



Australian Government
**National Measurement
Institute**

Bradfield Road, West Lindfield NSW 2070

Cancellation
Certificate of Approval No 6/14G/2

Issued by the Chief Metrologist under Regulation 60
of the
National Measurement Regulations 1999

This is to certify that the approval for use for trade granted in respect of the
Espera-Werke Model ES 600 HS Automatic Catchweighing Instrument
submitted by
Espera-Werke GmbH
Postfach 10 04 55
D-47004 DUISBURG
GERMANY

has been cancelled in respect of new instruments as from 1 December 2013.

Signed by a person authorised by the Chief Metrologist
to exercise their powers under Regulation 60 of the
National Measurement Regulations 1999.

A handwritten signature in black ink, appearing to read 'A Rawlinson', with a horizontal line underneath.

Dr A Rawlinson



National Standards Commission

Certificate of Approval

No 6/14G/2

Issued under Regulation 9
of the
National Measurement (Patterns of Measuring Instruments) Regulations


This is to certify that an approval for use for trade has been granted in respect of the

Espera-Werke Model ES 600 HS Automatic Catchweighing Instrument

submitted by Espera-Werke GmbH
 Postfach 10 04 55
 D-47004 DUISBURG
 GERMANY.

NOTE: This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

CONDITIONS OF APPROVAL

 This approval becomes subject to review on 1 March 2003, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked NSC No 6/14G/2 and only by persons authorised by the submitter.

It is the submitter's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the Commission and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with the Commission's Document 106.

The Commission reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificate No S1/0/A.

DESCRIPTIVE ADVICE

Pattern: approved 26 February 1998

- An Espera-Werke model ES 600 HS single interval Class Y(a) automatic catchweighing instrument of 6 kg maximum capacity.

Variants: approved 22 July 1998

1. With an ESF103 conveyor system.
2. With an ESF123 conveyor system.
3. With an ESF133 conveyor system.
4. A model ES 600 multi-interval Class Y(a) automatic catchweighing instrument of 8 kg maximum capacity.
5. A model ES 600K/8 multi-interval Class Y(a) automatic catchweighing instrument of 8 kg maximum capacity.
6. A model ES 600M single interval Class Y(a) automatic catchweighing instrument of 4 kg maximum capacity.

Technical Schedule No 6/14G/2 describes the pattern and variants 1 to 6.

FILING ADVICE

The documentation for this approval comprises:

Certificate of Approval No 6/14G/2 dated 30 March 1999
Technical Schedule No 6/14G/2 dated 30 March 1999 (incl. Test
Procedure)
Figures 1 to 9 dated 30 March 1999



Signed and sealed by a person authorised under Regulation 9 of the National Measurement (Patterns of Measuring Instruments) Regulations to exercise the powers and functions of the Commission under this Regulation.

A handwritten signature in black ink, appearing to read 'J. Bush'.

TECHNICAL SCHEDULE No 6/14G/2

Pattern: Espera-Werke Model ES 600 HS Automatic Catchweighing Instrument.

Submittor: Espera-Werke GmbH
Postfach 10 04 55
D-47004 DUISBURG
GERMANY.

1. Description of Pattern

An Espera-Werke model ES 600 HS catchweigher (Figure 1) which is approved to weigh objects either statically or while in motion.

1.1 Details

The instrument is a single interval Class Y(a) automatic catchweighing instrument, with a maximum capacity of 6.0 kg, a minimum capacity of 0.040 kg and with a verification scale interval of 0.002 kg. The instrument may operate statically (package stopping on the platform) or dynamically (package continuously moving on the platform). The maximum conveyor speed is 6.4 m/min and the minimum conveyor speed is 1.9 m/min.

1.2 Operation

A number of different parameters, such as ticket format, conveyor speed and price per kilogram are programmed into the instrument using the terminal and are stored as "Commodity Numbers". When a commodity number is entered and run, the conveyors start up and the instrument is ready to weigh in motion. An object to be weighed is placed or rolled onto the infeed conveyor and is then pulled along onto the weighing receptor conveyor and weighed in motion. After weighing, the object is pulled onto the outfeed conveyor where a ticket is printed then applied to the object by a plunger. The entire process may be continuous, or the package may stop whilst on the platform.

1.3 Weighing System

Espera-Werke model ES 600 HS weighing system has a roller conveyor-type load receptor having maximum nominal dimensions of 500 x 350 mm.

