

(UK/0126/0054)



MI-006

United Kingdom of Great Britain and Northern Ireland
**Certificate of EC type-examination of a
measuring instrument**
Number: UK/0126/0054 revision 1

issued by the Secretary of State for Business, Innovation & Skills
Notified Body Number 0126

In accordance with the requirements of the Measuring Instruments (Non-Prescribed Instruments) Regulations 2006 which implement, in the United Kingdom, Council Directive 2004/22/EC, this certificate of EC type-examination has been issued to:

Marel Limited
Wyncolls Road
Severalls Industrial Park
Colchester
CO4 9HW
United Kingdom

in respect of a family of automatic checkweighers / catchweighers designated the 9000 Series and having the following characteristics:

Maximum capacity	Max \leq 40,000 g
Minimum capacity	Min \geq 20 e for Category X and Y
Scale interval	e \geq 1 g
Number of scale intervals	n \leq 2750 for single interval instruments n _i \leq 2750 for multi- interval instruments
Maximum belt speed	\leq 48 m/min
Accuracy classes	XIII(1) and Y(a)

The necessary data (principal characteristics, alterations, securing, functioning etc) for identification purposes and conditions (when applicable) are set out in the descriptive annex to this certificate.

This revision replaces earlier versions of this certificate.

Signatory: P R Dixon
for Chief Executive
National Weights & Measures Laboratory
(Part of the National Measurement Office)
Stanton Avenue
Teddington
Middlesex TW11 0JZ
United Kingdom

Issue Date: 22 February 2011
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Reference No: T1108/0044

Descriptive Annex

1 INTRODUCTION

This pattern of an automatic catchweigher, designated the 9000 Series, operates as an automatic weight or weight/price labeller (Category Y). The instrument may also operate as an automatic checkweigher (Category X).

It comprises a weighing device with associated thermal label printer and mechanical handling facilities and is designed to weigh packs dynamically. Pricing, pack and labelling information is stored in files, known as Comformats, selectable for the commodity or labels being processed. Labels are printed with the required transaction data and are applied to the packs automatically.

2 FUNCTIONAL DESCRIPTION

2.1 Mechanical

2.1.1 The instrument (Figure 1) is constructed in stainless steel, anodised aluminium and plastics. The main frame work consists of a stainless steel re-enforced electrical cabinet that houses the control and display unit, electrical controls and adjustable screw feet for machine levelling. A level-indicator is provided on top of the weigh head conveyor. The modular conveyor section is fastened to the top of the electrical cabinet, and comprises in-feed, weigh head, and out-feed conveyors. The in-feed and out-feed conveyors are driven by dc motors. The weigh head conveyor is self-contained and is also driven by a dc motor.

2.1.2 The pole-mounted control and display unit, situated behind the conveyors, houses the conveyor based electrical hardware and display. Commands are entered via the 15" TFT LCD touch-screen. Access is through a lockable rear cover. The machine covers are stainless steel throughout with a perspex cover provided over the weighing area. A selection of photocells are mounted along the centreline of the conveyors for pack detection. One or two photocells are mounted on the infeed belt sections to pitch packs onto the weigh table, a second is placed between the gap of the infeed conveyor and weigh table, another is placed between the weigh table and the outfeed conveyor.

2.1.3 Weigh platform

2.1.3.1 The weighing device comprises a single strain gauge load cell located below the centre of the weigh conveyor.

The load cell may be as follows:

Entry / Mid-range:

Maximum capacity (Max)	1500 / 3000 g	1500 / 4600 g	3000 g	4600 g	5500 g
Verification scale interval (e)	1/2 g	1/2 g	2 g	2 g	2 g
Load cell type	Tedea Huntleigh 1040 C3				
Emax	10 or 15 kg				

Top range:

Maximum capacity (Max)	1500 g	1500 g
Verification scale interval (e)	1 g	2 g
Load cell type	Tedeo Huntleigh 1040 C3	
Emax	10 or 15 kg	

Heavy range:

