



Australian Government
Department of Industry,
Innovation and Science

National Measurement Institute

Certificate of Approval NMI 6/14G/10

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

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

ESPERA-WERKE Model ES 7001 Automatic Catchweighing Instrument

submitted by ESPERA-WERKE GmbH
 Moltkestrasse 17-33
 47058 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.

This approval has been granted with reference to document NMI R 51, *Automatic Catchweighing Instruments*, dated July 2004.

This approval becomes subject to review on **1/07/21**, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variants 1 & 2 approved – interim certificate issued	4/06/04
1	Pattern & variants 1 to 4 approved – certificate issued	16/11/04
2	Variant 5 approved – interim certificate issued	3/02/06
3	Variant 5 approved – certificate issued	9/3/06
4	Variant 6 approved – interim certificate issued	7/09/06
5	Variants 6 & 7 approved – certificate issued	13/11/06
6	Variant 8 approved – interim certificate issued	10/09/08
7	Variant 8 approved – certificate issued	18/11/08

Document History (cont...)

Rev	Reason/Details	Date
8	Pattern & variants 1 to 8 reviewed – notification of change issued	13/01/11
9	Pattern & variants 1 to 8 updated – variants 9 & 10 approved – certificate issued	10/08/12
10	Pattern & variants 1 to 8 updated & reviewed – variants 11 to 13 approved – certificate issued	20/10/16

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI (or NSC) 6/14G/10' and only by persons authorised by the submittor.

It is the submittor's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the National Measurement Institute (NMI) 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 document NMI P 106.

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

Special

This approval shall NOT be used in conjunction with General Certificate No 6B/0.

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



Dr A Rawlinson

TECHNICAL SCHEDULE No 6/14G/10

1. Description of Pattern

approved on 4/06/04

An ESPERA-WERKE model ES 7001 class Y(a) automatic catchweighing instrument (Figures 1 and 2) which is approved for use to weigh objects dynamically.

1.1 Details

The instrument is a multi-interval class Y(a) automatic catchweighing instrument 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 with a verification scale interval (e_3) of 0.005 kg from 6 kg up to the maximum capacity of 8 kg. Instruments have a minimum capacity of 0.02 kg.

The instrument operates dynamically (package in motion on the weighing receptor). The maximum belt speed of the weighing receptor is 1.17 m/s (70 m/min). The throughput is variable and depends on several factors, e.g. size of label, size of pack and weight of pack. The instrument has facilities to detect errors and provide error messages for situations close to and outside the limits.

NOTE: A static non-automatic weighing mode is also available in which the conveyors do not operate.

Instruments may be fitted with sockets (output interfacing capability) for the connection of peripheral and/or auxiliary devices, and for the external programming of PLU and labelling data.

1.2 Zero

The instrument has a semi-automatic zero-setting device with a nominal range of not more than 4% of the maximum capacity of the instrument, capable of setting zero to within $\pm 0.25e_1$.

The instrument has an automatic zero-setting device which operates periodically to zero the instrument.

Zero is automatically corrected to within $\pm 0.25e$ whenever the instrument comes to rest within $0.5e_1$ of zero (this may operate whilst the conveyors are operating).

The initial zero-setting device of the pattern has a nominal range of not more than 20% of the maximum capacity of the instrument.

1.3 Tare

A semi-automatic subtractive taring device of up to Max_1 capacity may be fitted. This device may only be activated (tare obtained) whilst the conveyors are stationary, however the value obtained may continue to be used when the instrument is set into automatic mode (conveyors operating).

The instrument has a pre-set subtractive taring device of up to Max_1 capacity. Preset tare values are stored in association with product-look-up (PLU) items.

1.4 Operation

In dynamic mode, an object to be weighed moves from the infeed and separator conveyors onto the weighing receptor conveyor and is weighed dynamically. After weighing, the object continues onto the outfeed conveyor where a label is then printed and applied to the object.

