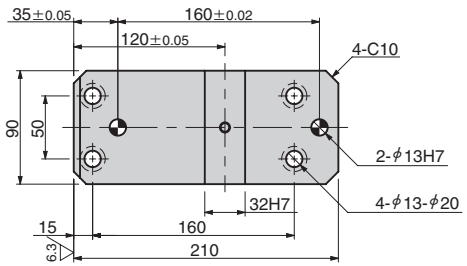
Bolts, nuts, dowel pins and washers for assembly are not indicated.

NEW Die Mounted Cam Unit

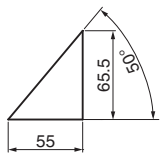
FOR PIERCING

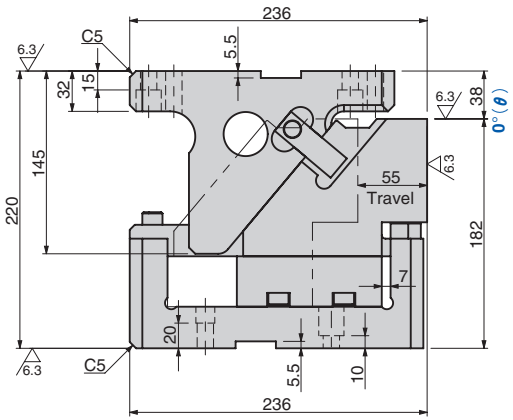
CMSD90-00-55
CMSDG90-00-55

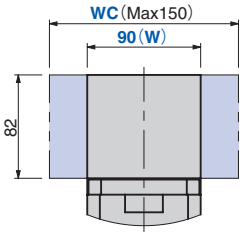
CAD FILE

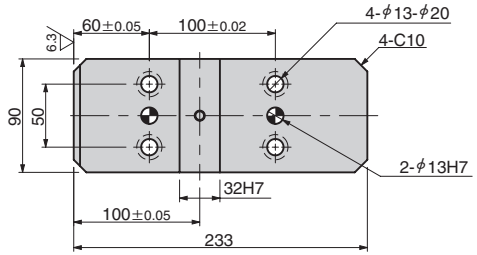


● Cam Diagram









Working Force kN (tonf)		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ	Stroke S	Spring Type PS
Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load						
38.2 (3.9)	76.4 (7.8)	170.6 (17.5)	1213.4 (124.2)	24.9	CMSD	90	00	55	No Code (Coil Spring)
58.8 (6.0)	88.2 (9.0)	—	4590.0 (468.4)	25.8	CMSDG	90	00	55	GK NGK GD NGD

No Code:Coil Spring GK:Gas Spring(KALLER) GD:Gas Spring(DADCO)
NGK/NGD:Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W		θ		S		PS		Option
CMSD	90	—	00	—	55				
CMSD	90	—	00	—	55				— WC150 — N12 — K
CMSDG	90	—	00	—	55	—	GK		— NF — WC100 — K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
WC	The width of the mounting surface is extended from 91 to 150 mm (in increments of 1 mm).
N12	Dowel pin holes of cam holder and cam driver are changed to φ12H7.
K	Key attached.

Refer to page 389 for the machining details of tapped holes and dowel pin holes for retainer mounting.
Refer to page 1 for key specification.

■Spring Specification

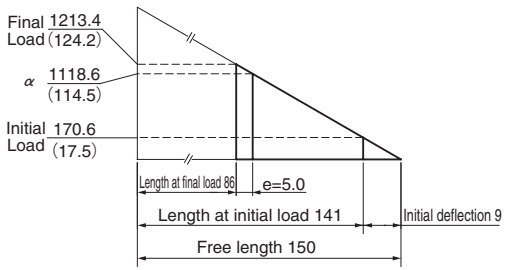
No.	PS	Model	Qty	Remark
	No Code	SWS26-150	2	Coil Spring
9	GK	X320-63-TD	1	Gas Spring(KALLER)
	GD	U.0325.063.TO	1	Gas Spring(DADCO)

Gas filling pressure is 18 MPa.

