



## Multi force cylinder Pneumatic cylinder with mechanic power transmission

- For high traversing forces, as e.g. when stamping, embossing or forming sheet metal components are required ( $> 10$  kN), hydraulic or electric servo axes are used often..
- Problem:
  - Hydraulic drives are expensive and very complex with the necessary additional units
  - Servo axes are also expensive and require complex control technology
  - Simple pneumatic cylinders are not suitable for installation space

The TÜNKERS Multi-force cylinder takes advantage of the fact that the force is mostly needed only in the last millimeter.

- Infeed movement with very compact direct-acting pneumatic cylinder with normal cylinder force (= pressure x area)
- In the end position, the cylinder acts on a toggle / wedge mechanism and thus generates a force increase of approx. 1: 8 to 1:10 for the forming task

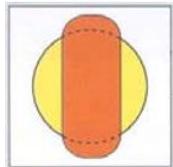


# Multi-force cylinder - Technical information

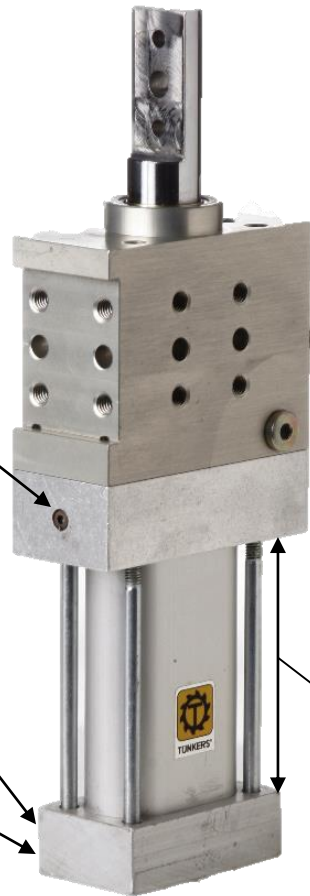
Enclosed housing  
providing mounting  
options on three sides

