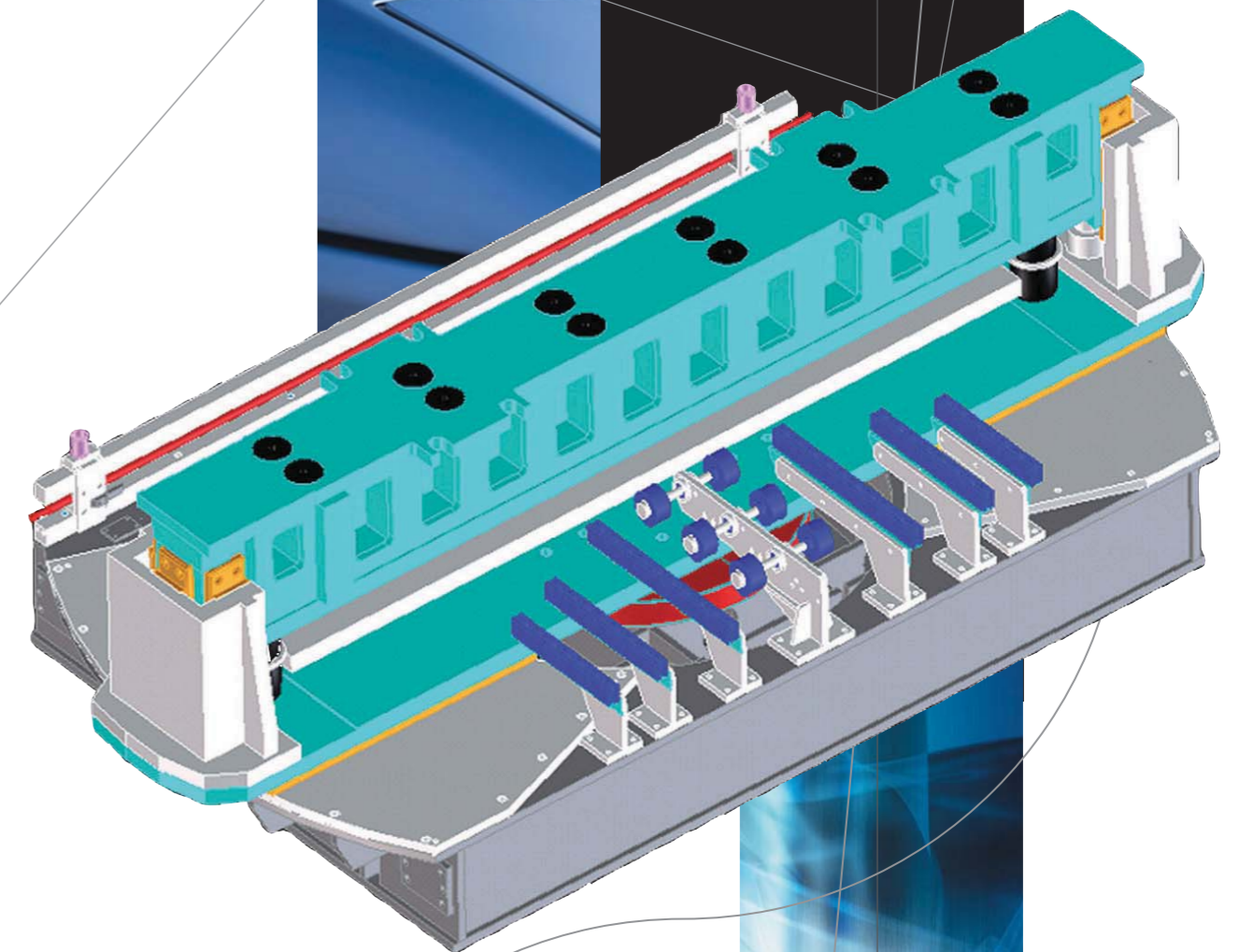


# Blanking Die System

to achieve labor saving and cost reduction in blanking process



**SANKYO OILLESS INDUSTRY, INC.**  
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**SANKYO OILLESS INDUSTRY, INC.**

# Achieving labor saving and cost reduction

The blanking die system makes the rectangle, parallelogram and trapezoid shape blank dies



Blanking line requiring small lot production of blanks in various shapes. Since the die area of the blanking die system turns with the drive mechanism, one system is able to produce many blank shapes.

