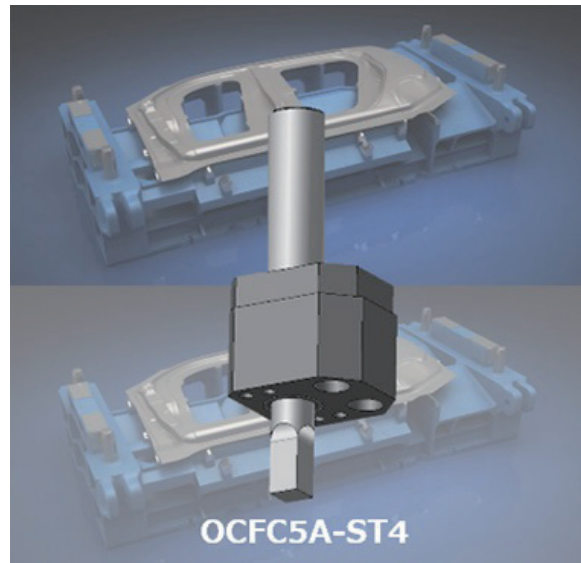


Prevents chips, burrs, buckling that occur when simultaneously trimming and cutting scrap of steel and aluminum sheets.

OCFC5A-ST4

Compact type for ordinary steel sheets



OCFC13-ST6

High reaction force type for high tensile strength steel sheets



Advantages

- **Reduces chips and burrs**  
Eliminates time-lag in cutting process and reduces chips and burrs by using a special high-pressure spring.
- **Durability (500,000 cycles)**  
The zero-clearance design reduces wear caused by side pressure generated during trimming, resulting in a longer service life.
- **Compact design**  
The use of our special springs allows for high resilience and unitization, making it possible to design a floating device that requires less space than conventional floating devices.
- **Maintenance free**  
No lubrication is required due to the use of Oiles sliding parts.

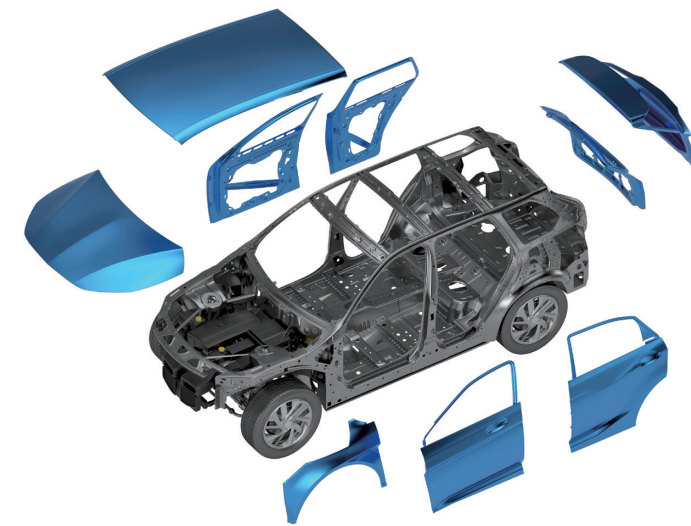
You can see the video here.



Performance metrics

| Model               | OCFC5A-ST4     | OCFC5A-ST4-B | OCFC5A-ST4-B-LC | OCFC13-ST6 |
|---------------------|----------------|--------------|-----------------|------------|
| Shear Force         | 5kN            | 5kN          | 5kN             | 13kN       |
| Stroke              | 4mm            | 4mm          | 4mm             | 6mm        |
| Trimming Angle      | 10°            | 10°          | 10°             | 10°        |
| Scrap Cutting Angle | 10°            | 20°          | 20°             | 10°        |
| Durability          | 500,000 cycles |              |                 |            |

OCFC5A-ST4 Example of Scope of Use: Outer Panel



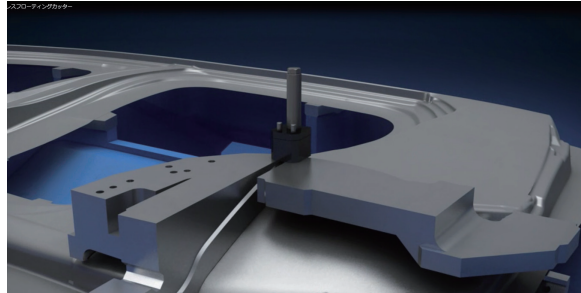
OCFC13-ST6 Example of Scope of Use: Chassis

※ Please contact us when considering the use of the high reaction force type for high tensile strength steel sheets.

