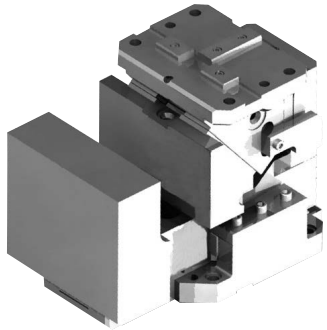
Double Cam Unit WCMSH/WCMS [Overview]

Product Information

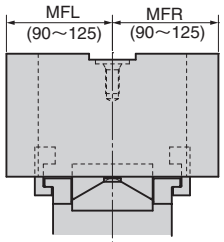
- Mount face width 250 mm.
- Working angles from 0.0° to 10.0° in 0.5° increments.
- Working angles from 1.6° to 3.9° in 0.1° increments.
- **WCMSH**: With Cam Holder A.
- **WCMS**: Without Cam Holder A.
- Coil or Gas Spring can be selected for pressure source.
- Space saving.



■Features

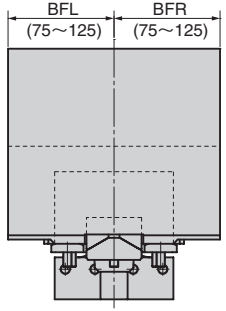
Positive Returns on the Working Cam Holder helps assure the Guide Cam is returned safely.
Working angle adjustment does not affect shut height consistency.
The width of Mount face and Backup face for the right and left sides can be specified from the centerline.
Select WCMS (Without Cam Holder A.) if the guide cam is directly mounted on the die.

Mount face width (View A)



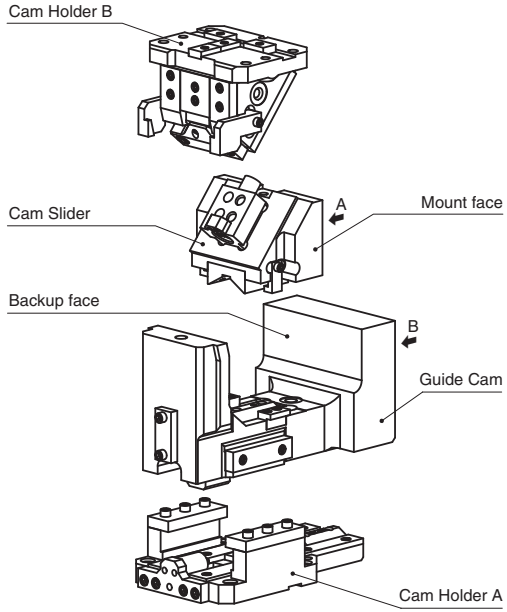
Width dimensions for right (MFR) and left (MFL) can be specified between 90 mm to 125 mm (in increments of 5 mm) from the centerline.

Backup face width (View B)

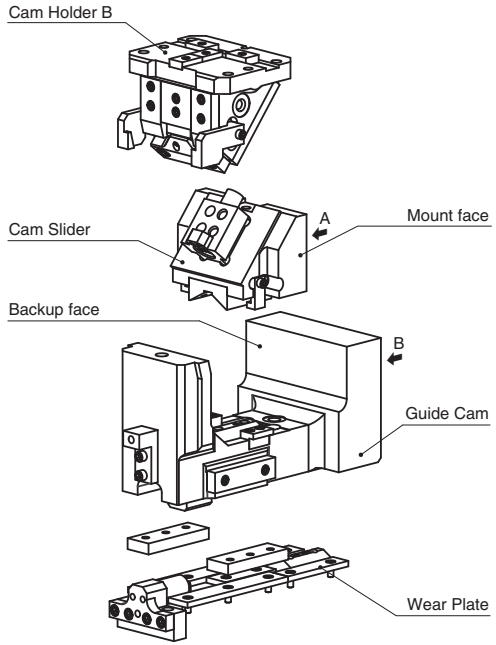


Width dimensions for right (BFR) and left (BFL) can be specified between 75 mm to 125 mm (in increments of 5 mm) from the centerline.
Note that this drawing shows the view from arrow B in page 608.

● WCMSH



● WCMS

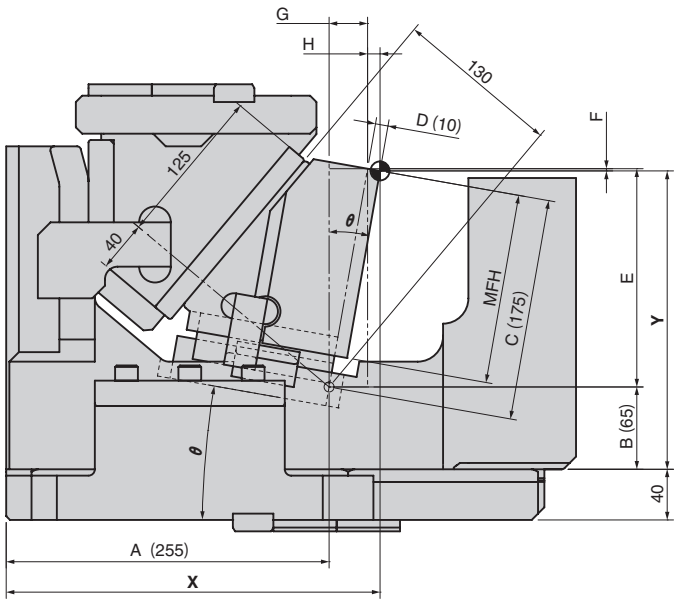


Special Cam Units

WCMSH WCMS

■Coordinates of working cam reference point

● Calculation of X and Y coordinates



$X = A + C \times \sin\theta + D \times \cos\theta$

$Y = B + C \times \cos\theta - D \times \sin\theta$

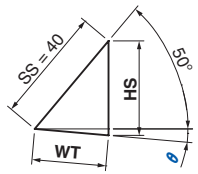
$E = C \times \cos\theta = 175 \times \cos\theta$

$F = D \times \sin\theta = 10 \times \sin\theta$

$G = C \times \sin\theta = 175 \times \sin\theta$

$H = D \times \cos\theta = 10 \times \cos\theta$

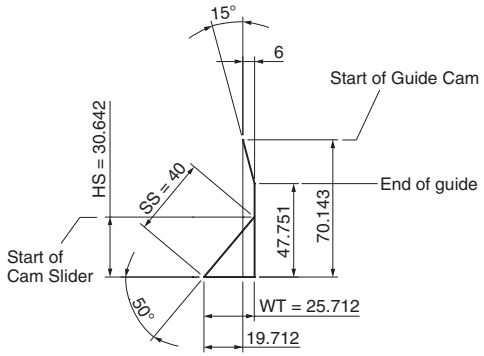
● Calculation of cam travel (WT) and press travel (HS)



$HS : 40 \times (\sin 50 + \cos 50 \times \tan\theta)$

$WT : 40 \times \cos 50 / \cos\theta$

● Cam diagram (Example of 0.0°)