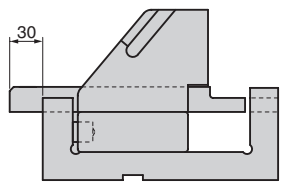
■Spring Diagram (Stripping force at punch retraction of 5 mm)

- Spring used SWS26-150 (2 pieces)
- Spring constant 9.48 N/mm (0.97 kgf/mm)
- Guideline of spring durability 500,000 strokes

α : Stripping force at punch retraction of 5 mm
e : Spring return when the punch return is 5 mm



■Rear Removal Space



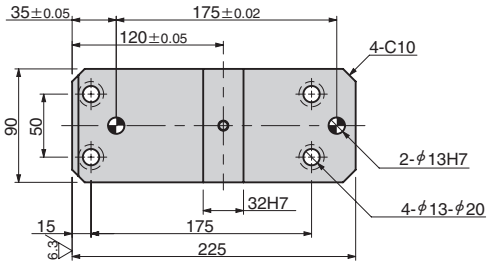
Refer to page 25-26 for parts lists.

NEW Die Mounted Cam Unit

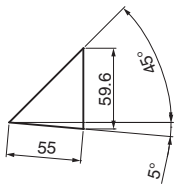
FOR PIERCING

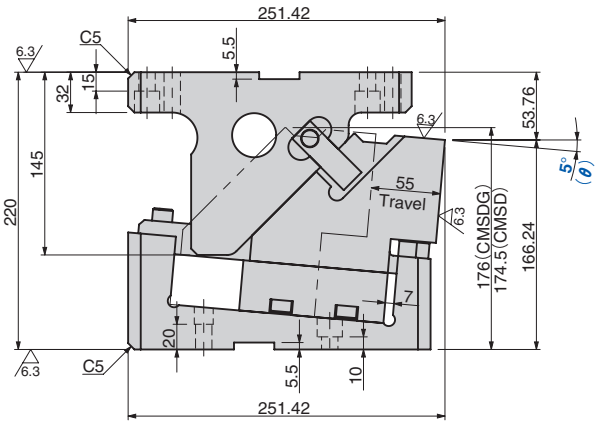
CMSD90-05-55
CMSDG90-05-55

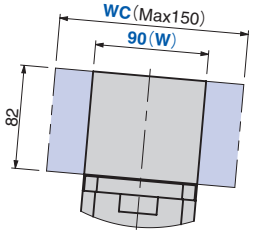
CAD FILE

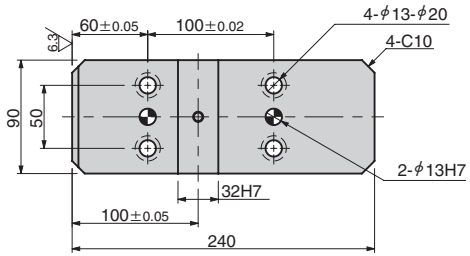


● Cam Diagram









Refer to page 25-26 for parts lists.

Working Force kN (tonf)		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ	Stroke S	Spring Type PS
Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load						
38.2 (3.9)	76.4 (7.8)	170.6 (17.5)	1213.4 (124.2)	25.9	CMSD	90	05	55	No Code (Coil Spring)
58.8 (6.0)	88.2 (9.0)	—	4590.0 (468.4)	26.9	CMSDG	90	05	55	GK NGK GD NGD

No Code:Coil Spring GK:Gas Spring(KALLER) GD:Gas Spring(DADCO)
NGK/NGD:Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W		θ		S		PS		Option
CMSD	90	–	05	–	55				
CMSD	90	–	05	–	55			–	WC150 – N12 – K
CMSDG	90	–	05	–	55	–	GK	–	NF – WC100 – K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
WC	The width of the mounting surface is extended from 91 to 150 mm (in increments of 1 mm).
N12	Dowel pin holes of cam holder and cam driver are changed to φ12H7.
K	Key attached.