## Double variable blanking die system

### Manual type with mechanical drive

The manual type with mechanical drive is the simple double variable blanking die system which determines the position of two dies only by manual handle operation without using an electric motor.

Cost down

Improvement of utilization rates

Reduction of keeping space

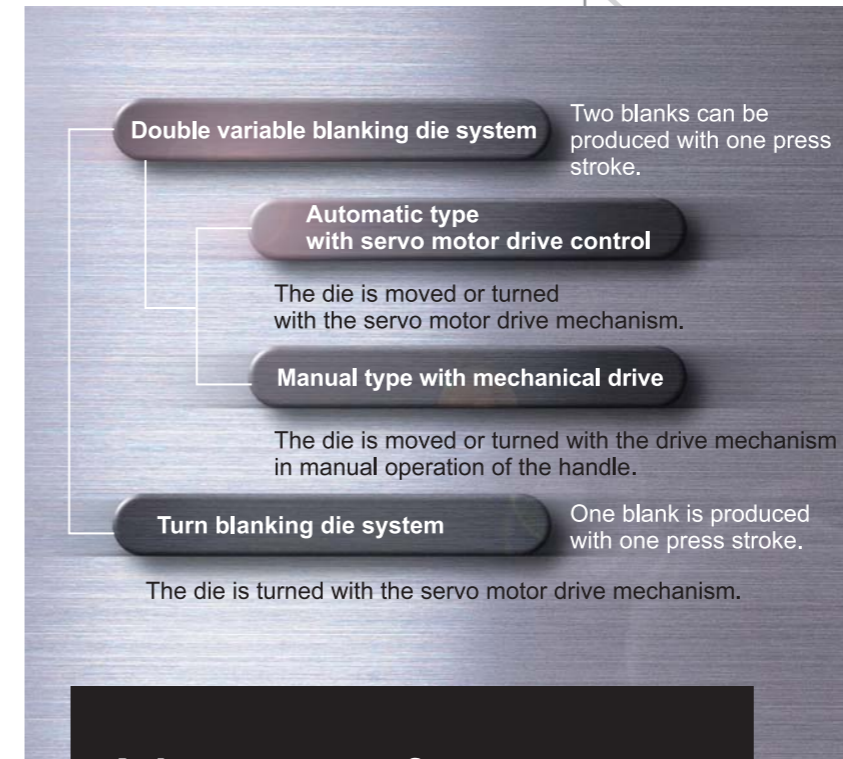
### Automatic type with servo motor drive control

Desired trapezoid blanks can be produced with two turning cutting dies. Two blanks can be produced with one press stroke. Two turning cutting dies are automatically positioned with the servo motor drive control.

# by reducing the blanking die!

unnecessary.

## Types of blanking die system



## Supply records

The blanking die system has been supplied to many automobile manufacturers for outer and inner panels of automobiles. About 30 units have been supplied to customers in Japan and about 20 units have been supplied to overseas customers. It gained high acclaim. (As of March, 2007)

## Advantages of blanking die system

### 1. Reduction of die costs

The blanking die system can easily cut trapezoid blanks to desired shape. As has been before, it is not necessary to manufacture a trapezoid blanking die for each set of dies. (Rectangle and parallelogram can also be cut.)

