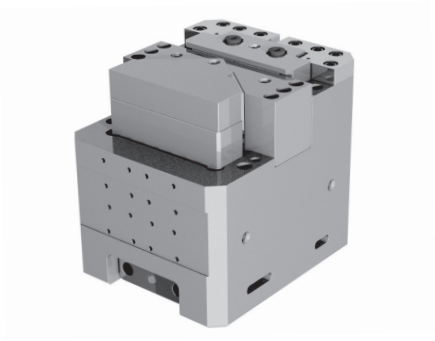
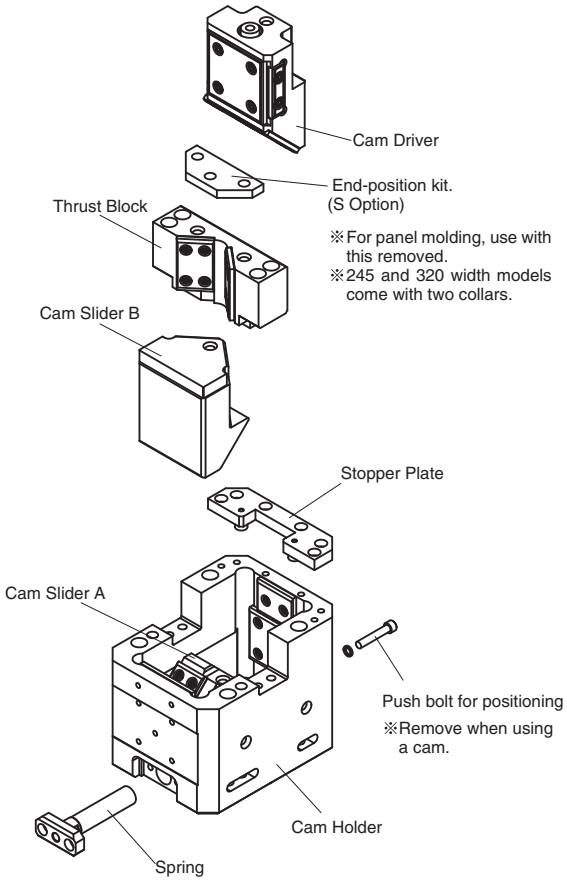
Counter Cam Unit General Description of CTCS / CTVS

THRUST BLOCK TYPE

The counter cam unit CTCS and CTVS series are the optimum cam units for bending panels upward. There are 8 variations available; regular / robust type and 4 different widths.



■ Structure and features of counter cam unit

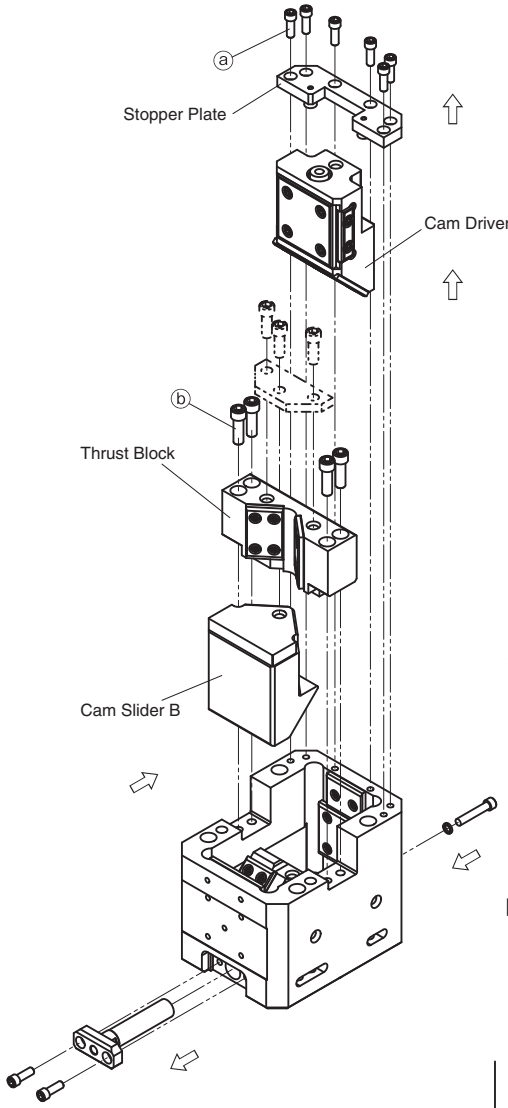


- Robust structure integrated into the casting is applied.
- The highly rigid type is reinforcing the backup wall of cam slider B. It is not necessary to machine the die for backup.
- V-shaped cam slider B is highly resistant to the reaction force on the side. (145/245/320 mm wide only)
- Urethane stopper for shock absorption are provided on the stopper plate to prevent direct force on the screws.
- The thrust block is installed as the stopper of cam slider B. This stopper block could prevent the cam slider B from lifting up over the specified stroke.
- A thread hole is drilled so that a pushing bolt for the end-position kit could be installed.

