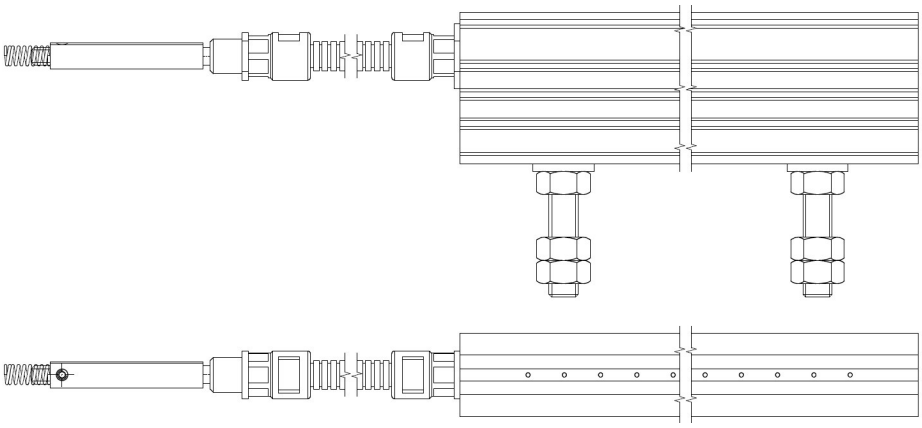
Simco (Nederland) B.V.
Postbus 71
NL-7240 AB Lochem
Telefoon +31-(0)573-288333
Telefax +31-(0)573-257319
E-mail general@simco-ion.nl
Internet http://www.simco-ion.nl
Traderegister Apeldoorn No. 08046136

HD-DET



Detection Bar

User's Manual

GB

CONTENTS

GB

Preface

This manual describes the installation and usage of type HD-DET detection bars.
This manual must be available at all times to staff operating the equipment.
Read the entire manual before installing and commissioning the product.
Follow the instructions set out in this manual to ensure proper operation of the product and to retain your entitlement under the guarantee.
The terms of the guarantee are set out in the Simco (Nederland) B.V. General Terms and Conditions of Sale.

Explanation of symbols

Warning
Indicates special information to prevent injury or significant damage to the product or the environment.

Note
Important information for efficient use and/or to prevent damage to the product or the environment.

GB

1 Introduction

The HD-DET is a hole-detection bar used to find holes in a web. The holes in the web are detected as production errors. De HD-DET is normally connected to a ECM high voltage generator. The overload output of the ECM generator is used as output signal.

