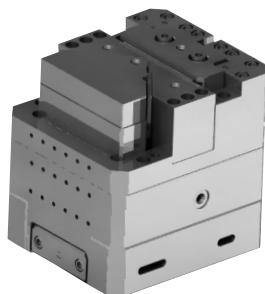
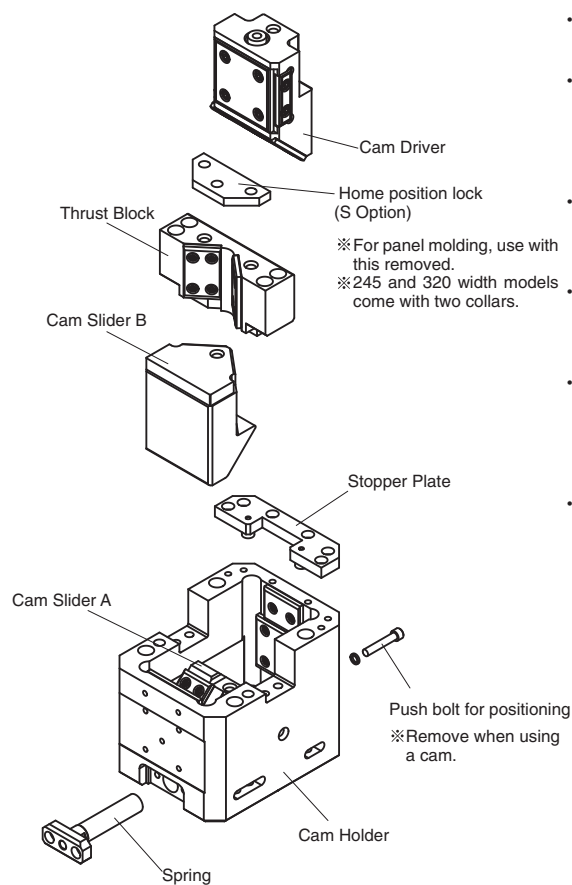


The counter cam unit CTCS and CTVS series are the optimum cam units for bending panels upward. There are 8 variations available; regular / robust type and 4 different widths.

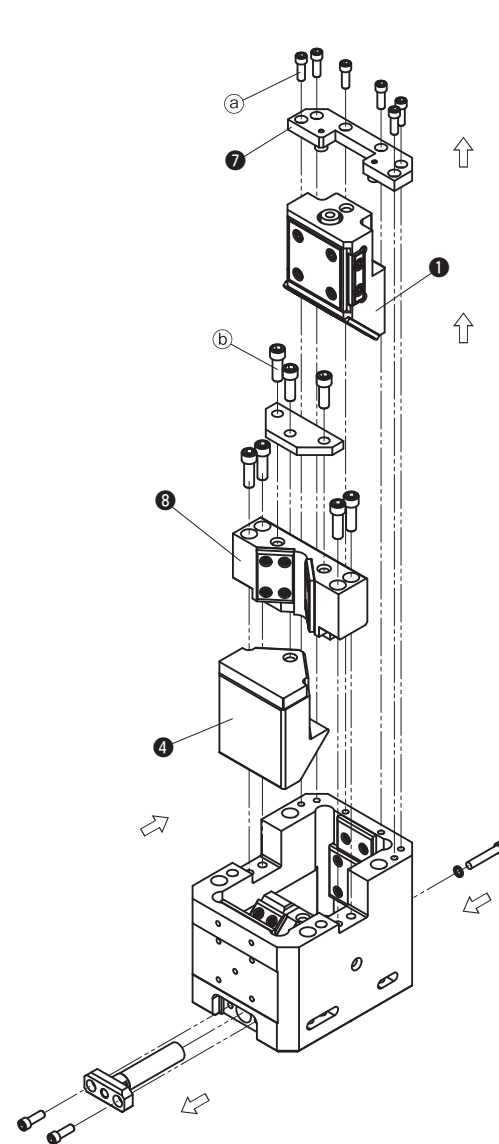


Structure and features of counter cam unit

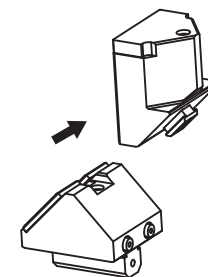


- Robust structure integrated into the casting is applied.
- The highly rigid type is reinforcing the backup wall of cam slider B. It is not necessary to machine the die for backup.
- V-shaped cam slider B is highly resistant to the reaction force on the side. (145/245/320 mm wide only)
- Urethane stopper 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.

