

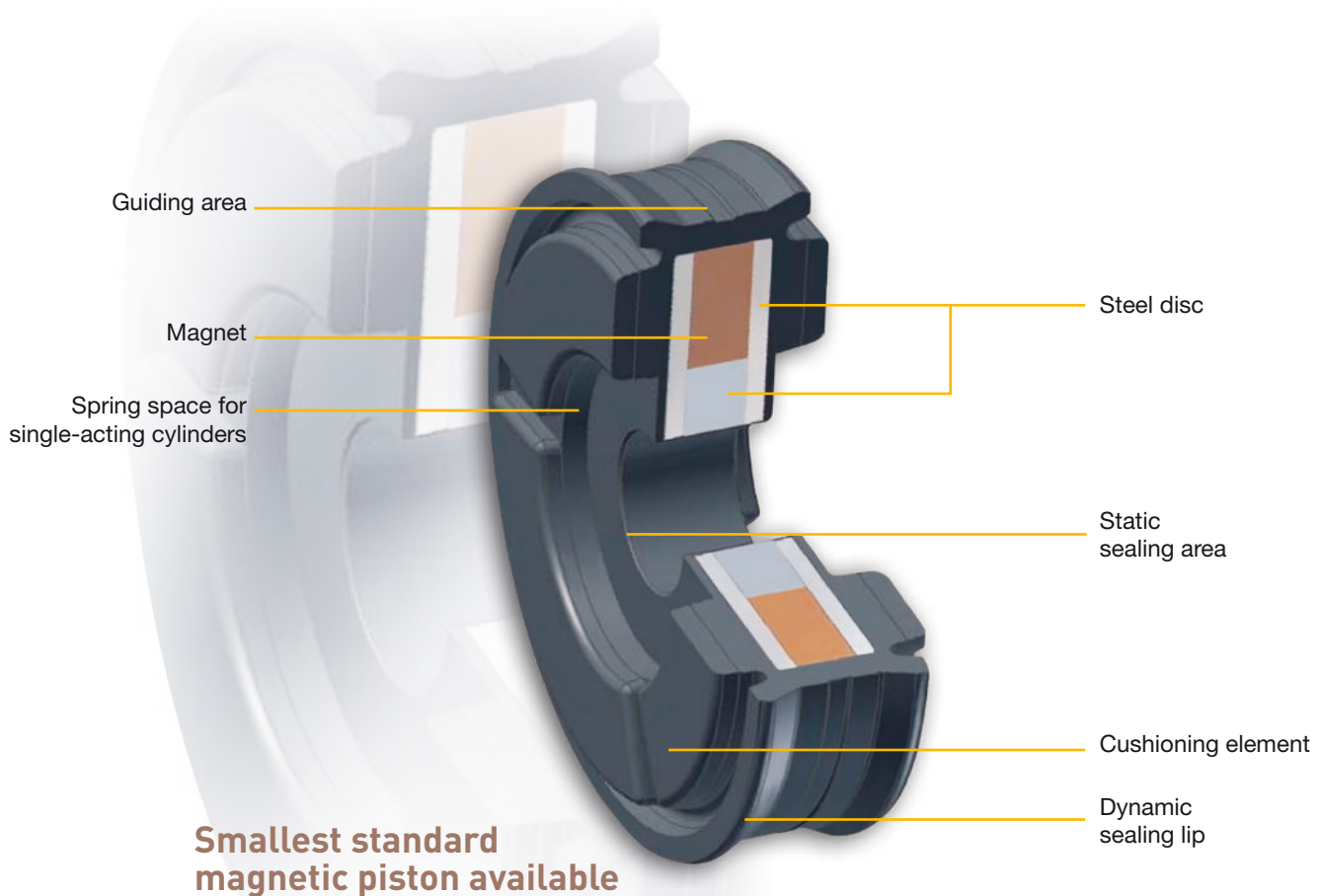
## DR magnetic piston

Compact – Magnetic – Sophisticated

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding

# DR Magnetic piston

Compact – Magnetic – Sophisticated



**Smallest standard magnetic piston available**

**One-piece solution**

**The newly developed elastomer complete piston DR with solenoid interrogation and integrated cushioning is specifically designed to meet the requirements of modern pneumatic cylinders.**

**The extremely slim complete piston is suitable for use in a wide range of different cylinder types, and with various sensors.**

**The combination of all functionalities – sealing, guiding, cushioning, interrogating – in a single component assures easy assembly and, in addition, offers handling and logistic cost benefits.**

## Overview of product properties

- Double-acting elastomer complete piston with magnetic interrogation and integrated cushioning
- Suitable for cylinders according to DIN ISO 15552 (pneumatic cylinders) and DIN ISO 21287 (compact cylinders)
- Interchangeable with standard complete piston DP (without solenoid interrogation)
- Low axial assembly height
- Reduced friction due to new friction-optimized NBR compound
- Low risk of leakage due to special manufacturing technology (composite part)



# Applications

## „Plug and Run“

DR magnetic pistons combine the functionalities of sealing, guiding, cushioning and interrogating in a single component. Even the requirement for static sealing at the piston rod is met by this design. The use of a single component not only simplifies and accelerates the assembly process but also reduces logistics costs, with regard to warehousing and receiving inspections, for example.

