



## Contact

general part operating manual

If you have any questions regarding our products, their handling or operation, please contact us stating the type and 5-digit commission number.

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Our telephone exchange will connect you week-days between 7am and 5 pm directly to your product expert

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telefax      ++49 - (0)7745 / 1512  
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In case of an emergency you can contact us 24 hours on

mobile        ++49 – (0) 173 / 31 33 744

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A small part of our solutions you will find on our homepage

[www.mafag.de](http://www.mafag.de) or [www.mafag.com](http://www.mafag.com)

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## Safety advice

### safety advice for handling of pneumatic/hydraulic products

Due to the technical nature of our pneumatic and hydraulic products there are several precautions to be taken. Even without any malfunctions there are dangerous situations which can lead to severe injuries or even to the death of a person. Particularly handling with equipment under pressure is restricted to well trained personnel which has to be familiar with safety advices and manuals before starting work on the product.

The following list points at the possible dangers of each use:

Risk of injury because of **missing safety devices**

- Ear protection from loud exhaust noise
- Eye protection from parts in discharging media
- Safety shoes, - clothes and - helmets when mounting

Risk of injury because of **incorrect use**

- Unintended motion
- Disrespect of maximum pressure
- Disrespect of ambient restrictions
- Unintended release of a safety device (quick closing, e.g.)

Risk of injury because of **moving device**

- Staying in range of operation

Risk of injury because of **improper release of pressure ports**

- Defective hearing caused by discharging noise
- Injuries/burnings caused by hot or aggressive media

Risk of injury because of **false disassembly** of

- Spring units or built-in pressure springs
- Actuator parts still under pressure

,with malfunctions due to wear or abuse of products there are additional dangers with

**Risk of injury** caused by:

- Loose connections between piston and piston rod
- Broken bolts on head piece or cap of cylinders
- Bursting cylinder tubes or housings
- Released pretension devices on spring units
- cracked parts under pressure

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# pneumatic Cylinder

## general operating instructions

### Seals & Lubrication

MAFAG pneumatic-cylinders are equipped with easy running seals designed to work with dried, oil-free compressed air. During operation these seals do retain the lubrication film of high-performance pneumatic grease applied when assembled. This initial greasing will last for the period between maintenance and no additional lubrication while operating is necessary (see compressed air requirement).

### Pressure load

With no specific data mentioned in the technical specification our pneumatic cylinders are designed for a maximum working pressure of 10 bar g / 145 psi.

### Temperature range

MAFAG-cylinders with standard seal materials are capable of working under temperatures between  $-30^{\circ}\text{C}$  and  $+90^{\circ}\text{C}$  /  $-22^{\circ}\text{F}$  and  $+194^{\circ}\text{F}$ . Different materials for low-temperature or high-temperature applications are available as special designs.

### Compressed air requirements

A high durability, operational reliability and the largest possible working safety are very much determined by the quality of the compressed air. It is therefore essential to strictly follow the below mentioned requirements. The compressed air has to be non-aggressive. All condensates have to be removed in a drier. Every drop of temperature after that drying must be avoided as this will cause further condensation. Condensation is the main reason for cylinder failure, destroying the lubrication film with wear and corrosion as a result. With very low temperatures condensation is also responsible for frost damages. Furthermore small parts in the compressed air should be held back by appropriate filters.

### Initial operation

Before connecting the cylinder to the pressure line all impurities must be removed from the piping. When mounting the pressure connections it is most important to securely tighten these connections without any leakage. Only well trained personnel with product knowledge is authorized to operate the cylinders. Refer to the safety instructions for possible risks of health hazard and only then take the cylinder into service.

### Wear & Maintenance

If, after longer use, there are objections regarding the function or tightness of the cylinder or when a maintenance stop is planned, it is recommended to fully disassemble the cylinder and clean all parts. Check all the components of the cylinder for wear or damages. There are seal kits for all cylinders built by MAFAG and every part of the cylinder is available as a spare part. Before assembling all running surfaces must be covered with a thin lubrication film of high-performance grease providing a long lasting lubrication and wear protection. This grease has to be compatible with the sealing material. As already mentioned the personnel which carries out the work has to be well trained with good product knowledge.



