

Vario Power Clamp

Operating Instructions

V/V2 40 BR2
V/V2 40 LW
V/V2 40.5 BR2

1. Description

The Vario Power Clamp is a high-power tool designed for use in clamping tasks in the processing of sheet metal. The clamp consists of a pneumatic cylinder, a metal housing – mountable on any of four sides – and a clamp arm with receiver for the contour piece.

When used in clamping, the pneumatic cylinder functions on an integrated toggle lever to move the clamp arm. The position control of the clamp arm is achieved through a cassette system with integrated inductive limit switches.

2. Safety

The Vario Power Clamp was not conceived to be a complete tool, ready for independent applications and has therefore not been fitted with 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 Vario Power 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.

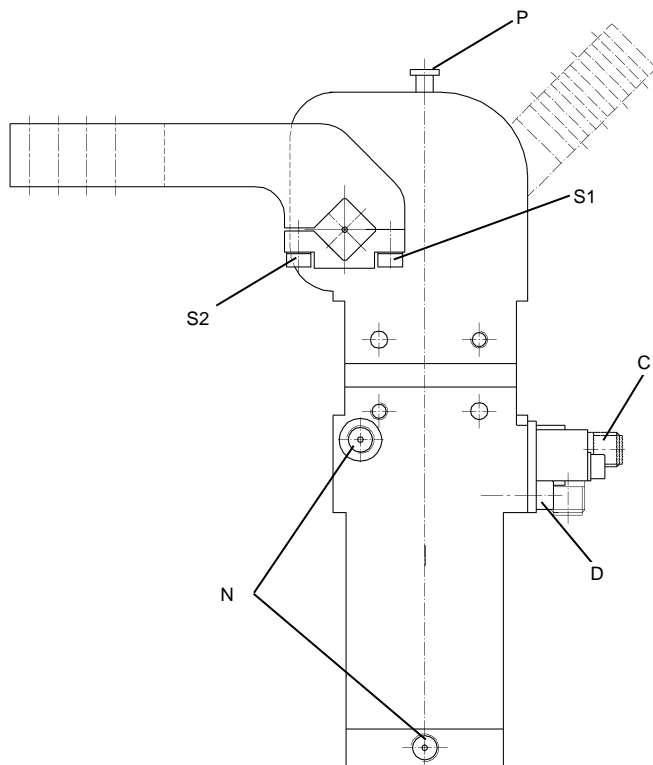


Fig. 1: Clamp

3. Installation of Vario Power Clamp

- The clamp is mounted on one of four housing sides using screws and dowels.

It is mandatory to adhere to the minimum screw-in depth.

Front and rear side attachment:

	V 40...	V 40.5...
Thread size	M6x10	M8x10
Screw-in depth min. [mm]	7	7
Tightening torque max. [Nm]	10	25

Lateral attachment:

	V 40...
Thread size	M6x10
Screw-in depth min. [mm]	7
Tightening torque max. [Nm]	10

- Connect to supply air between pneumatic control valve and clamp (connections "N").

Installation of flow control valves is necessary to both ports to reduce the clamp opening and closing speed and to adjust to the proper system / line speed.

Attention: The Vario Power Clamp is equipped with an integrated cushion on the return stroke. At excessive clamp arm weight, the safe function of the cushion is not warranted. Maximum permitted clamp arm weight design guidelines must be adhered to.

3.1 Clamp arm mounting

The bars of the flange have different heights. Note the alignment of the flange during assembly, see fig. 2 a and 2 b.

Tighten screw "S1" first (no gap between cap and arm body) and then screw "S2" (remaining gap). Use only the supplied fastening elements. Shorter screws will lead to damage of the clamp arm.

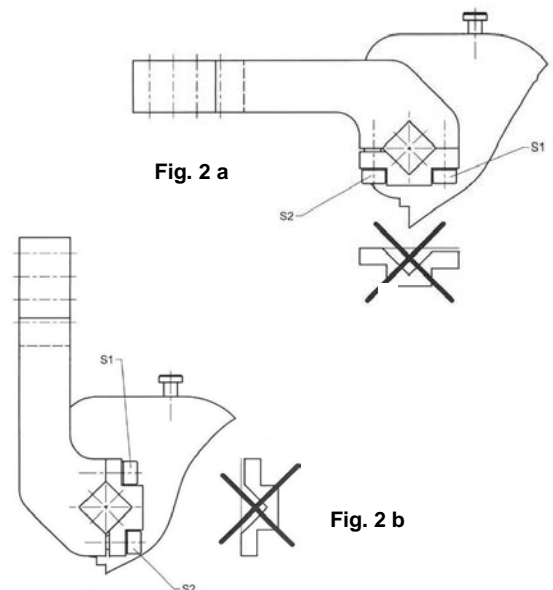


Fig. 2 a

Fig. 2 b



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Clamp arm versions

A10	A50	A60
M 6 x 16	M 6 x 16	M 6 x 20

Clamp arm in steel version:

ScREW 12.9
Tightening torque 8.7 Nm
Conical spring washer DIN 6796-6-FSt.