● Values of XY coordinates and cam diagram

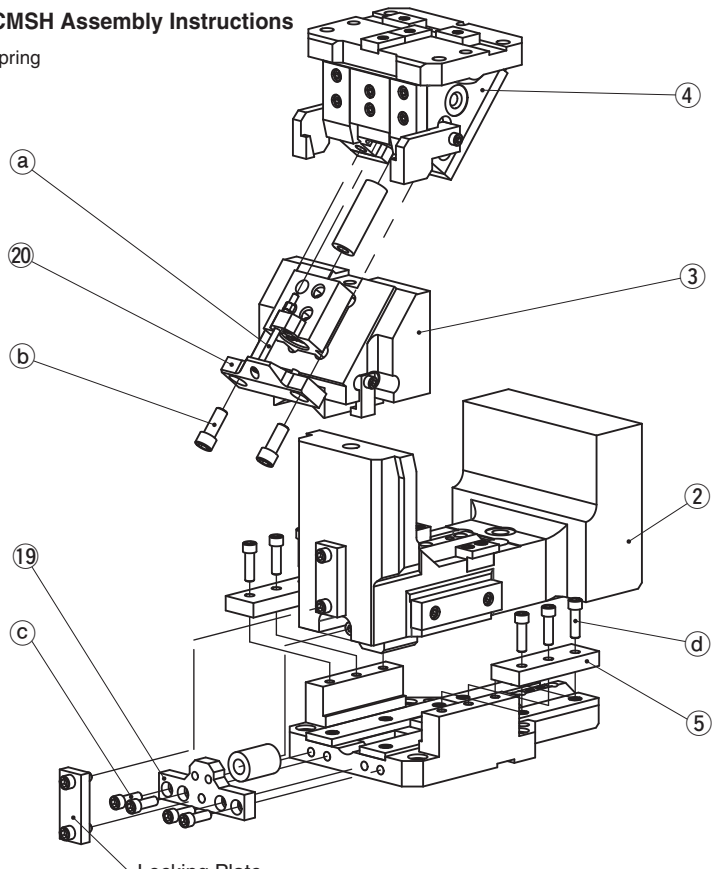
θ	X	Y	MFH	WT	HS
0	265.0	240.0	140	25.7	30.6
0.5	266.5	239.9	140	25.7	30.9
1	268.1	239.8	140	25.7	31.1
1.5	269.6	239.7	145	25.7	31.3
1.6	269.9	239.7	145	25.7	31.4
1.7	270.2	239.6	145	25.7	31.4
1.8	270.5	239.6	145	25.7	31.4
1.9	270.8	239.6	145	25.7	31.5
2	271.1	239.5	145	25.7	31.5
2.1	271.4	239.5	145	25.7	31.6
2.2	271.7	239.5	145	25.7	31.6
2.3	272.0	239.5	145	25.7	31.7
2.4	272.3	239.4	145	25.7	31.7
2.5	272.6	239.4	145	25.7	31.8
2.6	272.9	239.4	145	25.7	31.8
2.7	273.2	239.3	145	25.7	31.9
2.8	273.5	239.3	145	25.7	31.9
2.9	273.8	239.3	145	25.7	31.9
3	274.1	239.2	145	25.7	32.0
3.1	274.4	239.2	145	25.7	32.0
3.2	274.8	239.2	145	25.8	32.1
3.3	275.1	239.1	145	25.8	32.1
3.4	275.4	239.1	145	25.8	32.2
3.5	275.7	239.1	145	25.8	32.2
3.6	276.0	239.0	145	25.8	32.3
3.7	276.3	239.0	145	25.8	32.3
3.8	276.6	239.0	145	25.8	32.3
3.9	276.9	238.9	145	25.8	32.4
4	277.2	238.9	145	25.8	32.4
4.5	278.7	238.7	145	25.8	32.7
5	280.2	238.5	145	25.8	32.9
5.5	281.7	238.2	150	25.8	33.1
6	283.2	238.0	150	25.9	33.3
6.5	284.7	237.7	150	25.9	33.6
7	286.3	237.5	150	25.9	33.8
7.5	287.8	237.2	150	25.9	34.0
8	289.3	236.9	150	26.0	34.3
8.5	290.8	236.6	150	26.0	34.5
9	292.3	236.3	150	26.0	34.7
9.5	293.7	235.9	150	26.1	34.9
10	295.2	235.6	150	26.1	35.2

Double Cam Unit WCMSH/WCMS [Overview]

Product Information

■WCMSH Assembly Instructions

Coil Spring



To avoid loss, the locking plate should be secured to the guide cam before the first press cycle.

● Disassembly

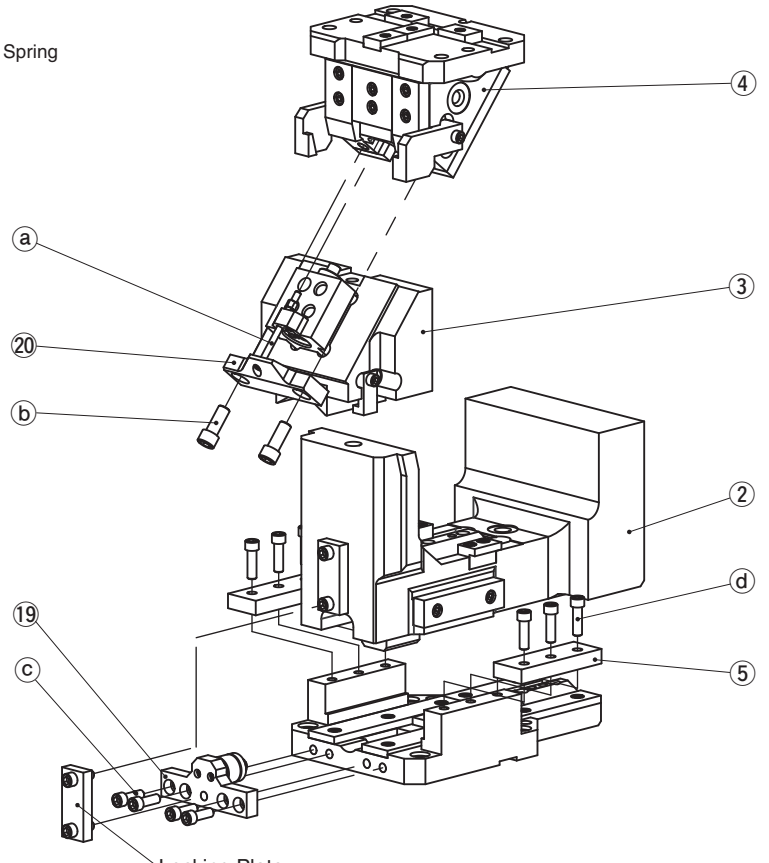
1) Loosen Hexagon Socket Head Bolts (ⓐ).
2) Remove Hexagon Socket Head Bolts (ⓑ), to pull out Stopper Plate (⑳) from Cam Holder (④).
3) Remove Cam Slider (③) from Cam Holder to the rear.
4) Remove Hexagon Socket Head Bolts (ⓒ), and remove Spring Stopper A (⑲).
5) Remove Hexagon Socket Head Bolts (ⓓ), and remove Cam Upper Plate (⑤).
6) Pull up Guide Cam (②).