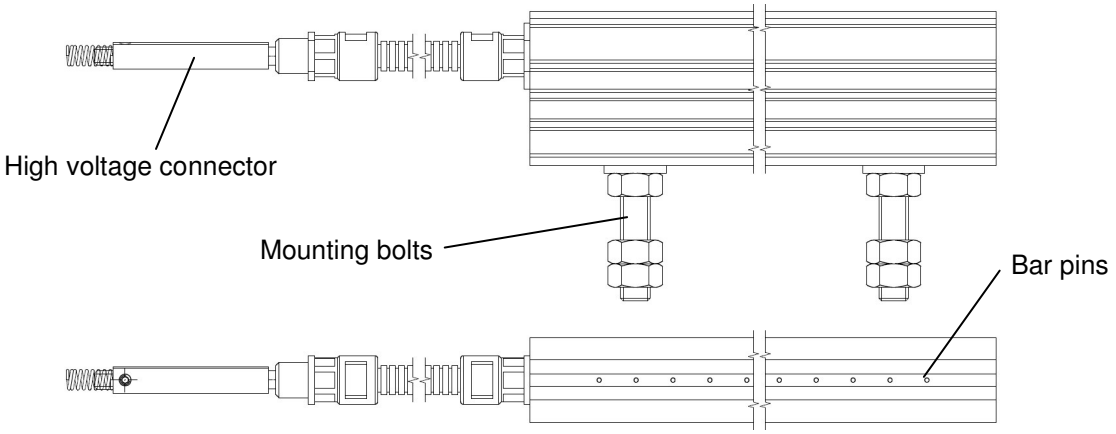


Figure 1: HD-DET

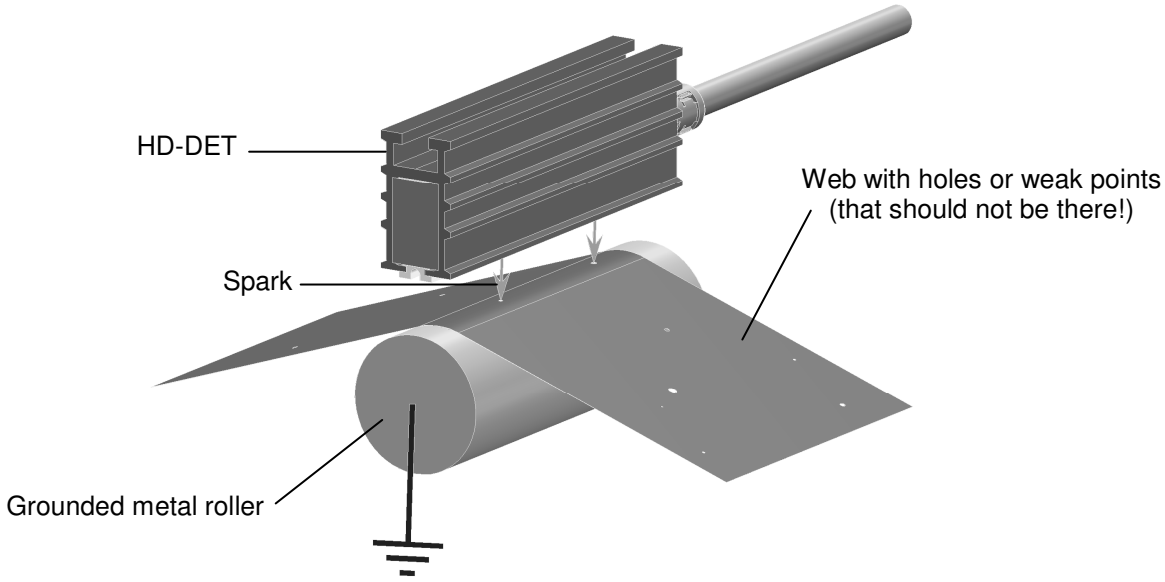


Figure 2: HD-DET application

2 Description

The HD-DET is connected through a high voltage cable and with a high voltage connector plugged into the ECM charging generator.
The pins face the grounded roller with a **electrical insulative material** (the web) as a barrier against short circuit in between. When a hole or electrical weak part of the web passes one or more pins of the bar, a spark will occur. This spark means a short circuit for the high voltage generator and it is detected as an overload of the generator. The overload output of the ECM generator is used as output signal for material faults.

GB

Since high voltage on sharp pins creates static charge in the material passing those pins a static discharge of the material is advised. Simco static bars are advised to discharge the web after the web testing.

3 Safety

The following safety guidelines must be observed in order to prevent physical injury and damage to objects or the HD-DET itself.

Warning:

- The type HD-DET detection bar is intended only for detection of holes in a web.
- When carrying out work on the equipment: de-energise the equipment.
- Do not install detection bars in the immediate vicinity of flammable materials, solvents or gases.
- Electrical installation, maintenance and repair must only be carried out by a skilled electrical engineer.
- The pins are hazardeous do not touch.
  You will get an unpleasant electrical shock.
- High voltages are hazardous for people who have a pacemaker.
- Metal parts near the detection bars, including the machine frame, must be earthed.
- If changes, adjustments, etc. have been made without prior consent in writing, guarantee can no longer be invoked for the equipment.

4 Technical specifications

Working voltage	Max. 30 kV DC
Suitable high voltage generator	Simco ECM-30 P
Working distance	Max. 5 mm
Ambient temperature	55°C max.
Detection frequency	See manual ECM generator

5 Installation

5.1 Checks

- Check that the detection bar is undamaged and that you have received the correct version.
- Check that the data on the packing slip corresponds with the data shown on the product received.

If you have any problems and/or in the case of ambiguity:
please contact Simco-Ion or your regional agent.

5.2 Installation of the HD-DET Bar

- The detection bar must be mounted with the plastic M10 bolts. These bolts are supplied with the detection bar.
- Do **not** use metal brackets or other fasteners.

GB

- The minimum distance between the sides of the detection bar and metal parts must be > 75 mm, the distance between the pins and the grounded metal roller is not within this minimum distance.
- Mount the detection bar with the points towards the material opposite a grounded metal roller. The distance between the pins and the roller should be as small as possible (indication 2 - 3 mm).
- Mask the parts of the detection bar extending beyond the material path with a cover plate in case the effective length exceeds the material width minus the dead end distances (fig. 4) (you have to cut the plate to the correct length yourself). **This is not recommended, a correct effective length in combination with the material width is the best technical solution!**
- Using the assembly clamps supplied, fix the HV cable alongside the machine frame to the Simco-Ion ECM high voltage generator.
  NOTE: keep the high voltage cable as short as possible.

Warning:

Do not route high voltage cables next to any sharp metal components and take care to avoid sharp bends and kinks in the cable.