Clamp arm in aluminum version:

ScREW min. 8.8
Tightening torque 8.7 Nm
Conical spring washer DIN 6796-6-FSt.

3.2 Inductive position sensing (T12)

Connect sensor per electrical diagram to control line by inserting connector "C" and tightening connector coupling nut.

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

Function of the integrated LEDs is as follows:

green..... system current
red..... clamp closed
yellow..... clamp open.

4. Adjustment of Vario Power 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 Vario Power Clamp is in operation. Before operations are started the air supply must be shot off.

- Tighten contour piece on clamp arm.
 - Close clamp. The toggle lever must move to upper dead centre position. The release pin "P" is in extended position.
 - Determine the tolerance between clamp arm/contour piece and workpiece.
 - Open clamp.
- a) Softtouch adjustment
Offset the tolerance to 0 mm (!) by adding required shims (see Fig. 3). Please note the OEM project specifications!
- b) Adjustment with preload
Offset the tolerance to +0.3 mm by adding required shims.

Close clamp. The toggle lever now moves into the upper dead centre position and the adjusted clamping force is achieved.

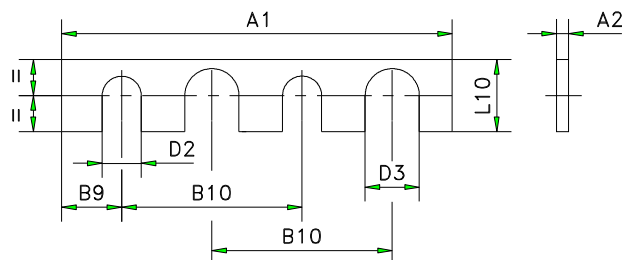


Fig. 3: Shims - example

Abstimm- platte Nr.	A1	A2	D2	D3	B9	B10	L10
AP 4005		0,5					
AP 4010	42	1,0	6,5	7	6	20	12,4

Subject to technical modifications.

5. Release of toggle

When the toggle lever is in the upper dead centre position, the clamp may be mechanically unlocked and thereby opened by operating pin „P“.

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. Changing the opening angle

The opening angle is steplessly adjustable in the range of 10° to 135°. Changing the opening angle adjusts the pneumatic end of stroke cushion and the position sensors automatically. The standard opening angle is 135°.

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° - 135° (APH2... max. 105°), see scale at the housing.
- Mount screw "A" in the cylinder bottom.

Attention: Max. opening angle for APH2 = 105°!

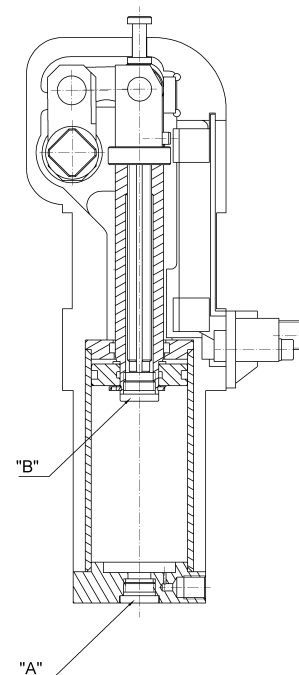


Fig. 3: Changing the opening angle



7. Changing of limit switch cartridge

- Remove limit switch cartridge by loosening screw "D".

