RE 95 134/04.99

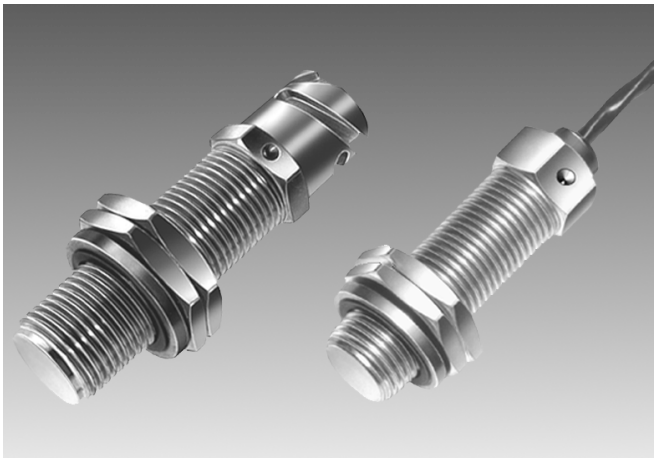
Replaces: RE 95 042/07.97

engineering mannesmann Rexroth

Hall Effect Speed Sensor HD

for frequency proportional speed measurement

Series 1



HDB18/12-L... HDK16/11

Features

The HD Hall-effect speed sensor is used for contact-free measurement of the rotary speeds of Brueninghaus Hydromatik hydraulic motors of types A2FM (see RE 91001), A2FE (see RE 91008), A6VM (see RE 91604) or A6VE (see RE 91606).

The sensor is installed in a special mounting hole in the housing of the axial piston motor and detects the speed on an internal gear wheel or comparable component made of ferromagnetic material. Using a Hall-effect semiconductor device, the HD sensor detects the change in magnetic flux and converts this parameter into square-wave signals in the built-in electronic unit.

The frequency f of the generated sensor output voltage is a function of the number of teeth z on the circumference of the gear wheel and of the rotary speed n of the input shaft or output shaft:

$$f = \frac{z \cdot n}{60} \qquad \begin{array}{l} f \text{ in } sec^{-1} \\ n \text{ in } min^{-1} \end{array}$$

The rotary speed of the axial piston motor can be calculated from the frequency of the signal using a suitable electronic device (e.g. an MC microcontroller, RE 95050).

The HD Hall-effect speed sensor (unlike the ID inductive speed sensor) delivers an amplified output signal even at low frequencies. Consequently, it can be used e.g. for closed-loop control of extremely slow travel speeds of a hydrostatic travel drive.

Main components

- Integrated Hall-effect semiconductor with permanent solenoid and amplifier
- Single-piece metal housing of non-magnetic material
- Complete with two lock nuts and sealing ring

Special features

- Available with a range of fixed lengths of engagement for the mounting thread
- Detects low frequencies
- Broad temperature range
- Short-circuit-proof and fool-proofed against polarity reversal
- Pressure resistant sensor measuring surface

Ordering Code

HD			/	1		–	

Type

Hall-effect speed sensor	**HD**

Model

with bayonet-type fitting	**B**
with cable end	**K**

Mounting

Thread M16x1.5	**16**
Thread M18x1.5	**18**

Series

	1

Index

for M16 thread	**1**
for M18 thread	**2**

Length of thread engagement (only with M18 x 1.5 thread)

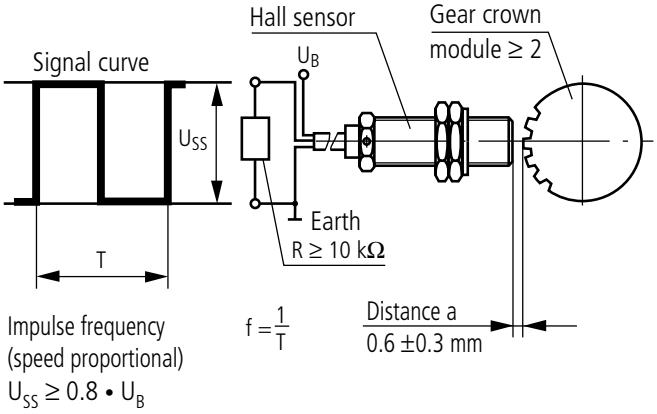
Fixed length of thread engagement L = 11,2 mm	**L112**
Fixed length of thread engagement L = 12,7 mm	**L127**
Fixed length of thread engagement L = 14,7 mm	**L147**
Fixed length of thread engagement L = 19,9 mm	**L199**
Fixed length of thread engagement L = 27,2 mm	**L272**
Fixed length of thread engagement L = 29,9 mm	**L299**
Fixed length of thread engagement L = 31,9 mm	**L319**
Fixed length of thread engagement L = 33,9 mm	**L339**
Fixed length of thread engagement L = 35,9 mm	**L359**
Variable length of thread engagement (no code)	