### 2. Improvement of press line operation rate

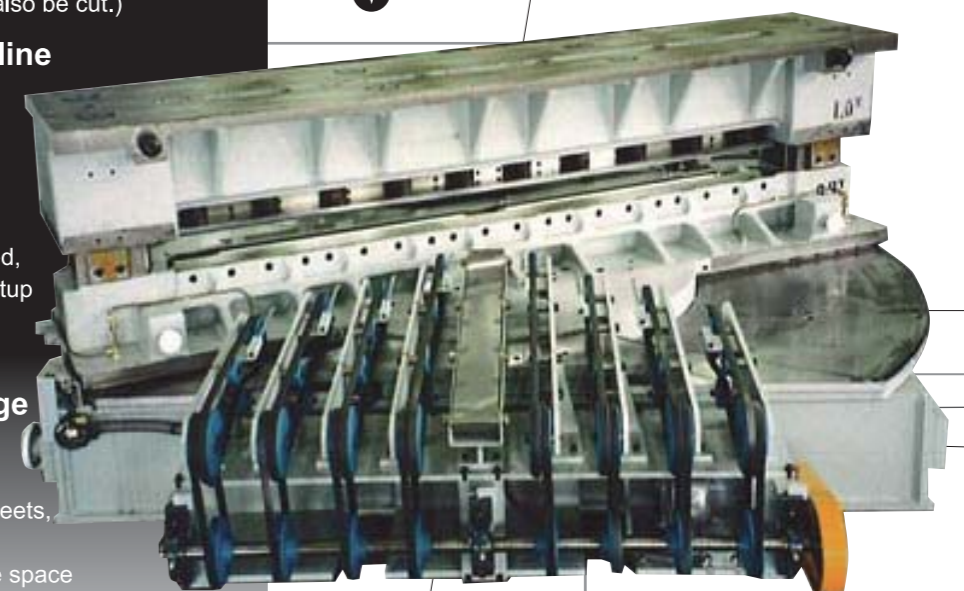
Just input of the angle data for the die or retrieve the preset part number to complete the setup of the blank cutting shape. The die does not have to be changed, resulting in great reduction of the setup time. Productivity of the press line can be improved to a large extent.

### 3. Reduction of die storage space

Since one unit of this system can produce various number of blank sheets, the number of dies in possession can be reduced, and the die storage space can be greatly reduced.

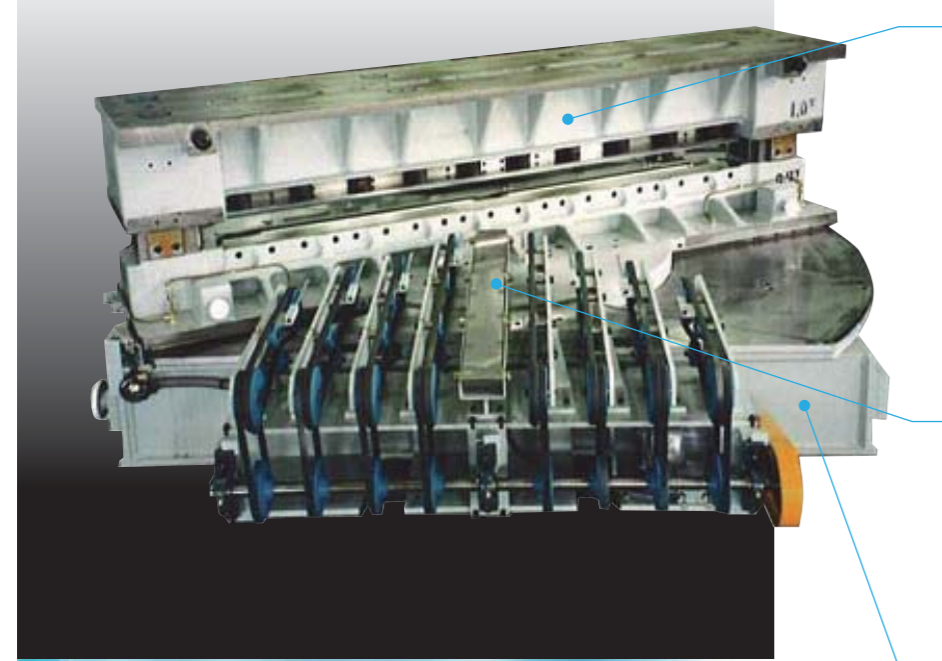
## Turn blanking die system

One unit of the turn blanking die can produce trapezoid blank sheets. One press stroke can produce one blank sheet.



# General description of turn blanking die

The die area turns for each stroke of the press to produce trapezoid blank sheets. Since every other blank sheet is produced inverse, two main stackers and a sorter is required.



### Die area

- It consists of the upper die and the lower die. The upper die floats on gas springs.
- The upper die surface has a silencing urethane pad.
- The cutter surface of the upper die has shear angle.
- The cutters can be changed at four corners by turning.
- Desired turning angles can be determined.

### Transfer area (unloading side)

- A transfer conveyor driven with a general motor can be installed.
- Feeding speed can be set with an inverter control unit.
- The transfer conveyor is a belt conveyor type.

### Common bed

- The structure is a highly rigid steel welded box.
- It contains the drive unit for turning or movement of the die area. The drive unit consists of the AC servo motor, worm reduction gear, spur gear and die clamping mechanism.

