



**Ministry of Business,
Innovation & Employment**
Wellington, New Zealand

CERTIFICATE OF APPROVAL

Weights and Measures Regulations 1999 Part 1 Regulations 5 and 6

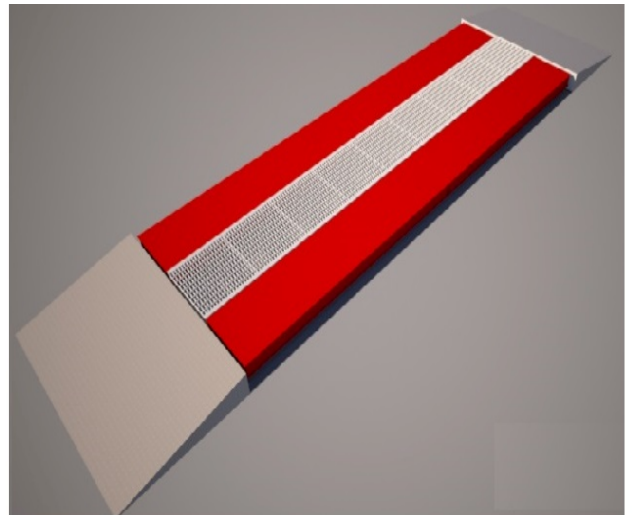
Current Date of Issue: 14 December 2020
Original Date of Issue: 06 September 2018

Certificate 2317

Overseas Certificate No: UK2946

This certifies that the Dini Argeo S.r.l DTW series, Instrument described overleaf has been approved as suitable for trade use subject to any conditions stated in the schedule:

Figure 1 - Dini Argeo DTW series (above ground installation)



S R Bobbala

J P Crane

Under delegated authority from the Chief Executive of The Ministry of Business, Innovation & Employment

Note: This is not an approval to any person but only with respect to the type and pattern of weight, measure, or weighing or measuring instrument.

SCHEDULE

Overseas Certificate No: UK2946

Pattern:	NAWI – Weighbridge Type
Make:	Dini Argeo S.r.l
Model:	DTW series
Manufacturer:	Dini Argeo S.r.l. (Italy)
Submitter:	Precia Molen New Zealand Ltd
Maximum Capacity (Max):	15, 000 kg ≤ MAX ≤ 30, 000 kg
Minimum Capacity:	20e
Verification Scale Interval:	≥ 5 kg (n=3000 max) see Table 1
Class:	III
Load Receptors:	Dual parallel track decks, each ≤ 9 m x 1 m (see Table 1)
Tare:	-Max
Conditions of Approval:	<ol style="list-style-type: none">1. Individual track platforms MUST not be used for trade2. Any weighing conducted must take place with the vehicle wholly on the platform.3. For the purpose of performing a verification or inspection test, use the test procedures detailed in this certificate.4. The operator shall have a clear and simultaneous view of the indicator and the deck.5. Trading Standards reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.6. This certificate does not imply and should not be construed as guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.7. 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 Trading Standards and with the relevant Certificate of Approval and Technical Schedule.

Description:

A Dini Argeo Model DTW Series (Figure 1 & 1A) is a Class III self indicating non-automatic dual track vehicle weighing instrument with a maximum capacity of ≤ 30 000 kg and configured as a single interval or multi-interval/multi-range instrument (see Table 1).

The weighbridge is permanently installed in a pit or above ground type installation. Figure 2 shows the connection schematic layout of the weighbridge.

CONSTRUCTION:

1. Basework:

The basework consists of parallel weighing tracks (platforms) constructed of steel and have beams that run longitudinally underside of the deck plate. The complete weighbridge is permanently installed in a pit (in-ground application) or above ground, and uses up to 4 weighing platforms and 6 weighing bars (TABLE 1).

Provisions are in place to limit the longitudinal and transverse movement of the weighing deck. Concrete or steel ramps may be provided at each end for easy vehicle access.

2. Load Cells:

Weigh bars (Figure 3) are positioned at either side of the weighing platform, each weigh bar incorporates

two load cells.

The load cells are Dini Argeo Type STU-1K (E_{max} = 8 tonne) S-type load cells used in compression. The load cells are tested to OIML R60 requirements. Table 2 details the load cell specifications.

3. Indicator:

A Dini Argeo DFW (Cert #2147) or Precia Molen X112-B series (Cert #2173) digital indicators are used.

Note: The weighbridge may be used with an alternative Trading Standards approved compatible indicator. The below criteria must be satisfied.

CRITERIA

The weighbridge may be connected to any other Trading Standards approved compatible digital indicator and the conditions to be met are:

The conditions to be met are given below, and include calculations using the following terms:

Ex = Indicator Excitation voltage (V)

LC_Sens = Load cell sensitivity (mV/V)

E_{max} = Load cell maximum capacity (kg)

Indicator Sensitivity = Minimum sensitivity value per verification scale interval for the indicator (µV)

e = Verification scale interval of the instrument (kg). In the case of multi-interval or multiple range instruments, any reference to 'e' refers to the smallest verification scale interval 'e1'.

e₁, e₂, ... = Verification scale interval of each range for multiple range instruments (or partial weighing ranges for multi-interval instruments), e₁ refers to the smallest verification interval.

