

Short Can Sensors

9/11-247-03, 9/11-267-03, 9/11-287-03/63

FOR SHORT CAN DETECTION IN DWI BODYMAKERS

Metal discrimination sensors designed specifically for short can detection and maximum durability in the demanding bodymaker tooling environment



| BENEFITS |
|--|
| Detects the can not the punch |
| Optimum tooling and machine protection |
| Maximum reliability, minimum down time |
| Long lasting rugged construction |
| Complete and compatible |

DETECTS THE CAN NOT THE PUNCH — These high efficiency units detect the can, yet remain totally blind to the punch.

OPTIMUM TOOLING & MACHINE PROTECTION — Using positive discrimination methods and ‘zero - drift’ detection, these sensors provide reliable detection of short cans and ‘tear - offs’ to protect your tooling investment.

MAXIMUM RELIABILITY, MINIMUM DOWN - TIME — With no need for adjustment or monitoring, Sencon Short Can Sensors keep machine downtime and maintenance needs to a minimum and so help to promote optimum productivity.

LONG LASTING RUGGED CONSTRUCTION — Sencon’s metal discriminating sensors are encapsulated in non - hygroscopic materials that are highly resistant to shock, vibration, coolant oils and humidity. They also have custom - fabricated titanium sensing face protection plates to withstand hydraulic abrasion and to provide maximum durability in the demanding bodymaker tool environment.

COMPLETE & COMPATIBLE — All 2xx Series sensors are equipped with both source (PNP) and sink (NPN) outputs, and they are supplied complete with mounting nuts.

CABLES FOR DC SENSORS — 11 series sensors are not supplied with a cable. Cable QDC - 6F - 4S is 6' (2 m) with a straight connector. Other cable lengths and connector styles are available. Please consult your local sales office for details.

PERFORMANCE UPGRADE — These sensors perform reliably on the majority of carbide punches, provided the magnetic permeability of the punch material remains stable in working conditions. Factors such as temperature variation can affect magnetic properties. The combination of can stock light weight can stock and the latest generation of punch materials may cause detection issues. In this case Sencon recommends upgrading to the latest 11-487-03 sensor.

| 200 SERIES SHORT CAN SENSOR SELECTION GUIDE | | | | | | |
|---|------------------------------|----------------|------------------|------------|------------------|---------------------|
| CAN MATERIAL | PUNCH MATERIAL | INTEGRAL CABLE | QUICK DISCONNECT | CASE STYLE | CURRENT SENSOR | RECOMMENDED UPGRADE |
| Aluminum | Steel punch | ● | | G | 9-247-03 * | No upgrade required |
| | | | ● | H | 11-247-03 * | No upgrade required |
| Steel | Carbide punch | ● | | G | 9-267-03 * | No upgrade required |
| | | | ● | H | 11-267-03 * | No upgrade required |
| Aluminum | Magnetic carbide punch | ● | | G | 9-287-03 / 63 ‡ | 9-487-00 |
| | | | ● | H | 11-287-03 / 63 ‡ | 11-487-00 |
| Aluminum | Paramagnetic carbide punch | ● | | G | 9-287-33 | 9-487-00 |
| | | | ● | H | 11-287-33 | 11-487-00 |
| Aluminum | Non - magnetic carbide punch | ● | | G | 9-287-53 | 9-487-00 |
| | | | ● | H | 11-287-53 | 11-487-00 |

* These models are also available with an output pulse stretcher. [See Can - on - Mandrel and High Performance Sensors].

The 287 series sensors perform reliably on the majority of known carbide punches, provided the magnetic permeability of the punch material remains stable in working conditions. Factors such as temperature variation can affect magnetic properties.