The pattern comprises:

- a) an ESC 903 terminal/indicator (Figure 1) which is used to control the system and store data such as system parameters (e.g. conveyor speed and ticket format);

- b) an ESW 333 basework which contains a load cell and electronics which supply and measure voltages to and from the load cell. An HBM model EF5 load cell of 13 kg maximum capacity mounted in a parallelogram mechanism as shown in Figure 2 is used;
- c) an ESF203 conveyor system which comprises separate infeed, outfeed and load receptor conveyors and an associated electric motor and drive arrangement for each conveyor. A number of optical sensors are also located along the infeed and weighing receptor conveyors;
- d) A printhead which comprises a printer and a plunger used to apply the label to the weighed object. The printhead may also have a small keyboard which is used for programming parameters such as plunger force and label rotation; and
- e) an ESG 53 stand which supports the conveyor system and printhead and houses an air compressor (for printhead) and transformer.

1.4 Terminal/Indicator

The model ESC 903 terminal/indicator (Figure 1) displays the dynamic weight (in kg).

Interfacing the instrument with other equipment is done via a number of ports located on the rear of the terminal. There are two RS 232 ports, one for sending data to other terminal(s) and the other used for the connection of an optional scanner. There are also two RS485 ports for connecting other Espera modules and a 25 pin parallel port for a printer.

1.5 Verification/Certification Provision

Provision is made for the application of a verification/certification mark.

1.6 Sealing Provision

Provision is made for the calibration adjustments to be sealed as shown in Figure 3.

1.7 Markings

Instruments carry the following markings, in the form shown at right:

Manufacturer's mark, or name written in full	Espera-Werke GmbH
Model designation
Serial number
Year of manufacture
Pattern approval mark	NSC No 6/14G/2
Maximum capacity	<i>Max</i> kg
Minimum capacity	<i>Min</i> kg
Verification scale interval	<i>e</i> = kg
Maximum conveyor speed	6.4 m/min
Minimum conveyor speed	1.9 m/min

2.1 Variant 1

With an ESF103 conveyor system (Figure 4).

2.2 Variant 2

With an ESF123 conveyor system (Figure 5).

2.3 Variant 3

With an ESF133 conveyor system (Figure 6).

2.4 Variant 4

A model ES 600 multi-interval Class Y(a) automatic catchweighing instrument (Figure 7), with a verification scale interval (e_1) of 0.001 kg up to 3 kg, with a verification scale interval (e_2) of 0.002 kg from 3 kg up to 6 kg, and a verification scale interval (e_3) of 0.005 kg from 6 kg up to the maximum capacity of 8 kg.

The instrument may only operate statically (package stopping on the platform).

2.5 Variant 5

A model ES 600K/8 multi-interval Class Y(a) automatic catchweighing instrument (Figure 8), with a verification scale interval (e_1) of 0.001 kg up to 3 kg, with a verification scale interval (e_2) of 0.002 kg from 3 kg up to 6 kg, and a verification scale interval (e_3) of 0.005 kg from 6 kg up to the maximum capacity of 8 kg.

The instrument may only operate statically (package stopping on the platform).

2.6 Variant 6

A model ES 600M single interval Class Y(a) automatic catchweighing instrument (Figure 9), with a maximum capacity of 4 kg, a minimum capacity of 0.040 kg and with a verification scale interval of 0.002 kg.

The instrument may only operate dynamically (package continuously moving on the platform).

TEST PROCEDURE

Non-automatic Operation

The maximum permissible errors for increasing and decreasing loads on initial verification/certification for loads, m , expressed in verification scale intervals, e , are:

- $\pm 0.5e$ for loads $0 \leq m \leq 500$;
- $\pm 1.0e$ for loads $500 < m \leq 2\,000$; and
- $\pm 1.5e$ for loads $2\,000 < m \leq 10\,000$.

- With the conveyor switched off, carry out a load test and an eccentricity test.

Automatic Operation

The maximum permissible errors for class Y(a) automatic catchweighing instrument for increasing and decreasing loads on initial verification/certification for loads, m , expressed in verification scale intervals, e , are:

- $\pm 1.5e$ for loads $0 \leq m \leq 500$;
- $\pm 2e$ for loads $500 < m \leq 2\,000$; and
- $\pm 2.5e$ for loads $2\,000 < m \leq 10\,000$.

For multi-interval instruments with verification scale intervals of e_1, e_2, \dots , apply e_1 for zero adjustment, and for maximum permissible errors apply e_1, e_2, \dots , as applicable for the load.

- For single interval instruments, prepare two test objects, one close to minimum capacity and one close to maximum capacity. With the conveyors running, apply each mass separately at least ten times. The masses of the test objects shall be measured on a verified, non-automatic weighing instrument with an uncertainty equal to or better than $0.5e$.
- The tests shall be conducted at the maximum and at the minimum conveyor speeds marked on the instrument.
- Vary the position of the test objects across the receptor.

