

Heavy Duty applications

Inductive & magnetic Proximity sensors



Designed for the Heavy Duty Vehicles market

DI 12.82.01/1

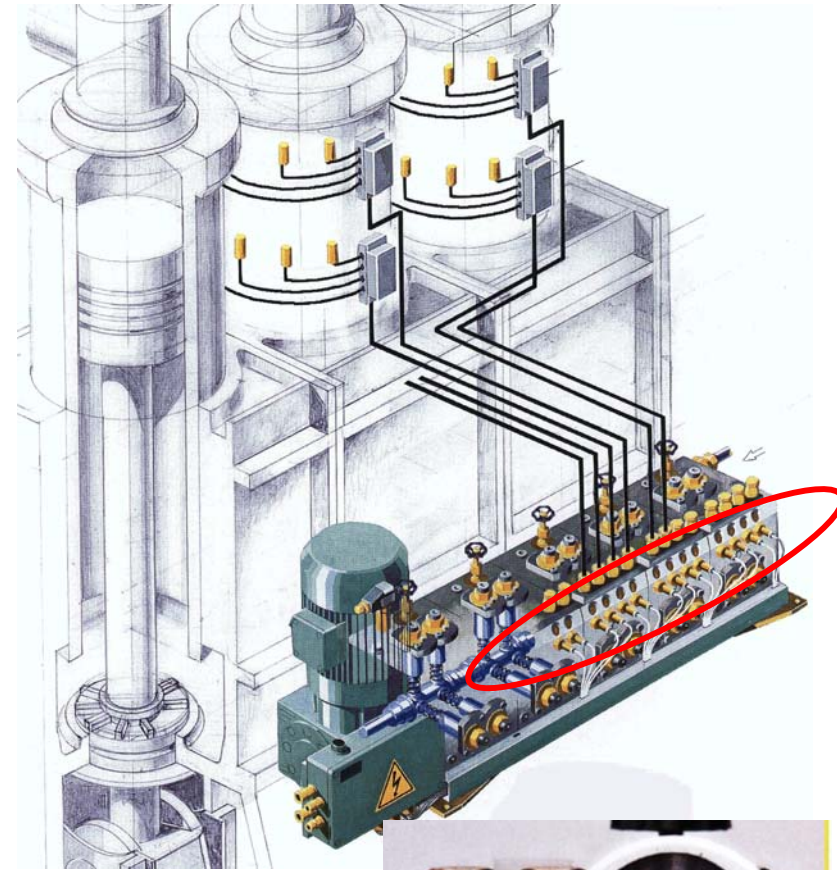
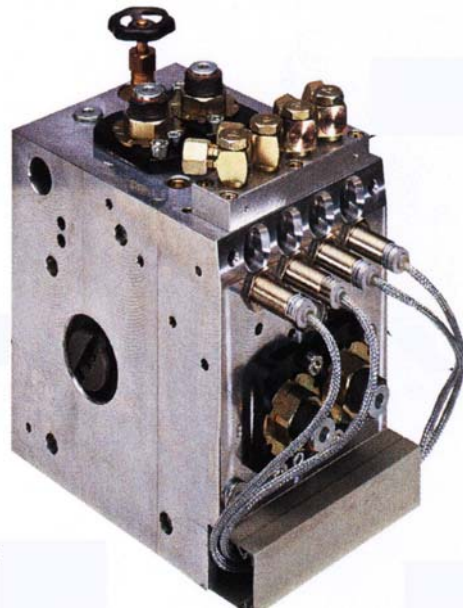
Double Namur Sensor with
screened Teflon cable

- ▶ Sn = 4mm
- ▶ Non flush
- ▶ Today spare parts only
- ▶ 250 to 300 pcs per year

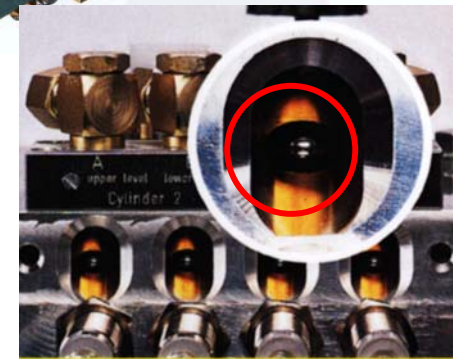


- ▶ Oil flow monitoring device for Sulzer Diesel engines
- ▶ Both sensors looking at steel ball supported by oil flow