Refer to page 389 for the machining details of tapped holes and dowel pin holes for retainer mounting.
Refer to page 1 for key specification.

■Spring Specification

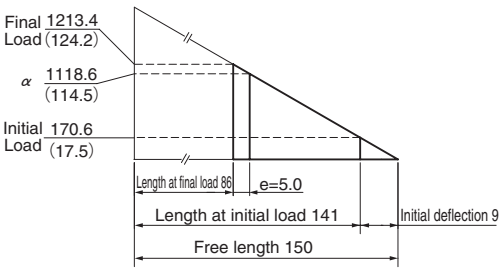
No.	PS	Model	Qty	Remark
	No Code	SWS26-150	2	Coil Spring
9	GK	X320-63-TD	1	Gas Spring(KALLER)
	GD	U.0325.063.TO	1	Gas Spring(DADCO)

Gas filling pressure is 18 MPa.

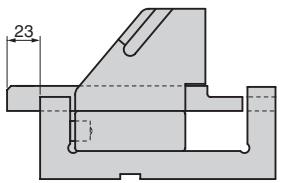
■Spring Diagram (Stripping force at punch retraction of 5 mm)

- Spring used SWS26-150 (2 pieces)
- Spring constant 9.48 N/mm (0.97 kgf/mm)
- Guideline of spring durability 500,000 strokes

α : Stripping force at punch retraction of 5 mm
e : Spring return when the punch return is 5 mm



■Rear Removal Space

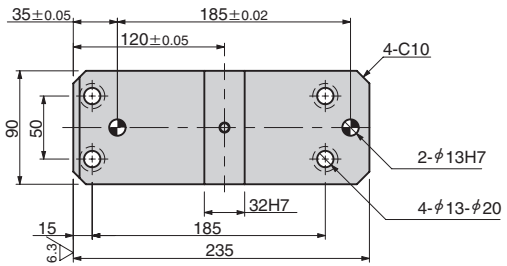


NEW Die Mounted Cam Unit

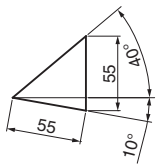
FOR PIERCING

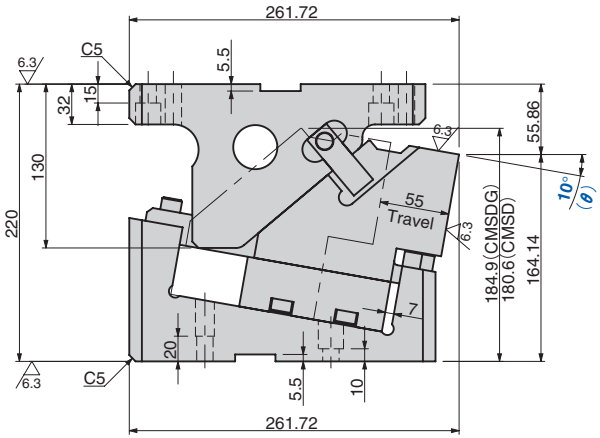
CMSD90-10-55
CMSDG90-10-55

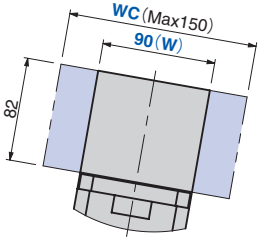
CAD FILE

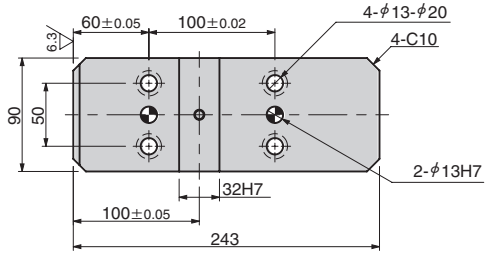


● Cam Diagram









Refer to page 25-26 for parts lists.