- **Keep high voltage cables separated from low voltage wiring.**
- **Metal parts near the detection bars, including the machine frame, must be earthed.**

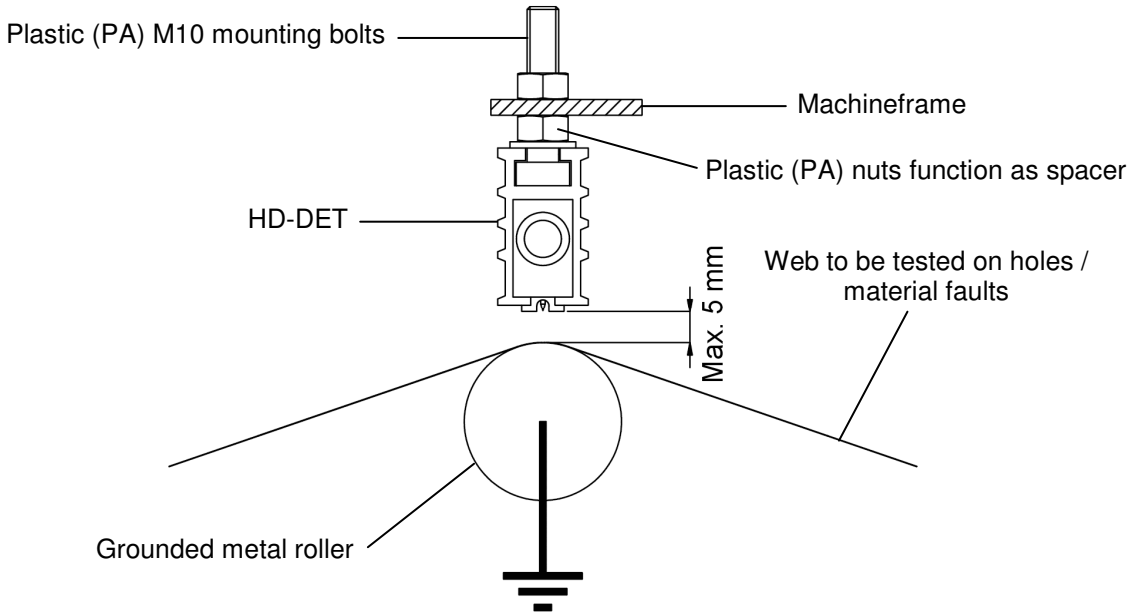


Figure 3: Installation HD-DET

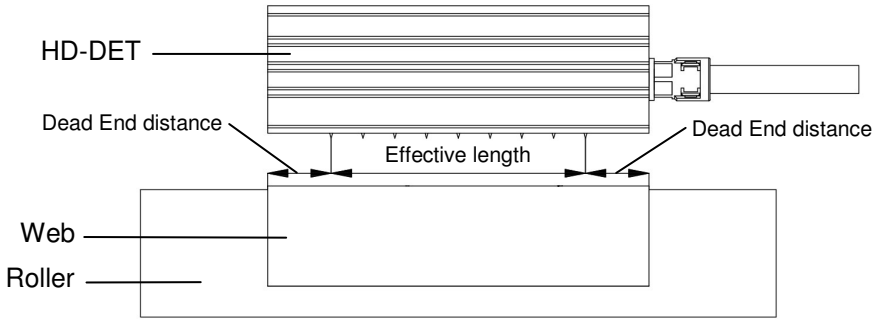


Figure 4: Installation HD-DET

GB

5.3 Assembly of the spring loaded connector

The spring loaded HV connector (Figure 5) is fitted to the detection bar connection cable.
If a high voltage cable with a protective sleeve (standard) is used, the knurled screw supplied with the HV connector is not required. The knurled screw is replaced by the gland fitted to the protective sleeve.
Fit the spring loaded HV connector in accordance with Figure 6.

- Strip 15 mm of the high voltage cable (2).
- Bend the stripped cores of the high voltage cable back on themselves. Do not twist the cores.
- Slide the pipe (1) over the cable.
- Slide the metal contact bush (3) over the cable until it abuts the cable insulation.
- Slide the pipe back over the contact bush so that the screw hole in the contact bush and the cores of the cable are visible through the hole in the pipe.
- Screw the set screw (4) through the pipe in the metal contact bush so that the unit is securely attached to the cable. The set screw must be at the same height as or below the surface of the pipe.
- Tighten the contact spring (5) with the closed end on the screw thread of the metal contact bush.
- Check that the spring loaded HV connector is securely attached to the cable.