● 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, Cam Holder and Guide Cam, 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.

Gas Spring



To avoid loss, the locking plate should be secured to the guide cam before the first press cycle.

● Disassembly

1) Loosen Hexagon Socket Head Bolts (ⓐ).
2) Remove Hexagon Socket Head Bolts (ⓑ), to pull out Stopper Plate (⑳) from Cam Holder (④).
3) Remove Cam Slider (③) from Cam Holder to the rear.
4) Remove Hexagon Socket Head Bolts (ⓒ), and remove Spring Stopper A (⑲).
5) Remove Hexagon Socket Head Bolts (ⓓ), and remove Cam Upper Plate (⑤).
6) Pull up Guide Cam (②).

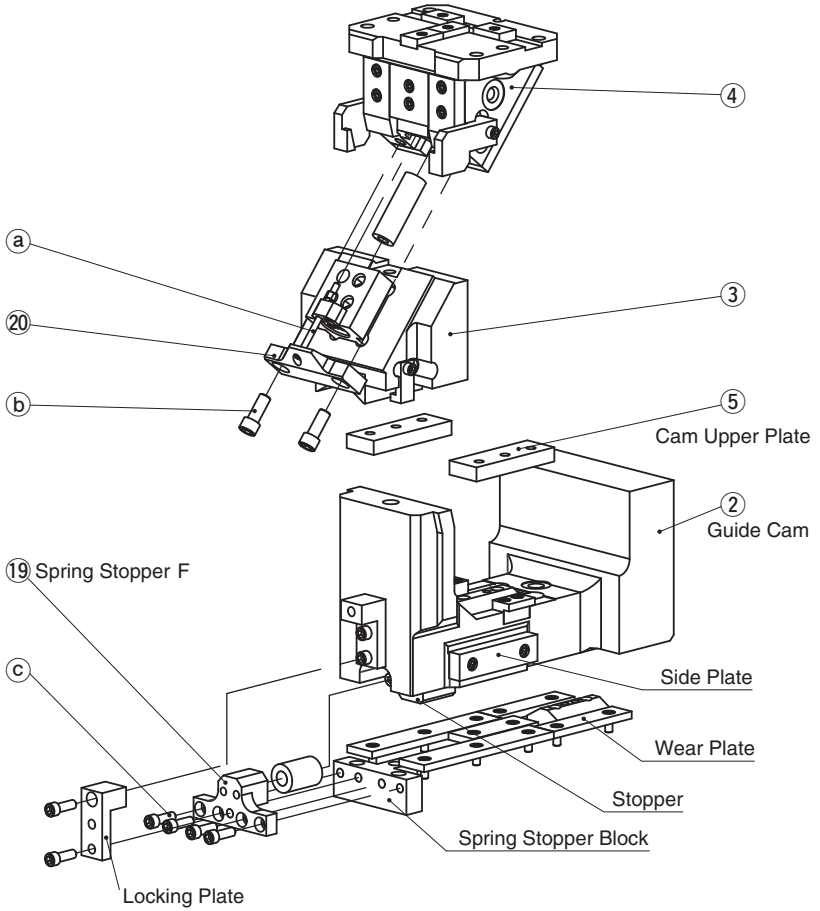
● Assembly

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, Cam Holder and Guide Cam, 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.

■WCMS Assembly Instructions

Coil Spring



To avoid loss, the locking plate should be secured to the guide cam before the first press cycle.

● Disassembly

1) Loosen Hexagon Socket Head Bolts (ⓐ).
2) Remove Hexagon Socket Head Bolts (ⓑ), to pull out Stopper Plate (⑳) from Cam Holder (④).
3) Remove Cam Slider (③) from Cam Holder to the rear.
4) Remove Hexagon Socket Head Bolts (ⓒ), and remove Spring Stopper A (⑲).
5) Remove Hexagon Socket Head Bolts (ⓓ), and remove Cam Upper Plate (⑤).
6) Pull up Guide Cam (②).

● Assembly

Assembly is the reverse procedure of disassembly.

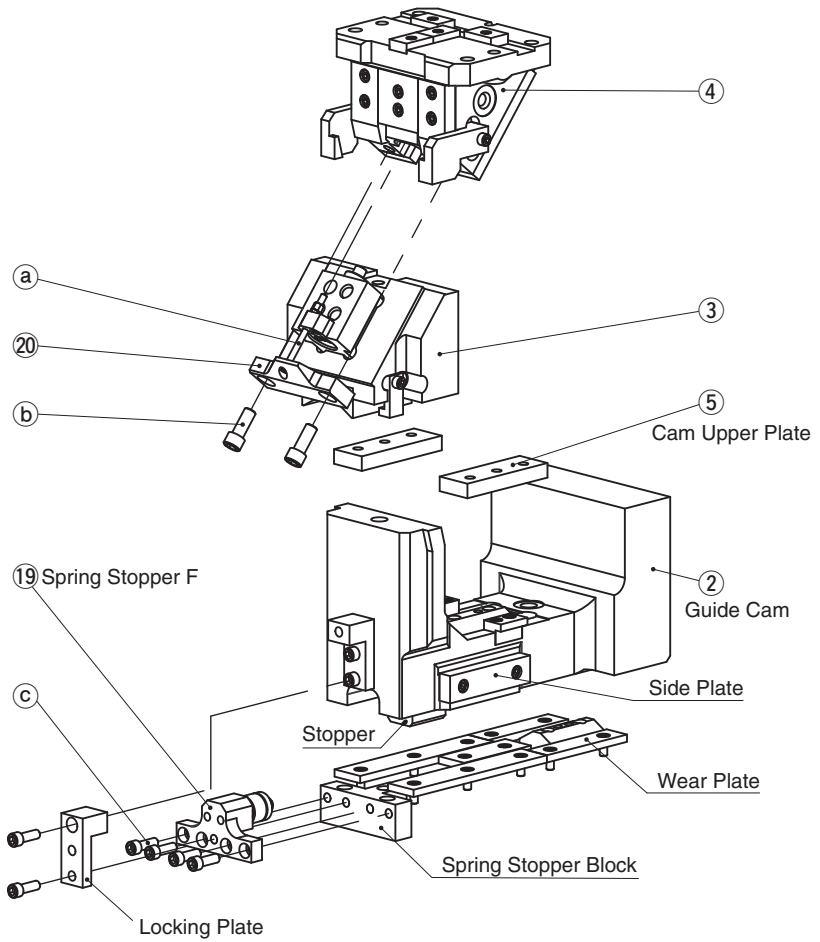
- Ensure that all parts are clean, particularly the sliding components to which a small amount of lubricant is applied and is then placed in position.
- Take care that the respective tolerances are observed when assembling Cam Slider, Cam Holder and Guide Cam, which also should be identified by the same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

● Installation method

Machine grooves to assemble Stopper and Spring Stopper Block on lower die.
Require a sliding surface of Side Plate on lower die and machine to fix Cam Upper Plate.