‡ Note: the 03/63 sensors now have the same specification and can be interchanged.

| CASE STYLES | |
|------------------------|---------------|
| Case Style G | |
| Max. Length | 3.60" 91.4 mm |
| Hex Nut (across flats) | 1.13" 28.6 mm |
| Cylinder Ø | 1.00" 25.4 mm |
| Case Style H | |
| Max. Length | 3.48" 88.5 mm |
| Hex Nut (across flats) | 1.13" 28.6 mm |
| Cylinder Ø | 1.00" 25.4 mm |

| COMMON SPECIFICATIONS | |
|-----------------------|---|
| Response Time | <1 ms ON <3 ms OFF |
| Supply Voltage | 12 to 30 VDC |
| Setting Distance | 0.060" to 0.080" (1.52 mm to 2.03 mm) recommended |

387SCT Short Can Sensor

11-387SCT-03

387SCT
Short Can
Sensor



Interface
Module and
connector
cable



SMART SYSTEMS FOR ALUMINUM CANS — Aluminum canstock is extremely difficult to detect on nickel carbide punches because the electromagnetic signatures are very similar. The 387SCT smart sensor is ideal for this situation because it has a built in microprocessor that reads and stores the signal profile of each new punch fitted to the bodymaker.

These sensors are used with a choice of Bodymaker Control Modules (BCM387 or BCM500) which communicate with the press control system to discriminate between aluminum can stock and a range of punch materials, including ceramics and nickel based carbides.

INTERFACE MODULE — The 387SCT Short Can Sensor works via a dedicated Interface Module that needs to be wired between the sensor and the chosen Bodymaker Control Module.

PROVIDES SUPERB AND RELIABLE CONTROL CAPABILITIES TO ANY WALL IRONING BODYMAKER

Works with a range of punch materials, including ceramics and nickel based carbides

FEATURES

Short can and tear - off detection

Calibrates to different punch types - Steel, Magnetic, Non-magnetic and Paramagnetic Carbides

Allows 'mixed' tooling, e.g. ceramic punch with steel nose

387 SCT SHORT CAN SENSOR SELECTION GUIDE

| CABLE OPTIONS | CASE STYLE | SENSOR |
|---|------------|-----------------------|
| Connector quick disconnect M12AC (5-pin double key) | I | 11H - 387SCT - S1 |
| Sensor supplied with a 300mm (12") cable with a micro M12DC (5-pin single key) quick-disconnect connector | I | 11R - 387SCT - M12DC* |
| Sensor supplied with a 6 m (20') cable | I | 9H - 387SCT - 56 - 77 |
| 387SCT Interface Module (includes module connector cable) | | 213-10766-00 |

*The 11R-387SCT-M12DC is a 387SCT sensor that has a short built-in cable terminated with a micro M12DC (5pin single key) plug. This allows the connector to be placed outside the bodymaker's wet area. It also offers the dual benefits of an encapsulated cable on the sensor itself plus a quick-disconnect connector.

NOTE: These sensors perform reliably on the majority of known carbide punches provided that the magnetic permeability of the punch material remains stable in working conditions. Factors such as temperature variation can affect magnetic properties.

BCM500 BODYMAKER CONTROL MODULE

BCM500 is a high speed control module which can be used instead of BCM387 with 387 series sensors. It can also be used to interface Sencon 2X7 Short Can Sensors with the bodymaker control system. The BCM500 allows the following control functions:

High speed clutch outputs

Immediate or timed output control

Inputs configurable for sink or source

Outputs configurable for sink, source, AC or DC

Back stop control

Air strip control

Dome jam control

Short can, tear - off and dome jam indication

Can be used with 'smart' 387 sensor for Aluminum cans

Can be used with a 'non - smart' 267 sensor for steel cans

BCM387 BODYMAKER CONTROL MODULE

The BCM387 interfaces Sencon 387 series Short Can Sensors with the bodymaker control system to allow the following control functions:

High speed clutch outputs

Immediate or timed output control

Outputs configurable for sink, source, AC or DC

Short can, tear - off indication

Used with 'smart' 387 sensor for Aluminum cans



Short Can Sensor with field updates

9/11-487-00

FOR DIFFERENT TYPES OF PUNCH



Switchable discrimination packs customized for specific punch materials, plus field update capability

The 487 series sensors are able to display punch signal information for ease of installation, running confidence, and fault diagnosis

The 487 series sensors are a self contained, smart, metal discrimination proximity switches that discriminate between the punch tooling and can material over the punch. They are designed to act as “short can” detectors to protect the tooling in wall ironing machines. Their all-metal construction provides maximum durability. Integral electronics interface directly with discrete logic or computer controlled systems.

