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Using one mould for manufacturing concrete products in different sizes

Japan has a great variety of precast concrete products which is indispensable for civil engineering and construction work. Obviously, the concrete strength, function and also ideas of concrete products have to be modified specifically in accordance with their intended use and usage environment which that annoys the precast concrete maker.

It must be avoided to buy a new mould just for the purpose of some little change on products dimension and shape. Therefore, it will be a great advantage to have a mould with adjustable function which capable to produce products in various sizes with the mould itself. Also, since the market has changed from “large quantity small variety” to “small quantity large variety”, it is important to meet their needs quickly at low cost. In this issue some types and methods of adjustable moulds of Toyotaforms will be introduced.

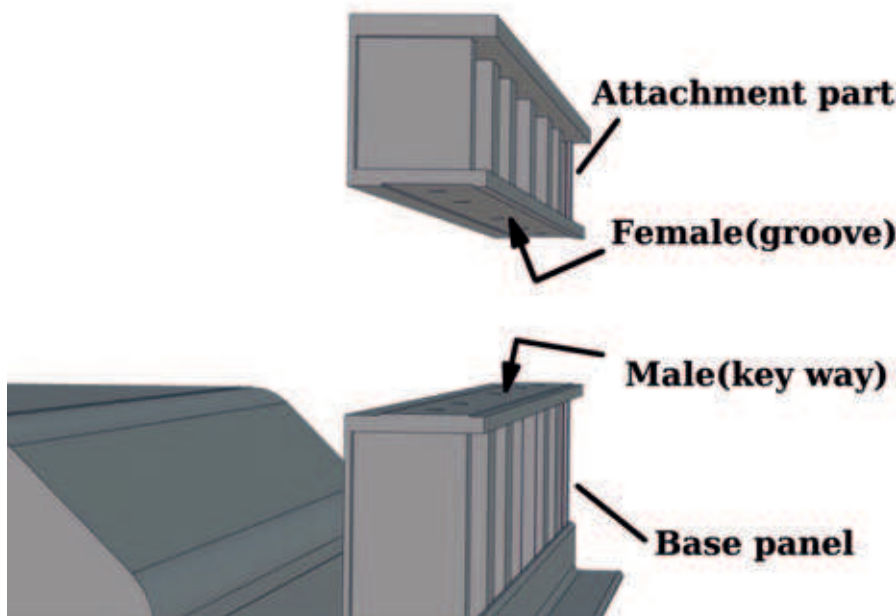


Fig. 1: Side jacket with the base panel and the attachment part

Width, height, length, thickness, with/with no surface design, male/female, there are various factors for the adjustable mould. It is especially important to make the adjustable moulds with dimensional accuracy in every re-assembly when it has to be changed to make different width, height or length. For example, Box Culvert is a typical such kind of the product.

Usually the more adjustable factors on the mould have, the more difficult to keep the dimensional accuracy and durability the mould will be.

However, Toyotaforms is stuffed with ideas and technologies which avoid from these problems.

Fig.1 shows a side jacket with the base panel and the attachment part. The height can be adjusted by combining different attachments. To minimize the tolerance when combine various attachment parts on