### Transfer area (loading side)

- It has the sheet guides to feed the sheet to the die center. A motor operated type and a manual operation type are available for selection.



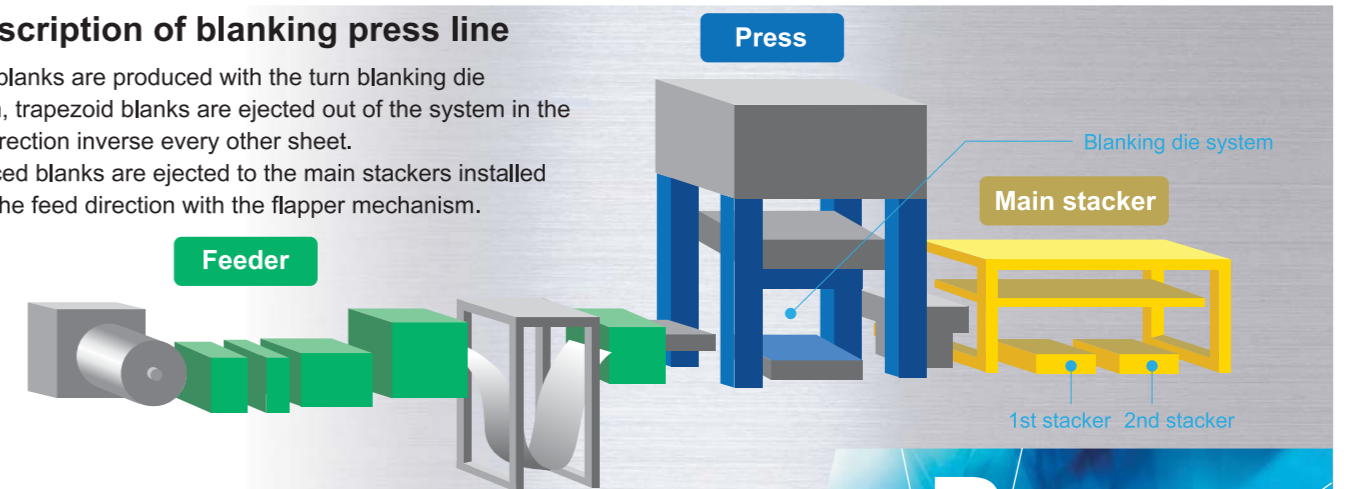
### Description of specifications

(Unit: mm)

Die system	Turn blanking die system
Major performance	Turn blanking die system
Cutter length	max2100
Range of thickness	0.5~1.7
Coil width	250~1850
Die turning angle	max ± 35°
Feed level	min450
Die height	min750

### Description of blanking press line

When blanks are produced with the turn blanking die system, trapezoid blanks are ejected out of the system in the feed direction inverse every other sheet. Produced blanks are ejected to the main stackers installed along the feed direction with the flapper mechanism.