## Wide range of applications

Due to their optimised, time-tested sealing geometry and extremely low assembly height DR magnetic pistons are suitable

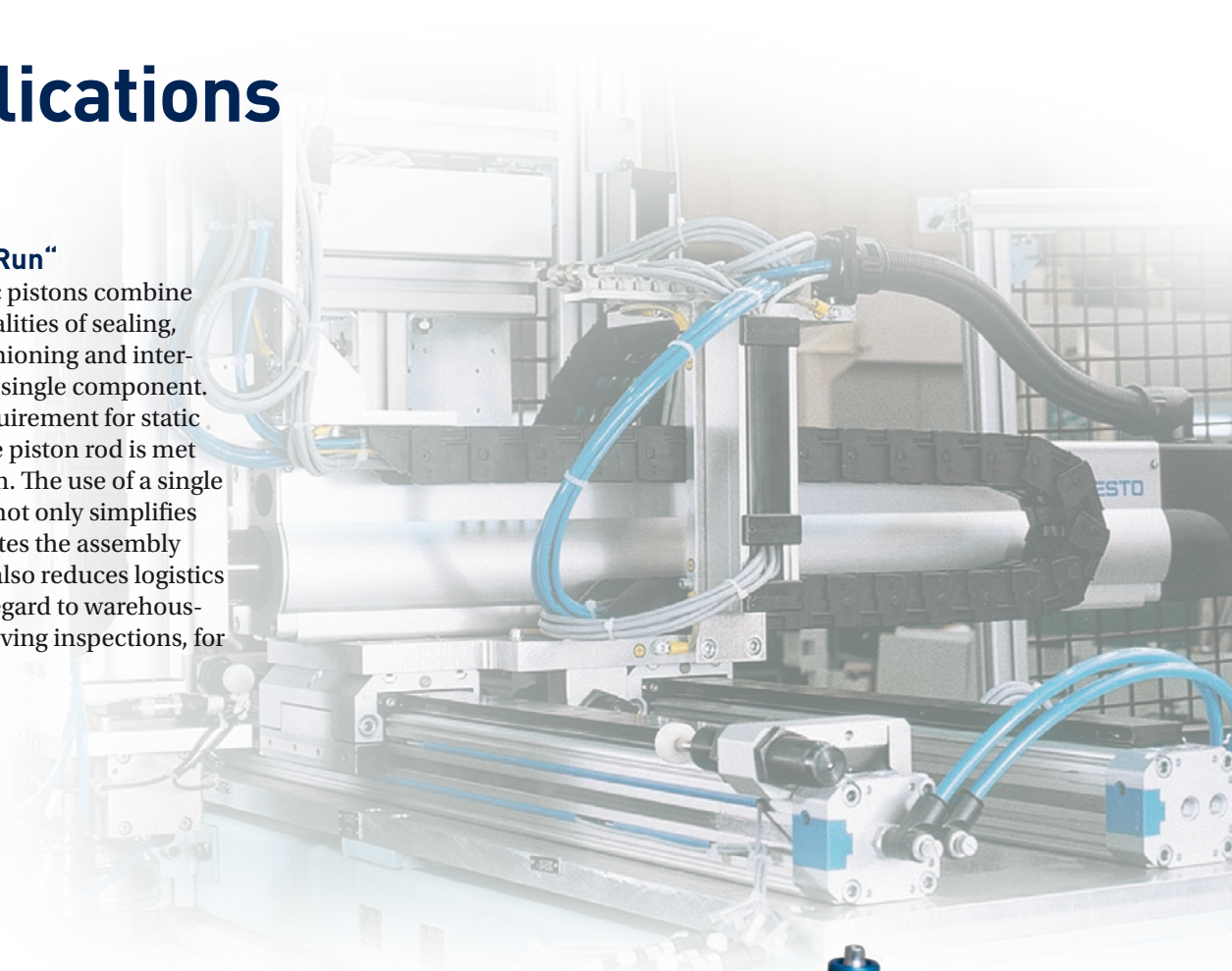
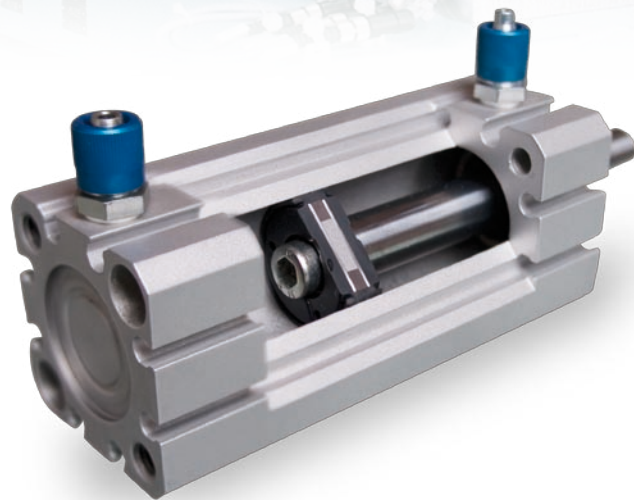
- for use in pneumatic cylinders according to DIN ISO 15552 and in compact cylinders according to DIN ISO 21287
- for double- as well as for single-acting cylinders not subjected to high lateral forces, long strokes or buckling stress
- for diverse uses such as applications in automation, the packaging, foodstuffs or automotive industries
- for different functional requirements: positioning, lifting, arranging, assembling, gripping, clamping, pushing, stopping, transferring, sorting, etc.