Brueninghaus Hydromatik

Technical Data

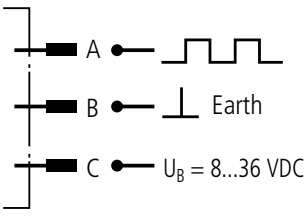
Type	HD
Supply voltage U_B	8 ... 36 V DC
Input current	max. 30 mA at 24 V DC
Output switch	PNP, load to 0 V
Short-circuit strength and reverse polarity protection	available
EMV specifications	available
Measuring range: for fixed length of thread engagement a = 0.6 ±0.3 mm	10 Hz ... 20 kHz [1])
for measuring distance a = 0.5 mm	2 Hz ... 20 kHz [1])
Storage temperature range	–40° C to +120° C
Operating temperature range	–40° C to +120° C
Isolation to DIN 40050	IP 67
Pressure strength on the measuring surface	10 bar
Vibration	15 • g / 1...2000 Hz
Shock	30 g / 11 ms
Max. tightening torque	50 Nm
Installation position	optional
Weight	approx. 100 g

Measuring Arrangement

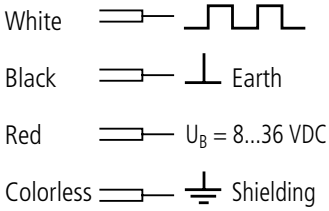


Terminal Connection

HDB.../11



HDK.../11

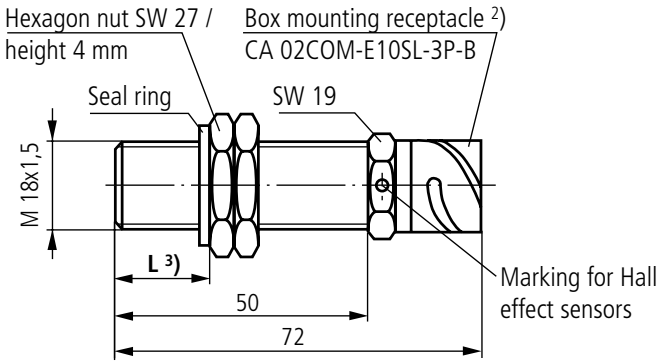


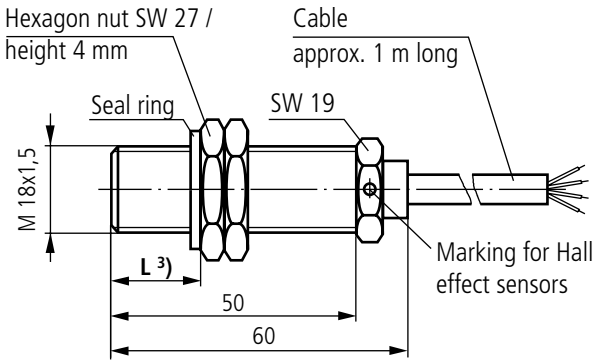
Fixed Length of Thread Engagement

HD.../12-L...

The hall effect speed sensor HD is preassembled to a certain threaded length according to the size of hydraulic motor A2FM (see RE 91001), A2FE (see RE 91008), A6VM (see RE 91604) or A6VE (see RE 91606). After screwing into the boring of the housing no further settings are necessary.

Unit dimensions
HDB18/12-L...
HDK18/12-L...





[1]) Characteristics for use in A2F... and A6V... motors

[2]) The mating connector is not included with the sensor.
Use connector type:
Cannon "VG 95234 D-10SL-3SN" (straight connector, 180°) or
Cannon "VG 95234 E-10SL-3SN" (elbow connector, 90°)
Supply via Brueninghaus Hydromatik on enquiry.