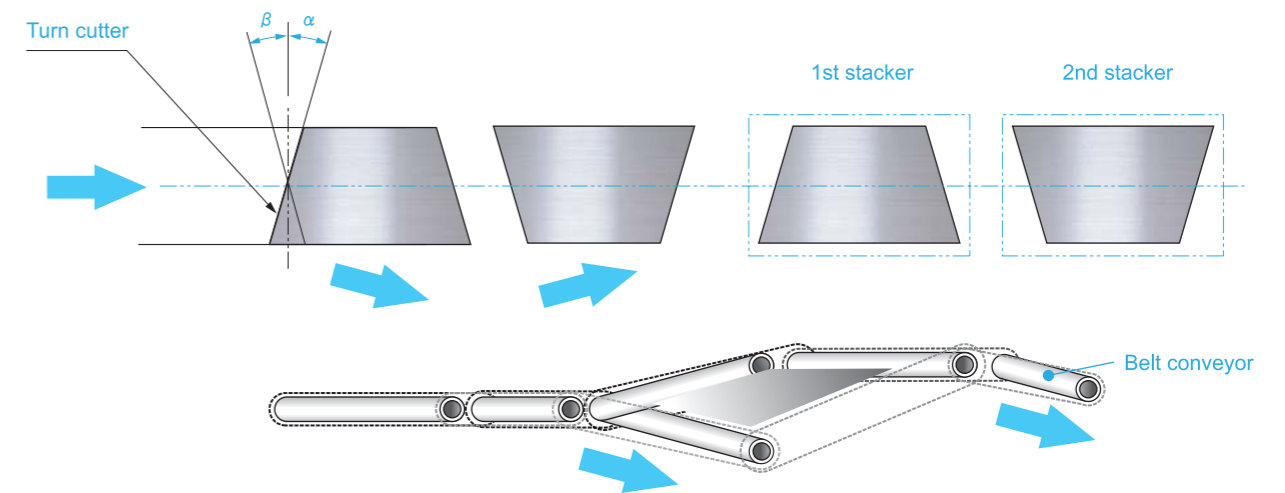


### Shapes capable of cutting



### From cutting to stock

According to the turn angle ( $\alpha, \beta$ ) preset with the numerical control system, the die area turns for each stroke of the press and the trapezoid blanks are produced. As shown in the figure below, trapezoid blanks are produced inverse in the feed direction every other sheet.



## General description of double variable blanking die system

(Manual type/automatic type)

The system has two die areas on the common bed and determines the position suitable for a blank shape. Two trapezoid blanks are produced for each press stroke. Since blanks are produced inverse every other sheet, two stackers are required.

### Manual drive unit

- The die is moved and turned with a manual handle.
- The reduction ratio of the gearbox unit facilitates movement and turning.
- (Common for manual type/automatic type)

### Die area (sheet unloading side)

- The die area at the sheet loading side has fixed cutters. It only turns on the bed.
- (The die specification is the same as that of the turn blanking type.)

### Die area (sheet loading side)

- The die area at the sheet loading side has movable cutters. It moves and turns on the bed.

### Intermediate transfer conveyor

- The transfer conveyor is installed at the center of two die areas. A kicker at the center of the conveyor is installed for ejection of blanks.
- The transfer conveyor has a special pantograph structure. It extends or shrinks along with movement of the movable cutters.
- Front/back length of the kicker for change of the sheet width is adjusted by the handle. (Automatic type is available.)
- Left/right length for change of the blank center gravity is adjusted by movement of the pantograph type conveyor.

### Transfer area (unloading side)

### Sheet guide (manual)

- The sheet guide is installed to guide the sheet loaded in the die to the specified position.

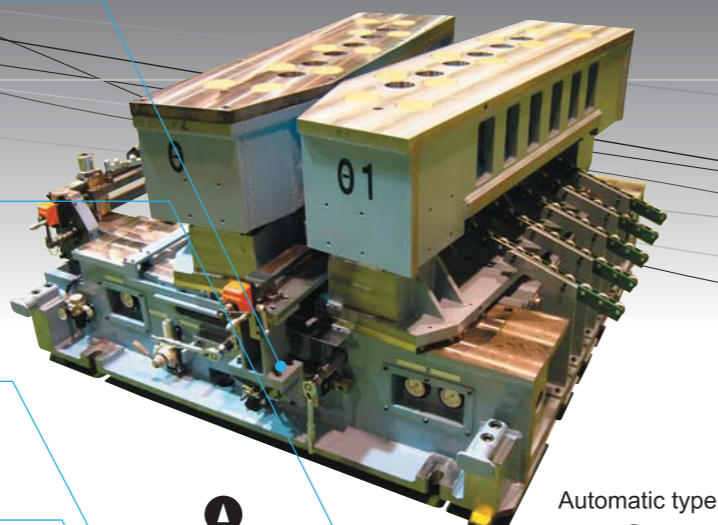
### Transfer area (loading side)

- The transfer conveyor has the same special pantograph structure as the intermediate transfer conveyor.

### Description of specifications

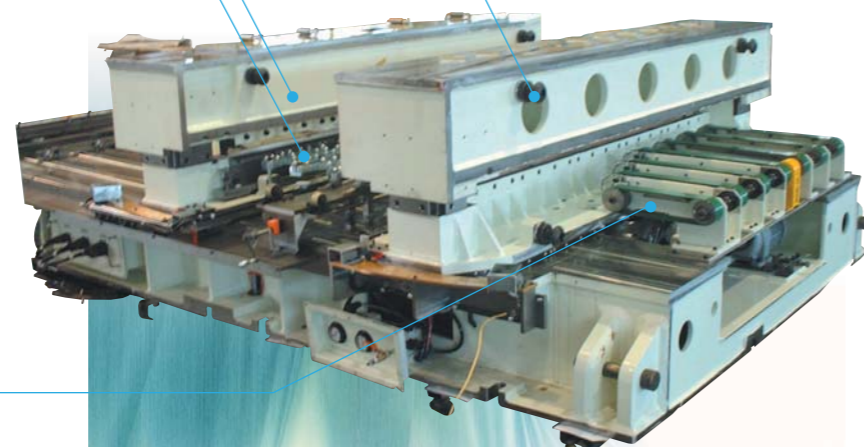
(Unit: mm)