⚠ How to handle the Gas Spring

- If you are planning to use any other gas springs than the ones Sankyo recommends, please let us know first.
- For the handling of the gas spring you have/use, including the maintenance of it on a standalone basis, please contact the gas spring manufacturer from where you purchased.

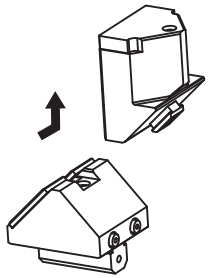
■ Structure and Assembly / Disassembly of CTCS / CTVS



● Disassembly method of CTCS and CTVS

1) Loosen hexagon socket head bolt (ⓐ) and remove stopper plate.
2) Pull and remove cam driver upward.
3) Remove hexagon socket head bolt (ⓑ) and remove thrust block.
4) Slide cam slider B with positive return obliquely upward and remove it. (See the figure below.)

(In the same way, slide cam slider B diagonally from above to assemble.)

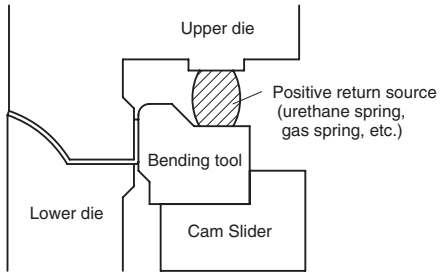


● Assembly method of CTCS / CTVS

1)Assemble components in the reverse order of disassembly.
- Make sure that there is no foreign matter on the sliding area and assemble components.
- When cam is disassembled and then reassembled,please do not forget to assemble all bolts provided.

■ For Operation

In order to make the counter cam unit correctly track the up-down motion of the press, use a return assist pressure source (urethane spring, gas spring, etc.) (See the figure below.)



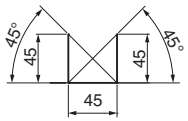
Counter Cam Unit

SPECIAL CAM UNIT

CAD FILE

CTCS120-45 (Regular Type)
CTCH120-45 (Highly Rigid Type)

■Cam Diagram

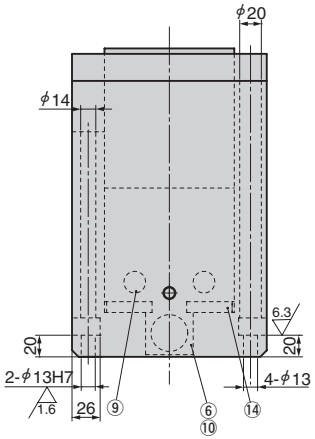


■ Spring Specification

Spring PS	Spring Force N(kgf)	
	Initial Load	Final Load
ISO	330 (33.7)	1815 (185.1)
GK	—	2072 (211.3)

Option

Option Code	Specification
S	End-position kit is included
N12	Dowel pin holes of holder are changed to ϕ12H7.
NF	Nitrogen gas not charged.



■ Specification

Catalog No.	J	K	L
CTCS	25	35	290
CTCH	35	45	300

Working Force kN(tonf) Standard Working Force kN(tonf) (1,000,000 strokes)	Spring Force	Total Weight kg	Catalog No.	W	Travel S	Spring Type PS*	
29.4 (3.0)	Refer to the table on the following page.	88.0	CTCS CTCH	120	45	ISO • GK	NISO • NGK

※ ISO：Coil spring
GK：Gas spring (KALLER)
NISO/NGK：without spring　Parts for spring assembly are included.

Order

Catalog No.	W	—	S	—	PS	
CTCS	120	—	45	—	ISO	
CTCH	120	—	45	—	GK	— NF

* Use gas spring filling pressure of 7MPa or less to avoid damage to components.