Structure and Assembly/Disassembly of CTCS / CTVS



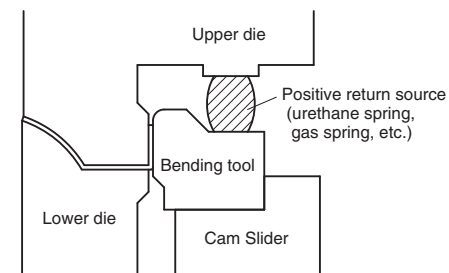
- Disassembly method of CTCS and CTVS
 - 1) Loosen hexagon socket head bolt (a) and remove stopper plate (7).
 - 2) Pull and remove cam driver (1) upward.
 - 3) Remove hexagon socket head bolt (b) and remove thrust block (8).
 - 4) Slide cam slider B (4) with positive return obliquely upward and remove 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.

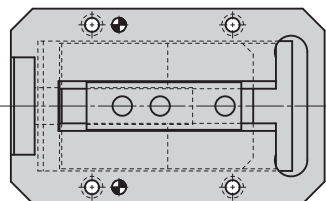
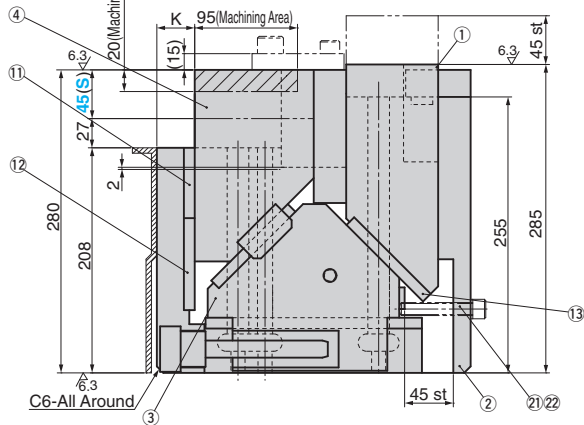
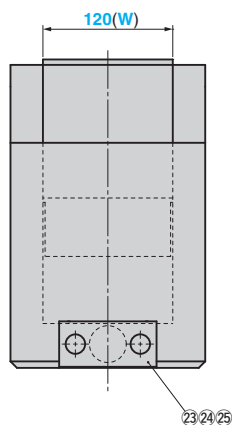
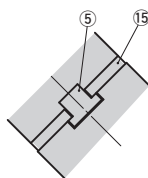
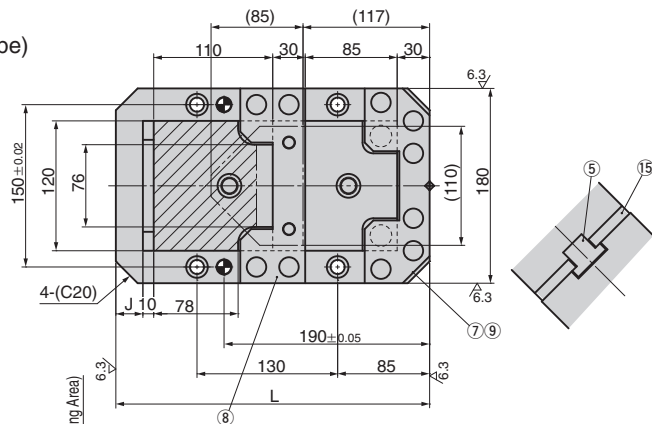
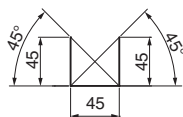
For Operation

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.)