- ▶ IFRM 18E91/403509
- ▶ Inductive Namur sensor
- ▶ Sn = 8mm non flush
- ▶ Screened heavy duty cable
- ▶ 1400 pcs / year



Detection of steel ball supported by oil flow



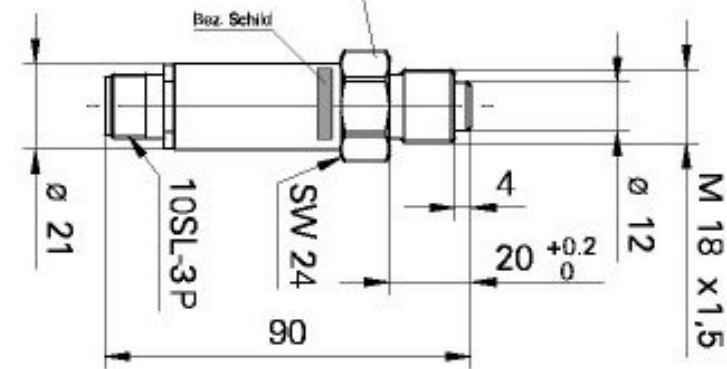
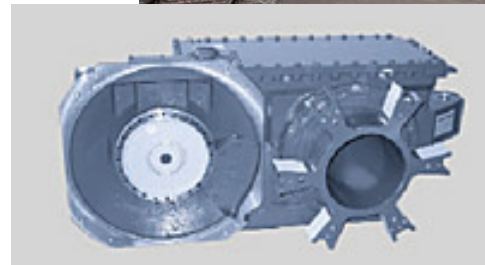
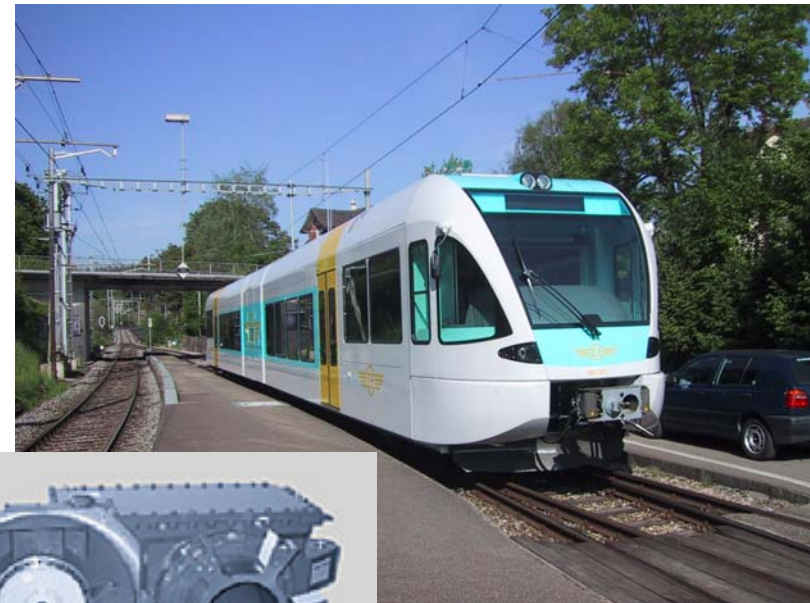
IFRM 12E Namur sensors

- ▶ Several versions
- ▶ Two different housing styles
- ▶ 300 pieces per year

MHRM 12Y Hall sensors

- ▶ One housing style
- ▶ Several probe lengths
- ▶ Special connector
- ▶ -25°C to +125°C
- ▶ 2500 pcs per year

- ▶ New version on trial
- ▶ -40°C to +125°C



Sensors for the train traction industry



- ▶ Gear wheel pick up
- ▶ Two output signals
- ▶ 90° phase shifted
- ▶ For up/down recognition