↑  $F_{max.}$   
Compressive force up to 60KN

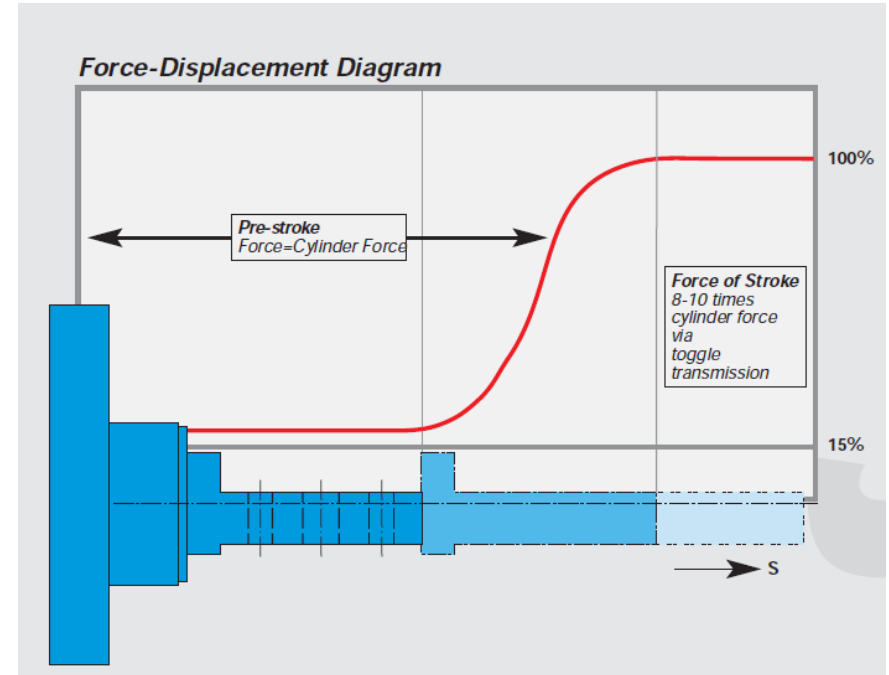
Option:  
Inductive sensor

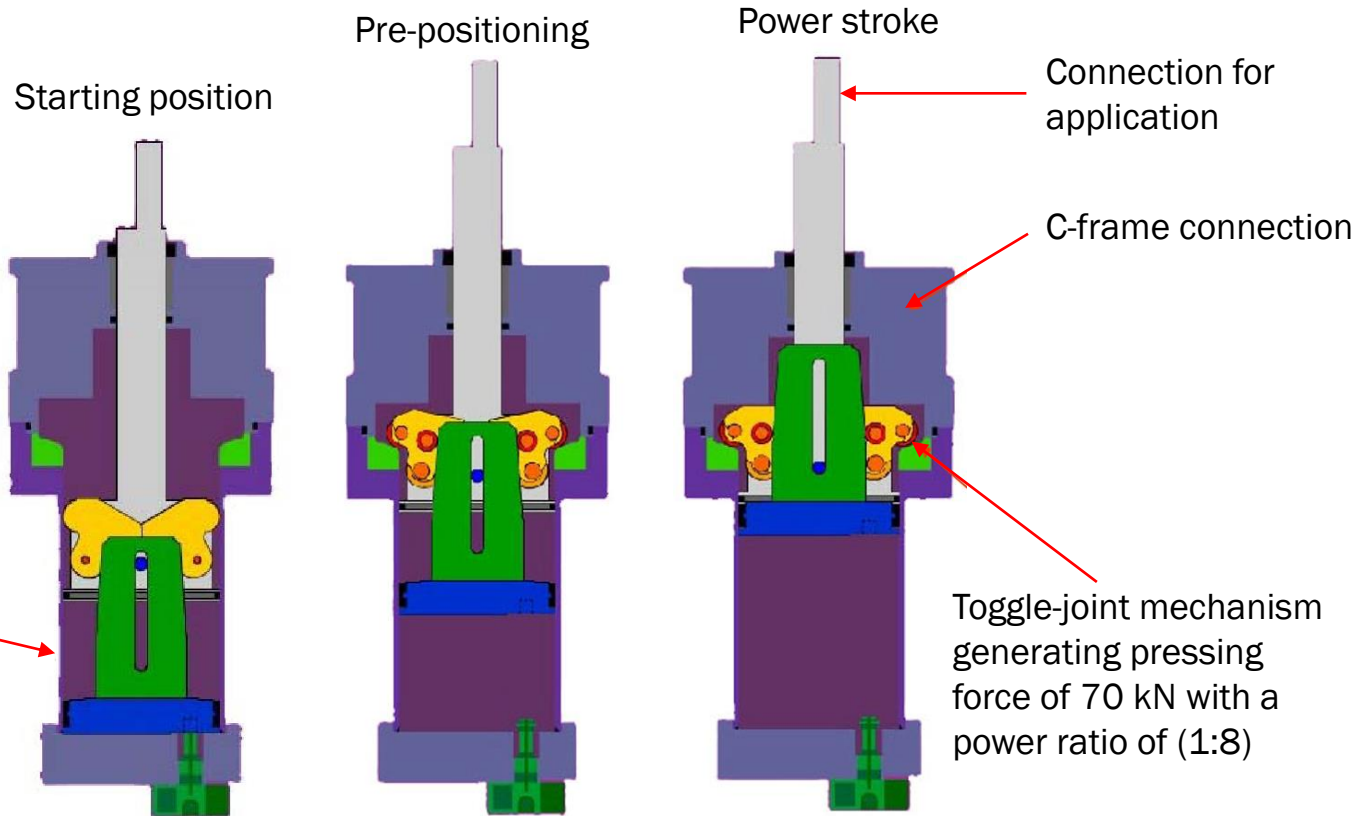


Oblong-shaped flat  
cylinder (Size 40, 63, 80)