- For multi-interval instruments, prepare four test objects, one close to minimum capacity in the first range and three close to the maximum capacities in the three ranges. The uncertainty shall be equal to or better than $0.5(e_1, e_2, e_3)$ as applicable.

Note: Use Commission Document 104 to determine compliance with the maximum permissible errors. In addition to the tests 1 to 4 listed in Document 104 (which only includes tests for maximum permissible errors up to $1.5e$) the following also applies:

TEST 5 – Maximum permissible error = $\pm 2e$

Test load = $(n + 0.5)e$

Readings:	A: $(n - 2)e$	reject
	B: $(n + 3)e$	reject
	$A < \text{Readings} < B$	accept

TEST 6 – Maximum permissible error = $\pm 2.5e$

Test load = ne

Readings:	A: $(n - 3)e$	reject
	B: $(n + 3)e$	reject
	$A < \text{Readings} < B$	accept

Note: If the instrument performs near the limits of the maximum permissible errors, six or more acceptable readings out of ten is considered satisfactory.

TECHNICAL SCHEDULE No 6/14G/2

Pattern: Espera-Werke Model ES 600 HS Automatic Catchweighing Instrument.

Submittor: Espera-Werke GmbH
Postfach 10 04 55
D-47004 DUISBURG
GERMANY.

1. Description of Pattern

An Espera-Werke model ES 600 HS catchweigher (Figure 1) which is approved to weigh objects either statically or while in motion.

1.1 Details

The instrument is a single interval Class Y(a) automatic catchweighing instrument, with a maximum capacity of 6.0 kg, a minimum capacity of 0.040 kg and with a verification scale interval of 0.002 kg. The instrument may operate statically (package stopping on the platform) or dynamically (package continuously moving on the platform). The maximum conveyor speed is 64 m/min and the minimum conveyor speed is 19 m/min.

1.2 Operation

A number of different parameters, such as ticket format, conveyor speed and price per kilogram are programmed into the instrument using the terminal and are stored as "Commodity Numbers". When a commodity number is entered and run, the conveyors start up and the instrument is ready to weigh in motion. An object to be weighed is placed or rolled onto the infeed conveyor and is then pulled along onto the weighing receptor conveyor and weighed in motion. After weighing, the object is pulled onto the outfeed conveyor where a ticket is printed then applied to the object by a plunger. The entire process may be continuous, or the package may stop whilst on the platform.

1.3 Weighing System

Espera-Werke model ES 600 HS weighing system has a roller conveyor-type load receptor having maximum nominal dimensions of 500 x 350 mm.

The pattern comprises:

- a) an ESC 903 terminal/indicator (Figure 1) which is used to control the system and store data such as system parameters (e.g. conveyor speed and ticket format);

- b) an ESW 333 basework which contains a load cell and electronics which supply and measure voltages to and from the load cell. An HBM model EF5 load cell of 13 kg maximum capacity mounted in a parallelogram mechanism as shown in Figure 2 is used;
- c) an ESF203 conveyor system which comprises separate infeed, outfeed and load receptor conveyors and an associated electric motor and drive arrangement for each conveyor. A number of optical sensors are also located along the infeed and weighing receptor conveyors;
- d) A printhead which comprises a printer and a plunger used to apply the label to the weighed object. The printhead may also have a small keyboard which is used for programming parameters such as plunger force and label rotation; and
- e) an ESG 53 stand which supports the conveyor system and printhead and houses an air compressor (for printhead) and transformer.

1.4 Terminal/Indicator

The model ESC 903 terminal/indicator (Figure 1) displays the dynamic weight (in kg).

Interfacing the instrument with other equipment is done via a number of ports located on the rear of the terminal. There are two RS 232 ports, one for sending data to other terminal(s) and the other used for the connection of an optional scanner. There are also two RS485 ports for connecting other Espera modules and a 25 pin parallel port for a printer.

1.5 Verification/Certification Provision

Provision is made for the application of a verification/certification mark.

1.6 Sealing Provision

Provision is made for the calibration adjustments to be sealed as shown in Figure 3.

1.7 Tare

A semi-automatic subtractive tare device and/or a keyboard-entered pre-set subtractive taring device each of up to 2 kg maximum capacity may be fitted.