■WCMS Assembly Instructions

Gas Spring



To avoid loss, the locking plate should be secured to the guide cam before the first press cycle.

● Disassembly

1) Loosen Hexagon Socket Head Bolts (ⓐ).
2) Remove Hexagon Socket Head Bolts (ⓑ), to pull out Stopper Plate (⑳) from Cam Holder (④).
3) Remove Cam Slider (③) from Cam Holder to the rear.
4) Remove Hexagon Socket Head Bolts (ⓒ), and remove Spring Stopper A (⑲).
5) Remove Hexagon Socket Head Bolts (ⓓ), and remove Cam Upper Plate (⑤).
6) Pull up Guide Cam (②).

● 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, Cam Holder and Guide Cam, 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.

● Installation method

Machine grooves to assemble Stopper and Spring Stopper Block on lower die.
Require a sliding surface of Side Plate on lower die and machine to fix Cam Upper Plate.

⚠ 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.

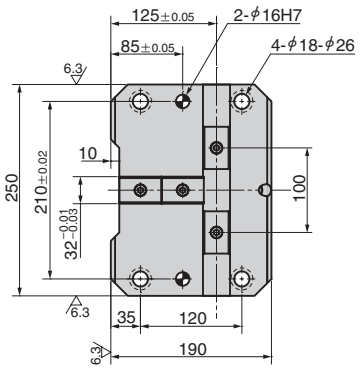
■Spring Specification

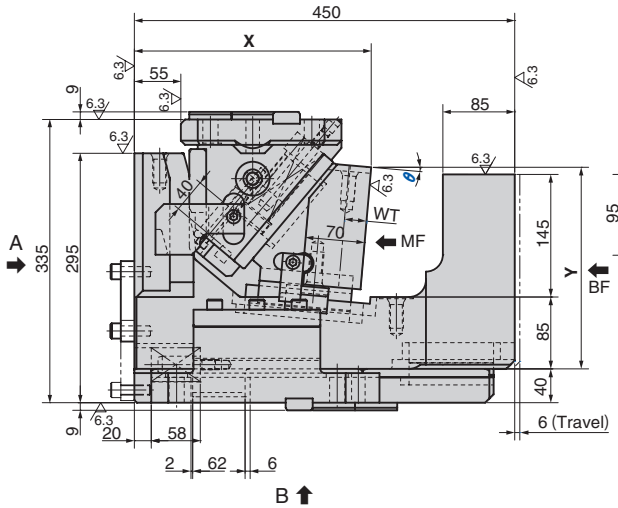
Working Force kN (tonf)	Catalog No.	W	Spring Type PS	Cam Slider Spring Force [N]		Guide Cam Spring Force [N]	
				Initial Load	Final Load	Initial Load	Final Load
98.0 (10.0)	WCMSH	250	GK	—	2084.4	—	1980
	WCMS		ISO	540.4	2084.4	1263.6	1895.4

No.	PS	Spring Model	Qty	Remark
47	GK	X500-013-5.5MPa	1	For Guide Cam
	ISO	TJM40-76	1	For Guide Cam 105.3 N/mm (10.74 kgf/mm) Life expectancy of Coil Spring is approximately 1,000,000 strokes.
49	GK	X350-050-7.5MPa	1	For Cam Slider
	ISO	TJM32-152	1	For Cam Slider 38.6 N/mm (3.94 kgf/mm) Life expectancy of Coil Spring is approximately 300,000 strokes.

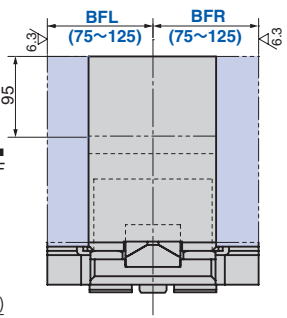
WCMSH

CAD FILE

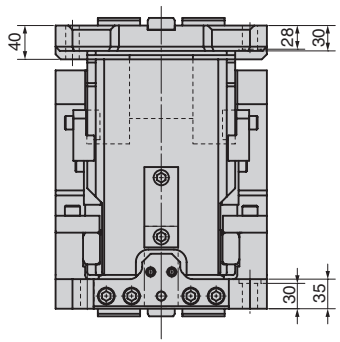




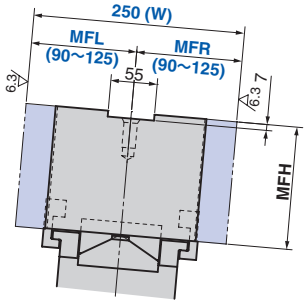
Backup Face (BF View)



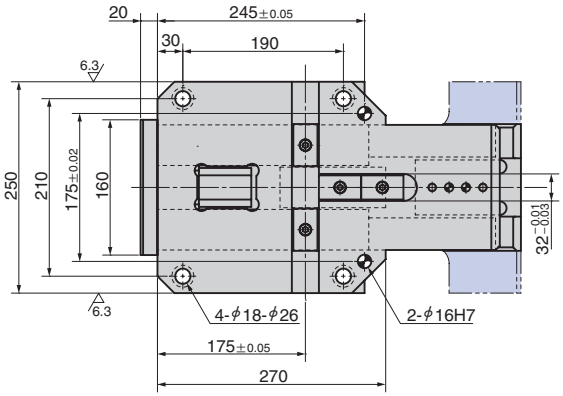
Arrow A View



Mount Face (MF View)



Arrow B View



Working Force kN (tonf)	Catalog No.	W	Mount Face 5 mm increments		θ*1 0.5° increments	Backup Face 5 mm increments		Spring Type PS
			MFL	MFR		BFL	BFR	
98.0 (10.0)	WCMSH	250	90~125	90~125	0.0~10.0	75~125	75~125	GK NGK ISO

ISO: Coil Spring GK: Gas Spring (KALLER)
NGK: Without Gas Spring Parts for spring assembly are included.

Refer to page 620 for the table of components, page 625 for details of the cam diagram, and page 616 for the Spring Specification.

Order

Catalog No.	W	–	MFL	–	MFR	–	θ*1	–	BFL	–	BFR	–	PS	–	Option
WCMSH	250	–	100	–	90	–	3.0	–	100	–	90	–	GK	–	NF

*1 The angle can be specified at increments of 0.1° from 1.6° to 3.9°.