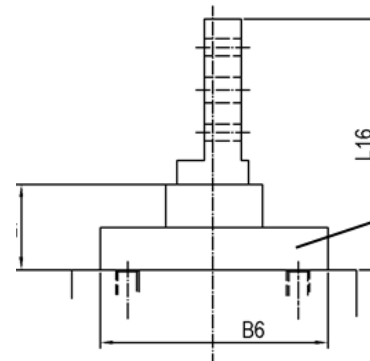
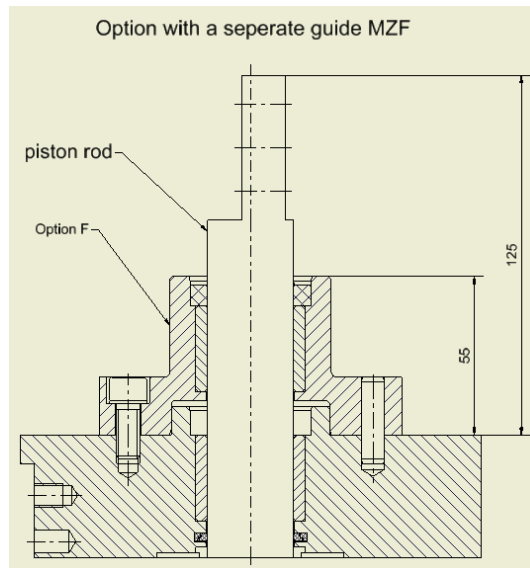
Cylinder stroke 30-200mm





## Optional: with separate guide F.

- For a stroke of more than 100 mm, the separate guide is mandatory, as the internal guide is not designed for long distances. If an external guide is used by the customer, the separate guide F must be avoided, otherwise the system is overdetermined
- Up to a stroke of 100 mm, the separate guide can be selected at its own discretion



### **Attention!**

Side forces may not operate on the piston rod.

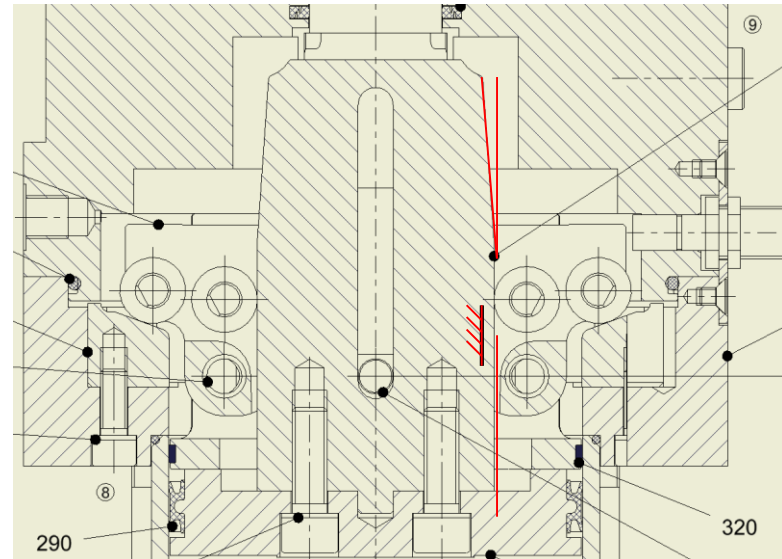
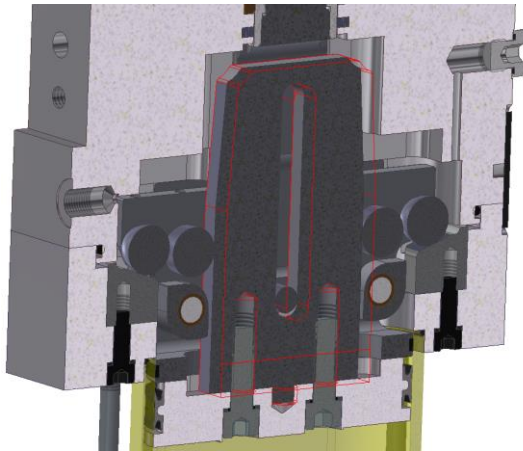
Additional guide "F" is necessary for strokes > 100 mm.


### **Option:**

Additional guide "F" is recommended for strokes < 100 mm.

