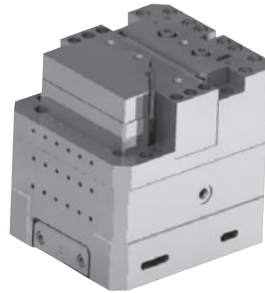


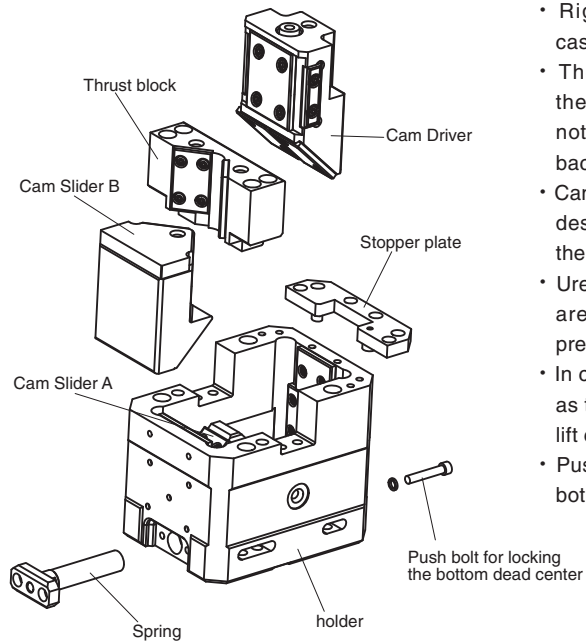
General Description of Counter Cam Unit

SPECIAL CAM UNIT

The thrust cam unit CTCS and CTVS series is the optimum cam unit for upper bending of panel. 8 models in total, regular type and highly rigid type and 4 sizes in width, are available.

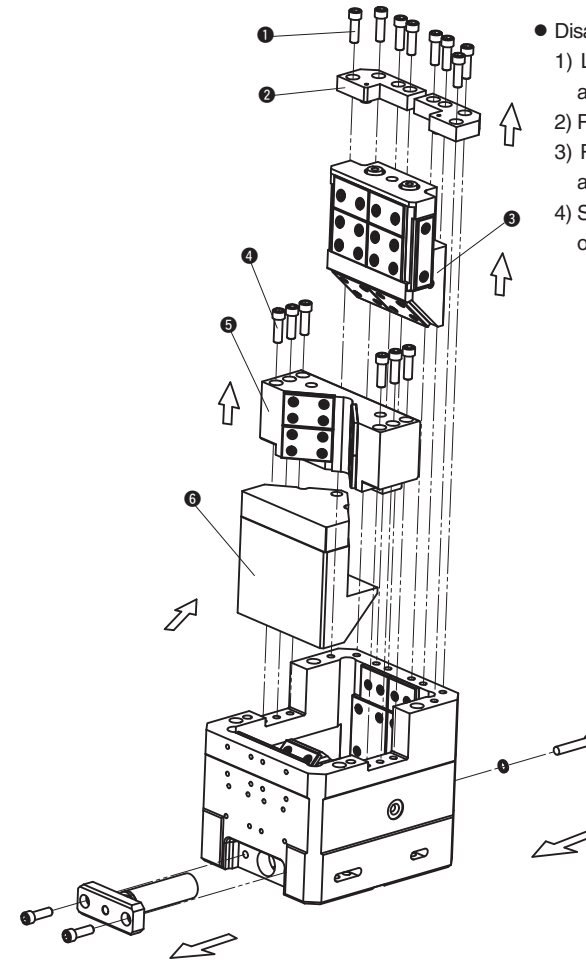


Structure and features of counter cam unit



- Rigid structure integrated into the casting is used.
- The highly rigid type is reinforcing the backup wall of cam slider B. It is not necessary to machine the die for backup.
- Cam slider B has a V guide design. The design is resistant to reaction force at the side. (145 or more in width)
- Urethane stopper for shock absorption are provided on the stopper plate to prevent direct force on the screws.
- In cam slider B, the thrust block is used as the stopper. It is designed to prevent lift exceeding the specified travel.
- Push bolt tapped holes for locking the bottom dead center are drilled.

Structure and Assembly/Disassembly of CTCS / CTVS



- Disassembly method of CTCS and CTVS
 - 1) Loosen hexagon socket head bolt (①) and remove stopper plate (②).
 - 2) Pull and remove cam driver (③) upward.
 - 3) Remove hexagon socket head bolt (④) and remove thrust block (⑤).
 - 4) Slide cam slider B (⑥) with positive return obliquely upward and remove it.