Max = The maximum capacity of the instrument. In the case of multiple range instruments, 'Max' refers to the maximum capacity of the highest range.

Max_r = The maximum capacity of the instrument for a multiple range instrument, i.e. the maximum capacity of the highest range.

Max₁, Max₂ ... = The maximum capacity of each range for a multiple range instrument.

n_{LC} = The maximum number of verification intervals for which the load cell or basework is approved (e.g. 3000 for a 'class C3' load cell).

DR = Dead load return value for the load cell. Note: Many load cells do not have a specified DR value.

The conditions are:

- The excitation voltage used is within the range approved for the baseworks.
- The maximum load applied to the basework (live load plus any dead load) does not exceed the load cell maximum capacity.
- The verification scale interval is not less than the minimum value specified. In the case of multi-interval or multiple range instruments, the verification scale interval refers to the smallest verification scale interval (i.e. e₁).
- The number of verification scale intervals is less than or equal to the n_{max} value specified. In the case of multi-interval or multiple range instruments, the number of verification scale intervals refers to the largest number in any weighing range or partial weighing range (i.e. the largest of Max₁/e₁, Max₂/e₂ etc).
- The signal voltage per verification scale interval is not less than the minimum sensitivity value per verification scale interval for the indicator (as specified in the approval documentation for the indicator), i.e. Indicator Sensitivity (µV) ≤ 1000 × Ex × LC_Sens × e / E_{max}

Additional requirement for multi-interval operation: In the case of indicators which are configured to form a multi-interval weighing instrument the instrument shall comply with one of the following conditions:

(i) The smallest verification scale interval (e1) shall satisfy the following:

$$e1 \geq \text{Max} / nLC$$

(ii) Or, the smallest verification scale interval (e1) shall satisfy the following:

$$e1 \geq 2 \times DR \times \text{Max} / E_{\text{max}}$$

Of course (ii) cannot apply where a value of 'Deadload return' DR is not given.

Additional requirement for multiple range operation: In the case of indicators which are configured to form a multiple range weighing instrument the instrument shall comply with one of the following conditions:

(i) The smallest verification scale interval (e1) shall satisfy the following:

$$e1 \geq 0.4 \times \text{Max}_r / nLC$$

(ii) Or, the smallest verification scale interval (e1) shall satisfy the following:

$$e1 \geq DR \times \text{Max}_r / E_{\text{max}}$$

Note: condition (ii) cannot apply where a value of 'Deadload return' DR is not given.

ZERO SETTING DEVICES:

Zero may be automatically corrected to within $\pm 0.25e$ whenever the instrument comes to rest within $0.5e$ of zero. Zero may be set by pressing the zero button.

Initial zero setting is $\leq 20\%$ of maximum capacity of the instrument.

The instrument may have a semi-automatic zero-setting device (to set the instrument to within $\pm 0.25e$ of zero) with a nominal range of not more than 4% of the maximum capacity of the instrument.

METROLOGICAL MARKINGS:

Instruments must carry the following markings:

Manufacturer' name ----

Serial number ----

Accuracy class ----

Pattern approval No for the Basework **TS2317**.... **

Maximum capacity Max kg *

Minimum capacity Min kg *

Verification scale interval e =..... kg *

Serial number: ----

* These markings shall also be shown near the display

**This marking must be put on the indicator along with the approval number of the indicator.

TEST PROCEDURES:

The verification/inspection test procedures detailed in this certificate are specifically designed for this pattern.

Note: At all times when using a vehicle for performing any testing, the brakes, gears and any other means that are capable of restricting the free movement of the vehicle **MUST** be disengaged.

Zero Test and Discrimination Tests:

Shall be performed on both platforms separately.

Eccentricity Test - Rolling Load:

If practicable to test, perform the test using a test load within 80% to 20% of maximum capacity of the instrument.

Eccentricity Test – Weights:

Shall be performed separately on individual platforms, a test load of "100 e" is used to perform this test.

NOTE: When performing an Eccentricity Test (Standard and Rolling test load), ensure that test loads are distributed evenly in the test area so the load point remains in contact with the load receptor and there is no tilting of the structure.

Repeatability Test:

The test loads shall be evenly distributed on both the platforms when performing the repeatability test. Test loads at half max ($350e \pm 10\%$) and max capacity ($700e - 10\%$).

Linearity Test:

This test is also known as Weighing Performance test or Increasing Load test. To check linearity errors in the first MPE range, the test MUST be carried out on each individual platform up to 200e. From '200e' onwards the test shall be carried out by placing the test loads on both the platforms up to its maximum capacity.

Check for Summing function:

Standard weights of 100e are placed on each platform to check the summing function. The indicated summed result must be within the MPE.

Blanking of Indication:

With the test load distributed on both the platforms there shall be no indication if $Max+9e$ is exceeded.