MHRM 16G25/508909

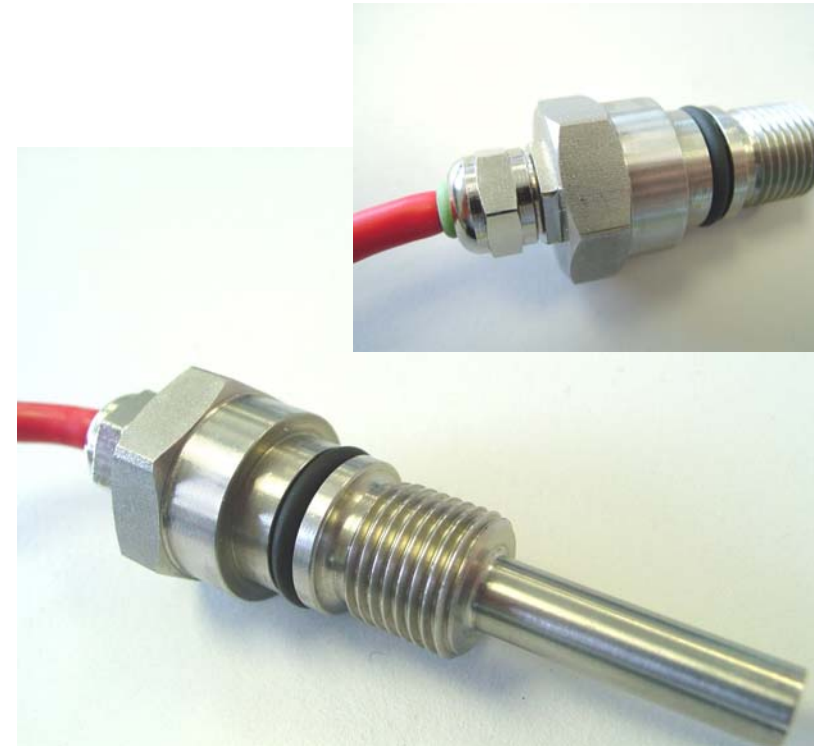
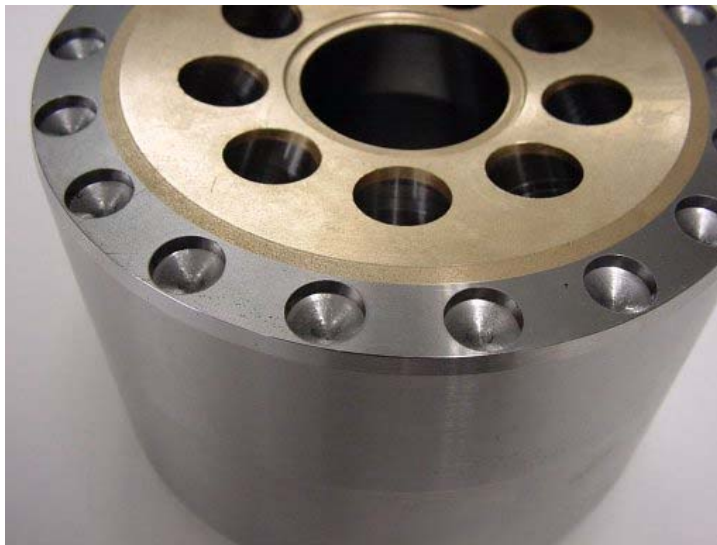
- ▶ Hall sensor
- ▶ High switching frequency
- ▶ Shock & vibration proof
- ▶ -40°C to + 120°C



MHRM 14G55/404407 for RPM feedback and control

- ▶ Hall sensor
- ▶ Single channel output
- ▶ M14 x 1,5 / 64mm length
- ▶ AMP connector/Teflon cable
- ▶ -40 to +120°C temp range

500 pcs sold to date



Sensor picks up holes in a rotating part in a hydraulic motor. Front end of sensor is continuously exposed to hydraulic oil