* For the spring specification, refer to the above and below.
- ISO…TJM32-178, Spring constant 33N (3.37kgf) /mm
  Guideline of spring durability 1,000,000 strokes
- GK …X350-80-7.0.MPa

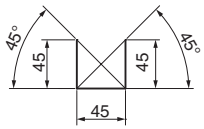
Counter Cam Unit

SPECIAL CAM UNIT

CAD FILE

CTVS145－45 (Regular Type)
CTVH145－45 (Highly Rigid Type)

■Cam diagram

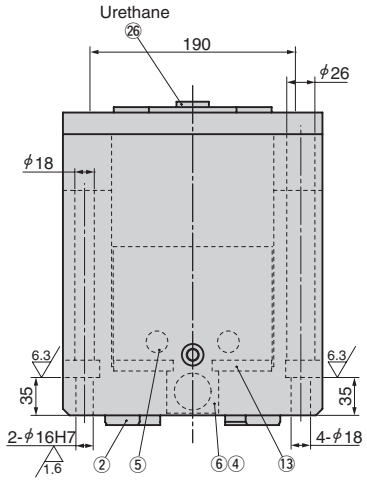


■ Spring Specification

Spring PS	Spring Force N(kgf)	
	Initial Load	Final Load
ISO	330 (33.7)	1815 (185.1)
GK	—	2072 (211.3)

Option

Option Code	Specification
S	End-position kit is included
NF	Nitrogen gas not charged.



■ Specification

Catalog No.	J	K	L
CTVS	25	35	305
CTVH	40	50	320

Working Force kN(tonf) Standard Working Force kN(tonf) (1,000,000 strokes)	Spring Force	Total Weight kg	Catalog No.	W	Travel S	Spring Type PS*	
73.5 (7.5)	Refer to the table on the following page.	124.0	CTVS CTVH	145	45	ISO • GK	NISO • NGK

※ ISO：Coil spring
GK：Gas spring (KALLER)
NISO/NGK：without spring　Parts for spring assembly are included.

Order

Catalog No.	W	—	S	—	PS
CTVS	145	—	45	—	ISO
CTVH	145	—	45	—	GK — NF

* Use gas spring filling pressure of 7MPa or less to avoid damage to components.

* For the spring specification, refer to the above and below.
- ISO…TJM32-178, Spring constant 33N (3.37kgf) /mm
  Guideline of spring durability 1,000,000 strokes
- GK …X350-80-7.0.MPa

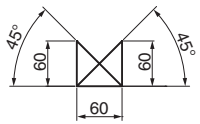
Counter Cam Unit

SPECIAL CAM UNIT

CAD FILE

CTVS245-60 (Regular Type)
CTVH245-60 (Highly Rigid Type)

■Cam Diagram

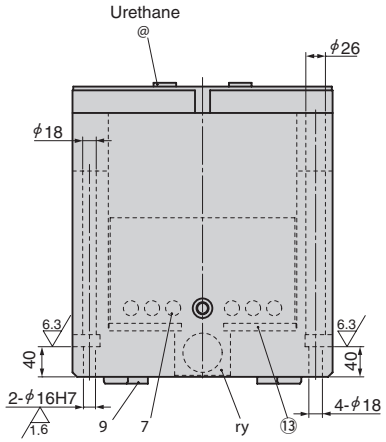


■ Spring Specification

Spring PS	Spring Force N(kgf)	
	Initial Load	Final Load
ISO	582 (59.3)	4074 (415.4)
GK	—	4691 (478.3)

Option

Option Code	Specification
S	End-position kit is included
NF	Nitrogen gas not charged.



■ Specification

Catalog No.	J	K	L
CTVS	35	45	390
CTVH	55	65	410

Working Force kN(tonf) / Standard Working Force kN(tonf) (1,000,000 strokes)	Spring Force	Total Weight kg	Catalog No.	W	Travel S	Spring Type PS*	
117.6 (12.0)	Refer to the table on the following page.	295.0	CTVS CTVH	245	60	ISO • GK	NISO • NGK

※ ISO：Coil spring
GK：Gas spring (KALLER)
NISO/NGK：without spring　Parts for spring assembly are included.

Order

Catalog No.	W	—	S	—	PS
CTVS	245	—	60	—	ISO
CTVH	245	—	60	—	GK — NF

* Use gas spring filling pressure of 7MPa or less to avoid damage to components.