Working Force kN (tonf)		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ	Stroke S	Spring Type PS
Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load						
38.2 (3.9)	76.4 (7.8)	170.6 (17.5)	1213.4 (124.2)	27.3	CMSD	90	10	55	No Code (Coil Spring)
58.8 (6.0)	88.2 (9.0)	—	4590.0 (468.4)	28.4	CMSDG	90	10	55	GK NGK GD NGD

No Code:Coil Spring GK:Gas Spring(KALLER) GD:Gas Spring(DADCO)
NGK/NGD:Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W		θ		S		PS		Option
CMSD	90	—	10	—	55				
CMSD	90	—	10	—	55				— WC150 — N12 — K
CMSDG	90	—	10	—	55	—	GK		— NF — WC100 — K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
WC	The width of the mounting surface is extended from 91 to 150 mm (in increments of 1 mm).
N12	Dowel pin holes of cam holder and cam driver are changed to φ12H7.
K	Key attached.

Refer to page 389 for the machining details of tapped holes and dowel pin holes for retainer mounting.
Refer to page 1 for key specification.

■Spring Specification

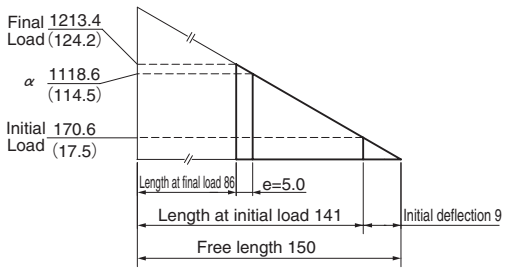
No.	PS	Model	Qty	Remark
	No Code	SWS26-150	2	Coil Spring
9	GK	X320-63-TD	1	Gas Spring(KALLER)
	GD	U.0325.063.TO	1	Gas Spring(DADCO)

Gas filling pressure is 18 MPa.

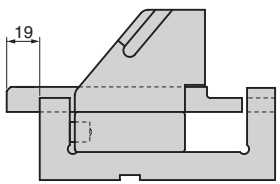
■Spring Diagram (Stripping force at punch retraction of 5 mm)

- Spring used SWS26-150 (2 pieces)
- Spring constant 9.48 N/mm (0.97 kgf/mm)
- Guideline of spring durability 500,000 strokes

α : Stripping force at punch retraction of 5 mm
e : Spring return when the punch return is 5 mm