## Optional: with locking V in the end position

- The optional locking mechanism is realized by means of an internal support plate (see illustration on the left, marked in red)
- Without an optional locking, the support plate does not have a horizontal contact surface
- Non-locking multi-power cylinders are usually used for forming.
- For clamping and infeed applications, the option V is used. To lock the MZ, the support plate is provided with a horizontal contact surface (see illustration on the right).
- The angled start-up surface serves, among other things, for the generation of forces



 Horizontal

- Pneumatic cylinder with mechanical power transmission, which multiplies the cylinder force by a factor of 8 in the end position
- Basic body in aluminum
- Transmission mechanism in steel design
- Pneumatic drive with flat cylinder and round cylinder
- Power transmission by wedge mechanism for defined power stroke

	<b>MZ 40</b>	<b>MZ 63</b>	<b>MZ 80</b>	<b>MZ 100</b>	<b>MZ 140</b>	<b>MZD 80</b>
Clamping force of the power stroke (kN)	4	10	25	40	60	9
Power stroke (mm)	6	6	6	6	6	15
Pre-power of the pre-stroke (kN)	0,7	1,75	2,8	4,5	8,5	2,4
Piston Ø	40	63	80	100	140	80
Dimensions (l x w x d) (mm)	(265+ str.) x 100 x 45	(320+ str.) x 160 x 45	(420+ str.) x 200 x 62	(494+ str.) x 180 x 165	(647+ str.) x 250 x 232	(404+ str.) x 180 x 120



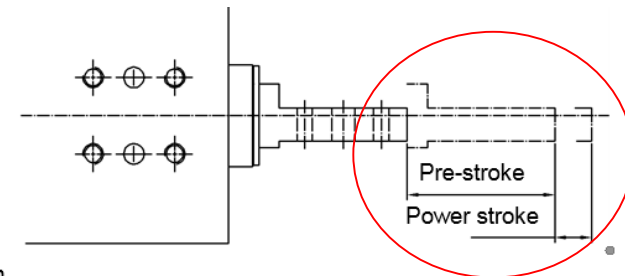
## Stroke specification

- The length specification in the type designation applies only to the stroke (pre-stroke). In addition, the 6 mm power stroke is always added. For a declared stroke of, for example, 120 mm, the total stroke to be considered is 126 mm.

### Ordering example:

MZ F 40 V 120 A12 T02

MZ:	Type
F:	<b>Optional:</b> with additional guide
40:	Piston Ø
V:	<b>Optional:</b> with lock
120:	Stroke
A12:	Version
T02:	Sensing system



**Pre-stroke:** min 15 mm

**Standard pre-strokes:** 50, 100, 150 mm  
(power stroke of 6 mm not included)

Further special strokes up to a maximum of 300 mm on request.

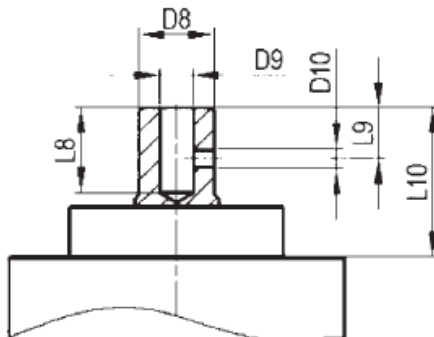
\*Tolerance for dowel holes  $\pm 0.02$ , for threaded holes  $\pm 0.1$ .

Medium: Air, max. 6 bar; operation permitted with oil-free air.

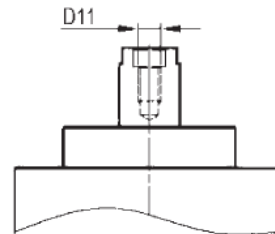
# Multi-force cylinder MZR 40...63

- Cylinder with integrated force transmission for high clamping and locking force in the end position
- Main body and transmission mechanism made of steel
- Pneumatic drive mechanism with circular-section cylinder
- Operating pressure: 4 to 6 bar
- By means of wedge mechanism for defined power stroke
- Stroke: 50 to 300 mm

**Configuration B** with dowel hole



**Configuration G**  
with thread



Other piston rod adaptations  
available on request



## Thank you for your attention

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