VPSS 3i BEND-Ver. 2.03
Machine - Bending Process Machine - Auto Process Condition Setting Guide

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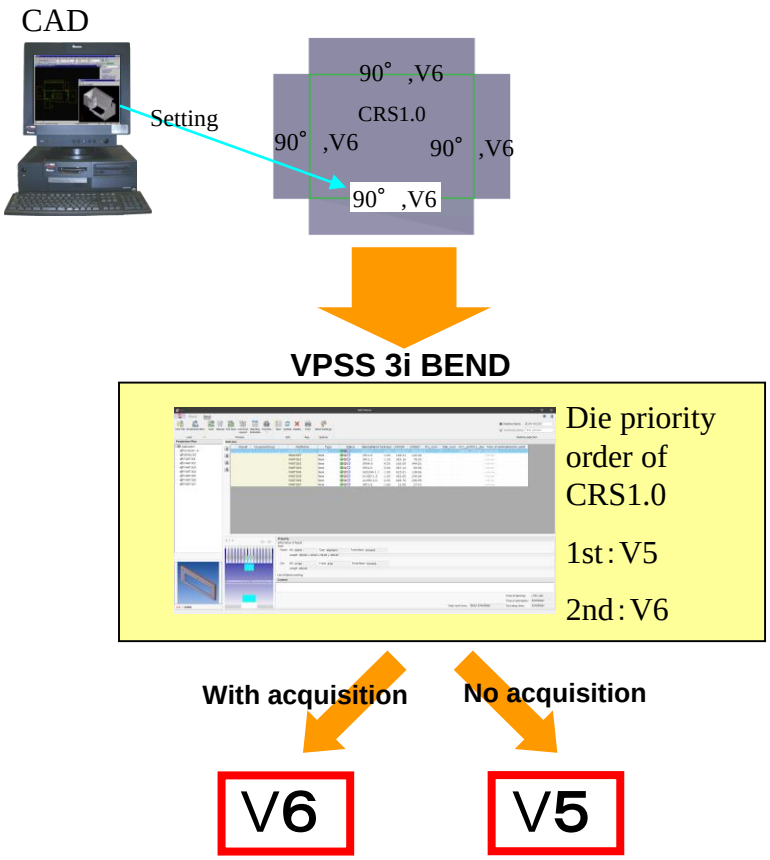
Front Table

ToolSelect

V width information of bend line of part - acquisition thereof



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This is configuration item whether V-width information specified in the unfolded view is used or not in selecting a tool in the automatic processing creation. In case of the left drawing, the V-width is set to 6 when creating the unfolded view. When planning this in the VPSS 3i BEND, the tool priority order of the VPSS 3i BEND is that the first priority is V5 and the second priority is V6. If setting that the acquisition is present, even a die which priority order is low is selected to perform the automatic processing creation.

Case to be changed

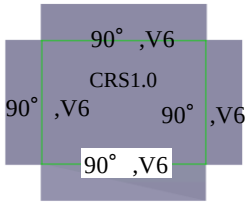
Basically, the setting is "Check ON".

The case of setting "Check OFF" is that a customer unfolds V-width information without being conscious of it, the V-width information to be actually used is not set, unreliable V-width information is set, and so on.
Note: Even when setting "Check ON", a V-width that is not registered in the tool priority order is not selected.

Default value: check ON
Set range: check ON, check OFF

V width information of bend line of part - if auto process generation fails in acquiring it, generate auto process according to order of tool priority

Setting



Use V-width set to part

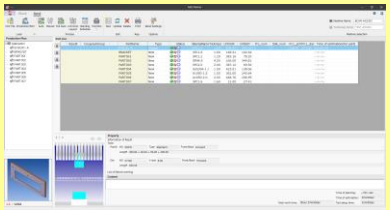
V6

＜When this parameter is set to “check OFF”＞ ⟶ If failed, that is not good.

＜ When this parameter is set to “check ON” ＞

Even if failed…

VPSS 3i BEND



Die priority order of CRS1.0

1st：V5

2nd：V6

Use tool priority order setting

V5

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This item is effective only when “acquire V-width information of bend line of part” is set to “check ON”.

When setting “check ON” and even if the auto process generation is failed, the auto process generation is tried according to the order of tool priority.

When setting “check OFF” and if the auto process generation is failed for acquired V-width information, it becomes failed just as it is.

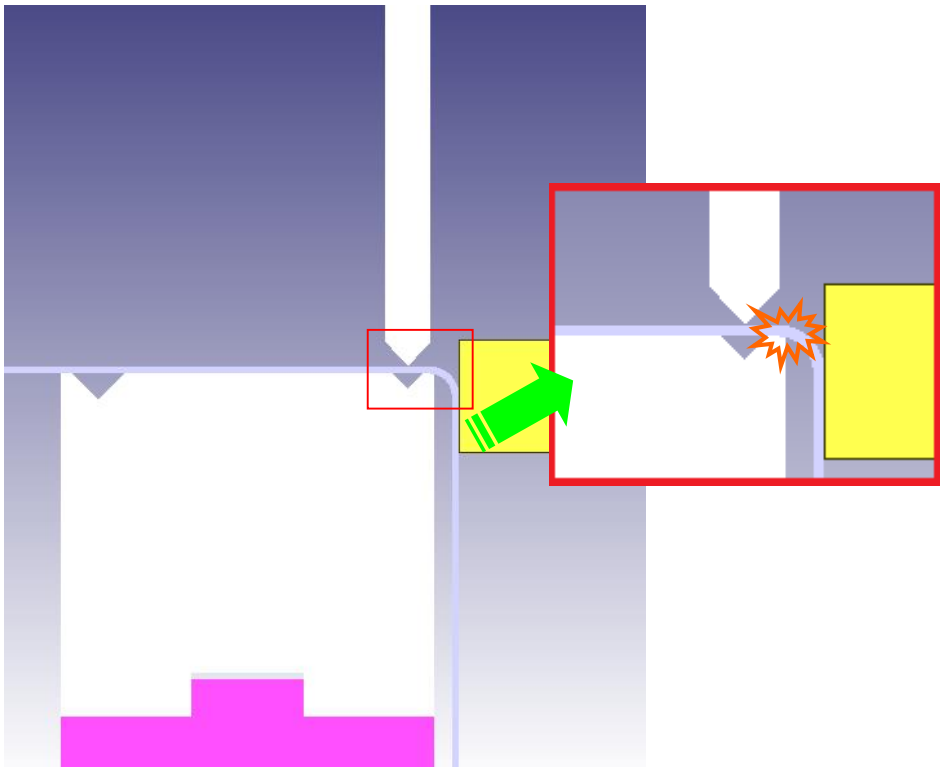
Case to be changed

Set “check ON” normally.

If you want to perform auto step generation only with V-width info set for part, set “check OFF”.

Default value: check ON
Set range: check ON, check OFF

Minute interference check - accept pre-bend interference between part's inner R and die shoulder in selecting tool



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This item is to set whether a collision between the part's inner R and the die is checked in checking such a collision before bending.

VPSS 3i BEND faithfully reproduces the shape of the model and checks the collision.

The case as shown in the left figure is originally to be not good because there is a collision. However, by allowing such a collision the planning is succeeded (presence of warning).

Case to be changed

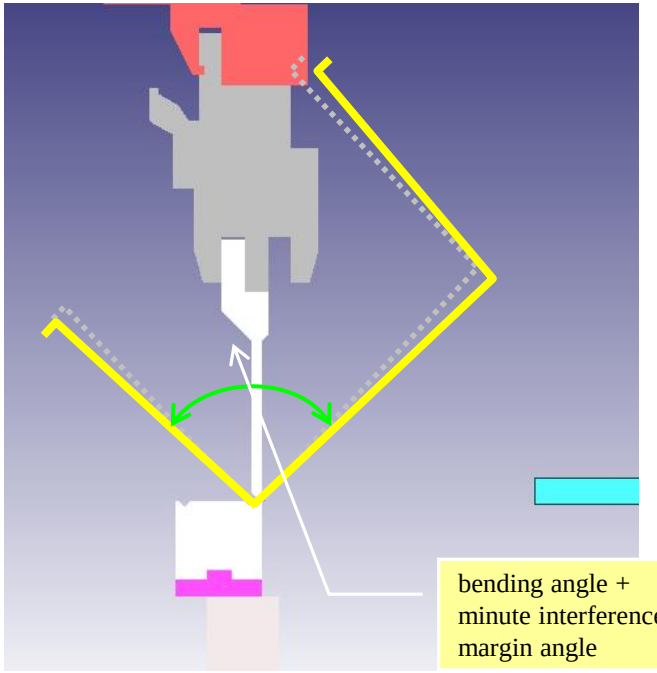
Explain about the parameters to the customer to determine which parameter to be set.

Since mostly the actual status of the part's inner R is not the same as the image of the part's inner R on the screen, it is likely that many customers prefer to set "check ON" to accept a collision.

Default value: check OFF
Set range: check ON, check OFF

Minute interference check - post-bend interference with upper table

°



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This item is that a plan is successful (presence of warning) for a part such that the part and the upper table have minute interference with the upper table, by checking the interference between the upper table and the part according to a bending angle (yellow line in left figure) larger than the original bending angle (gray line in left figure).

Case to be changed

It is normally recommended to set “check OFF”.

When a customer says “a large part is failed in a situation that the part is bent while lightly applying the part to the upper table, however, can you manage to make such bending successful”, change to “check ON”. When a customer wants to save a data that interference is accepted, the item, “the data that a micro-collision occurs (with warning) is automatically saved”, is turned to “check ON”.

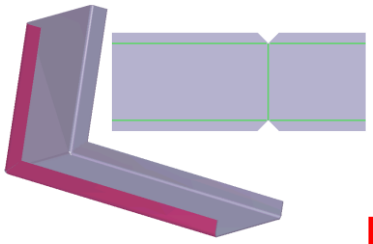
When a minute collision angle margin value is set for each sheet thickness, check "Check ON" of "Set a minute collision angle margin value for each sheet thickness range".

If you want to save a data that a collision is accepted, check "Check ON" of "Automatically save "Warning" data that there is a slight collision".

Interference to be accepted **Default value：check OFF** **Set range：check ON，check OFF**	**Set minute interference margin value for each range of thickness.** **Default value: check OFF** **Set range: check ON, check OFF**	
Thickness **(If setting a second sheet thickness, turn the part beside the Sheet Thickness column ON.)** **Default value：99.99mm** **Set range：0.01～99.99mm**	**Minute interference margin value (=α)** **Default value：5 degrees** **Set range：0 - 30 degrees**	**The data that minute interference occurs “presence of warning” is automatically saved.** **Default value: check OFF** **Set range: check ON, check OFF**

Recognition of self interference of part

AP100

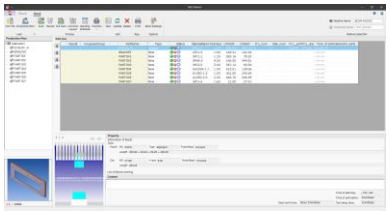


No interference occurs at interference check of stereoscopic edition.

Without interference

Presence of recognition

VPSS 3i BEND



Plan is impossible due to part with collision.

With interference

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This item is to set whether presence or absence of self interference of a part is recognized or not in the auto process generation.

Case to be changed

This is basically set to “check ON”.

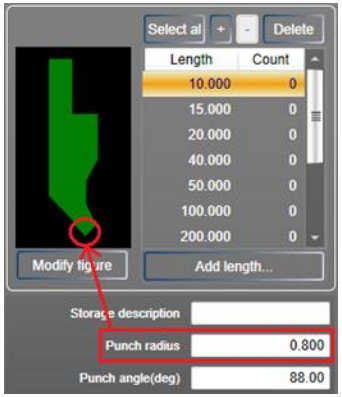
Occasionally, a customer may say “this part is determined to be no collision in AP100, but a self interference error is caused in VPSS 3i BEND”.
This is due to the difference between the interference check function of AP100 and the interference check function of VPSS 3i BEND which modules used are different from each other.

In this case, after explaining about the description above to the customer, change the setting to “check OFF”.

Default value: check ON
Set range: check ON, check OFF

Consider punch tip R

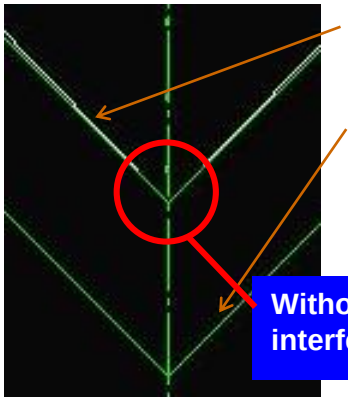
Whether interference with part of “inner R” =0 occurs or not?



Whether interference with part of “inner R” =0 occurs or not?

▪Setting without interference

Punch tip with a right angle

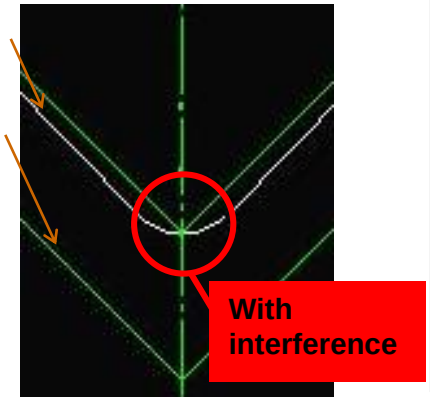


Punch outer shape line (white)

Work-piece outer shape line (green)

▪Setting with interference

Punch tip with “a tip-R (radius)”



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This item is to determine, according to “tool priority setting”, whether a punch having a tip R which does not interfere with the part’s inner R is automatically selected or not.

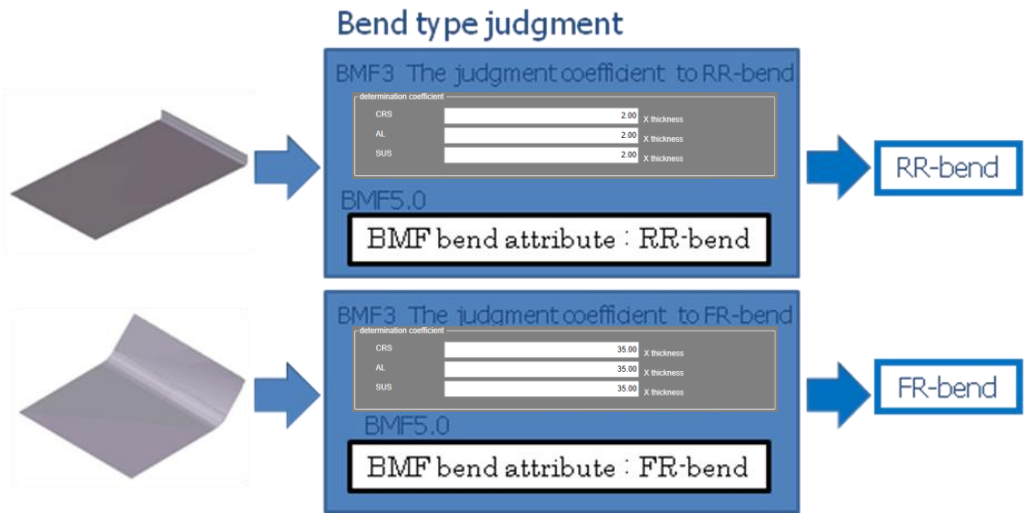
Case to be changed

Basically, the setting is "Check OFF".

In case of normally setting "Check Off", collision between the "inner-R" set when the customer unfolds and a cross sectional shape of the punch is checked when the tool is automatically selected. The case of setting "Check ON" is a case that you want to strictly check collision between the "inner-R" that the customer set in the unfolded view and the cross sectional shape of the punch to which the "edge-R" value of the punch is added, when a tool is automatically selected.

Default value: check OFF
Set Range: check ON, check OFF

Acquire information of bend type and number of FR bend of bend line



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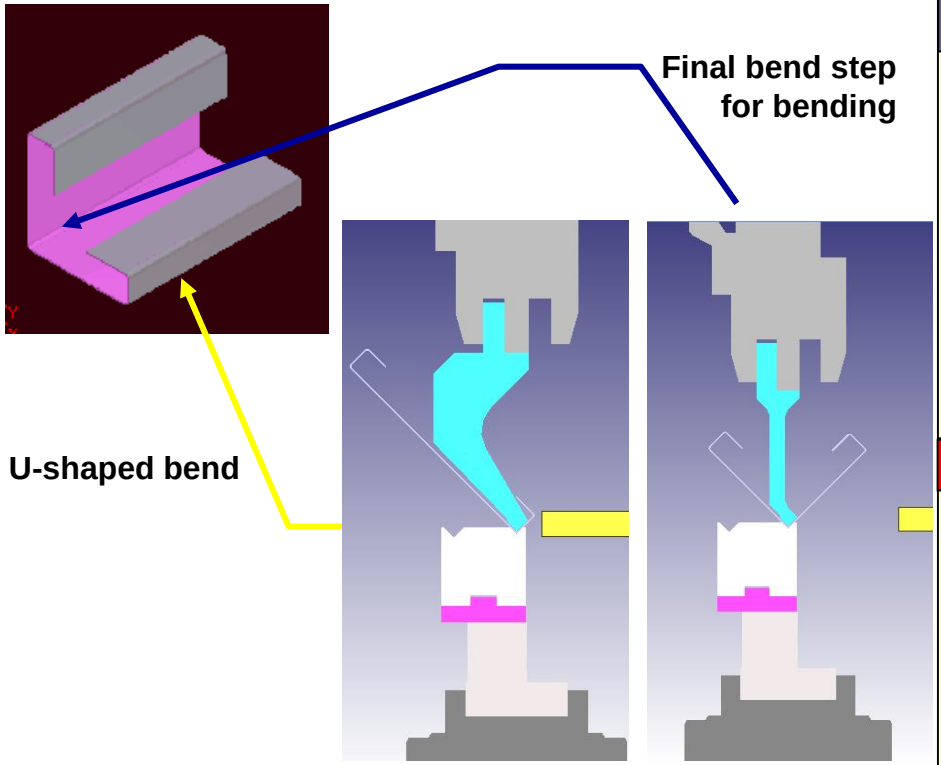
This item is to be used when determining, in the automatic process creation, whether the object bend line is subjected to V-Bend, RR-Bend or Step-Bend based on their bend attribute (see the left figure).

Case to be changed

Set “check ON”, when you want to determine whether a bend line type is V-Bend, RR-Bend or Step-Bend based on their bend attribute.

Default value: check OFF
Set region: check ON, check OFF

[V-Bend] - automatic selection of multiple different kinds of tools - execution of selection



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This item is to set whether or not selecting a combination of multiple different kinds of tools for a part that there is a V-Bend which cannot be bent by only one type of tool depending on a condition of parameters the user sets and a shape of the part.

When being bendable by a combination of multiple tools as shown in the left figure, it is normally impossible to select tools, that is, the automatic creation is not good. However, in this case, selecting the combination of multiple tools makes the automatic creation successful (OK).

Case to be changed

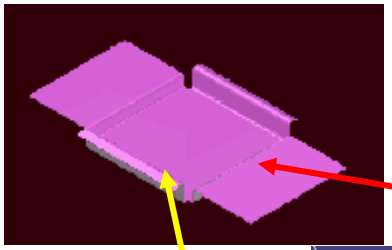
Set this item when automatically creating a tool that a V-Bend which cannot be bended by only one type of tool depending on a condition of parameters the user sets and a shape of the part.

Since tools are selected by combining multiple types of tools, the automatic process creation takes more time than normal.

In this case, even if the automatic creation is not good (NG) according to only one tool, the number of parts that the automatic creation is successful (OK) will increase.

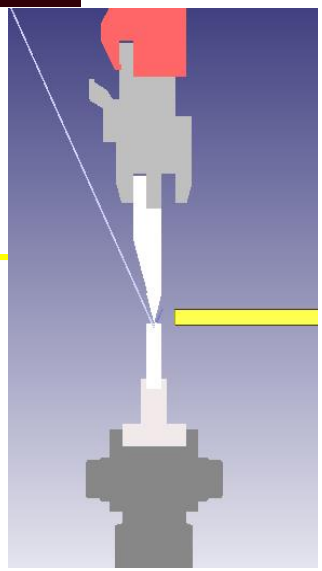
Default value: check OFF
Set range: check ON, check OFF

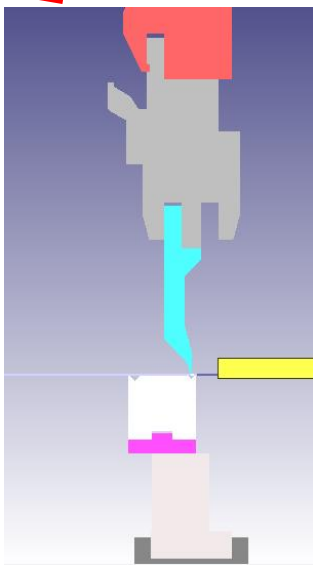
[V-Bend] - auto-selection of multiple different kinds of tools - auto-selecting another tool separately for acute angle bending



For 90 degrees bending

For acute angle bending





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This item is to set when you want to perform V-Bend using both acute angle bending with an acute angle bending tool and obtuse angle bending with a 90 degrees bending tool, instead of using one kind of tool for an acute angle bending tool.

As shown in the left figure, a part that there are both acute (< 90 degrees) and obtuse (>90 degrees) angle bendings is normally successful (OK) for the automatic creation at selecting an acute angle tool.

However, in this case, the automatic creation is successful (OK) using the acute angle bending tool for an acute angle and the 90 degrees bending tool for an obtuse angle.

Case to be changed

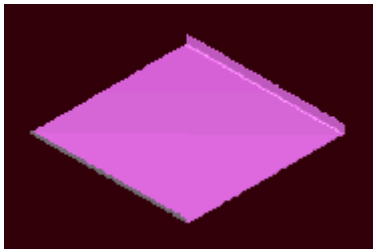
Set this item when you want to perform V-Bend using both of an acute angle bending tool for an acute angle and a 90 degrees angle bending tool for an obtuse angle.

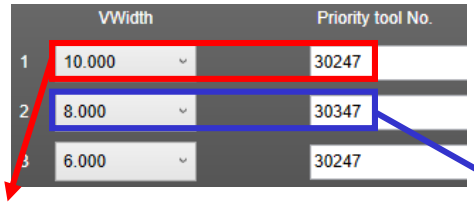
Since tools are selected by combining multiple types of tools, the automatic process creation takes more time than normal.

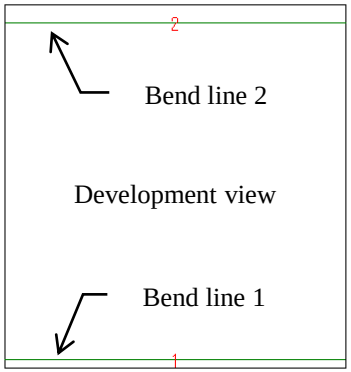
However, in this case, the automatic creation is successful (OK) using the acute angle bending tool for a acute angle and the 90 degrees bending tool for an obtuse angle.

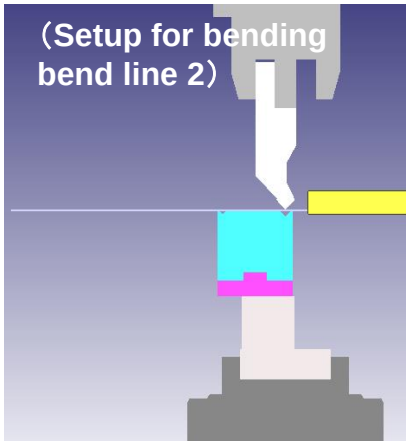
Default value: check OFF
Set range: check ON, check OFF

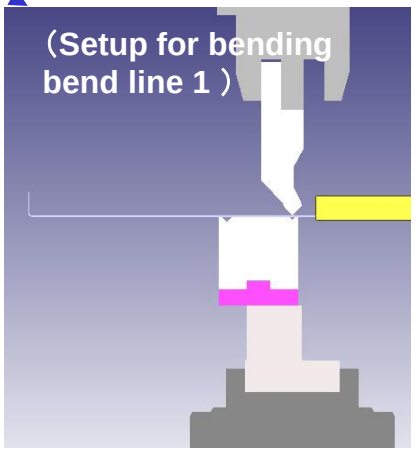
[V-Bend] - automatic selection of multiple different kinds of tools - automatically selecting another tool for bending minimum flange











Contents

This item is to set whether or not selecting a combination of multiple tools while maximally keeping a V-width specified to the bend line of the unfold drawing or a higher level V-width of tool priority setting for a part that a V-Bend exists which cannot be bent by one V-width according to the flange length of the part, or can be bent but not automatically select a V-width specified to the bend line of the unfold drawing or a higher level V-width set in the tool priority setting.

Since the flange of the bend line 1 is short as shown in left Figure 1, originally the bend line 2 is also to be resulted in being bent for a small V-width.

However, the result of automatic creation by the V-width die appropriate for each bend is obtained by selecting a combination of multiple tools.

Case to be changed

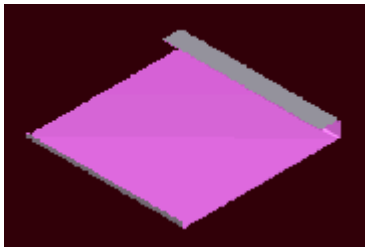
Set a time when automatically creating a part that a V-Bend exists which cannot be bent by one kind of V-width according to the flange length of the part, or can be bent but not set a V-width specified to the bend line of the development view or a higher level V-width set in the tool priority setting.

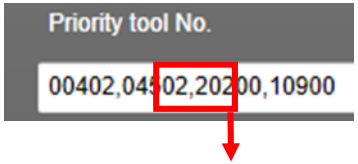
Since tools are selected by combining a plurality of tools, the automatic process creation takes more time than normal.

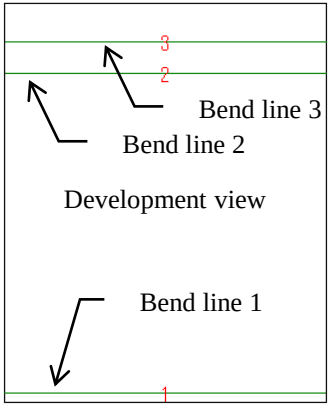
However, an automatic creation result by a die with a V-width appropriate for each bend is obtained.

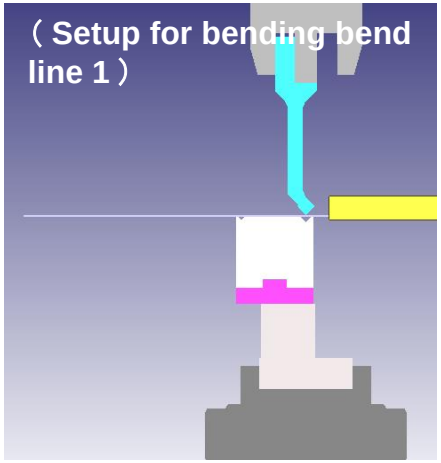
Default value: check OFF
Set range: check ON, check OFF

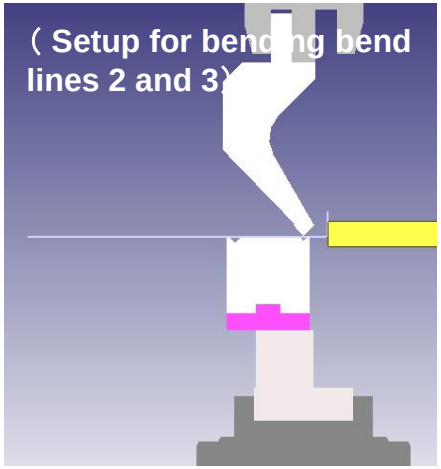
[V-Bend] - automatic selection of multiple different kinds of tools - automatically selecting another tool for preventing interference between tool and backgauge











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This item is to set whether or not selecting a combination of multiple tools that the backgauge and the punch do not interfere in the normal holding direction with respect to the part in which a V-Bend exists for example that the backgauge is over the die due to the flange length of the part and the rear face of the punch and the backgauge collide due to the length of the flange, or only a punch which is bent in a direction difficult to hold when performing a backgauge can be set.

Since the flange of the bend line 1 is short and the punch for bending the bend lines 2 and 3 prevents collision with the backgauge, a result that a short flange is held and bended is obtained.

However, an automatic generation result based on a punch that the punches and the backgauge do not collide by selecting a combination of multiple tools is obtained.

Case to be changed

Set this item when automatically creating a part in which a V-Bend exists for example that the backgauge is over the die and the rear face of the punch and the backgauge collide due to the length of the flange of the part, or only a punch which is bent in a direction difficult to hold when performing a backgauge can be set.

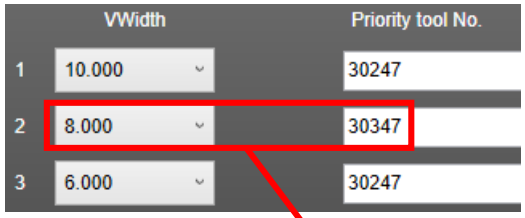
Since tools are selected by combining multiple types of tools , the automatic process creation takes more time than normal.

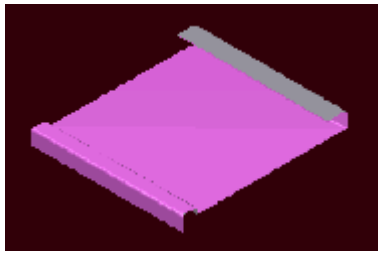
However, an automatic generation result by a punch appropriate for each bend is obtained.

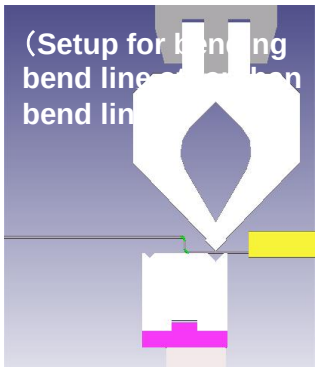
Default value: check OFF
Set range: check ON, check OFF

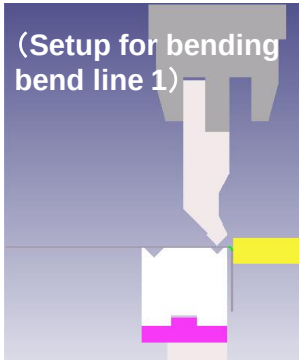
[V-Bend] - automatic selection of multiple different kinds of tools - automatically selecting another die for preventing collision between part and die

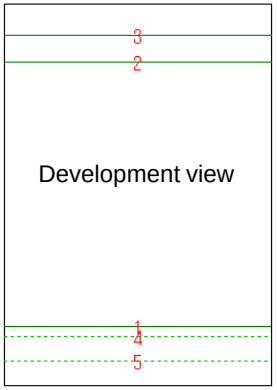
Bend line	Bend type	Inside R	Deduction	Angle	Direction	V-Width
1	V-Bend	1.86	2.05	90.00	Back	10.00
2	V-Bend	1.86	2.05	90.00	Back	10.00
3	V-Bend	1.86	2.05	90.00	Back	10.00
4	V-Bend	1.86	2.05	90.00	Front	10.00
5	V-Bend	1.86	2.05	90.00	Front	10.00











Contents

This item is to set whether or not selecting a combination of multiple tools while for example selecting a die which has another V-width for the V-width of the bend line that the rear face of the die and the inner R of the part interfere with respect to the part that a V-Bend exists which cannot be bent by one type of V-width specified for the bend line in the development view.

Since the bend line 1 shown in left figure is short and when the bend lines 1 to 4 is bent, the die having the V-width specified for the bend line in the development view collides with the inner R of the part, a result that a die having a small V-width is selected and bent is obtained.

However, an automatic generation result that a die having a small V-width for the V-width of the bend line which collides by selecting a combination of multiple tools is obtained.

Case to be changed

Set this item when you want to automatically create the tool setup with the same V-width specified to the bend width in the unfold diagram as much as possible for the part in which the V-width that cannot be bended, due to the part shape, by one kind of tool exists.

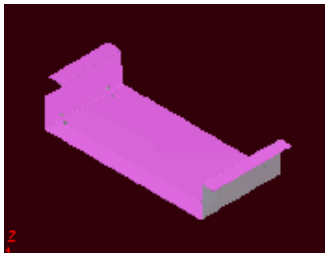
Since the multiple types of tools are selected, the automatic generation step takes more time than normal.

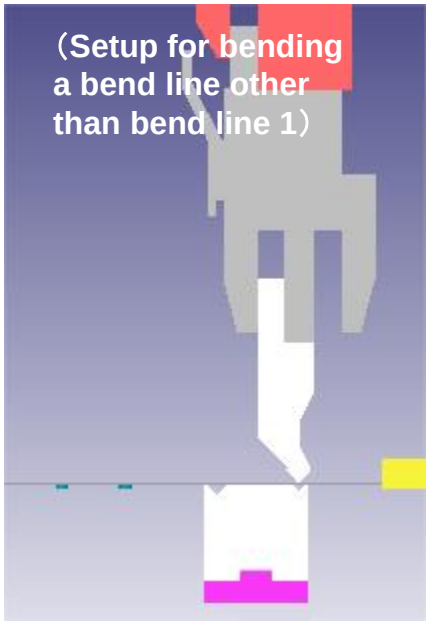
However, an automatic generation result that much more V-widths specified for the bend line in the development view are used is obtained.

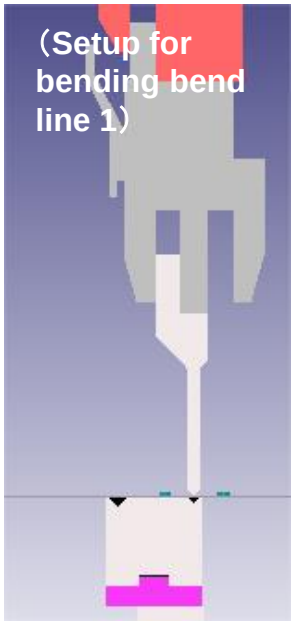
Default value: check OFF
Set range: check ON, check OFF

[V-Bend] - automatic selection of multiple different kinds of tools
- automatically selecting another punch for preventing collision with forming shape of part

※AMNC5.1 or later can be accommodated.







Contents

This item is to be set when you want to use an acute angle punch or a straight sward punch only for the bend line, which can be bent by one kind of tool, for preventing the forming shape existing on the part, and perform the V-Bend with a higher priority punch for other bend line.

Since the forming shape is close to the bend line 1 as shown in the left figure, when bending the bend line 1, an automatic creation result that the straight sward punch is selected to bend the bend line 1 is obtained.

However, the automatic creation result that the straight sward punch is used only for the bend line 1 by selecting a combination of multiple tools is obtained.

Case to be changed

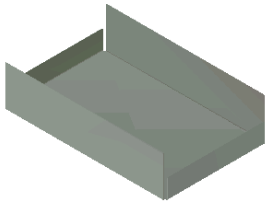
Set this item when a forming shape existing on a part is close to a bend line, and you want to perform V-Bend with a punch for preventing only such a bend line from collision.

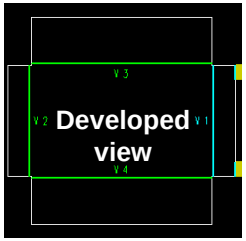
Since the multiple types of tools are selected, the automatic process creation takes more time than normal.

However, the automatic creation is successful by using a punch that prevents only the bend line to which the forming shape exists close from collision, and a punch which is selected according to the order of priority.

Default value: check OFF
Set range: check ON, check OFF

[V-Bend] - automatic selection of multiple different kinds of tools - selecting another punch according to height set in order of priority



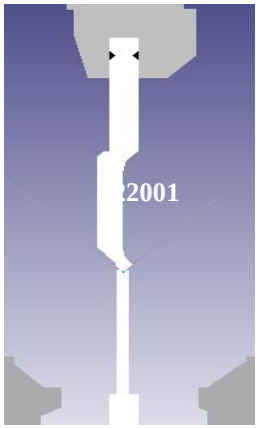


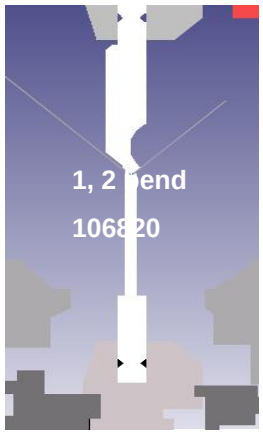
Setting "tool priority order"

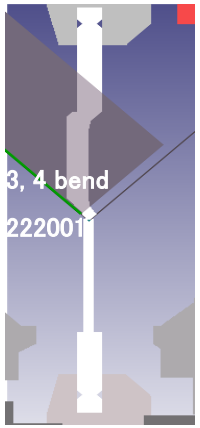
No.	Height	priority order
106820	156.0	1
222001	206.0	2

When setting "check OFF" in this example, select one type of punch having a high height.
(A tool is selected to reconstruct the order of priority by considering a necessary height of the punch which VPSS 3i BEND determines on the basis of the status set in the order of tool priority.)

In this example, when setting "do", select two types of punches, the one with high priority order and the one with high height.
(A tool is selected according to the status set in the tool priority order, and another tool is selected for a process which requires a punch having a high height.







Contents

This item is to be set when you want to select a tool according to setting of tool priority order and select another tool only for a V-Bend process requiring a punch having a high height.

The part as shown in the left figure requires a tool having a high height, since the side flange is high.

It is possible to process only a bend line which the side flange affects, by selecting a tool having a higher height, and to process other bend line by selecting a tool on the basis of setting of tool priority order.

Case to be changed

When executing the bending operation with the same tool as much as possible, select "not do".

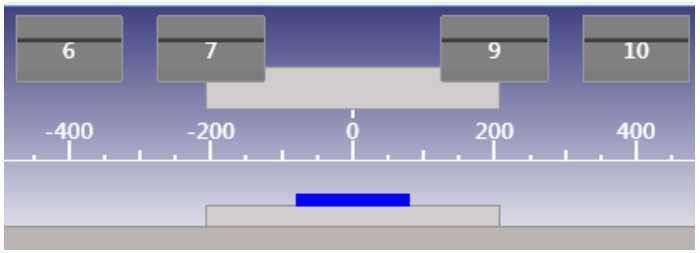
Since the number of setup change can be reduced, normally select this.