1.5 Weighing System

The ESPERA-WERKE model ES 7001 weighing system (Figures 1 and 2) comprises:

- (a) a model ESC904 terminal/indicator;
- (b) a weighing unit and conveyor system with associated controller – a model ESF724 conveyor system incorporating separator, weighing and outfeed conveyors, a model ESG154 controller unit, and a model ESF124 infeed conveyor (alternative infeed conveyor units may be used, i.e. ESF1*4); and
- (c) a printing unit that is comprised of a thermal printer, a roll of labels and a unit used to apply the label to the weighed object (e.g. the label may be applied by compressed air or by a piston). The instrument examined utilised a model ESD 504 printing unit (alternative printing units may be used, i.e. ESD**4).

1.6 Terminal/Indicator

The terminal/indicator is fitted with a touch screen LCD display and keyboard. This is used to control the system and store data such as system parameters (e.g. conveyor speed, printing unit position and label format). It displays the weight (in kg). Instruments have unit price to \$999.99/kg, a product-look-up (PLU) facility and a separate 'tare' display.

1.7 Weighing Unit and Conveyor System

The weighing unit uses an ESPERA-WERKE model ESW 2704 (twin conveyor belt) or ESW 2714 (single belt) weighing module which incorporate an ESPERA model 15 load cell of 20 kg maximum capacity and an HBM model AD104-R5 A/D convertor module. The belt conveyor-type load receptor has a conveyor length of from 500 to 650 mm and a maximum width of 365 mm.

The conveyor system comprises an infeed and separator conveyor, the weighing unit/conveyor and an outfeed conveyor, with an associated electric motor and drive arrangement for each conveyor. Optical sensors are located along the conveyor path. The infeed conveyors space the objects to be weighed, the side guides being positioned automatically.

1.8 Sealing Provision

Provision is made for the sealing of the calibration adjustments of the instrument by the application of a destructible adhesive label over the hole which provides access for a 'calibration pin' in the casing of the weighing module (ESW2704 or ESW 2714 for the pattern, ESW2604 or ESW 2614 for variant 1), and sealing by use of lead and wire seal to prevent access within this weighing module (Figure 2).

1.9 Verification Provision

Provision is made for the application of a verification mark.

1.10 Descriptive Markings

Instruments carry the following markings:

- (a) The following markings should be provided together on a nameplate attached to the instrument:

Manufacturer's mark, or name written in full	ESPERA-WERKE, Germany
Importer's mark, or name written in full
Model designation
Serial number
Pattern approval mark	NMI (or NSC) 6/14G/10
Maximum subtractive tare	$T = - 3 \text{ kg}$
Maximum conveyor speed	70 m/min

- (b) The following markings are provided together on the display of the terminal/indicator:

Accuracy class	Y(a)
Maximum capacity * Verification scale interval combinations	$Max 3 \text{ kg} * 1 \text{ g}; 6 \text{ kg} * 2 \text{ g}; 8 \text{ kg} * 5 \text{ g}$
Minimum capacity	$Min \dots\dots\dots \text{ kg} *$
Verification scale interval (this value varies according to the value in use at the time)	$e = d = \dots \text{ g}$

2. Description of Variant 1 approved on 16/11/04

Other models of the 7000 series of automatic catchweighing instruments using the weighing systems described for the pattern but having different conveyors and one or more printing units – the last two digits of the model number refer to the printing units, e.g the model ES 7002 has two printing units above the conveyor while the model ES 7011 has one unit above the conveyor and another below (Figure 3).

3. Description of Variant 2 approved on 16/11/04

The ESPERA-WERKE ES 6000 series weighing instruments which are similar to the ES 7001 series, but which operate statically (that is, the package stops on the load receptor to be weighed). The last two digits of the model number refer to the printing units, e.g the model ES 7001 (Figure 4) has one printing unit above the conveyor.

The weighing unit uses an ESPERA-WERKE model ESW 2604 (twin conveyor belt) or ESW 2614 (single belt) weighing module, which incorporate an ESPERA model 15 load cell of 20 kg maximum capacity and an HBM model AD104-R5 A/D converter module. The belt conveyor-type load receptor has a conveyor length of from 380 to 650 mm, and a maximum width of 365 mm.