1.8 Markings

Instruments carry the following markings:

Manufacturer's mark, or name written in full	Espera-Werke GmbH
Model designation
Serial number
Year of manufacture
Pattern approval mark	NSC No 6/14G/2
Maximum capacity	Max kg
Minimum capacity	Min kg
Verification scale interval	e = kg
Maximum conveyor speed m/min
Minimum conveyor speed m/min

2.1 Variant 1

With an ESF103 conveyor system (Figure 4).

2.2 Variant 2

With an ESF123 conveyor system (Figure 5).

2.3 Variant 3

With an ESF133 conveyor system (Figure 6).

2.4 Variant 4

A model ES 600 multi-interval Class Y(a) automatic catchweighing instrument (Figure 7), with a verification scale interval (e_1) of 0.001 kg up to 3 kg, with a verification scale interval (e_2) of 0.002 kg from 3 kg up to 6 kg, and a verification scale interval (e_3) of 0.005 kg from 6 kg up to the maximum capacity of 8 kg.

The instrument may only operate statically (package stopping on the platform).

2.5 Variant 5

A model ES 600K/8 multi-interval Class Y(a) automatic catchweighing instrument (Figure 8), with a verification scale interval (e_1) of 0.001 kg up to 3 kg, with a verification scale interval (e_2) of 0.002 kg from 3 kg up to 6 kg, and a verification scale interval (e_3) of 0.005 kg from 6 kg up to the maximum capacity of 8 kg.

The instrument may only operate statically (package stopping on the platform).

2.6 Variant 6

A model ES 600M single interval Class Y(a) automatic catchweighing instrument (Figure 9), with a maximum capacity of 4 kg, a minimum capacity of 0.040 kg and with a verification scale interval of 0.002 kg.

The instrument may only operate dynamically (package continuously moving on the platform).

TEST PROCEDURE

Non-automatic Operation

The maximum permissible errors for increasing and decreasing loads on initial verification/certification for loads, m , expressed in verification scale intervals, e , are:

- $\pm 0.5e$ for loads $0 \leq m \leq 500$;
- $\pm 1.0e$ for loads $500 < m \leq 2\,000$; and
- $\pm 1.5e$ for loads $2\,000 < m \leq 10\,000$.

For multi-interval instruments with verification scale intervals of e_1, e_2, \dots , apply e_1 for zero adjustment, and for maximum permissible errors apply e_1, e_2, \dots , as applicable for the load.

- With the conveyor switched off, carry out a load test and an eccentricity test.

Automatic Operation

The maximum permissible errors for class Y(a) automatic catchweighing instrument for increasing and decreasing loads on initial verification/certification for loads, m , expressed in verification scale intervals, e , are:

- $\pm 1.5e$ for loads $0 \leq m \leq 500$;
- $\pm 2e$ for loads $500 < m \leq 2\,000$; and
- $\pm 2.5e$ for loads $2\,000 < m \leq 10\,000$.

For multi-interval instruments with verification scale intervals of e_1, e_2, \dots , apply e_1 for zero adjustment, and for maximum permissible errors apply e_1, e_2, \dots , as applicable for the load.

- For multi-interval instruments, prepare four test objects, having test load values as follows:
 - (a) test load values close to minimum capacity and to maximum capacity; and
 - (b) test load values at two critical points between minimum and maximum capacities, such as just below range changes or just below error limit changes.

With the conveyors running, apply each mass separately at least ten times. The masses of the test objects shall be measured on a verified, non-automatic weighing instrument with an uncertainty equal to or better than $0.5(e_1, e_2)$ as applicable.

- The tests shall be conducted at the maximum conveyor speed marked on the instrument.
- Vary the position of the test objects across the receptor.

TESTS - Use the following tests to determine compliance with the maximum permissible errors - n is a whole number and e equals e_1, e_2, \dots as applicable for the load.

TEST 1 – Maximum permissible error = $\pm 1.5e$

Test load = ne

Readings:	A: $(n - 2)e$	reject
	B: $(n + 2)e$	reject
	$A < \text{Readings} < B$	accept

TEST 2 – Maximum permissible error = $\pm 2e$

Test load = $(n + 0.5)e$

Readings:	A: $(n - 2)e$	reject
	B: $(n + 3)e$	reject
	$A < \text{Readings} < B$	accept

TEST 3 – Maximum permissible error = $\pm 2.5e$

Test load = ne

Readings:	A: $(n - 3)e$	reject
	B: $(n + 3)e$	reject
	$A < \text{Readings} < B$	accept



National Standards Commission

Notification of Change

Certificate of Approval No 6/14G/2

Change No 1

The following change is made to the approval documentation for the

Espera-Werke Model ES 600 HS Automatic Catchweighing Instrument

submitted by Espera-Werke GmbH
 Postfach 10 04 55
 D-47004 DUISBURG
 GERMANY.