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

Cam Diagram



Spring Specification

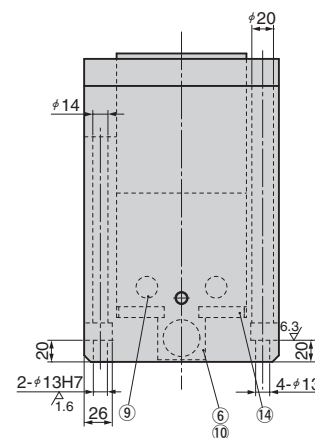
Spring (PS)	Spring Force N(kgf)	
	Initial Load	Final Load
ISO	330 (33.7)	1815 (185.1)
GK	1407 (143.5)	2072 (211.3)



Option

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

※ If no spring is required, specify "NISO" or "NGK", prefixing "N" to the ISO or GK spring.
The parts for installing the spring are included.



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*
29.4 (3.0)	Refer to the table on the following page.	88.0	CTCS CTCH	120	45	ISO GK NISO NGK



Order

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

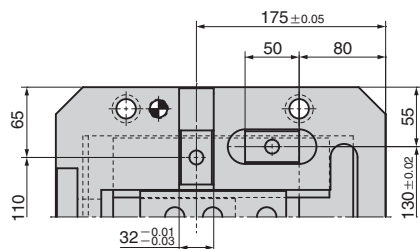
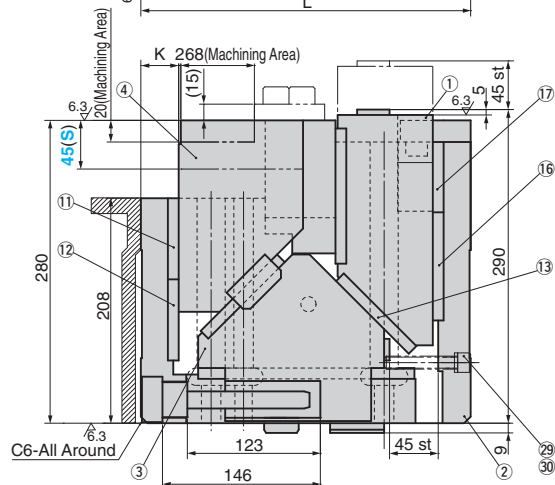
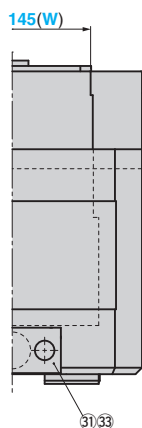
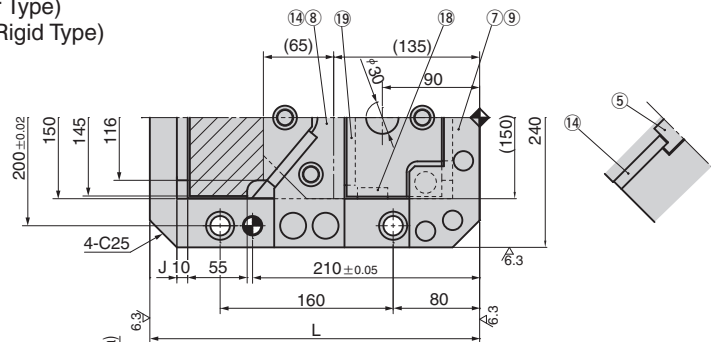
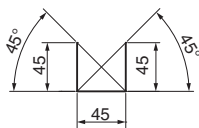
※ The reason for not using gas springs with their maximum loads is to avoid parts damage from returning with a maximum load.

* 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 (KALLER)

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

Cam diagram



Spring Specification

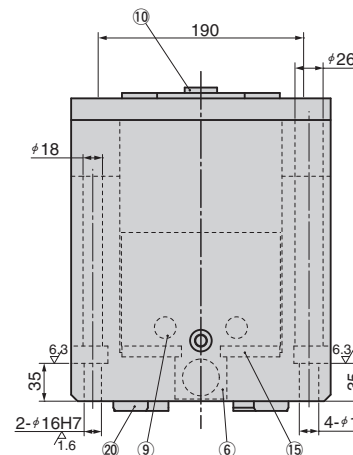
Spring (PS)	Spring Force N(kgf)	
	Initial Load	Final Load
ISO	330 (33.7)	1815 (185.1)
GK	1407 (143.5)	2072 (211.3)



Option

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

※ If no spring is required, specify "NISO" or "NGK", prefixing "N" to the ISO or GK spring.
The parts for installing the spring are included.