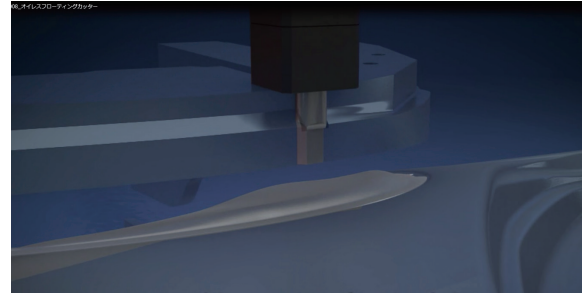


■ Example of Application

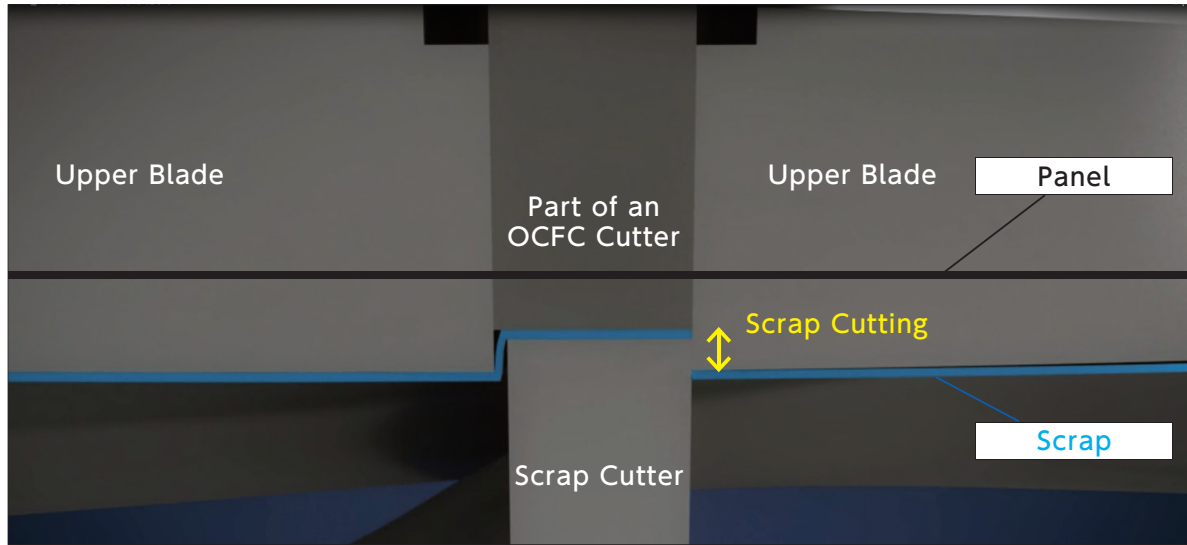
◆ Trimming and Scrap Cutting Using OCFC



Incorporated into the upper die and used as one of the upper blades.



The upper blade can trim the panel with a continuous trim line.

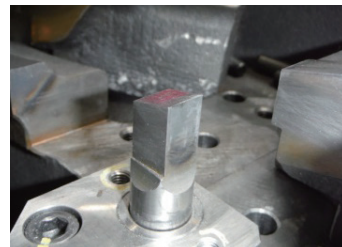
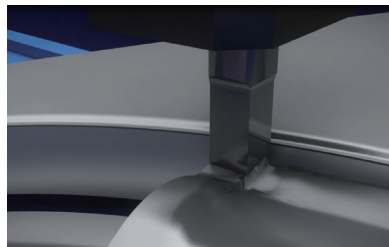


The OILES Compact Floating Cutter (OCFC) is a movable so the cutter can cut while holding down the scrap part.



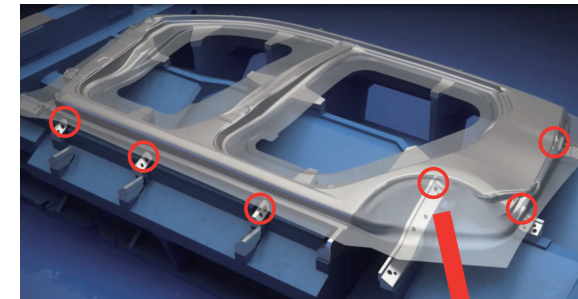
Reduces chips, burrs, and warping. Example of OCFC (cutter machining) integration Illustration showing the cutter section holding down the scrap.