Sencon has extensively tested and evaluated carbide wall-ironing punches. These punches use various binder materials—most commonly nickel and cobalt, as well as other elements such as chromium and iron—to obtain the desired mechanical properties for the punch. The mixtures and compositions of these materials impart differing magnetic properties to the finished punch tooling.

The 487 series sensors differentiate between the magnetic signatures of the wall-ironed aluminum of the can and the carbide of the punch.

FIELD UPDATES — Variations in the magnetic properties of carbide punches are addressed by switching to the appropriate “Punch Discrimination Pack” (PDP). These software packs (which can also be field updated with future versions) fundamentally alter the sensor so it can work with different punch materials. Given the wide range of punch types available with subtle changes in materials, a sensor that can be field updated in this way offers canmakers the opportunity to buy once and remain flexible to tooling changes in the future.

PUNCH OPTIMIZATION — The 487 series sensors can also be optimized to a specific punch in the bodymaker via a simple push button or PC interface. This optimizes the sensor to the specific punch’s magnetic properties and mounting distance. Instead of having a specific sensor which is calibrated during manufacture to a generic target material, the 487 series sensors can be optimized to the unique set of circumstances for each bodymaker.

COMMON SPECIFICATIONS

| | |
|------------------|---|
| Response Time | <1 ms ON <3 ms OFF |
| Supply Voltage | 12 to 30 VDC |
| Setting Distance | 0.060" to 0.080" (1.52 mm to 2.03 mm) recommended |

BENEFITS

The 487 series sensors are the ideal upgrade from the 287 series sensors as they offer improved detection capability which is important when using light weight can stock or the latest punch materials.

Discriminates between the punch and can over punch allowing short can/tear-off detection

Optimum tooling and machine protection

Multiple punch types are supported via Switchable Punch Discrimination Packs (PDP)

Live graphing of punch signal information

Sensor management software

In-process Punch Optimization for fine tuning

487 FEATURES

- Standard sensor case design similar to the original 287 series sensors
- Integral cable (9-487-00) or micro M12 cable connection (11-487-00)
- Can be wired directly to the press control system
- No control module needed
- Two Punch Discrimination Packs (PDPs) pre-loaded (see *Ordering Information*)
- The PDP can be selected via a push button connected to the sensor cable.
- A PC based software client application allows the sensor to be interrogated and set up via a computer.

SHORT CAN SENSOR / PDP EQUIVALENCE CHART

| DISCRIMINATION CHARACTERISTICS | OLDER SHORT CAN SENSOR EQUIVALENT | 487 SENSOR PUNCH DISCRIMINATION PACK (PDP) |
|--|--------------------------------------|--|
| Aluminum can over magnetic carbide punch: Suitable for both 287/03 and 287/63 applications | [9-287-03 / 63] [11-287-03 / 63] | 22-487-03/63 |
| Aluminum can over paramagnetic carbide punch | [9-287-33] [11-287-33] | 22-487-33/53 |
| Aluminum can over non-magnetic carbide punch | [9-287-53] [11-287-53] | 22-487-33/53 |

ORDERING INFORMATION

| | |
|---|---|
| 9-487-00 | with integral cable and moulded strain relief |
| 11-487-00 | with micro M12 5-pin cable connector |
| The 487 sensor is supplied with both 22-487-03/63 and 22-487-33/53 PDPs which can be switched by the customer to enable the characteristics required (see <i>Short Can Sensor / PDP Equivalence Chart</i> above). | |
| Sensor Management Software | |