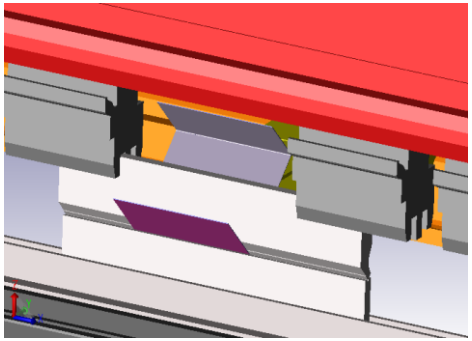
When using tools according to setting the priority order, select "check ON".

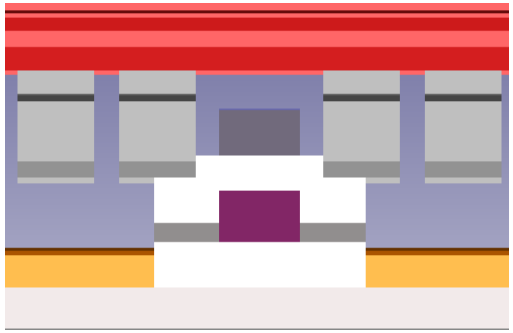
The possibility that a setup change is inserted in the middle becomes higher. However, a punch according to setting the priority order is selected as much as possible, a side flange is prevented, and another tool having a high height is selected for the V-Bend process requiring a punch having a high height.

Default value: check OFF
Set range: check ON, check OFF

[V-Bend] - for sash parts, automatically selecting core - drawing punch of punch holder for preventing collision between part and punch holder after bending







Contents

This item is to set whether or not automatically selecting a punch in a state that a punch holder is core-drawn when a part and the punch holder collide after bending in the sash shaped part only for V-Bend.
The maximum process width of the part, the minimum punch holder grip amount, and the minimum clearance between the part and the punch holder can be set.

Case to be changed

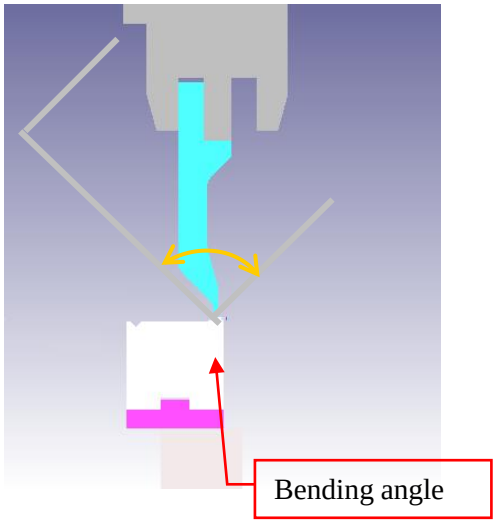
Set this item when the bending process is performed in a state that a punch holder is core-drawn, since in a sash shaped part only for V-Bend the part and the punch holder collide after bending in the normal tool layout, thereby the bending process cannot be performed.

execution of selection
Default value: check OFF
Set range: check ON, check OFF

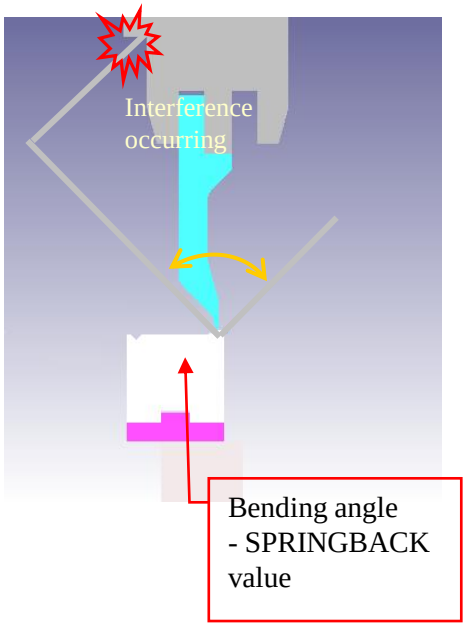
Maximum process width	Minimum punch holder grip amount	Minimum clearance between part and punch holder
Default value: 200 **Set range: 10 - 500**	**Default value: 50** **Set range: 10 - 150**	**Default value: 15 (“with” wedge, when setting punch holder),** **5 (“without” wedge, when setting punch holder)** **Set range: 1 - 100**

[V-Bend] - springback

Considering check OFF



Considering check ON



Contents

This item is to set whether or not considering springback when checking interference in the automatic process creation (see the left figure).

Case to be changed

Basically “check OFF” is set.

A collision check which comes closer to the actual process can be performed by setting this parameter to “check ON” and inputting the SPRINGBACK value.

However, since the interference check becomes strict, the success rate reduces.

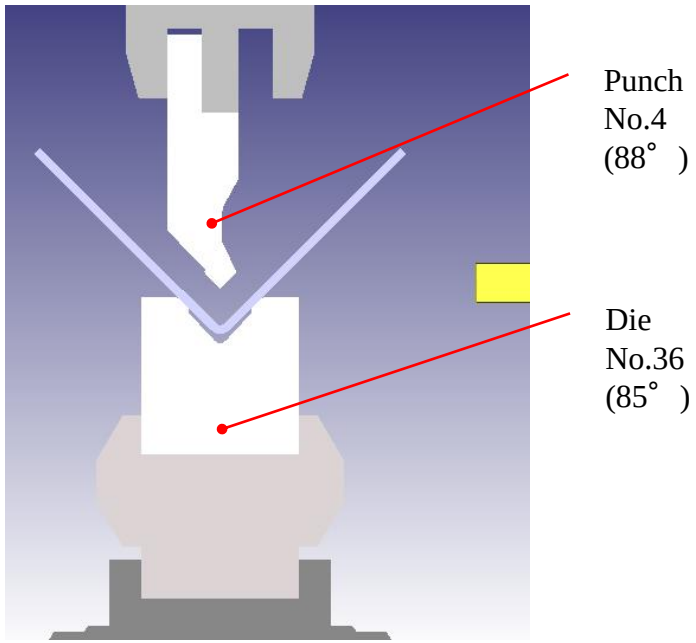
Since there are many cases that a normal customer ignores some interference to perform bending, he/she can set “check OFF” for that.

However, if a customer wants to check very small interference strictly as possible as he/she can, set “check ON”.

Consideration	Springback
Default value: check OFF Set range: check ON, check OFF	Default value: 0.0 degree Set range: 0.0 - 9.99 degrees

[V-Bend] - selecting punch depending on die usage condition - permitting selection of punch having larger tip angle than die V-groove angle when using 1V-die for thick sheet

・Case that “ ・・・ when using 1V-die for thick sheet ・・・ ” is set to “check ON”



Contents

This is a parameter for automatically selecting a punch having a larger tip angle than the die V-groove angle.

Case to be changed

This is a case that a punch having a larger tip angle than the die V-groove angle is used when using the 1V-die for the thick sheet (tool attribute: 1V).
However, the result of automatic creation is “warning”.
Tool selection operation
(Contents)

According to the setting of user parameters, a punch having a tip angle larger than the V-groove angle of the die is selected.

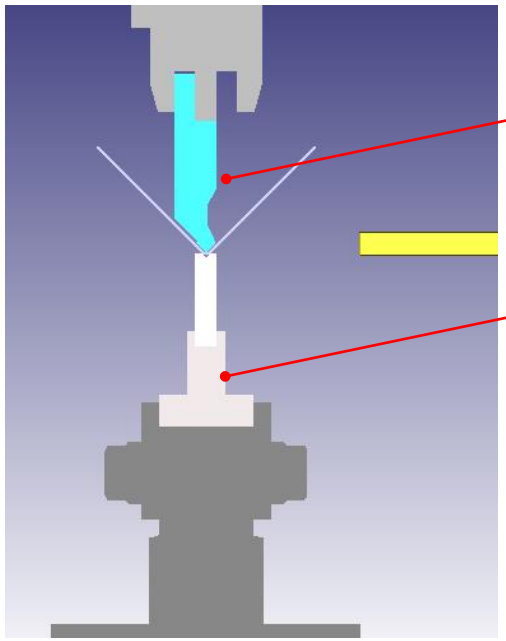
(Handling)

Carefully work when performing the tool setup and setting the tool origin.

Default value: check OFF
Set range: check ON, check OFF

[V-Bend] - selecting punch depending on die usage condition - permitting selection of punch having tip angle of 90 degrees when using die having V-groove angle of 88 degrees

・Case that " ・・・ V-groove angle of 88 degrees ・・・ " is set to "check ON"



Contents

This is a parameter for automatically selecting a punch having a larger tip angle than the die V-groove angle.

Case to be changed

This is a case that a punch having a tip angle of 90 degrees is used when using the die having the V-groove angle of 88 degrees. However, the result of automatic creation is "warning".

Tool selection operation

(Contents)

According to the setting of user parameters, a punch having a larger tip angle than the die V-groove angle is selected.

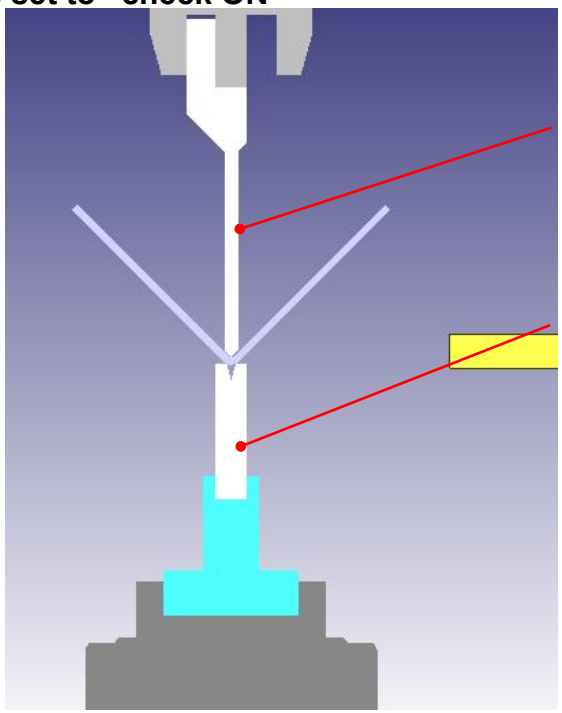
(Measures)

Carefully work when performing the tool setup and setting the tool origin.

Default value: check OFF
Set range: check ON, check OFF

[V-Bend] - selecting punch depending on die usage condition - permitting selection of punch having tip angle larger than die V-groove angle when using acute angle die

・Case that " ・・・ when using acute angle die ・・・ " is set to "check ON"



Punch
No.919021
(86°)

Die
No.970031
(30°)

Contents

This is a parameter for automatically selecting a punch having a tip angle larger than the die V-groove angle.

Case to be changed

This is a case that a punch having a tip angle larger than the die V-groove angle is used when using the acute angle die (tool attribute: acute angle, acute angle 2V).

However, the result of automatic creation is "warning".

Tool selection operation

(Contents)

According to the setting of user parameters, the punch having a tip angle larger than the die V-groove angle is selected.

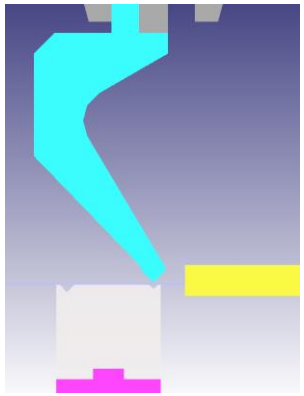
(Measures)

Carefully work when performing the tool setup and setting the tool origin.

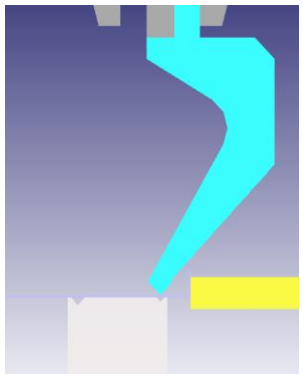
Default value: check OFF
Set range: check ON, check OFF

[V-Bend] - front and back sides of punch

Front side



Back side



Contents

This item is to designate a punch attachment direction when automatically creating the process.

If “do not fix” is designated, VPSS 3i BEND automatically determines an optimal attachment direction.

If a direction is designated (as front or back), it is determined only by the designated attachment direction whether the bend processing is feasible or not. Therefore, a part to be bent for which a punch must be set on the “back side” for setting on the “front side” becomes “Plan IS Not Good”.

Case to be changed

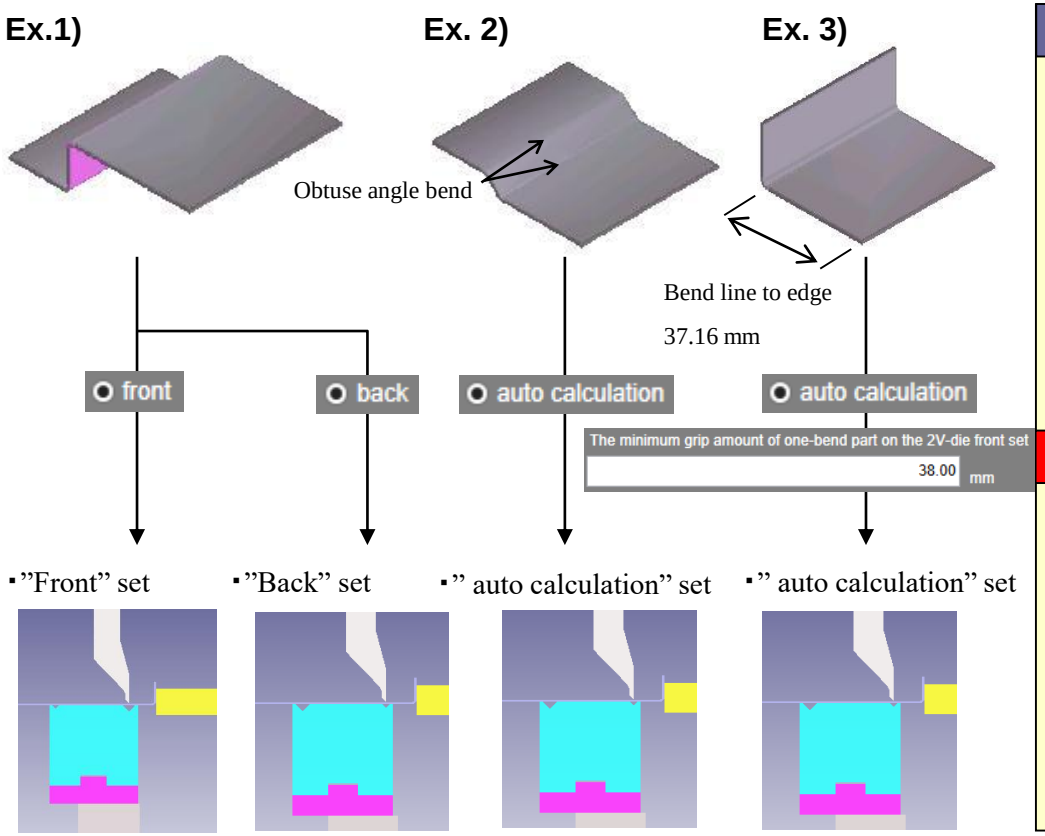
Normally, “do not fix” is set.

However, an unusual customer may determine that “the punch attaching direction must be set on the “back side”.

In response to such a customer, change this parameter accordingly..

Default value: not fixed
Set range: front fixed, back fixed, not fixed

[V-Bend] - priority direction of die attachment



Contents

The die attachment direction which can be automatically selected is either the "front" or "back" side.

A punch is automatically selected after automatically selecting a die, by the scheme of automatic tool selection.

The "front" set has been consistently prioritized till now, however, by setting this parameter, a prioritized attachment direction can be set.

Case to be changed

A prioritized attachment direction can be changed depending on a die attachment direction in a customer's bend process.

If you want to perform the "back" set, the "auto calculation" is set depending on a part shape (Z-Bend shape of an obtuse angle, shape with one bend, etc).

A die where "Back" is set is "Sash 1V", "1V", or "Acute Angle" where "Die Type" is set as "2V", "2V Acute Angle" and "Back Face Process Width".

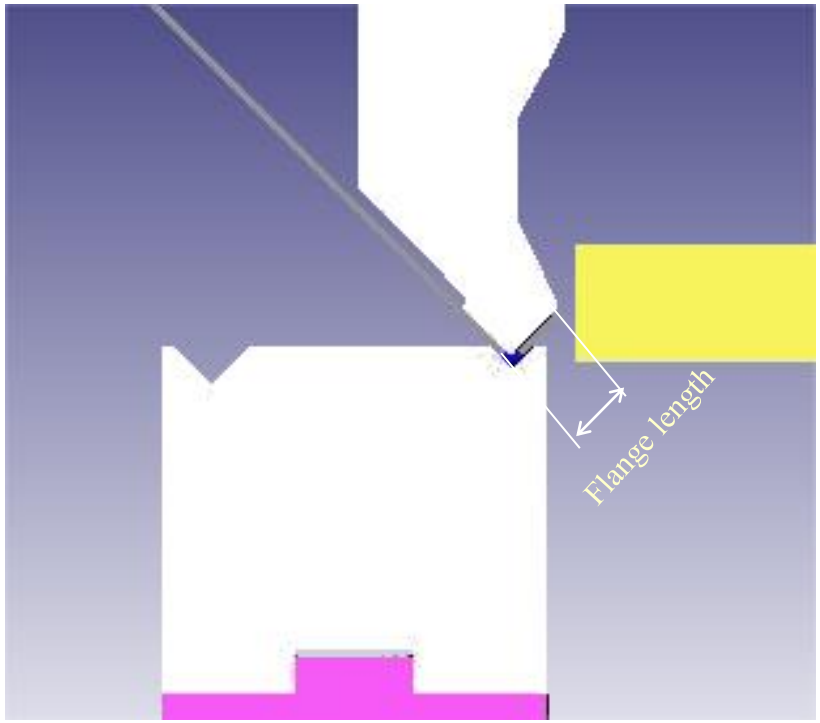
Prioritized die attachment direction

- **Default value: auto calculation**
- **Set range: front, back, auto calculation**

The minimum grip amount of one-bend part on the 2V-die front set

- **Default value: 0 mm**
- **Set range: 0.00 mm - 99.99 mm**

[V-Bend] - margin value of minimum flange (M)



Contents

If it is determined that each flange length of the object part is smaller than the permissible smallest flange length of the selected die, “impossible to process due to less than minimum flange length ”, that is, “impossible to plan” is determined.

The formula below is used for this determination.

Minimum flange =(V groove width/2)/sin(bending angle/2)+ minimum flange margin value

As shown in the formula above, the minimum flange margin value is a parameter which is used as an adjustment value for the calculation result of the minimum flange.

Case to be changed

The calculation formula above for the minimum flange is commonly used. However, some customer may process as small as possible to the minimum flange, or may process to a dimension less than the smallest flange which is calculated by the formula. In this case, despite a part that a customer processes, “minimum flange error” may be determined, thereby “impossible to plan” may be made.

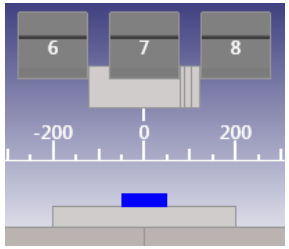
In this case, set an arbitrary value for this parameter value.

However, setting to too large value leads to defective processing. Therefore, set the minimum value so that the object part does not become impossible to plan.

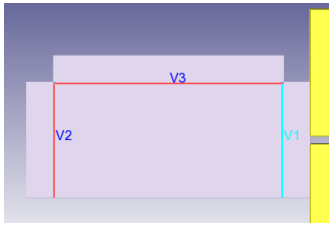
Default value: 0.0 mm
Set range: -99.9 mm - 99.9 mm

[V-Bend] - selection of single prioritized tool

＜Case to set Select and Perform to “check OFF” (disable)＞



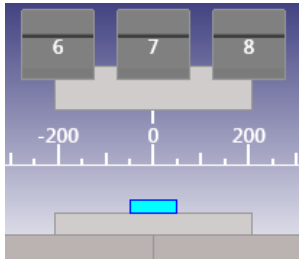
・Bend order



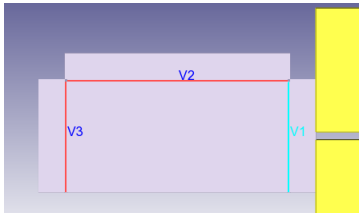
・Punch (200-10-15-20) ※Values in parentheses: divided distances

・Die (400)

＜Case to set Select and Perform to “check ON” (disable)＞



・Bend order



・Punch (415) ※ Values in parentheses: divided distance

・Die (415)

Contents

Bend processing data is automatically created while selecting a single tool (having an L/S length as the tool length), or searching a bend order for which the tool length of the single tool is considered. If the automatic process creation using a single tool is not good or the time limit of planning comes, the automatic process creation operation is performed by the normal tool selection or the bend order search. In addition, a candidate that is selected as the single tool can be selected by “partition” in “User Parameter”.

Case to be changed

This is a case that the bend operation is performed with the single tool mainly. This is also available in the case that multiple parts such as a simple L-bend shape, three sides box shape, etc are bent by attaching S-size or L-size tool on a machine. It is unnecessary to register a virtual tool of "Division Type" = "Sectionalized" type.

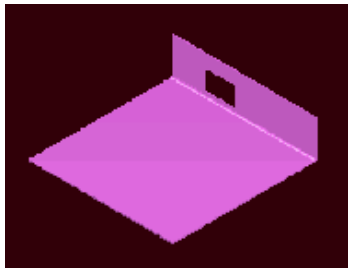
execution of selection

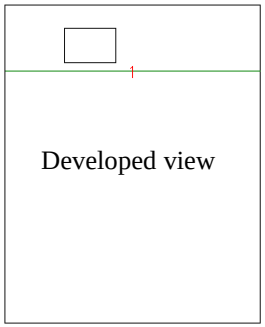
- **Default value: check OFF**
- **Set range: check ON, check OFF**

Single tool which partition is “Both” is included

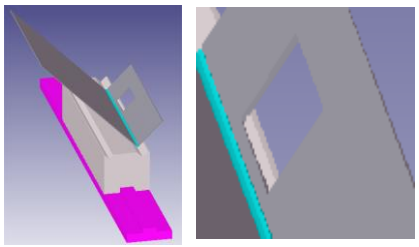
- **Default value: check ON**
- **Set range: check ON, check OFF**

[V-Bend] - selection of die for considering hole or notch when determining minimum flange - execution of selection

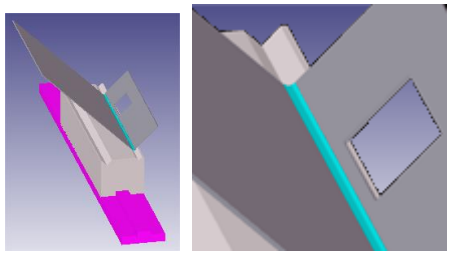




	VWidth	Priority tool No.
1	12.000	30347
2	10.000	30247
3	8.000	30347



When “check OFF” is set, the die which priority is top of V=12 is selected and the hole is caught by the V-groove.



When “check ON” is set, the die which priority is third of V=8 is selected and the hole is not caught by the V-groove.

Contents

This item is to set whether or not selecting a die that prevent a hole because there is a hole or pitch near the bend line. There is a hole near the bend line 1 as shown in the left figure, and the hole is caught by the V-groove for the die which priority is higher or has a V-width specified for the bend line of the developed view. Therefore, the finished product is easily deformed.

As a result, when finishing the product, the product is easily deformed.

The automatic creation results from using a small die with a hardly deformable V-width by selecting a die which V-width is smaller.

Case to be changed

Set this item when you want to perform automatic creation which finished precision is high for processing a part that there is a hole or notch near a bend line.

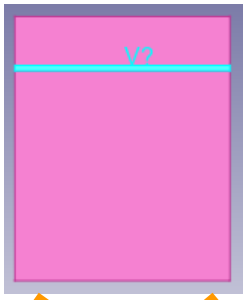
If a die having a V-width is selected in order for a V-groove not to be over a hole or notch, a result in the automatic creation that a deformation as described above is hardly occurred is obtained.

Default value: check OFF

Set range: check ON, check OFF

[V-Bend] - coining - selecting tool that V-Bend is regarded as coining bend

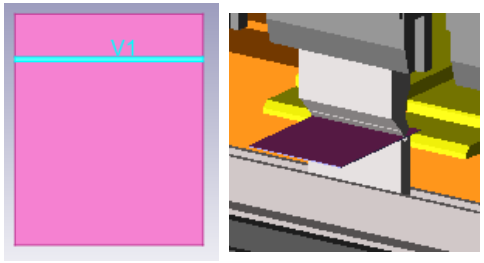
Before planning



・One bend line

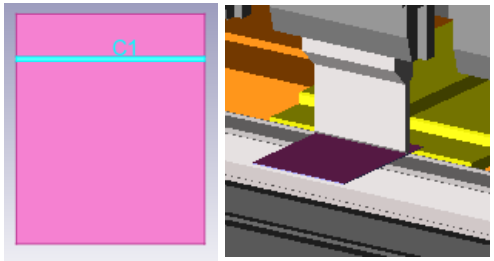
・bending angle 90 degrees

Check OFF



Since the step is automatically created as a V-Bend step, select the die which die angle is 88 degrees.

Check ON



Since the step is automatically created as a coining step, select the die which die angle is 90 degrees.

Note: A machine of AMNC_3i or later can be used as the NC name.

Contents

With respect to the bend lines defined as V-Bend, all the automatic plans is performed as the coining bend.

If an automatic plan is performed as the coining bend, a tool to be selected is only a tool that the tool angle and the bending angle of the product are matched.

Case to be changed

When you want to perform all the V-Bends as the coining bend, set this item.

Default value: check OFF

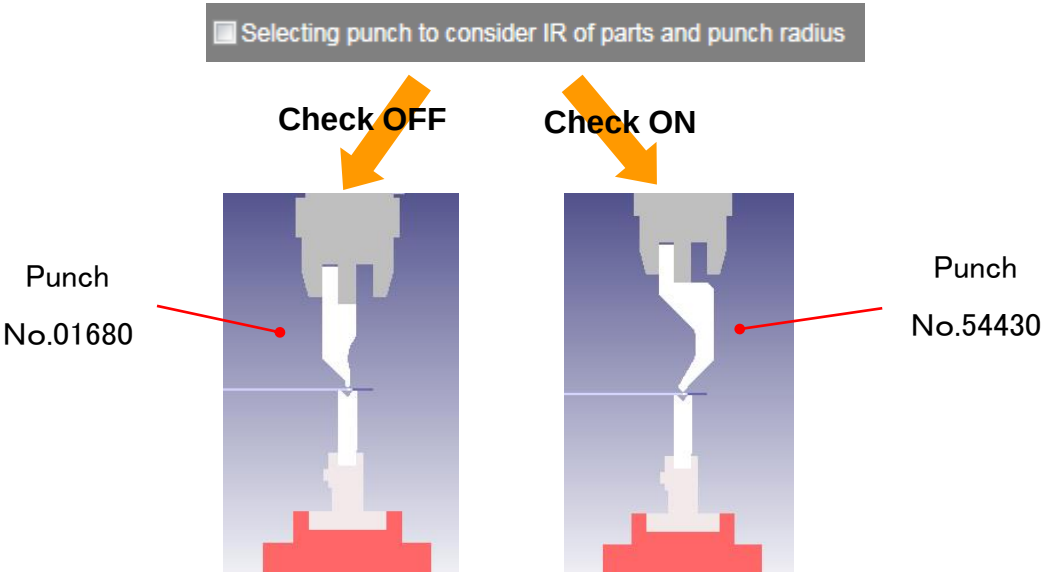
Set range: Check ON, check OFF

[V-Bend] - **Selecting punch to consider IR of parts and punch radius**

The automatic planning is executed for a part having an inner R of 3.0

No.	Angle(de	Punch radius	Type	Tool length typ	Height	Allowable tor	Ear/Hinge	Attach type	Priority	Comment
01680	90.00	0.200	Starnd	Both	66.900	40	Exist	RG	1	14780
54715	90.00	1.500	Gooseneck	Both	103.900	50	Exist	RG	2	54615
00300	60.00	6.000	Radius	No section	65.000	100	Exist	RG	*	13800
54430	90.00	3.000	Gooseneck	Both	88.250	50	Exist	RG	*	54530

※ Tool which satifies all the conditions in the automatic planning.



Contents

The automatic planning is executed, in the following order, by prioritizing the tools registered in order of punch tool priority of V-bnding.

1. In the order that inner R of part ≧ edge R of punch and that edge R of punch near inner R of part

2. In the order that inner R of part ≺ edge R of punch and that edge R of punch is near inner R of part, if no order is found according to the item 1 above

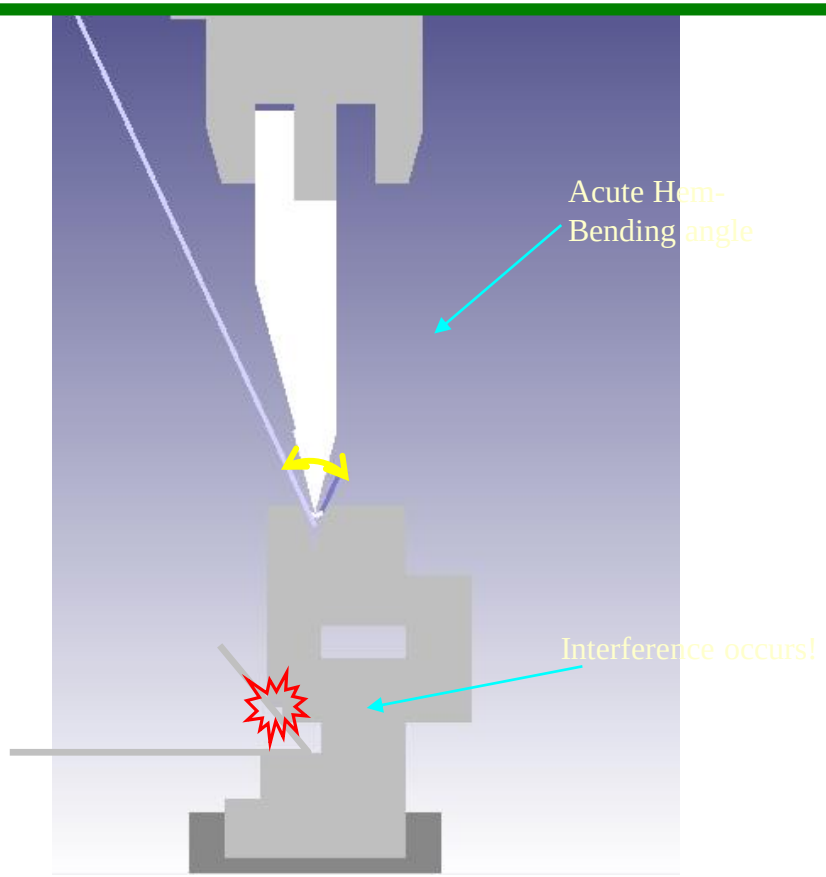
When the edge R is overlapped, follow the priority settings. When Check OFF is set, the automatic planning is executed, in ascending order of tool number, by prioritizing the tools for which priority "*" is registered.

Case to be changed

Set "Check ON" when prioritizing a tool that edge R of punch is near inner R of part.

Default value: check OFF
Set range: check ON, check OFF

[Hem-Bend] - hemming acute bending angle



Contents

When Hem-Bend is performed at the automatic process creation, the hemming acute bending angle is a parameter that specifies the bending angle at the first step of the Hem-Bend.

Case to be changed

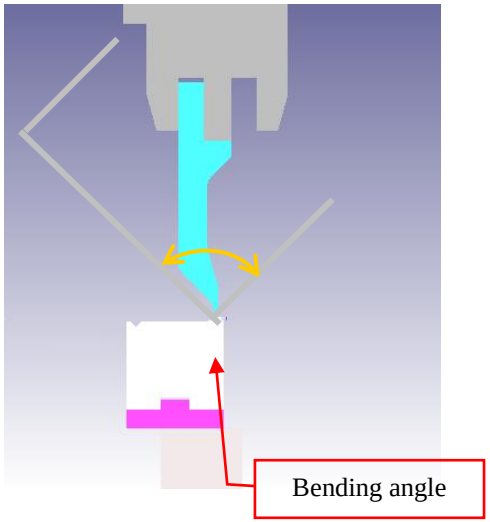
You should set the hemming acute bending angle to match the acute angle punch for hemming which the customer has.

When a hemming part is planned and an error “interference exists before bending” occurs, that may be caused by interference between the part and the double-deck die tool at the crushing step due to the hemming acute bending angle which is too large. In that case, decrease the angle to be set a little.

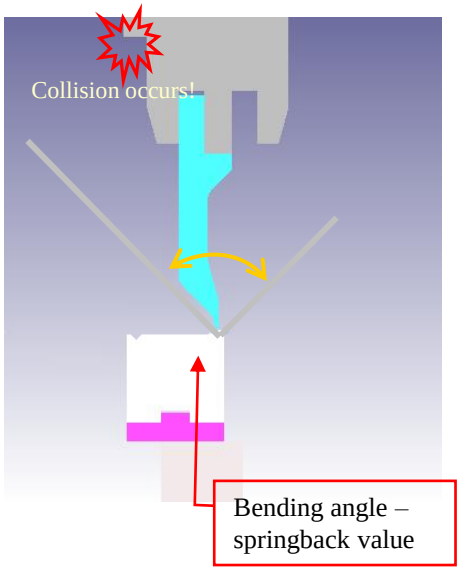
Default angle: 35 degrees
Set range: 25 - 65 degrees

[Hem-Bend] - springback

Considering check OFF



Considering check ON



Contents

This item is to set whether or not considering springback when checking interference at the automatic process creation (see the left figure).

Case to be changed

Basically, this item is set to “check OFF”.

By setting this parameter to “check ON” and inputting the springback value, the interference check which comes closer to the actual processing can be performed.

However, since the interference check becomes strict, the success rate is decreased.

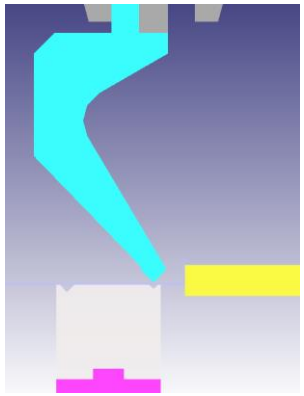
Since normal customers often ignore some small interference, they can set “check OFF”.

However, for a customer who wants to strictly check also very small interference, set “check ON”.

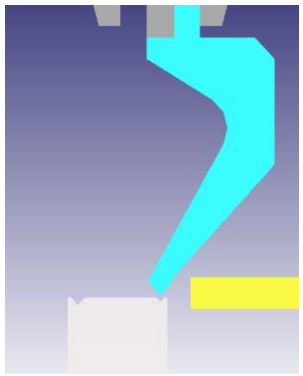
Consideration	Springback
Default value: check OFF Set range: check ON, check OFF	Default value: 1.0 degree Set range: 0.0 - 9.99 degrees

[Hem-Bend] - front and back sides of punch

Front set



Back set



Contents

This item is to specify an attachment direction of a punch at the automatic step creation.

When setting it “do not fix it”, VPSS 3i BEND automatically determine an optimum fixing direction.

When specifying a direction (front or back), it is determined only for the specified direction whether or not the bend process is possible.

Therefore, a part to be bent for which a punch must be set on the “back side” for setting on the “front side” becomes “Plan IS Not Good”.

Case to be changed

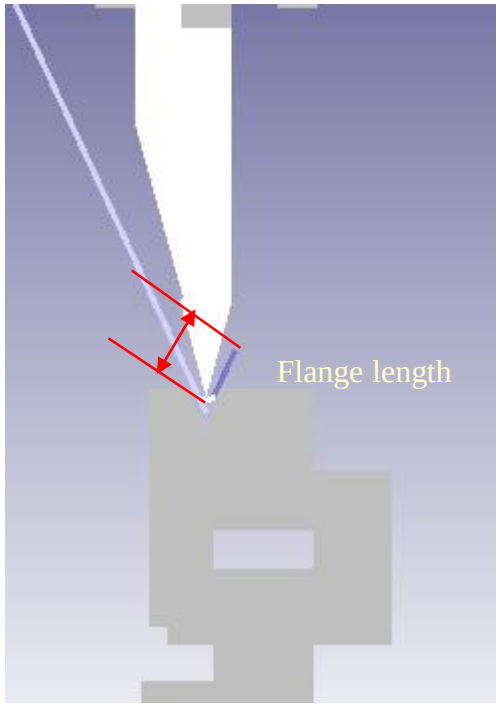
Normally, “do not fix” is set.

However, an unusual customer may determine that “the punch attaching direction must be set on the “back side”.

In response to such a customer, change this parameter accordingly.

Default value: not fixed
Set range: front fixed, back fixed, not fixed

[Hem-Bend] - margin value of minimum flange (M)



Contents

In the case that it is determined that each flange length of the object part is smaller than the acceptable minimum length of selected die, the plan becomes impossible because the length is “less than the minimum flange length, thereby the processing is not good”.

In this case, the formula below is used for the determination above. Min flange = (V-groove/2)/sin(bending angle/2)+Minimum flange margin value

As shown in the formula, the minimum flange margin value is a parameter which is used as an adjustment value to the calculated result of the minimum flange.

Case to be changed

The above formula for the minimum flange is commonly used.

However, a customer may perform a process near the minimum flange length, that is, the process may be performed less than the minimum flange length calculated by the formula.

In such a case, despite a part that a customer perform a process, the plan may be not good due to “an error of the minimum flange”.