Image of scrap being held down by cutter



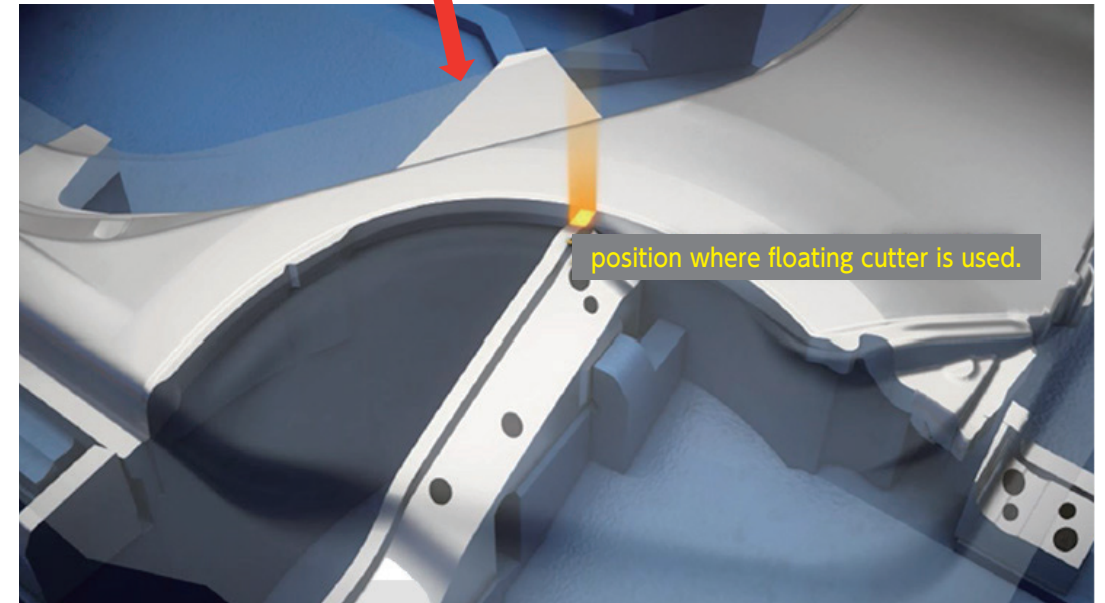
Application

Where OCFC used in trim and cut of side panel



○ Intersection to cut scrap

Enlarged View



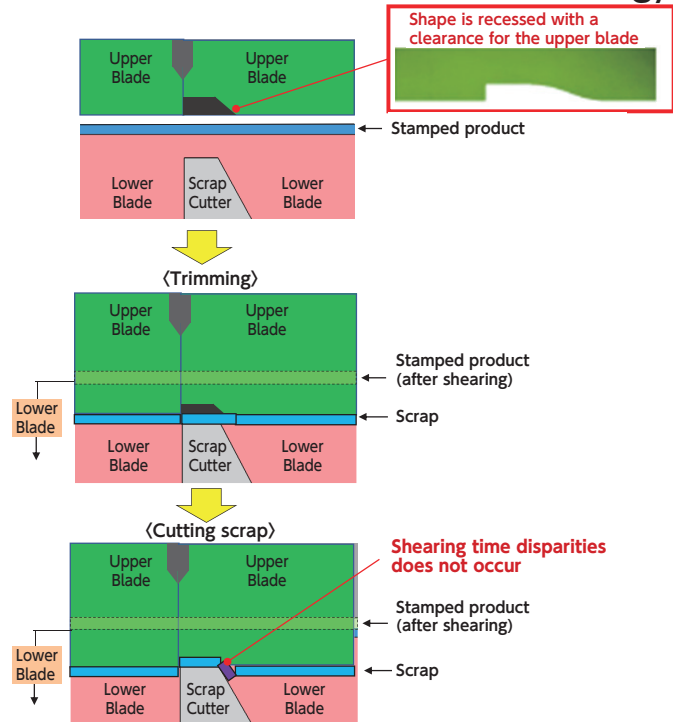
It functions as a "upper blade" (cutting blade) to cut and separate the panel from the scrap.

When it makes contact with the lower scrap cutter, it moves and releases the cutter.

These two functions eliminate chips, burrs, and buckling and help to keep the panels in a good condition.

Improve quality of scrap cut part of stamped products

Problems (conventional technology)



In order to perform both trimming and scrap cutting in the same process, shape is recessed with a clearance for the upper blade.