In Technical Schedule No 6/14G/2 dated 30 March 1999, the conveyor speeds given in the last sentence of clause 1. **Description of Pattern** should be amended to read:

“The maximum conveyor speed is 64 m/min and the minimum conveyor speed is 19 m/min.”

Signed and sealed by a person authorised under Regulation 9 of the National Measurement (Patterns of Measuring Instruments) Regulations to exercise the powers and functions of the Commission under this Regulation.

A handwritten signature in black ink, consisting of a large, stylized initial 'J' followed by a series of loops and a long horizontal stroke.



National Standards Commission

Notification of Change

Certificate of Approval No 6/14G/2

Change No 2

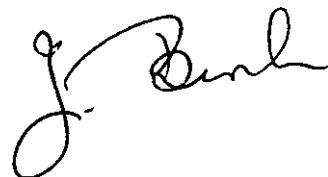
The following changes are made to the approval documentation for the
Espera-Werke Model ES 600 HS Automatic Catchweighing Instrument
submitted by Espera-Werke GmbH
 Postfach 10 04 55
 D-47004 DUISBURG
 GERMANY.

- A. Technical Schedule No 6/14G/2 dated 30 March 1999 is replaced by the attached Technical Schedule, which includes amended conveyor speeds in clause **1.1 Details** (as previously amended by Notification of Change No 1 dated 31 May 1999), a new clause (**1.7 Tare**), re-numbering of clause **1.7 Markings** (now 1.8), and an amended Test Procedure.
- B. In Certificate of Approval No 6/14G/2 dated 30 March 1999, the FILING ADVICE should be amended by adding reference to this Notification of Change, so that it now read as follows:

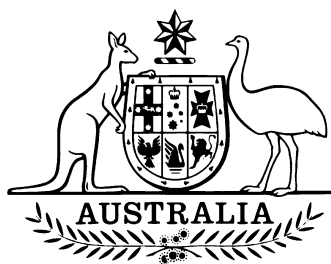
“Technical Schedule No 6/14G/2 dated 30 March 1999 is replaced by the Technical Schedule attached herein. The documentation for this approval now comprises:

Certificate of Approval No 6/14G/2 dated 30 March 1999
Technical Schedule No 6/14G/2 dated 18 April 2000
Notification of Change No 2 dated 18 April 2000
Figures 1 to 6 dated 30 March 1999”

Signed and sealed by a person authorised under Regulation 63 of the National Measurement Regulations 1999 to exercise the powers and functions of the Commission under this Regulation.



6/14G/2
20 October 2000



National Standards Commission

12 Lyonpark Road, North Ryde NSW

Notification of Change

Certificate of Approval No 6/14G/2

Change No 3

The following change is made to the approval documentation for the

Espera-Werke Model ES 600 HS Automatic Catchweighing Instrument

submitted by Espera-Werke GmbH
 Postfach 10 04 55
 D-47004 DUISBERG
 GERMANY.

In Technical Schedule No 6/14G/2 dated 18 April 2000 (issued as part of Notification of Change No 2), clause **1.8 Markings** should be amended to include;

“Indication of accuracy class

Class Y(a)”

Signed by a person authorised under Regulation 63 of the National Measurement Regulations 1999 to exercise the powers and functions of the Commission under this Regulation.

6/14G/2
13 October 2004



Australian Government

**National Measurement
Institute**

12 Lyonpark Road, North Ryde NSW 2113

Notification of Change
Certificate of Approval No 6/14G/2
Change No 4

Issued by the Chief Metrologist under Regulation 60
of the
National Measurement Regulations 1999

The following change is made to the approval documentation for the

Espera-Werke Model ES 600 HS Automatic Catchweighing Instrument

submitted by Espera-Werke GmbH
 Postfach 10 04 55
 D-47004 DUISBURG
 GERMANY.

In Certificate of Approval No 6/14G/2 dated 30 March 1999, the Condition of Approval referring to the review of the approval should be amended to read:

“This approval becomes subject to review on **1 March 2008**, and then every 5 years thereafter.”

Signed by a person authorised by the Chief Metrologist
to exercise his powers under Regulation 60 of the
National Measurement Regulations 1999.

A handwritten signature in black ink, appearing to be 'J. G. T.', is located in the bottom right corner of the page.



Australian Government
**National Measurement
Institute**

Bradfield Road, West Lindfield NSW 2070

Notification of Change
Certificate of Approval No 6/14G/2
Change No 5

The following changes are made to the approval documentation for the
Espera-Werke Model ES 600 HS Automatic Catchweighing Instrument

submitted by Espera-Werke GmbH
 Postfach 10 04 55
 D-47004 DUISBURG
 GERMANY.