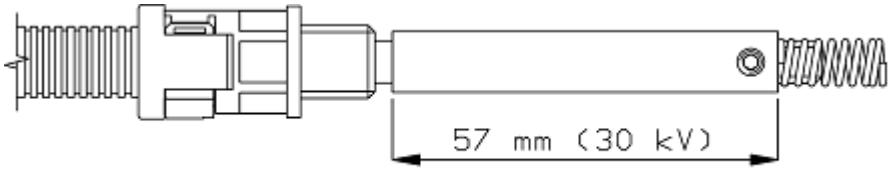


Figure 5: 30 kV spring loaded HV connectors

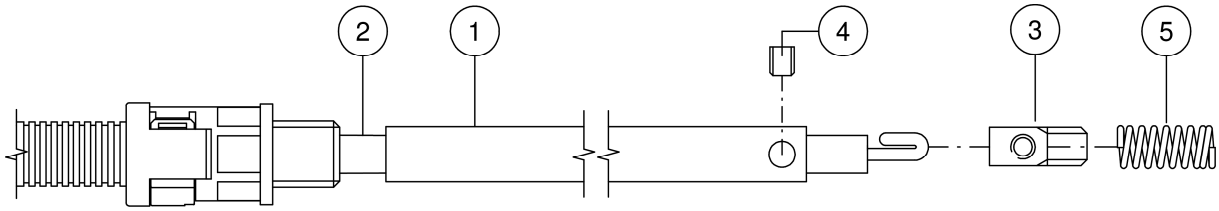


Figure 6: Assembly of spring loaded HV connectors

5.4 Connecting Bar and ECM high voltage generator

- Connect the high voltage cable to the Simco-Ion ECM high voltage generator using the spring loaded connector. (see Simco-Ion ECM high voltage generator manual).
- Connect the Simco-Ion ECM high voltage generator overload output to your system (see manual Simco-Ion ECM high voltage generator).

If you have any questions concerning proper detection or installation:
please contact Simco-Ion or your regional agent.

GB

6 Commissioning and operation

 **Warning:**

- **High voltages can be dangerous for pacemaker wearers.**
- **Touching live parts of the detection bar will cause an unpleasant electrical shock.**

The detection bar is put into use by switching on the DC high voltage generator (please refer to the manual of the DC high voltage generator).

Note that the edges of the web cannot be tested on material faults, the high voltage will create a spark around the edges to the grounded metal roller. The width of this indetectable area depends on the adjusted high voltage level.

Check and adjust the system.
Lead the material to be tested between the detection bar and the grounded metal roller and make a hole or pinhole in the material. Place the material with the (pin)hole on the grounded metal roller. Adjust the high voltage (see manual Simco-Ion ECM high voltage generator) to a level until sparks jump through the hole or pinhole and the overload LED on the Simco-Ion ECM high voltage generator lits.

Tips.

- The Dead End distance depends on the detection bar / roller distance and adjusted voltage!
- Air between roller and web results in instable detection.
- Compared to big holes the detection bar is **more** sensitive for pinholes.
- Lower adjusted high voltage level results in a lower charged web after testing.
- Wear of pins result in a higher voltage level setting for reliable hole detection.

7 Maintenance

 **Warning:**

- **When carrying out work on the equipment: de-energise the equipment.**

- Keep the detection bar and the pins clean.
- If fouled: clean the detection bar with a hard non-metal brush.
- If heavily fouled: clean the detection bar with isopropyl alcohol.

☞**Attention:**

- **Do not damage the detection bar points.**
- **Make sure the detection bar is entirely dry before you turn it on again.**

GB

8 Faults

Table 1: faults

Problem	Cause	Remedy
No high voltage	High voltage generator not switched on	See manual high voltage generator
	High voltage generator defective	See manual high voltage generator
	HV cable interrupted	Restore HV cable
Continuous detection	High Voltage level too high	Decrease High Voltage level
	Many holes in the web	No remedy
	Conductive parts in the web	No remedy
	Detection Bar polluted	Clean the bar
No detection	High Voltage level too low	Increase High Voltage level
	Pins polluted	Clean pins and bar
	Pins worn	Replace Detection Bar

9 Repairs

Warning:

- **Repairs shall be made by a skilled electrical engineer.**
- **When carrying out work on the equipment: de-energise the equipment.**

Except for the cable protection the detection bar does not have any parts which may be replaced by the customer. Simco-Ion recommends to return defective bars.
Request an RMA form by sending an e-mail to service@simco-ion.nl.
Pack the bar properly and clearly state the reason for return.

10 Disposal

Observe the applicable local environmental and other regulations when disposing of the equipment.

Simco (Nederland) B.V.
Postbus 71
NL-7240 AB Lochem
Telefoon +31-(0)573-288333
Telefax +31-(0)573-257319
E-mail general@simco-ion.nl
Internet http://www.simco-ion.nl