• Assembly method of CTCS / CTVS

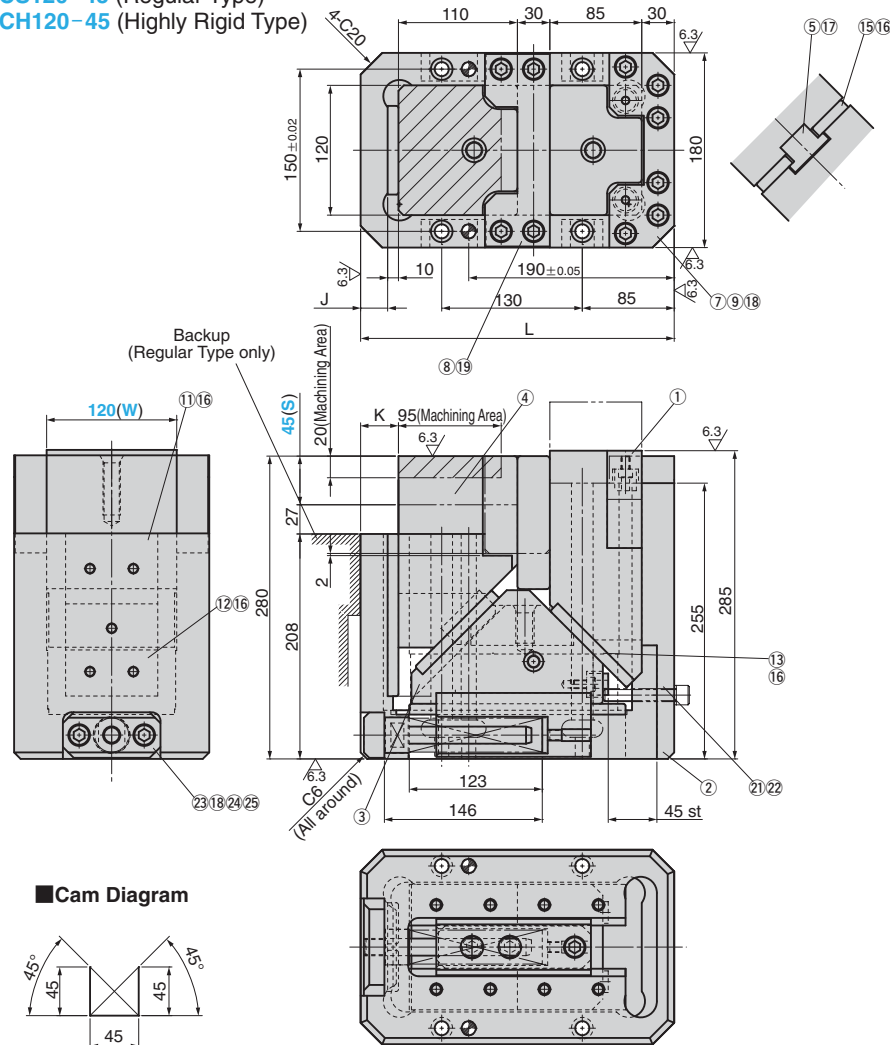
- 1) Assemble components in the reverse order of disassembly.
 - Make sure that there is no foreign matter on the sliding area and assemble components.
 - When cam is disassembled and then reassembled, please do not forget to assemble all bolts provided.

Counter Cam Unit

SPECIAL CAM UNIT



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



Spring Specification

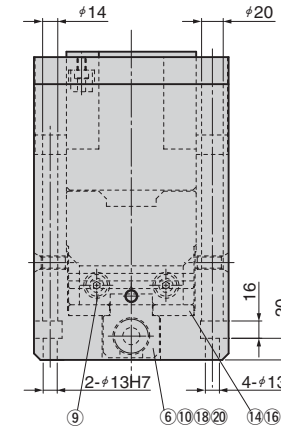
Spring (PS)	Spring Force N(kgf)	
	Initial Load	Final Load
ISO	330 (33.7)	1815 (185.1)
GK	1407 (143.5)	2072 (211.3)

New Option

N12 The dowel pin holes for the cam holder and cam driver are changed to #12H7.

