

### 1. Description

The Multi Power Cylinder is a high-power tool designed as an engine for tasks in forming, clamping and positioning in the processing of sheet metal. It consists of a pneumatic cylinder and a toggle lever mechanism inside the front housing. The housing has got mountings at the front and sides.

Optionally, the Multi Power Cylinder is equipped with an inductive monitoring for both end positions.

The working stroke of the Multi Power Cylinder divides into pre-stroke and power stroke. During pre-stroke, the system works similar to a pneumatic cylinder, so the power of the pre-stroke matches the one of a pneumatic cylinder with the same cylinder diameter:

	Power of the pre-stroke at 6 bar	Clamping power of the power stroke at 6 bar
MZ 40	0.7 kN	4 kN
MZ 63	1.75 kN	10 kN
MZ 80	2.8 kN	25 kN
MZ 100	4.5 kN	40 kN
MZ 140	8.5 kN	60 kN

Size MZ 40 – 80 with anti-rotating function, tolerance  $\pm 0.2^\circ$ .

In the end position the integrated toggle lever mechanism operates a force intensification of appr. 1:8, so that the above clamping powers are reached with a power stroke of appr. 6 – 8 mm. In version „V“ the end position is mechanically locked.

The locking mechanism of the Multi Power Cylinder generates a dynamic pressure in the starting position, whereby a deviation of approx. 0.5-2 mm can arise (depending on product). However, the position is reached in the depressurized state or can be achieved with a small force on the piston rod (about 15% of the cylinder force).

### 2. Safety

The Multi Power Cylinder 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 Multi Power Cylinder 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 Multi Power Cylinder

- Assembly of the Multi Power Clamp with 4 screws at the cylinder head or the housing sides.
- Mounting of the adapter or tools at the receiver of the piston rod.
- Connect to supply air between pneumatic control valve and clamp (connections „N“).

**Caution:** The working pressure for control lines is max. 6 bar. Exceeding this pressure can destroy the toggle lever mechanism.

**Caution:** For fine adjustment of speed of clamping process, the use of external directional flow control valves is recommended.

#### A. Inductive position sensing (T02)

- Position the electrical coupling on connector "C" in accordance with the electrical design of the Multi Power Cylinder and screw it tight.

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

Function control with integrated LED as follows:

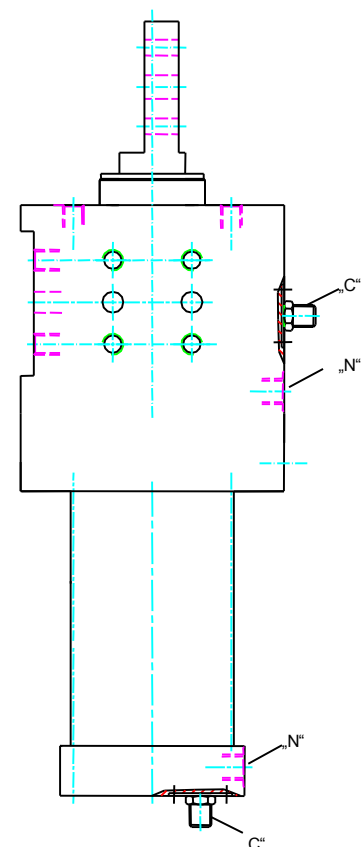
green .....operation voltage  
yellow .....cylinder up  
yellow .....cylinder down

### 4. Replacement of limit switch cartridge

- Remove limit switch cartridge by releasing the fixing screw.
- Set new limit switch cartridge and assemble. Check the function of the switches.

### 5. Maintenance

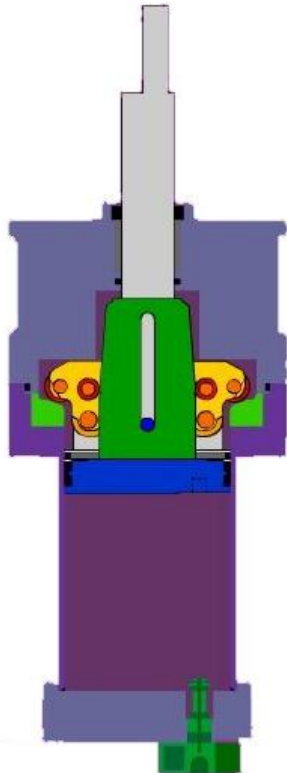
The Multi Power Cylinder is fitted with a view to application in series production with low-maintenance bearings and guides. Because of the closed structure of the retractable pin cylinder no special maintenance is necessary. Cleaning with high-pressure steam or dry ice may damage the Multi Power Cylinder.



# Multi Power Cylinder

## Function diagram

MZ...