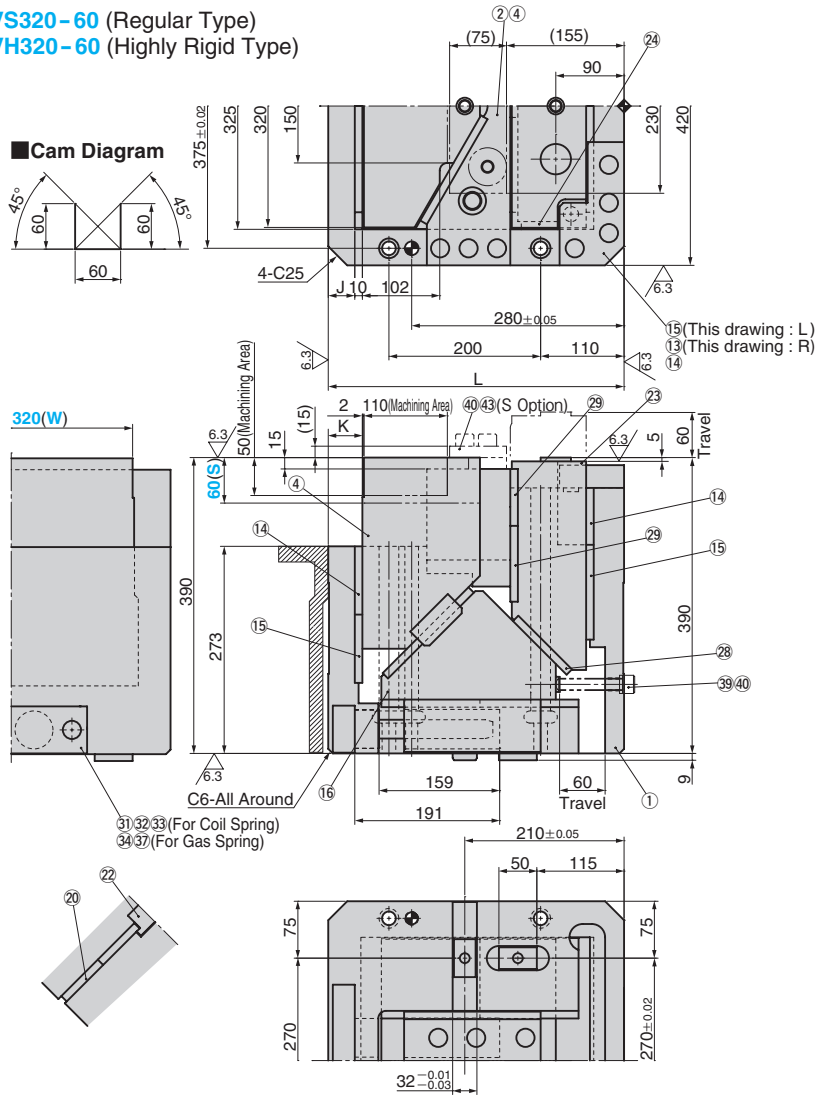
* For the spring specification, refer to the above and below.
- ISO…TJM50-229, Spring constant 58.2N (5.93kgf) /mm
  Guideline of spring durability 1,000,000 strokes
- GK …K750-100-7.0MPa

Counter Cam Unit

SPECIAL CAM UNIT

CAD FILE

CTVS320－60 (Regular Type)
CTVH320－60 (Highly Rigid Type)

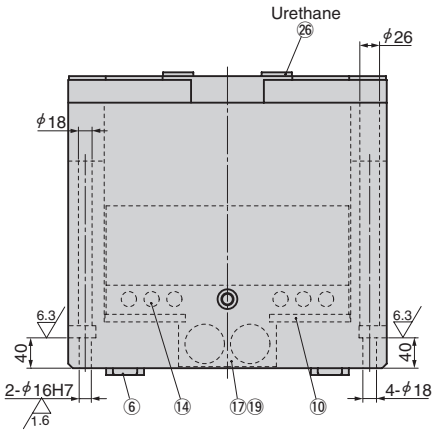


■ **Spring Specification**

Spring PS	Spring Force N(kgf)	
	Initial Load	Final Load
ISO	1164 (118.7)	8148 (830.9)
GK	—	9382 (956.7)

Option

Option Code	Specification
S	End-position kit is included
NF	Nitrogen gas not charged.



■ **Specification**

Catalog No.	J	K	L
CTVS	35	45	390
CTVH	55	65	410

Working Force kN(tonf) / Standard Working Force kN(tonf) (1,000,000 strokes)	Spring Force	Total Weight kg	Catalog No.	W	Travel S	Spring Type PS*	
156.8 (16.0)	Refer to the table on the following page.	362.0	CTVS CTVH	320	60	ISO • GK	NISO • NGK

※ ISO：Coil spring
GK：Gas spring (KALLER)
NISO/NGK：without spring　Parts for spring assembly are included.

