



How can I monitor the position of my hydraulic cylinder in my system in every position and readjust it if necessary?

Part 6 Displacement measurement

In many applications, reliable statements about the current position of a hydraulic cylinder are needed, for example for safety interrogations or to prevent different axes of movement from interfering with each other. Sometimes, however, it is necessary to move to an exact position. The simple form of position switches (NI sensors) in the end positions of the hydraulic cylinders is no longer sufficient for this. Even the adjustable position sensors ([MS sensors](#), [NE sensors](#), [RE sensors](#), [DKS sensors](#)) reach their limits in this case. In order to always and absolutely determine the position of the hydraulic cylinder, internal or external position measuring systems can be used.

Precise and inexpensive: built-in, pressure-resistant proximity switches

Internal position measuring systems have the great advantage of being largely protected from external influences. With the [WMZ161](#) series, HEB has equipped a standardised round cylinder with a position measuring system. The customer is free to choose the manufacturer. As a rule, the common manufacturers such as T+R, MTS or Balluff are preferred. The interface to the evaluation electronics can also be freely selected and thus perfectly designed to meet the customer's needs. In the end, feedback is received over the entire stroke, even if the system is restarted after a power interruption. Internal displacement encoder systems operate without contact and are therefore wear-free. Displacement encoder systems can be used not only in the [WMZ161](#) but also, on request, in almost any hydraulic cylinder, including [block cylinders](#), up to 500 bar and 80°C.

How the displacement measuring system works

The displacement measuring systems use the properties of the magnetostrictive waveguide. 2 magnetic fields cause a torsional impulse in the waveguide through short-term interaction, which travels along the sensor as an acoustic wave and is detected by the evaluation electronics in the sensor head. One field is caused by the position magnet moving along the sensor rod without contact. The other is generated in the waveguide in the sensor rod by an induced current pulse. The position can now be precisely determined by measuring the elapsed time between the triggering of the current pulse and the arrival of the acoustic wave at the sensor head. This results in a reliable position measuring system with high accuracy and repeatability.

Getting intelligent cylinders through displacement encoder systems

Systems are constantly evolving. And they are also taking on more and more tasks in hydraulic cylinders. In the past, it was sufficient to know the position of the hydraulic cylinder. Today, HEB can additionally determine the temperature and the number of strokes with intelligent IO-Link systems. And not only for the current state, but also over a period of time. This allows conclusions to be drawn about possible wear and tear and preventive maintenance to be initiated.

[Contact](#) us for more information.