

1. Description

The ALPHA Clamp is a high-power tool designed for use in clamping tasks processing sheet metal. It consists of a pneumatic cylinder, a metal housing with several mounting possibilities, and a clamp arm with receiver for the contour piece.

When used for clamping, the pneumatic cylinder functions on an integrated curve mechanism and moves the clamp arm. The position control of the clamp arm is achieved through limit switches fixed on an integrated cassette system.

The ALPHA Clamp version "WP" is especially suitable for use in dripping water areas or water spray areas:

- Enclosed two-part special housing, anodized
- Bearing carried out with external seal
- Clamp arm with chromium nitride-corrosion protection
- End position sensing forward / back with sealed M12 round plug
- Pneumatic connection for sealing air (0.2-0.4 bar) for additional securing of the mechanical components

2. Safety

The ALPHA Clamp was not conceived to be a complete tool, ready for independent applications 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 ALPHA 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.

3. Assembly of the ALPHA Clamp

- The Clamp is installed by means of cylinder screws and dowel pins on the front, rear side or bottom surface.
- Connect to supply air between pneumatic control valve and Clamp (connections "N").
External throttle valves can be used for damping of the return stroke (back and forth). They can be set to the corresponding traversing speed.
- Connect blocking air 0.2-0.4 bar to connection „A“ to create an internal overpressure.
- End position detection T02:
Detection by sealed rotary switches with push-in fitting (see wiring diagram).

4. Set up for the ALPHA Clamp

Caution! Danger of crushing!

When the clamp arm is being set, fingers could be severed or crushed. Do not reach into the swivel area of the clamp arm while the ALPHA Clamp is in operation. Before operations are stated the air supply must be shot off.

The ALPHA clamp is equipped with a special curve mechanism, which generates a defined clamping force over a clamping angle of $\pm 1.5^\circ$. The contour pieces are to be built so they fit into the work piece in a clamp arm position of 0° respectively 90° . This ensures a clamping way and so a power reserve in process.

- Tighten contour piece on clamp arm.

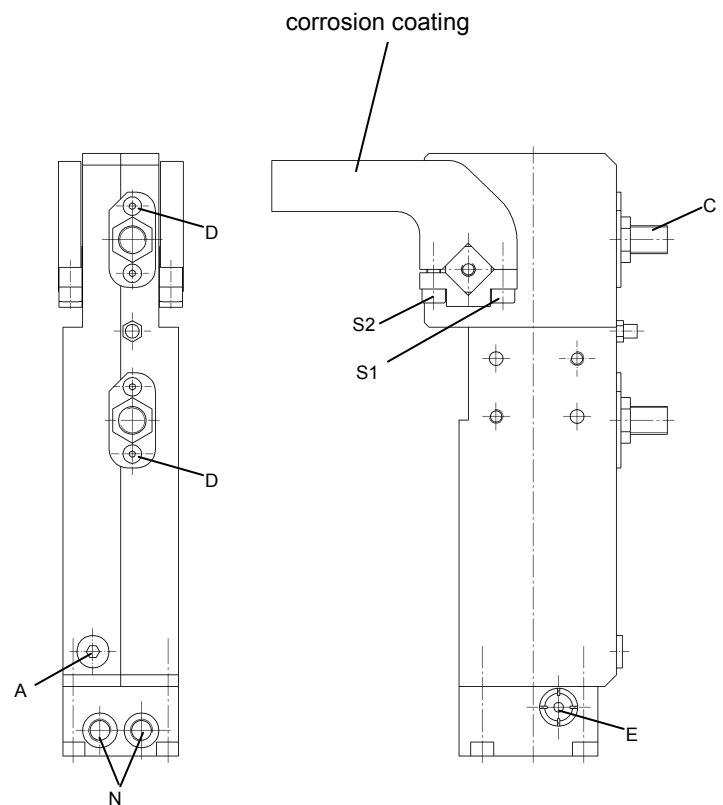


Figure 1: ALPHA Clamp

5. Release of Toggle

The ALPHA-clamp is equipped with a built-in check valve. Function: blocking in case of air loss in the return stroke. Manual ventilation is required when operating in depressurized state.

In case of air failure, unlocking is also possible by actuating pin „E“.

Caution! Danger of crushing!

By operating pin „P“ the clamp arm can open abruptly. Do not reach into the swivel area of the clamp arm!

6. Adjusting the opening angle

The opening angle is steplessly adjustable in the range of 10° to 90°. Changing the opening angle adjusts the position sensors automatically. The standard opening angle is 90°.

Set Up:

- Bring clamp arm to open position.
- Read the pre-adjusted angle at the scale.
- Remove screw „A“ in the cylinder bottom.
- Turn screw „B“ with the same hexagon key until the desired angle has been reached, adjusting range 10° - 90°.
- Mount screw „A“ in the cylinder bottom.

CAUTION: Look out for a correct fastening of screw „B“, otherwise the opening angle could be changed by mistake.

8. Replacement of switches T02

- Remove support block with switches by loosening screw „D“.
- Replace switches.

9. Changing of clamp arm

In order to avoid warping of the square-section shaft, it must be ensured when changing the clamp arm that fixing screw "S1" (flange contact surface, clamp arm at stop) is tightened first, followed by the second fixing screw, "S2" (see Figure 1).