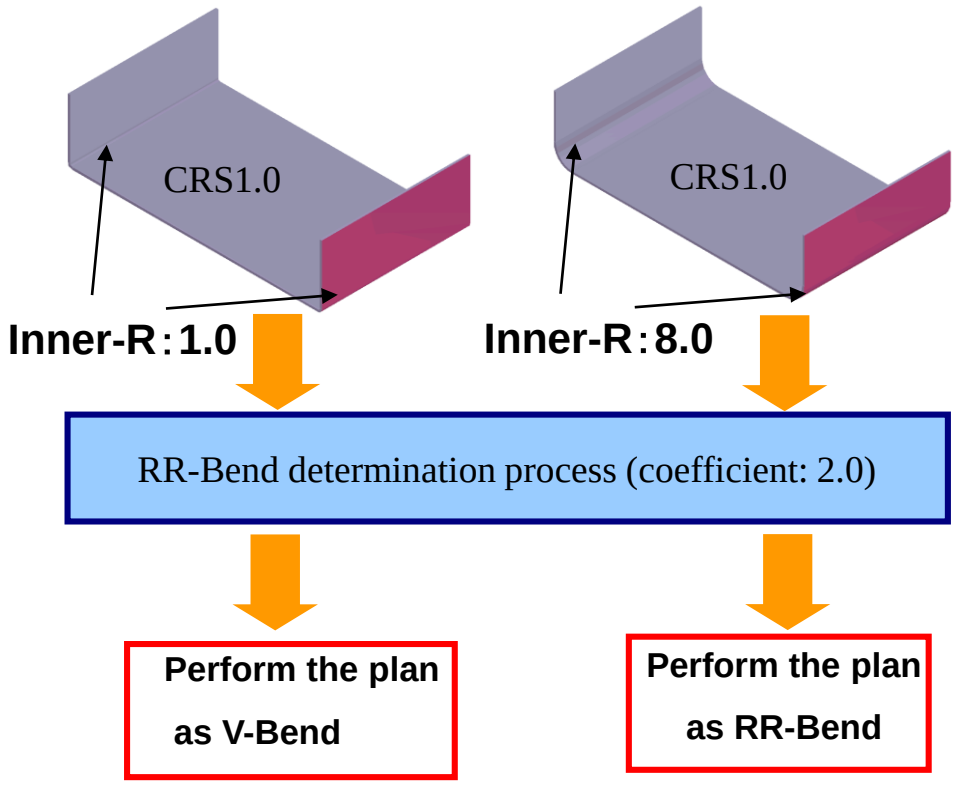
In that case, set the parameter value to an arbitrary value.

However, if a too large value is set, the process becomes not good.

Therefore, set the minimum value in the range that the object part does not become not good.

Default value: 0.0 mm
Set range: -99.9 mm - 99.9 mm

[RR-Bend] - determination coefficient



Contents

This item is to be used when determining whether the object bend line is for V-Bend or RR-Bend from the inner-R at the automatic process creation (see the left figure).

Case to be changed

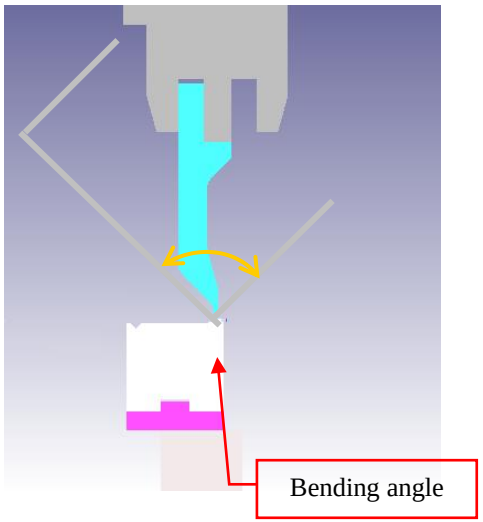
Conditions for performing RR-Bend are different for each customer.

Set this item by combining the item “Step-Bend” and the determination coefficient on page 47 and interviewing the customer on conditions for performing the R-bend.

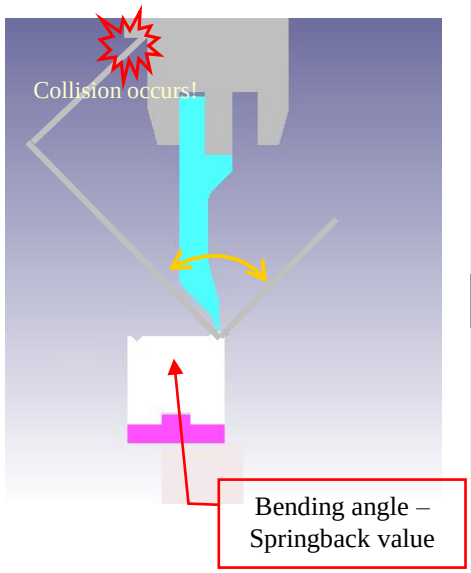
Default value: 2.0 (CRS, AL, SUS)
Set range: 1.0 - 99.90

[RR-Bend] - springback

Considering check OFF



Considering check ON



Contents

This item is to set whether or not considering springback at the automatic step creation (see the left figure).

Case to be changed

Basically this item is set to “check OFF”.

By setting this parameter to “check ON” and inputting the springback value, the interference check which comes closer to the actual processing can be performed.

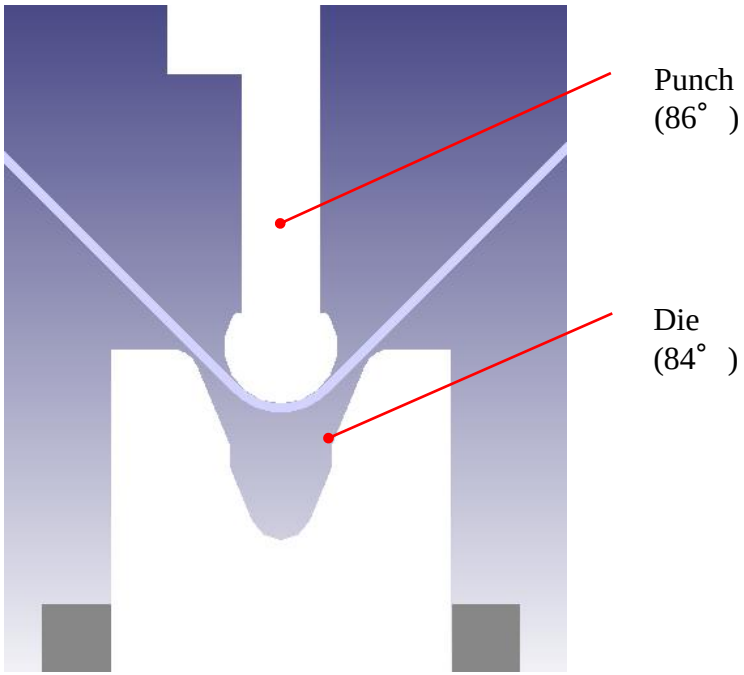
However, since the interference check becomes strict, the success rate is decreased.

Since normal customers often ignore some small interference, they can set “check OFF”.

However, for a customer who wants to strictly check also very small interference, set “check ON”.

Consideration	Springback
Default value: check OFF Set range: check ON, check OFF	Default value: 0.0 degree Set range: 0.0-9.99 degrees

[RR-Bend] - Selection of the die by punch type-Allow selection of V-groove Angle die smaller than tip angle.



Contents

This is a parameter for automatically select a die which has a V-groove angle smaller than the tip angle.

Case to be changed

In case the processing is performed using a die having a V-groove angle smaller than the tip angle. However, the Auto Generation results becomes "Warning".

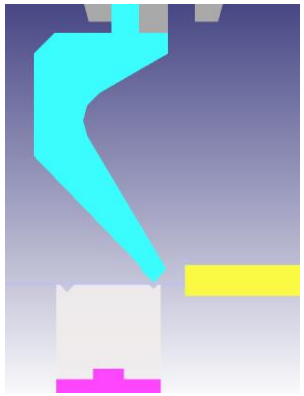
Tool selection processing

(Content)
A die having a V-angle smaller than the tip angle of the punch is selected according to the settings of VPSS 3i Parameter Explorer (PX).
(Handling)
Carefully work when conducting the tool setup and setting the tool original position of the tool.

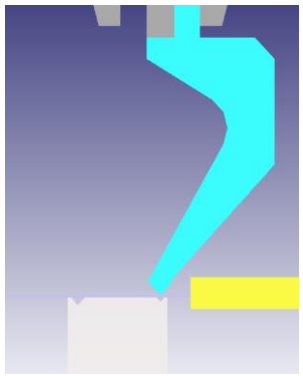
Default value: check OFF
Set range: check ON, check OFF

[RR-Bend] - front and back sides of punch

Front set



Back set



Contents

This item is to specify an attachment direction of a punch at the automatic step creation.

When setting it “do not fix it”, VPSS 3i BEND automatically determine an optimum fixing direction.

When specifying a direction (front or back), it is determined only for the specified direction whether or not the bend process is possible.

Therefore, a part to be bent for which a punch must be set on the “back side” for setting on the “front side” becomes “Plan IS Not Good”.

Case to be changed

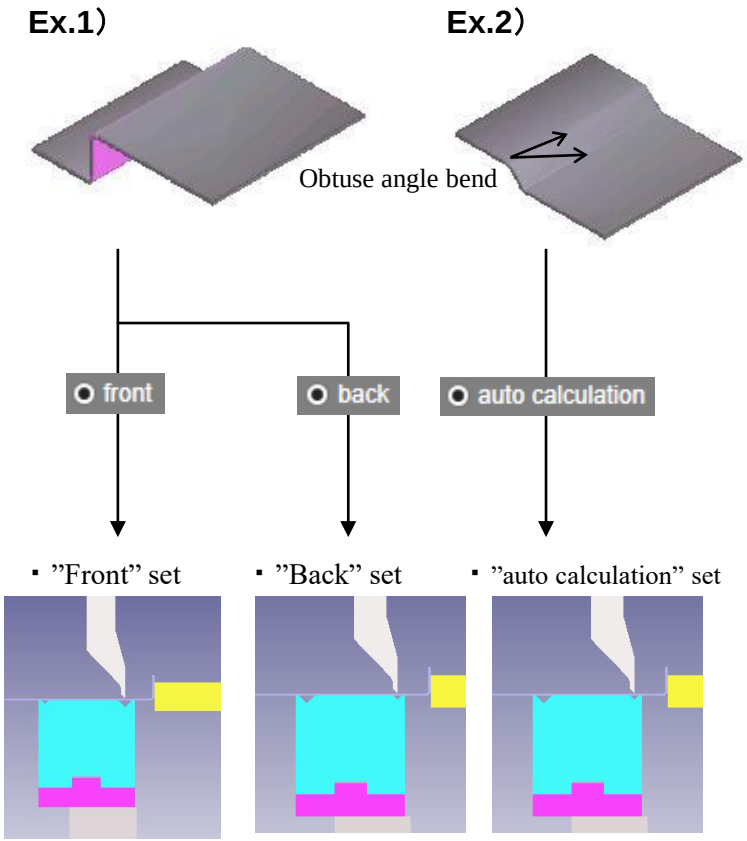
Normally, “do not fix” is set.

However, an unusual customer may determine that “the punch attaching direction must be set on the “back side”.

In response to such a customer, change this parameter accordingly.

Default value: not fixed
Set range: front fixed, back fixed, not fixed

[RR-Bend] - priority direction of die attachment



Contents

The die attachment direction which can be automatically selected is either the “front” or “back” side.

A punch is automatically selected after automatically selecting a die, by the scheme of automatic tool selection.

The “front” set has been consistently prioritized till now, however, by setting this parameter, a prioritized attachment direction can be set.

Case to be changed

A prioritized attachment direction can be changed depending on a die attachment direction in a customer’s bend process.

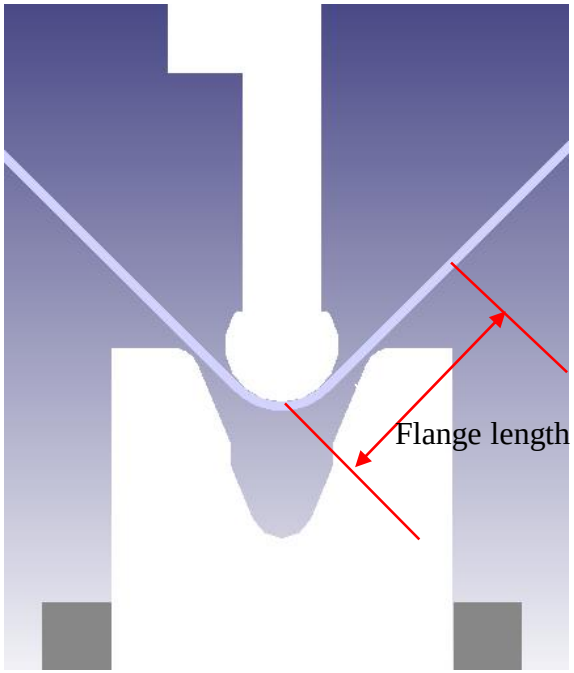
If you want to perform the “back” set, the “auto calculation” is set depending on a part shape (Z-Bend shape of an obtuse angle, shape with one bend, etc).

A die where “Back” is set is “Sash 1V”, “1V”, or “Acute Angle” where “Die Type” is set as “2V”, “2V Acute Angle” and “Back Face Process Width”.

Priority direction of die attachment

- **Default value: auto calculation**
- **Set range: front, back, auto calculation**

[RR-Bend] - margin value of minimum flange (M)



Contents

If it is determined that each flange length of the object part is smaller than the permissible smallest flange length of the selected die, “impossible to process due to less than minimum flange length ”, that is, “impossible to plan” is determined.

The formula below is used for this determination.

Minimum flange =(V groove width/2)/sin(bending angle/2)+ **minimum flange margin value**

As shown in the formula above, the minimum flange margin value is a parameter which is used as an adjustment value for the calculation result of the minimum flange.

Case to be changed

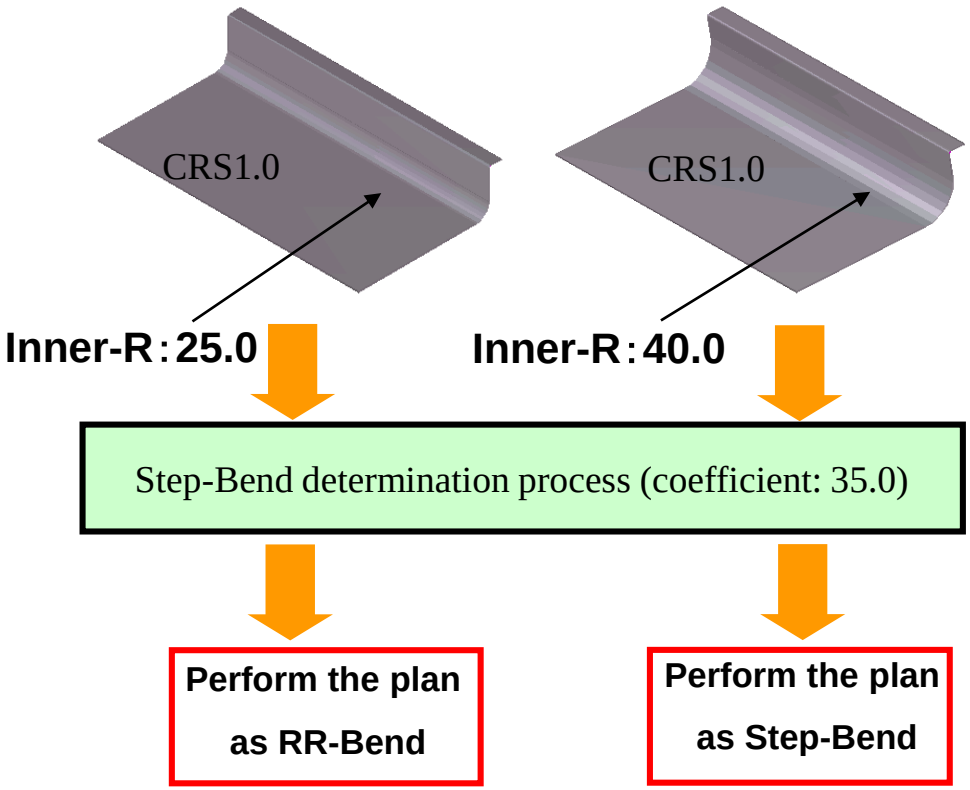
The calculation formula above for the minimum flange is commonly used. However, some customer may process as small as possible to the minimum flange, or may process to a dimension less than the smallest flange which is calculated by the formula. In this case, despite a part that a customer processes, “minimum flange error” may be determined, thereby “impossible to plan” may be made.

In this case, set an arbitrary value for this parameter value.

However, setting to too large value leads to defective processing. Therefore, set the minimum value so that the object part does not become impossible to plan.

Default value: 0.0 mm
Set range: -99.9 mm - 99.9 mm

[Step-Bend] - determination coefficient



Contents

This item is to be used when determining whether the object bend line is for RR-Bend or Step-Bend from the inner-R at the automatic process creation (see the left figure).

Case to be changed

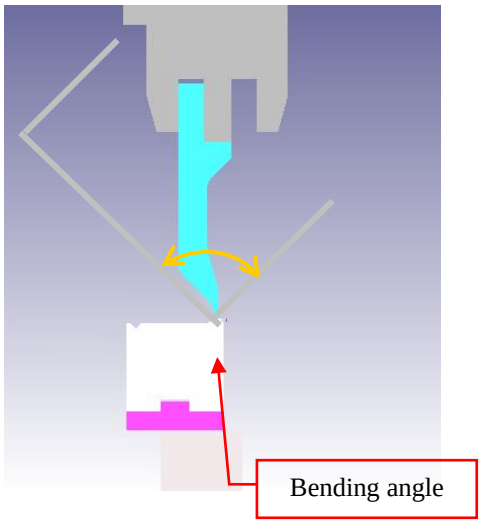
Conditions for performing Step-Bend are different for each customer.

Set this item by combining the item “Step-Bend” and the determination coefficient on page 42 and interviewing the customer on conditions for performing the R-bend.

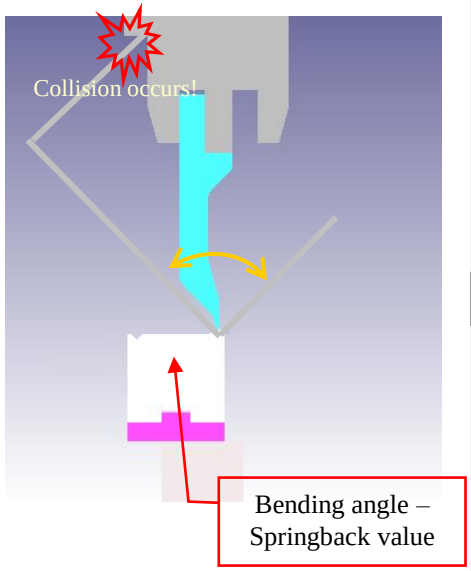
Default value: 35.0 (CRS, AL, SUS)
Set range: 1.0 - 99.90

[Step-Bend] - springback

Considering check OFF



Considering check ON



Contents

This item is to set whether or not considering springback at the automatic step creation (see the left figure).

Case to be changed

Basically, this item is set to “check OFF”.

By setting this parameter to “check ON” and inputting the springback value, the interference check which comes closer to the actual processing can be performed.

However, since the interference check becomes strict, the success rate is decreased.

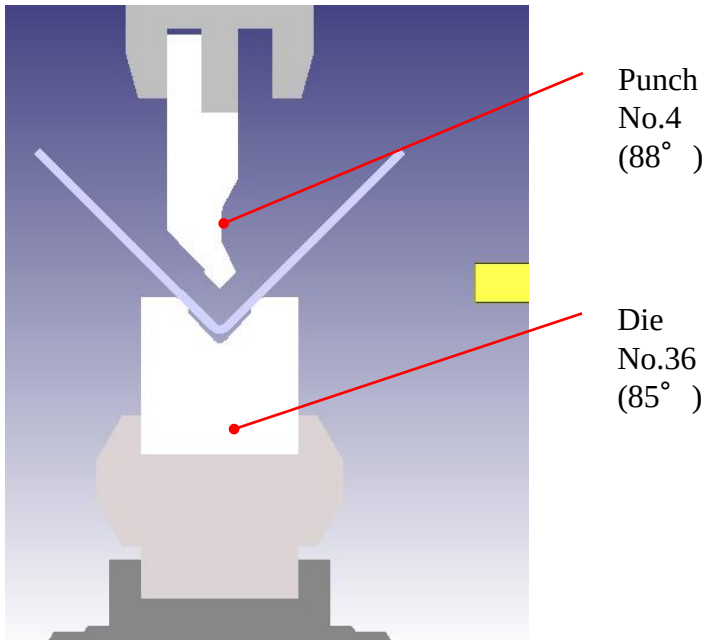
Since normal customers often ignore some small interference, they can set “check OFF”.

However, for a customer who wants to strictly check also very small interference, set “check ON”.

Consideration	Springback
Default value: check OFF Set range: check ON, check OFF	Default value: 0.0 degree Set range: 0.0 - 9.99 degrees

[Step-Bend] - selecting punch depending on die usage condition - permitting selection of punch having larger tip angle than die V-groove angle when using 1V-die for thick sheet

・In the case that the setting "･･･ when using 1V die for thick sheet ･･･" is "check ON"



Contents

This item is a parameter to automatically select a punch having a tip angle larger than the V-groove angle of the die.

Case to be changed

This is the case that a punch having a tip angle larger than the V-groove angle of the die is used when using a 1V die for a thick sheet (tool attribute: 1V).

However, warning appears for the result of automatic creation.

Tool selection operation

(Contents)

According to setting user parameters, a punch having a tip angle larger than the V-groove angle of the die is selected.

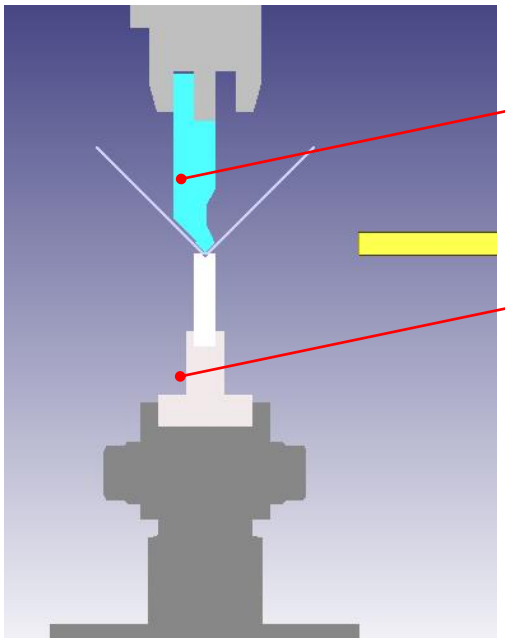
(Measures)

Carefully work when performing the tool setup and setting the tool origin.

Default value: check OFF
Set range: check ON, check OFF

[Step-Bend] - punch selection depending on die use situation - permitting selection of punch having tip angle of 90 degrees when using die having V-groove angle of 88 degrees

・In the case that the setting "・・・ V-groove angle of 88 degrees ・・・" is "check ON"



Contents

This item is a parameter to automatically select a punch having a tip angle larger than the V-groove angle of the die.

Case to be changed

This is the case that a punch having a tip angle of 90 degrees is used when using a die with a V-groove of 88 degrees.

However, warning appears for the result of automatic creation.

Tool selection

(Contents)

According to the setting of user parameters, a punch having a tip angle larger than the V-groove angle of the die is selected.

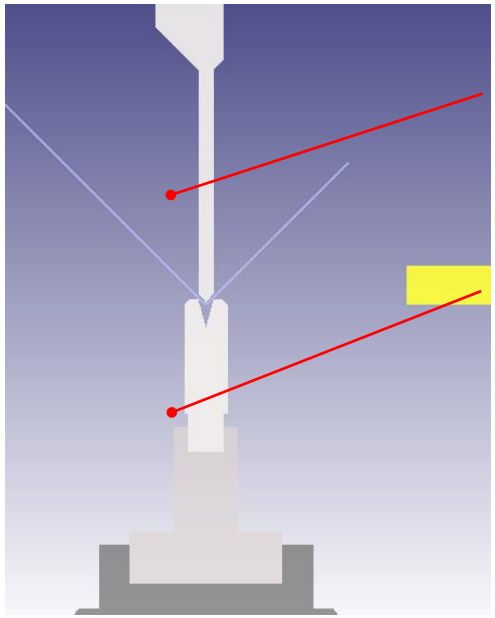
(Measures)

Carefully work when performing the tool setup and setting the tool origin.

Default value: check OFF
Set range: check ON, check OFF

[Step-Bend] - punch selection depending on die use situation - permitting selection of punch having tip angle larger than die V-groove angle when using acute angle die

・In the case that the setting "・・・ when using acute angle die ・・・" is "check ON"



Punch
No.919021
(86°)

Die
N0.970031
(30°)

Contents

This item is a parameter for automatically selecting a punch having a tip angle larger than the V-groove angle of the die.

Case to be changed

This is the case that a punch having a tip angle larger than the V-groove angle of the die is used when using an acute angle die (tool attribute: acute angle, acute angle.

However, warning appears for the result of automatic creation.

Tool selection

(Contents)

According to the setting of user parameters, a punch having a tip angle larger than the V-groove angle of the die is selected.

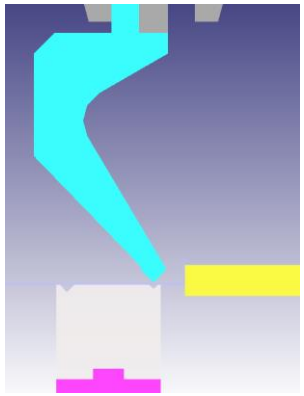
(Measures)

Carefully work when performing the tool setup and setting the tool origin.

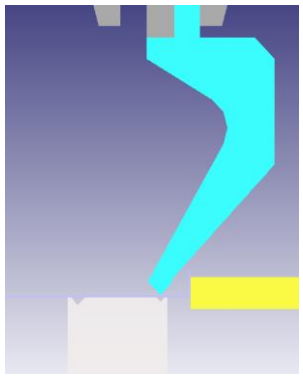
Default value: check OFF
Set range: check ON, check OFF

[Step-Bend] - front and back sides of punch

Front set



Back set



Contents

This item is to specify an attachment direction of a punch at the automatic step creation.

When setting it “do not fix it”, VPSS 3i BEND automatically determine an optimum fixing direction.

When specifying a direction (front or back), it is determined only for the specified direction whether or not the bend process is possible.

Therefore, a part to be bent for which a punch must be set on the “back side” for setting on the “front side” becomes “Plan IS Not Good”.

Case to be changed

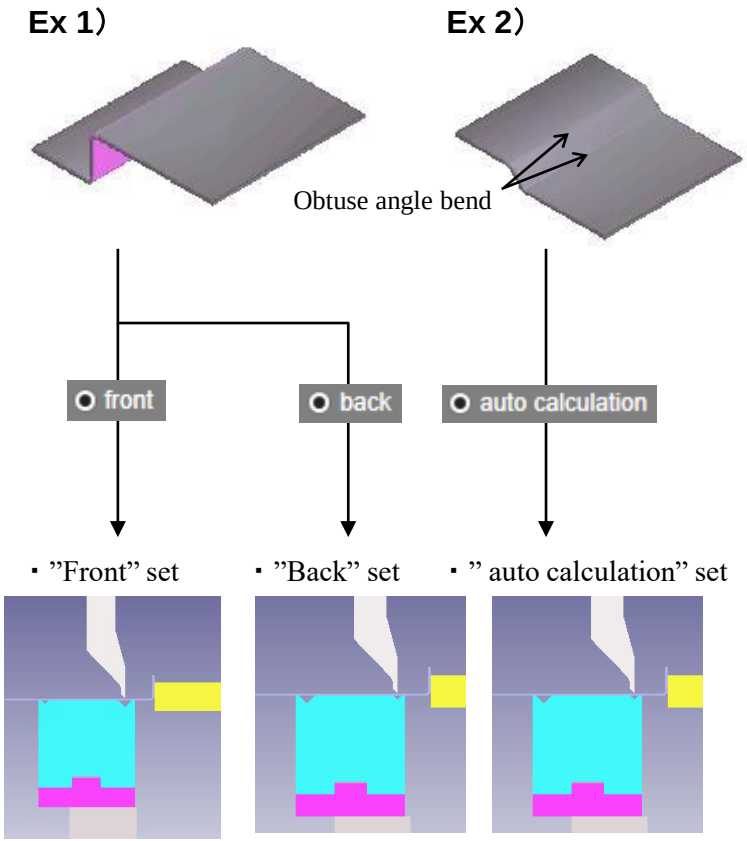
Normally, “do not fix” is set.

However, an unusual customer may determine that “the punch attaching direction must be set on the “back side”.

In response to such a customer, change this parameter accordingly.

Default value: not fixed
Set range: front fixed, back fixed, not fixed

[Step-Bend] - priority direction of die attachment



Contents

The die attachment direction which can be automatically selected is either the “front” or “back” side.

A punch is automatically selected after automatically selecting a die, by the scheme of automatic tool selection.

The “front” set has been consistently prioritized till now, however, by setting this parameter, a prioritized attachment direction can be set.

Case to be changed

A prioritized attachment direction can be changed depending on a die attachment direction in a customer’s bend process.

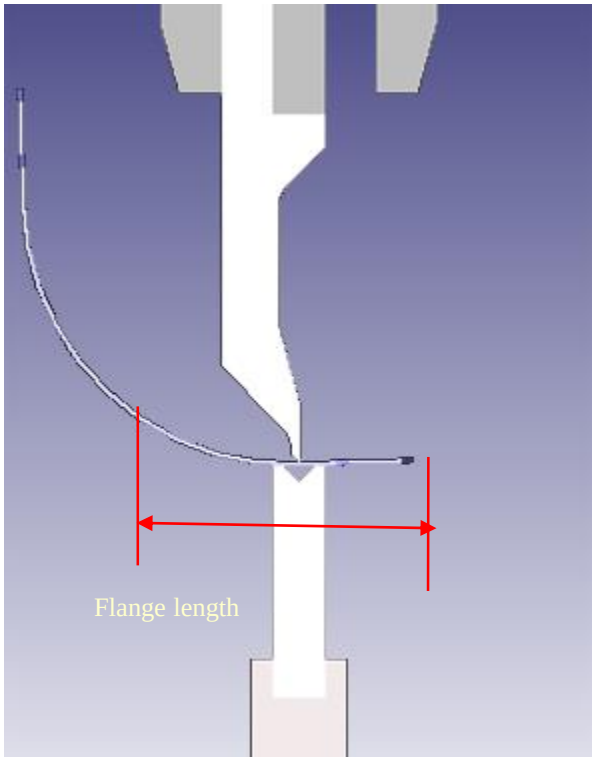
If you want to perform the “back” set, the “auto calculation” is set depending on a part shape (Z-Bend shape of an obtuse angle, shape with one bend, etc).

A die where “Back” is set is “Sash 1V”, “1V”, or “Acute Angle” where “Die Type” is set as “2V”, “2V Acute Angle” and “Back Face Process Width”.

Priority direction of die attachment

- **Default value: auto calculation**
- **Set range: front, back, auto calculation**

[Step-Bend] - margin value of minimum flange (M)



Contents

If it is determined that each flange length of the object part is smaller than the permissible smallest flange length of the selected die, “impossible to process due to less than minimum flange length”, that is, “impossible to plan” is determined.

The formula below is used for this determination.

Minimum flange =(V groove width/2)/sin(bending angle/2)+ **minimum flange margin value**

As shown in the formula above, the minimum flange margin value is a parameter which is used as an adjustment value for the calculation result of the minimum flange.

Case to be changed

The calculation formula above for the minimum flange is commonly used. However, some customer may process as small as possible to the minimum flange, or may process to a dimension less than the smallest flange which is calculated by the formula. In this case, despite a part that a customer processes, “minimum flange error” may be determined, thereby “impossible to plan” may be made.

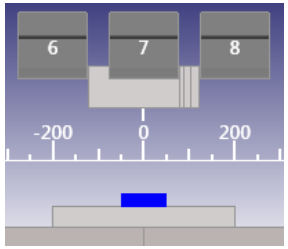
In this case, set an arbitrary value for this parameter value.

However, setting to too large value leads to defective processing. Therefore, set the minimum value so that the object part does not become impossible to plan.

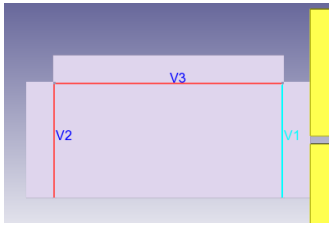
Default value: 0.0 mm
Set range: -99.9 mm - 99.9 mm

[Step-Bend] - selection of single prioritized tool

＜Case to set Select Perform to “check OFF” (disable)＞



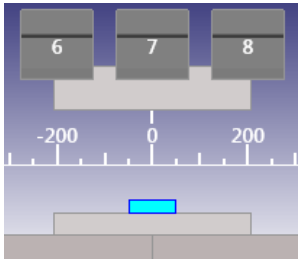
・Bending order



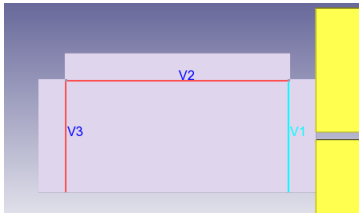
・Punch (200-10-15-20) ※Values in parentheses: divided distances

・Die (400)

＜Case to set Select Perform to “check ON” (disable)＞



・Bending order



・Punch (415) ※ Values in parentheses: divided distance

・Die (415)

Contents

Bend processing data is automatically created while selecting a single tool (having an L/S length as the tool length), or searching a bend order for which the tool length of the single tool is considered. If the automatic process creation using a single tool is not good or the time limit of planning comes, the automatic process creation operation is performed by the normal tool selection or the bend order search. In addition, a candidate that is selected as the single tool can be selected by “partition” in “User Parameter”.

Case to be changed

This is a case that the bend operation is performed with the single tool mainly. This is also available in the case that multiple parts such as a simple L-bend shape, three sides box shape, etc are bent by attaching S-size or L-size tool on a machine. It is unnecessary to register a virtual tool of "Division Type" = "Sectionalized" type.

execution of selection

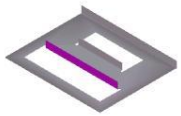
- Default value: check OFF
- Set range: check ON, check OFF

Single tool which partition is “Both” is included

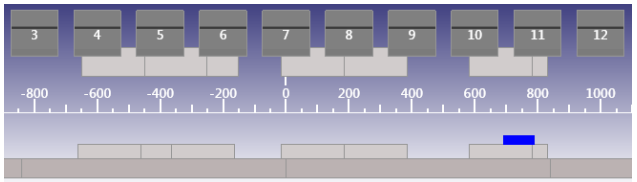
- Default value: check ON
- Set range: check ON, check OFF

ToolSet

Tool layout attachable range (A)



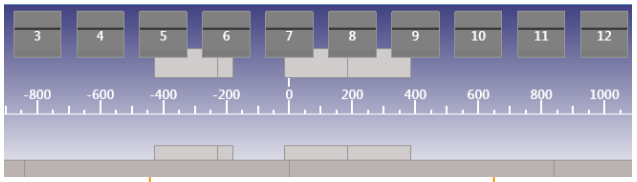
Length of tool layout attachable range = 2600mm



HG-8025: 2600mm(default)

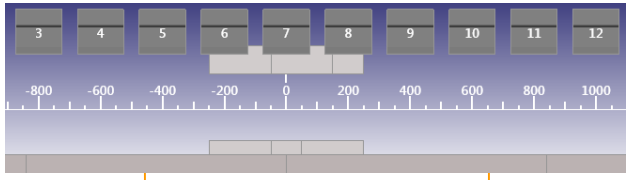
Length of tool layout attachable range = 1000mm

・Setup 1



1000mm

・Setup 2



1000mm

Contents

This item is to set a range for creating a tool layout in the auto process generation.

Case to be changed

Since the tool layout length of the Z-Bend for which the auto process generation is performed is long, if it is annoying to carry the foot pedal while bending process, this item is set.

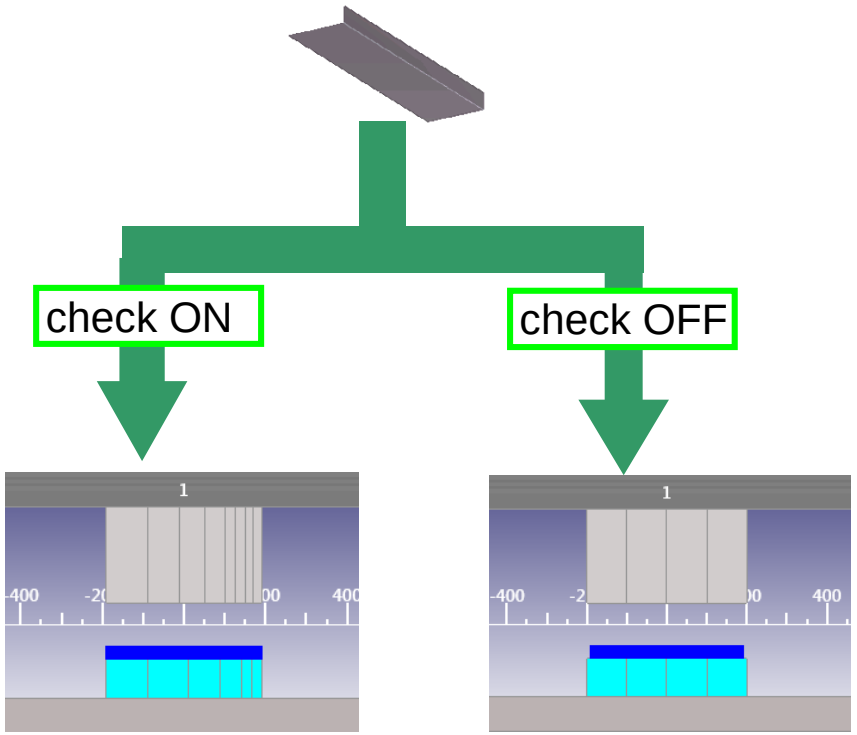
If this parameter is made small, all the tool stages for bending processes may not be installed.

Therefore, it is recommended that the setting, [V-Bend] - “Z-Bend mode” - “consider setup change when exceeding the length of tool layout attachable range”, is made “check ON”.

Default value: (set machine cable length)
Set range: (9.0mm - set machine cable length)

Prioritize the stage length created with 100/200mm section length only.

Example: In case of one-bend part which bend length is 380 mm



Note: Only the modular ATC machine is effective.

Contents

Item for setting whether the tool stage only with a divided length of 100 mm at the time of Auto Step Generation is created or not. Create a tool stage only with the divided length of 100/200 mm as long as possible.
This is displayed only in an ATC machine.