↓

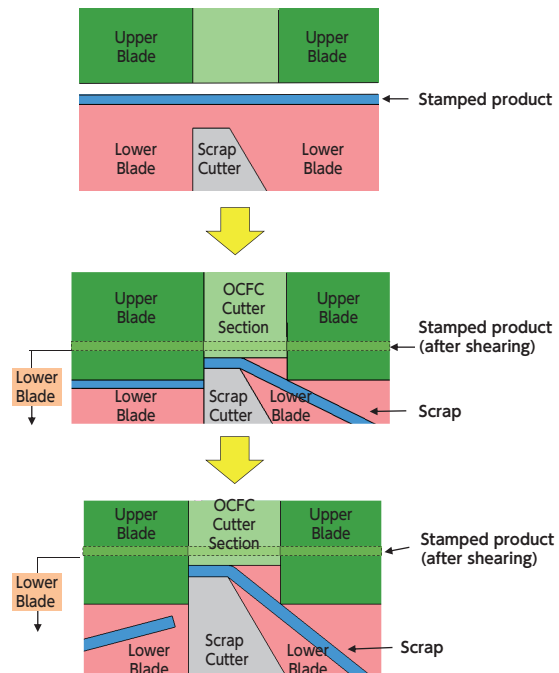
Difference in shear time causes chips, burrs and buckling.

↓

This result in causing damaged condition of panel surface. Chips can also cause damage to the die and to the inner side of the panel as well.



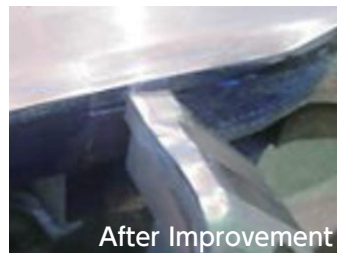
Improvement Proposal (Floating Cut Method Using OCFC)



By having the OCFC built into the upper die and using it as part of the upper blade, it is possible to trim the panel and maintain a continuous trim line.

It prevents chips, burrs and buckling, and contributes to improve quality and productivity.

- Reduce a rework
- Reduce a waste loss
- Reduce a need to clean and polish dies.
- Reduce a down time of machine

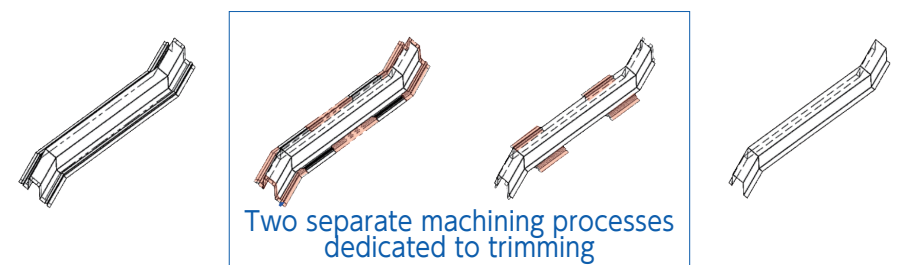


Reduction of Trimming processes

If your trimming process is divided into two processes and the quality of stamped products is secured without using scrap cutters, OCFC can reduce the trimming process down to one process.

<Current: 2 process at trimming>

- ① Draw → ② 1st trimming → ③ 2nd trimming → ④ Flange



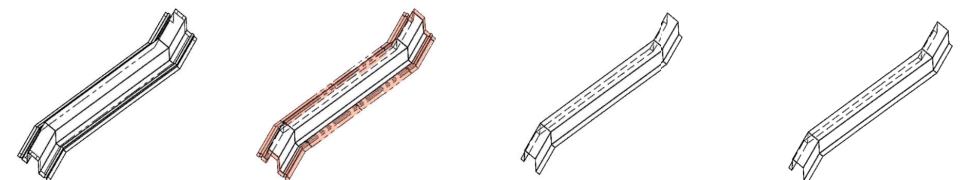
<Proposal 1: Reduce cost of die by eliminating 1 die>

- ① Draw → ② Trimming → ③ Flange



<Proposal 2: By simplifying trimming process, increase the flange process, and improves the quality of products with complex shapes>