Due to the identical design of the new magnetic piston DR and the time-tested standard complete piston DP existing cylinders can be retrofitted easily and quickly.

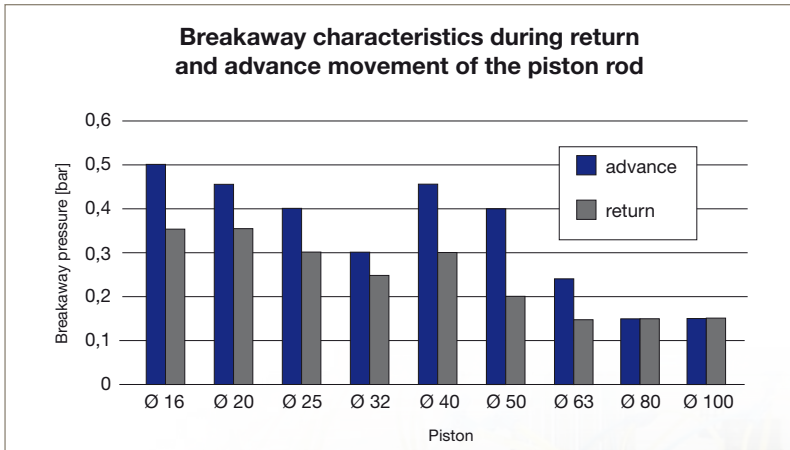
## Customer benefits

- Low assembly height of the magnetic piston enables small cylinder designs
- Only one piston for a wide range of cylinder designs

- Combinations of several functionalities in a single component: sealing, guiding, cushioning, interrogating
- Enables use of different types of sensors
- Presence of inside seal facilitates assembly
- Reduced handling and assembly times
- Logistic cost savings
- Long service life



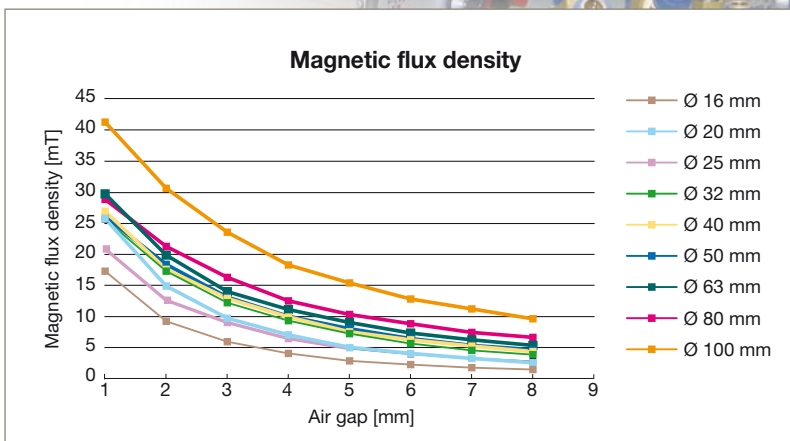
# Test Result



(Lubricating grease: Fuchs Renolit HLT2)