Option

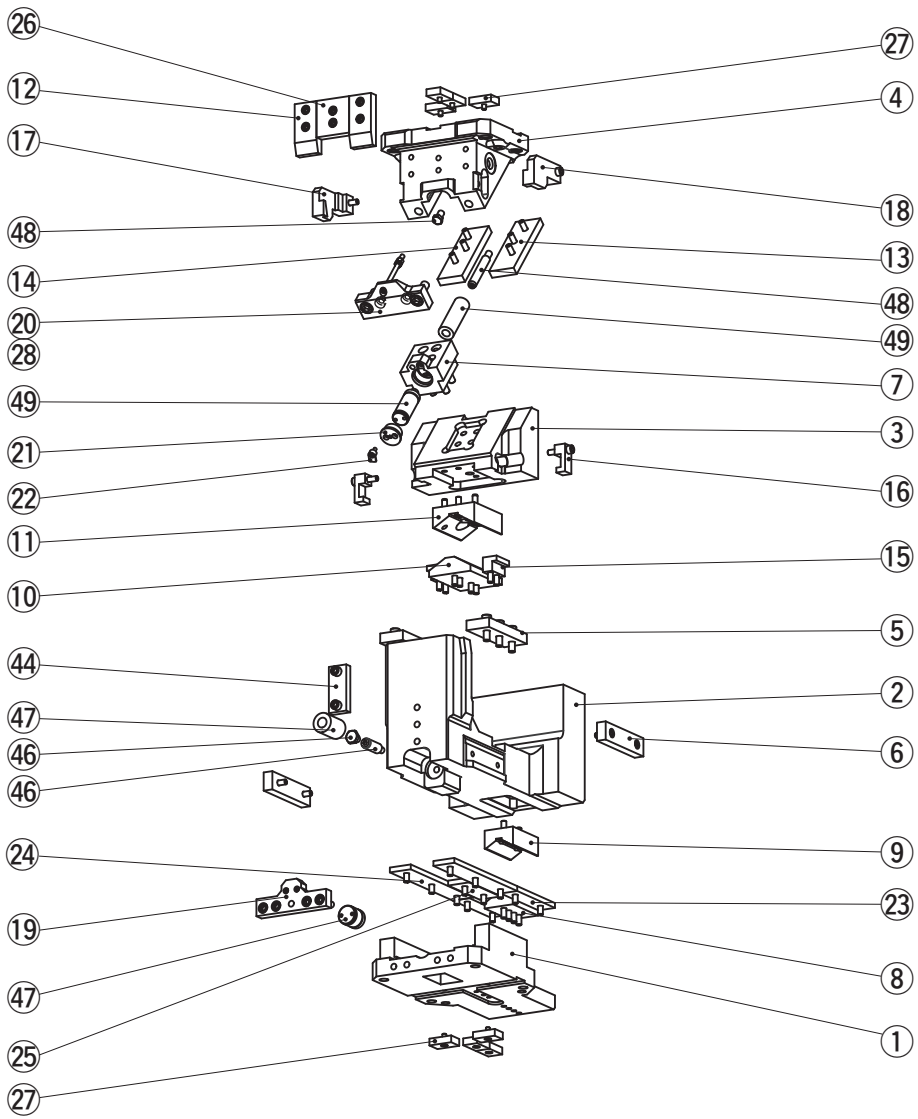
Option Code	Specification
NF	Nitrogen gas not charged.

WCMSH [Table of Components]

with Cam Holder A

Double Cam Unit

WCMSH



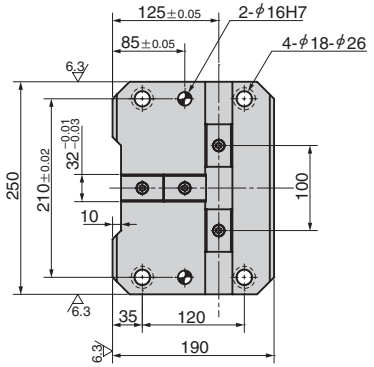
No.	Description	Qty	Material and Remark
1	Cam Holder A	1	Cast Iron
2	Guide Cam	1	Cast Iron
3	Cam Slider	1	Cast Iron
4	Cam Holder B	1	Cast Iron
5	Cam Upper Plate	2	MCUF52-150
6	Side Plate	2	SESW38-150
7	Spring Guide Block	1	Bronze with Graphite
8	Cam Slide Guide	1	CBSPL65-100
9	Cam Slide Guide	1	CBSL65-100
10	Cam Slide Guide	1	Steel
11	Cam Slide Guide	1	Bronze with Graphite
12	Cam Stroke Plate	2	Bronze with Graphite
13	Slide Plate R	1	Copper Powder Sintered
14	Slide Plate L	1	Copper Powder Sintered
15	Positive Return Block	2	Steel
16	Positive Return	2	Bronze
17	Positive Return R	1	Bronze
18	Positive Return L	1	Bronze
19	Spring Stopper A	1	Steel
20	Stopper Plate	1	Steel
21	Spring Stopper B	1	Steel
22	Stopper	1	Steel
23	Wear Plate	2	TWX38-150
24	Wear Plate	2	TWX48-250
25	Wear Plate	1	TWX48-125
26	Wear Plate	1	SESW75-75
27	Key	8	LKU32-50-14
28	Stopper	2	–
44	Locking Plate A	1	Steel
46	Spring Guide Pin	1	Steel ISO specification only
46	Spring Stopper C	1	Steel GK specification only
47	Spring	1	Refer to the Spring Specification.
48	Spring Guide Pin	1	Steel ISO specification only
48	Spring Stopper D	1	Steel GK specification only
49	Spring	1	Refer to the Spring Specification.

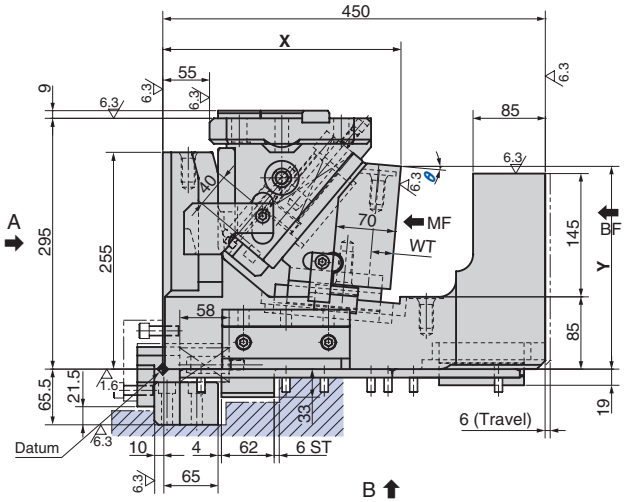
Bolts, nuts, dowels, and washers for assembly are not indicated.

WCMS
without Cam Holder A
Double Cam Unit

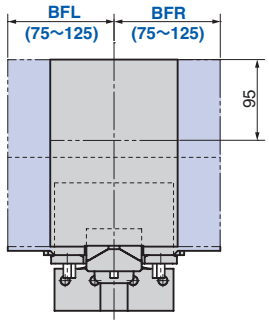
WCMS

CAD FILE

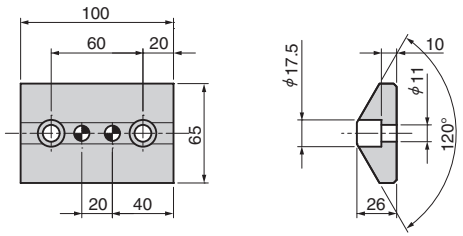




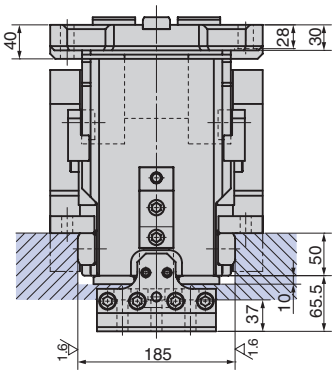
Backup Face (BF View)