Maximum capacity (Max)	10/20 kg	5/10/40 kg	10/40 kg	27.5 kg	40 kg
Verification scale interval (e)	5/10 g	5/10/20 g	10/20 g	10 g	20 g
Load cell type	Tedeo Huntleigh 1260 C3				
Emax	50 or 75 kg				

Any compatible load cell may be used providing the following conditions are met:

- There is a respective OIML Certificate of Conformity (R60) or a test certificate (EN45501) issued for the load cell by a Notified Body responsible for type examination under Directive 90/384/EEC.
- The certificate contains the load cell types and the necessary load cell data required for the manufacturer's declaration of compatibility of modules (WELMEC 2, Issue 4, 2004, No 11), and any particular installation requirements. A load cell marked NH is allowed only if humidity testing to EN45501 has been conducted on this load cell.
- It is not a load cell with digital output
- The characteristics of the replacement load cell such as nlc, Y, Z are the same or better than the load cell tested dynamically (Tedeo 1040 C3, capacity 15 kg)
- The design of the load cells and the material are the same
- No oil damper is used

2.1.3.2 Packs are weighed as they pass over the weigh head conveyor which runs continuously at the speed of the in-feed and out-feed conveyors. The load cell is connected to a Marel MWS2 digital weighing unit. Real time control of the machine is performed by the Elvis board which communicates via CAN with the MWS2 electronics to receive and process weight messages.

2.1.4 The label head is mounted above the out-feed conveyor. It contains the hardware necessary to print, feed and apply self-adhesive labels from a reel. The label applicator is a linear applicator and contains the pneumatics necessary to apply a partial vacuum to the label.

2.2 Electrical

2.2.1 The electrical hardware is based in three main locations: the control and display unit, the electrical cabinet and the thermal label printer.

2.2.2 The control of the instrument is provided by a single board, designated the Elvis board. The Elvis board uses a Motorola MPC860 microprocessor, designated the PM860 Power PC Module. It also communicates with the common I/O module to handle the basic I/O functions and conveyor-based dc motors.

2.2.3 The PM860 interface is the pole-mounted control and display unit, communicating via Ethernet. The control and display unit houses a 15” TFT LCD, a resistive touch screen (Figure 2) and a Fujitsu D2703 single board computer with dual core processor. The common I/O board is also the control interface to the labeller providing CAN and pack-timing information to ensure each pack is labelled with the correct information.

2.2.4 Interconnecting conduits between the main electrical cabinet and the thermal labeller contains mains power, signal and communication cables and air supply. The thermal label head comprises a main processor module, host board for I/O and a display and keypad. The main processor module incorporates a 32-bit microprocessor memory, communication ports and a connection to the host I/O board.

2.3 Devices

The instrument has the following devices:

- Automatic zero setting device active during automatic operation (at least every 3 h)
- Semi-automatic zero-setting ($\leq 4\%$ max, testing mode only)
- Initial zero-setting ($\leq 20\%$ max)
- Pre-set tare device (subtractive)
- Static calibration, not accessible to the user
- Belt speed setting, accessible to the user
- Internal memory for storage of batch data (category X)
- Device acting upon significant faults
- Screen check at power-up
- Label editing (restricted to access levels higher than operator)
- Conformat editing (restricted to access levels higher than operator)
- High resolution mode (0.1e) for testing purposes, not accessible to the user
- Operation under Category Y only or X and Y selection device, accessible to the user (restricted to access levels higher than operator, see note below)

Note: The parameter allowing the instrument to operate as category Y only or X and Y is set at initial verification and part of the legally relevant parameters, and is therefore protected. The user has no access to any mode of operation disabled at initial verification.

Note: the pre-set tare accuracy is 1e when running category Y single or multi-conformats, as well as category X and Y multi-conformats. The pre-set tare accuracy may be greater than e (1/8 e) only when running category X only multi-conformats.