3.1 Operation

In automatic mode, an object to be weighed moves from the infeed and separator conveyors onto the weighing receptor conveyor which then stops whilst the item is weighed.

After weighing, the object continues onto the outfeed conveyor where a label is then printed and applied to the object.

3.2 Weighing System

The ESPERA-WERKE model ES 6000 weighing system (Figures 4 and 5) comprises:

- (a) a model ESC904 terminal/indicator as in the pattern;
- (b) a weighing unit and conveyor system with associated controller – a model ESF624 conveyor system incorporating separator, weighing and outfeed conveyors, a model ESG154 controller unit, and a model ESF124 infeed conveyor (alternative infeed conveyor units may be used); and
- (c) a model ESD 504 printing unit as in the pattern (alternative printing units may be used, e.g. ESD**4).

4. Description of Variant 3 **approved on 16/11/04**

In situations where the instrument is intended to be used for packing items for export the instrument may be provided with alternative units and currency denominations (e.g. lb, ¥, £). In this case instruments shall be marked "UNITS OTHER THAN kg and \$ MAY ONLY BE USED FOR EXPORT PURPOSES", either as a notice adjacent to the display or in the display.

5. Description of Variant 4 **approved on 16/11/04**

With a verification scale interval (e_1) of 0.002 kg up to 6 kg, and with a verification scale interval (e_2) of 0.005 kg from 6 kg up to the maximum capacity of 8 kg. Instruments have a minimum capacity of 0.04 kg.

6. Description of Variant 5 **approved on 9/03/06**

The ESPERA-WERKE ES 8000 series weighing instruments which are similar to the ES 7001 series (the pattern and variant 1). The ES 8000 series are multi-interval class Y(a) automatic catchweighing instruments of 6 kg maximum capacity, having either:

- Two partial weighing ranges with a verification scale interval (e_1) of 0.001 kg up to 3 kg and with a verification scale interval (e_2) of 0.002 kg from 3 kg up to the maximum capacity of 6 kg (with a minimum capacity of 0.020 kg); or
- Three partial weighing ranges with a verification scale interval (e_1) of 0.0005 kg up to 1.5 kg, with a verification scale interval (e_2) of 0.001 kg from 1.5 kg up to 3 kg, and with a verification scale interval (e_3) of 0.002 kg from 3 kg up to the maximum capacity of 6 kg (with a minimum capacity of 0.050 kg).

The last two digits of the model number refer to the printing units, e.g the models ES 8001 and ES 8002 have either one or two printing units above the conveyor (Figure 5).

The weighing unit uses an ESPERA-WERKE model ESW 5804 (twin conveyor belt) or ESW 5814 (single belt) weighing module, which incorporate a Wipotec model EC3000 B-4-6-10-S load cell of 7.5 kg maximum capacity and an integrated A/D converter. The belt conveyor-type load receptor has a conveyor length of from 380 to 650 mm, and a maximum width of 365 mm.

The maximum belt speed of the weighing receptor is 1.4 m/s (84 m/min).

6.1 Operation

In dynamic mode, an object to be weighed moves from the infeed and separator conveyors onto the weighing receptor conveyor and is weighed dynamically. After weighing, the object continues onto the outfeed conveyor where a label is then printed and applied to the object.

6.2 Weighing System

The ESPERA-WERKE model ES 8000 weighing system comprises:

- (a) a model ESC904 terminal/indicator as in the pattern;
- (b) a weighing unit and conveyor system with associated controller – a model ESF624 conveyor system incorporating separator, weighing and outfeed conveyors, a model ESG154 controller unit, and a model ESF124 infeed conveyor (alternative infeed conveyor units may be used); and
- (c) a model ESD 504 printing unit as in the pattern (alternative printing units may be used, e.g. ESD**4).