Table of Components

No.	Description	Qty	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	SP2
⑥	Spring Guide Block	1	Bronze with Graphite(SO#50SP2)
⑦	Stopper Plate	1	S45C(1045)
⑧	Thrust Block	1	Bronze with Graphite(SO#50SP2)
⑨	Stopper	4	Urethane
⑩	Spring Stopper	1	S45C(1045)
⑪	Wear Plate	1	S45C Copper Powder Sintered(#220)
⑫	Wear Plate	1	S45C Copper Powder Sintered(#220)
⑬	Wear Plate	1	Bronze with Graphite(SO#50SP7)
⑭	Wear Plate	4	S45C Copper Powder Sintered(#220)
⑮	Wear Plate	2	S45C Copper Powder Sintered(#220)
⑯	Hex' Socket Button Bolt	21	SCM435 M8×20
⑰	Hexagon Socket Head Bolt	2	SCM435 M10×30
⑱	Hexagon Socket Head Bolt	11	SCM435 M12×35
⑲	Hexagon Socket Head Bolt	4	SCM435 M12×50
⑳	Conical Spring Washer	3	For M12
㉑	Sim	1	
㉒	Locate Cap Bolt	1	SCM435 M12×68
㉓	Spring Stopper A	1	S45C(1045)
㉔	Spring Guide Pin	1	S45C(1045) HQI-HT
㉕	Coil Spring	1	Refer to the Specification Table



Specification

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

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



Order

Catalog No. (W) - S - PS
CTCS 120 - 45 - ISO

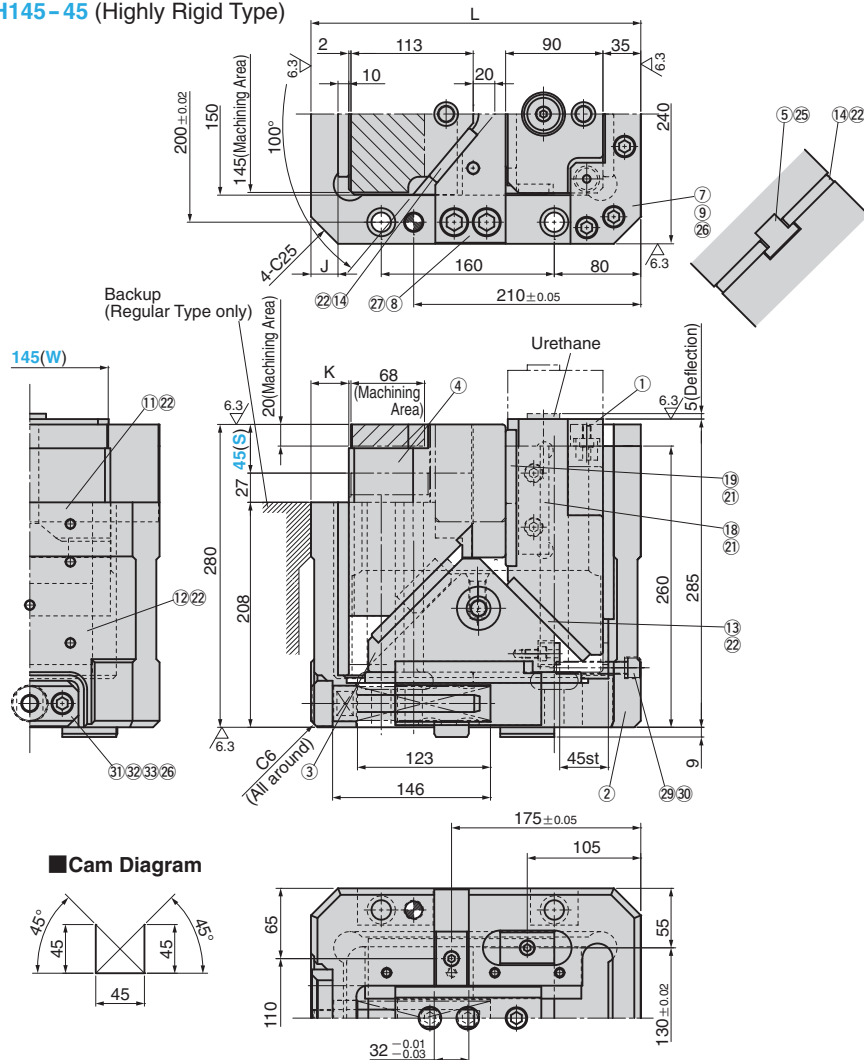
* For the spring specification, refer to the above and below.
• ISO...TJM32-178, Spring constant 33N(3.37kgf)/mm
• GK...X350-80-7.0 (by KALLER)

Counter Cam Unit

SPECIAL CAM UNIT



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



Spring Specification

Spring (PS)	Spring Force N(kgf)	
	Initial Load	Final Load
ISO	330 (33.7)	1815 (185.1)
GK	1407 (143.5)	2072 (211.3)

