



Operation instructions Underbody clamp

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K 60 U

1. Description

The underbody clamp is a high-power tool designed for use in clamping tasks in the processing of sheet metal. It consists of a pneumatic cylinder, a metal housing with mountings at the front and rear and an integrated clamp hook.

When used in clamping, the pneumatic cylinder moves an integrated toggle lever joint to accentuate power; the joint triggers the swivel action of the clamp hook. The position control of the clamp arm is achieved optionally through integrated (T12) or pneumatic switches (T08).

2. Safety

The underbody clamp was not conceived as a full tool supplied ready for independent use and has therefore not been fitted with its own safety equipment. Only when it is correctly installed in a production system and a corresponding safety control system is added, will all safety requirements be met.

Should any faults occur that place personnel at risk, the underbody clamp is to be switched off immediately. Maintenance measures are only to be undertaken when the machine is at a complete standstill and by suitably qualified specialists.

After maintenance work has been carried out, the protection devices are to be refitted in the correct way.

Maximum load depends on diameter of dowel pin and geometry of the hook.

3. Assembly of the underbody clamp

- The clamp is installed by means of four head cap screws on the shoulder area on the front / back.
- Create supply of compressed air between pneumatic control and clamp (connections "N").

Caution: For fine adjustment of speed of clamping process, the

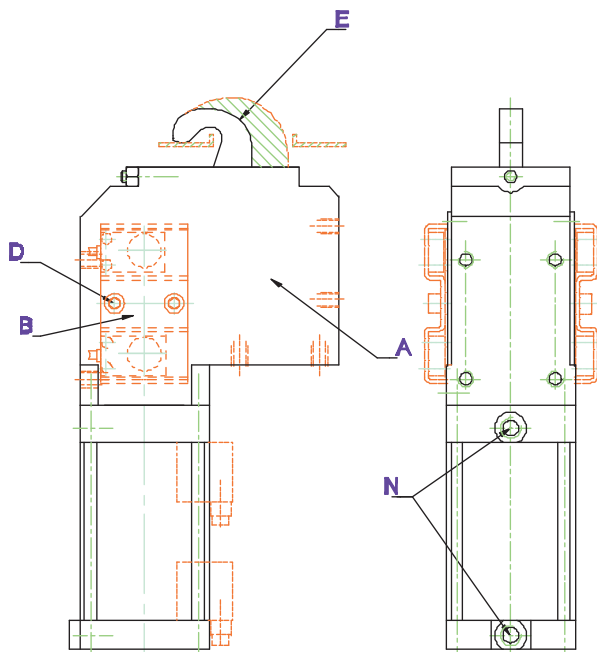


Fig. 1: Underbody clamp

use of external regulating valves is recommended.

A. Inductive limit switch set (T06/T12)

Set plug on socket "C" according to the electrical design of the pneumatic clamp (see circuit diagrams), and tighten.

Caution: Operation with incorrect or too high voltage can lead to short circuiting and danger to personnel.

Function control with integrated LED as follows:

- greenoperation voltage
- yellow clamp open
- red..... clamp closed (new version from 01/99, formerly yellow)

B. Pneumatic limit switch set (T08/T10)

Connect control line for pneumatic limit switch set to the rear of the clamp according to the marking.

Caution: Working pressure for control lines max. 6 bar.

4. Setting for underbody clamp

Caution! Danger of crushing!

When the clamp hook is being set, fingers could be severed or crushed. Do not reach into the swivel area of the clamp arm while the underbody clamp is in operation. Before operations are commenced in the area of the tool, the supply of compressed air must first be interrupted.

- For sight checks of the support roller, dismantle cover sheet "B" by releasing the screws "D".
- Move the underbody clamp to the opened position, the clamp hook is swung in, support roller in lower position.
- Set work piece on and move to desired position.
- Move underbody clamp to clamping position, clamp hook lies on the work piece, support roller is in the upper position.
Caution: The support roller must be at the upper limit stop. Only in this way can operation of the upper dead-centre lock be ensured.
- If pre-tensioning between the work piece and the clamp hook is too low, open the clamp and remove the work piece. Increase height of support plate on clamp head accordingly (intermediate plates, shims, o.s.).
- Increased pre-tensioning is characterised by
 - a) Cylinder does not run to the upper position. Support roller does not lie on limit stop.
 - b) After clamping operation, the cylinder can no longer be raised under normal pressure (6 bar). The cylinder ring area is insufficient for unlocking the clamp. If necessary, the clamp is to be unlocked manually at the support roller. Open clamp and remove work piece. Reduce height of support plate of clamp head accordingly.
- Secure cover sheet "B" with screws "D".

5. Replacement of limit switch cartridge

- Remove limit switch cartridge by releasing the screw "D".
- Set new limit switch cartridge and assemble.

6. Maintenance

The underbody clamp is fitted with a view to application in series production with low-maintenance bearings and guides. Because of the closed structure no special maintenance of the underbody clamp is necessary.

Caution: Damage can be caused to the underbody clamp by cleaning with steam-jet or dry ice.



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