7. Description of Variant 6

approved on 13/11/06

The ESPERA-WERKE ES 5000 series weighing instruments which are similar to the ES 7001 series (the pattern and variant 1). The ES 5000 series are single interval class Y(a) automatic catchweighing instruments of 6 kg maximum capacity with a verification scale interval (e) of 0.002 kg and with a minimum capacity of 0.040 kg.

The instrument may be used as a class 3 non-automatic weighing instrument when in a static mode in which the conveyors do not operate.

The last two digits of the model number refer to the printing units, e.g. the models ES 5001 (Figure 6) and ES 5002 have either one or two printing units above the conveyor.

The weighing unit uses an ESPERA-WERKE model ESW 2504 (single conveyor belt) weighing module, which incorporates an HBM model SP4C3 load cell of 15 kg maximum capacity and an HBM model AD104-R5 A/D converter. The belt conveyor-type load receptor has a conveyor length of 380 mm and a maximum width of 200 mm.

The maximum belt speed of the weighing receptor is 1 m/s (60 m/min).

7.1 Operation

In automatic mode, an object to be weighed moves from the infeed and separator conveyors onto the weighing receptor conveyor which then stops whilst the item is weighed. After weighing, the object continues onto the outfeed conveyor where a label is then printed and applied to the object.

7.2 Weighing System

The ESPERA-WERKE model ES 5000 weighing system (Figure 6) comprises:

- (a) a model ESC924 terminal/indicator or a model ESC904 terminal/indicator as described elsewhere in this approval;

- (b) a model ESG 304 weighing unit and conveyor system incorporating separator, weighing and outfeed conveyors and associated controller unit (alternatively, other conveyor systems in the ESG 3*4 series may be used).
Additional infeed conveyor modules, e.g. a model ESF 504 as shown in Figure 6(b) may be used.
- (c) a model ESD 524 printing unit (alternative printing units may be used, e.g. ESD**4).

8. Description of Variant 7 **approved on 13/11/06**

The pattern or variants 1 to 5 using a model ESC924 terminal/indicator (as described in variant 6) instead of the model ESC904 terminal/indicator.

9. Description of Variant 8 **approved on 18/11/08**

The ESPERA-WERKE ES 7800 series weighing instruments which are similar to the ES 7001 series (the pattern, variant 1 and variant 7) but use one or more model ESD 604 multi-cassette printing units (Figure 7).

The last two digits of the model number refer to the printing units, e.g. the model ES 7802 has two printing units above the conveyor while the model ES 7811 has one printing unit above the conveyor and another unit below.

10. Description of Variant 9 **approved on 10/08/12**

The ESPERA-WERKE ES 7100 series weighing instruments which are similar to the ES 7001 series and ES7800 series (the pattern, variant 1, variant 7 and variant 8) but use an ESPERA-WERKE model ESW 2734 (twin (or split) conveyor belt) or ESW 2754 (single (or integral) belt) weighing module, having either:

- Two partial weighing ranges with a verification scale interval (e_1) of 0.002 kg up to 6 kg and with a verification scale interval (e_2) of 0.005 kg from 6 kg up to the maximum capacity of 10 kg (with a minimum capacity of 0.040 kg); or
- Three partial weighing ranges 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 with a verification scale interval (e_3) of 0.005 kg from 6 kg up to the maximum capacity of 10 kg (with a minimum capacity of 0.020 kg).

11. Description of Variant 10 **approved on 10/08/12**

The ESPERA-WERKE ES 5900 weighing instrument which is similar to the ES 5000 series (variant 6) but uses an ESPERA-WERKE model ESW 2514 (twin conveyor belt) weighing module, which incorporates an HBM model SP4MC3 load cell of 15 kg maximum capacity and an HBM model AD104-R5 A/D converter. The belt conveyor-type load receptor has a conveyor length of 380 mm and a maximum width of 360 mm.

Figure 10 shows a model ES 5911 with additional ESF504 and ESC964 IP.

12. Description of Variant 11 **approved on 20/10/16**

Variant 10 using a model ESG 334 weighing unit and conveyor system instead of the model ESG 304 weighing unit and conveyor system.