Table of Components

No.	Description	Qty	Material and Remark
①	Cam Driver	1	S45C(1045) HQI-HT
②	Cam Holder	1	FCD550
③	Cam Slider A	1	S45C
④	Cam Slider B	1	SCM440 HC-HQ
⑤	Cam Positive Return	1	S45C(1045) HQ-HT
⑥	Spring Guide Block	1	S45C(1045) HQ-HT
⑦	Stopper Plate	1	S45C(1045)
⑧	Thrust Block	1	S45C(1045) HQI-HT
⑨	Stopper A	4	Urethane
⑩	Stopper B	1	Urethane
⑪	Wear Plate	1	Bronze with Graphite(SO#50SP7)
⑫	Wear Plate	1	Bronze with Graphite(SO#50SP7)
⑬	Wear Plate	2	Bronze with Graphite(SO#50SP7)
⑭	Wear Plate	4	Bronze with Graphite(SO#50SP7)
⑮	Wear Plate	2	Bronze with Graphite(SO#50SP7)
⑯	Wear Plate	1	Bronze with Graphite(SO#50SP7)
⑰	Wear Plate	1	Bronze with Graphite(SO#50SP7)
⑱	Wear Plate	2	S45C Copper Powder Sintered(#220)
⑲	Wear Plate	1	S45C Copper Powder Sintered(#220)
⑳	Key	4	SS400(1020)
㉑	Hexagon Socket Brazier Head Bolt	8	SCM435 LCS10-20
㉒	Hex' Socket Button Bolt	39	SCM435 M8×20
㉓	Hexagon Socket Head Bolt	4	SCM435 M8×15
㉔	Hexagon Socket Head Bolt	1	SCM435 M8×25
㉕	Hexagon Socket Head Bolt	2	SCM435 M10×30
㉖	Hexagon Socket Head Bolt	11	SCM435 M12×35
㉗	Hexagon Socket Head Bolt	4	SCM435 M16×60
㉘	Conical Spring Washer	3	For M12
㉙	Sim	1	S45C(1045)
㉚	Locate Cap Bolt	1	SCM435 M12×68
㉛	Spring Stopper A	1	S45C(1045)
㉜	Spring Guide Pin	1	S45C(1045) HQI-HT
㉝	Coil Spring	1	Refer to the Specification Table

Specification

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



Order

Catalog No.	(W)	S	PS
CTVS	145	45	GK

* For the spring specification, refer to the above and below.
 • ISO...TJM32-178, Spring constant 33N(3.37kgf)/mm
 • GK...X350-80-7.0 (by KALLER)

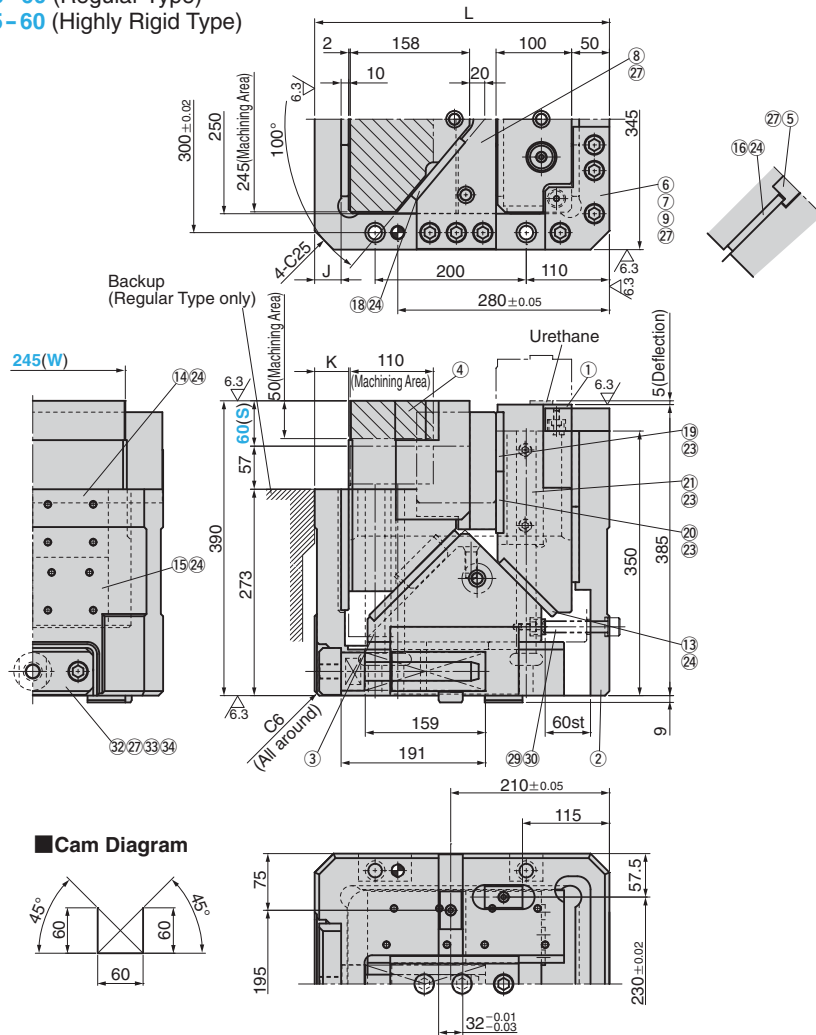
Working Force kN(tonf)	Spring Force	Total Weight kg	Catalog No.	(W)	Travel S	Spring PS*
Standard Working Force kN(tonf) (one million strokes)	Refer to the table on the following page.	124.0	CTVS CTVH	145	45	ISO GK
73.5 (7.5)						