Order

Catalog No.	W	—	S	—	PS
CTVS	320	—	60	—	ISO
CTVH	320	—	60	—	GK — NF

* Use gas spring filling pressure of 7MPa or less to avoid damage to components.

* For the spring specification, refer to the above and below.
- ISO…TJM50-229, Spring constant 58.2N (5.93kgf) /mm 2 pieces
  Guideline of spring durability 1,000,000 strokes
- GK …K750-100-7.0.MPa 2 pieces

■Table of Components

■CTCS120, CTCH120
・ST=45

No.	Description	Qty Coil Spring	Qty Gas Spring	Material and Remark
①	Cam Driver	1		FC250 with Graphite
②	Cam Holder	1		FCD550
③	Cam Slider A	1		FC250 with Graphite
④	Cam Slider B	1		FC250 with Graphite
⑤	Cam Positive Return	1		Bronze
⑥	Spring Guide Block	1		Bronze with Graphite
⑦	Stopper Plate	1		S45C(1045)
⑧	Thrust Block	1		Bronze with Graphite
⑨	Urethane Stopper	4		Urethane
⑩	Spring Stopper	1		S45C(1045)
⑪	Wear Plate	1		S45C Copper Powder Sintered
⑫	Wear Plate	1		S45C Copper Powder Sintered
⑬	Wear Plate	1		Bronze with Graphite
⑭	Wear Plate	4		S45C Copper Powder Sintered
⑮	Wear Plate	2		S45C Copper Powder Sintered
㉑	Spacer	1		SK5
㉒	Locate Cap Bolt	1		M12×68
㉓	Spring Stopper A	1	-	S45C(1045)
	Spring Stopper B	-	1	S45C(1045)
㉔	Spring Guide Pin	1	-	S45C(1045) HQI-HT
㉕	Coil Spring	1	-	TJM32-178
	Gas Spring	-	1	X350-80-7.0MPa
㉗	Locking Plate(S Option)	1		S45C(1045)

※ When springs are GK, there are three ㉓ Spring stopper Bs per spring.

⚠ Bolts for assembly are not indicated.

■CTVS145, CTVH145
・ST=45

No.	Description	Qty Coil Spring	Qty Gas Spring	Material and Remark
①	Cam Holder	1		FCD550
②	Key	4		SS400(1020)
④	Stopper Plate	1		S45C(1045)
⑤	Ureathane Stopper A	4		Urethane
⑦	Thrust Block	1		Bronze with Graphite
⑨	Wear Plate E	4		Bronze with Graphite
⑪	Wear Plate A-1	1		Bronze with Graphite
⑫	Wear Plate A-2	1		Bronze with Graphite
⑬	Wear Plate B	2		Bronze with Graphite
⑭	Wear Plate C	1		Bronze with Graphite
⑮	Wear Plate D	1		Bronze with Graphite
⑯	Cam Slider A	1		FC250
⑰	Spring Guide Block	1		S45C(1045)
⑲	Spring Stopper	1		S45C(1045)
⑳	Cam Slider B	1		FC250
㉑	Cam Positive Return	1		S45C(1045)
㉓	Cam Driver	1		FC250
㉔	Wear Plate	2		S45C Copper Powder Sintered
㉖	Urethane Stopper B	1		Urethane
㉘	Wear Plate	1		S45C Copper Powder Sintered
㉙	Wear Plate F	1		Bronze with Graphite
㉚	Spring Stopper A	1	-	S45C(1045)
㉛	Coil Spring	1	-	TJM32-178
㉜	Spring Guide Pin	1	-	S45C(1045) HQI-HT
㉝	Spring Stopper B	-	1	S45C(1045)
㉞	Gas Spring	-	1	X350-80-7.0MPa
㊲	Locate Cap Bolt	1		M12×68
㊳	Spacer	1		S45C(1045)
㊴	Locking Plate(S Option)	1		S45C(1045)

※ When springs are GK, there are three ㉝ Spring stopper Bs per spring.

⚠ Bolts for assembly are not indicated.