In Certificate of Approval No 6/14G/2 dated 30 March 1999;

1. The Condition of Approval referring to the review of the approval should be amended to read:
"This approval becomes subject to review on 1 March **2013**, and then every 5 years thereafter."
2. The FILING ADVICE should be amended by adding the following:
"Notification of Change No 3 dated 20 October 2000
Notification of Change No 4 dated 13 October 2004
Notification of Change No 5 dated 22 May 2008"

Signed by a person authorised by the Chief Metrologist
to exercise his powers under Regulation 60 of the
National Measurement Regulations 1999.

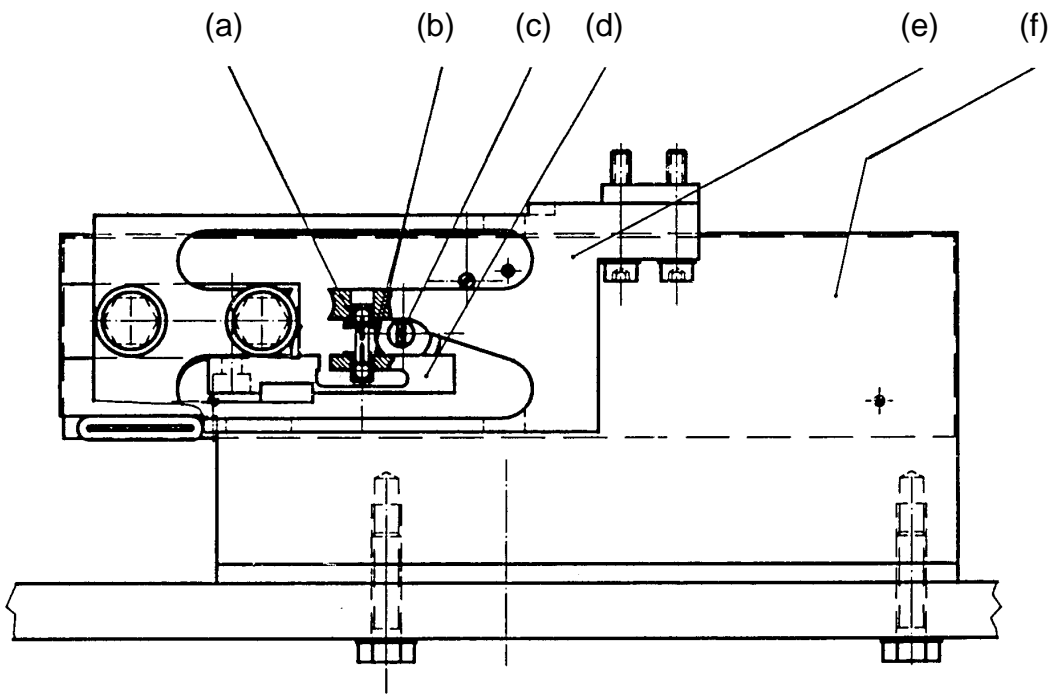
A handwritten signature in black ink, appearing to be 'J. H. T.', written in a cursive style.