Major performance	Double variable blanking die system (automatic type)	Double variable blanking die system (manual type)
Cutter length	max1950	max900
Range of thickness	0.6~1.7	0.6~1.2
Coil width	450~1850	600~880
Die turning angle	max30°	max15°
Distance between dies	600~1700	350~600
Feed level	min450	min550
Die height	min750	min850



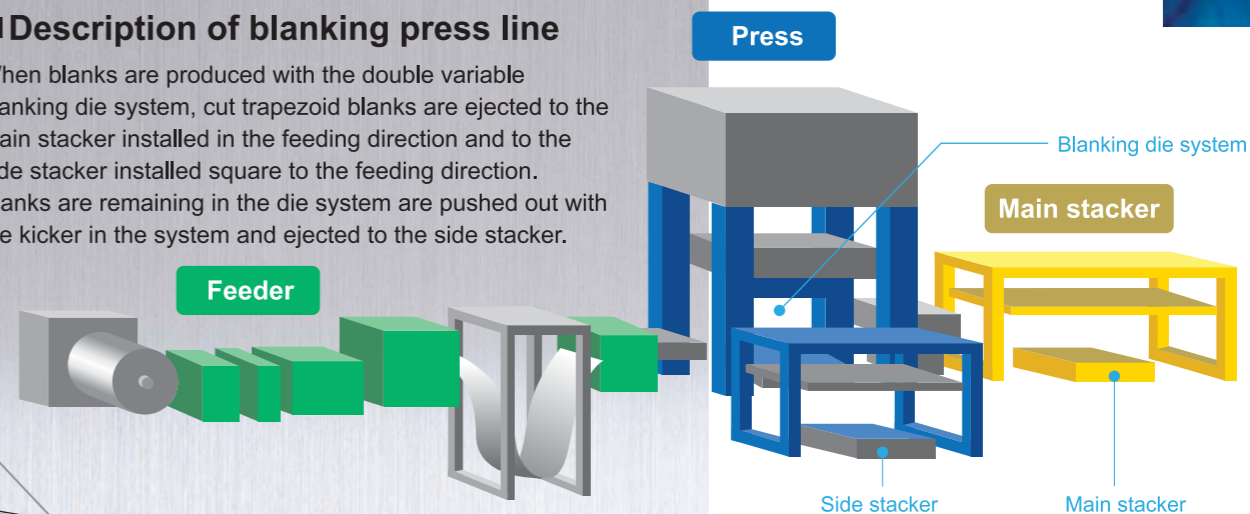
Manual type

Automatic type



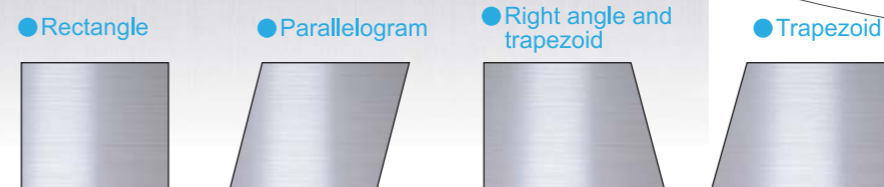
### Description of blanking press line

When blanks are produced with the double variable blanking die system, cut trapezoid blanks are ejected to the main stacker installed in the feeding direction and to the side stacker installed square to the feeding direction. Blanks are remaining in the die system are pushed out with the kicker in the system and ejected to the side stacker.



## Blanking Press line

### Shapes capable of cutting



### From cutting to stock

When setup such as die angle or spacing is completed, pressing starts. Cutting is performed at the movable side (loading side) and fixed side (unloading side) for each stroke of the press. Two trapezoid blanks are produced at the same time.

Two blanks are ejected to the main stacker and the side stacker as shown in the figure below.