■CTVS245, CTVH245
・ST=60

No.	Description	Qty Coil Spring	Qty Gas Spring	Material and Remark
①	Cam Holder	1		FCD550
②	Thrust Block	1		FCD550
④	Wear Plate E	4		Bronze with Graphite
⑥	Stopper Plate R	1		S45C(1045)
⑦	Urethane Stopper A	8		Urethane
⑧	Stopper Plate L	1		S45C(1045)
⑨	Key	4		SS400(1020)
⑪	Wear Plate A-1	2		Bronze with Graphite
⑫	Wear Plate A-2	2		Bronze with Graphite
⑬	Wear Plate B	4		Bronze with Graphite
⑭	Wear Plate C	2		Bronze with Graphite
⑮	Wear Plate D	2		Bronze with Graphite
⑯	Cam Slider A	1		FC250
⑰	Spring Guide Block	1		S45C(1045)
⑲	Spring Stopper	1		S45C(1045)
⑳	Wear Plate G	2		Bronze with Graphite
㉑	Cam Slider B	1		FC250
㉒	Cam Positive Return	1		S45C(1045)
㉓	Cam Driver	1		FC250
㉔	Urethane Stopper B	2		Urethane
㉖	Wear Plate	2		S45C Copper Powder Sintered
㉘	Wear Plate F	2		Bronze with Graphite
㉙	Wear Plate	2		S45C Copper Powder Sintered
㉚	Wear Plate	2		S45C Copper Powder Sintered
㉛	Spring Stopper A	1	-	S45C(1045)
㉜	Spring Guide Pin	1	-	S45C(1045) HQI-HT
㉝	Coil Spring	1	-	TJM50-229
㉞	Gas Spring	-	1	X750-100-7.0MPa
㊲	Spring Stopper B	-	1	S45C(1045)
㊴	Locate Cap Bolt	1		M16×88
㊵	Spacer	1		S45C(1045)
㊶	Locking Plate(S Option)	1		S45C(1045)
㊹	Locking Collar(S Option)	2		S45C(1045)

※ When springs are GK, there are three ㊲ Spring stopper Bs per spring.

⚠ Bolts for assembly are not indicated.

■CTVS320, CTVH320
・ST=60

No.	Description	Qty Coil Spring	Qty Gas Spring	Material and Remark
①	Cam Holder	1		FCD550
②	Thrust Block	1		FCD550
④	Wear Plate E	4		Bronze with Graphite
⑥	Key	4		SS400(1020)
⑧	Wear Plate A-1	2		Bronze with Graphite
⑨	Wear Plate A-2	2		Bronze with Graphite
⑩	Wear Plate B	4		Bronze with Graphite
⑪	Wear Plate C	2		Bronze with Graphite
⑫	Wear Plate D	4		Bronze with Graphite
⑬	Stopper Plate R	1		S45C(1045)
⑭	Urethane Stopper A	8		Urethane
⑮	Stopper Plate L	1		S45C(1045)
⑯	Cam Slider A	1		FC250
⑰	Spring Guide Block	1		S45C(1045)
⑲	Spring Stopper	2		S45C(1045)
⑳	Wear Plate G	4		Bronze with Graphite
㉑	Cam Slider B	1		FC250
㉒	Cam Positive Return	1		S45C(1045)
㉓	Cam Driver	1		FC250
㉔	Wear Plate	2		S45C Copper Powder Sintered
㉖	Urethane Stopper B	2		Urethane
㉘	Wear Plate F	2		Bronze with Graphite
㉙	Wear Plate	2		S45C Copper Powder Sintered
㉚	Wear Plate	2		S45C Copper Powder Sintered
㉛	Spring Stopper A	1	-	S45C(1045)
㉜	Spring Guide Pin	2	-	S45C(1045) HQI-HT
㉝	Coil Spring	2	-	TJM50-229
㉞	Spring Stopper B	-	1	S45C(1045)
㊲	Gas Spring	-	2	X750-100-7.0MPa
㊴	Locate Cap Bolt	1		M16×88
㊵	Spacer	1		S45C(1045)
㊶	Locking Plate(S Option)	1		S45C(1045)
㊷	Locking Collar(S Option)	2		S45C(1045)

※When springs are GK, there are three ㉛ Spring stopper Bs per spring.

⚠ Bolts for assembly are not indicated.