- ① Draw → ② Trimming → ③ 1st Flange → ④ 2nd Flange





OCFC13-ST6 High reaction force type for high tensile strength steel sheets

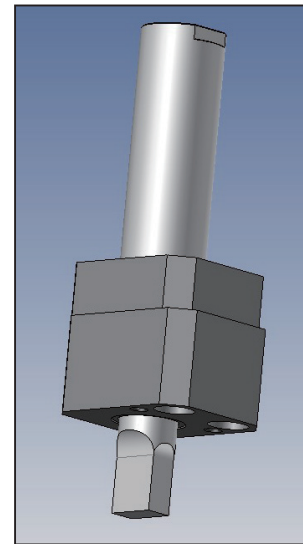
Performance Metrics

|             |                 |
|-------------|-----------------|
| Shear Force | 13kN            |
| Stroke      | 6mm             |
| Durability  | 500,000 cycles* |
| Unit Weight | 3.8kg           |

\*Performance measurement is based on in-house test results. Durability performance under customer usage environments and conditions is not guaranteed.

List of Models

Standard type : OCFC13-ST6

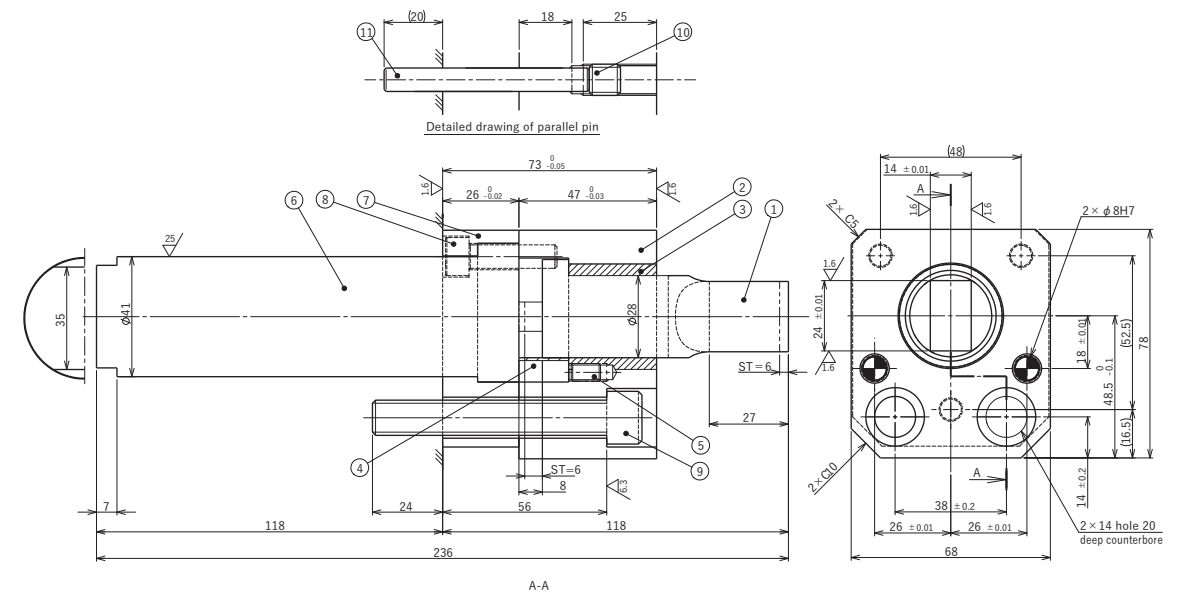


OCFC13-ST6

Advantages

- Improved shearing capacity**  
 Shear force improved from 5kN of past product (OCFC5A) to 13kN. This enable to cut high tensile steel.
- Increased movable range of cutter**  
 The stroke range has been extended to 6mm, enabling shearing of thicker panels than the prior products (OCFC5A).

Structure



| Working Capacity<br>500,000Cycles | Working Stroke | Reaction force at stroke end | Unit Weight |
|-----------------------------------|----------------|------------------------------|-------------|
| 13kN { 1.32tonf }                 | 6.0mm          | 35.0kN { 3.77tonf }          | 3.8kg       |

| No. | Part Name     | Material     | Remarks           |
|-----|---------------|--------------|-------------------|
| 1   | Cutter        | Steel        | SKD11(HRC60 ~ 63) |
| 2   | Cutter holder | Steel        | S45C              |
| 3   | Guide bush    | Oiles 2000   |                   |
| 4   | Guide plate   | Oiles 2000   |                   |
| 5   | Screw plug    |              | M6 × 10           |
| 6   | Spring        | Oiles Spring | —                 |

| No. | Part Name                     | Material | Remarks                       |
|-----|-------------------------------|----------|-------------------------------|
| 7   | Spring holder                 | Steel    | S45C                          |
| 8   | Hexagon socket head cap screw |          | M8 × 30 (Self-locking nut)    |
| 9   | Hexagon socket head cap screw |          | M12 × 80                      |
| 10  | Screw plug                    |          | M10 × 10                      |
| 11  | Parallel pin                  |          | φ 8 × 70 (M6 type with screw) |

■ Guidelines for Use

◆ About Shear Strength

The example below indicates the conditions which shearing is possible.