3 TECHNICAL DATA

3.1 The 9000 Series has the following technical characteristics:

Range	All
Minimum capacity (Min)	20e
Tare (T)	-450 e (single interval) -450 e ₁ (multi interval)
Climatic environment	0°C to +35 °C
	Non-condensing (closed)
EM environments	E1 and E2
Load cell excitation voltage	14 Vdc

Power supply	230 Vac 50/60 Hz
Display/keyboard location	Control and display unit
Accuracy classes	Y(a) and XIII(1)

Max operating speed:

Single interval: 0-1500e: 0.8 m/s 1501e-Max: 0.6 m/s
Multi-interval: 0-1500e₂: 0.8 m/s 1501e₂-Max: 0.6 m/s

3.2 Documentation and drawings

Description	Drawing / Document number	Rev.
Technical reference Manual	Specific to each individual machine	-
Dimensional drawings	CL5301648 (base model)	1
Mechanical assembly drawings	AC1540311 (9000 Series)	1
	AC1526660 (cabinet)	1
	AC1542030 (weigh head)	1
	AC1540220 (control and display unit)	1
Electrical assembly drawings	1540251 (22 sheets)	4
PCB drawing	1521560 (Elvis board)	2
	1521350 (PM860)	7
	1521560 (Epic)	2
	1521670 (Common I/O)	3

3.3 Software

3.3.1 The legally-relevant section of the software has its own version number, 1.1, which is displayed in the Info page of the Test Window. The overall software version is also shown in this window, and is of the form 1.x.y, with x and y reflecting non-legally relevant modifications. This version number covers both the legally-relevant and non-legally relevant portions of the software. The firmware boot code software version is also shown in this window and is currently at 1.13.0. The boot code does not include any legally relevant software.

3.3.2 Any changes to legally relevant parts of the software will result in a change to the legally relevant and overall software version numbers. Any changes to the non-legally relevant parts of the software will result in a change to the overall software version number.

3.3.3 Security

3.3.1 Legally relevant parameters are protected by two event counters, one specifically for weight calibration and the other one for all other legally relevant parameters. The value stored in these counters is incremented each time any of the legally-relevant parameters is altered. These counters are designated “Calibration Count” and “Configuration Count” and can be displayed in “Main Menu / System Information”. Access to these legally relevant parameters should be password-protected, and both counters must be written on a tamper-evident label, located on or near the rating plate.

3.3.2 The counters can only be reset when a Delford dongle is used on the USB port located on the left side of the control and display unit.

4 PERIPHERAL DEVICES AND INTERFACES

4.1 Interfaces

4.1.1 The instrument may have a number of the following interfaces:

- RS232/RS485/RS422
- Ethernet
- Digital I/O

4.2 Peripheral devices

4.2.1 The instrument may be connected to any peripheral device that has been issued with a test certificate by a Notified Body responsible for Annex B (MI-006) under Directive 2004/22/EC in any Member State and bears the CE marking of conformity to the relevant directives; or

A peripheral device without a test certificate may be connected under the following conditions:

- it bears the CE marking for conformity to the EMC Directive;
- it is not capable of transmitting any data or instruction into the weighing instrument, other than to release a printout, checking for correct data transmission or validation;
- it prints weighing results and other data as received from the weighing instrument without any modification or further processing; and
- it complies with the applicable requirements of Paragraph 8.1 of Annex I.

5 APPROVAL CONDITIONS

The certificate is issued subject to the following conditions:

5.1 Legends and inscriptions

5.1.1 The instrument bears the following legends (Figure 3):

‘CE’ marking
Supplementary metrology marking
Notified body identification number
Accuracy class
Serial number
Manufacturers mark or name
Certificate number
Max
Min
e =
T =
Temperature-range
Power supply
Pneumatic pressure
Maximum speed / pack rate

5.2 Printing (Weight/Weight-Price labeller: category Y)

Editing of the printed labels format is restricted to Manager or Supervisor levels. The labels must bear the weight, unit price and price to pay (when applicable), with associated units. Currency units must be in accordance with the country of use.

When preset tare values are printed, they must be identified as such, and net and/or gross weights should be clearly identified when printed with a tare value. Net weights do not require such identification when the preset tare value is not printed.

Printing below Min is not allowed.