Recommended tightening torque: 8.7 Nm

10. Maintenance

Bearings and wear faces on the ALPHA clamp have been designed with consideration for high production applications. This technical concept allows 2 million cycles without significant component wear.

Attention: To provide protection from welding slag and other debris, the clamp is equipped with a fully closed housing. Therefore, no special maintenance is required. Cleaning with high-pressure steam or dry ice may damage the ALPHA Clamp mechanism.

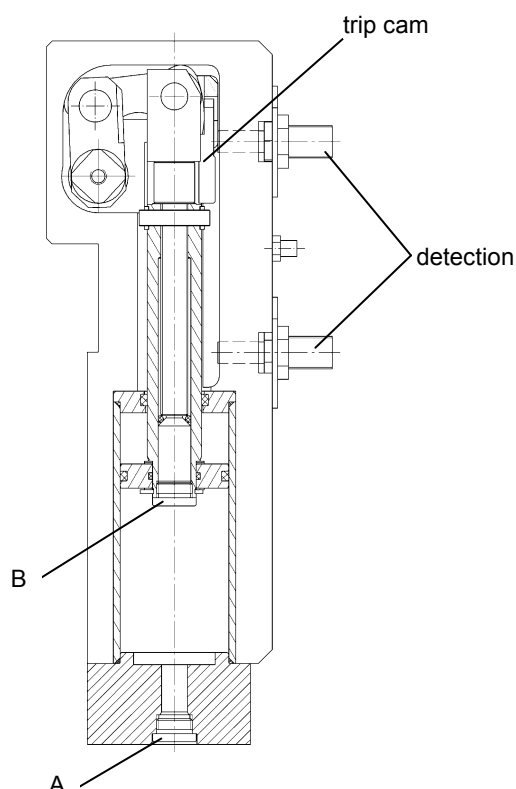
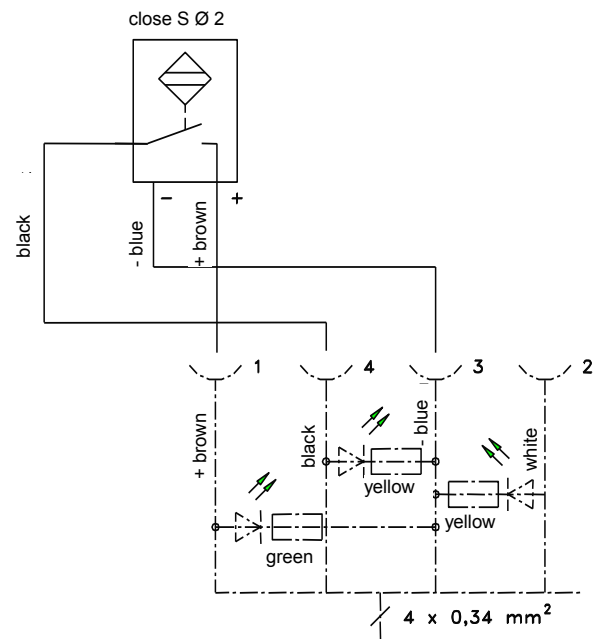
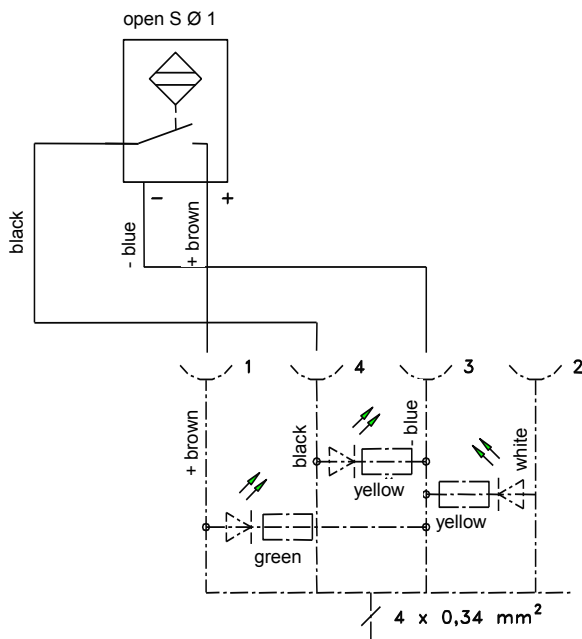
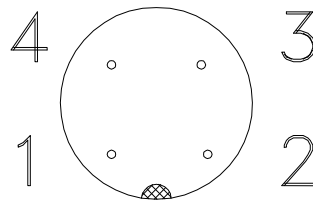
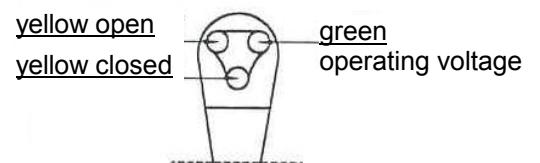


Figure 2: Adjusting the opening angle



arrangement of the LED



Angle coupling with 3 LEDs WK 4 - 05

Electrical data for voltage up to 30 V:

Resistance load	3 A
Lamp load	1.5 A
Inductive load	3 A

Protection Class IP 67



Subject to technical modifications.

13.02.2015