Example  $\text{Shear length (cutter width)} \times \text{Panel thickness} \times \text{Panel tensile strength} = \text{※ 2 Shear strength (strength needed to trim)} < \text{※ 1 Shear force (required capacity to trim)}$

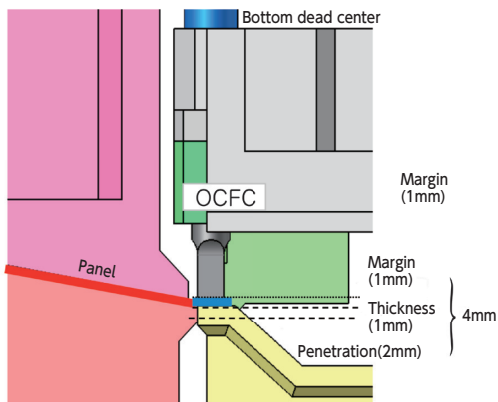
|        |      |       |        |         |      |
|--------|------|-------|--------|---------|------|
| OCFC5A | 14mm | 1.0mm | 340MPa | 4.76kN  | 5kN  |
| OCFC13 | 14mm | 1.5mm | 590MPa | 12.39kN | 13kN |

In this case, value of shear strength ※ 2 is within a shear force. ※ 1 Therefore it works, if shear strength exceed over the shear force, shearing trim disparities may occur with OCFC, and trimcut may not be properly done.

◆ About strokes

Example  $\text{Panel thickness} + \text{penetration depth} + \text{Adjustment (margin)} = \text{Stroke}$

|        |       |       |       |     |
|--------|-------|-------|-------|-----|
| OCFC5A | 1.0mm | 2.0mm | 1.0mm | 4mm |
| OCFC13 | 1.5mm | 3.0mm | 1.5mm | 6mm |



movable range of cutter

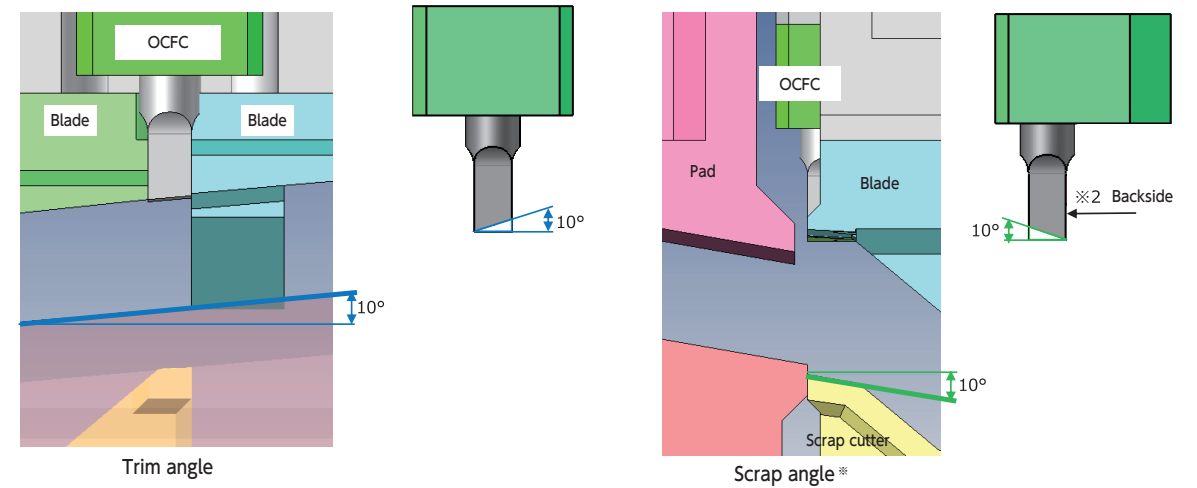
| Stroke limitations |                                |                      |
|--------------------|--------------------------------|----------------------|
| ST                 | OCFC5A-ST4                     | Capability Zone      |
| 1mm                | Normal usage zone              | Panel thickness      |
| 2mm                |                                | Penetration depth    |
| 3mm                |                                | Margin               |
| 4mm                |                                |                      |
| 5mm                | Danger Zone                    | For die adjustment   |
| 6mm                | No-use zone                    | No-use zone          |
| Exceeds            | Instantaneous Destruction Zone | Absolute No-use zone |