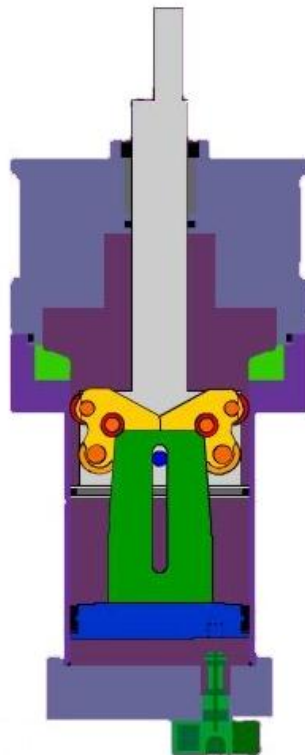


### Power stroke

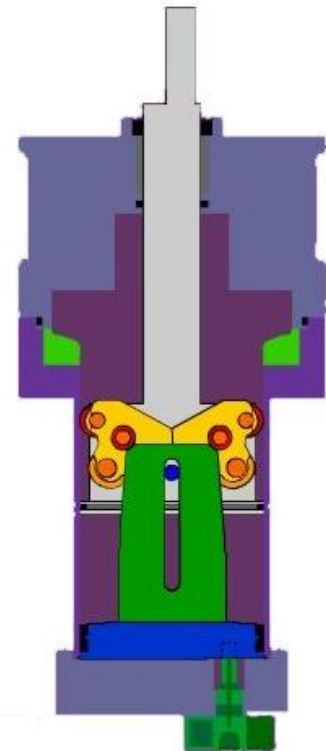
Mechanical power gear ratio by toggle lever mechanism, which operates a force intensification of appr. 1: 8 in the end position

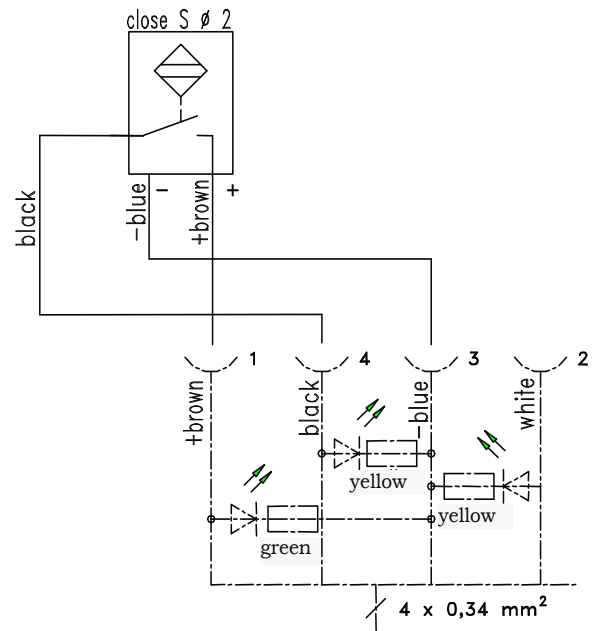
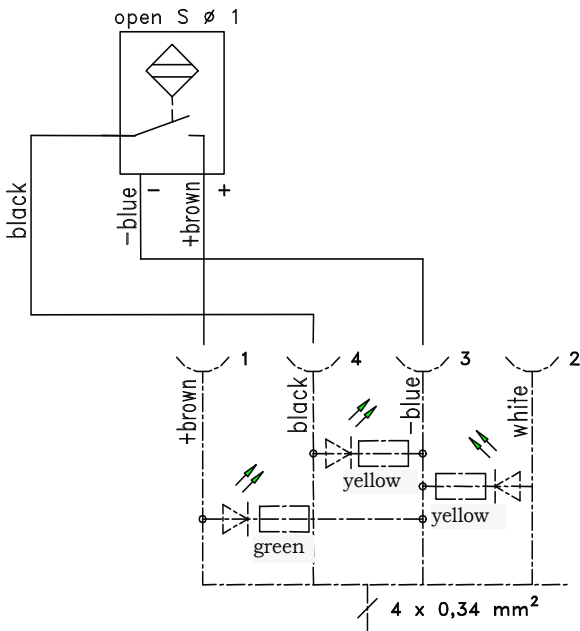
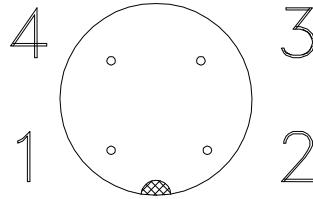
### Pre-stroke

The power is comparable to the one of a pneumatic cylinder



### Starting position



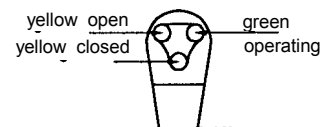


Electrical data at voltage up to 30 V =

Resistance demand 3 A  
 Lamp demand 1,5 A  
 Inductive demand 3 A

Protection class IP 67

Arrangement of the LED



**Angle coupler with 3 LED**  
**WK 4 - 05**