

## 1. Description

The Manual Clamp is a heavy-duty tool designed for clamping work in the metal plate processing industry. It consists of a manual feed clamp, a metal housing with connection possibilities on the front and a clamp arm with a holder for the jig.

During the clamping action the manual lever increases the force on the integrated toggle joint mechanism that initiates the swivel action of the clamp arm.

## 2. Safety

The Manual Clamp was not designed as an independent tool and has therefore not been fitted with its own safety facilities. In order to comply with the safety requirements, the clamp must be integrated into a production system and it must be connected to a suitable safety control system.

In the event of any failures resulting in a risk to people's safety, the use of the Manual Clamp must be discontinued immediately. Maintenance work must only be carried out by properly trained staff when the machine is not running. After carrying out such maintenance work, any protective devices must be fitted again properly.

## 3. Mounting the Manual Clamp

- Connect the Manual Clamp using fillister head screws to the mounting surfaces on the front of the clamp.

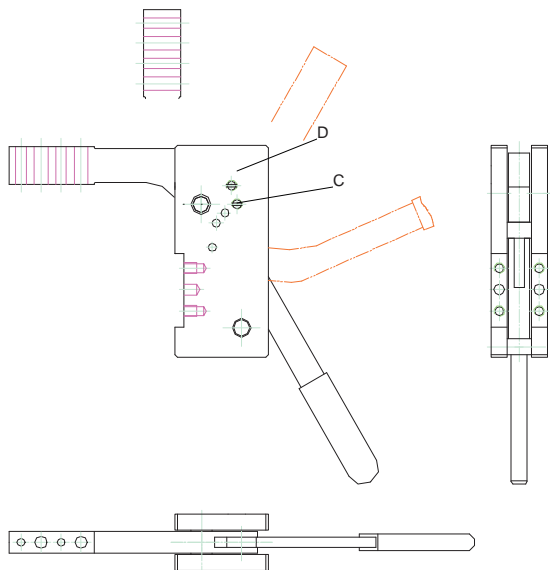


Figure 1: Manual Clamp

## 4. Adjusting the Manual Clamp

### Warning: Risk of getting trapped!

When adjusting the clamp arm, your fingers may get trapped between moving parts. Do not reach into the operating area of the clamp arm while the Manual Clamp is being operated.

- Screw the jig onto the clamp arm.
- Close the Manual Clamp. The toggle joint must audibly click into the position above the dead point.
- Determine the difference in size between the clamp arm/jig and the product being worked on.
- Open the Manual Clamp.
  - Adjustment without pre-tensioning (soft touch)  
Take out the difference in size to 0 mm (!) by mounting the relevant adaptor plates.
  - Adjustment with pre-tensioning  
Take out the difference in size to 0.3 mm by mounting the relevant adaptor plates.
- Close the Manual Clamp. The toggle joint will take up its position above the dead point and the required pre-tension will be achieved.

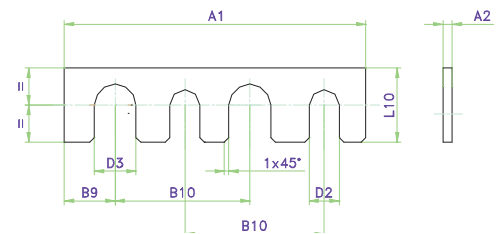


Figure 2: Adaptor plates

Adaptor plate No.	A1	A2	D2	D3	B9	B10	L10
AP 4002	65	0,2	6,5	7	6	20	12,4
AP 4005		0,5					
AP 4010		1,0					
AP 4020		2,0					

## 5. Adjusting the opening angle

The opening angle can be set to the 120°, 96°, 75°, 45° positions using the stop pin "C" and both ball ratchets "D" integrated into the housing. The factory-set position (120°) can be changed by disassembling the pin and the ball ratchets and fitting them in the required holes.

## 6. Maintenance

The Manual Clamp was primarily designed for series manufacturing applications and has been fitted with low-maintenance bearings and guides. For Manual Clamps with an open housing we recommend regular cleaning of the moving parts of the toggle joint mechanism.

**Note:** The Manual Clamp should only be cleaned in a closed state, as otherwise dust particles might penetrate into the housing. Cleaning the clamp with a steam jet cleaner or dry ice will damage the Manual Clamp.