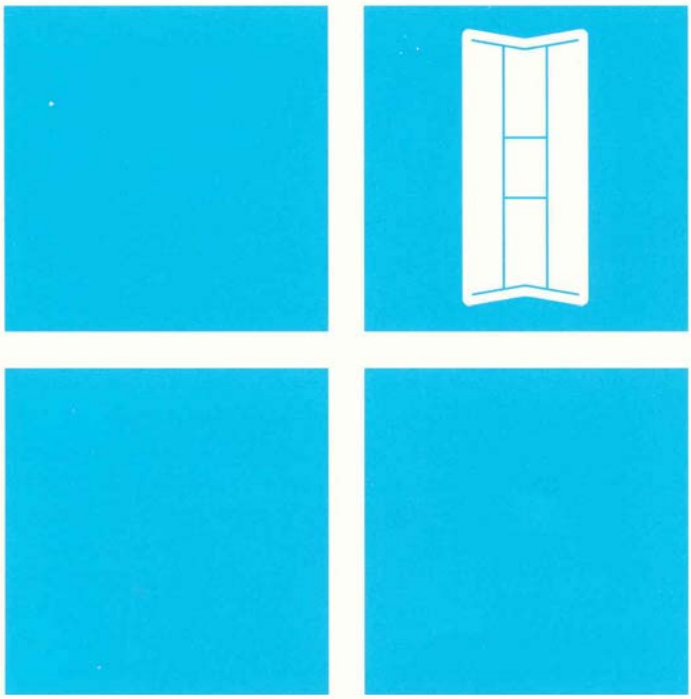
TI Group
Specialty Polymer Products

COMPLETE PNEUMATIC PISTON PK



Busak+Shamban

Description

Complete Pneumatic Piston PK is a ready-to-install piston for pneumatic cylinders. It consists of a metal back-up disc to which a double-sided sealing lip is vulcanised.

Complete Pneumatic Piston PK is supplied ready for installation. It is pushed onto the end of the piston rod and secured with a nut and locking element.

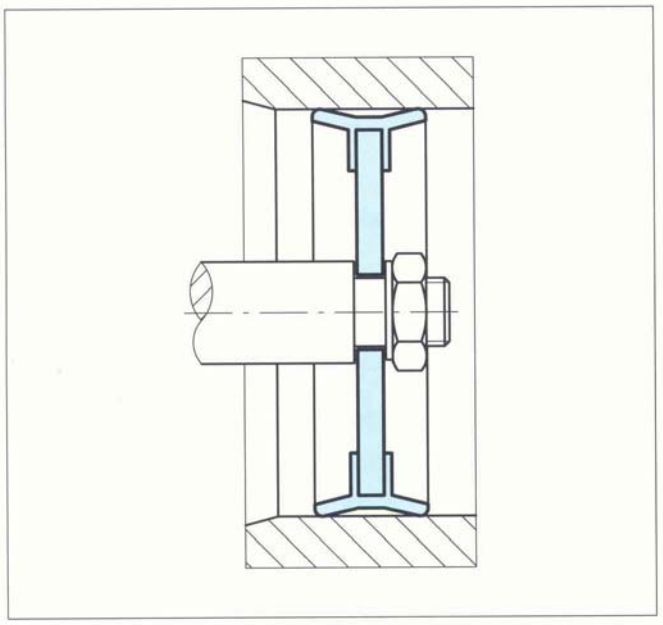


Figure 1 Complete Pneumatic Piston PK

Design

The outside diameter of the piston has a specially formed double-sided elastomer sealing face with two rounded sealing lip profiles. The outer surfaces of the metal body are sheathed with rubber as corrosion protection.

Method of Operation

The piston seals on both sides. The piston must be guided by the bearings of the piston rod. The back-up disc has a star-shaped profile on both sides. The chambers which are thus created provide additional damping for the cylinder at the end of its stroke.

Machined venting passages apply pressure uniformly to the complete piston during the piston return stroke so that the piston starts smoothly and without jerking.

