PNEUMATIC STEPPING MOTOR BPS-IP

Operating instructions

May be used for ex-zones 0, 1, 2, 20, 21, 22

According to attached declaration of incorporation of the motor and the EC type-examination certificate of the sensors. The integrator has to apply in minimum the following directives and standards: 2014/34/EU, DIN EN ISO 80079-36.

Introduction

The purpose of these operating instructions is to familiarise you with the pneumatic stepping motor BPS-IP and its functions. These instructions contain safety information and notes about assembly, programming, operation and maintenance.

Machine safety

The BPS was classified as an incomplete machine according to Directive 2006/42/EC. The following risk factors must be taken into account when installing in a machine:

- Noise and vibration.

- Hot surfaces (depending on the installation, the surface may become> 70 ° C hot).

- Contact to rotating shaft end.

The entire machine may only be put into operation if a conformity assessment.

Technical data

Size	1620IP	2532IP
Hollow shaft possible	no	no
Protection class	67	67
Step angle (°)	3	3
Repeat accuracy	±9'	±9'
Max. moment of mass inertia$_1$ (kgm^2)	0,0042	0.01
Max. torque $_1$ (Nm) ±10%	3,3	10
Max. speed $_2$ (1/min)	24	20
Max. holding torque pressure less (Nm)	7	7
Max. holding torque 6bar (Nm)	20	60
Rotation control length cable $_3$	3 x 5m	3 x 5m
Max. FR under radial load only (kN)	1,24	1,75
Max. FA under axial load only (kN)	1,75	2,45
Air consumption (litre/turn)	0,75	3,31
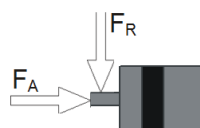
1 Test conditions: 6 bars, hose length 1 m, valve retardation 40 ms

2 Test conditions: 6 bars, matrix direct, valve retardation10 ms, without load

3 Direct output, PUR cable 5 m, EU design model test certificate No PTB 00 ATEX 2032

Installation dimension

The installation and connection dimensions can be found in the respective type drawing.

Function

The BPS-IP enables precise rotational movements to be performed in steps of 3°.

The stepping movement is achieved by pneumatic actuation of 3 pistons. Because of the self-locking function, the BPS-IP maintains its position in the event of a power failure and no step loss occurs (considering the holding torque).

For operation without a sensor unit, the BPS-IP continues to rotate internally if the spindle is mechanically locked.

Operating conditions

- Dried and filtered compressed air (5 μm) at max. 6 bars (indicated by valve manufacturer).

- Ambient temperature:
  stepping motor:-25°C to +70°C.

- Acids and alkaline substances may damage the motor.

For special operating conditions (temperature, contact with fluids etc), please contact your service partner to enable your particular application to be studied.

With the incorporated NAMUR sensors, the BPS-IP may only be used in ex- zones 1, 2, 21 and 22.

Repeat accuracy ±9' absolute with uniform load direction.

When changing the load direction, a load alternation of 50' must be respected under maximum load.

Protection class IP 67; the motor is sealed and may also be operated with fluids.

When mounted on sheet metal structures, motor vibrations may cause noise to occur.

Assembly

The motor can either be fitted from the front by means of the 3 threads or else using the 3 continuous bores.

Before fitting, we advise placing the BPS-IP under pneumatic pressure. This protects the transmission components when the motor shaft is tightened.

When assembling the transmission components (plate, wheels etc.), please make sure that the torque applied to the drive shaft does not exceed the indicated maximum.

The motor must be earthed.

After installation, check the connection of the motor and valves for absence of leakage.

Actuation

3 valves (3/2 way) are required for actuation. Operation with a flange-mounted matrix valve is not possible.
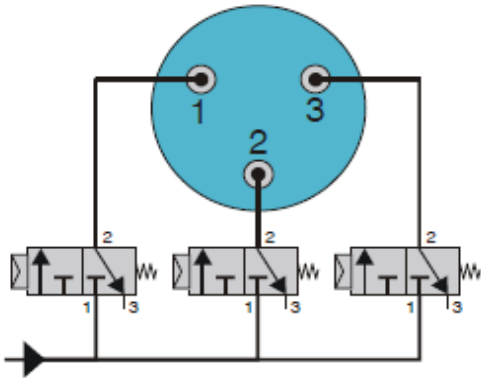
Programming

The BPS-IP is generally incorporated into a PLC (Programmable Logic Controller).

In the event of operation with sensors (option), these report the current position of the three pistons to the control.

Program modules for the Siemens PLC are available free of charge at www.baumitech.ch.

Choose the direction of rotation

The direction of rotation of the stepper motor is determined by the command sequence of the pneumatic control.

1-2-3 = Direction of rotation forward

3-2-1 = Direction of rotation backwards

Signal logic

Valve 1 on – Sensor 1 on - Valve 1off
= Step from 3°

Valve 2 on - Sensor 2 on - Valve 2off
= Step from 3°

Valve 3 on - Sensor 3 on - Valve 3off
= Step from 3°

If all valves have switched once, this results in an angle change of 9°.

Connection for rotation control

The NAMUR sensors which are used cannot be directly integrated into a control. An isolation switching amplifier is needed to amplify the signal. We recommend P+F: KFD2-SOT-Ex2 - Data sheet: www.pepperl-fuchs.com

The wiring is present in the wiring diagram.

Operation

The indicated conditions and maximum torque and the maximum moment of mass inertia must not be exceeded.

Maintenance

Repairs may be performed only by authorised qualified personnel. Otherwise, the warranty claim will lapse.

To exchange wear parts, please contact your service partner.

Disposal

The BPS-IP complies with the RoHS guideline. Materials which are no longer in service should be taken for recycling. Disposal of the BPS-IP must comply with local specifications.
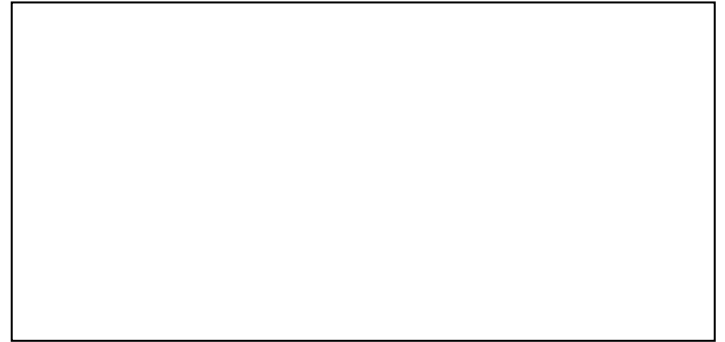
Accessories and special versions

Please contact us for special applications. We will be happy to work with you to design a solution.

Further information about our pneumatic stepping motors is available on the Internet:

www.baumitech.ch

Your service partner

Manufacturer

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