## Low breakaway friction

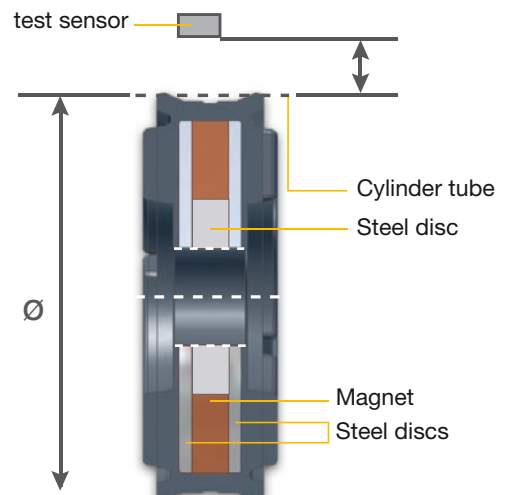
The diagram shows the piston's breakaway characteristics after 72 hours of rest. In case of shorter periods of rest, breakaway friction is reduced by up to 50 %. The design of the mating surface as well as the use of a suitable lubricating grease have a significant effect on breakaway friction as well.



## Reliable position interrogation

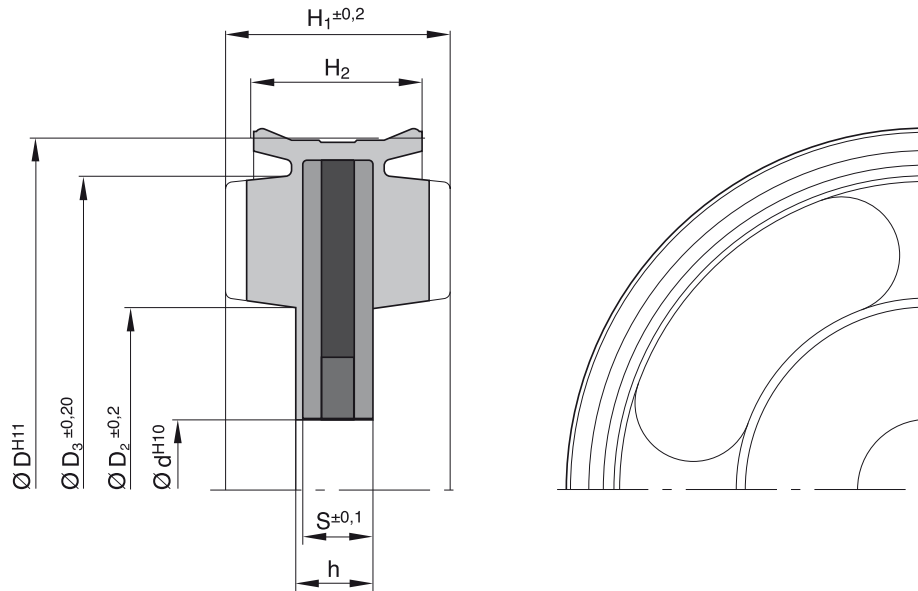
The properties profile of the magnet's material allows different types of sensors to be used (e.g. Hall sensors, Reed switches). However, it is important to note that changes in temperature, sensor distance and/or sensor sensitivity may critically affect the switch-on and switch-off points. For this reason, trials based on the intended field application are always required to confirm suitability, and safety margins should be considered.

## Test installation



# DR Magnetic piston

with integrated cushioning



## Available dimensions

D	d	H <sub>1</sub>	H <sub>2</sub>	S	h	D <sub>2</sub>	D <sub>3</sub>	Order code
16	4,5	6,5	5,1	2,65	2,95	6,9	13,5	DR 1604 Z4004
20	6	7,5	6,1	3,65	3,95	10,1	17,5	DR 2006 Z4004
25	7	9	7,6	3,65	4,15	11	21,9	DR 2507 Z4004
32	8	10,9	8,7	5	5,5	15	27,9	DR 3208 Z4004
40	8	11,9	9,7	5	5,5	20	35,7	DR 4008 Z4004
50	10	13,8	11,6	6	6,5	26	45,6	DR 5010 Z4004
63	12	13,8	11,6	6	6,5	33,2	58,25	DR 6312 Z4004
80	16	15,9	13,7	7	7,5	34,8	75,4	DR 8016 Z4004
100	20	17,9	15,7	8	8,5	47	95,4	DR A020 Z4004

## Performance range

- Operating pressure: 10 bar
- Operating temperature: -20°C to +80°C (HNBR +120°C)
- Sliding speed: 1 m/s
- Medium: compressed air, lubricated as well as dry and oil-free (after initial lubrication during assembly)

## Assembly

The magnetic piston DR is connected to the piston rod by threading or riveting. The threaded connection should be secured against loosening. For operation in dry or oil-free air, a long-term lubricant must be used for the piston and cylinder.

## Materials

**Elastomer:**  
Standard compound is an NBR-based elastomer with an approximate hardness of 70 Shore A with vulcanised metal and magnetic disc.

**Magnet:**  
Plastic-bonded hard ferrite, axially magnetised.  
Flux density: < 40 mT  
(depending on air gap and nominal diameter)



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