The gap between the sealing lips must be packed with grease. This helps to prevent problems resulting from inadequate lubrication. It also enables the piston to be operated with oil-free dry air.

Advantages

- secure and simple installation without special installation tools.
- compact one-piece piston and seal design
- competitive construction.

Applications

Complete Pneumatic Piston PK is installed in double-acting pneumatic cylinders. The piston dimensions conform to ISO 3320.

Fields of Application

Operating pressure:	up to 1.2 MPa(12 bar)
Speed:	max. 1 m/s
Temperature:	-30°C to + 100°C
Medium:	Compressed air, oiled, dry or oil-free.

Materials

Seal profile
Wear-resistant acrylonitrile butadiene rubber (NBR) with lubricant additives, Shore hardness 70 Shore A.

Steel disc
Material: 1.0315, fully sheathed

Design Instructions

Ensure that the protruding seal lips have sufficient clearance in the end positions at the cylinder bottom and cylinder head.

Installation dimensions

The permissible tolerance for the cylinder diameter D is H11, tolerance for the rod end diameter d is f8.

Surface roughness

The functional reliability and service life of a seal depend to a very great extent on the quality and surface finish of the mating surface for the seal.

Scores, scratches, pores, concentric or spiral machining marks are not permitted. Ideally, dynamic mating surfaces should be ground spiral-free.

The characteristics most frequently used to describe the surface microfinish R_a, R_z and R_{max} are defined in DIN 4762/ISO 4287/1 and DIN 4768. These characteristics alone, however, are not sufficient for assessing the suitability in seal engineering.

In addition, the material contact area M_r (previously percentage contact area t_p) in accordance with DIN 4762/ISO 4287/1 should be demanded. The material contact area is determined in each case by the specific profile form. This in turn is directly dependent on the machining process employed.

In the Busak+Shamban recommendations, the surface finishes are defined as follows:

Table 1 Surface roughness

Surface roughness µm	
Characteristic	**Mating surface Cylinder barrel**
$R_{max.}$	1.00 - 4.00
$R_{z\ (DIN)}$	0.63 - 2.50
R_a	0.10 - 0.40

The material contact area M_r should be approx. 50 to 70%, determined at a cut depth $c = 0.25 \times R_z$, relative to a reference line c ref. 5%.

Installation Instructions

Complete Pneumatic Piston PK is pushed onto the reduced piston rod end and secured with a locking element and hexagonal nut. The edges of the cylinder barrel must be chamfered or rounded. Before installation of the piston, initial lubrication must be carried out using a mineral oil-based grease.

Quality Criteria

The cost-effective use of seals and bearings is highly influenced by the quality criteria applied in production. Seals and bearings manufactured by Busak+Shamban are continuously monitored according to strict quality standards from material acquisition through to delivery.

Certification of our production plants in accordance with international standards EN ISO 9000 meets the specific requirements for quality control and management of purchasing, production and marketing functions.

Our quality policy is consistently controlled by strict procedures and guidelines which are implemented within all strategic areas of the company.

All testing of materials and products is performed in accordance with accepted test standards and specifications, e.g. random sample testing in accordance with DIN ISO 2859 part 1/ANSI/ASQC Z 1.4-1993/ MIL-STD- 105 E. Inspection specifications correspond to standards applicable to individual product groups (e.g. for O-Rings: ISO 3601/DIN 3771).

Our sealing materials are produced free of chlorofluorinated hydrocarbons and carcinogenic elements.

The 10^{th} digit of our article number defines the quality characteristics of the part. A hyphen indicates compliance with standard quality criteria outlined in this catalogue. Customer-specific requirements are indicated by a different symbol in this position. Customers who require special quality criteria should contact their local Busak + Shamban sales office for assistance. We have experience to meet all customer quality requirements.