Counter Cam Unit

SPECIAL CAM UNIT



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

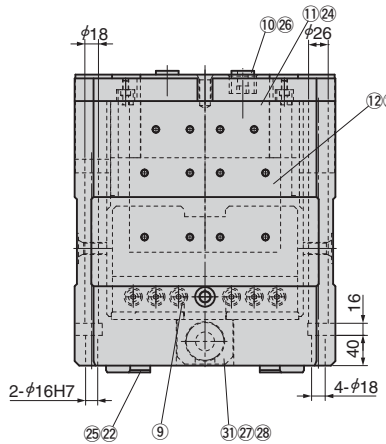


Spring Specification

Spring (PS)	Spring Force N(kgf)	
	Initial Load	Final Load
ISO	582 (59.3)	4074 (415.4)
GK	3436 (350.4)	4691 (478.3)

Table of Components

No.	Description	Qty	Material and Remark
①	Cam Driver	1	S45C(1045) HQI-HT
②	Cam Holder	1	FCD550
③	Cam Slider A	1	S45C(1045)
④	Cam Slider B	1	SCM440 HC-HQ
⑤	Cam Positive Return	1	S45C(1045) HQ-HT
⑥	Stopper Plate R	1	S45C(1045)
⑦	Stopper Plate L	1	S45C(1045)
⑧	Thrust Block	1	S45C(1045) HQI-HT
⑨	Stopper A	8	Urethane
⑩	Stopper B	2	Urethane
⑪	Wear Plate	2	Bronze with Graphite(SO#50SP7)
⑫	Wear Plate	2	Bronze with Graphite(SO#50SP7)
⑬	Wear Plate	2	Bronze with Graphite(SO#50SP7)
⑭	Wear Plate	2	Bronze with Graphite(SO#50SP7)
⑮	Wear Plate	2	Bronze with Graphite(SO#50SP7)
⑯	Wear Plate	2	Bronze with Graphite(SO#50SP7)
⑰	Wear Plate	4	Bronze with Graphite(SO#50SP7)
⑱	Wear Plate	4	Bronze with Graphite(SO#50SP7)
⑲	Wear Plate	2	S45C Copper Powder Sintered(#220)
⑳	Wear Plate	2	S45C Copper Powder Sintered(#220)
㉑	Wear Plate	2	S45C Copper Powder Sintered(#220)
㉒	Key	4	SS400(1020)
㉓	Hexagon Socket Brazier Head Bolt	16	SCM435 LCS10-20
㉔	Hex' Socket Button Bolt	76	SCM435 M8×20
㉕	Hexagon Socket Head Bolt	4	SCM435 M8×15
㉖	Hexagon Socket Head Bolt	2	SCM435 M8×25
㉗	Hexagon Socket Head Bolt	21	SCM435 M16×50
㉘	Conical Spring Washer	3	For M16
㉙	Sim	1	
㉚	Locate Cap Bolt	1	SCM435 M16×88
㉛	Spring Guide Block	1	S45C(1045) HQ-HT
㉜	Spring Stopper A	1	S45C(1045)
㉝	Spring Guide Pin	1	S45C(1045) HQI-HT
㉞	Coil Spring	1	Refer to the Specification Table



Specification

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

Working Force kN(tonf)	Spring Force	Total Weight kg	Catalog No.	(W)	Travel S	Spring PS*
Standard Working Force kN(tonf) (one million strokes)	Refer to the table on the following page.	295.0	CTVS CTVH	245	60	ISO GK
117.6 (12.0)						



Order

Catalog No.	(W)	S	PS
CTVS	245	60	ISO

* For the spring specification, refer to the above and below.
 • ISO...TJM50-229, Spring constant 58.2N(5.93kgf)/mm
 • GK...K750-100-7.0 (by KALLER)