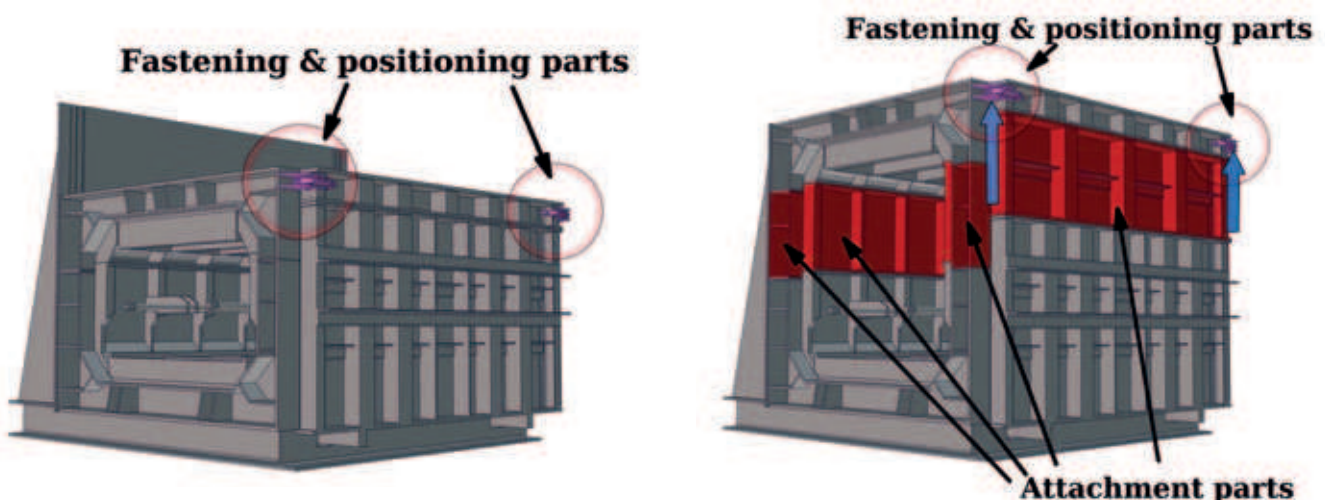


Fig. 2, Fig. 3: The fastening and positioning parts are always keeping their relative position and they move together when the attachment parts are exchanged. It is the key to keep the constant dimension of the adjustable mould.

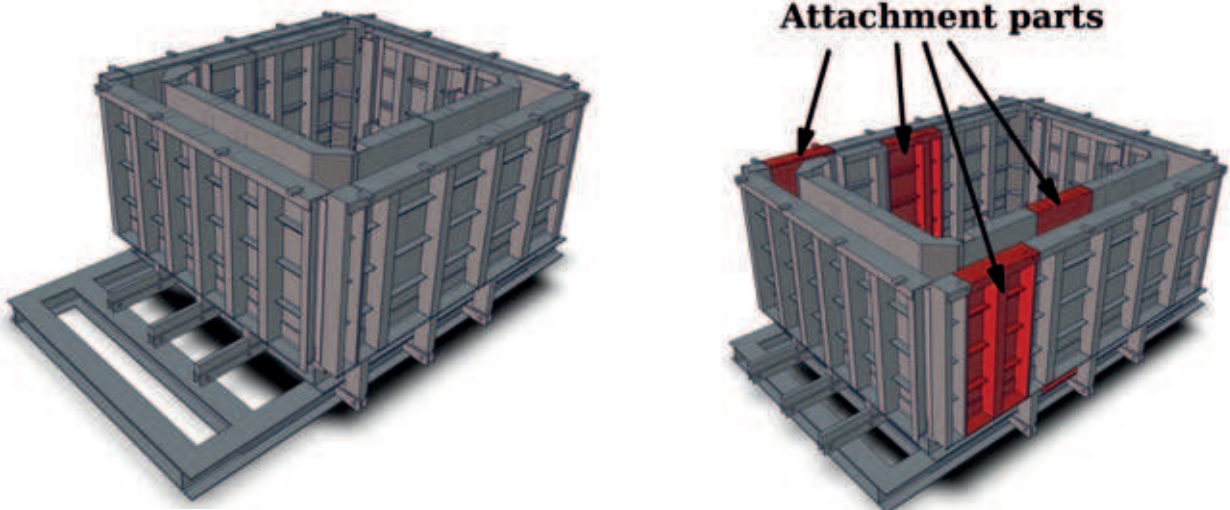


Fig. 4, Fig. 5: Examples of moulds with adjustable system - Pouring in vertical direction

to the base panel, machine the attachment parts after welding is the best way and in many cases, Toyotaforms make them in male/female joint to keep the perfect position.

The operators on site of the precast concrete manufacturers can easily exchange or

re-assemble the moulds by bolt up/un bolt the attachment parts mentioned above and no worry about the dimension or positioning error.

Followings are some examples of moulds with adjustable system. The red parts in the figures are the attachment parts. They are

able to insert between the base parts. This is a typical example which shows the major modification on width. It keeps high dimensional accuracy and durability even if the attachment parts are longer than the base parts because the attachment parts are made precisely.



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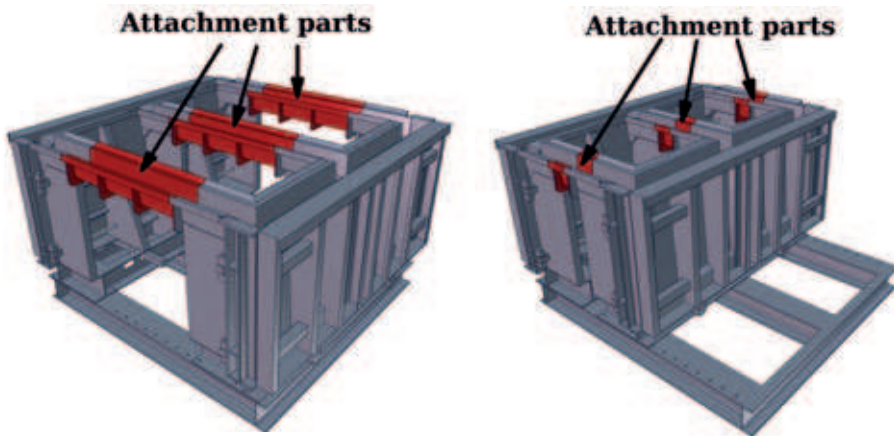