IFRP special types for high pressure applications



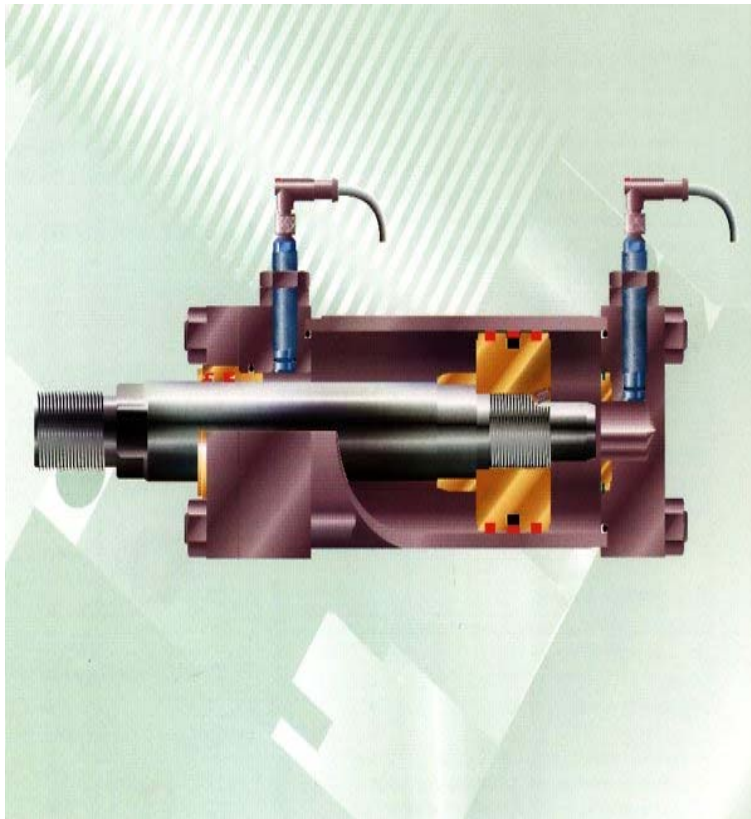
500 bar/7000 psi

▶ IFRP 12P1501/S14
Sn = 2 mm flush

▶ IFRP 16P1501/S14
Sn = 2 mm flush

▶ IFRP 18P1501/S14
Sn = 2 mm flush

IFRP special high pressure versions



- ▶ Main applications in hydraulic systems
- ▶ Piston position feedback
- ▶ Ceramic sensing face withstands pressures of up to 350/500 bar
- ▶ Sensing face is directly exposed to the hydraulic fluids (rated IP 68)

ILFK 12E9191/O3

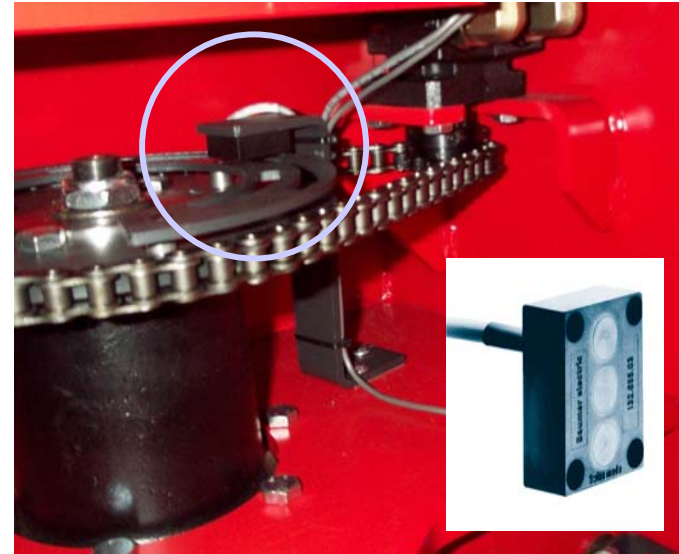
- ▶ Sn = 4mm
- ▶ Two heads only
- ▶ 3200 pcs per year

ILFK 12E91/407158

- ▶ Sn = 4mm
- ▶ Two heads only
- ▶ Special flylead connector
- ▶ 3200 pcs per year

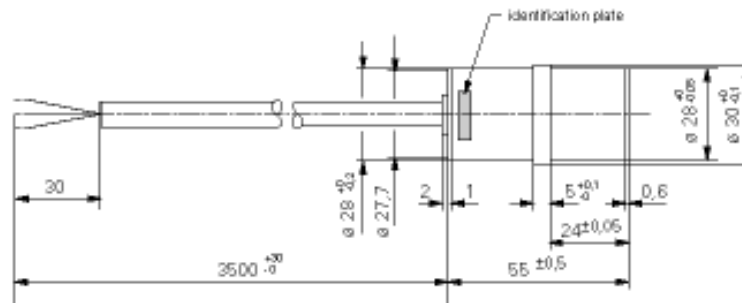
Steering mechanism control

- ▶ Detecting holes in metal wheel
- ▶ Position feedback of steering wheel



Special inductive analog sensor IWRM 30I95/405416

- ▶ Special unthreaded housing
- ▶ Sensing range 5...10 mm
- ▶ Temp range $-25...+85^{\circ}\text{C}$
- ▶ Cable sea water proof