■Rear Removal Space

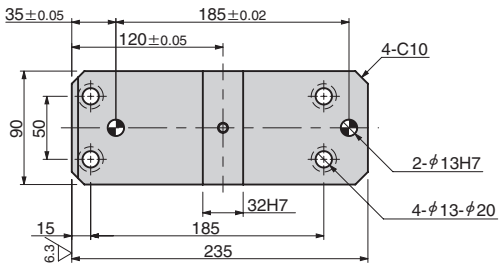


NEW Die Mounted Cam Unit

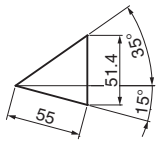
FOR PIERCING

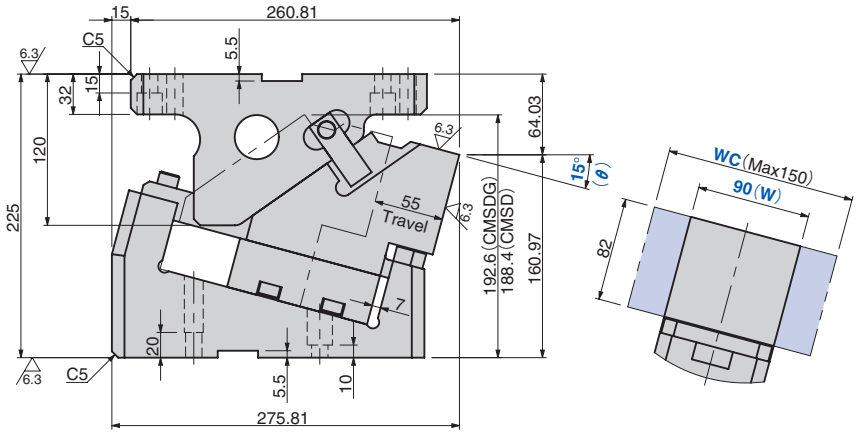
CMSD90-15-55
CMSDG90-15-55

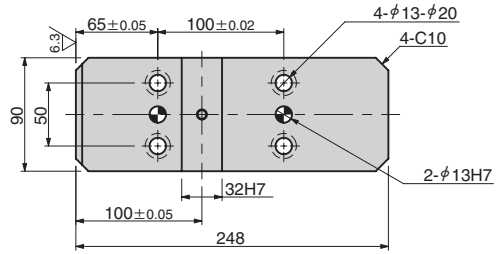
CAD FILE



● Cam Diagram







Refer to page 25-26 for parts lists.

Working Force kN (tonf)		Spring Force N (kgf)		Total Weight kg	Catalog No.	W	θ	Stroke S	Spring Type PS
Standard Working Force 1,000,000 strokes	Allowable Working Force 300,000 strokes	Initial Load	Final Load						
38.2 (3.9)	76.4 (7.8)	170.6 (17.5)	1213.4 (124.2)	29.3	CMSD	90	15	55	No Code (Coil Spring)
58.8 (6.0)	88.2 (9.0)	—	4590.0 (468.4)	29.7	CMSDG	90	15	55	GK NGK GD NGD

No Code:Coil Spring GK:Gas Spring (KALLER) GD:Gas Spring (DADCO)
NGK/NGD:Without Gas Spring Parts for spring assembly are included.

Order

Catalog No.	W	—	θ	—	S	—	PS	—	Option
CMSD	90	—	15	—	55				
CMSD	90	—	15	—	55			—	WC150 — N12 — K
CMSDG	90	—	15	—	55	—	GK	—	NF — WC100 — K

Option

Option Code	Specification
NF	Nitrogen gas not charged.
WC	The width of the mounting surface is extended from 91 to 150 mm (in increments of 1 mm).
N12	Dowel pin holes of cam holder and cam driver are changed to φ12H7.
K	Key attached.

Refer to page 389 for the machining details of tapped holes and dowel pin holes for retainer mounting.
Refer to page 1 for key specification.

■Spring Specification

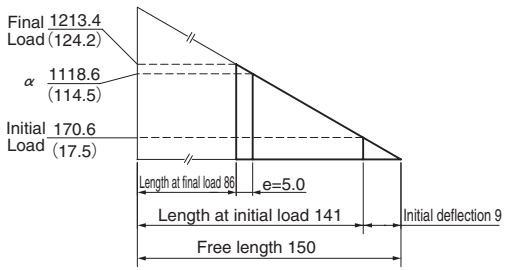
No.	PS	Model	Qty	Remark
	No Code	SWS26-150	2	Coil Spring
9	GK	X320-63-TD	1	Gas Spring (KALLER)
	GD	U.0325.063.TO	1	Gas Spring (DADCO)

Gas filling pressure is 18 MPa.

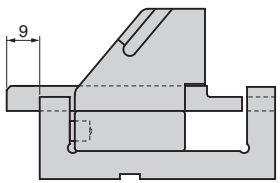
■Spring Diagram (Stripping force at punch retraction of 5 mm)

- Spring used SWS26-150 (2 pieces)
- Spring constant 9.48 N/mm (0.97 kgf/mm)
- Guideline of spring durability 500,000 strokes

α : Stripping force at punch retraction of 5 mm
e : Spring return when the punch return is 5 mm