Installation Recommendations

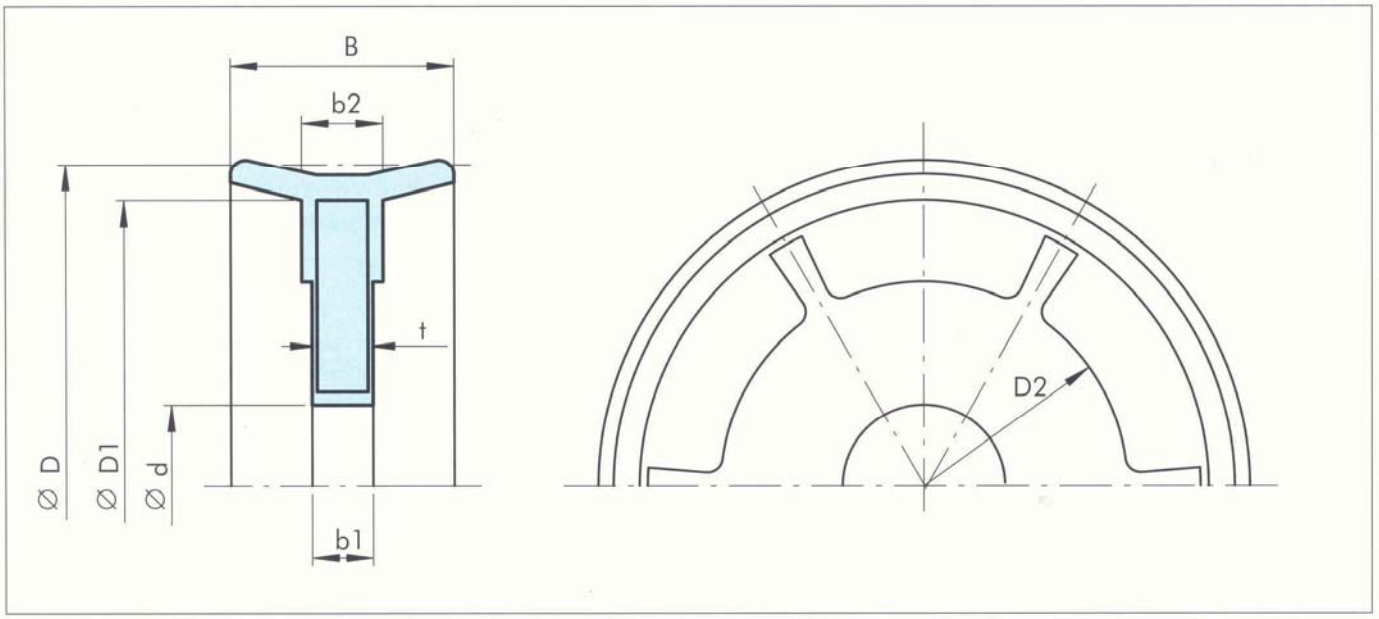


Figure 2 Installation dimensions

Table II Range of sizes

Bore diameter	Inside diameter	Ring width			Thick-ness	Diameter		Order No.
D H11	**d**	**B**	**b1**	**b2**	**t**	**D1**	**D2**	
32.0	8.0	15.0	3.6	6.0	3.0	27.5	16.0	AK0803215-N7MM
40.0	10.0	18.0	4.6	7.0	4.0	35.0	23.0	AK1004018-N7MM
50.0	10.0	18.0	4.6	7.0	4.0	45.0	25.0	AK1005018-N7MM
63.0	16.0	22.0	5.6	8.0	5.0	57.0	40.0	AK1606322-N7MM
80.0	16.0	24.0	5.6	8.0	5.0	73.0	55.0	AK1608024-N7MM
100.0	20.0	26.0	6.6	10.0	6.0	92.5	72.0	AK2010026-N7MM
125.0	20.0	26.0	7.4	10,0	6,0	116.0	90.0	AK2012526-N7MM
160.0	27.0	30.0	9,5	11.5	8.0	149,5	110.0	AK2716030-N7MM
200.0	27.0	35.0	12,0	15,0	10.0	183.0	150.0	AK2720035-N7MM

Sizes other than those listed above can also be manufactured on request.