The weighing unit uses a wider ESPERA-WERKE model ESW 2514 (twin conveyor belt) weighing module, which incorporates an HBM model SP4MC3 load cell of 15 kg maximum capacity and an HBM model AD104-R5 A/D converter. The belt conveyor-type load receptor has a conveyor length of 380 mm and a maximum width of 360 mm.

13. Description of Variant 12 **approved on 20/10/16**

The pattern and variants 2, 5, 8 and 9 using a model ESG2154 control unit instead of the model ESG154 control unit.

14. Description of Variant 13 **approved on 20/10/16**

The pattern or variants using a stainless steel model ESC964 IP terminal/indicator instead of the model ESC904/ESC924 terminal/indicator.

TEST PROCEDURE No 6/14G/10

Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures.

The instrument shall not be adjusted to anything other than as close as practical to zero error, even when these values are within the maximum permissible errors.

Maximum Permissible Errors

The maximum permissible errors are specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

FIGURE 6/14G/10 – 1

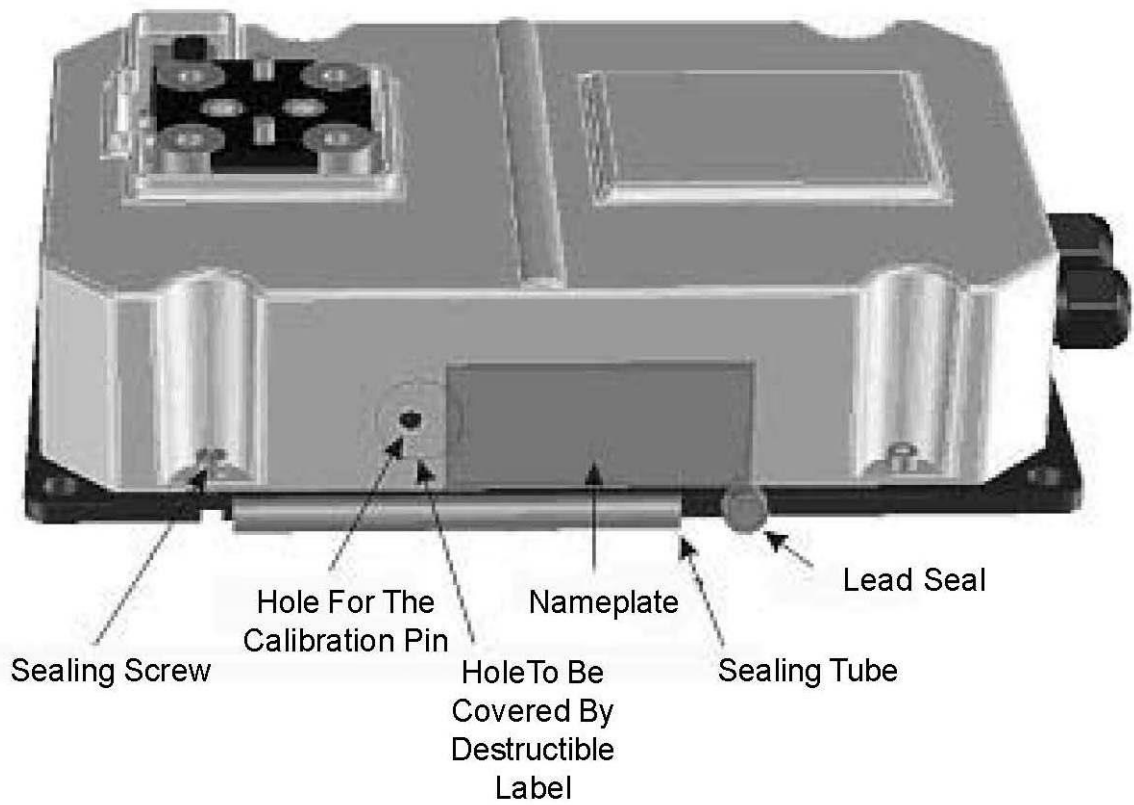


(a) Model ES 7001 With Model ESF124 Conveyor



(b) Model ES 7001 Without Model ESF124 Conveyor

FIGURE 6/14G/10 – 2



Typical Mechanical Sealing

FIGURE 6/14G/10 – 3



(a) Model ES 7002 (Two printers both above the conveyor) With Model ESF124 Conveyor