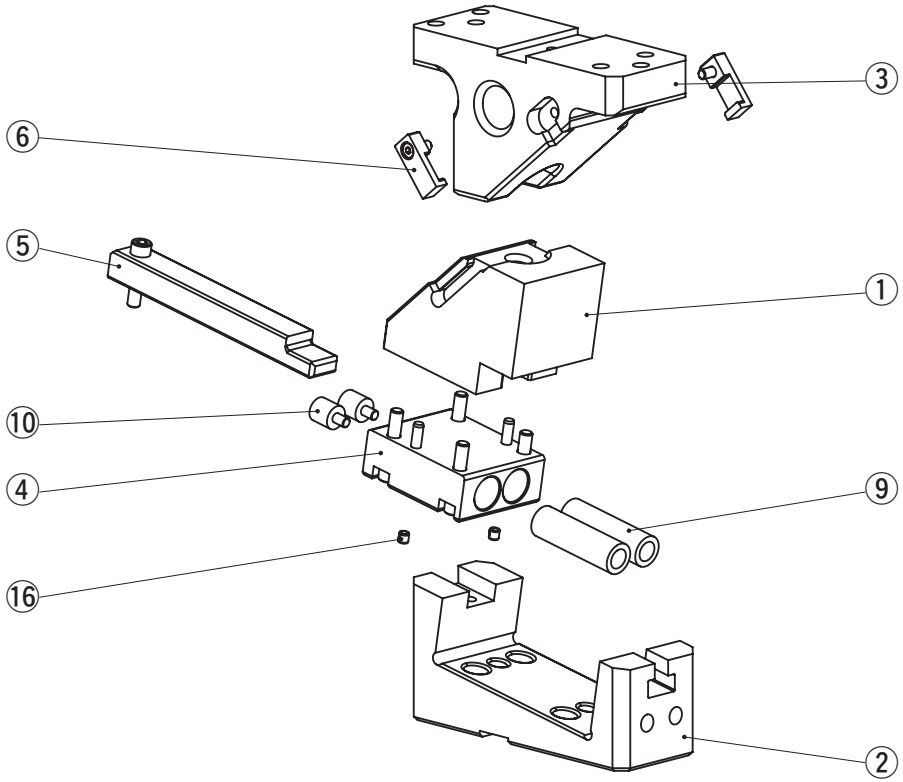
■Rear Removal Space



NEW Die Mounted Cam Unit

FOR PIERCING

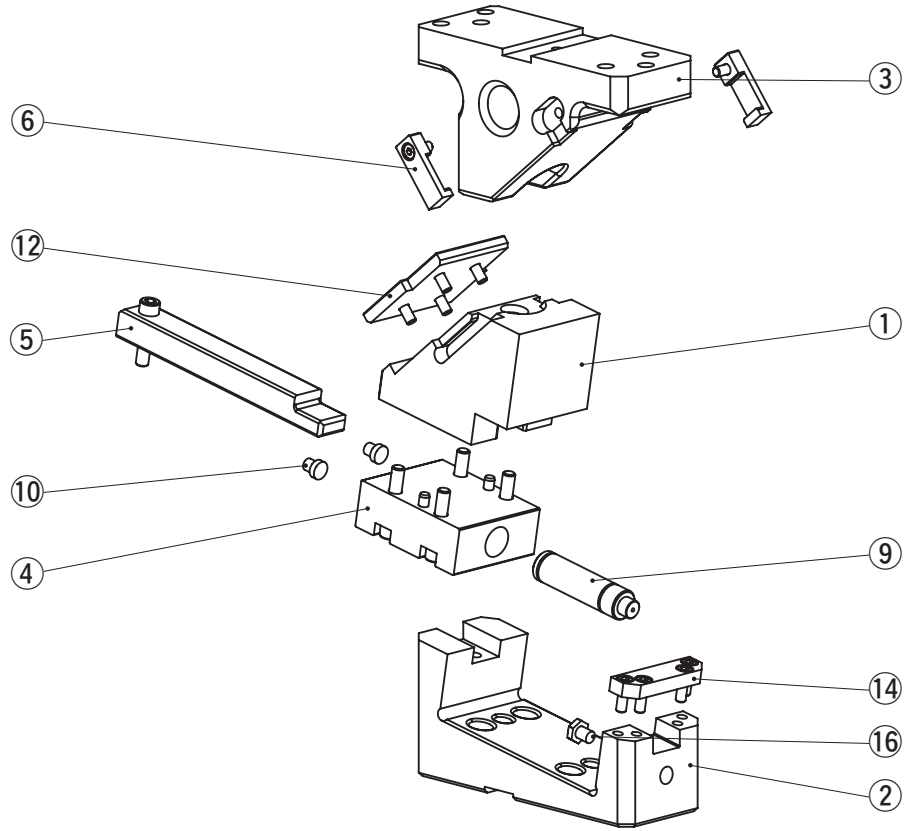
CMSD90



No.	Description	Qty
1	Cam Slider	1
2	Cam Holder	1
3	Cam Driver	1
4	Cam Lower Slider	1
5	Guide Bar	1
6	Positive Return Follower	2
9	Coil Spring	2
10	Stopper	2
16	Spring Plug	2

Bolts, nuts, dowel pins and washers for assembly are not indicated.

CMSDG90



No.	Description	Qty
1	Cam Slider	1
2	Cam Holder	1
3	Cam Driver	1
4	Cam Lower Slider	1
5	Guide Bar	1
6	Positive Return Follower	2
9	Gas Spring	1
10	Stopper	2
12	Wear Plate	1
14	Block	1
16	Stop Pin	1

Bolts, nuts, dowel pins and washers for assembly are not indicated.

General Description of Additional Machining

AERIAL CAM UNIT OPTION

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

- Instruction method for machining