Fig. 6, Fig. 7: Example of modification on width

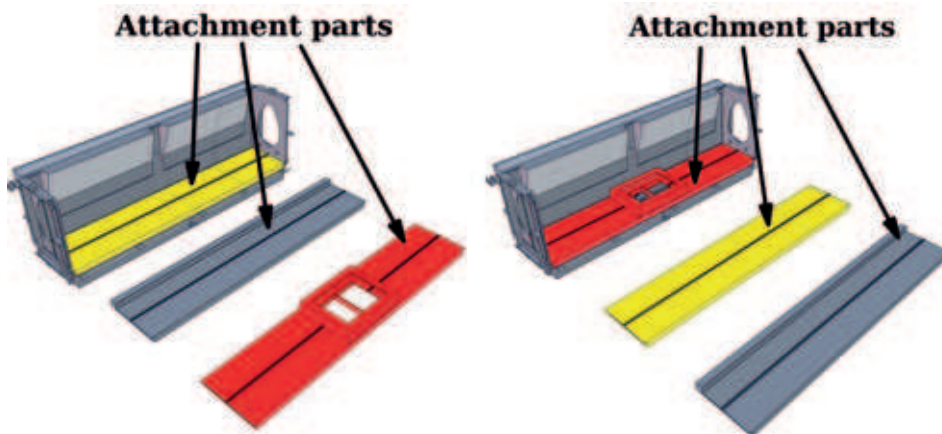


Fig. 8, Fig. 9: Moulds for Drainage gutter

Products of drainage are variable according to the shape of the road. Mould will be adaptable to various shapes by replacing the whole or some part of the base plate of mould.

In addition to height and width (bottom part) adjustment, Toyota Kohki also manufacture mould for L-shaped retaining wall with detachable pallet which enable to produce various surface designed wall with

one mould by exchanging each pallet. The design is made by resin or aluminum and inserted on the pallet. Variation is enabled by exchanging the pallets and it is also available to put a plain plate when deserve a wall with no design.

As described above, Toyotaforms made it possible for user to adjust and modify the mould easily without requirement of special skill.

By using one adjustable mould to produce various different concrete products in high tolerance and durability makes it possible to reduce the cost and help to develop the "small quantity large variety market."

FURTHER INFORMATION



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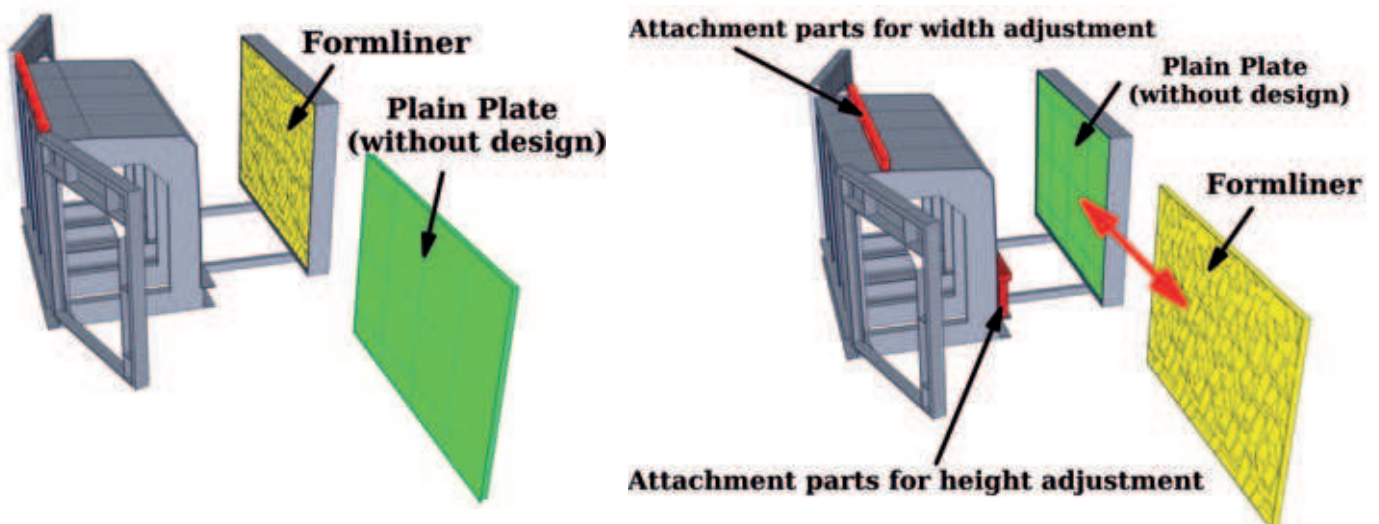


Fig. 10, Fig. 11: Mould for L-shaped retaining wall