6 LOCATION OF SEALS AND VERIFICATION MARKS

6.1 The 'CE' marking, supplementary metrology marking and certificate number are located on the rear of the control cabinet below the conveyor. The CE mark shall be impossible to remove without damaging it. The data plate shall be impossible to remove without it being destroyed.

The markings and inscriptions shall fulfil the requirements of Paragraph 9 of Annex I of the Directive 2004/22/EC.

6.2 Components that may not be dismantled or adjusted by the user (load cell) will be secured by either a wire and seal or tamper evident label and securing mark. The securing mark may be either:

- a mark of the manufacturer and/or manufacturer's representative, or
- an official mark of a verification officer.

7 ALTERNATIVES

7.1 Having the machine fitted with two top labellers, in which case the system is modified as follows. The outfeed conveyor length is extended and two identical label printers are fitted in series. Each printer is connected to the control cabinet via its own interconnecting conduit containing mains power supply, an air supply pipe and signal cables (RS232). The Group Comformat may be used to enable labelling using one printer only, or using both.

7.2 Having the machine fitted with a base labeller (Figure 4). The base labeller is a Delford labeller which is controlled directly by the main control cabinet via an RS232 serial or CAN interface on the main control cabinet. The labeller has inputs to detect conveyor movement and its own photocell. It comprises a main processor module, a host board, an I/O and stepper board, a printhead interface board and a display and keypad. The main processor module incorporates a 32-bit microprocessor, memory, serial ports and a connection to the host board.

7.2.1 The maximum packs/min throughput of the machine may be limited by the speed of the base labeller.

7.2.2 The base labeller is connected directly to the main control cabinet of the control cabinet via the RS232 serial or CAN interface, the software in the control cabinet communicates with the base labeller as if it were a top labeller. The base labeller does not store label formats, but does store fonts and logo bitmaps.

7.3 Having the top labeller removed from the machine, in which case the frame is modified and the machine fitted with one or two base labellers. Where the machine is fitted with two base labellers the outfeed conveyor is extended with the bed having two apertures.

7.4 Having a machine fitted with two top labellers and a base labeller, in which case the base labeller will be connected to the same RS232 serial port as the second top labeller. The user will manually switch between the top labeller and base labeller using a serial port switch.

7.5 Having a rotary label applicator in place of the linear label applicator. The maximum belt speed is 0.8 m/s.

7.6 Having the base labeller mounting changed so that there is no lift mechanism, pneumatic locking bolts or PLC.

7.7 Having the thermal label printer without the small keypad and display.

7.8 Having the instrument modified to enable the connection of a sleeving/labelling unit (SLU), in which case the instrument is designated the 'Integrated machine'. The outfeed conveyor and thermal label printer are removed such that the system comprises only three conveyors. The thermal label printer is replaced by a Smart Date printer provided on the SLU. The outfeed conveyor is replaced by the infeed conveyor of the SLU. The SLU is a stand-alone system which is mounted following the weigh head conveyor of the modified instrument. The interface between the instrument and the SLU is achieved by communication via a PIP processor board and the SLU's PLC. The SLU utilises the Smart Date printer to print the associated weight and price information received from the 'Integrated' machine onto the sleeve. The SLU takes the sleeve and places it around the pack. Interlocks are provided to ensure that the correct sleeve is placed on each pack.

7.8.1 The Smart Date printer may be replaced by a Markem Cimjet printer and the instrument may be configured such that the outfeed conveyor and thermal label printer are retained. The stand-alone SLU is mounted following the outfeed conveyor.

7.8.2 The instrument may be configured to operate using:-

- (i) only the thermal label printer; or
- (ii) only the SLU; or
- (iii) both the thermal label printer and the SLU.

7.9 Having a modified construction (Figure 5) as follows.

7.9.1 The instrument comprises a framework which supports the modular conveyor sections, the electrical cabinet and the pole-mounted control and display unit. There are three conveyors; the infeed, separator and weigh head conveyor. The conveyors are driven by brushless DC motors with the speed controlled by software. A cover is provided over the weigh head conveyor.

7.9.2 Modular labeller

7.9.2.1 The outfeed conveyor and thermal label printer are combined in a stand-alone modular labeller which is connected to the main instrument and is located following the weigh head conveyor.