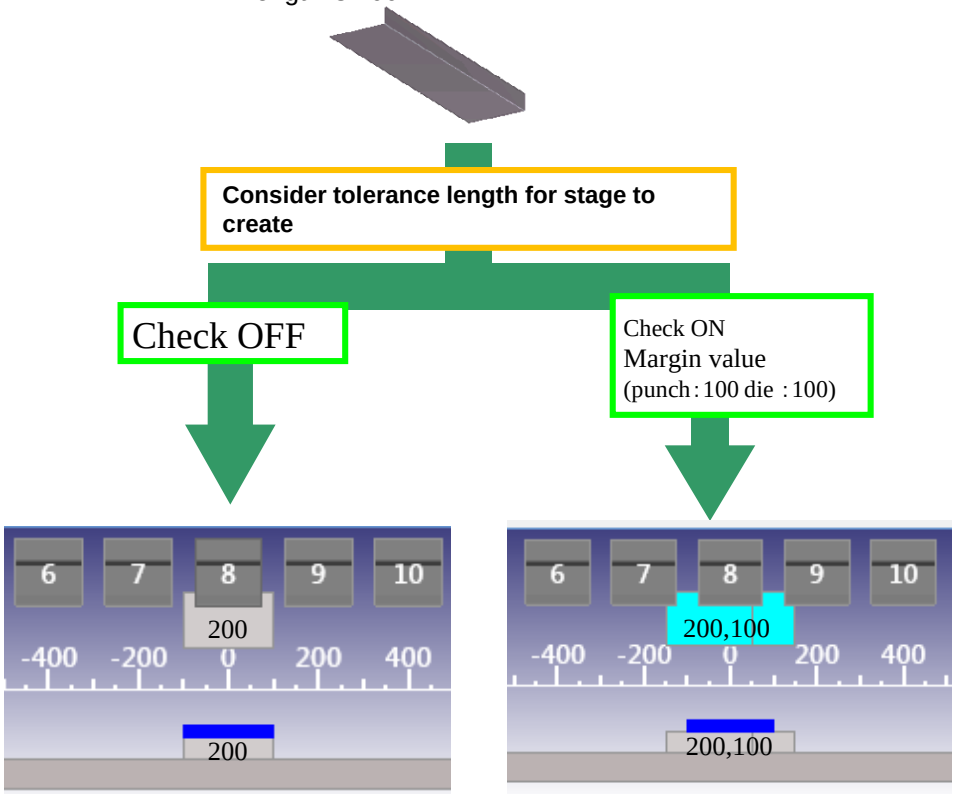
Case to be changed

Tick "Check ON", if you want to create a stage only with a divided length of 100/200 mm without outputting a result using the divided length less than 100/200 mm.

Default value: check ON
Set range: check ON, check OFF

Stage margin region

Example: In case of one-bend part which bend length is 200 mm



Contents

It is an item to set whether or not to prepare the die stage with margin over the bending line length at the time of Auto Step Generation.

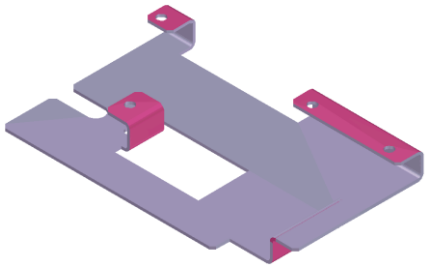
Create a tool stage which has margin as long as possible.

Case to be changed

If you want to create a stage length which has a margin larger than the maximum bend length to be processed, tick "Check ON".

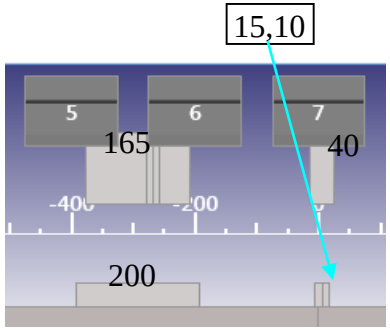
Consider tolerance length for stage to create	Punch max tolerance length (A+B) :	Die max tolerance length (C+D) :
・Default value: check OFF ・ Set range: check ON, check OFF	・ Default value: 50.0mm (In case of the ATC machine : 100.0mm) ・ Set range: 1.0mm～400.0mm	・ Default value: 50.0mm (In case of the ATC machine : 100.0mm) ・ Set range: 1.0mm～400.0mm

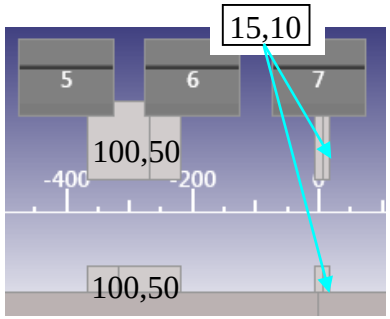
Minimization of number of divisions - die/punch - execution



Check ON

Check OFF





Contents

This item is to set whether or not replacement is performed such that the required number of divided tools which are laid out in the auto process generation is as small as possible.

In this case, unlike the single tool replacement process, a process to replace a tool type is not performed.

Case to be changed

Since this item depends on a processing method of a customer, it is difficult to say which to be set.

(It is determined that a majority of customers set check ON.)

As shown in the left figure, a tool longer than the bend line may be set if performing planning by setting minimization-yes.

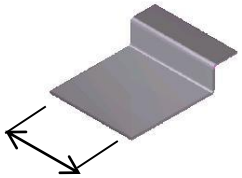
For a customer who does not like this layout, check OFF is appropriate.

However, if check OFF is set, the possibility of exceeding the required number of tool stocks will increase.

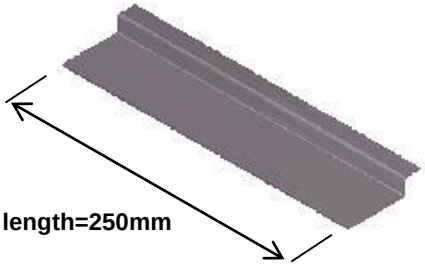
Therefore, if check OFF is set, this disadvantage must be explained to the customer.

Default value: check ON
Set range: check ON, check OFF

Minimization of number of divisions - for die/punch - when minimum length exceeds minimum boundary tool length, replace it to single tool



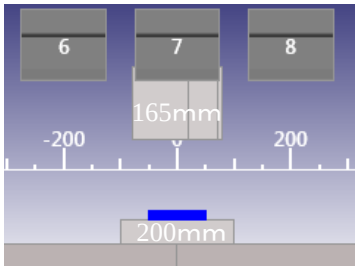
Bend length=50mm

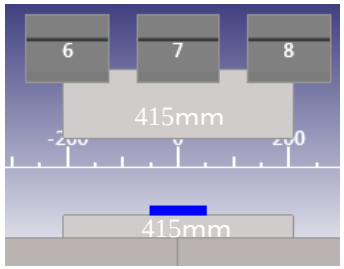


Bend length=250mm

Min. tool boundary length=200mm

Min. tool boundary length=200mm
Replaced with single tool





Contents

This item is a parameter accompanying the parameter on the previous page.

The item is to set whether or not furthermore the tool layout is replaced with a single tool with respect to the tool layout after performing minimizing process of divided tool.

The minimum tool boundary length is used for the determination.

When replacing it with a single tool, “Punch-single tool replacement” and “die-single tool replacement” for each bend type should be set to “check ON”.

Case to be changed

For example, the above setting is performed for the following cases.

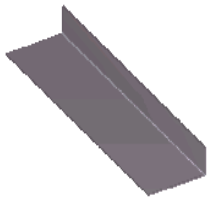
・It is desirable that all the tool layouts of one stage of a work piece which is bendable for a tool length less than 200mm is set to a tool length that is around 200mm.

・In case the automatically created tool layout is one stage, it is desirable to set to single tool instead of a tool layout which is automatically created with the parameter on the previous page.

When Min. length exceeds Min. tool boundary length, replace it to single tool.	Min. tool boundary length
・Default value: check OFF ・Set range: check ON, check OFF	・Default value: 200 mm ・Set range: 100.0 - 835.0 mm

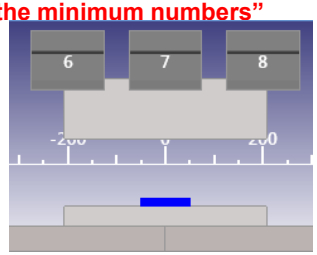
Minimization of number of divisions - die/punch - tool layout quality less than prioritized Min. tool boundary length

Example) In case of the length of a one-bend part of 200mm (in case of the minimum tool boundary length of 300.0mm)



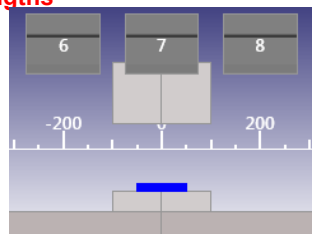
・Divided length of tool stocked for selected punch (mm) : 10 15 20 25 40 50 100 100 415
・Divided length of tool stocked for selected die (mm) : 10 15 20 25 40 50 100 100 415

・In case the numbers of punches and dies are set to "the minimum numbers"



・Punch (415mm)
・Die (415mm)
※The values in the parentheses are the divided tools lengths.

・In case the lengths of punches and dies are set to "the minimum lengths"



・Punch (100mm-100mm)
・Die (100mm-100mm)
※The values in the parentheses are the divided tools lengths.

Contents

This item is a parameter accompanying the parameter on the previous page.

The item is to set whether tool layout quality is less than "Min. tool boundary length" (Min. number of tools or Min. tool length) with an integrated tool with respect to the tool layout after performing minimizing process of divided tool.

Case to be changed

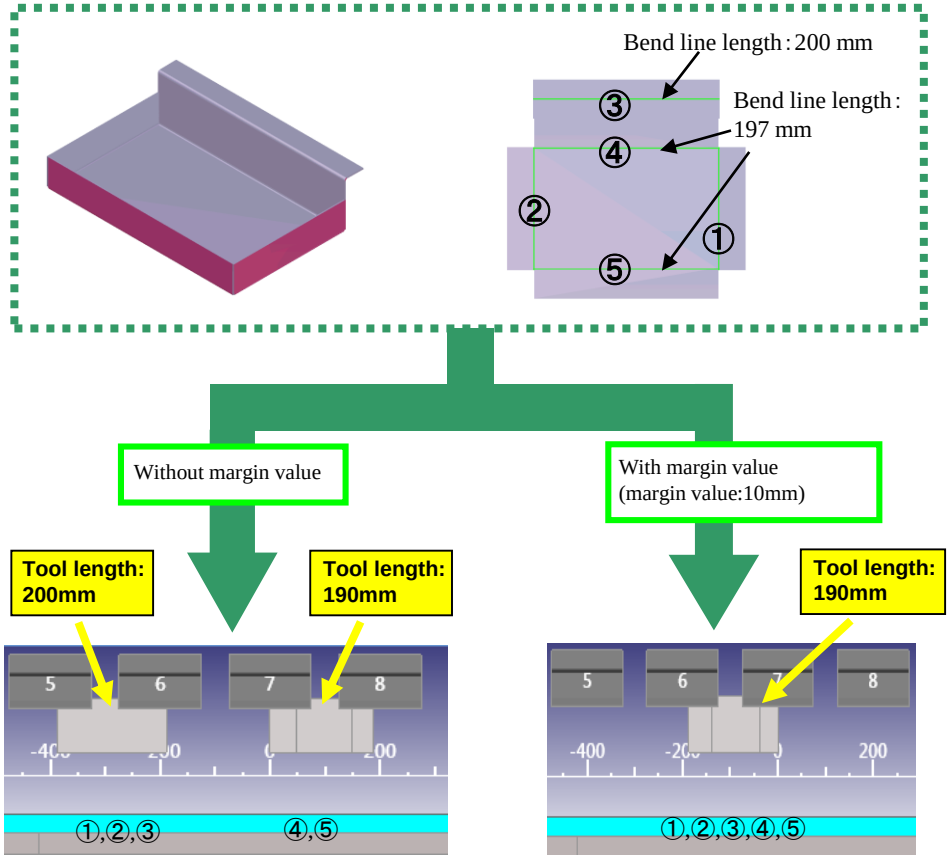
For example, for the case as follows "the minimum length" is set.

・The case that you want to set all tool layouts in one stage of a workpiece, which can be bent for the tool length of 200 mm, to the minimum tool length around the tool length of 200 mm.

・The case that a tool layout in one stage automatically created is an integrated one (L/S size), in which the tool length is longer than necessary to the bend length.

Tool layout quality having the Min. prioritized tool boundary length or less
Default value: Min. number
Set range: Min. number, Min. length

Tool sharing process



Contents

When this parameter is “unchecked” (default setting), a created tool layout results in bend line length ≦ tool length. (There are no obstacles on the right and left sides).

When this parameter is “checked”, a tool layout that a tool length is shorter than a bend line length may be created, thereby sharing of the stage may be promoted to reduce the number of stages.

The margin value is a value how much the tool length is permitted to minimize at most with respect to the bend line length. (Margin value = Max〔Bend line length -Tool length〕)

Cases to be changed

Basically, the margin value is “unchecked”.

Change it, when a customer requests us on how he/she could try to manage because the number of stages are many, or the like.

However, as described above, a tool shorter than the bend line length may be set.

(In case of an example on the left side, the bend line length of 200 mm is for the tool length of 190 mm.)

This may lead to bend defects. Therefore, explain the content to the customer on change of this parameter for the customer to be satisfied.

Changing the margin value

- Default value: check OFF
- Set range: check ON, check OFF

Max. margin value for both ends when the material thickness is 2.5mm or less

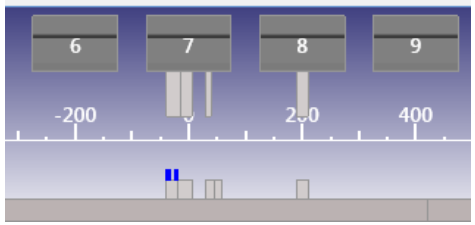
- Default value: 4.0mm
- Set area: 0.0mm - 99.0mm

Max. margin value for both ends when exceeding the material thickness of 2.5mm

- Default value: 18.0mm
- Set area: 0.0mm - 99.0mm

Margin value between stages

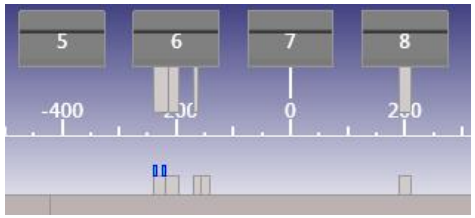
Example 1）In case the margin value between the stages is set to 20.0 mm.



・Distance between punch and stage = 197.5 mm

・Distance between die and stage = 187.5 mm

Example 2）In case the margin value between the tool and the stage is set to 200.0 mm.



・Distance between punch and stage = 397.5 mm

・Distance between die and stage = 387.5 mm

Contents

This item is to set the minimum distance between the tool stages required on the tool stage of the same setup.
In case a placement position of the punch to the punch holder is considered, a distance between the tool stages may be larger than the set value.

Cases to be changed

Normally, the minimum compact tool layout is automatically created.

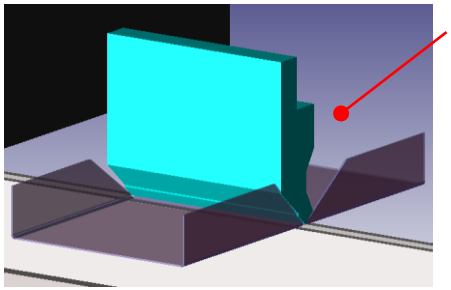
At that time, a distance that the workpiece and the adjacent tool stage do not interfere is provided.

However, the setting is done if the distance between the tool stages is narrow and then there is concern that a user may his/her hand caught in tool stage accidentally at the time of bend operation.

Default value：20 mm
Set range：10.00 mm - 200.00 mm

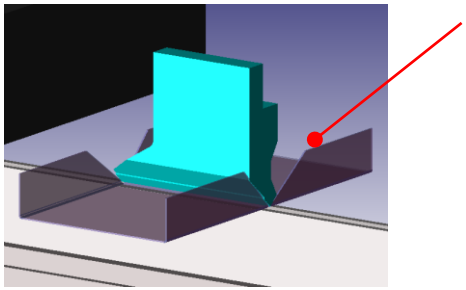
Creating tool layout using ear-type punch also except for box form, when number of divided tools is insufficient

・In case “check OFF” (invalid) is set for creating tool layout using ear-type punch also except for box form, when the number of divided punches is insufficient.



・Since the number of tools (divided length = 100mm) is insufficient, a tool layout is created using the virtual tools.

・In case “check ON” (valid) is set for creating tool layout using ear-type-punch also except for box form, when the number of divided tools is insufficient.



・Since the number of tools (divided length = 100mm) is insufficient, the tool layout is created using an ear-type-punch.

Contents

As for the result that the number of divided punches is insufficient, create a tool layout using the ear-type punch.
Regardless of the presence/absence of the necessity of ear-type punch, create the tool layout using the ear-type punch if the ear-type punch is settable.

Cases to be changed

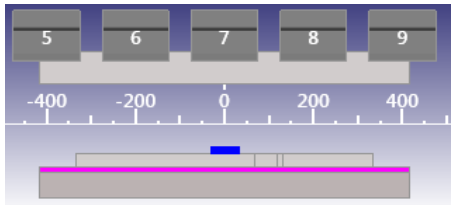
If the number of divided punches is insufficient, thereby if it is thought that the tool layout where the number of divided tools is sufficient by using the ear-type-punch can be automatically created, set this parameter.

Default value：check ON
Set range：check ON，check OFF

If tool names of single tool section and divided section differ in replacing integrated tool of changing setup, do not replace single tool

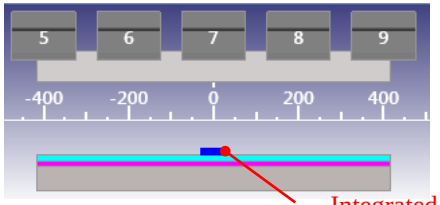
・In case of setting “Do not perform integrated tool replacement of changing the setup” to “unchecked” (invalid).

Setup No.1/2



Punch No.00402[both] (835)
Die No.30346[divided] (400-50-15-200)

Setup No.2/2

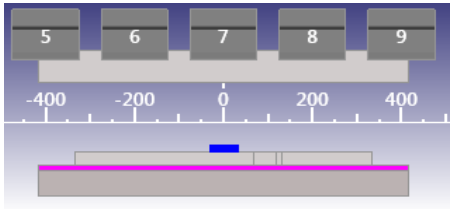


Punch No.00402[both] (835)
Die No.12406[single] (835)

※The values in the parentheses are the consisted divided lengths [mm].

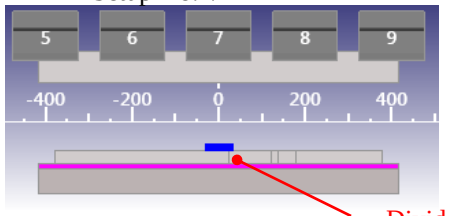
・In case of setting “Do not perform single tool replacement of changing the setup” to “checked” (valid)

Setup No.1/2



Punch No.00402[both] (835)
Die No.30346[divided] (400-50-15-200)

Setup No.2/2



Punch No.00402[both] (835)
Die No.30346[divided] (400-100-15-40-200)

※The values in the parentheses are the consisted divided lengths [mm].

Contents

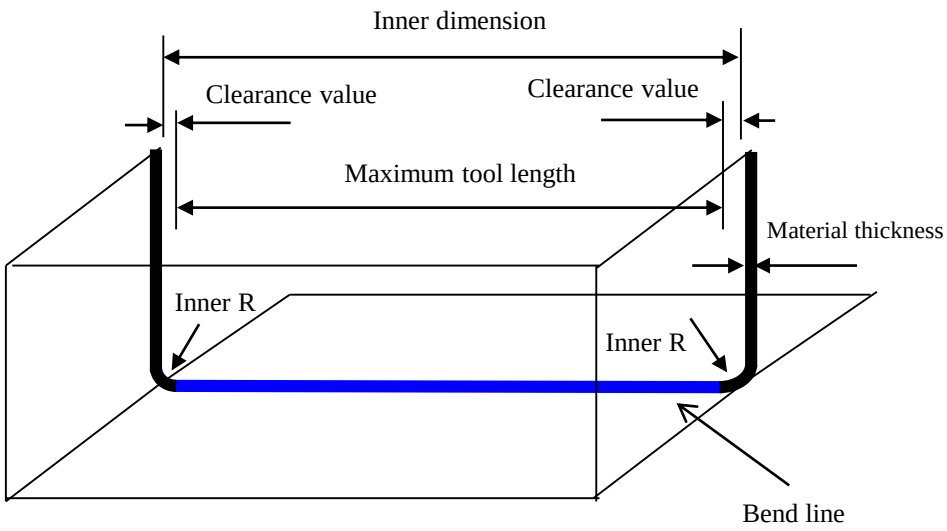
Do not perform the single tool replacement by considering an increase in setup time caused by performing exchange work of the die such as the die rail due to difference between the name of the L/S sized tool for the 2V die and the name of the divided tool of the 2V die.

Cases to be changed

If [Tool Layout Method] is [Setup Change] or if the setting of [Consider setup changing when exceeding tool layout attachable length] is “check ON”, set this parameter in case the 2V die of the divided section is the 2V divided die, and the 2V die of the integrated section is the 2V die (L/S size).

Default value：check OFF
Set range：check ON，check OFF

Use inner R of part, when calculating tool length



Contents

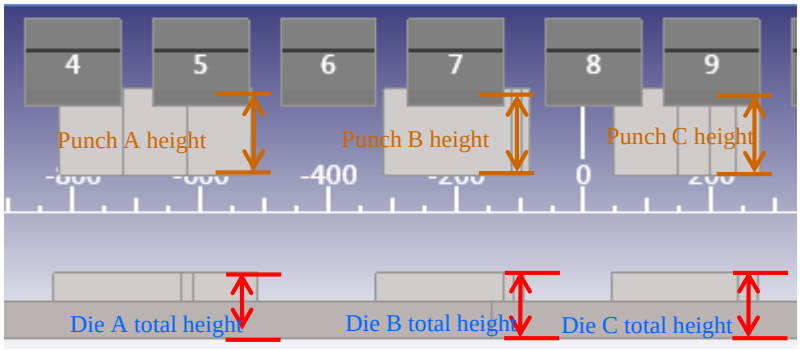
This item is to set a selection whether the clearance values of the left and right flanges and the tool are made the inner R of the part or the thickness when calculating the tool length of the tool layout at the time of the auto process generation.

Cases to be changed

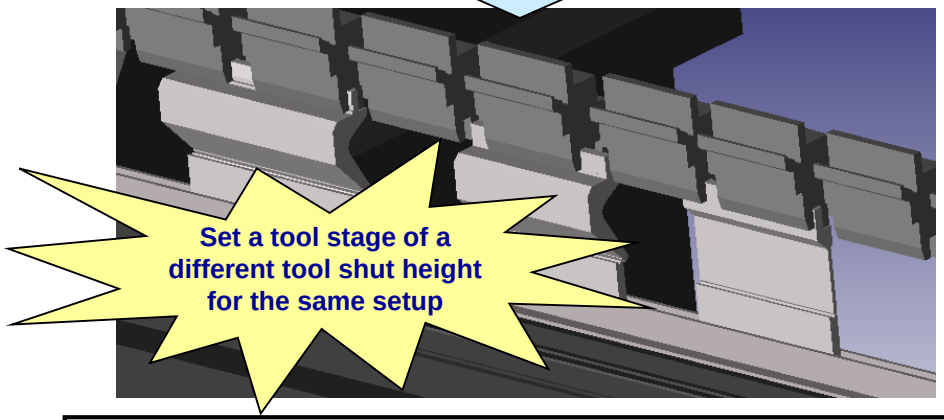
If, in a tool of a box-bending shape, the punch length of the automatically created tool layout is not enough for the inner dimension since the inner R value set for the bend line in the development figure is smaller than the material thickness, the clearance values for the left and right flanges and the tool is set to the thickness by changing this parameter to “unchecked”.

Default value: checked
Set range: checked, unchecked

Allowable difference in shut height of tool (C) when using different combination of tools in same setup



（Height of punch A + Total height of Die A）>（Height of punch B + Total height of die B）>（Height of Punch C + Total height of Die C）≧ 0.05 mm



Contents

This item is to set a difference between tool shut heights allowed to be set to the same setup in the tool layout which is automatically created at the auto process generation.

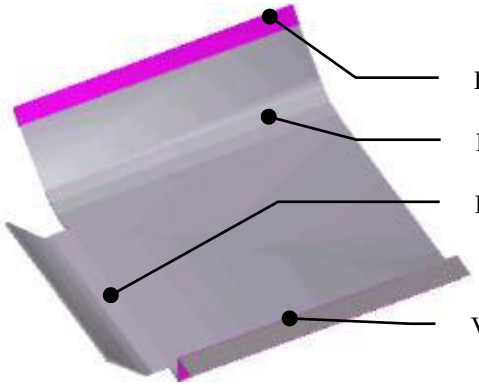
Cases to be changed

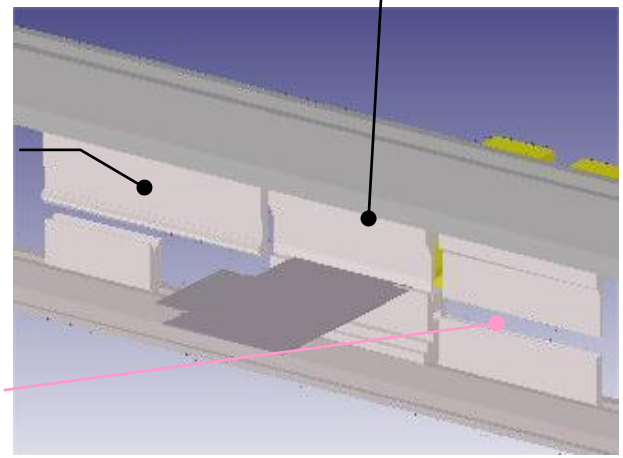
This parameter aims to allow a difference between small tool shut heights.

Increase the parameter, when you want to set up a tool stage of a plural kinds of punches and dies for the same Z-Bend tool layout, in automatically creating setups in a batch or an automatic selecting a plural kinds of tools for V-Bend.

Default value： 0.05 mm
Set range：0.00 mm - 0.10 mm

Make tool stage of different bend type (RR bend, Hem-Bend) same setup as tool stage of V-Bend (including FR bend)





Contents

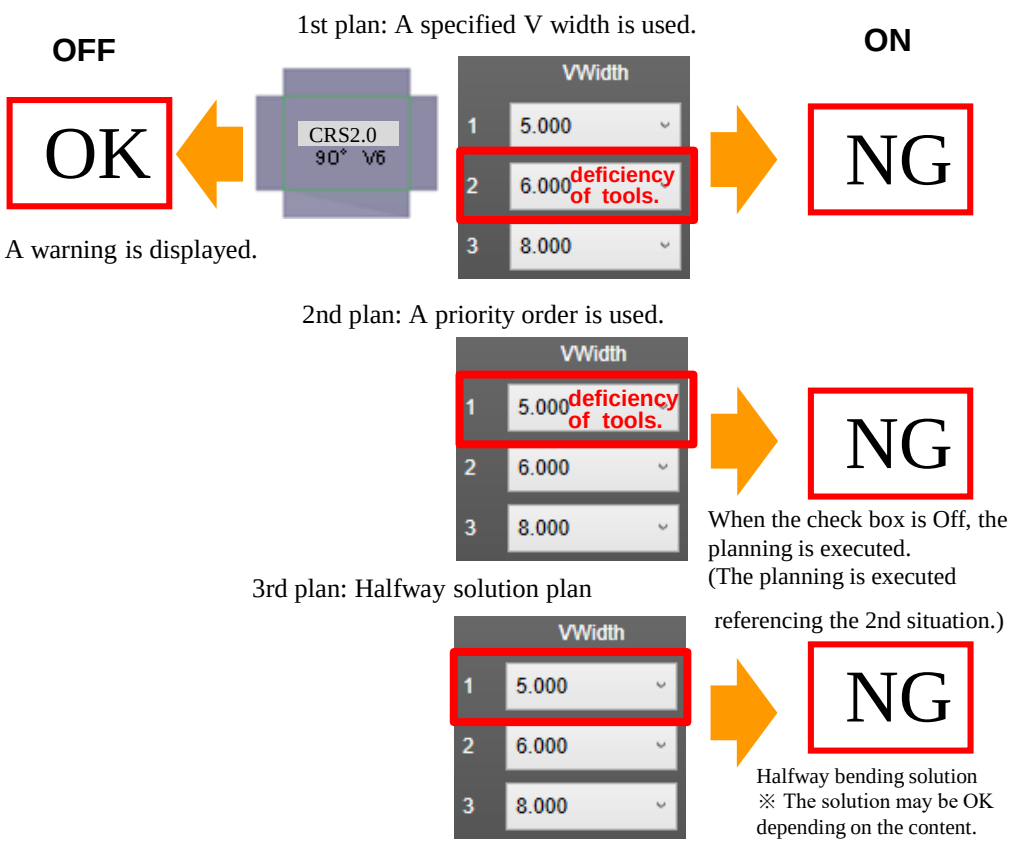
In case of a tool shut height difference within a set value of "tool shut height difference (C) allowable when using a different combination of tools in the same setup", this item is that the tool stage for different kinds of bends (RR bend, Hem-Bend) is the same setup as the tool stage of V-Bend (also including FR bend).

Cases to be changed

When using a modular tool or a CS die holder, if you do not want to set different bend type of tool (RR bend, Hem-Bend) other than V-Bend with which the tool shut height coincides, to the same tool layout as the V-Bend, set "check OFF".

Default value: check ON
Set range: check ON, check OFF

The existing tool length number is taken into consideration.



Contents

The automatic process generation is executed considering the required number of tools upon generating the automatic process.

When the check box is ON:

The 1st and 2nd plans are NG (not good) because of deficiency of the required number of tools.

The halfway solution of the 3rd plan is outputted as a halfway bending solution. (The results are changed depending on the content.)

When the check box is OFF: The results are outputted for the 1st plan even if the required number of tools are deficient.

Cases to be changed

The default is checked OFF

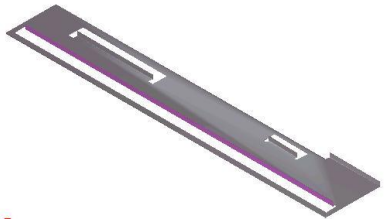
In case of deficiency of tools.
please set "check OFF" when you want to output the result in the first automatic step generation.

Default value: check OFF
Set range: check ON, check OFF

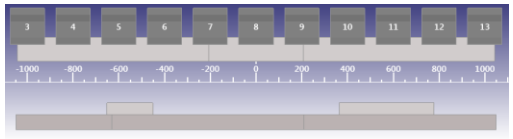
[V-Bend] - Z-Bend mode - when exceeding length range in which tool layout can be set, consider setup change

Example) In case of automatically setup-changing a part of "Auto Creation: not good, impossible to determine a bend order: stage length exceeded"

- Expansion size: 1900 mm × 348.26 mm
- Number of bends: 4
- Step bend process by HDS-8025NT

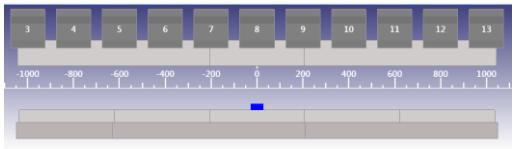


- **Setup: 1/2**



Auto setup

- **Setup: 2/2**



Contents

In case "the tool layout method" is for "Z-Bend", if the following situation <1> or <2> occurs, automatically perform a setup change, and if possible, avoid the above phenomenon and automatically create bend data that Auto Creation is OK.

<1> Auto Creation is not good, which reason is that the stage length is exceeded.

<2> Auto Creation is warned, which reason is that the number of tools stocked is exceeded.

Cases to be changed

Normally, if "tool layout method" is for "Z-Bend", Auto Creation is performed while changing "bend order" so that the following situation <1> or <2> does not occur.

<1> Auto Creation is not good, which reason is that the stage length is exceeded.

<2> Auto Creation is warned, which reason is that the number of tools stocked is exceeded.

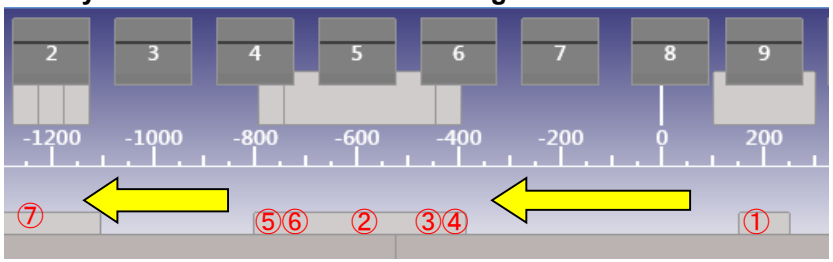
If you want to perform Auto Creation by avoiding the phenomenon above, this item is set.

Default value: check OFF
Set range: check ON, check OFF

[V-Bend] - Z-Bend mode - create tool layout to transfer material handling from left to right
[V-Bend] - Z-Bend mode - boundary value of number of tool stages which are transferred from left to right

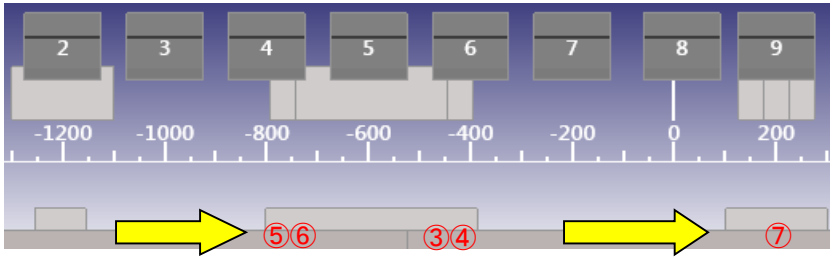
[Step bend mode] -

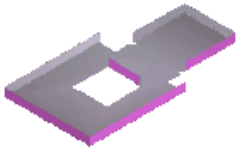
In case of setting “consider setup change when exceeding tool layout attachable range length” to “check ON” (valid) and the boundary value of the number of tool stages to “5”

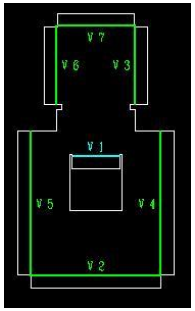


[Step bend mode] -

In the case of setting “consider setup change when exceeding tool layout attachable range length” to “check ON” (valid) and the boundary value of the number of tool stages to “2”







Contents

In case “tool layout method” is for “Z-Bend”, If **a number of tool stages larger than the value set for the parameter of the boundary value of the number of tool stages** is automatically created, except for the following situation <1> or <2>, automatically perform the setup change, and create a bend order and tool layout in which the tool stage moves from left to right as the bend process proceeds.

<1> Auto Creation is not good, which reason is that the stage length is exceeded.

<2> Auto Creation is warned, which reason is that the number of tools stocked is exceeded.

Cases to be changed

In case that “the tool layout method” is for “step bend”, if you want to automatically create a bend order and a tool layout to move the tool stage from left to right as the bend process proceeds, set this item.

Create a tool layout so that the material handling moves from left to right.

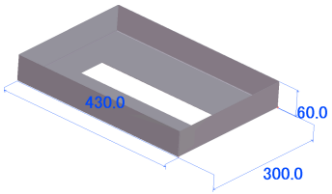
- Default value: check OFF
- Set range: check ON, check OFF

Boundary value of the number of tool stages to move the tool stage from left to right

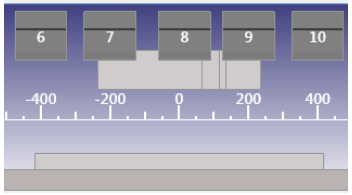
- Default value: 5
- Set range: 2 - 10

[V-Bend] - single punch replacement
[V-Bend] - single die replacement

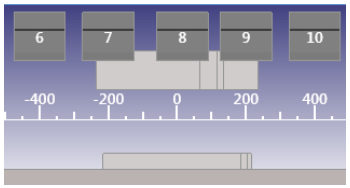
Example 1



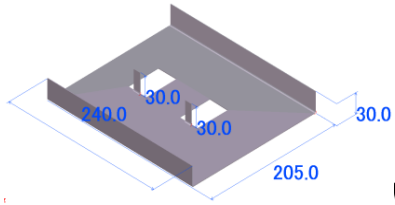
With replacement



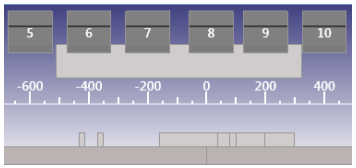
Without replacement



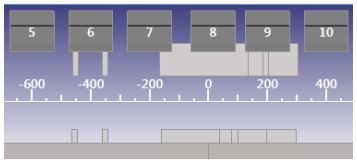
Example 2



With replacement



Without replacement



Contents

If the divided tool laid out at the auto process generation is replaceable to S size (415mm) or L size (835mm), set whether the replacement is performed or not.

All the stages are collectively replaced by determining whether the replacement can be performed for all the stages.

Any partial replacement is not performed.

(Example: 2 stages of 3 stages are not replaces to a single one.)

Cases to be changed

Since it depends on a processing method of a customer, it is inappropriate to completely mention which one is better to be set.

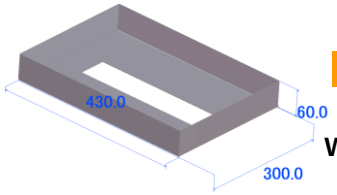
You can ask a customer to look at results of implementing a plan with or without replacement of several kinds of parts which shapes the customer often processes, and to determine what results are good for the customer. After that accordingly set a condition.

If the number of tool stocks is often exceeded, it is possible to avoid this situation to some extent with replacement.

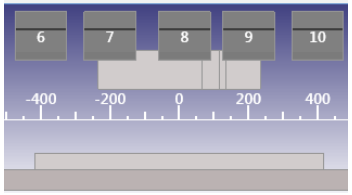
Default value: check ON
Set range: check ON, check OFF

[Hem-Bend] - single punch replacement
[Hem-Bend] - single die replacement

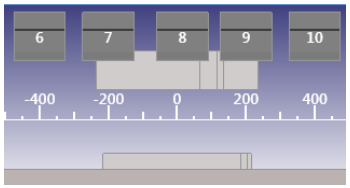
Example 1



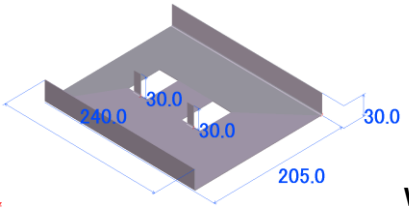
With replacement



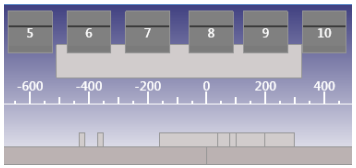
Without replacement



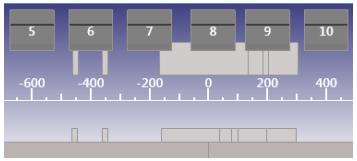
Example 2



With replacement



Without replacement



Contents

If the divided tool laid out at the auto process generation is replaceable to S size (415mm) or L size (835mm), set whether the replacement is performed or not.