## Technical data

Pneumatic stroke-actuator as per A2-146.799/B / KOSAIR 2004

Commission No: 98028  
Article No: A15067990106  
Type: F 150-106 DdKG/XP/Spez.  
As per drawing: A2-146.799/B

### **Pneumatic stroke-actuator double acting,**

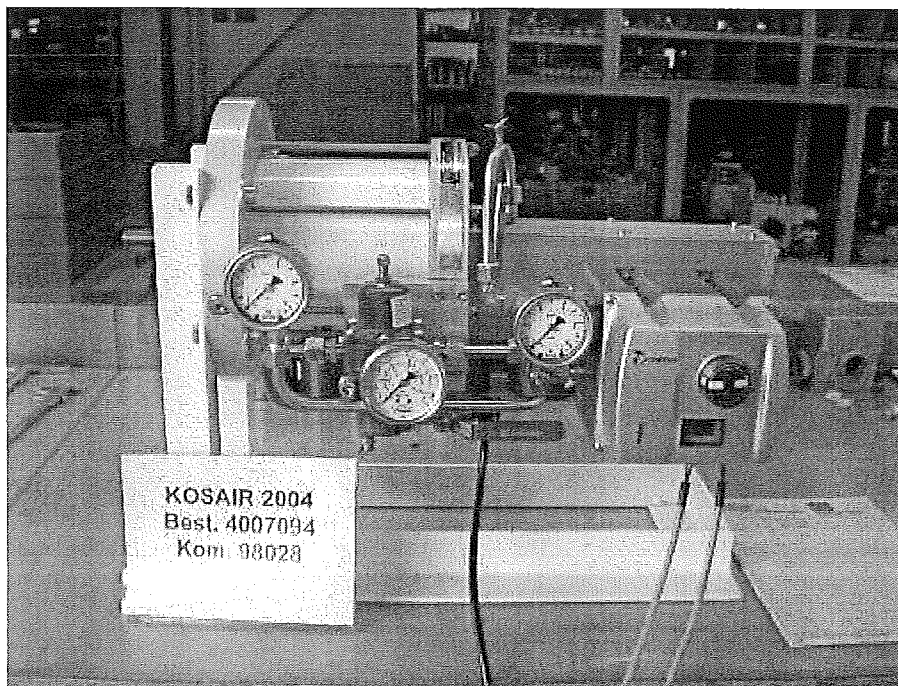
type F flange mounting, special design  
piston diameter 150mm, stroke 106mm,  
piston rod with thread M20x1,5 50mm long,

complete with electro-pneumatic positioner,  
input signal 4-20mA and position transmitter 4-20mA,  
4mA = piston rod out,  
20 mA = piston rod in,  
with 2 pcs mechanical microswitches OMRON D2VW-5  
manufacture METSO Typ ND 9103 HNT K05,

complete with piping, 2 gauges at the cylinder pressure ports,  
pressure reducer with gauge, filter and shut-off valve,  
pressure port thread 1/4"-18NPT,

working media dried, oil-free air max. 6 bar g, min. 3,5 bar g,

TAG signs as per project- / order specification  
scale on gauges 0-10 bar  
Mat.No. 10108817







# Herstellereklärung manufacturers declaration

auf Grundlage der EG-Maschinenrichtlinie **98/37/EG, Anhang IIB**  
according to the EC Machinery directive **98/37/EC, Annex IIB**

für Maschinen der Bauart  
for machinery of type

pneumatische und hydraulische Arbeitszylinder  
pneumatic and hydraulic cylinders  
pneumatische und hydraulische Schwenkantriebe  
pneumatic and hydraulic swivel actuators  
pneumatische und hydraulische Sonderlösungen  
pneumatic and hydraulic specific solutions

erklärt der Hersteller  
declares the manufacturer

**MAFAG GmbH**  
**Maschinen- und Apparatefabrik**  
**Rheinauer Strasse 2**  
**D-79798 Jestetten**

dass die Maschinen in Übereinstimmung mit der EG-Maschinenrichtlinie 98/37/EG entwickelt, konstruiert und gefertigt wurden.

that the machinery is developed, designed and manufactured in accordance with the EC Machinery directive 98/37/EC.

Folgende Normen finden Anwendung:  
The following standards are used:

EN 60204-1	Sicherheit von Maschinen, Teil 1: Allgemeine Anforderungen Safety of Machinery, Part 1: General Requirements
EN 292	Sicherheit von Maschinen, Grundbegriffe, allgemeine Gestaltungs- Leitsätze Safety of Machinery, basic concepts, general principles for design
EN 294	Sicherheit von Maschinen, Sicherheitsabstände Safety of Machinery, safety distances

Hinweis: Die Einhaltung der EN 294 bezieht sich nur auf den montierten Berührungsschutz, sofern dieser zum Lieferumfang gehört. Für die vollständige Erfüllung der EN 294 ist der Anlagenbauer verantwortlich.

Note: The compliance with EN 294 refers to the fitted contact safety device only, as far as it is part of the extent of delivery. The total compliance with EN 294 is the system manufacturer's responsibility.

Die Inbetriebnahme der Maschine ist so lange untersagt, bis festgestellt wurde, dass die Maschine, in die die Maschine eingebaut werden soll, den Bestimmungen der Maschinen-Richtlinie entspricht.

The setting in operation of the machinery is forbidden until there is conformity with the Machinery directive for the complete assembly in which this machinery should be mounted.

Für den Hersteller  
For the manufacturer

Max P. Schweizer  
Geschäftsführung / CEO