8. Changing of clamp arm

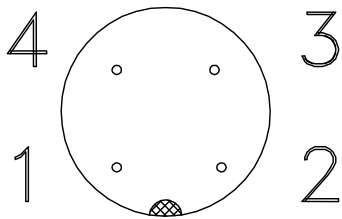
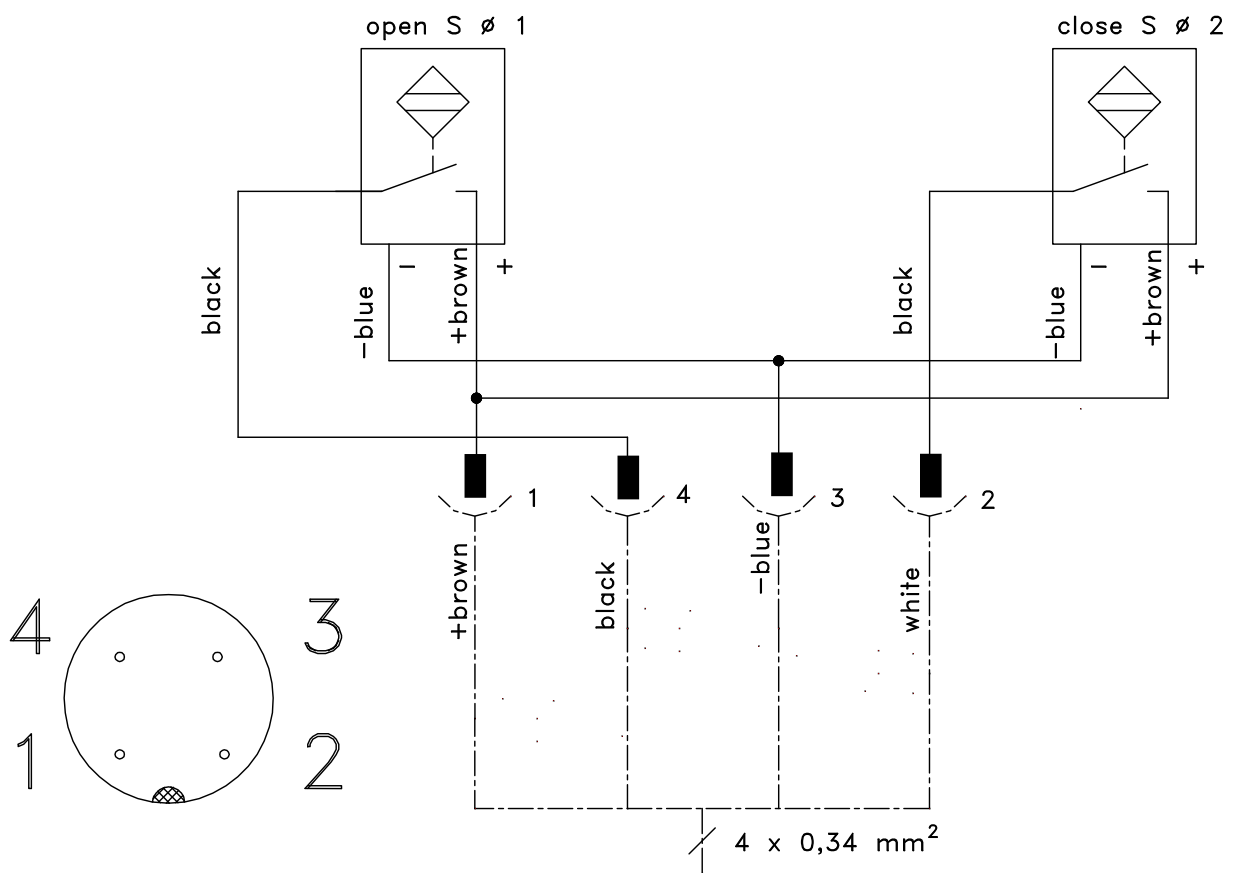
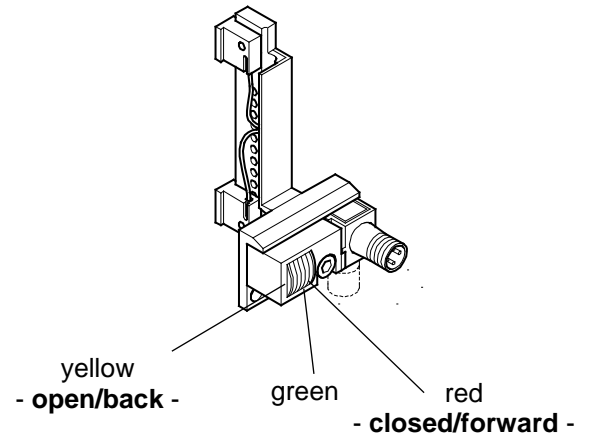
To avoid warping of the square-section shaft, it must be ensured when changing the clamp arm that fixing screw "S1" (zero opening between cap and arm body) is tightened first, followed by the second fixing screw, "S2" (see fig. 1).

Recommended torque = 8.7 Nm

9. Maintenance

Bearings and wear faces on the Vario Power 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 Vario Power Clamp mechanism.



Technical Specifications

Inductive switch (Standard version)

Short circuit proof

Rated voltage 10-30 V

Working current 32 mA (one initiator connected with PLC)

Closer PNP exit



Subject to technical modifications.

26.01.2021