The replacement is performed collectively for all the stages by determining whether the replacement can be performed for all the stages.

Any partial replacement is not performed.

(Example: 2 stages of 3 stages are not replaces to a single one.)

Cases to be changed

Since it depends on a processing method of a customer, it is inappropriate to completely mention which one is better to be set.

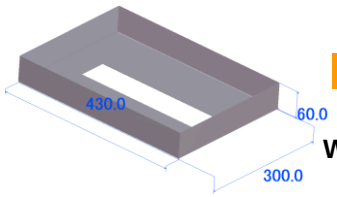
You can ask a customer to look at results of implementing a plan with or without replacement of several kinds of parts which shapes the customer often processes, and to determine what results are good for the customer. After that accordingly set a condition.

If the number of tool stocks is often exceeded, it is possible to avoid this situation to some extent with replacement.

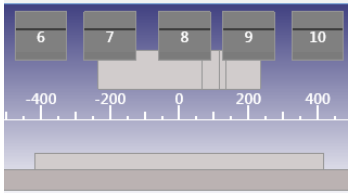
Default value: check ON
Set range: check ON, check OFF

[RR bend] - single punch replacement
[RR bend] - single die replacement

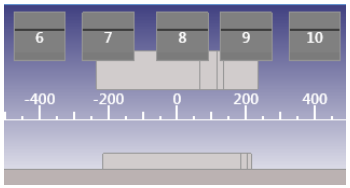
Example 1



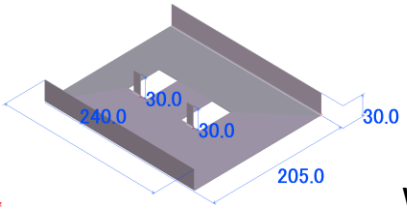
With replacement



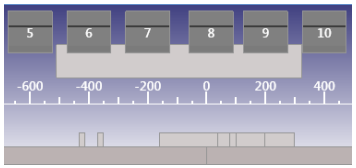
Without replacement



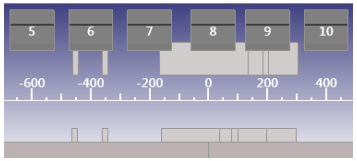
Example 2



With replacement



Without replacement



Contents

If the divided tool laid out at the auto process generation is replaceable to S size (415mm) or L size (835mm), set whether the replacement is performed or not.

The replacement is performed collectively for all the stages by determining whether the replacement can be performed for all the stages.

Any partial replacement is not performed.

(Example: 2 stages of 3 stages are not replaces to a single one.)

Cases to be changed

Since it depends on a processing method of a customer, it is inappropriate to completely mention which one is better to be set.

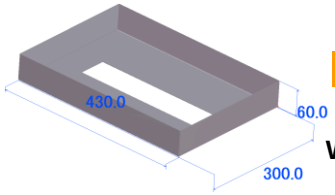
You can ask a customer to look at results of implementing a plan with or without replacement of several kinds of parts which shapes the customer often processes, and to determine what results are good for the customer. After that accordingly set a condition.

If the number of tool stocks is often exceeded, it is possible to avoid this situation to some extent with replacement.

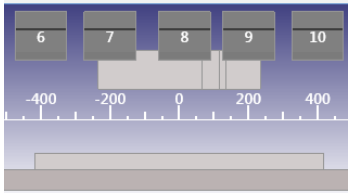
Default value: check ON
Set range: check ON, check OFF

[FR bend] - single punch replacement
[FR bend] - single die replacement

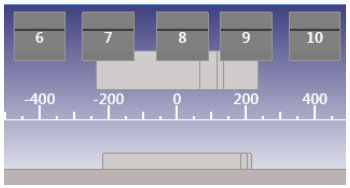
Example 1



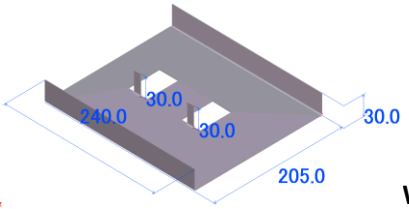
With replacement



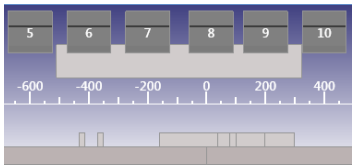
Without replacement



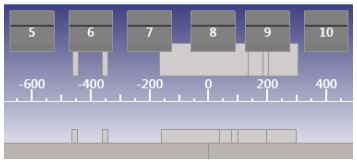
Example 2



With replacement



Without replacement



Contents

If the divided tool laid out at the auto process generation is replaceable to S size (415mm) or L size (835mm), set whether the replacement is performed or not.

The replacement is performed collectively for all the stages by determining whether the replacement can be performed for all the stages.

Any partial replacement is not performed.

(Example: 2 stages of 3 stages are not replaces to a single one.)

Cases to be changed

Since it depends on a processing method of a customer, it is inappropriate to completely mention which one is better to be set.

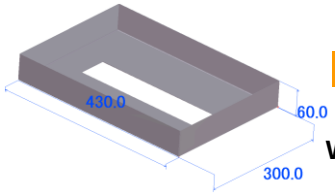
You can ask a customer to look at results of implementing a plan with or without replacement of several kinds of parts which shapes the customer often processes, and to determine what results are good for the customer. After that accordingly set a condition.

If the number of tool stocks is often exceeded, it is possible to avoid this situation to some extent with replacement.

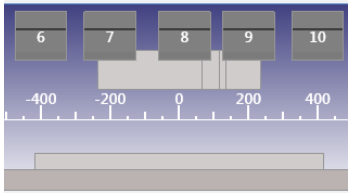
Default value: check ON
Set range: check ON, check OFF

[Z-Bend] - Same punch change to L/S type.
[Z-Bend] - Same die change to L/S type.

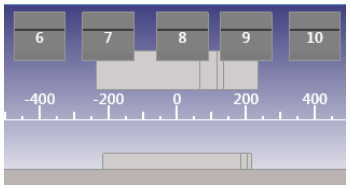
Example 1



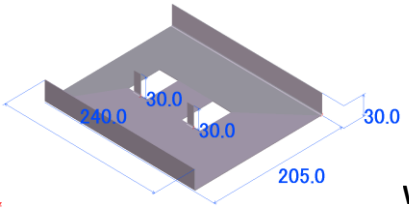
With replacement



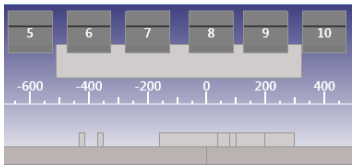
Without replacement



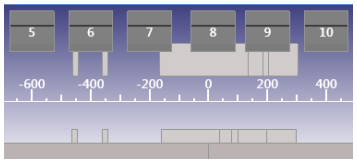
Example 2



With replacement



Without replacement



Contents

If the divided tool laid out at the auto process generation is replaceable to S size (415mm) or L size (835mm), set whether the replacement is performed or not.

The replacement is performed collectively for all the stages by determining whether the replacement can be performed for all the stages.

Any partial replacement is not performed.

(Example: 2 stages of 3 stages are not replaces to a single one.)

Cases to be changed

Since it depends on a processing method of a customer, it is inappropriate to completely mention which one is better to be set.

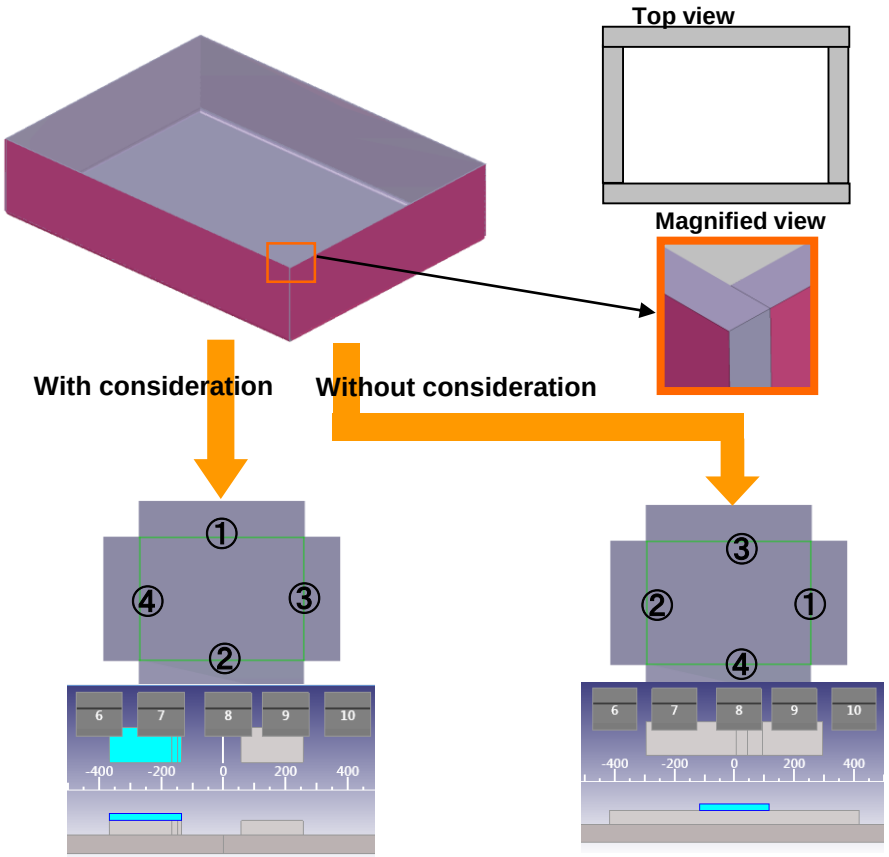
You can ask a customer to look at results of implementing a plan with or without replacement of several kinds of parts which shapes the customer often processes, and to determine what results are good for the customer. After that accordingly set a condition.

If the number of tool stocks is often exceeded, it is possible to avoid this situation to some extent with replacement.

Default value: check ON
Set range: check ON, check OFF

BendOrder

Consideration of part setback



Contents

This item is to set whether a bend order that interference of a box-shaped setback portion is considered is created or not.

As shown in the left figure, in case of a setback that a long side is outside and a short side is inside, since the bend order is long side →long side →short side →short side for the setting of "with consideration", the tool layout has two stages. (See the left figure.)

It can be set whether such a setback is considered for material or thickness of a part.

Cases to be changed

Normally, setting to "check ON" is recommended. Because in case of "without consideration" parts may interfere with each other at bending, thereby result in their slight deformation.

However, some customer can ignore slight deformation of the setback caused by interference but want to reduce the number of tool stages. In such a case, set "check OFF".

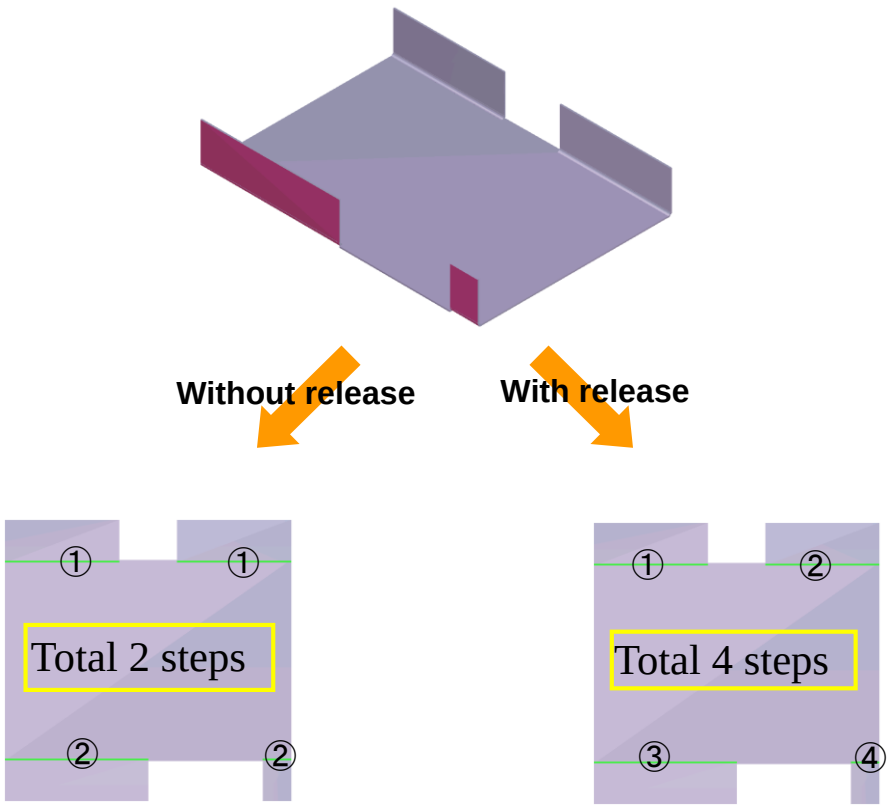
Execution

- Default value: check ON
- Set range: check ON, check OFF

Consider when the sheet thickness exceeds this value (CRS, AL, SUS).

- Default value: 0.0 mm
- Set range: 0.0 mm - 99.9 mm

[V-Bend] - grouping parallel bend lines - release



Contents

This item is to set whether a parallel bend is performed by the same process or other process in the auto process generation. (See the left figure.)

Cases to be changed

Basically, “check OFF” is set.

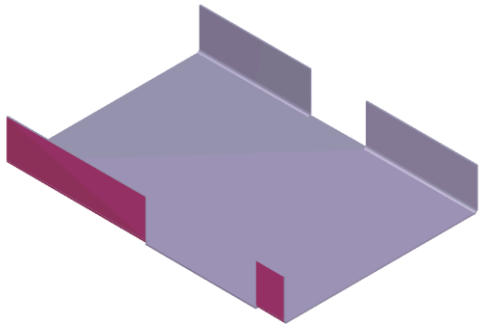
As shown in the left figure, if “check ON” is set, the number of bend steps increases.

In the background of a requirement that they want to perform a parallel bend separately, they want to prevent variation in precision caused by bending in different bend lengths with the same D value, or to prevent excess table length which occurs due to performing a parallel bend.

In such a case, set “check ON”.

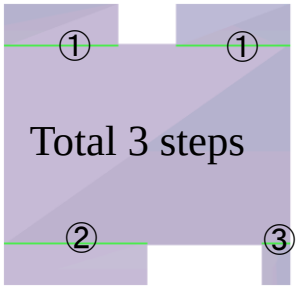
Default value: check OFF
Set range: check ON, check OFF

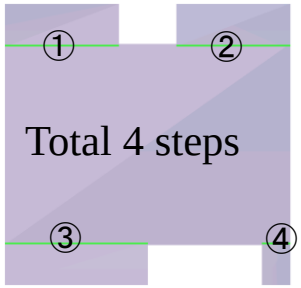
[V-Bend] - grouping parallel bend lines - grouping bend lines with same length
[V-Bend] - grouping parallel bend lines - ratio of grouped bend line length



With grouping

Without grouping





Contents

This item is available only when the parameter on the previous page is set to “with release”.

- **Grouping bend lines with same length**

In the parallel bend, this item is to set whether parallel bends that bend lines have the same length are grouped or not.

- **Ratio of Grouped bend line length**

Coefficient for determining the above parameter as “the same length”.

Cases to be changed

If you want to release the grouping of parallel bend lines but to group and bend bend-lines having the same length (or approximately the same length), set the parameter to “check ON”. At this time, set a ratio that you want to determine as the same length”.

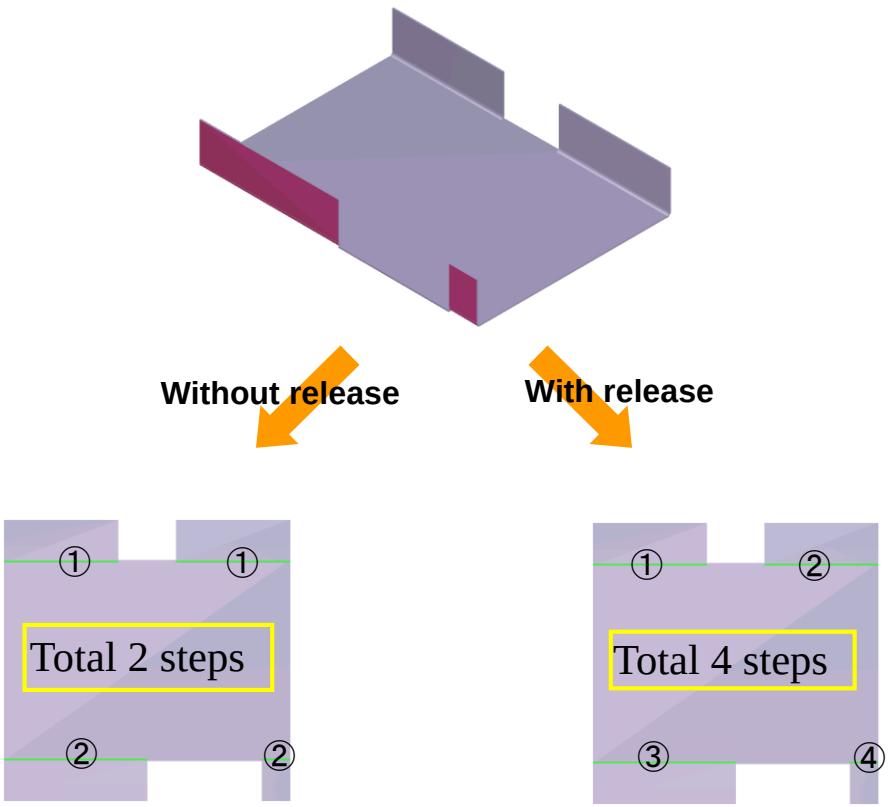
Grouping bend lines with same length

- Default value: check OFF
- Set range: check ON, check OFF

Ratio of grouped bend line length

- Default value: 90 %
- Set range: 1 % - 99 %

[Hem-Bend] - grouping parallel bend lines - release



Contents

This item is to set whether a parallel bend is performed by the same process or other process in the auto process generation. (See the left figure.)

Cases to be changed

Basically, “check OFF” is set.

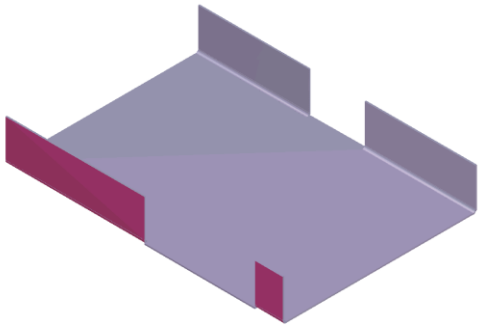
As shown in the left figure, if “check ON” is set, the number of bend steps increases.

In the background of a requirement that they want to perform a parallel bend separately, they want to prevent variation in precision caused by bending in different bend lengths with the same D value, or to prevent excess table length which occurs due to performing a parallel bend.

In such a case, set “check ON”.

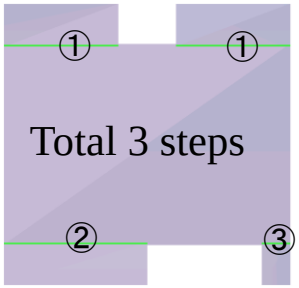
Default value: check OFF
Set range: check ON, check OFF

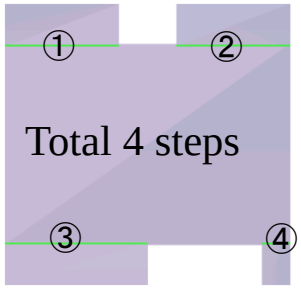
[Hem-Bend] - grouping parallel bend lines - grouping bend lines with same length
[Hem-Bend] - grouping parallel bend lines - ratio of grouped bend line length



With grouping

Without grouping





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- **Grouping bend lines with same length**

  In the parallel bend, this item is to set whether parallel bends that bend lines have the same length are grouped or not.

- **Grouping bend line length ratio**

  Coefficient for determining the above parameter as “the same length”.

Cases to be changed

If you want to release the grouping of parallel bend lines but to group and bend bend-lines having the same length (or approximately the same length), set the parameter to “check ON”. At this time, set a ratio that you want to determine as the same length”.

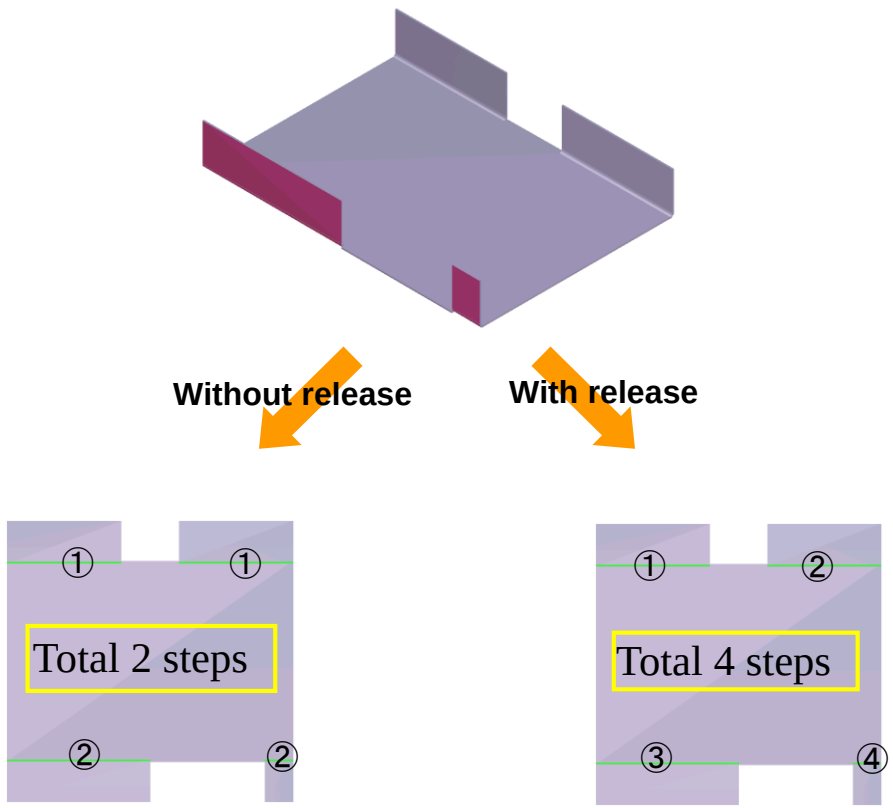
Grouping bend lines with same length

- Default value: check OFF
- Set range: check ON, check OFF

Ratio of grouped bend line length

- Default value: 90 %
- Set range: 1 % - 99 %

[RR bend] - grouping parallel bend lines - release



Contents

This item is to set whether a parallel bend is performed by the same process or other process in the auto process generation. (See the left figure.)

Cases to be changed

Basically, “check OFF” is set.

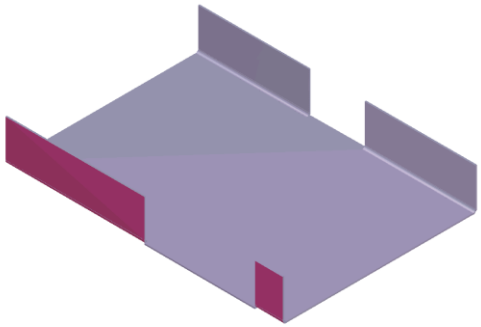
As shown in the left figure, if “check ON” is set, the number of bend steps increases.

In the background of a requirement that they want to perform a parallel bend separately, they want to prevent variation in precision caused by bending in different bend lengths with the same D value, or to prevent excess table length which occurs due to performing a parallel bend.

In such a case, set “check ON”.

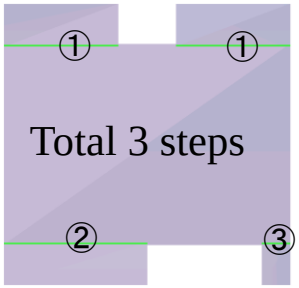
Default value: check OFF
Set range: check ON, check OFF

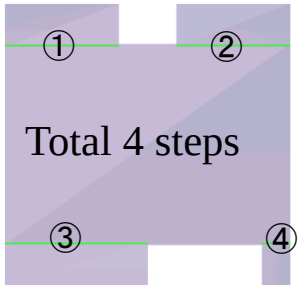
[RR bend] - grouping parallel bend lines - grouping bend lines with same length
[RR bend] - grouping parallel bend lines - ratio of grouped bend line length



With grouping

Without grouping





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- **Grouping bend lines with same length**

  In the parallel bend, this item is to set whether parallel bends that bend lines have the same length are grouped or not.

- **Grouping bend line length ratio**

  Coefficient for determining the above parameter as “the same length”.

Cases to be changed

If you want to release the grouping of parallel bend lines but to group and bend bend-lines having the same length (or approximately the same length), set the parameter to “check ON”. At this time, set a ratio that you want to determine as the same length”.

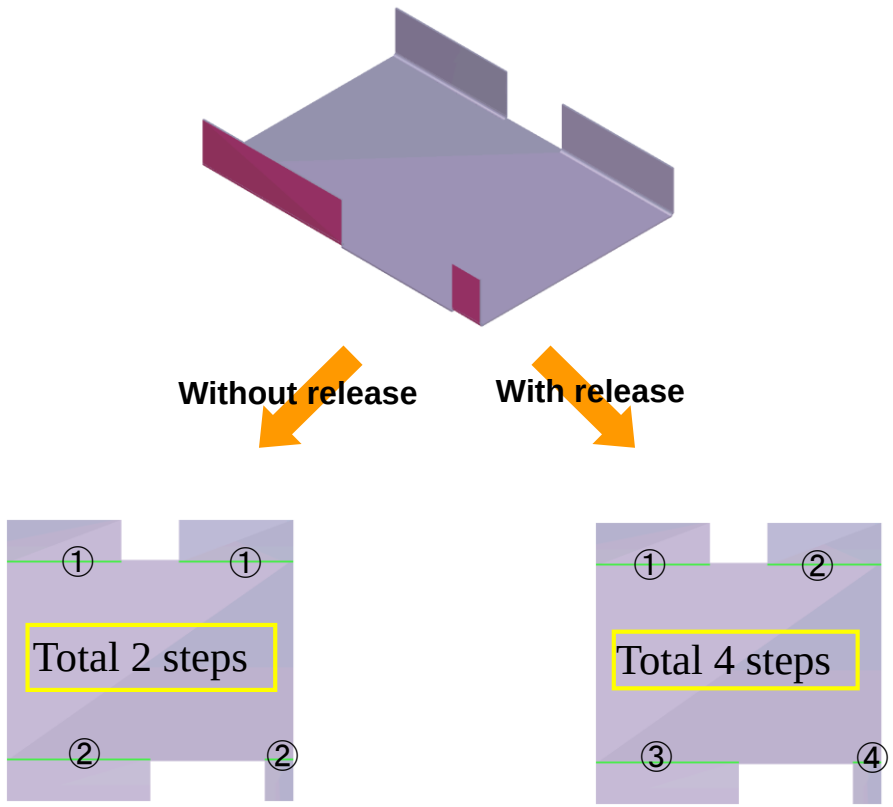
Grouping bend lines with same length

- Default value: check OFF
- Set range: check ON, check OFF

Ratio of grouped bend line length

- Default value: 90%
- Set range: 1% - 99%

[FR bend] - grouping parallel bend lines - release



Contents

This item is to set whether a parallel bend is performed by the same process or other process in the auto process generation. (See the left figure.)

Cases to be changed

Basically, “check OFF” is set.

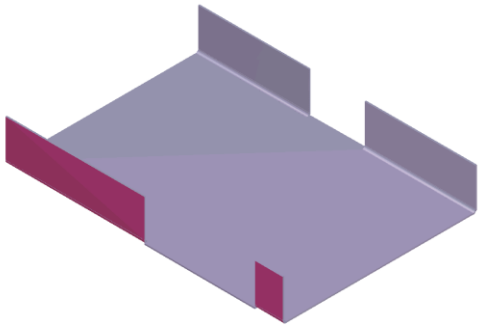
As shown in the left figure, if “check ON” is set, the number of bend steps increases.

In the background of a requirement that they want to perform a parallel bend separately, they want to prevent variation in precision caused by bending in different bend lengths with the same D value, or to prevent excess table length which occurs due to performing a parallel bend.

In such a case, set “check ON”.

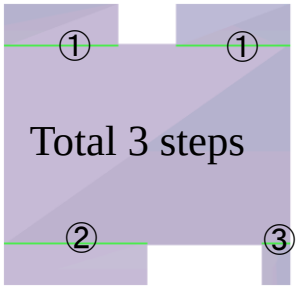
Default value: check OFF
Set range: check ON, check OFF

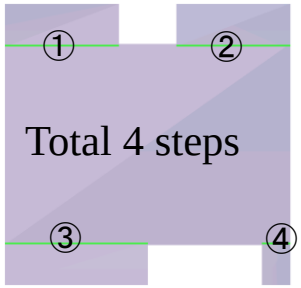
[FR bend] - grouping parallel bend lines - grouping bend lines with same length
[FR bend] - grouping parallel bend lines - ratio of grouped bend line length



With grouping

Without grouping





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- **Grouping bend line length ratio**

  Coefficient for determining the parameter above as “the same length”.

Cases to be changed

If you want to release the grouping of parallel bend lines, but to group and bend bend-lines having the same length (or approximately the same length), set the parameter to “check ON”. At this time, set a ratio that you want to determine as the same length”.

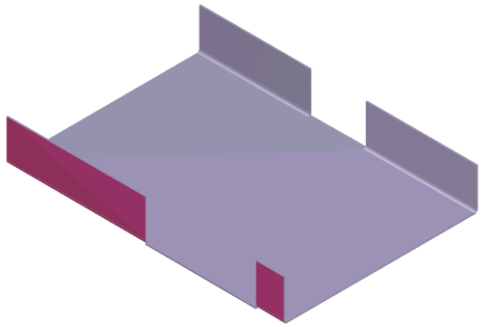
Grouping bend lines with same length

- **Default value: check OFF**
- **Set range: check ON, check OFF**

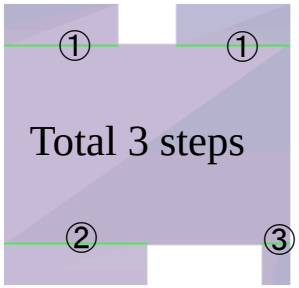
Ratio of grouped bend line length

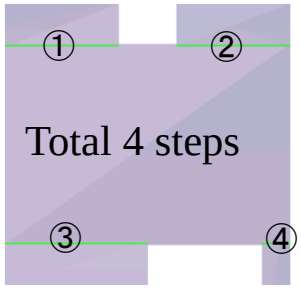
- **Default value: 90%**
- **Set range: 1% - 99%**

[Z-Bend] - grouping parallel bend lines - grouping bend lines with same length
[Z-Bend] - grouping parallel bend lines - ratio of grouped bend line length



With grouping　　Without grouping





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- **Grouping bend line length ratio**

  Coefficient for determining the parameter above as “the same length”.

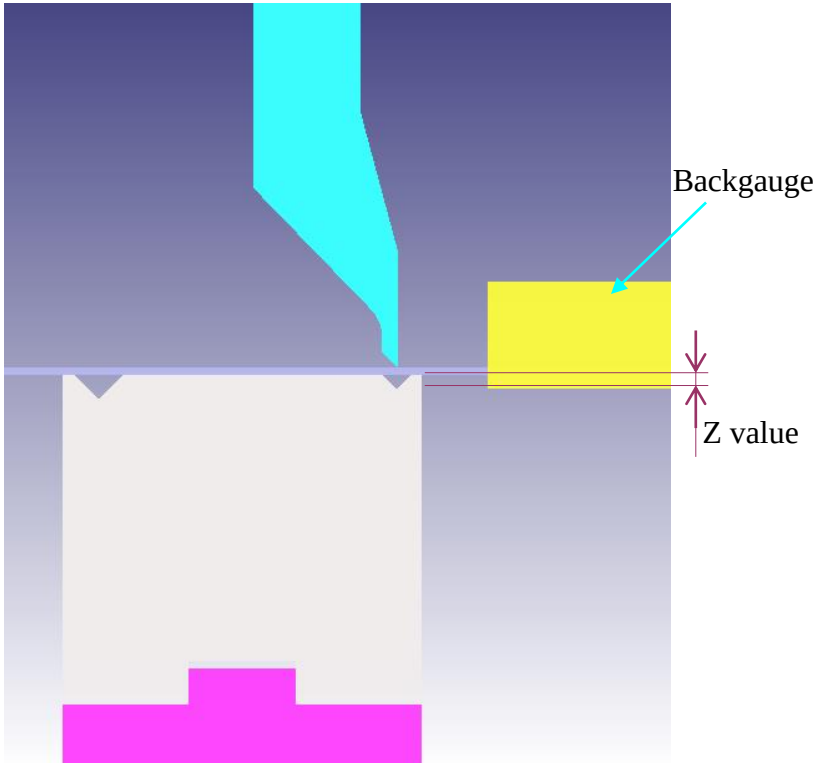
Cases to be changed

If you want to release the grouping of parallel bend lines, but to group and bend bend-lines having the same length (or approximately the same length), set the parameter to “check ON”. At this time, set a ratio that you want to determine as the same length”.

Grouping bend lines with same length	Ratio of grouped bend line length
・Default value: check OFF ・Set range: check ON, check OFF	・Default value: 90% ・Set range: 1% - 99%

Gauge

Initial Z value (Z)



Contents

This item is to set an initial Z value of data to be created.

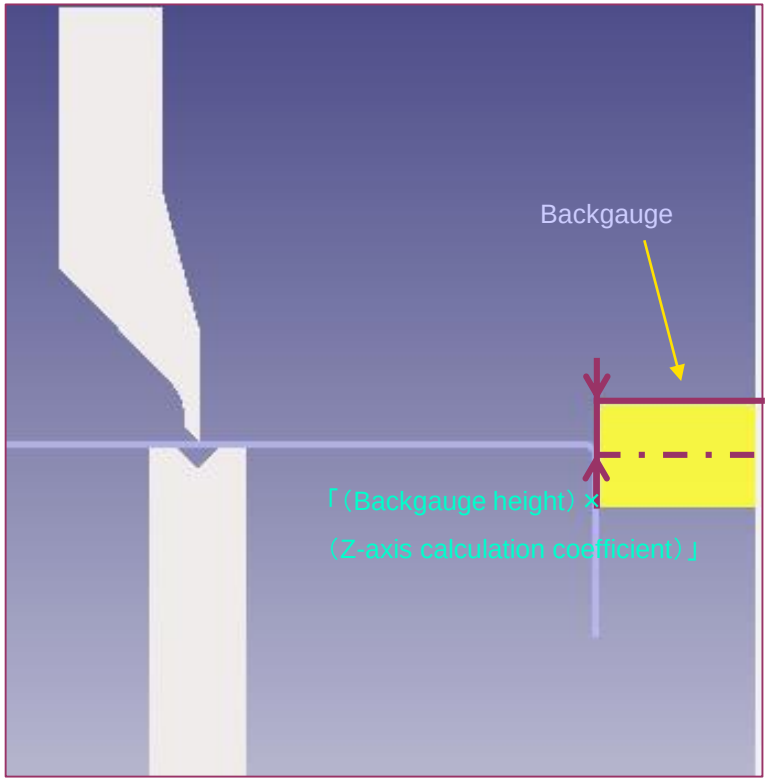
The initial Z value is a Z value in case there is no interference between the backgauge and the part or punch in a step capable of putting a backgauge.

Cases to be changed

The default value of AMNC is “-2 mm”. However, some customer may change the default value. First of all, ask the customer what the current set value of AMNC is, and set the same value as the value for this parameter.

Default value: -2 mm
Set range: -99.9 mm - 99.9 mm

Coefficient for calculating Z value (K)



Contents

This item is to set a coefficient for calculating a Z value for Z-axis data which an automatic portion or manual portion creates.

The coefficient for calculating a Z value is a coefficient for setting where a reference in the height direction of the backgauge is with respect to the end point of the outer-R of the bend.

Cases to be changed

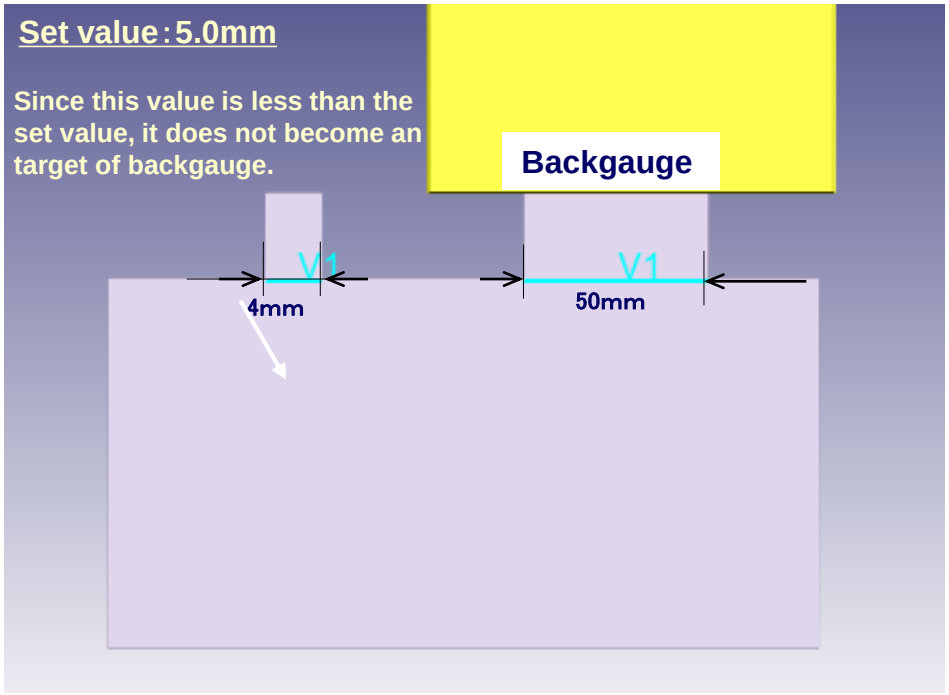
The default value is “0.5”.