FIGURE 6/14G/2 - 1



Espera-Werke Model ES 600 HS Catchweighing Instrument

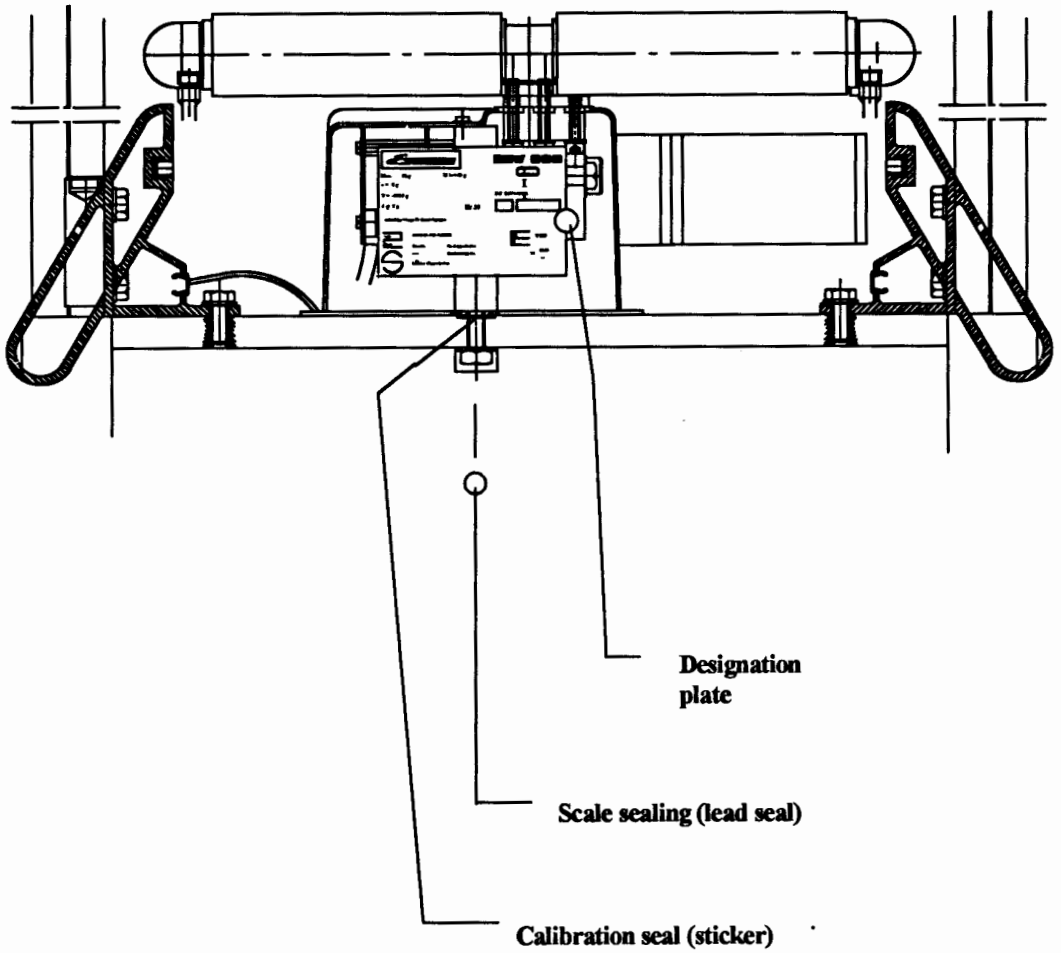
FIGURE 6/14G/2 - 2



- | | | | | | |
|-----|-------------|-----|----------------|-----|-----------------|
| (a) | Flat tappet | (b) | Tappet bearing | (c) | Eccentric screw |
| (d) | Load cell | (e) | Parallel guide | (f) | Support |

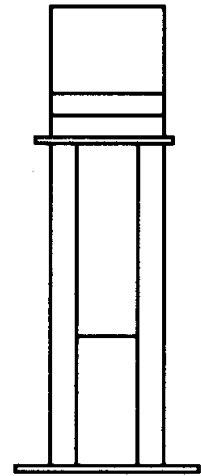
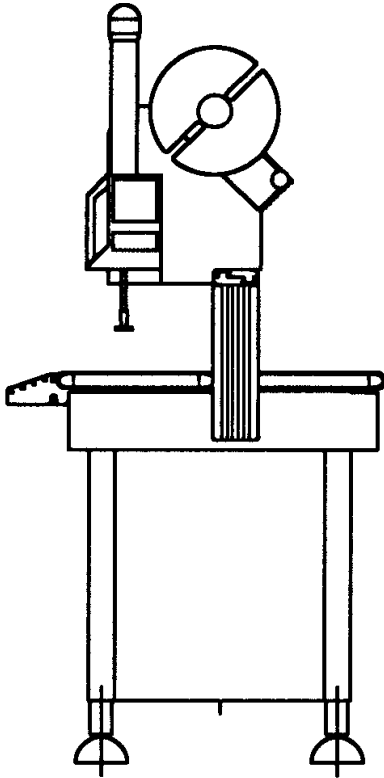
Showing Load Cell Mounting