7.9.3 Multiple modular labellers, including base labellers, may be connected to the instrument.

7.9.4 The modular labeller(s) may be removed from the system and replaced by an SLU.

7.9.5 Having the instrument configured with both a modular labeller and an SLU. The instrument may be configured with both a modular labeller and an SLU and may operate using:-

- (i) only the modular labeller; or
- (ii) only the SLU; or
- (iii) both the modular labeller and the SLU.

7.10 Having a modified construction (Figure 6) as follows: the pole-mounted control and display unit described in section 2.2.3 is replaced by a remote pod with conduit, mounted on a stand. The remote pod assembly follows drawing AC1545632 and the conduit shall be according to drawing AC1545649.

7.11 Having the instrument manufactured by:

AEW Delford Systems
Wyncolls Road
Severalls Industrial Park
Colchester
CO4 9HW
United Kingdom

8 ILLUSTRATIONS

- Figure 1 9000 Series
- Figure 2 Display (Running screen)
- Figure 3 Rating plate
- Figure 4 Base labeller
- Figure 5 Modified construction (authorised alternative 7.8)
- Figure 6 Modified construction (authorised alternative 7.10)

9 CERTIFICATE HISTORY

ISSUE NO.	DATE	DESCRIPTION
UK/0126/0054	01 May 2009	Type examination certificate first issued.
UK/0126/0054 Rev 1	22 February 2011	Applicant's name changed on front page. Sections 7.10, 7.11 and Figure 6 added.



Figure 1 **9000 Series**

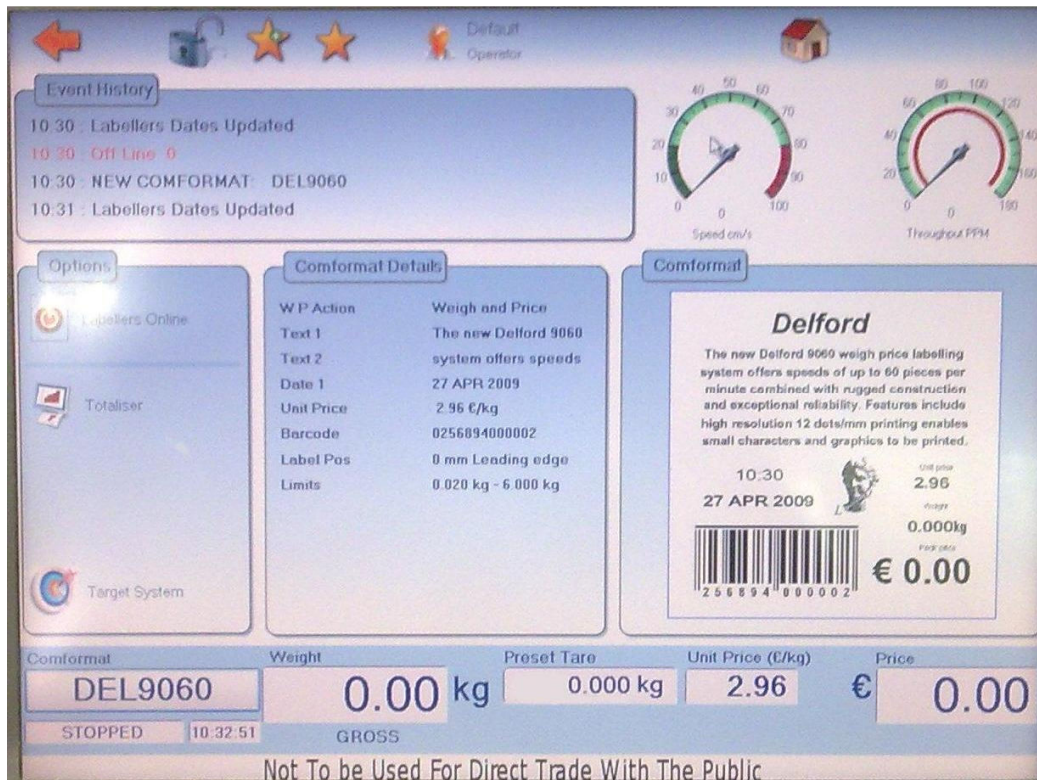


Figure 2 Display (Running screen)