- ▶ Used on the new generation Diesel engines without camshaft
- ▶ Output signals are used to control pattern of exhaust gas valves
- ▶ Sensor looks at moving wedge/ramp shaped steel target

Application: Indirect torque measurements



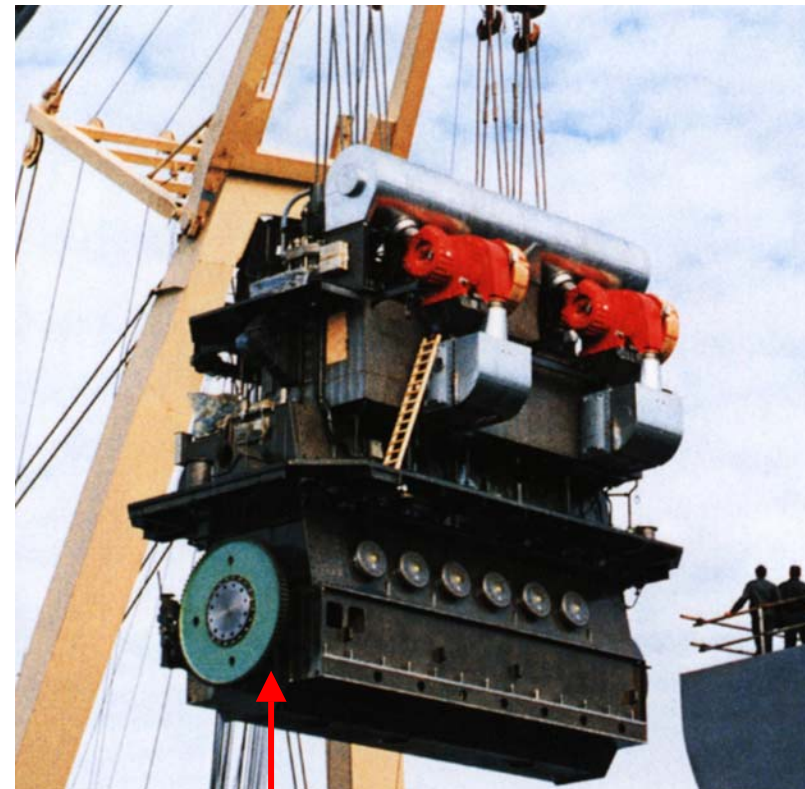
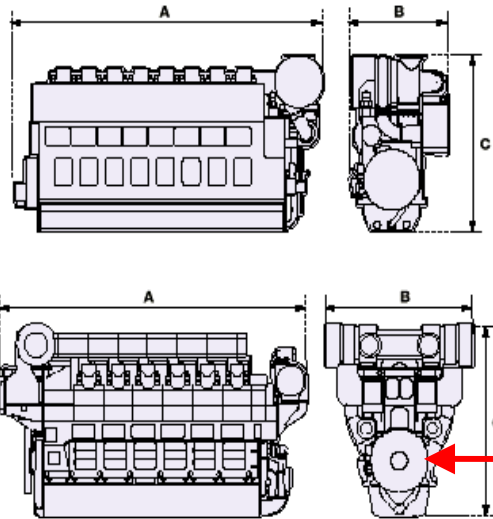
- ▶ Indirect torque measurement on a conveyor belt drive
- ▶ Distance from cylinder to sensor varies according to torque applied
- ▶ 1...9 VDC Voltage output signal
- ▶ Excessive output signal leads to automatic shut-down of drive motor

IFR 18.26.31/K53 & K713

- ▶ Sn = 4 mm
- ▶ Non flush mounting
- ▶ M18 x 1,5 x 78/121mm
- ▶ Special connector

1700 pcs per year

WÄRTSILÄ 64



The sensor is installed behind the balance wheel in the engine housing

Special sensor IMRM 16D1599 / 300 pcs per year

- ▶ Temp range $-25\dots+85^{\circ}\text{C}$
- ▶ Mil spec connector
- ▶ 2-wire design
- ▶ Contains 2 independent sensing devices
- ▶ Redundant systems
- ▶ RPM pick-up on tanks