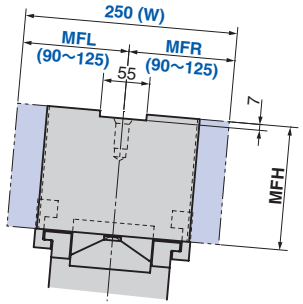
● Cam Slide Guide (⑧)



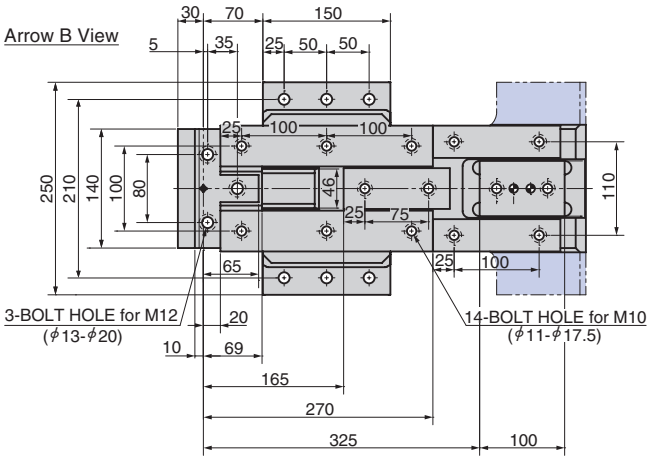
Arrow A View



Mount Face (MF View)



Arrow B View



Working Force kN (tonf)	Catalog No.	W	Mount Face 5 mm increments		θ*1 0.5° increments	Backup Face 5 mm increments		Spring Type PS
			MFL	MFR		BFL	BFR	
98.0 (10.0)	WCMS	250	90~125	90~125	0.0~10.0	75~125	75~125	GK NGK ISO

ISO: Coil Spring GK: Gas Spring (KALLER)
NGK: Without Gas Spring Parts for spring assembly are included.

Refer to page 623 for the table of components, page 625 for details of the cam diagram, and page 616 for the Spring Specification.

Order

Catalog No.	W	–	MFL	–	MFR	–	θ*1	–	BFL	–	BFR	–	PS	–	Option
WCMS	250	–	100	–	90	–	5.0	–	100	–	90	–	ISO	–	NF

*1 The angle can be specified at increments of 0.1° from 1.6° to 3.9°.

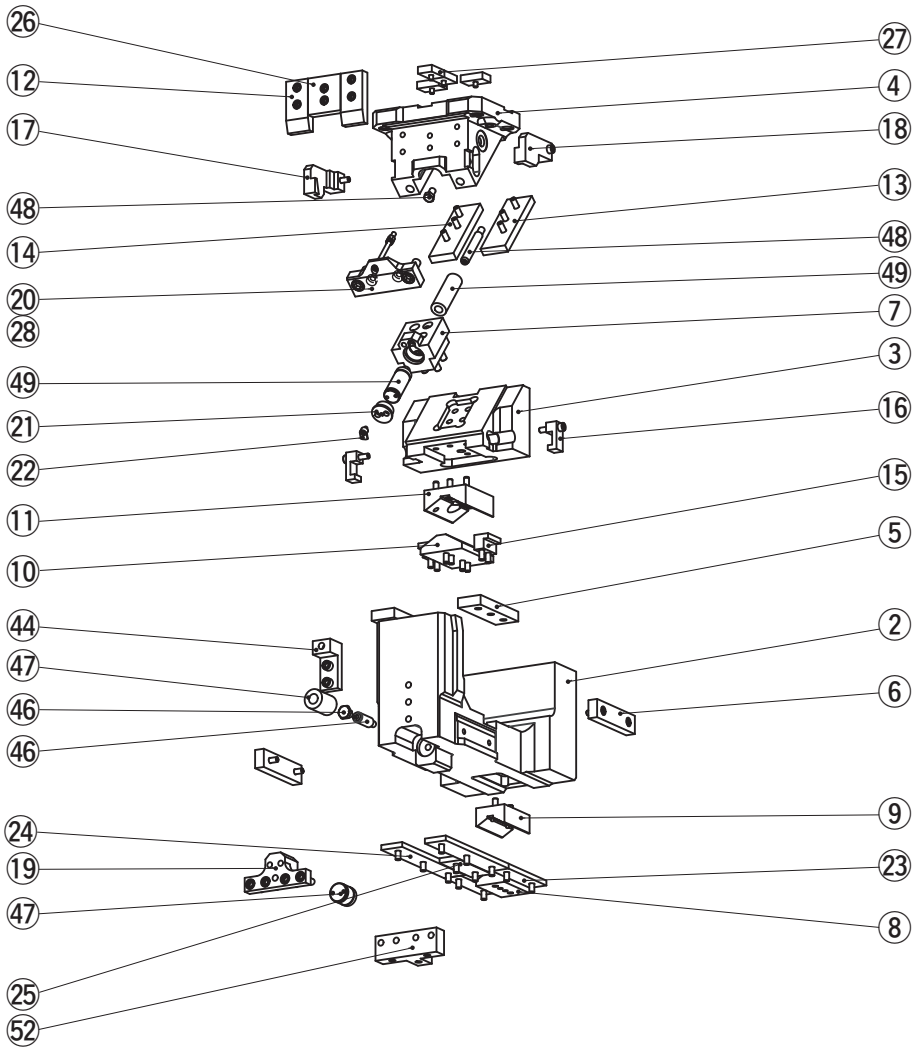
Option

Option Code	Specification
NF	Nitrogen gas not charged.

WCMS [Table of Components]