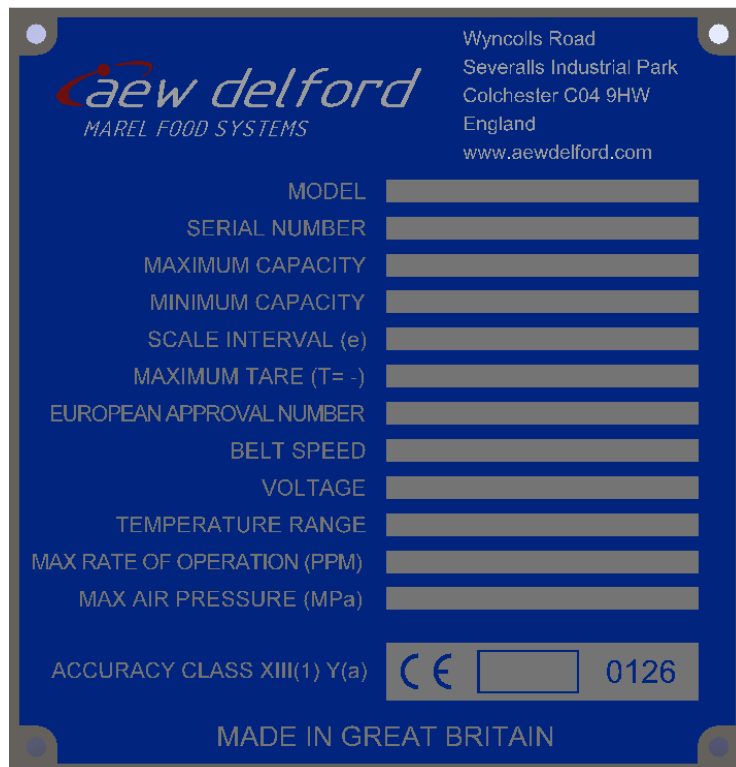


Figure 3 Rating plate

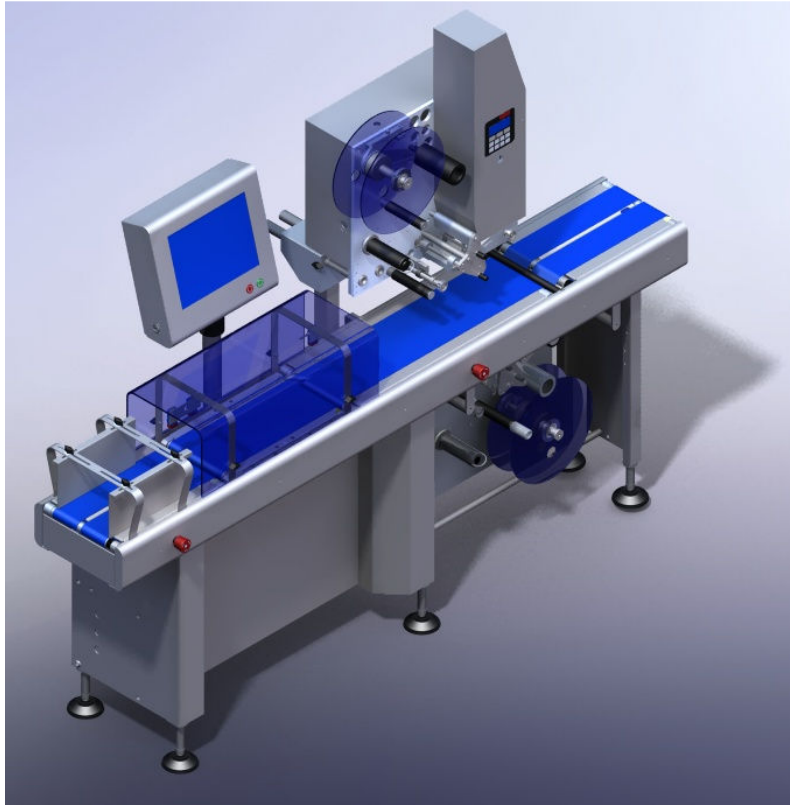


Figure 4 Base labeller

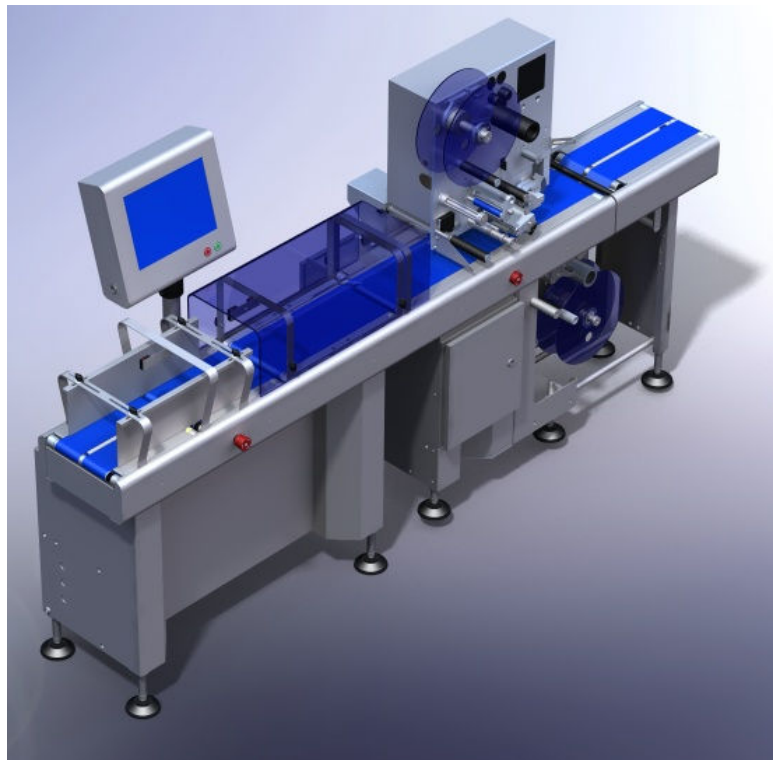