IFRD 18P17A/405371

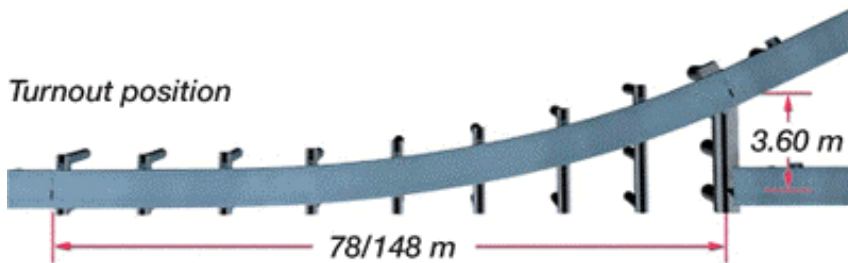
- ▶ Sn = 6mm
- ▶ Special type
- ▶ no LED



Straight position



Turnout position



- ▶ Outdoor application
- ▶ Controlling rail switch
- ▶ Actual application undisclosed

High temperature *DuroProx*

- -25°C ... +100°C
- without LED
- sealed to IP69K

IFRD 08P17T1/S35

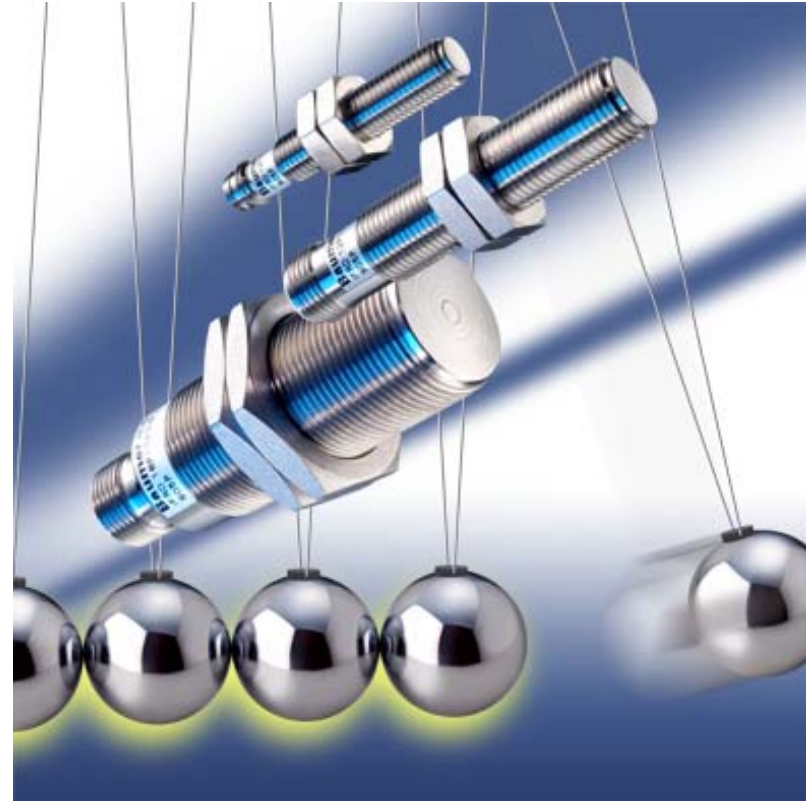
- ▶ Sn = 2mm
- ▶ M8x1x 46mm

IFRD 12P17T3/S14

- ▶ Sn = 4mm
- ▶ M12x1x 50mm