| Stroke limitations |                                |                      |
|--------------------|--------------------------------|----------------------|
| ST                 | OCFC13-ST6                     | Capability Zone      |
| 1mm                | Normal usage zone              | Panel thickness      |
| 2mm                |                                | Penetration depth    |
| 3mm                |                                |                      |
| 4mm                |                                | Margin               |
| 5mm                | Danger Zone                    | For die adjustment   |
| 6mm                |                                | No-use zone          |
| 7mm                | Danger Zone                    | For die adjustment   |
| 8mm                | No-use zone                    | No-use zone          |
| Exceeds            | Instantaneous Destruction Zone | Absolute No-use zone |

◆ Angle of Use

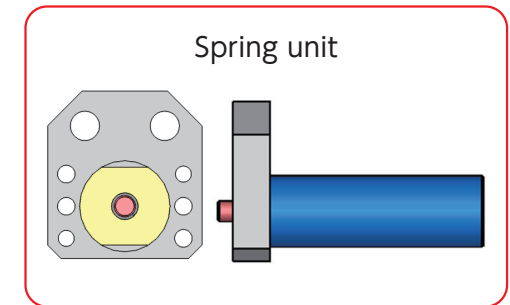
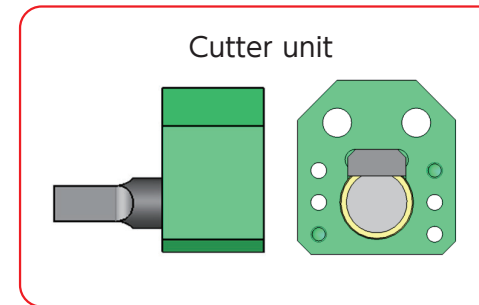
Both trim angle and scrap cutting angle should be less than 10°. However, a backup version (OCFC5A-ST4-B) with a backup plate applied to the backside of the cutter can be used for scrap cutting angles of up to 20°.

※ No backup type prepared for OCFC13-ST6.



◆ Replacement of Unit

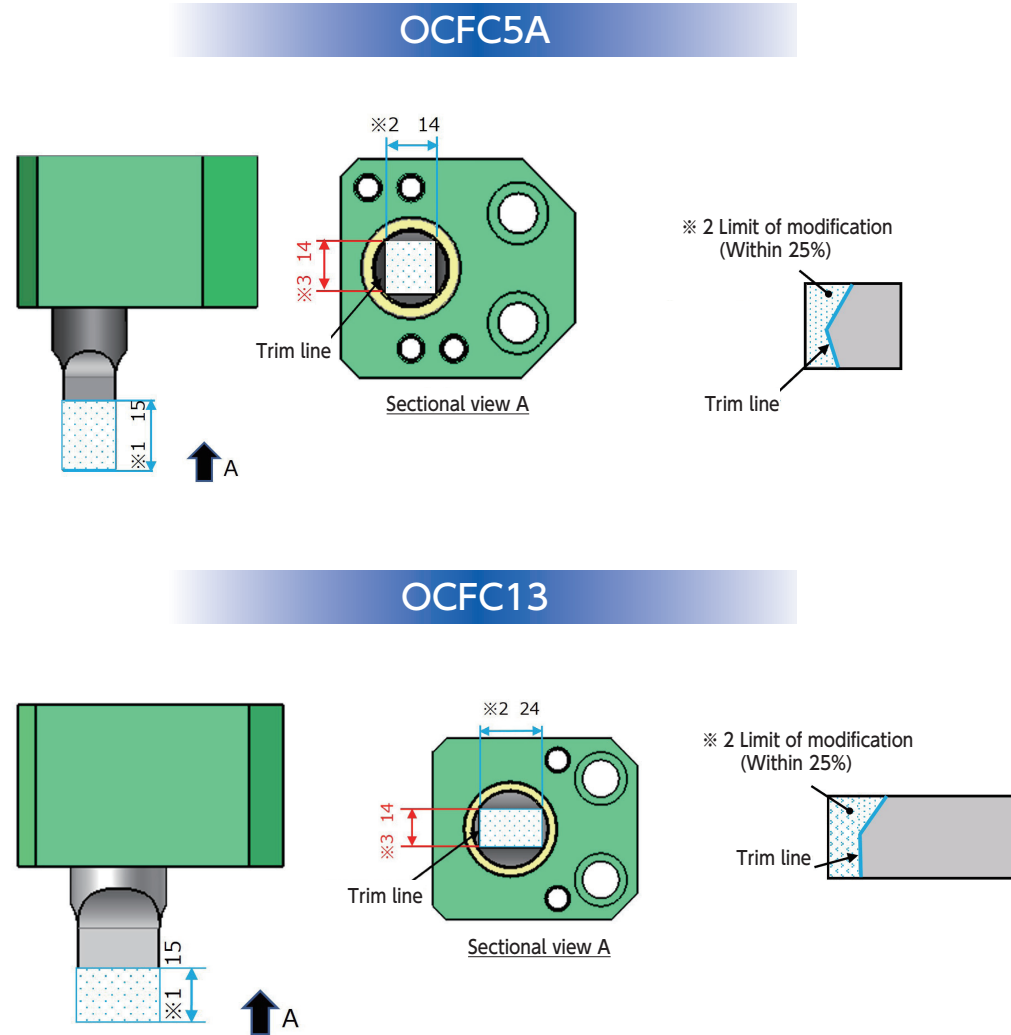
A cutter unit and spring unit for both OCFC5A and 13 is available for replacement if needed for maintenance.