A backgauge height which value is “(backgauge height) x 0.5” corresponds to the outer-R of the bend.

Set it, when a length of a curved side which is a point of the backgauge is “(backgauge height) x 0.5” or less and is not selected as a backgauge point.

Default value: 0.5
Set range: 0.10 - 0.90

Minimum backgauge width (W)



Contents

This item is to set the minimum flange length for determining that "a backgauge is available" at the auto process generation.

Cases to be changed

The default value is "2.0mm".

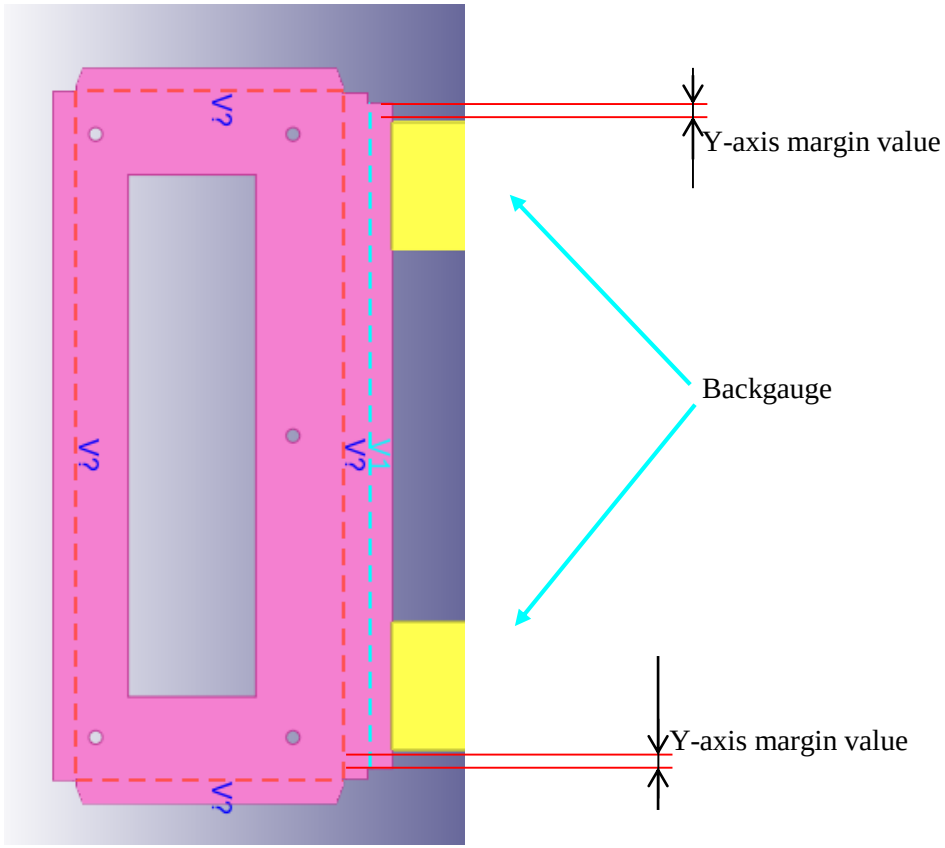
Some customer may not want to perform a backgauge to a flange which width is narrow.

As for the left figure, the flange nearest to the bend line is a flange of 4mm width, but the set value for that is 5.0mm. Therefore, the backgauge is performed to a flange of 50mm width.

Present examples to the customer and perform the setting.

Default value: 2.0 mm
Set range: 2.0 mm - (backgauge width)

Y axis margin value (Y)



Contents

This item is to set a Y-axis margin value of data that the automatic portion creates.

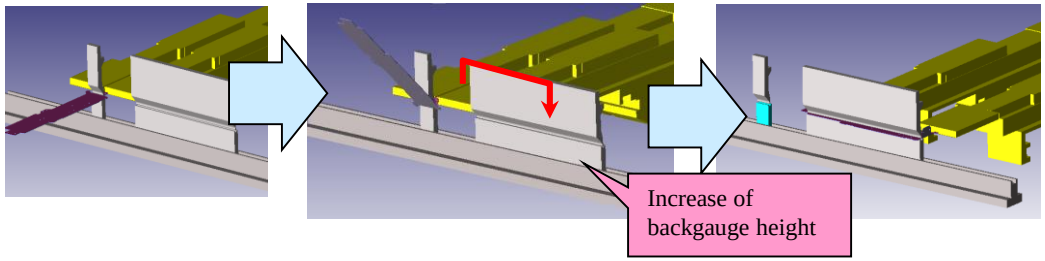
Cases to be changed

The default value of AMNC is “1.0 mm”. However, some customer may change the default value. First of all, ask the customer what the current set value of AMNC is, and set the same value as that value for the parameter.

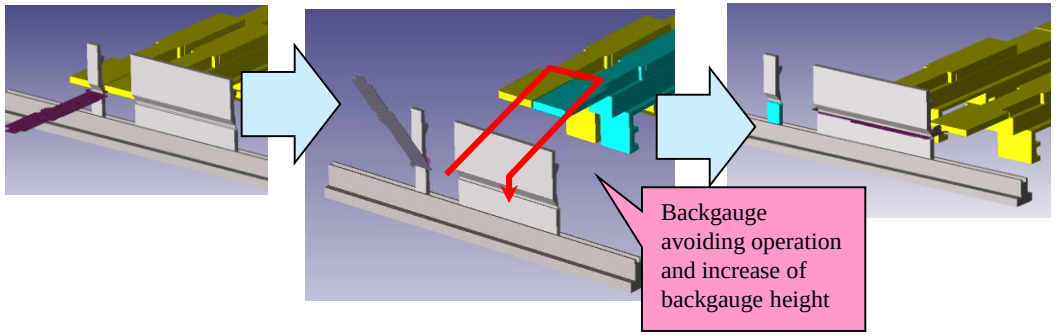
Default value: 1.0 mm
Set range: 0.0 mm - 500.0 mm

Backgauge operation pattern (CZ)

- **Backgauge operation of CZ=1**



- **Backgauge operation of CZ=2**



Contents

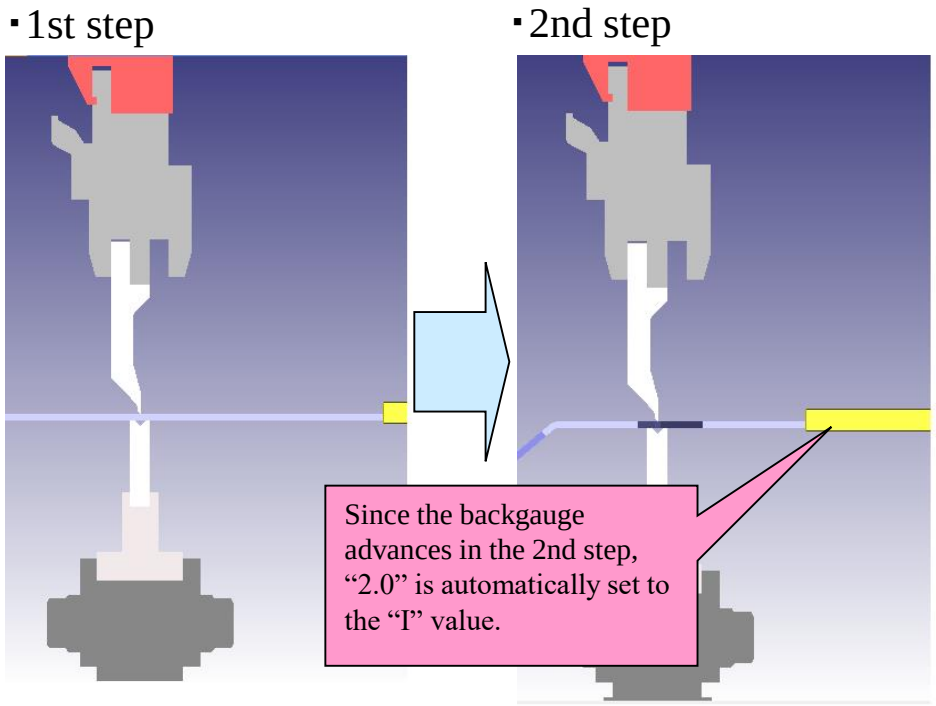
This item is to set a backgauge operation pattern when the backgauge moves to a next step of data which the automatic portion and the manual portion create.

Cases to be changed

Set the pattern, in case a bend data for bending based on a Z-Bend tool layout, when a part and a backgauge are likely to collide at the time of taking out the part after bending, or when several setups are performed for tool stages in different die heights.

Default value: 0
Set range: 0, 1, 2

Idle timer for all steps (I)



Contents

This item is to set a backgauge movement start timer when the backgauge moves to a next step of data that the automatic portion and the manual portion create.

Cases to be changed

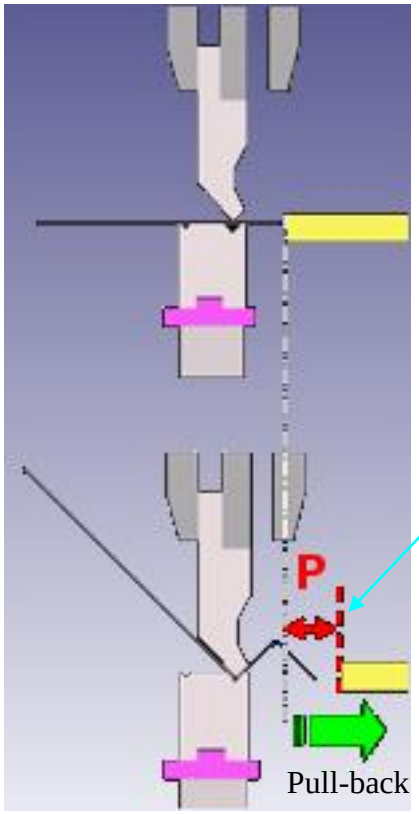
The default value of AMNC is “2.0 sec”. However, some customer may change the default value. First of all, ask the customer what the current set value of AMNC is, and set the same value as that value for the parameter.

Default value: 2.0 sec
Set range: 0.0 sec - 99.9 sec

Pull-back operation

Before bending

After bending



Pull-back amount

Contents

・All steps execution

This item is a parameter used when you want to insert a pull-back operation to all steps of data that the automatic portion creates.

In case of setting “check OFF”, the pull-back operation is inserted in only a step that a pull-back is required.

・Pull-back amount

This is available only in case that the parameter is set to “check ON”.

Cases to be changed

Normally, “check OFF” is set.

Set “check ON” when the pull-back operation is required for all the steps due to outputting a signal to a following device, etc.

In the case, set the pull-back amount to 0.00.

All steps execution

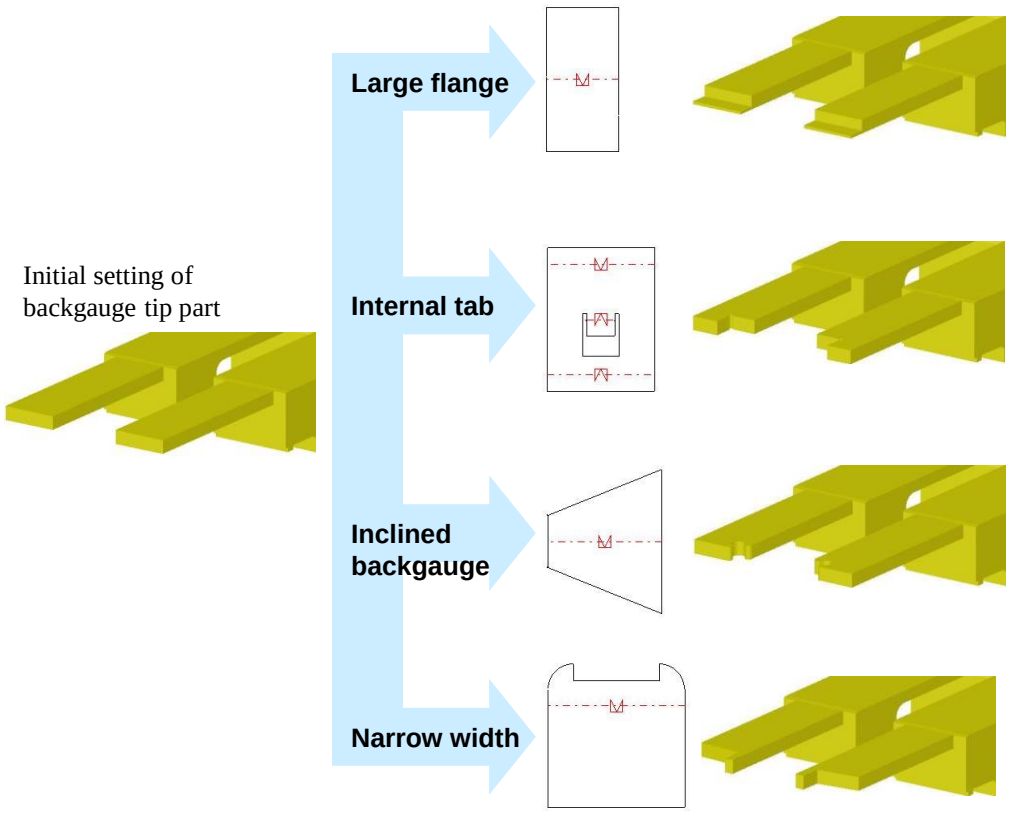
- **Default value: check OFF**
- **Set range: check ON, check OFF**

Pull-back amount (P)

- **Default value: 50 mm**
- **Set range: 0.00 mm - 99.99 mm**

Automatic backgauge tip selection - execution

※ *Available for AMNC5.1 or later*



Contents

This item is to set whether or not a backgauge tip is automatically selected at the time of the auto process generation.

Analyze a workpiece feature and select a backgauge tip suitable for a bending process from “tool group” registered.

Cases to be changed

Normally, “check OFF” is set.

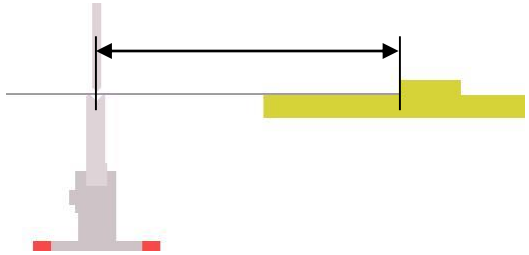
If multiple backgauge tip parts are possessed and the backgauge tip parts are changed for each workpiece (machine setup), set “check ON”.

Default value: check OFF
Set range: check ON, check OFF

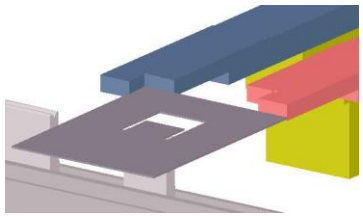
Automatic backgauge tip selection - L axis value of workpiece support boundary
Automatic backgauge tip selection - change for side gauge

※Available for AMNC5.1 or later

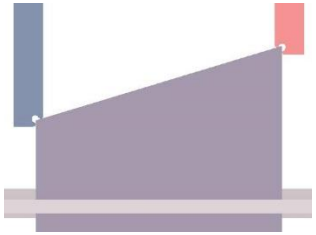
・There is a flange larger than the boundary L-axis value.



・Having an internal-tab bend



・Inclined backgauge is required.



Note) Available only for "NT bender with L axis shift"

Contents

This item is an parameter accompanying the parameter on the previous page.

・L axis value of workpiece support boundary

A boundary L axis value for automatically selecting a Z-Bend and a receiver tip.

Being automatically selected for a workpiece with a flange larger than the boundary L axis value.

・Change for the side gauge

A parameter for automatically selecting an L-type clamp tip.

Available only for a machine provided with an L axis shift feature.

Being automatically selected for a workpiece that a box bend/inclined backgauge having an internal-tab bend/side flange on the punch side is required.

Cases to be changed

・L axis value of workpiece support boundary

Set a bend flange dimension which has a Z-Bend and receiver tip and needs to receive the bowed workpiece.

・Change for the side gauge

Set "check ON" when having an L type clamp tip and using it as a substitute for the side gauge.

L axis value of workpiece support boundary

- **Default value: 200 mm**
- **Set range: 0.00 mm - 999.99 mm**

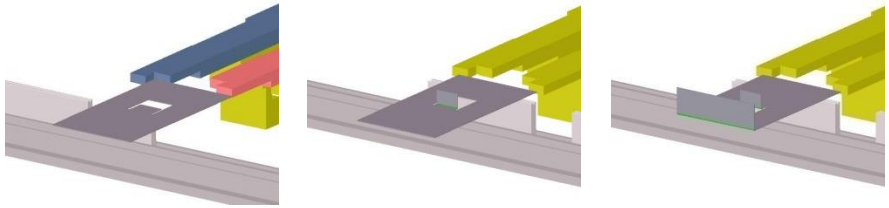
Change for side gauge

- **Default value: check OFF**
- **Set range: check ON, check OFF**

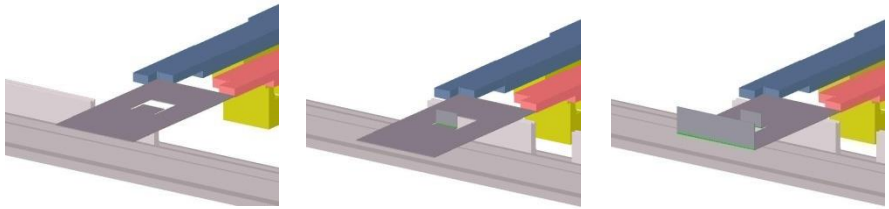
Side gauge - execution of side gauge in all steps

※ Available for AMNC5.1 or later

・When “check OFF” is set, since for the 2nd and 3rd steps the side gauge is not required, a backgauge position is found as usual.



・When “check ON” is set, a backgauge position that a side gauge is performed is found in all steps.



Note) Available only for “NT bender with L axis shift”

Contents

Set whether an L type clamp tip is initially set or automatically selected, and a backgauge position for performing a side gauge is found in all steps.

This is applied to only a machine that is provided with an L axis feature.

When “check OFF” is set, a position to perform the side gauge is calculated only for necessary steps (the steps of internal-tab bend and box bend with a side flange).

Cases to be changed

Normally, “check OFF” is set.

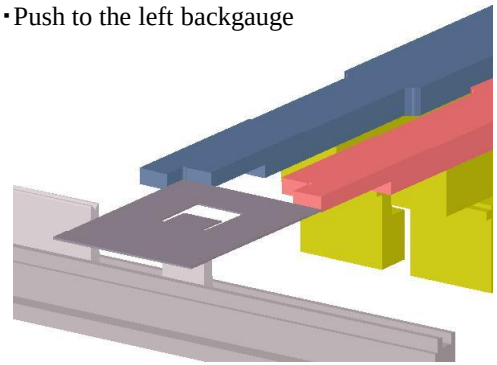
Change the setting if you want to perform the side gauge in all the steps.

Default value: check OFF
Set range: check ON, check OFF

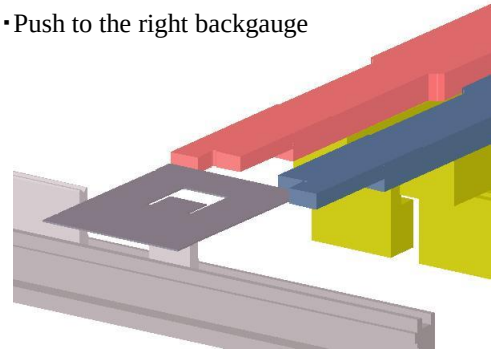
Side gauge - backgauge reference for executing side gauge

※ Available for AMNC5.1 or later

・Push to the left backgauge



・Push to the right backgauge



Note) Available only for “NT bender with L axis shift”

Contents

Set a backgauge as a standard when an L type clamp tip is initially set or automatically selected and used as a substitute.

Applied only to a machine provided with an L axis shift function.

Left: push to the left backgauge

Right: push to the right backgauge

Cases to be changed

Normally, “left” is set.

Change the settings when the customer wants to change the pushing direction as a side gauge.

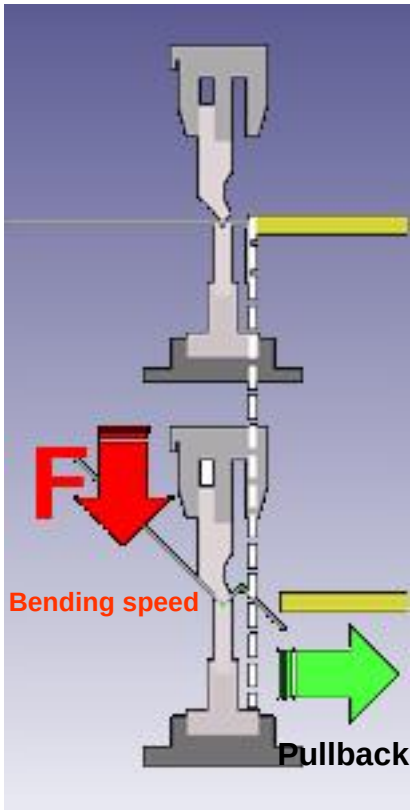
Default value: left
Set range: left, right

TableAction

Initial value of pull-back speed (F)

Before bending

After bending



Contents

This item is to set a bending speed after a pull-back operation in the pull-back generation process that the automatic portion creates data.

A default value is different depending on the model, which is

Cases to be changed

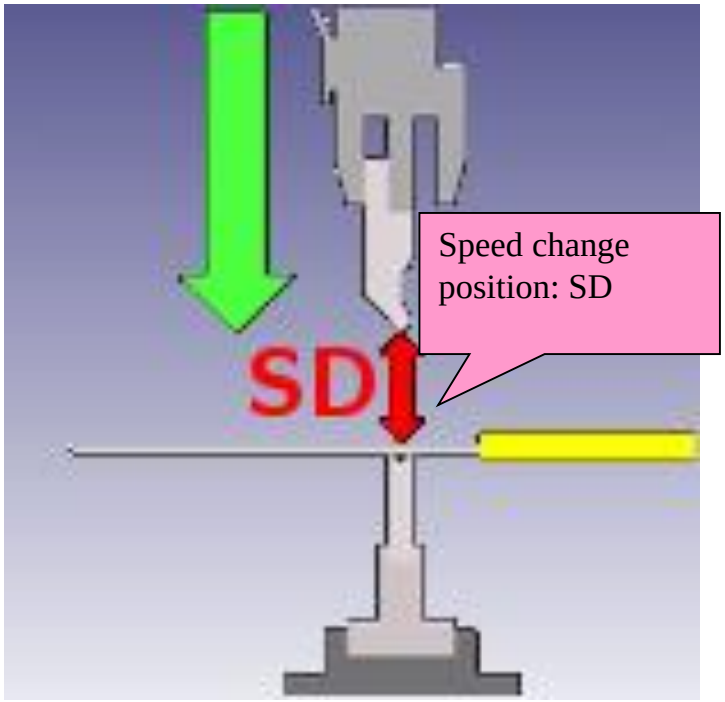
The default value of AMNC differs for each model, which is HG : 6, EG : 6, HFE3I : 9, HDS : 6, HD : 6, HFP : 5or9, FMB2 : 9, FMB : 9, FBD3 : 9, or RGM2 : 9 , HM : 9

The default value of AMNC is “2.0 sec”. However, some customer may change the default value. First of all, ask the customer what the current set value of AMNC is, and set the same value as that value for the parameter.

Default value: HG : 6, EG : 6, HFE3I : 9, HDS : 6, HD : 6, HFP : 5or9, FMB2 : 9, FMB : 9, FBD3 : 9, RGM2 : 9, HM : 9

Set range: 1 - 9

Slowdown D value (SD)



Contents

This item is to set a D axis position that the slide (upper table) for data which the automatic portion and manual portion create is switched from high speed to low speed.

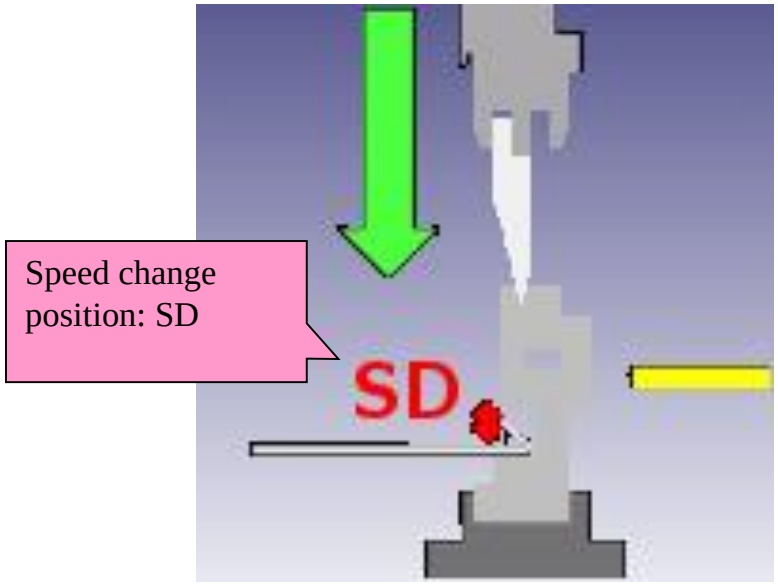
Be applied to V-bending, FR-bending, RR-bending and Hemming acute bending.

Cases to be changed

The default value of AMNC is “2.0 mm”. However, some customer may change the default value. First of all, ask the customer what the current set value of AMNC is, and set the same value as that value for the parameter.

Default value: 2.0 mm
Set range: 0.0 - 999.9 mm

Slowdown D value (SD)　For crushing bending (double deck tool)



Contents

Item for setting the D-axis position that the slide (upper table) of data which the auto portion creates is switched from the high speed to the low speed.

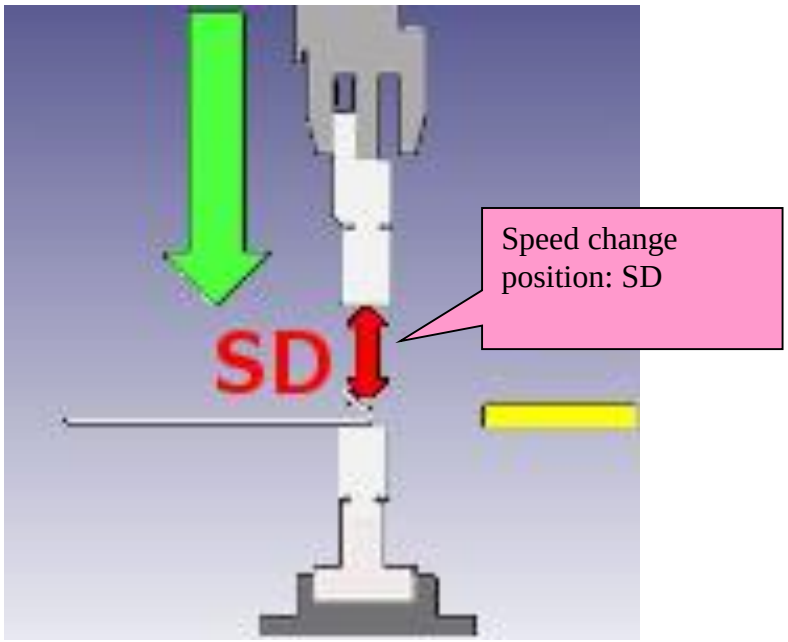
Be applied when using a double deck tool for the Hemming crushing bending.

Cases to be changed

The default value of AMNC is “20.0 mm”. However, some customer may change the default value. First of all, ask the customer what the current set value of AMNC is, and set the same value as that value for the parameter.

Default value: 20.0 mm
Set range: 0.0 - 999.9 mm

Slowdown D value (SD)　For crushing bending (slider tool)



Contents

Item for setting the D-axis position that the slide (upper table) of data which the auto portion, the manual portion creates is switched from the high speed to the low speed.

The auto portion is applied when using a slider tool for Hemming crushing bending.

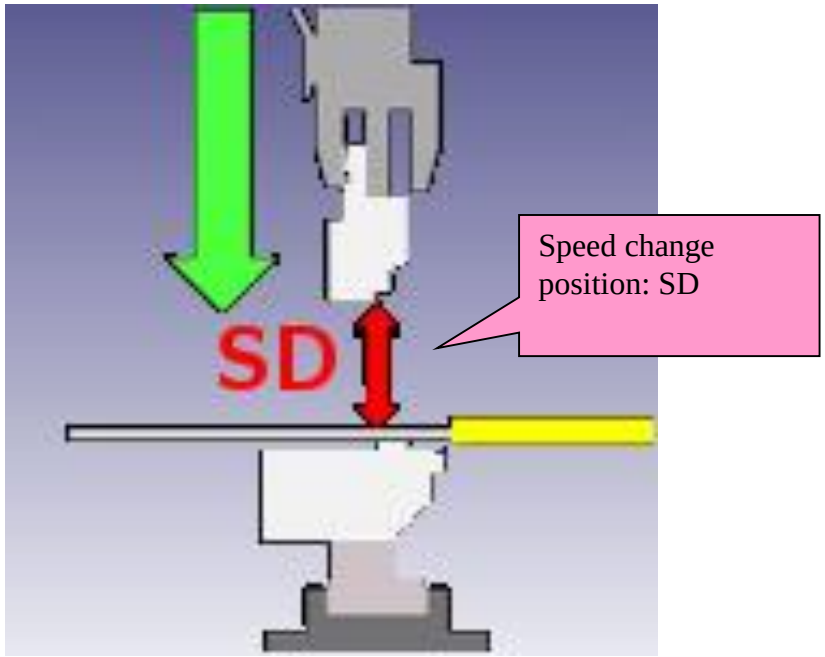
The manual portion is applied when using a double deck/slider tool for Hemming crushing bending.

Cases to be changed

The default value of AMNC is “30.0 mm”. However, some customer may change the default value. First of all, ask the customer what the current set value of AMNC is, and set the same value as that value for the parameter.

Default value: 30.0 mm
Set range: 0.0 - 999.9 mm

Slowdown D value (SD)　For Z-Bending



Contents

Item for setting the D-axis position that the slide (upper table) of data which the auto portion, the manual portion creates is switched from the high speed to the low speed.

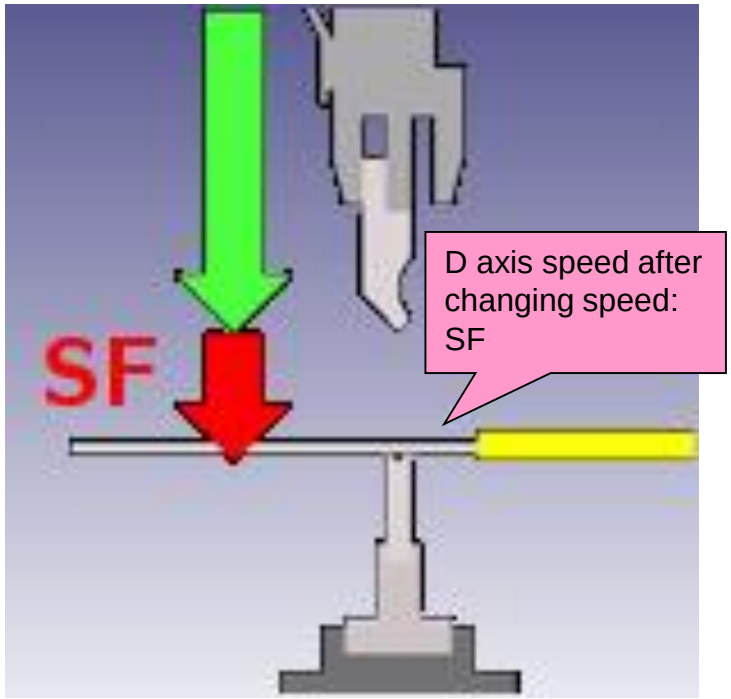
Be applied to Z-Bending.

Cases to be changed

The default value of AMNC is “20.0 mm”. However, some customer may change the default value. First of all, ask the customer what the current set value of AMNC is, and set the same value as that value for the parameter.

Default value: 20.0 mm
Set range: 0.0 - 999.9 mm

Slowdown speed (SF)



Contents

This item is to set a D axis speed after the slide (upper table) for data which the automatic portion and manual portion create is switched from high speed to low speed (bending speed).

Cases to be changed

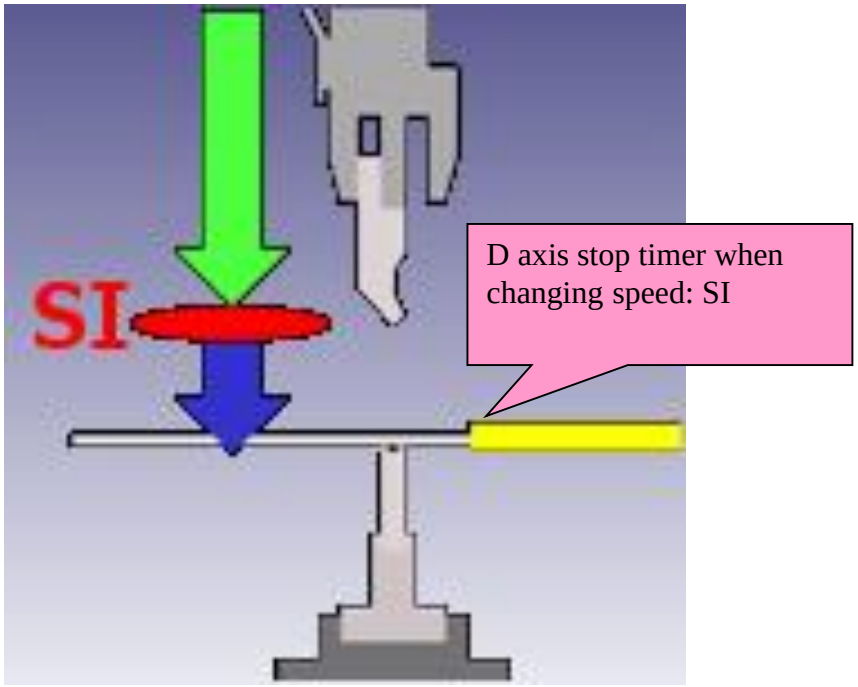
The default value differs for each model of AMNC, which is HG : 6, EG : 6, HFE3I : 9, HDS : 6, HD : 6, HFP : 5or9, FMB2 : 9, FMB : 9, FBD3 : 9, or RGM2 : 9 or HM : 9

However, some customer may change the default value. First of all, ask the customer what the current set value of AMNC is, and set the same value as that value for the parameter.

Default value: HG : 6, EG : 6, HFE3I : 9, HDS : 6, HD : 6, HFP : 5or9, FMB2 : 9, FMB : 9, FBD3 : 9, RGM2 : 9 , HM : 9

Set range: 1 - 9

Slowdown timer (SI)



Contents

This item is to set a D axis stop timer that the slide (upper table) for data which the automatic portion and manual portion create is switched from high speed to low speed.

Cases to be changed

The default value of AMNC is “0.0 sec”.

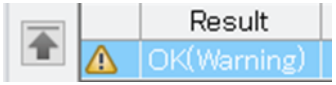
However, some customer may change the default value. First of all, ask the customer what the current set value of AMNC is, and set the same value as that value for the parameter.

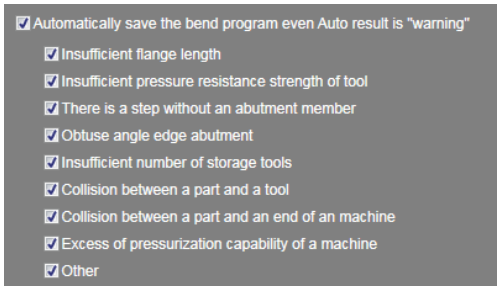
Default value: 0.0 sec
Set range: 0.0 - 99.9 sec

Related to Auto

Automatically save the bend program even Auto result is “warning”

In case that the results which the Auto Process creates are OK(warning).





OFF

The processing data is not saved.

ON

The processing data is saved in the save destination server according to the NC name.

Details

If the Auto Step Generation results is OK (or Warning), it is set, for each warning content, whether the processing data is automatically saved or not.

The respective displayed warning contents other than "Others" can be separately set. All the other warning contents belong to "Others".

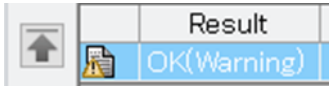
Set saving the warning bend data of a slight collision not for this parameter but for " The data that minute interference occurs “presence of warning” is automatically saved.

Change case

Basically "Check OK" is set. When you do not want to automatically save the processing data that the Auto Process Creation results are OK (warning), set this item to "Check OFF".

Default value : ON
Setting range : ON / OFF

Save the feasibility report by Auto-Save the warning message



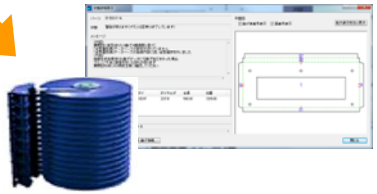
In case that the results which the Auto Process creates are OK(warning).

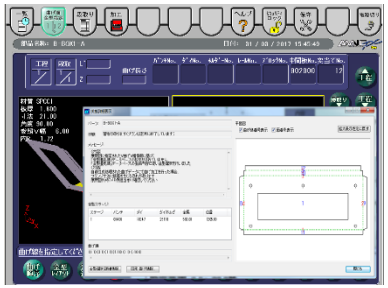
OFF

The warning message is not saved.

ON

The warning message is saved.





Details

This item is effective only when "Automatically save the bend program even Auto result is warning" is set to "Check ON" And "Save the feasibility report by Auto" is set to "Check ON".

Note）Only machines other than AMNC_V3 / AMNC_3i NC name can be changed.

When the Auto Process Creation results are OK (warning), set whether the warning message is saved.
The warning message is saved only when the warning bend data is saved.

The message can be confirmed by the unbendable viewer on the AMNC side.

Change case

Basically "Check OFF" is set

When the warning message is saved together with the processing data of "the Auto Process Creation results are OK (warning)", set this item to "Check ON".

Default value : OFF
Setting range : ON / OFF

Save the feasibility report by Auto-Save the error message

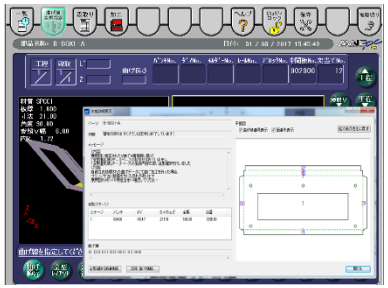
In case that the results which the Auto Process creates are NG

OFF

The failure message is not saved.