IFRD 18P17T3/S14

- ▶ Sn = 6mm
- ▶ M18x1x 60mm



High temperature probe with in-line amplifiers



IFRH 12P1501/L (inductive)
replacement for
IFRH 12P5501

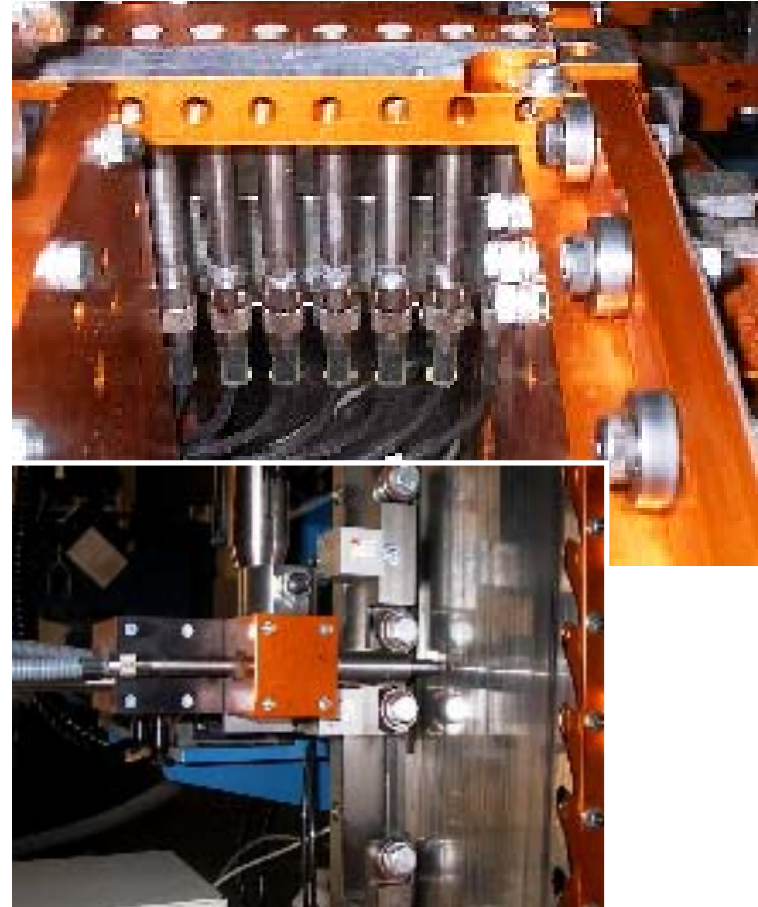
IFRH 18P1501/L (inductive)
replacement for
IFRH 18P5501

- ▶ Connector types on request
- ▶ Working temperature up to 180°C

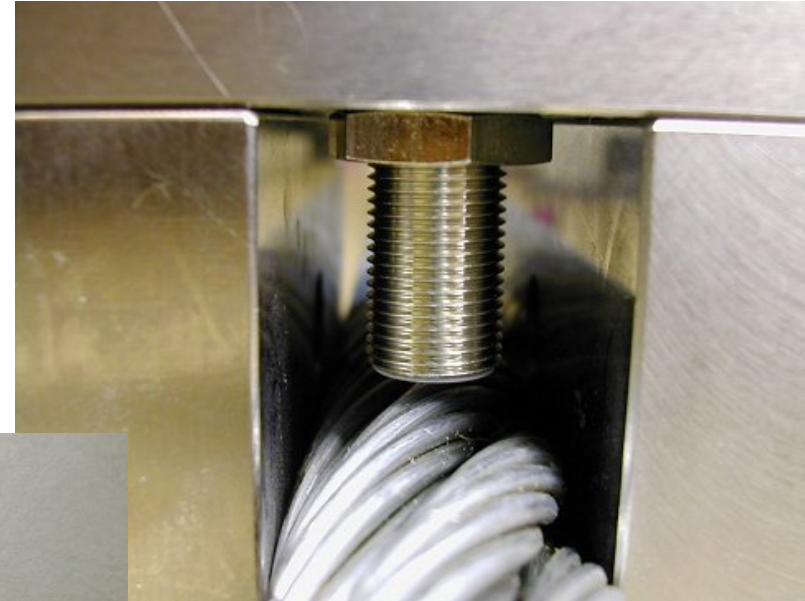
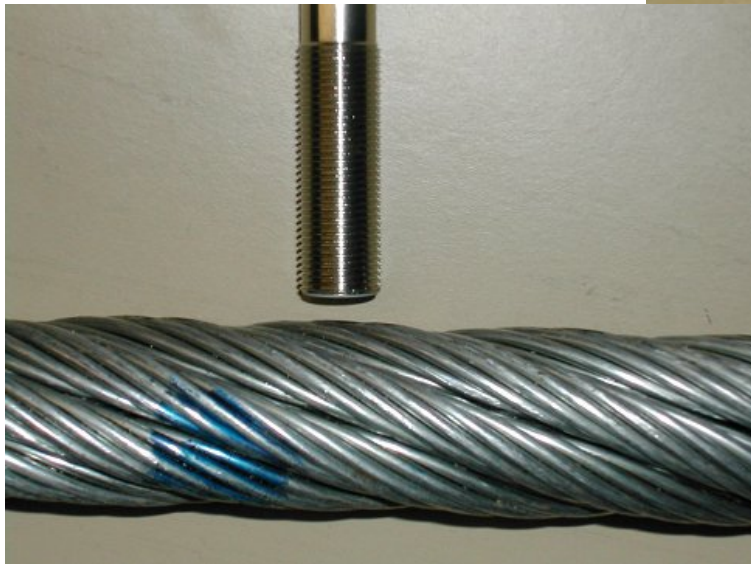
CFAH 30P1200/S14L (capacitive)

