



BiAir®



Zeiss measuring center mounted on BiAir®

BiAir®

Product Description

The Air Spring Isolator **BiAir®** consists of a cast aluminum body whose air volume is enclosed by a thin-walled, flexible and pressure-resistant rolling diaphragm. The piston is seated on this diaphragm and is pushed into the air volume.

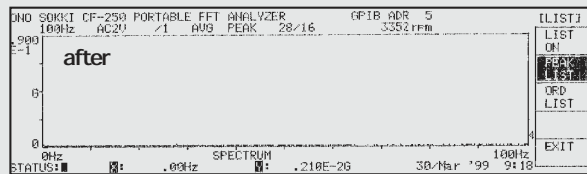
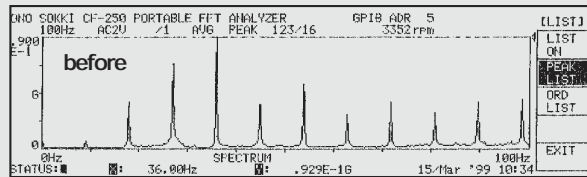
This design causes highly effective vibration isolation.

In order to obtain as high a dampening effect as possible, the air space is split into two chambers (load/dampening volume) connected by air tube. By the adjustable valve the dampening can be easily changed from outside. Due to the friction caused by the air stream passing through the bypass valve, up to 20% dampening can be effected. Additional safety valves will protect the rolling diaphragm from getting damaged by over inflation.

Range of Application

Highly effective vibration isolation of sensitive measuring and testing machines, fine machining plant, as well as optical and electronic equipment. Another important range of application is the vibration isolated foundation of vehicle, motor and other performance testers.

BiAir® Air Spring isolators are extremely well suited for the isolation of foundations e.g. equivalent machine loads.



Advantages compared with conventional steel springs

BiAir® Air Spring Isolators with level control are an active system. The machine foundation level consistency will always be preserved! Automatic leveling adjustment.

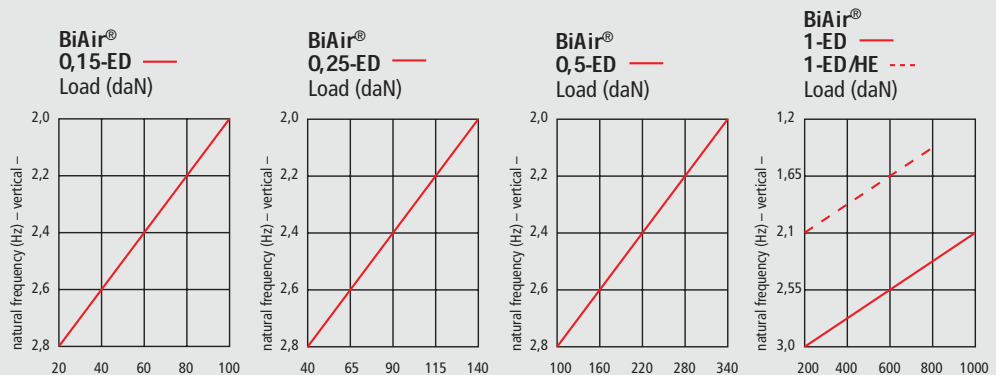
BILZ level controller systems

Level control is an important part of an optimally functioning air spring system. The automatic level controller can be utilized to overcome the problem associated with load changes in air spring isolated machines, which can result in tilting of the machine.

The height of the specific elements **BiAir®** or **FAEBI®** can be controlled by changing the air pressure in the air spring isolators. Quick inflation or deflation will hold the machines level even if their center of gravity keeps changing.

Control circuit

The circuit consists of at least three air springs. If more air springs are needed for structural or loading reasons, the system must always include 3 position points, e.g. three controlled components to avoid being in a statically indeterminate condition. This is achieved by connecting sets of air springs in parallel.



BiAir® MPN



BiAir® mechanical-pneumatic positioner/controller

The mechanical-pneumatic control valves are a simple yet effective solution. The level is constantly scanned by a plunger. The plunger position is transmitted to a spool valve. Depending on the spool valve position, pressure is either applied to the air spring or vented from the inside of the air spring. The machine level can be maintained at an accuracy $\pm 1/100$ mm.

Principally three control valves are used. The incoming air supply is conditioned with a pressure regulator to limit system pressure to a maximum of 6 bar and with a water trap to remove vapor and an air filter to remove dust and any foreign bodies from the air supply.

BiAir® EPN



BiAir® electro-pneumatic positioner/controller

Advantages

Important advantages of the BILZ level control are:

- a high reset accuracy e.g. level accuracy of $\pm 1/100$ mm
- extremely short reaction time (within the milliseconds range)
- the general possibility of being able to optimally adapt (increase and reset) the speed of the system to the specific conditions (control circuit)
- wear resistant and sturdy relief valves
- simple and effective set-up operation

System components

Each system consists of 3 position sensors, 3 electro-pneumatic control valves, one control unit (digital computer logic), the pressure regulator and filter units.

Even the most severe conditions are mastered by the electro-pneumatic positioner. It is used mainly where high reset precision and extremely short reaction times are required.

Any deviation (difference between desired value and actual value) from the desired height (desired value) of the air spring isolator is measured at a precision of up to $1/100$ mm accuracy by means of position sensors.

In the control unit, these electronic signals will then be processed and the air spring elements will be inflated or deflated accordingly for level equalization via the pneumatic control valves.

Control unit

The control unit consists of a printed circuit board, containing the entire logic of the 3 control circuits, 3 air pressure gauges for the air springs, adjusting screws for the adjustment of the machine, selection of the controller speed, and a switch to enable complete deflation of the air springs. The control unit can be supplied either as a 19 inch rack mount unit or completely enclosed within a cabinet.

Software

As an optional feature, a special software package is available. By means of this software, the adjustment and optimization of controlled conditions, the registration of adjustment parameters as well as error determination can be carried out via the serial interface (serial interface provided on the control unit).

Furthermore, the integrated serial interface enables a connection between available machine computers or systems to be isolated. A number of more complex system modes can be realized this way.