Double Cam Unit

WCMS



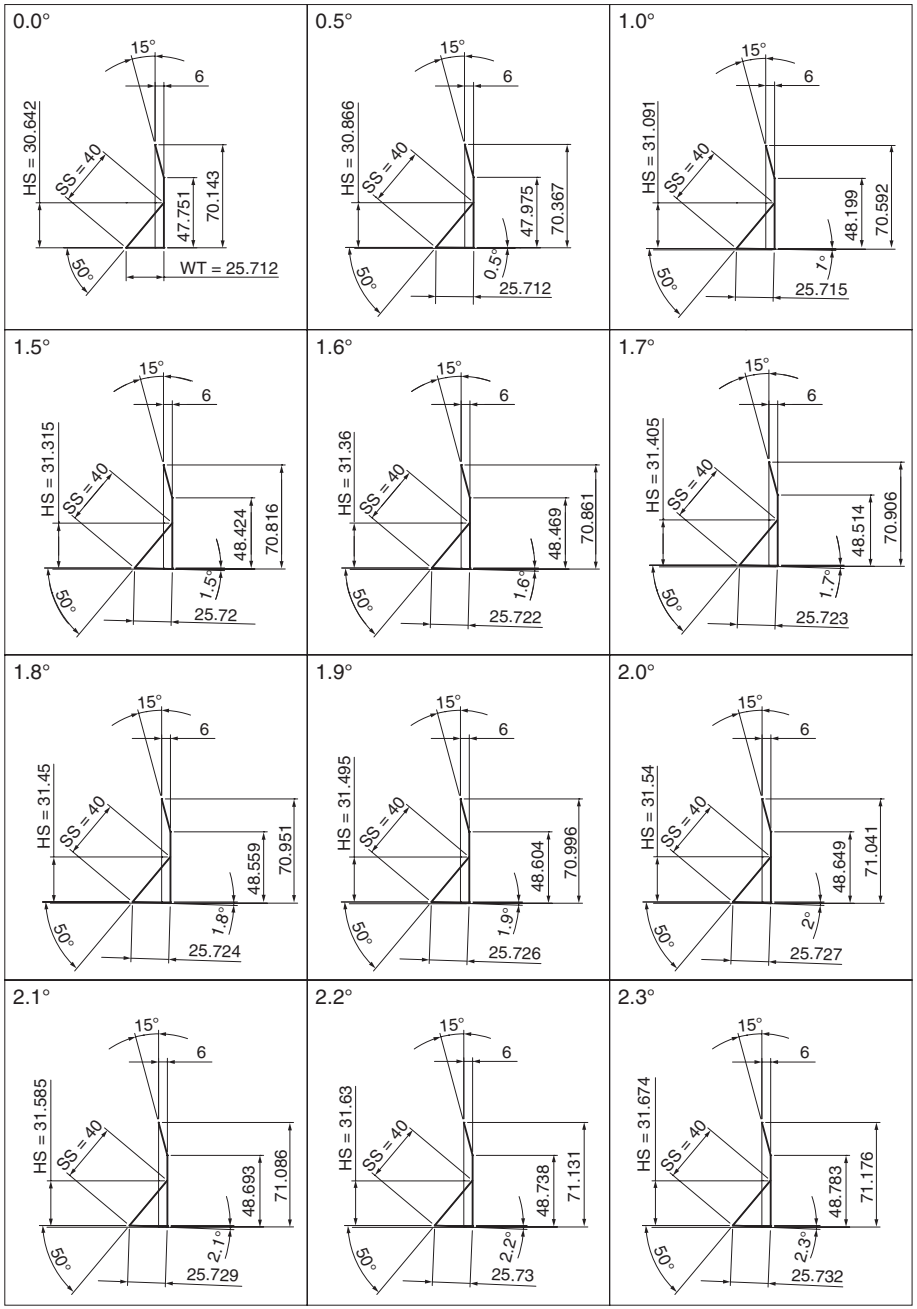
No.	Description	Qty	Material and Remark
2	Guide Cam	1	Cast Iron
3	Cam Slider	1	Cast Iron
4	Cam Holder B	1	Cast Iron
5	Cam Upper Plate	2	MCUF52-150
6	Side Plate	2	SESW38-150
7	Spring Guide Block	1	Bronze with Graphite
8	Cam Slide Guide	1	CBSPL65-100
9	Cam Slide Guide	1	CBSL65-100
10	Cam Slide Guide	1	Steel
11	Cam Slide Guide	1	Bronze with Graphite
12	Cam Stroke Plate	2	Bronze with Graphite
13	Slide Plate R	1	Copper Powder Sintered
14	Slide Plate L	1	Copper Powder Sintered
15	Positive Return Block	2	Steel
16	Positive Return	2	Bronze
17	Positive Return R	1	Bronze
18	Positive Return L	1	Bronze
19	Spring Stopper F	1	Steel
20	Stopper Plate	1	Steel
21	Spring Stopper B	1	Steel
22	Stopper	1	Steel
23	Wear Plate	2	TWX38-150
24	Wear Plate	2	TWX48-250
25	Wear Plate	1	TWX48-125
26	Wear Plate	1	SESW75-75
27	Key	4	LKU32-50-14
28	Stopper	2	—
44	Locking Plate B	1	Steel
46	Spring Guide Pin	1	Steel ISO specification only
46	Spring Stopper C	1	Steel GK specification only
47	Spring	1	Refer to the Spring Specification.
48	Spring Guide Pin	1	Steel ISO specification only
48	Spring Stopper D	1	Steel GK specification only
49	Spring	1	Refer to the Spring Specification.
52	Spring Stopper Block	1	Steel

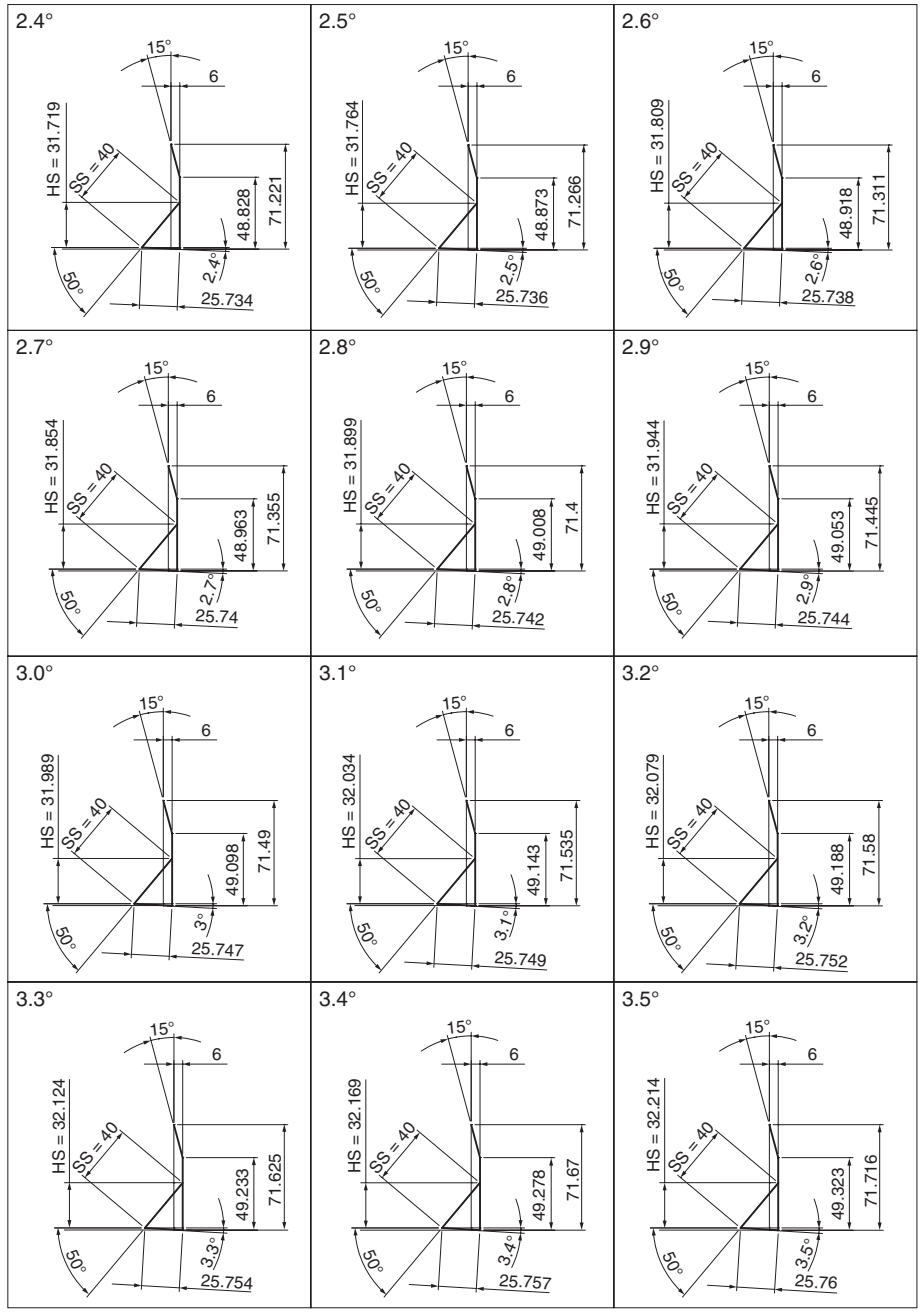
Bolts, nuts, dowels, and washers for assembly are not indicated.