Specification

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

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



Order

Catalog No.	(W)	-	S	-	PS
CTVS	145	-	45	-	ISO
CTVH	145	-	45	-	GK - NF

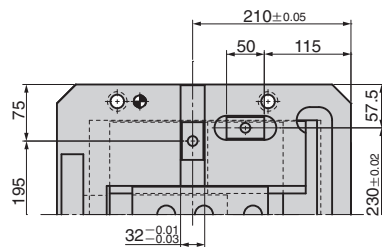
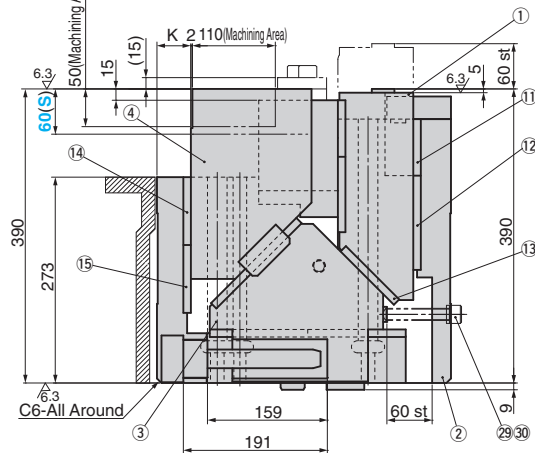
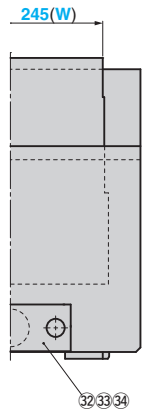
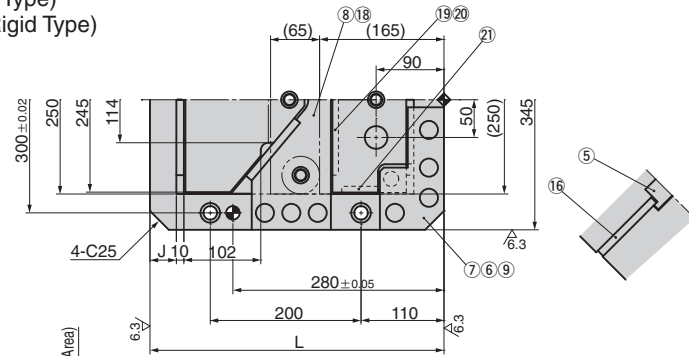
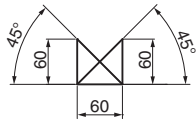
※ The reason for not using gas springs with their maximum loads is to avoid parts damage from returning with a maximum load.

* 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 (KALLER)

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

Cam Diagram



Spring Specification

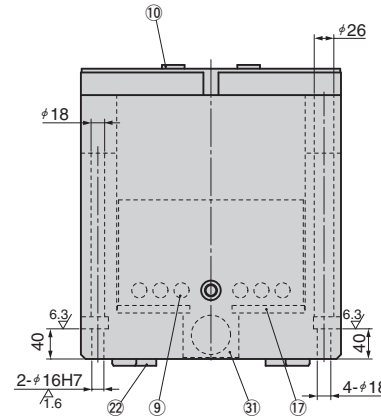
Spring (PS)	Spring Force N(kgf)	
	Initial Load	Final Load
ISO	582 (59.3)	4074 (415.4)
GK	3436 (350.4)	4691 (478.3)



Option

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

※ If no spring is required, specify "NISO" or "NGK", prefixing "N" to the ISO or GK spring.
 The parts for installing the spring are included.



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)						
117.6 (12.0)	Refer to the table on the following page.	295.0	CTVS CTVH	245	60	ISO GK NISO NGK