Model ES 7011 (Two printers – above and below the conveyor)

Typical Model ES 7002 and Model ES 7011 Instruments

FIGURE 6/14G/10 – 4



Model ES 6001

FIGURE 6/14G/10 – 5



(a) Model ES 8001



(b) Model ES 8002

Typical ES 8000 Series Instruments

FIGURE 6/14G/10 – 6



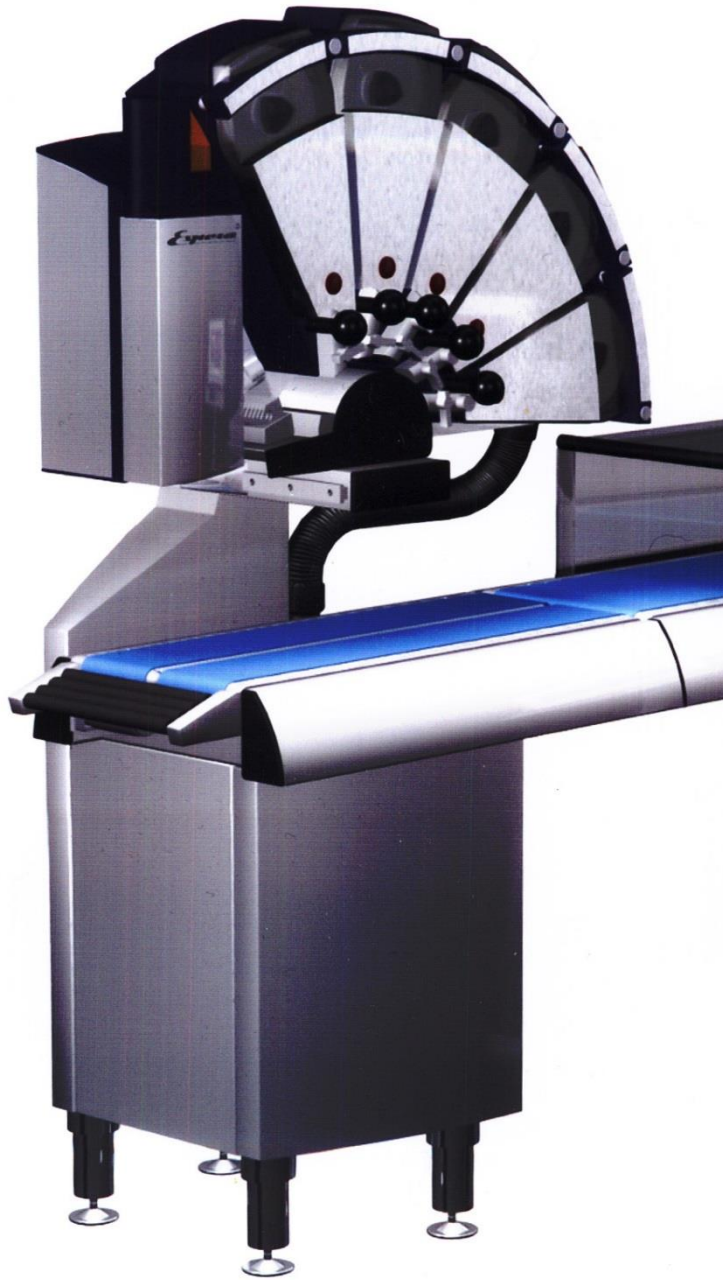
(a) Model ES 5001



(b) Model ES 5001 With Model ESF504 Infeed Conveyor

Typical ESPERA ES 5000 Series Instruments

FIGURE 6/14G/10 – 7



Typical ESPERA ESD 604 Printing Unit

FIGURE 6/14G/10 – 8



Model ES 5911 With Additional Model ESF504 and Model ESC964 IP

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