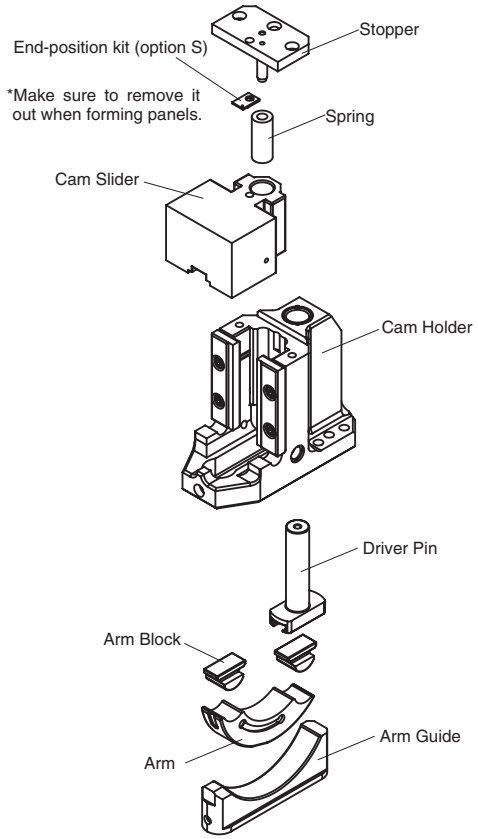
Counter Cam Unit General Description of CTCC

COMPACT TYPE

CAD FILE

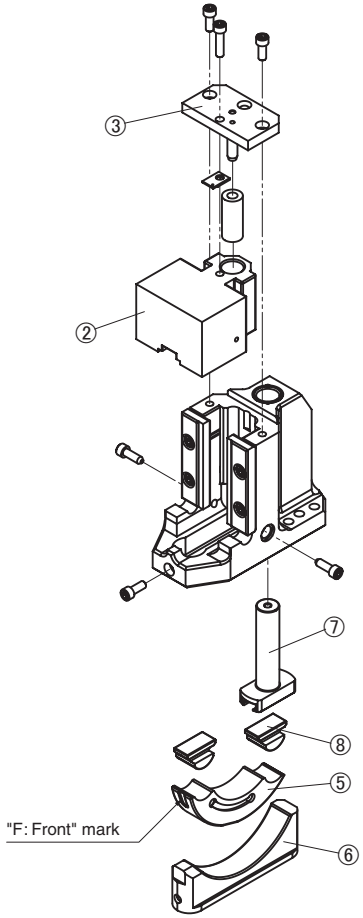
CTCC is a compact and space-saving counter cam unit for bending panels upward.

■ Structure and Features of Counter Cam Unit



- Its compact design enables to flange panels upward even in a narrow space.
- The new structure prevents the stress concentration, which does not require to install a backup.
- The end-position kit and spring can be assembled or disassembled with the whole unit mounted on the die.
- The elimination of the box-type holder enables to avoid interferences with front objects.

■ Disassembly and Assembly of CTCC



● CTCC Disassembly Procedures

1) Loosen the hexagon socket head bolt and remove the stopper plate (③).
2) Pull the cam slider (②) up and out.
3) Loosen the three hexagon socket head bolts. With the cam main unit laid down horizontally, use the M10 tap at the bottom of the arm guide (⑥) to pull it out.
4) Disassemble the arm (⑤), arm block (⑧) and driver pin (⑦).

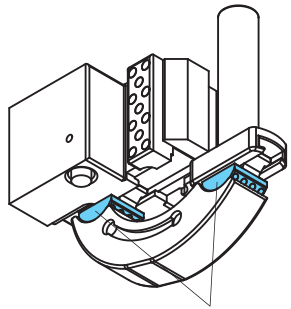
● CTCC Assembly Procedure

1) Assemble by reversing the disassembly procedure.
   - Make sure that there is no foreign matter on the sliding area and assemble components.
   - When cam is disassembled and then reassembled, please do not forget to assemble all bolts provided.

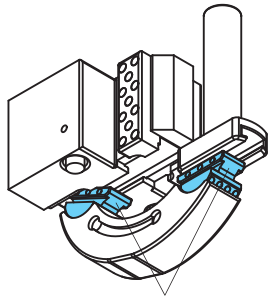
Note: Make sure to assemble the arm (⑤) with engraved "F" (= Front) mark facing in the correct direction.

Assembly Precautions

Make sure to install the two arm blocks (⑧) into each T-groove slot of the cam slider (②) and the driver pin (⑦) as shown to the right.