Order

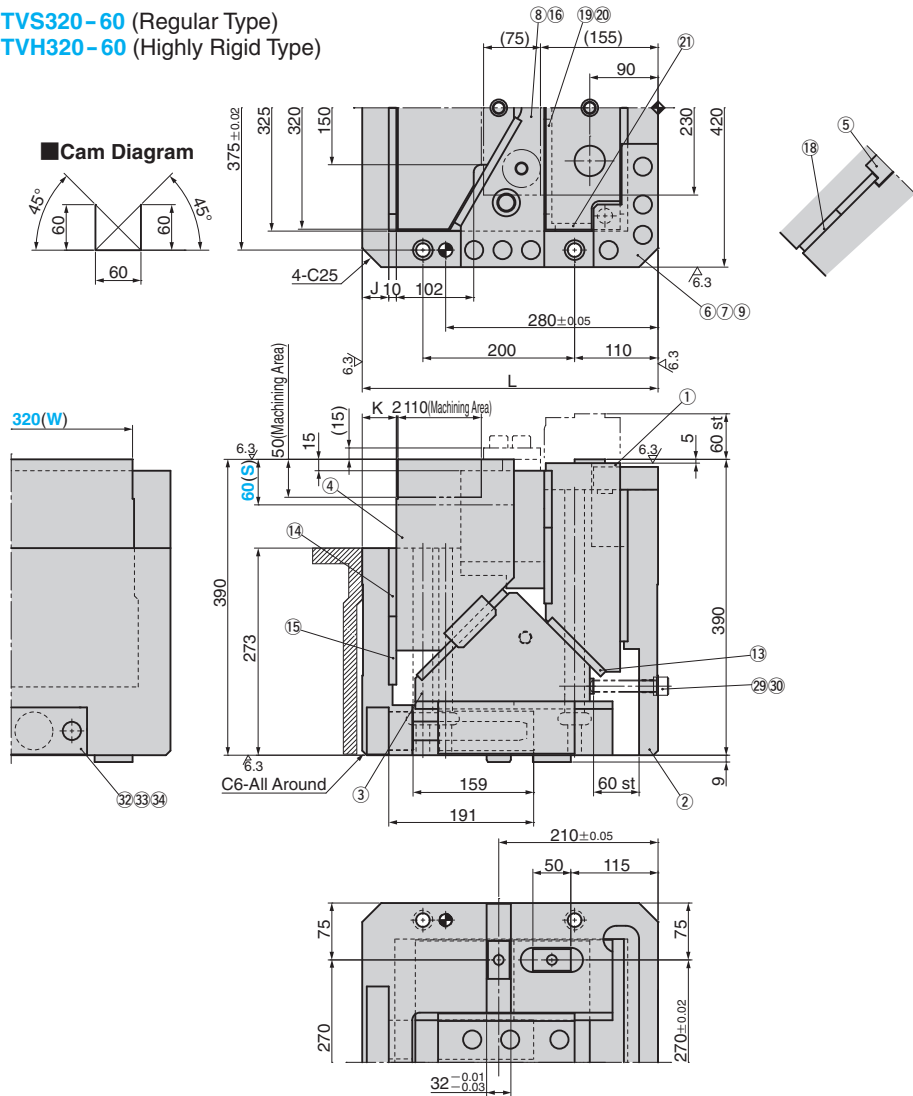
Catalog No.	(W)	-	S	-	PS
CTVS	245	-	60	-	ISO
CTVH	245	-	60	-	GK - NF

* 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...K750-100-7.0 (KALLER)

※ The reason for not using gas springs with their maximum loads is to avoid parts damage from returning with a maximum load.

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



Spring Specification

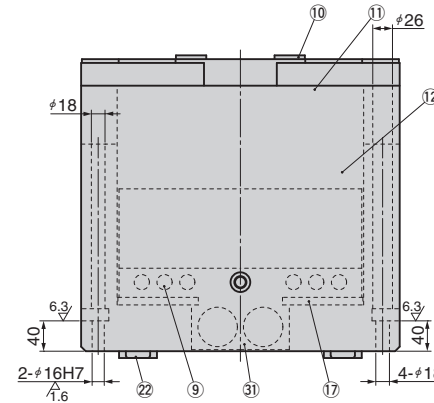
Spring (PS)	Spring Force N(kgf)	
	Initial Load	Final Load
ISO	1164 (118.7)	8148 (830.9)
GK	6872 (700.7)	9382 (956.7)



Option

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

※ If no spring is required, specify "NISO" or "NGK", prefixing "N" to the ISO or GK spring.
The parts for installing the spring are included.



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)						
156.8 (16.0)	Refer to the table on the following page.	362.0	CTVS CTVH	320	60	ISO GK NISO NGK



Order

Catalog No.	(W)	(S)	PS
CTVS	320	60	ISO
CTVH	320	60	GK - NF

※ The reason for not using gas springs with their maximum loads is to avoid parts damage from returning with a maximum load.