ON

The failure message is saved.



Details

This item is effective only when “Save the feasibility report by Auto” is set to “Check ON”.

Note）Only machines other than AMNC_V3 / AMNC_3i NC name can be changed.

When the Auto Process Creation results are NG, set whether the failure message is saved.

The message can be confirmed by the unbendable viewer on the AMNC side.

Change case

Basically "Check OFF" is set

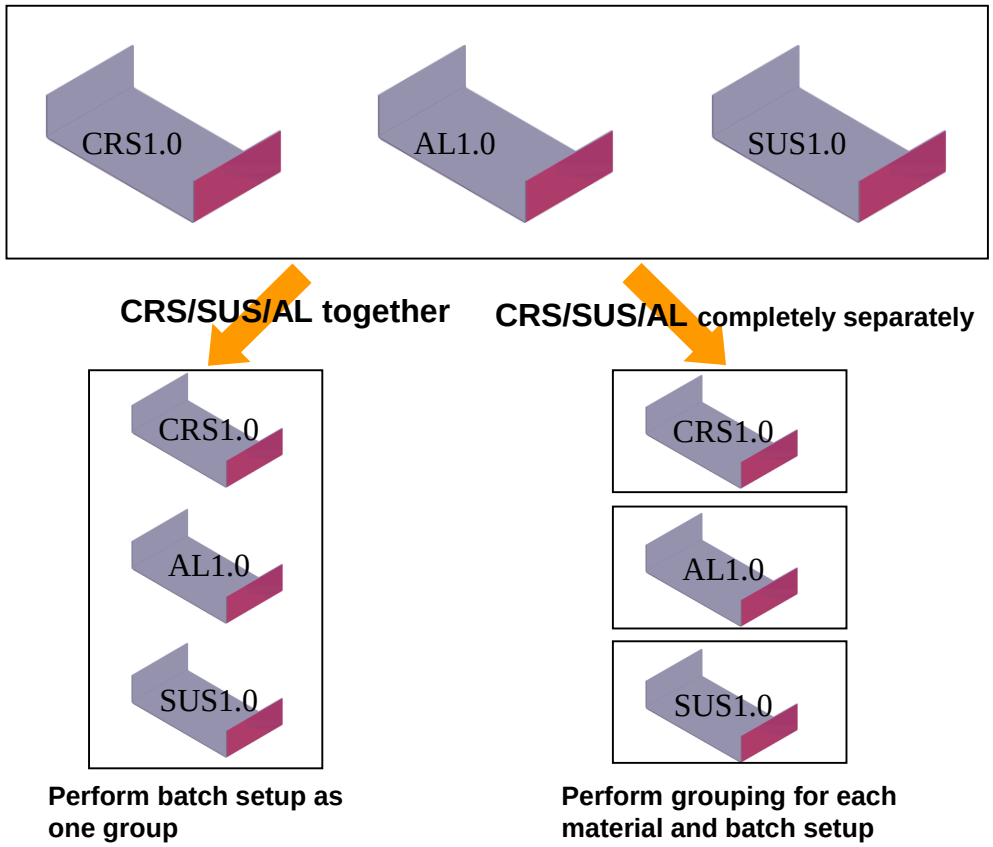
If when the Auto Process Creation results are NG the failure message is saved, set this item to "Check ON".

In case of halfway planning other than shortage of tools, results are NG, but no failure messages are saved.

Default value : OFF
Setting range : ON / OFF

Common layout group

Grouping for each material (CRS/SUS/AL)



Contents

This item is to set whether grouping is performed on the basis of material when performing batch setup.

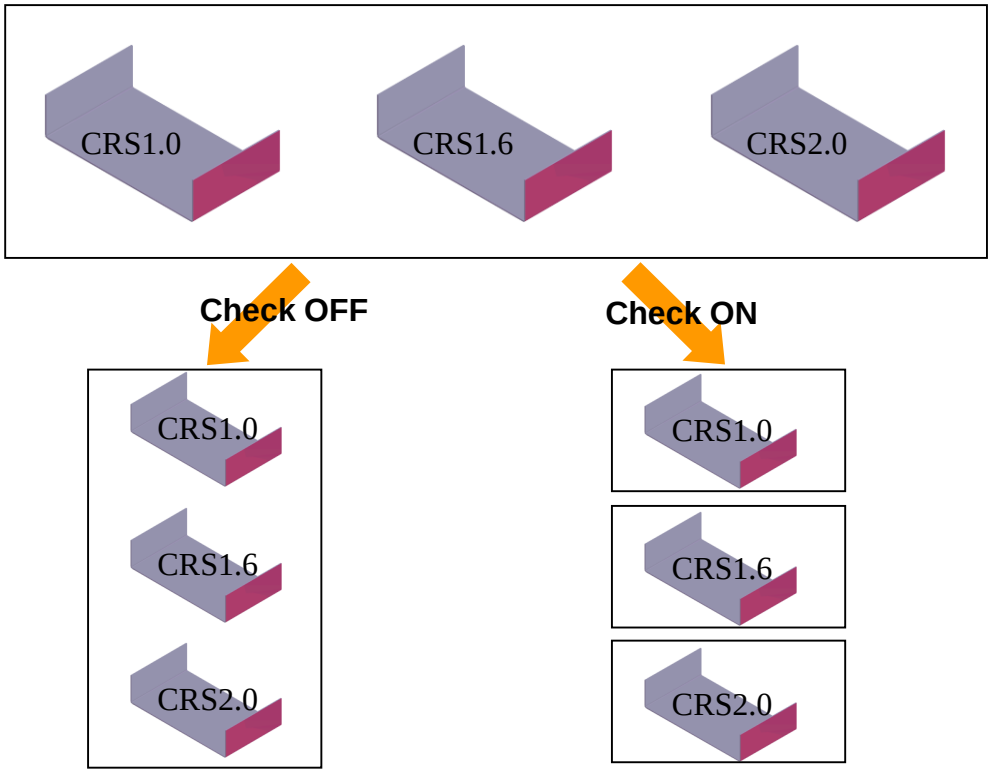
Cases to be changed

The default value is “CRS/SUS/AL together”.

Set this parameter when you want to perform setup in a batch with a different layout for each material for a reason such as accuracy.

Default value: CRS/AL/SUS together
Set range: CRS/AL/SUS together ,CRS/AL/SUS completely separately, CRS/AL together, CRS/SUS together, AL/SUS together

Grouping for each plate thickness



Contents

This item is to set whether grouping is performed on the basis of material when performing batch setup.

If this item is checked, grouping is performed for each plate thickness of material.

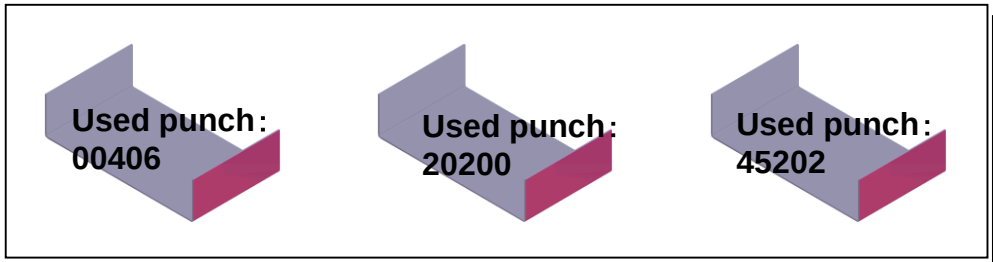
Cases to be changed

Normally, “check OFF” is set.

Set this item when required to set a layout for each plate thickness for a reason such as a V width that you want to use when performing batch setup.

Default value: check OFF
Set range: check ON, check OFF

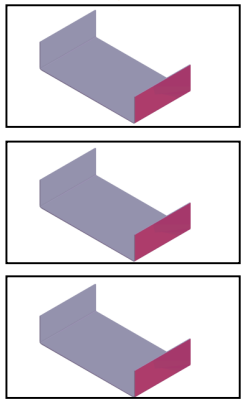
Grouping for each punch number



Check OFF

Create a layout that a plural punches are grouped and set without considering the used punches.

Check ON



Since grouping is performed for each punch, a created layout is that only one kind of punch is used.

Contents

This item is to set whether grouping is performed on the basis of punch number used when performing batch setup in a.

If this item is checked, grouping is performed on the basis of punch number.

Cases to be changed

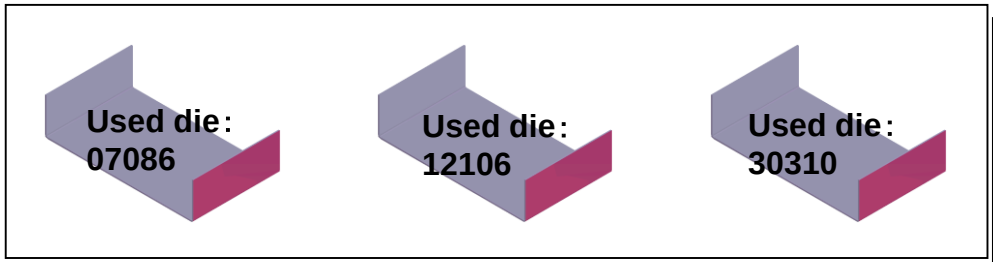
Normally, “check OFF” is set.

Set this item when you want to perform batch setup for each punch used at the time of process creation.

Default value: check OFF

Set range: check ON, check OFF

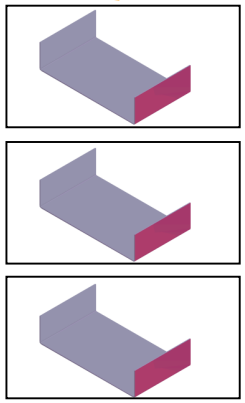
Grouping for each die number



Check OFF

Create a layout that a plural punches are grouped and set without considering the used dies.

Check ON



Since grouping is performed for each punch, a created layout is that only one kind of die is used.

Contents

This item is to set whether grouping is performed on the basis of die number used when performing batch setup.

If this item is checked, grouping is performed on the basis of die number.

Cases to be changed

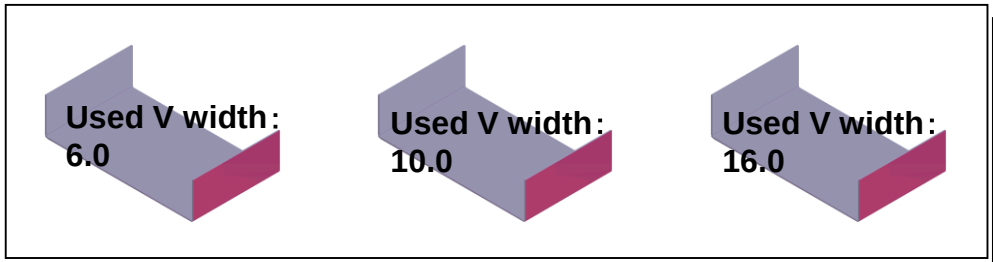
Normally, “check OFF” is set.

Set this item when you want to perform batch setup for each die used at the time of process creation.

Default value: check OFF

Set range: check ON, check OFF

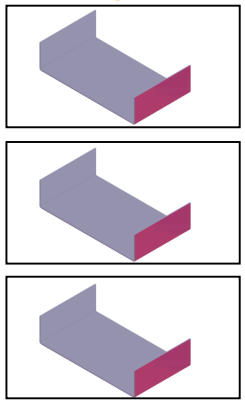
Grouping for each V width



Check OFF

Create a layout that a plural V widths are grouped and set without considering the used V width.

Check ON



Since grouping is performed for each V width, a created layout is that only one kind of V width is used.

Contents

This item is to set whether grouping is performed on the basis of V width of die used when performing batch setup.

If this item is checked, grouping is performed on the basis of V width of die used.

Cases to be changed

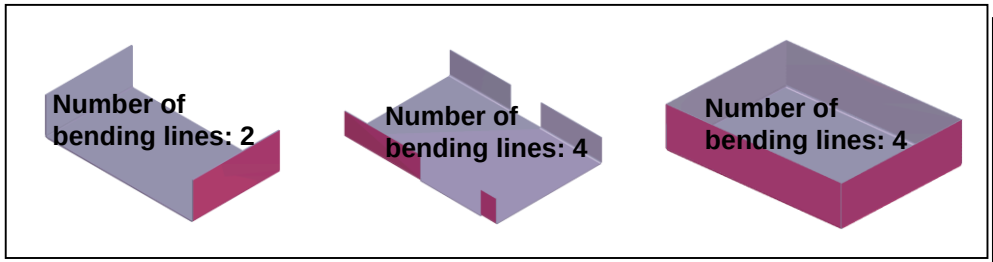
Normally, “check OFF” is set.

Set this item when you want to perform batch setup for each die used at the time of process creation.

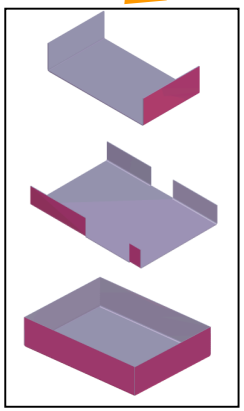
Default value: check OFF

Set range: check ON, check OFF

Grouping for each number of bending steps

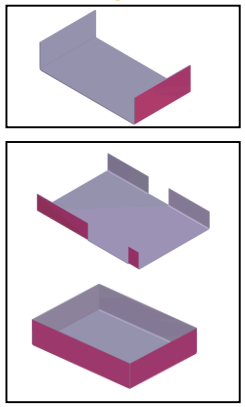


Check OFF



Perform grouping without considering the number of bending lines.

Check ON



Perform grouping with considering the number of bending lines. A part which has different number of bending lines belongs to other group.

Contents

This item is to set whether grouping is performed on the basis of the number of bending lines of a part when performing batch setup.

If this item is checked, grouping is performed only for a part having the same number of bending liens.

Cases to be changed

Normally, “check OFF” is set.

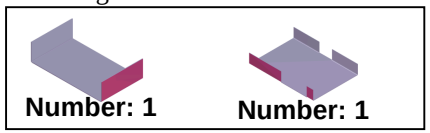
Set this item when you want to process only a part which has the same number of bending lines in performing batch setup.

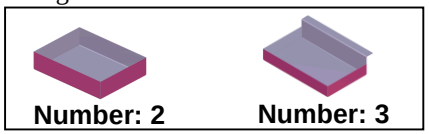
Default value: check OFF
Set range: check ON, check OFF

Grouping for every number of tool stage/ single tool/ sash shape/ punch front or back

○ Number of tool stages = 1

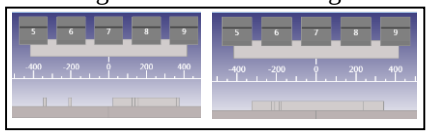
Distinguish a case that the number of tool stage is 1 from other case.





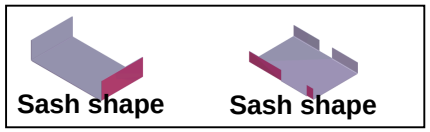
○ Single tool

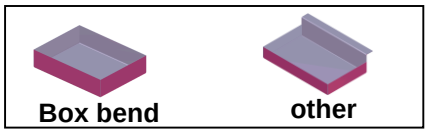
Distinguish a case that a single tool is used from other case.



○ Sash shape

Distinguish a sash shape from other.

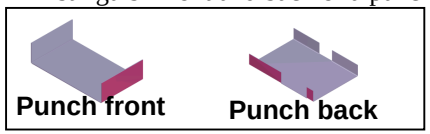


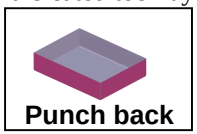


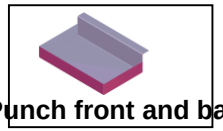
Note) A sash shape of a tool represents a shape that there is no interference objects with a part in a horizontal direction of the tool in all bending steps.

○ Front/back of punch

Distinguish front and back of a punch in a created tool layout.







Contents

When grouping a batch setup, determine whether grouping is performed on the basis of the number of tool stages, classification of used tool, part shape or front and back of used punch.

When selecting “none”, ignore respective conditions and perform grouping.

Cases to be changed

Normally, “none” is set.

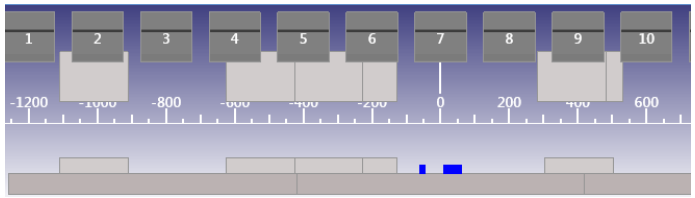
If you want to create an layout for which respective conditions are considered, set this item.

Default value: none

Set range: none, number of tool stage = 1, number of tool stage = 1 / single tool,
number of tool stage = 1 / single tool / sash shape,
number of tool stage = 1 / single tool / sash shape / punch back/front

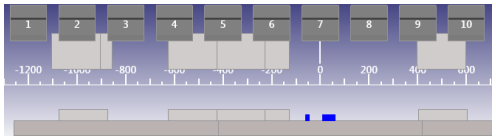
Common layout repeat

Repeated acquisition of bending process data - execution



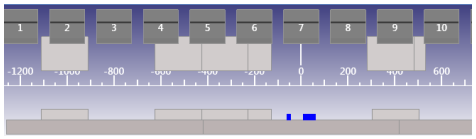
In the case that there is a process data created in the past.

Check OFF



Execute the automatic plan and recreate the process data.

Check ON



Use the process data created in the past.

Contents

If there is a data created in the past when performing batch setup, it can be set whether data created in the past is used, or a batch planning is carried out after an automatic plan is performed and the processed data is recreated.

Cases to be changed

Normally, “check OFF” is set.

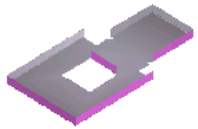
When performing batch setup, always execute the automatic plan and recreate the process data.

If you want to use the data created in the past as it is, set this item.

Default value: check OFF
Set range: check ON, check OFF

When auto process generation based on repeated bending process is not good, execute new auto process generation

Result
NG



In the case that the auto process generation using a created process data is a failure.

Check OFF

	Result	CoLayoutGroup
⊗	NG	
●	OK(Batch)	A-1

Since the plan is not good, a setup in a batch cannot be performed for the part.

Check ON

	Result	CoLayoutGroup
●	OK(Batch)	A-3
●	OK(Batch)	A-3

Execute the automatic plan and create the new auto process generation.

Contents

When the auto process generation is not good in repeatedly acquiring batch setup, set whether the automatic portion is performed to execute the auto process generation or leave it not good as it is.

Cases to be changed

Normally, “Check OFF” is set. Therefore, when the result of acquiring the repeat is not good, a batch setup is not executed for the part.

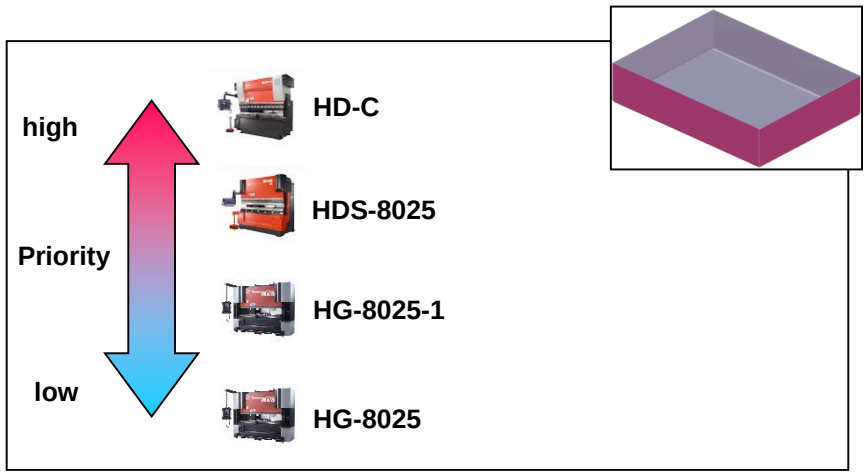
When the result of the repeated batch setup is not good, adopt the result of the automatic plane, and when you want to implement the batch setup, set this item.

Default value: check OFF
Set range: check ON, check OFF

Setting priority of target machine name subject of bending process data

Setting priority of target machine name subject of bending process data

	Effective	Machine name	model	type	Punch holder ty
1	☑	HD-C	HD	5020	AMADA
2	☑	HDS-8025	HDS	8025	AMADA
3	☑	HG-8025-1	HG	8025	AMADA
4	☑	HG-8025	HG	8025	AMADA



Contents

When repeatedly acquiring the batch setup, set the priority of machine data to be acquired.

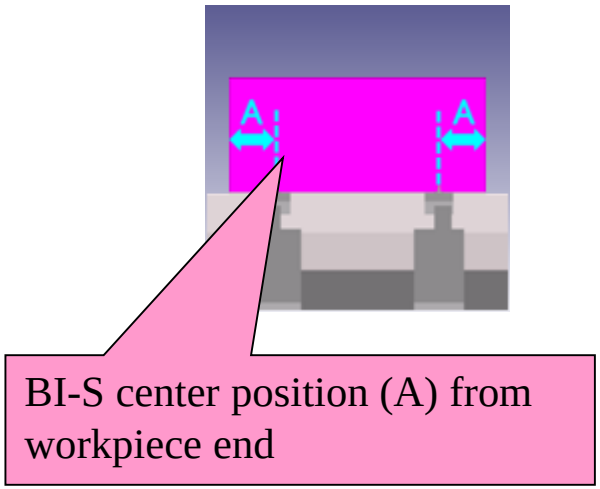
Cases to be changed

Set an order preferentially acquired when acquiring bending process data according to a part which has data created by a plurality of machines in the past.

Default value: check OFF
Set range: check ON, check OFF

BI-S

BI-S center position from work-piece edge (A)



Contents

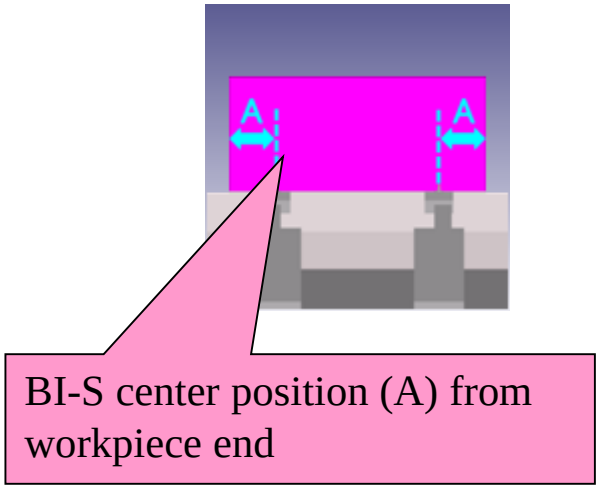
Set the BI measuring position from the part end.

Cases to be changed

The default value is "set as a fixed position".
This parameter is set if selecting a part which can be accurately measured.
Select the BI-S center position from the workpiece end whether a fixed value is set regardless of a bend line length or a ratio value which is varied depending on the bend line length is set.

Default value: set it as a fixed position
Setting area: set it as a fixed position, or set it as a ratio position

Fixed Position Setting



Contents

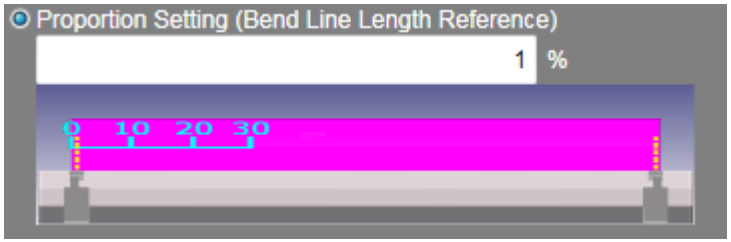
Set the fixed value of the BI measuring position from the part end.

Cases to be changed

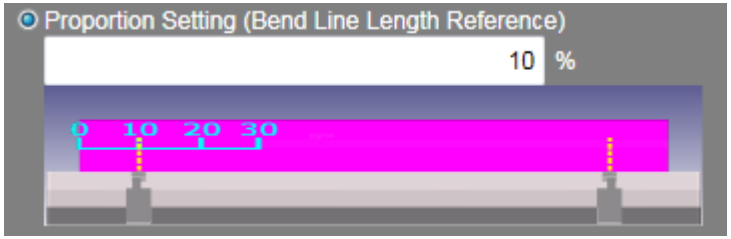
The default value is "5.00".
Set this parameter if you want to set the BI-S center position from the workpiece end inside the default value.

Default value: 5.0mm
Setting value: 5.0mm-machine width/2mm

Proportion Setting (Bend Line Length Reference)



If inputting a value into the text box, the BI position is changed.



Contents

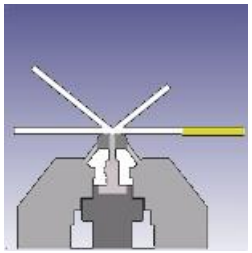
Set the BI measuring position from the part end as a ratio value.

Cases to be changed

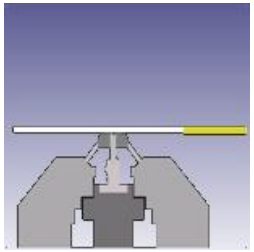
The default value is "1" %.
When the BI-S center position from the workpiece end is set to the bend line length is less than 5mm, the BI-S measuring position is 5mm.

Default value: 1%
Setting value: 1%-25%

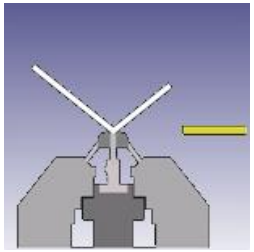
Initial value of BI-S rising timing



Automatic calculation



Pinching



Tentative bend D value

Contents

Set timing that the BI sensor head rises when performing the measurement of BI.

In case of “Auto Calculation”, consider interference with a part or a backgauge and perform setting with “pinching” or “tentative bend D value”. They are prioritized in the following order: “pinching”, “temporary bend D value” next.

“Pinching” is an operation that a BI-S sensor head contacts a material at a timing that the tool pinches the material.

“Tentative bend D value” is an operation that a BI-S sensor head contacts a material at a timing that the tool bends the material to 3 degrees before the bending angle.

Cases to be changed

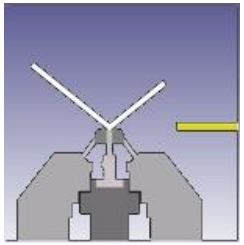
The default value is “Auto Calculation”.

When you want to fix the rising timing, change this parameter.

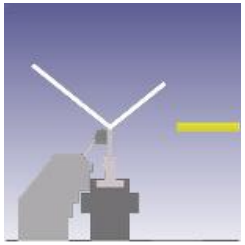
When the multi-point measurement is turned ON, "Tentative bend D value" are fixed.

Default value: auto calculation
Set range: auto calculation, pinching, temporary D value

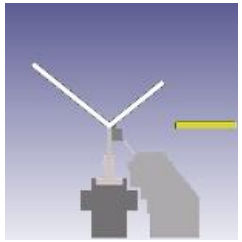
Initial value of BI-S measurement method



Both Sides



Front Side



Back Side

Contents

Set a measurement method in measuring BI.

In case of “Auto Calculation”, consider interference of the sensor head and set “both sides”, “front side” or “back side”. They are prioritized in the following order: “both sides”, “front side” or “back side” next.

“Both Sides” is a method that the measurement is performed by the sensor heads of both sides.

“Front Side” is a method that the measurement is performed only by the sensor head of the front side.

“Back Side” is a method that the measurement is performed only by the sensor head of the back side.

Cases to be changed

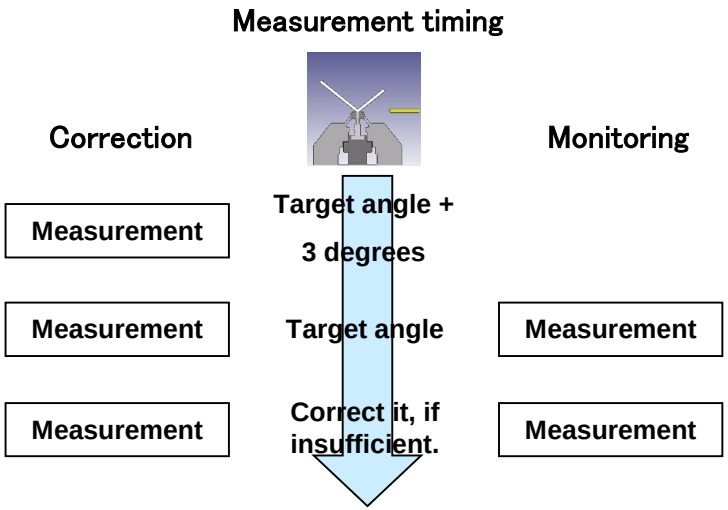
The default value is “Auto Calculation”.

Due to reasons such as measurement accuracy, set this item if you want to fix the BI measurement method.

When the multi-point measurement is turned ON, “Both sides" are fixed.

Default value: auto calculation
Set range: auto calculation, both sides, front side, back side

BI-S operation



Note: The NC name can be changed only for a machine of AMNC V5.1/5.5/5.5(connect vSDD)/AMNC 3i.

Contents

Set the BI measurement mode.

The measurement timings between correction and monitoring differ.

The correction calculations after measuring are different between “normal speed” and “high speed”, as follows:

“High speed”: can perform high-speed calculation but is unsuitable depending on a bend condition, etc.

“Normal speed”: can accurately perform correction but is slow to calculate.

Cases to be changed

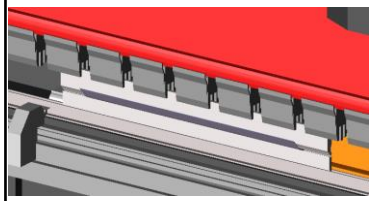
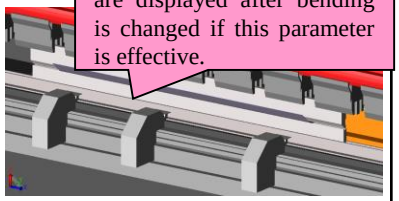
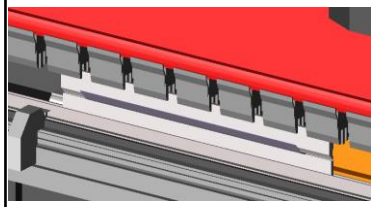
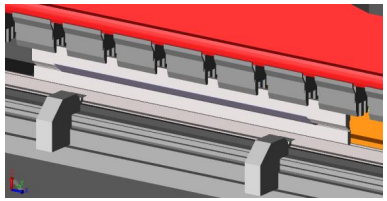
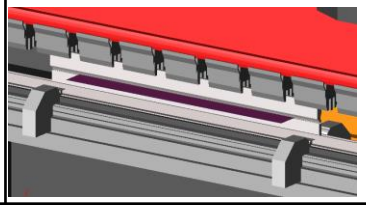
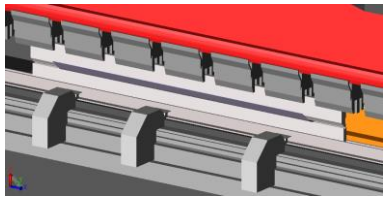
Also AMNC is different for each machine type: HG :correction (high speed), EG: correction (high speed), HFE3I:correction (high speed), HDS: correction (normal), HD: correction (normal).

Some customers may change this default value.

First of all, ask the customer what set value the customer uses for the current AMNC, and set the same value as that value as this parameter.

Default value: different depending on machine type
Set range: correction(normal), correction(high speed), monitoring(normal), monitoring(high speed)

BI-S 2 point measurement/BI-S 3 point measurement

Status	Before bend	After bend
BI 1 pair(three-point measurement)		
BI 1 pair(two-point measurement)		
BI 2 pair(three-point measurement)		

The number of BIs which are displayed after bending is changed if this parameter is effective.

Contents

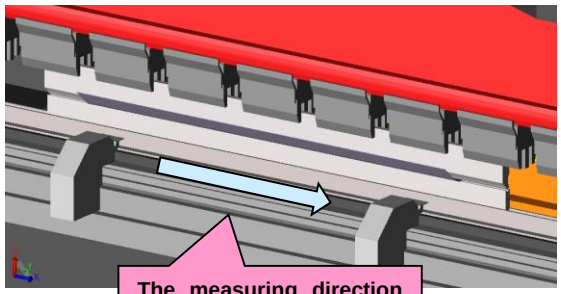
This is an item to set whether two-point measurement/three-point measurement is executed using one BI-S or a three-point measurement is executed using two BI-Ss.
If this item is checked, the BI-S rising timing initial value is set to "the temporary bend D value".
The display of the item is different depending on the machine type or the number of set BI-Ss.
Any machine type or any number of set BI-Ss other than the following is non-displayed.
· HG(one BI-S, two BI-Ss): three-point measurement
· EG, HFE3i,HRB(one BI-S): two-point measurement

Cases to be changed

The default is checked OFF.
If the number of BI-Ss is one or two, and if the BI-Ss are moved and the angle measurement is executed at two or three of the left, center and right parts while driving it to the target angle, set this item.

Default value: check OFF
Set range: check ON, check OFF

Fixed route



Contents

This is an item whether the measuring direction of the BI-S is fixed or set "from left to right".
If the number of set BI-Ss is more than one, it is non-displayed.

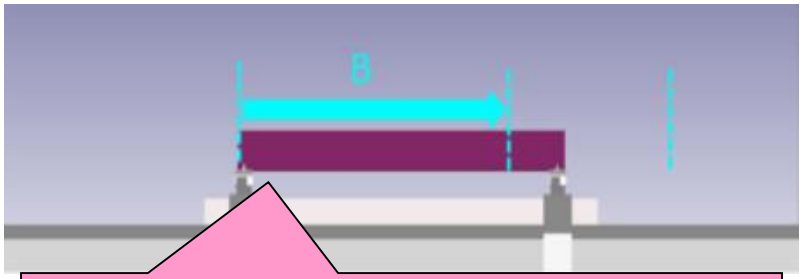
When the BI-S two-point measurement/BI-S three-point measurement is ON and the machine type and the number of set BI-Ss are as follows, this can be changed.
· HG, EG, HFE3i ,HRB(one BI-S)

Cases to be changed

The default is checked OFF.
This is used when the measuring direction of the BI-S is fixed "from left to right".
If the route is not fixed, the route is determined based on the BI-S position upon the completion of the previous process.
The route is not fixed "from right to left".

Default value: check OFF
Set range: check ON, check OFF

Boundary value of automatically selecting two BI-S sensors (In case of BI-S 2 point measurement/BI-S 3 point measurement)



Boundary value (B) for automatically selecting 2 BI-S sensors

Contents

Boundary bend line lengths of the same number as the BI-S measurement points used for one bend line are set in a machine that the BI-S two-point measurement/BI-S three-point measurement is executed.

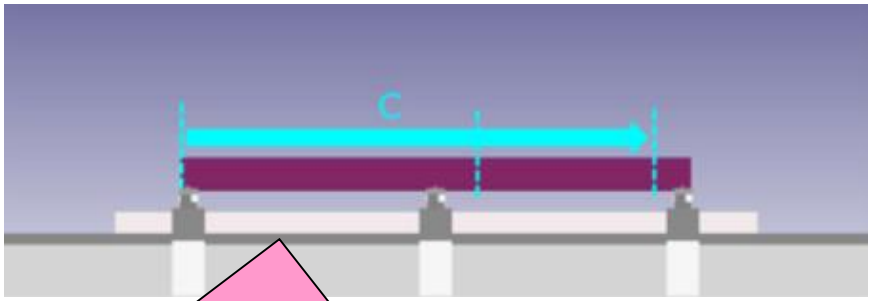
If the bend line of a part to be bent has a length exceeding this boundary value, the measurement is executed using two BI-S measurement points.

Cases to be changed

The default value is "600" mm.
The accuracy of a through-angle is improved by using two BI-S measurement points. Set this parameter according to a length of a part you want to measure.
Minimum value:
· BI-S center position (A) from workpiece end - in case of setting fixed point: [minimum distance between BIs (varying depending on machine type)] + [BI-S center position (A) from workpiece end] - [fixed position set] x 2
· BI-S center position (A) from workpiece end - in case of setting ratio point: [minimum distance between BIs (varying depending on machine type)] + [minimum value (5mm) from workpiece end] x 2
Maximum value:
· HG: ("boundary value automatically selected by three BI-S sensors" - 0.1) mm
· EG, HFE3i: machine length

Default value: 600.0 mm
Setting area: (varying depending on machine type and setting)mm – (varying depending on machine type)mm

Boundary value of automatically selecting three BI-S sensors (In case of the BI-S 2 point measurement/BI-S 3 point measurement)



Boundary value (C) for automatically selecting 3 BI-S sensors

Contents

Boundary bend line lengths of the same number as the BI-S measurement points used for one bend line are set in a machine that the BI-S two-point measurement/BI-S three-point measurement is executed.

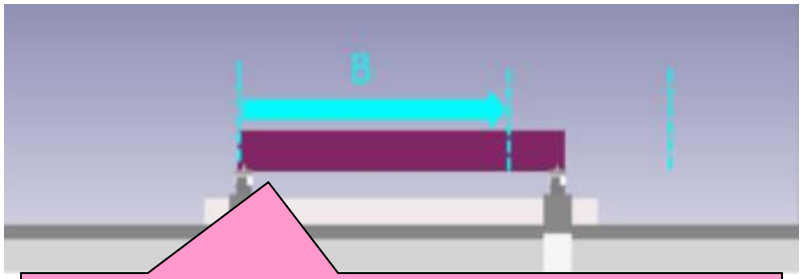
If the bend line of a part to be bent has a length exceeding this boundary value, the measurement is executed using three BI-S measurement points.

Cases to be changed

The default value is "1000.0" mm.
The accuracy of a through-angle is improved by using three BI-S measurement points. Set this parameter according to a length of a part you want to measure.
Minimum value (the larger value is the minimum value):
· BI-S center position (A) from workpiece end - in case of setting fixed point: [minimum distance between BIs (varying depending on machine type)] x 2 + [BI-S center position (A) from workpiece end] - [fixed position set] x 2 or [boundary value automatically selected by two BI-S sensors] + 0.1
· BI-S center position (A) from workpiece end] - in case of setting ratio point set: [minimum distance between BIs (varying depending on machine type)] x 2 + [minimum value (5mm) from workpiece end] x 2 or [boundary value automatically selected by two BI-S sensors] + 0.1

Default value: 1000.0 mm
Setting area: (varying depending on machine type and setting)mm – (machine width)mm

Boundary value of automatically selecting two BI-S sensors



Boundary value (B) for automatically selecting 2 BI-S sensors

Contents

In the machine that 2 or more BI-Ss are equipped, set a bend line length that is a boundary of BI-Ss used for one bend line.