FIGURE 6/14G/2 - 3

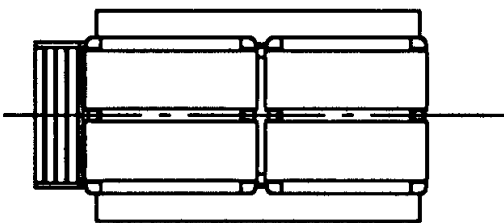


Showing Sealing Method

FIGURE 6/14G/2 - 4

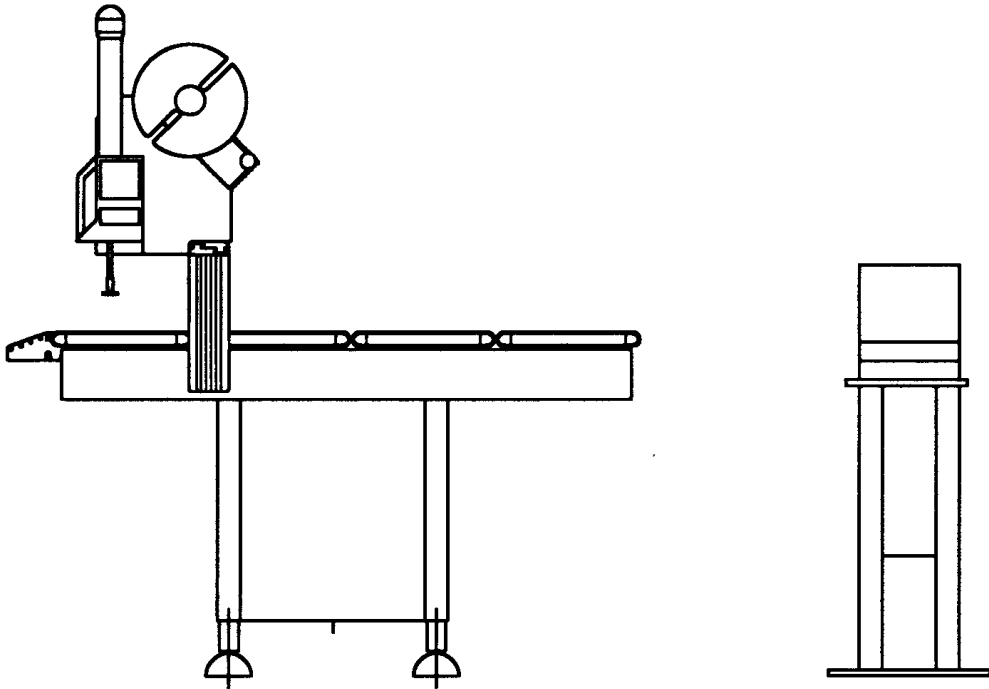


ESF 103

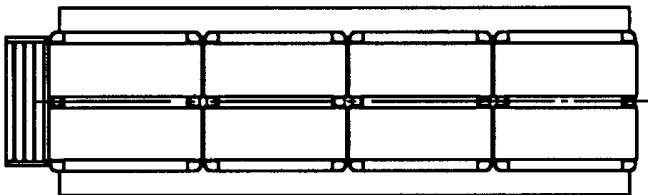


Model ESF103 Conveyor System

FIGURE 6/14G/2 - 5

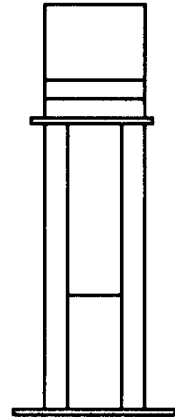
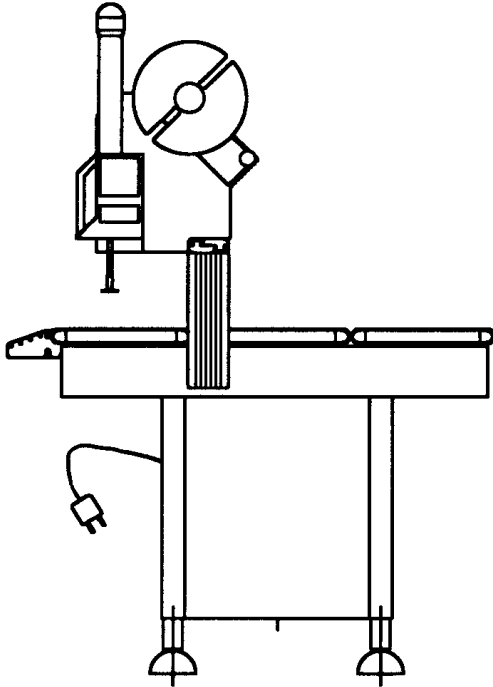


ESF 123

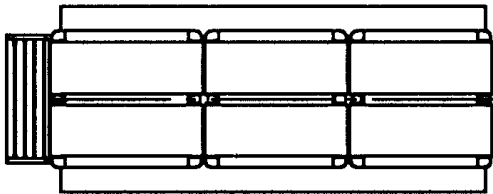


Model ESF123 Conveyor System

FIGURE 6/14G/2 - 6



ESF 133



Model ESF133 Conveyor System

FIGURE 6/14G/2 - 7



Model ES 600 Catchweighing Instrument

6/14G/2
30 March 1999

FIGURE 6/14G/2 - 8



Model ES 600 K/8 Catchweighing Instrument

FIGURE 6/14G/2 - 9



Model ES 600 M Catchweighing Instrument