The two arm blocks are in the T-groove slots. (Correct)



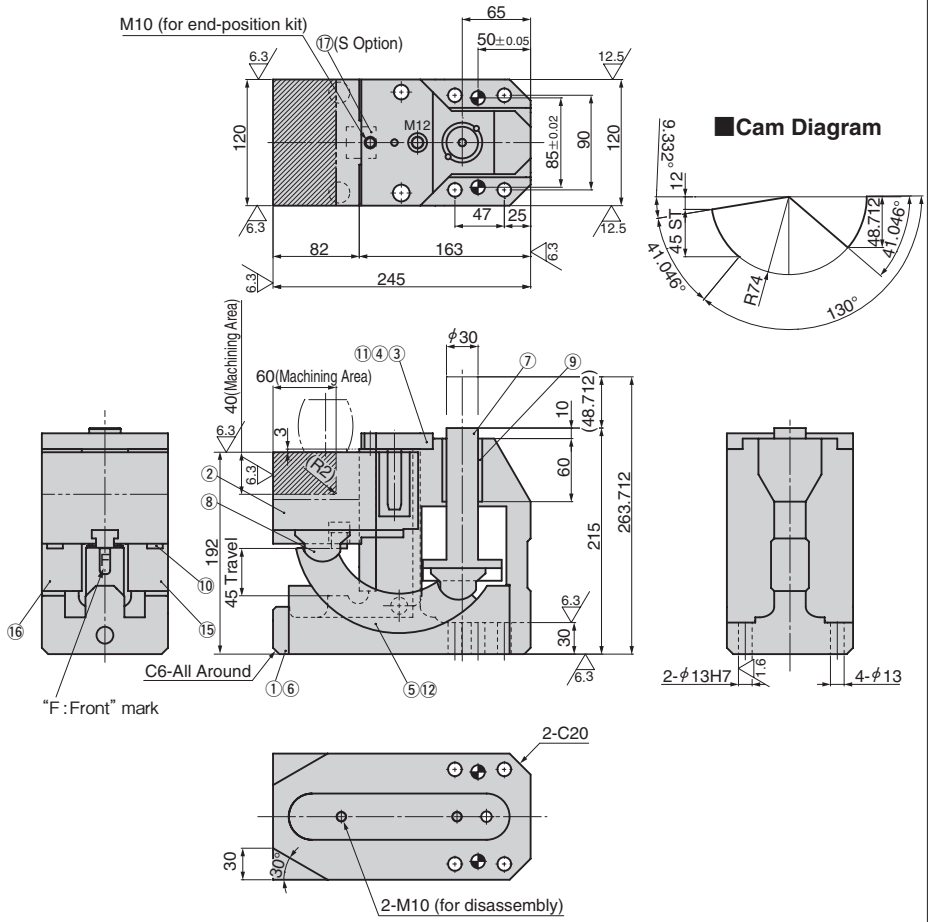
The two arm blocks are NOT in the T-groove slots. (Incorrect)

Counter Cam Unit

COMPACT TYPE

CAD FILE

CTCC120-45



■Cam Diagram

Working Force kN (tonf) (1,000,000 strokes)	Spring Force N (kgf)		Total Weight kg	Catalog No.	Cam width W	Travel S	Spring Type PS
	Initial Load	Final Load					
9.8 (1.0)	150.7 (15.3)	574.6 (58.6)	28.8	CTCC	120	45	TF27-125

※ Spring specification TF27-125 : Spring constant 9.42N/mm (0.96kgf/mm)
Guideline of spring durability 300,000 strokes

■Table of Components

No.	Description	Qty	Material and Remark
①	Cam Holder	1	FC250
②	Cam Slider	1	FC250 with Graphite
③	Stopper Plate	1	S45C(1045)
④	Spring Guide Pin	1	S45C(1045)
⑤	Arm	1	NAK55
⑥	Arm Guide	1	FC250 with Graphite
⑦	Driver Pin	1	S45C(1045)
⑧	Arm Block	2	Bronze with Graphite
⑨	Oilless Bush	1	Bronze with Graphite
⑩	Urethane Stopper	2	Urethane
⑪	Spring	1	TF27-125
⑫	Ball Plunger	2	SCM435
⑮	Holding Plate R	1	FC250 with Graphite
⑯	Holding Plate L	1	FC250 with Graphite
⑰	Locking Plate(S Option)	1	S45C

Order

Catalog No.	W	–	S
CTCC	120	–	45

Option

Option Code	Specification
N12	Dowel pin holes of holder are changed to φ12H7.
S	Locking plate and bolts are included.

■ **Installation of a positive return**

Please install a positive return of the cam slider as shown below so that the cam slider could follow the up-and-down motion of press machine.