- ▶ working temperature up to 200°C

- ▶ Machines to rectify saw blades
- ▶ Sensor array consisting of 7 units IPRM 12 high precision inductive analog sensors
- ▶ “Warpage check” of metal saw blades



- ▶ IWRM 12Z8704/S14C
- ▶ Inductive analog sensor
- ▶ Sn = 4mm quasi flush
- ▶ Project pending (CH)



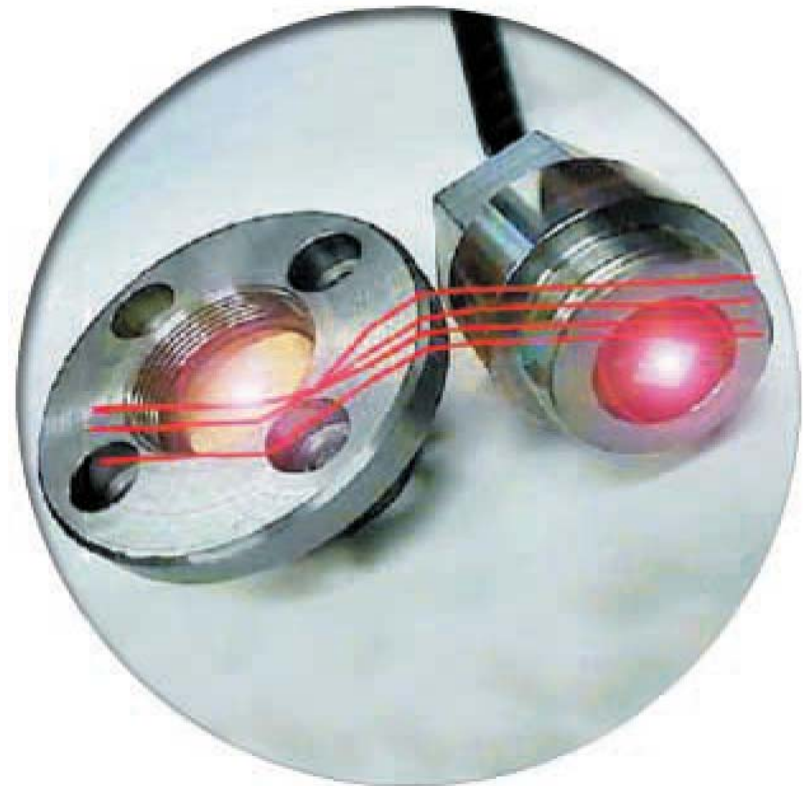
Detecting the thread-like twist of the steel cable for reasons of quality control

Sulzer integrated piston wear assembly

Sensor mounted directly into the cylinder of a big Diesel engine

Monitors the movement as well as the wear of the piston ring of the running motor

Sipwa Sensor used to be supplied by Baumer electric but has been shifted to some other supplier



- ▶ *MAGRES* encoder (CH)
 - ▶ BMMH 58 / Absolute Multiturn SSI
 - ▶ Application on road building machines (vibrating roller)
- ▶ *MAGRES* encoder (Italy)
 - ▶ BMMH 42 / Absolute Multiturn CANopen
 - ▶ Application on fork lifter for multiple axes steering control
- ▶ BFF absolute encoder (D)
 - ▶ Hollow shaft execution
 - ▶ With special 25'000 rpm ball bearing
 - ▶ Torpedo application