If a bend line of a bent part is more than this boundary value, the measurement is performed by using 2 BI-Ss.

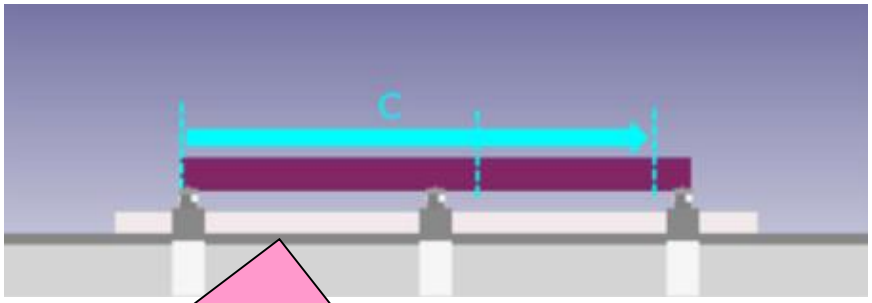
Cases to be changed

The default value is “600.0” mm.

Angle accuracy is improved by using 2 BI-Ss. Set this parameter according to a length of a part which you want to measure.

Default value: 600.0 mm
Set range: (varying depending on machine type and setting) mm ～
(varying depending on number of set BI) mm

Boundary value of automatically selecting three BI-S sensors



Boundary value (C) for automatically selecting 3 BI-S sensors

Contents

In the machine that 2 or more BI-Ss are equipped, set a bend line length that is a boundary of the BI-Ss used for one bend line.

If a bend line of a bent part is more than this boundary value, the measurement is performed by using 3 BI-Ss.

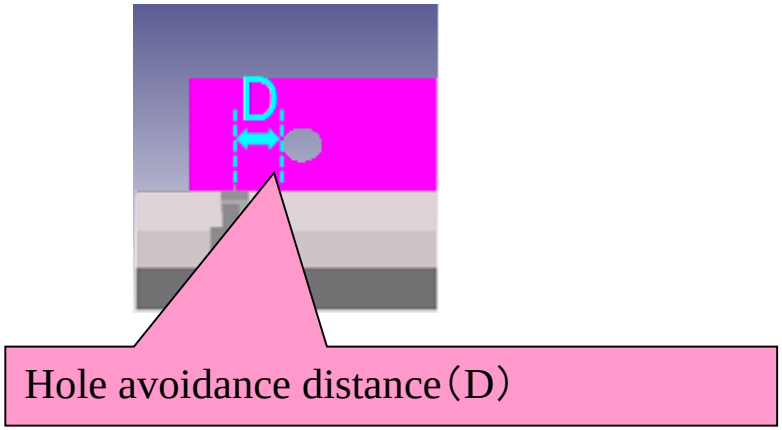
Cases to be changed

The default value is “1000.0” mm.

Angle accuracy is improved by using 3 BI-Ss. Set this parameter according to a length of a part which you want to measure.

Default value: 1000.0 mm
Set range: 0.01 mm -
(“Boundary value for automatically selecting 3 BI-S sensors”-0.1) mm

Hole avoidance distance



Contents

This is a value used to calculate a measurement position when the BI-S avoids a hole.

In case the BI-S is reaching a hole in automatically calculating the measurement position, the measurement position is a position which is separated from the end of the hole by the distance.

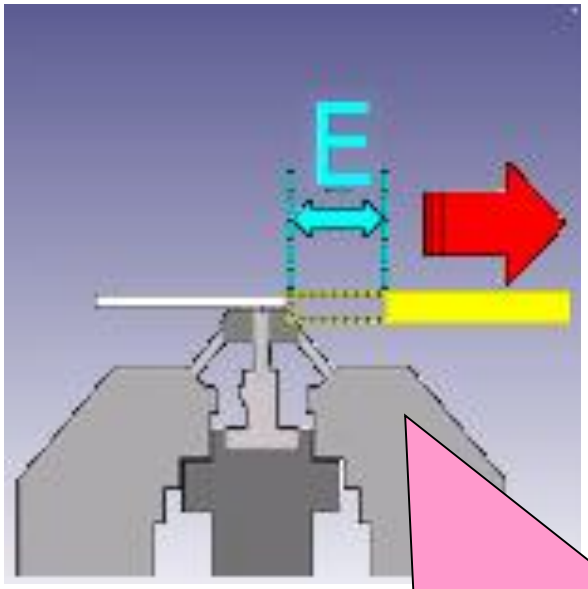
Cases to be changed

The default value is 5.0 mm.

In case of such a shape that there is something such as a burr around a hole, set this parameter to expand the distance from the hole.

Default value: 5.0 mm
Set range: 0.0 mm - 99.9 mm

Interference-avoidance pull-back position for BI-S (E)



Interference-avoidance pull-back position for BI-S (E)

Contents

Pullback position to avoid interfering if the sensor head (rear side) of BI-S may interfere with the abutment (including the climb trajectory).

Cases to be changed

The default value is (BI-S head storage notch Position) mm.

※ Since the BI rising trajectory differs depending on the BI type and manufacturing timing,

BI-S head storage notch Position is the default.

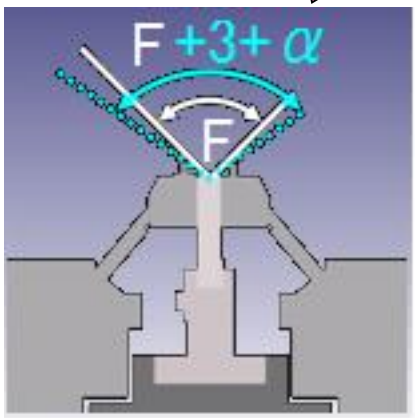
When avoiding interference between the sensor head (including the ascent trajectory) and the abutment, set the optimum pull-back position based on the customer's environment.

Default value: (BI-S head storage notch Position)mm

Set range: (BI-S (rear side) Cover L Min. value) mm to (BI-S head storage notch Position) mm

Margin value of tentative bending angle

Margin value of tentative bending angle (α)



F: Target angle

Contents

This is a margin value for performing interference check in tentatively bending a part, when the “BI-S BI timing initial value” is the “tentative bend D value”.

Perform the interference check with the bending angle + 3 degrees + the margin value of tentative bend, and do not use BI-S if an interference exists.

Cases to be changed

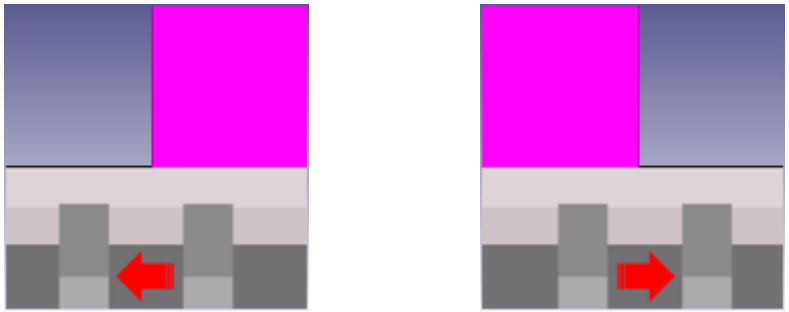
The default value is “0.0” degree.

If a flange is deformed in its real shape by sagging, etc in a long part, an interference can be prevented by setting this parameter at the actual working place.

Default value: 0.0 degree
Set range: 0.0 degree - 5.0 degrees

Standby operation through whole process during “tentative bend” - priority standby position

Standby position



Left　　Right

Contents

・Standby operation through the whole process during “tentative bend”

If the “BI timing” is the “tentative bend D value”, the standby position is in the gap of 50 mm (initial value) from the part end to the BI-S sensor cover end even in a step that no interference occurs between the BI-S sensor cover and the part.

・Priority standby position

If the standby operation is performed, this is the priority position and direction.

Cases to be changed

・Standby operation through the whole process during “tentative bend”,

The default is “no”.
Set this parameter, if an interference occurs when the flange is pinched.

・Priority standby position

The default is “left”.

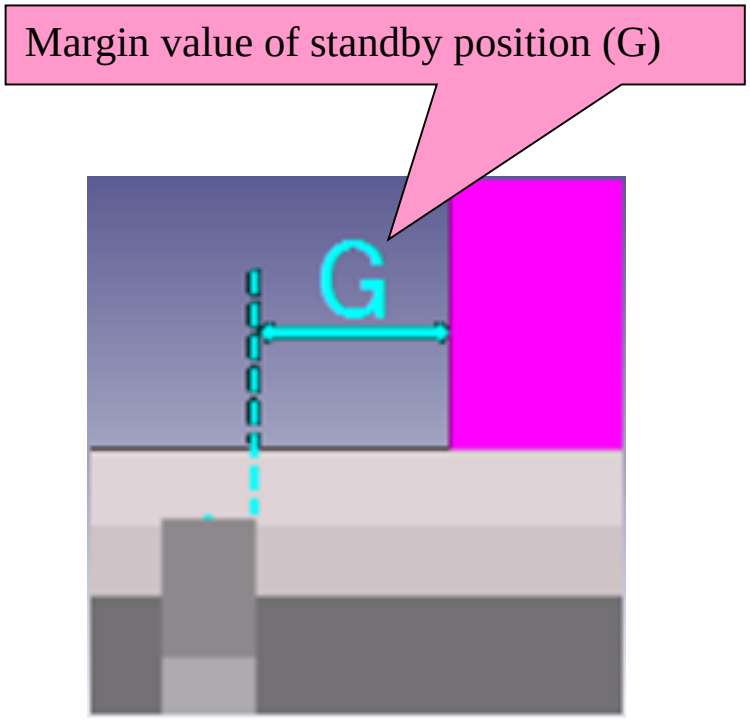
Standby operation through whole process during “tentative bend”

- **Default value: check OFF**
- **Set range: check ON, check OFF**

Priority standby position

- **Default value: left**
- **Set range: left, right**

Margin value of standby position



Contents

The standby position is at a position: 50 mm from the part end + the margin value of standby position (G).

Cases to be changed

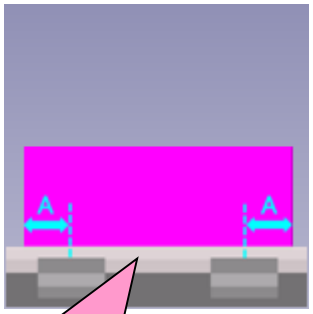
The default value is “0.0” mm.

Set this parameter, if an interference occurs even when being in the standby position according to the part shape.

Default value: 0.0 mm
Set range: 0.0 mm - 500.0 mm

BI-L

BI-L center position from workpiece end(A)



BI-L center position (A) from workpiece end

Contents

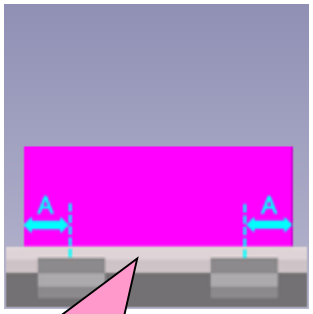
Set the BI measuring position from the part end.

Cases to be changed

The default value is "set as a fixed position".
This parameter is set if selecting a part which can be accurately measured.
Select the BI-L center position from the workpiece end whether a fixed value is set regardless of a bend line length or a ratio value which is varied depending on the bend line length is set.

Default value: set it as a fixed position
Setting area: set it as a fixed position, or set it as a ratio position

Fixed Position Setting



BI-L center position (A) from workpiece end

Contents

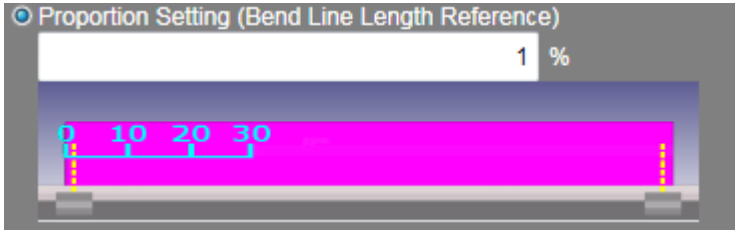
Set the fixed value of the BI measuring position from the part end.

Cases to be changed

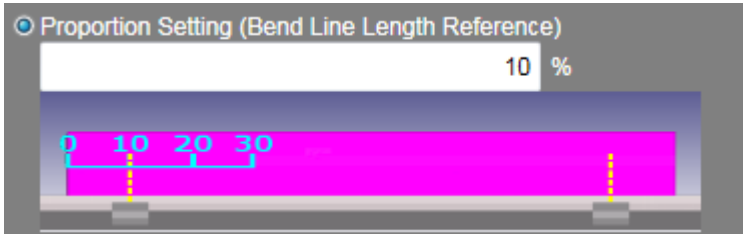
The default value is "5.00".
Set this parameter if you want to set the BI-L center position from the workpiece end inside the default value.

Default value: 5.0mm
Setting value: 5.0mm-machine width/2mm

Proportion Setting (Bend Line Length Reference)



If inputting a value into the text box, the BI position is changed.



Contents

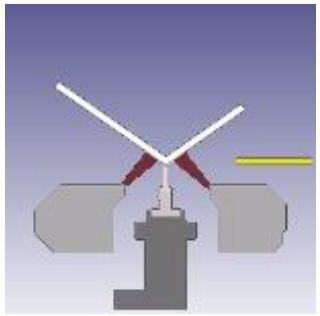
Set the BI measuring position from the part end as a ratio value.

Cases to be changed

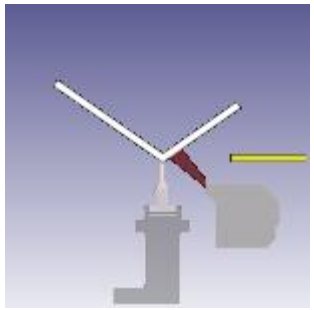
The default value is "1" %.
When the BI-L center position from the workpiece end is set to the bend line length is less than 5mm, the BI-L measuring position is 5mm.

Default value: 1%
Setting value: 1%-25%

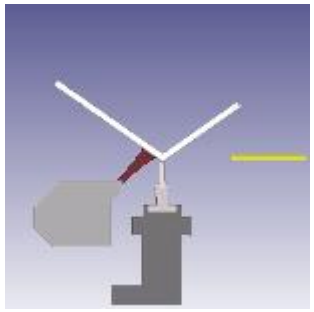
Initial value of BI-L measurement method



Both sides



Front side



Back side

Contents

Set a measurement method in performing a BI measurement.

In the case of “Auto Calculation”, consider an interference of the sensor and set “both sides”, “front side” or “back side”. They are prioritized in the following order: “both sides”, “front side” or “back side” next.

“Both Sides” is a method that the measurement is performed by the sensors of both sides measure.

“Front Side” is a method that the measurement is performed only by the sensor of the front side.

“Back Side” is a method that the measurement is performed only by the sensor of the back side.

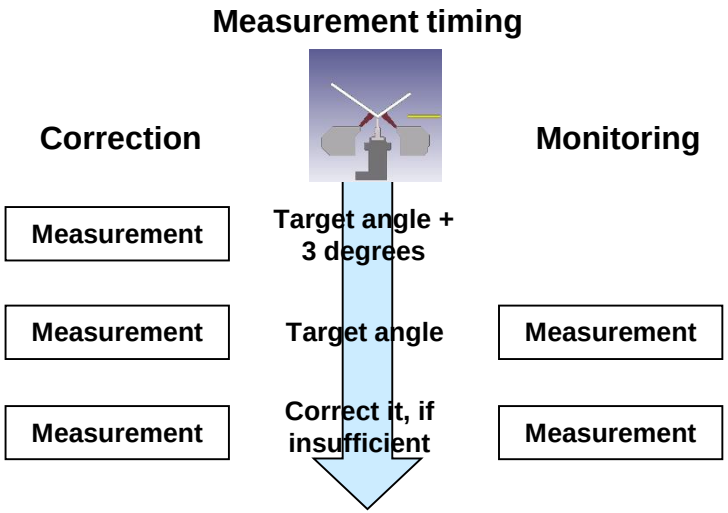
Cases to be changed

The default value is “Auto Calculation”.

Set this item when you want to fix a BI measurement method for reasons such as measurement accuracy, etc.

Default value: auto calculation
Set range: auto calculation, both sides, front side, back side

BI-L operation



Note: The NC name can be changed only for a machine of AMNC V5.1/5.5/5.5(connect vSDD)/AMNC 3i.

Contents

Set the BI measurement mode.

The measurement timings between the correction and monitoring differ.

The correction calculations after measuring for “normal speed” and “high speed” are different as follows:

“High speed”: can perform high-speed calculation but is unsuitable depending on a bend condition, etc.

“Normal speed”: can accurately perform correction but is slow to calculate.

Cases to be changed

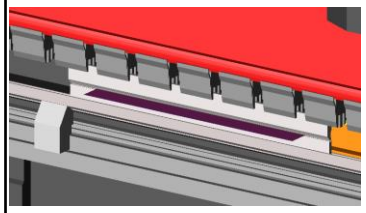
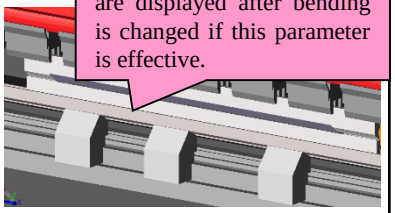
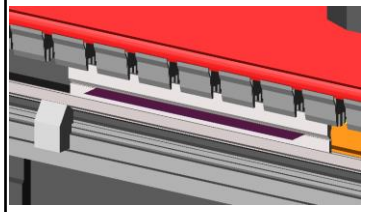
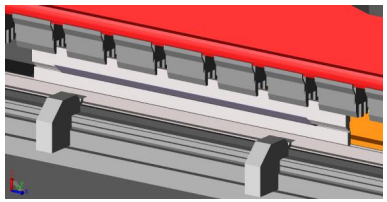
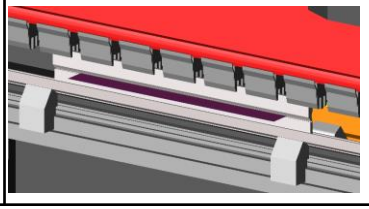
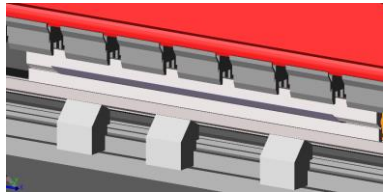
Also AMNC is different for each machine type: HG :correction (high speed), HFE3I:correction (high speed), HDS: correction (normal), HD: correction (normal).

Some customers may change this default value.

First of all, ask the customer what set value the customer uses for the current AMNC, and set the same value as that value as this parameter.

Default value: different depending on machine type
Set range: correction(normal), correction(high speed), monitoring(normal), monitoring(high speed)

BI-L 2 point measurement/BI-L 3 point measurement

Status	Before bend	After bend
BI 1 pair(HG)		
BI 1 pair(,HFE3i)		
BI 2 pair(HG)		

The number of BIs which are displayed after bending is changed if this parameter is effective.

Contents

This is an item to set whether two-point measurement/three-point measurement is executed using one BI-L or a three-point measurement is executed using two BI-Ls.

The display of the item is different depending on the machine type or the number of set BI-Ls.
Any machine type or any number of set BI-Ls other than the following is non-displayed.

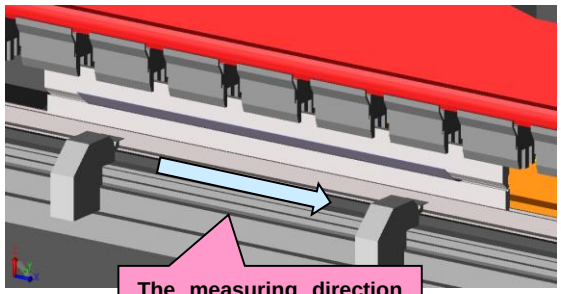
· HG(one BI-L, two BI-Ls): three-point measurement
· HFE3i(one BI-L): two-point measurement

Cases to be changed

The default is checked OFF.
If the number of BI-Ls is one or two, and if the BI-Ls are moved and the angle measurement is executed at two or three of the left, center and right parts while driving it to the target angle, set this item.

Default value: check OFF
Set range: check ON, check OFF

Fixed route



The measuring direction of the BI-L is fixed "from left to right" when being checked ON.

Contents

This is an item whether the measuring direction of the BI-L is fixed or set "from left to right".
If the number of set BI-Ls is more than one, it is non-displayed.

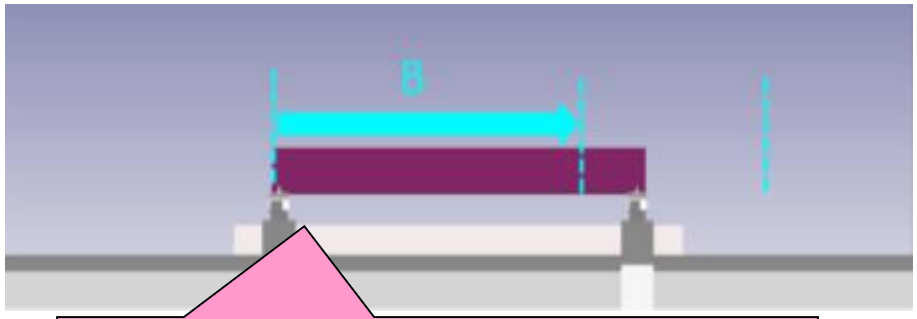
When the BI-L two-point measurement/BI-L three-point measurement is ON and the machine type and the number of set BI-Ls are as follows, this can be changed.
· HG, HFE3i(one BI-L)

Cases to be changed

The default is checked OFF.
This is used when the measuring direction of the BI-L is fixed "from left to right".
If the route is not fixed, the route is determined based on the BI-L position upon the completion of the previous process.
The route is not fixed "from right to left".

Default value: check OFF
Set range: check ON, check OFF

Boundary value (B) for automatically selecting 2 BI-L sensors (In case of BI-L 2 point measurement/BI-L 3 point measurement)



Boundary value (B) for automatically selecting 2 BI-L sensors

Contents

Boundary bend line lengths of the same number as the BI-L measurement points used for one bend line are set in a machine that the BI-L two-point measurement/BI-L three-point measurement is executed.

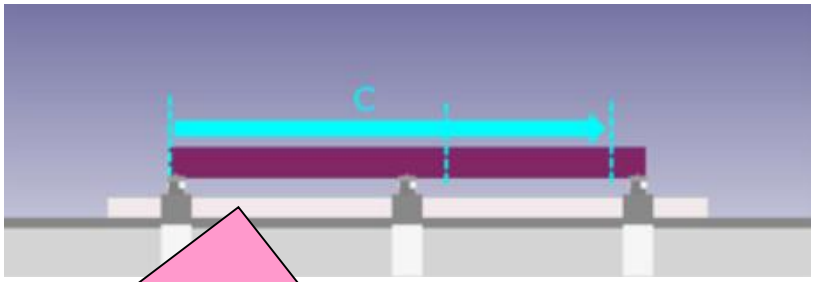
If the bend line of a part to be bent has a length exceeding this boundary value, the measurement is executed using two BI-L measurement points.

Cases to be changed

The default value is "600" mm.
The accuracy of a through-angle is improved by using two BI-L measurement points. Set this parameter according to a length of a part you want to measure.
Minimum value:
· BI-L center position (A) from workpiece end - in case of setting fixed point: [minimum distance between BIs (varying depending on machine type)] + [BI-L center position (A) from workpiece end] - [fixed position set] x 2
· BI-L center position (A) from workpiece end - in case of setting ratio point: [minimum distance between BIs (varying depending on machine type)] + [minimum value (5mm) from workpiece end] x 2
Maximum value:
· HG: ("boundary value automatically selected by three BI-L sensors" - 0.1) mm
·HFE3i: machine length

Default value: 600.0 mm
Setting area: (varying depending on machine type and setting)mm – (varying depending on machine type)mm

Boundary value (C) for automatically selecting 3 BI-L sensors (In case of the BI-L 2 point measurement/BI-L 3 point measurement)



Boundary value (C) for automatically selecting 3 BI-L sensors

Contents

Boundary bend line lengths of the same number as the BI-L measurement points used for one bend line are set in a machine that the BI-L two-point measurement/BI-L three-point measurement is executed.

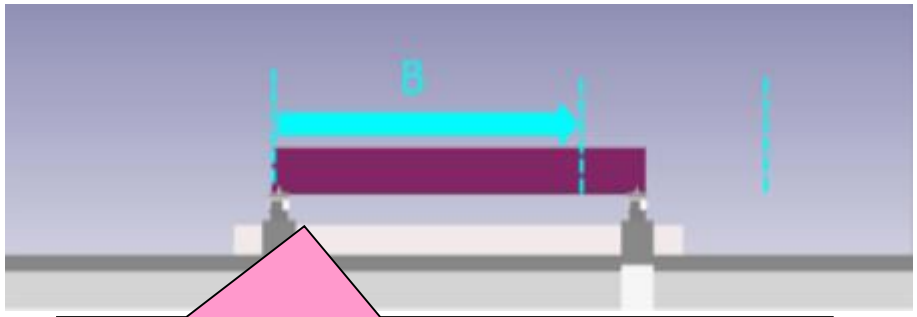
If the bend line of a part to be bent has a length exceeding this boundary value, the measurement is executed using three BI-L measurement points.

Cases to be changed

The default value is "1000.0" mm.
The accuracy of a through-angle is improved by using three BI-L measurement points. Set this parameter according to a length of a part you want to measure.
Minimum value (the larger value is the minimum value):
· BI-L center position (A) from workpiece end - in case of setting fixed point: [minimum distance between BIs (varying depending on machine type)] x 2 + [BI-L center position (A) from workpiece end] - [fixed position set] x 2 or [boundary value automatically selected by two BI-L sensors] + 0.1
· BI-L center position (A) from workpiece end] - in case of setting ratio point set: [minimum distance between BIs (varying depending on machine type)] x 2 + [minimum value (5mm) from workpiece end] x 2 or [boundary value automatically selected by two BI-L sensors] + 0.1

Default value: 1000.0 mm
Setting area: (varying depending on machine type and setting)mm – (machine length)mm

Boundary value of automatically selecting 2 BI-L sensors（B）



Boundary value of automatically selecting 2 BI-L sensors (B)

Contents

In a machine that 2 or more BI-Ls are equipped, set a bend line length that is a boundary of BI-Ls used for one bend line.

If a bend line of a part bent is more than the boundary value, perform the measurement by using 2 BI-Ls.

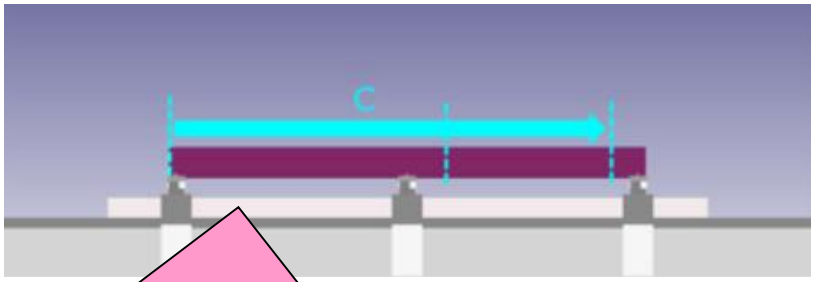
Cases to be changed

The default value is “600.0” mm.

Angle accuracy is improved by using 2 BI-Ls. Set this parameter according to a length of a part which you want to measure.

Default value: 600.0 mm
Set range: (varying depending on machine type and setting) mm –
(“Boundary value for automatically selecting 3 BI-L sensors”- 0.1) mm

Boundary value (C) for automatically selecting 3 BI-L sensors



Boundary value (C) for automatically selecting 3 BI-L sensors

Contents

In the machine that 2 or more BI-Ls are equipped, set a bend line length that is a boundary of the BI-Ls used for one bend line.

If a bend line of a bent part is more than this boundary value, the measurement is performed by using 3 BI-Ls.

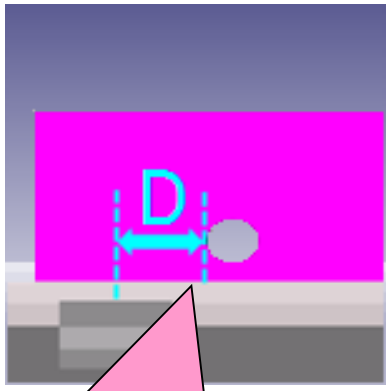
Cases to be changed

The default value is “1000.0” mm.

Angle accuracy is improved by using 3 BI-Ls. Set this parameter according to a length of a part which you want to measure.

Default value: 1000.0 mm
Set range: (“Boundary value for automatically selecting 2 BI-L sensors”+0.1) mm - mm

Hole avoidance distance



Hole avoidance distance (D)

Contents

This is a value used to calculate a measurement position when the BI-L avoids a hole.

When the BI-L reaches a hole in automatically calculating the measurement position, the measurement position is a position separated from the end of the hole by the distance.

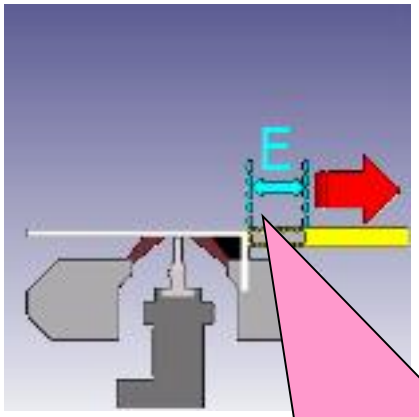
Cases to be changed

The default value is 5.0 mm.

In the case of such a shape that there is something such as a burr around a hole, set this parameter to expand the distance from the hole.

Default value: 5.0 mm
Set range: 0.0 mm - 99.9 mm

Initial value of pull-back for BI-L



Initial value of pull-back for BI-L (E)

Contents

This is a initial value of pull-back for avoiding interference when BI-L interferes with a backgauge.

If even for this value such interference occurs, perform the automatic calculation to set a pull-back amount.

Cases to be changed

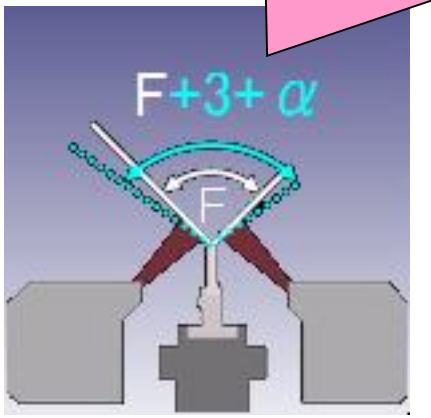
The default value is “300” mm.

If many interferences exist between BI-L and the backgauge and the pull-back amount by the automatic calculation is too much, set this parameter.

Default value: 30.0 mm
Set range: 3.0 mm - 99.9 mm

Margin value of tentative bending angle

Margin value of tentative bending angle (α)



F: Target angle

Contents

This is a margin value for performing interference check in tentatively bending a part.

Perform the interference check with the bending angle + 3 degrees + the temporary bend margin value, and do not use BI-L if an interference occurs.

Cases to be changed

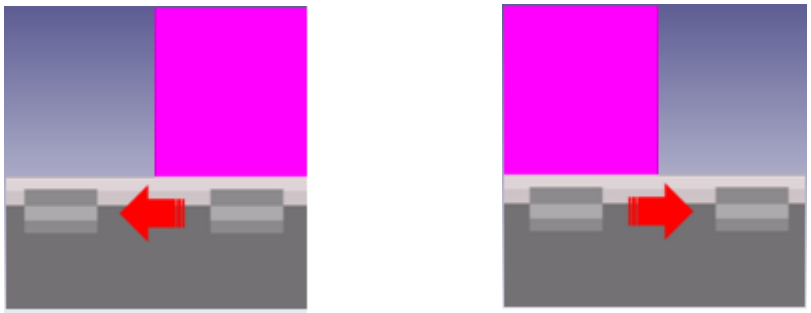
The default value is “0.0” degree.

If a flange is deformed in its real shape by sagging, etc in a long part, an interference can be prevented by setting this parameter at the actual working place.

Default value: 0.0 degree
Set range: 0.0 degree - 5.0 degrees

Standby operation through whole process during “tentative bend” - priority standby position

Standby position



Left　　Right

Contents

・Standby operation through whole process during “tentative bend”

The standby position is in the gap of 50 mm (initial value) from the part end to the BI-L sensor cover end even in a step that no interference occurs between the BI-L sensor cover and the part.

・Priority standby position

If the standby operation is performed, this is the priority position and direction.

Cases to be changed

・Standby operation through whole process during “tentative bend”,

The default is “no”.
Set this parameter if interference occurs when the flange is pinched.

・Priority standby position

The default is “left”.

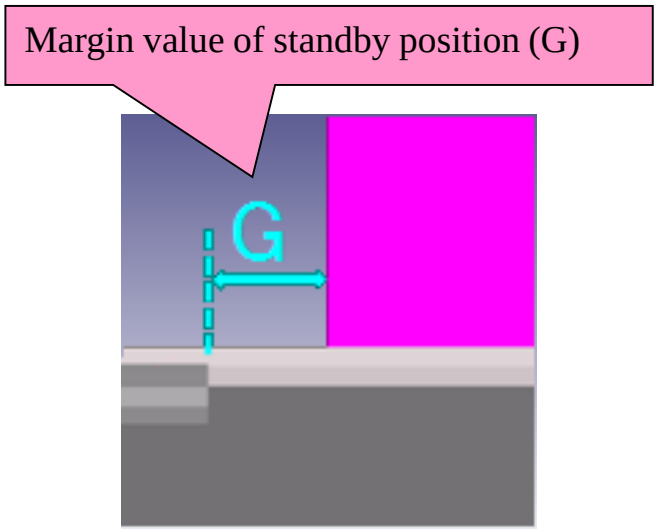
Standby operation through whole process during “tentative bend”

- Default value: check OFF
- Set range: check ON, check OFF

Priority standby position

- Default value: left
- Set range: left, right

Margin value of standby position



Contents

The standby position is at a position: 50 mm from the part end + the margin value of standby position (G).

Cases to be changed

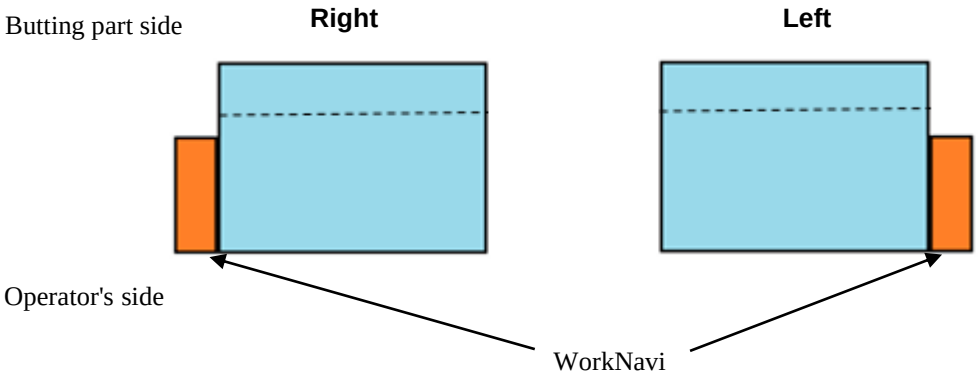
The default value is “0.0” mm.

If an interference occurs even when being in the standby position according to the part shape, set this parameter.

Default value: 0.0 mm
Set range: 0.0 mm - 500.0 mm

WorkNavi

Initial value specification abutment direction



Note: The machines to be supported are HDS5020/8025/1303.

Contents

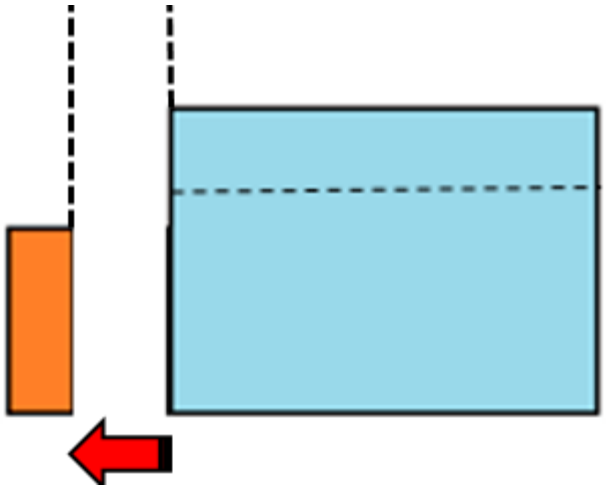
When the workpiece navigation is available, an initial value in the butt direction is set.

Cases to be changed

The default value is "right side".
Change the value depending on customer's requirements.

Default value : Right
Set range : Right, Left

Initial value Purusaido



Contents

When the workpiece navigation collides with the workpiece, this is an initial pull side value for avoiding such a collision.
If the collision occurs even with this value, the automatic calculation is performed to set a pull side amount.

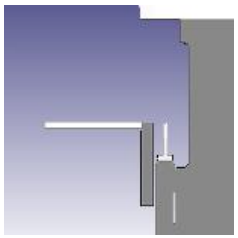
Cases to be changed

The default value is "3.0" mm.
If many collisions occur between the workpiece navigation and the workpiece and the pull side amount based on the automatic calculation is too much, set this parameter.

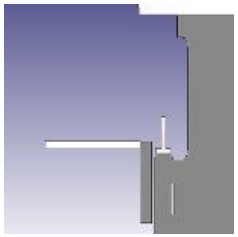
Default value：3.00mm
Set range：0.00mm~99.90mm

Front Table

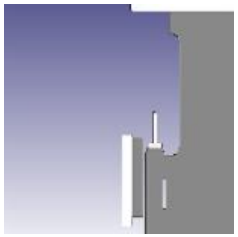
Front Table Settings



Upper



Lower



Fold

Note: Only the machine HFE3i 5012 is supported.

Contents

The initial position of the front table is set.
Use a setting as close as possible to the table position of the actual machine so that the collision determination in the CAM is effectively utilized.

Cases to be changed

The default value is "upper".
If the table position that is mainly used is different from this setting when actually processing, change the parameter to reflect the setting state.

Default value : Upper
Set range : Upper , Lower, Fold