Figure 5 Modified construction (authorised alternative 7.8)

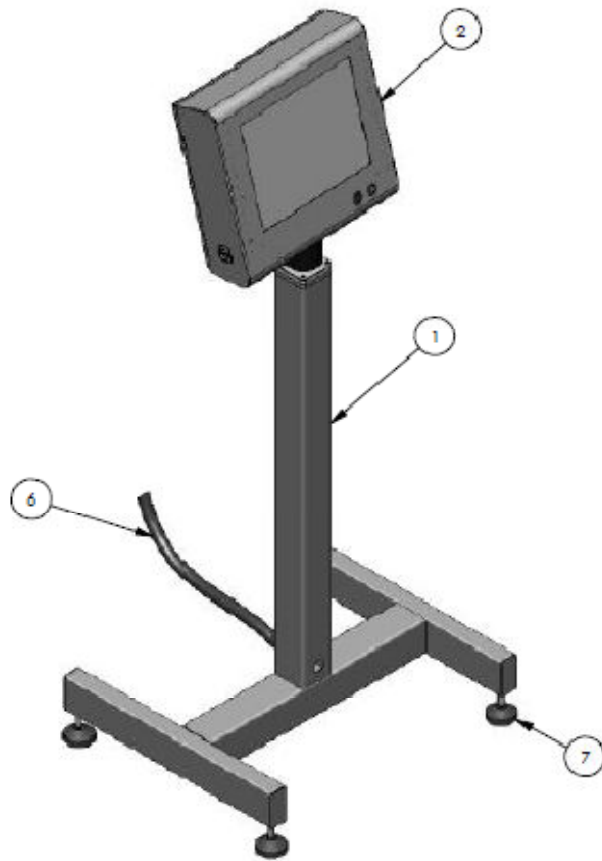


Figure 6 **Modified construction (authorised alternative 7.10)**