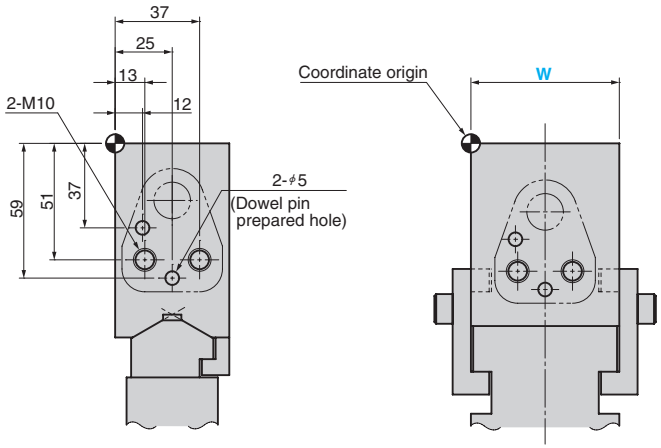
  Indicate the tapped hole diameter and the dowel pin hole (or prepared hole) diameter with the XY coordinates.

- To indicate the coordinates
  - The origin is positioned at the upper left corner of the mount surface. (However, machining uses our machining datum as the reference.)
  - Indication symbol

    M…Tapped hole, K…Dowel pin prepared hole, N…Dowel pin finish hole

- Machining standard
  - Tapped holes and dowel pin 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 pin hole spacing is machined to the tolerance of ±0.02.The hole tolerance is H7.

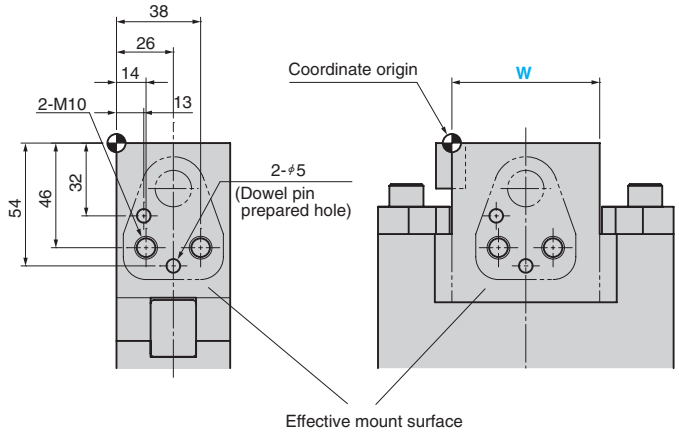
(Example of aerial cam)



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)

(Example of die mounted 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.