IND Sensors for Seam Detection in Metal Tubes

KLASCHKA Industrieelektronik

Task

Metal tubes are delivered on coils. These tubes are then fed into a processing machine. The seam between two succeeding tube sections must be reliably recognised in order to avoid damages at the tool and the machine.

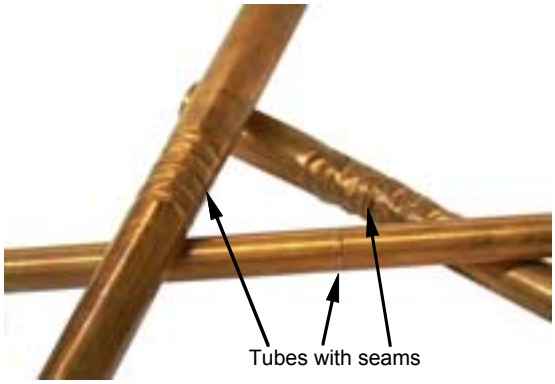
Tubes made of copper, aluminium, high-grade steel, steel or other suitable metals and metal alloys are used for the production of tube-machined parts, e.g. fittings, in tube-bending machines. The tube insertion frequently happens off a coil.

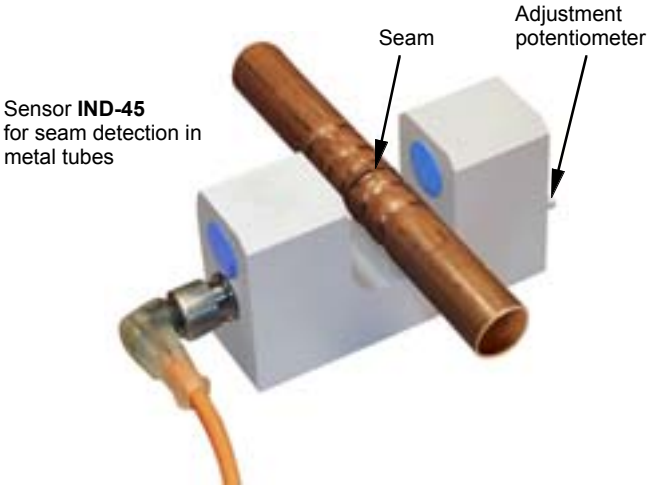
The ends of succeeding tube sections are connected with each other by pressing on a short tube piece with a smaller diameter.

The sensor detects the seams of the tube passing through and generates a pulse which lasts several hundred milliseconds. The machine is stopped and the seam is detached.

The sensor is available in two different sensor sizes for tube diameters from 12 to 22 mm and from 22 to 32 mm. Sensors for other tube diameters are available on request.

The sensor has a permissible ambient temperature range between + 10 °C and + 60 °C.





Sensor **IND-45** for seam detection in metal tubes

Principal Mode of Function

By means of an installed potentiometer the sensor can be adjusted to the tube diameter and in its sensitivity.

When the tube is passing through, the seam releases a short signal at the output of the IND sensor which is extended to approx. 300 ms by an installed time function element. The tube speed can thereby reach 1 m/s. This signal can be used for stopping the tube transport.

If no tube is inserted, a permanent signal appears at output A.

The output current IA may maximally be 200 mA.

The output signal A can be processed in the PLC-control of the machine.

The voltage supply range of the sensor is 12 … 24 … 30 V DC.

Tube-bending machine

Application

The IND sensor is used for the seam detection after winding off a tube from a coil. The sensor is mounted before the tube enters the machine. Between sensor and intake into the machine sufficient place must be available for stopping the tube movement. The passage of the tube through the sensor must be sufficiently soothed by levelling rollers which are placed in front of and behind the sensor (side- and height fluctuations < 1 mm).

The sensor can be applied in all tube-processing machines, where the tube is supplied off a coil and where the feeding of a joint sleeve connecting tube sections must be prevented.

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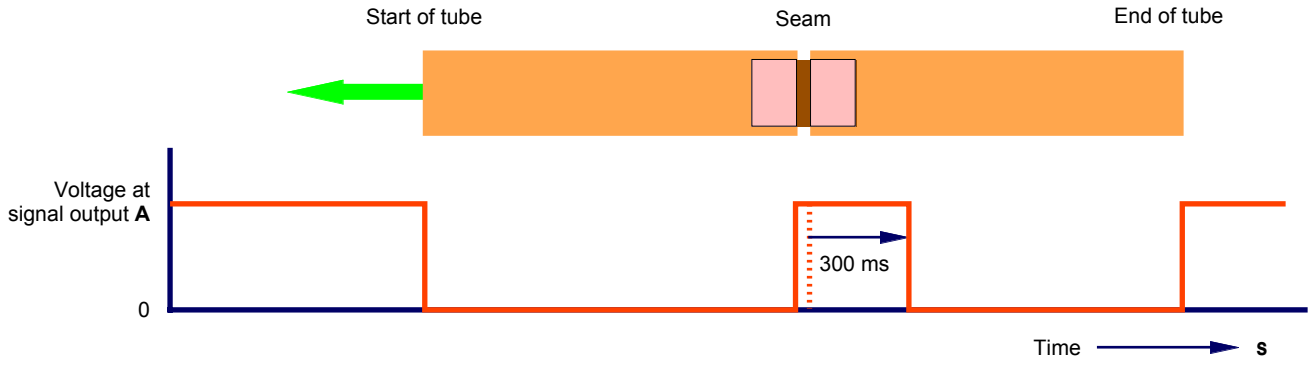
Signal sequence



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Type	Ref. No.	Series	For tube diameter	Mounting	Max. passage width
			in mm		in mm
IND/A-45as95n22...32-1Sd1A **)	15.16-01	Specific sensor	22 ... 32	Mounted on	45
IND/A-30as95n12...22-1Sd1A **)	15.16-02	Specific sensor	12 ... 22	Mounted on	33

**) = supply on request