* For the spring specification, refer to the above and below.
• ISO...TJM50-229, Spring constant 58.2N(5.96kgf)/mm 2 pieces
Guideline of spring durability 1,000,000 strokes
• GK ...K750-100-7.0 (KALLER)

Table of Components

CTCS120, CTCH120 •ST=45

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	Bronze
⑥	Spring Guide Block	1	Bronze with Graphite
⑦	Stopper Plate	1	S45C(1045)
⑧	Thrust Block	1	Bronze with Graphite
⑨	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
⑰	Spacer	1	
⑱	Locate Cap Bolt	1	SCM435 M12×68
⑳	Spring Stopper A	1	S45C(1045)
㉑	Spring Guide Pin	1	S45C(1045) HQI-HT
㉒	Coil Spring	1	Refer to the Specification Table

※ When springs are GK, there are three ㉑spring stopper Bs per spring.

Bolts for assembly are not indicated.

CTVS145, CTVH145 •ST=45

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
⑫	Wear Plate	1	Bronze with Graphite
⑬	Wear Plate	2	Bronze with Graphite
⑭	Wear Plate	4	Bronze with Graphite
⑮	Wear Plate	2	Bronze with Graphite
⑯	Wear Plate	1	Bronze with Graphite
⑰	Wear Plate	1	Bronze with Graphite
⑱	Wear Plate	2	S45C Copper Powder Sintered
⑲	Wear Plate	1	S45C Copper Powder Sintered
⑳	Key	4	SS400(1020)
㉑	Spacer	1	S45C(1045)
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

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

Bolts for assembly are not indicated.

CTVS245, CTVH245 •ST=60

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
⑫	Wear Plate	2	Bronze with Graphite
⑬	Wear Plate	2	Bronze with Graphite
⑭	Wear Plate	2	Bronze with Graphite
⑮	Wear Plate	2	Bronze with Graphite
⑯	Wear Plate	2	Bronze with Graphite
⑰	Wear Plate	4	Bronze with Graphite
⑱	Wear Plate	4	Bronze with Graphite
⑲	Wear Plate	2	S45C Copper Powder Sintered
⑳	Wear Plate	2	S45C Copper Powder Sintered
㉑	Wear Plate	2	S45C Copper Powder Sintered
㉒	Key	4	SS400(1020)
㉓	Spacer	1	
㉔	Locate Cap Bolt	1	SCM435 M16×88
㉕	Spring Guide Block	1	S45C(1045) HQ-HT
㉖	Spring Stopper A	1	S45C(1045)
㉗	Spring Guide Pin	1	S45C(1045) HQI-HT
㉘	Coil Spring	1	Refer to the Specification Table

※ When springs are GK, there are three ㉖spring stopper Bs per spring.

Bolts for assembly are not indicated.

CTVS320, CTVH320 •ST=60

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	10	Urethane
⑩	Stopper B	2	Urethane
⑪	Wear Plate	2	Bronze with Graphite
⑫	Wear Plate	4	Bronze with Graphite
⑬	Wear Plate	4	Bronze with Graphite
⑭	Wear Plate	2	Bronze with Graphite
⑮	Wear Plate	2	Bronze with Graphite
⑯	Wear Plate	4	Bronze with Graphite
⑰	Wear Plate	4	Bronze with Graphite
⑱	Wear Plate	4	Bronze with Graphite
⑲	Wear Plate	2	S45C Copper Powder Sintered
⑳	Wear Plate	2	S45C Copper Powder Sintered
㉑	Wear Plate	2	S45C Copper Powder Sintered
㉒	Key	4	SS400(1020)
㉓	Spacer	1	S45C(1045)
㉔	Locate Cap Bolt	1	SCM435 M16×88
㉕	Spring Guide Block	1	S45C(1045) HQ-HT
㉖	Spring Stopper A	1	S45C(1045)
㉗	Spring Guide Pin	2	S45C(1045) HQI-HT
㉘	Coil Spring	2	Refer to the Specification Table

※ When springs are GK, there are three ㉖spring stopper Bs per spring.

Bolts for assembly are not indicated.