WCMSH/WCMS [Cam Diagram]

without Cam Holder A

Double Cam Unit



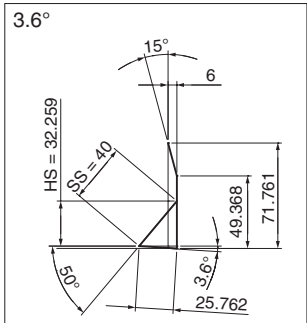


WCMSH/WCMS [Cam Diagram]

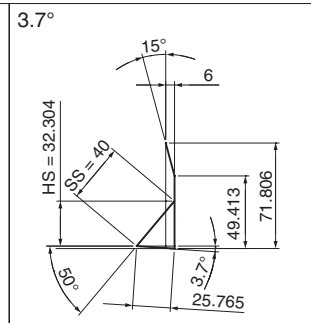
without Cam Holder A

Double Cam Unit

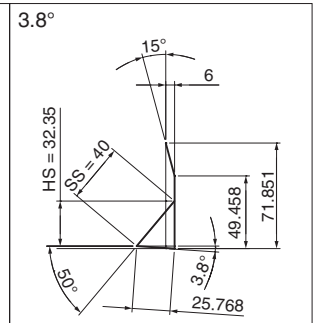
3.6°



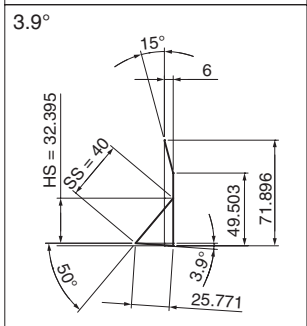
3.7°



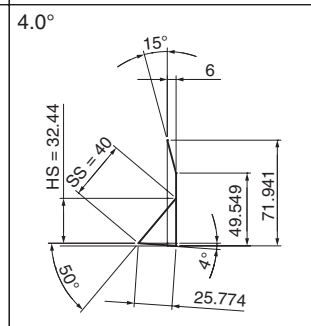
3.8°



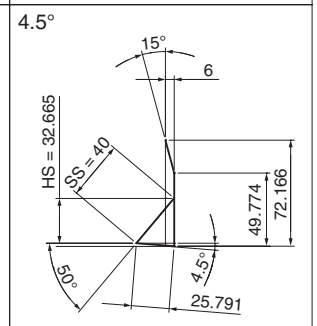
3.9°



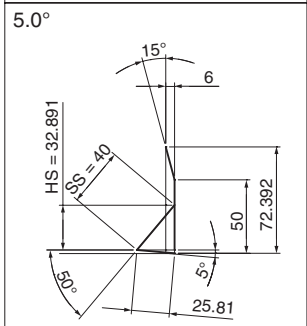
4.0°



4.5°



5.0°



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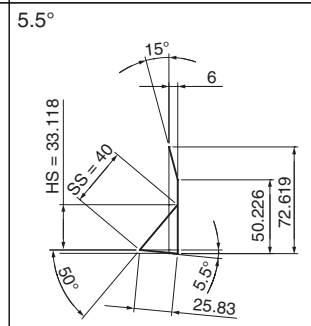
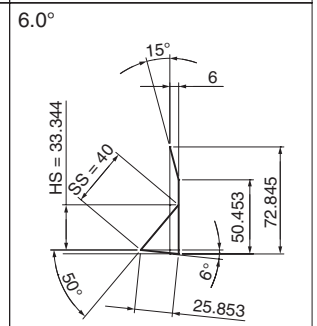


6.0°



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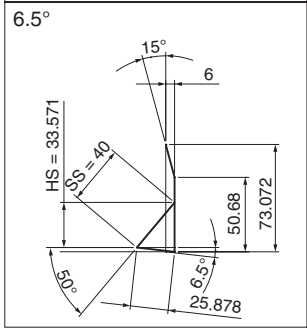
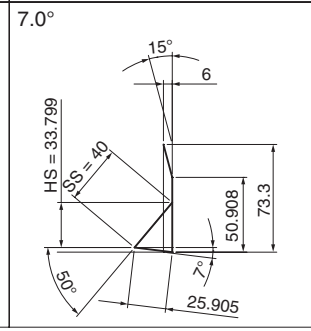
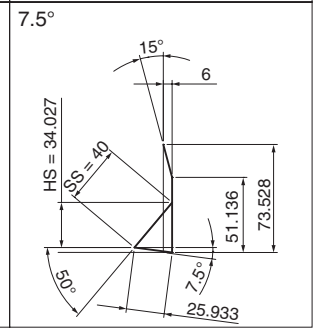


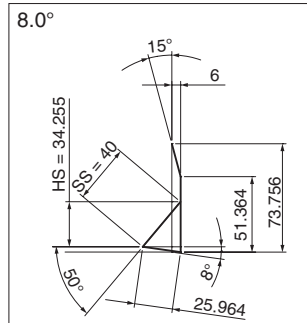
7.0°



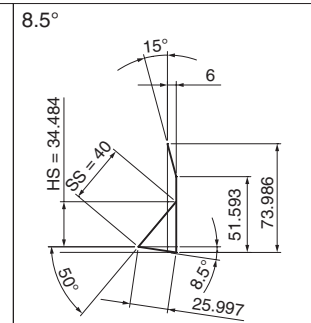
7.5°



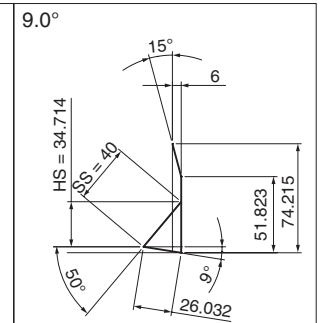
8.0°



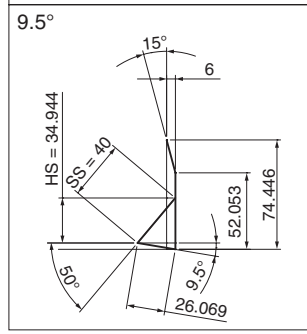
8.5°



9.0°



9.5°



10.0°