[3]) See ordering code

Variable Length of Thread Engagement

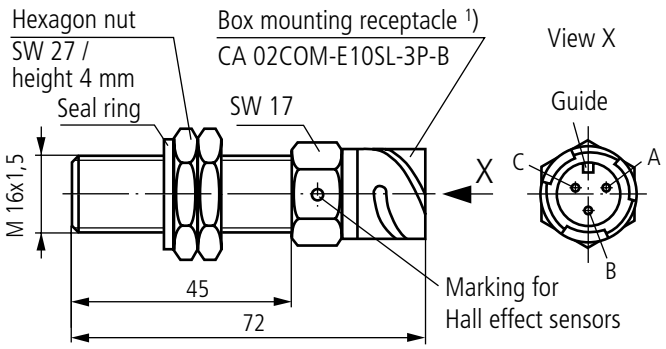
HD.16/11 / HD.18/12

In case of variable setting of the hall effect speed sensor HD, a nut is screwed into the hydraulic motor housing. Before installation of the lock nut, a suitable adhesive (e.g. Loctite 262) should be applied onto the thread between the nuts.

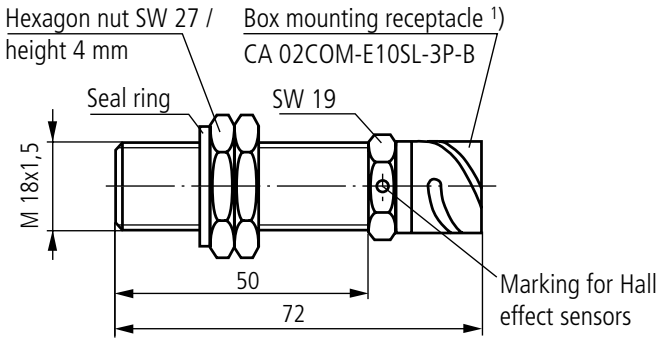
The distance a = $0.5_{-0.1}$ mm has to be set as follows:

– During standstill of the hydraulic motor carefully screw the sensor in the thread of the measurement boring until internal contact is reached with the gear crown.
– Depending on the pitch (specification based on 1.5 mm/turn), unscrew the sensor by a third of a revolution (120°, with a maximum tolerance of 36° less than specified).
– Check the screwing by hexagonal nut.

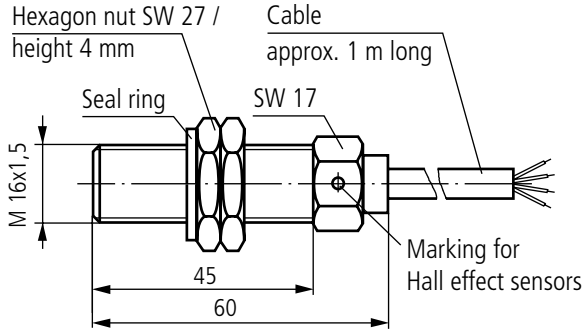
Unit dimensions
HDB16/11



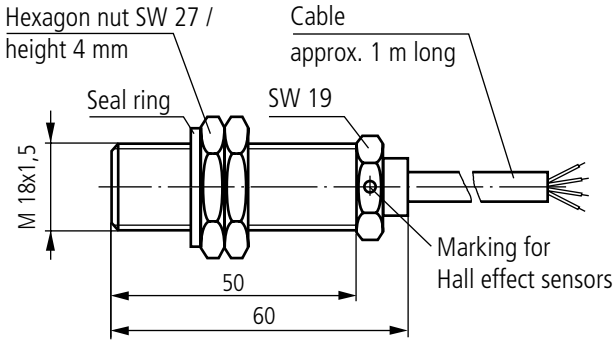
HDB18/12



HDK16/11



HDK18/12



Attention:

A touch of sensor and gear crown during running of the hydraulic motor will damage the sensor!

Screw the seal ring on the sensor thread.

Do not push! It will cause damages.

1) The mating connector is not included with the sensor.
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The specified data is for product description purposes only and may not be deemed to be guaranteed unless expressly confirmed in the contract.