■ Guidelines for Use

◆ Regarding Cutter Modification

Any modification should be done within the limits of ※<sup>1</sup> and ※<sup>2</sup> since the trim line is assumed with the dimensions shown in the figure below. Do not make a modification to the ※<sup>3</sup> dimensions (trim length).

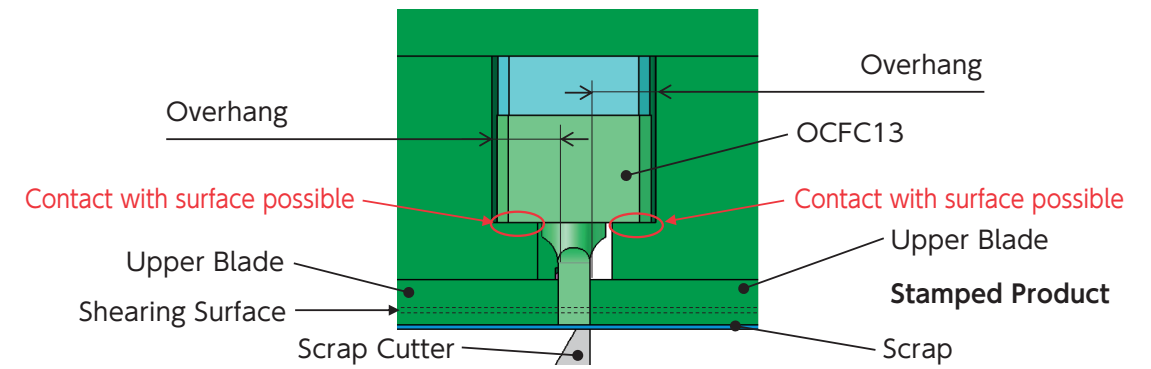


■ Guidelines on Use

◆ Receiving Surface of Upper Blade

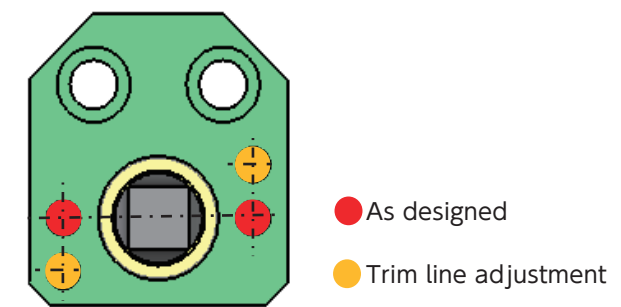
The top surface of the OCFC13 cutter holder can receive the overhanging portion of the upper blade. Please refer to the schematic drawing (P.26) for the dimensional tolerance of the holder section

※ OCFC5A is not designed to have a receiving surface, so when you use OCFC5A, be sure to check the dimensions and make shim adjustments or other adjustments as necessary.



◆ About positioning

OCFC5A has a knock mechanism for adjusting the trim line.



◆ Regarding retrofitting of backup plate onto OCFC5A-ST4

It is not possible to retrofit back up plate to an already delivered OCFC5AST4.