Components:

Dini Argeo Type STU-1K (Emax = 8 tonne)

Sealing:

- As provided on the approved indicator.
- The Junction box shall be sealed by an adhesive destructible label or an approved type seal placed across the joining of both the covers.

Mark of Verification:

An adhesive destructible label or an approved type seal that inhibits access to calibration on the indicator and the junction box should carry a Mark of Verification. Removal of seal deems the instrument not verified.

Figure 1A - Dini Argeo DTW series (pit type)



TABLE 1 - Configuration Details

Weighbridge version	Dimensions (L x D x H) m	Total content	Capacity (kg)	Single Interval 3000e (kg)	Multi-Interval Multi-Range 2 x 3000e (kg)
DTW515	4.50 x 1.00 x 0.20	2 modules – 4 weighing bars	15 000	5	--
DTW530	4.50 x 1.00 x 0.20	2 modules – 4 weighing bars	30 000	10	5/10
DTW930	9.00 x 1.00 x 0.20	4 modules – 6 weighing bars	30 000	10	5/10

TABLE 2 - Dini Argeo Model STU Loadcell Specifications

Maximum capacity (E_{max})	2000 kg up to and including 10000 kg
S-beam load transmission	Compression
Minimum dead load	0 kg
Accuracy Class	C
Rated Output	2,4 mV/V
Maximum number of load cell intervals (n)	4000
Ratio of minimum LC Verification interval $Y = E_{max} / V_{min}$	12000
Ratio of minimum dead load output return $Z = E_{max} / (2 * DR)$	10000
Input impedance	1000 $\Omega \pm 20 \Omega$
Temperature range	- 10 °C / + 40 °C
Fraction p_{LC}	0,7
Humidity Class	CH
Safe overload	120 % of E_{max}
Output impedance	1000 $\Omega \pm 5 \Omega$
Recommended excitation	10 V DC
Excitation maximum	15 V DC
Transducer material	Stainless steel
Atmospheric protection	Hermitically welded seal, IP68

The characteristics for n_{max} and Y can be reduced separately. Z is proportional or equal to n_{max} .

Figure 2 - DTW connection schematic layout

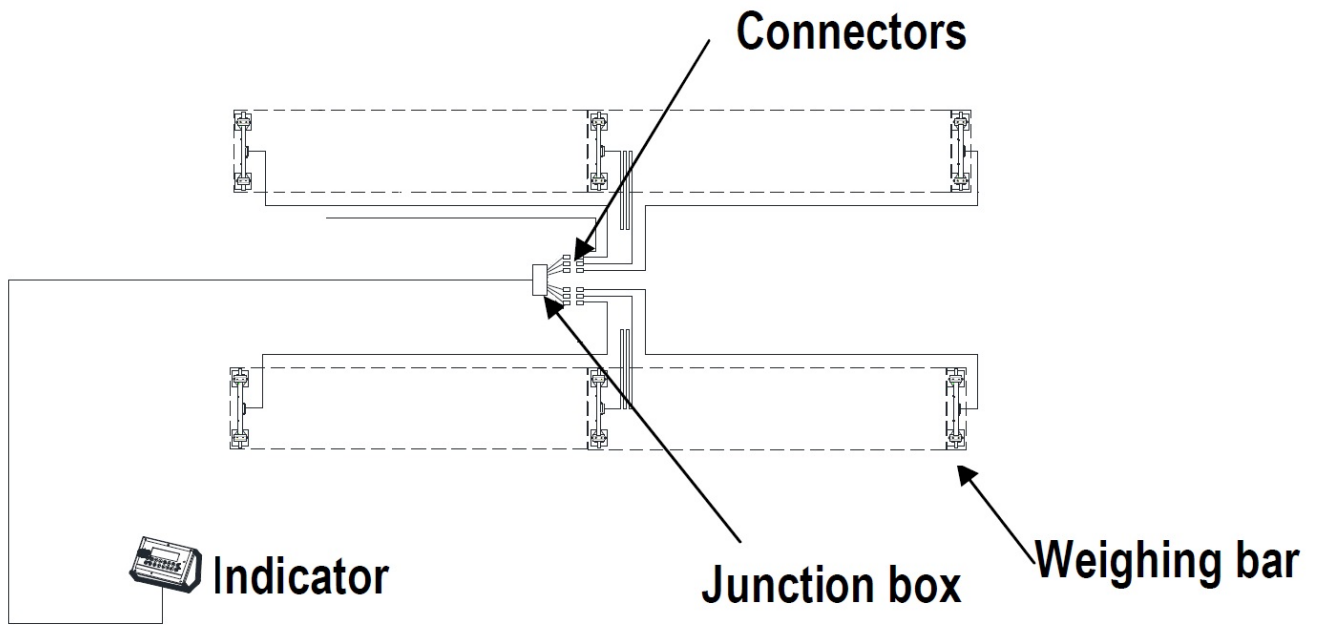


Figure 3 - Weighbar



SCHEDULE

Variant: 2317.1

Current Date of Issue: 14 December 2020

Pattern:	NAWI – Weighbridge Type
Make:	Dini Argeo
Model:	DTW Series
Submitter:	Scaletec Limited (AP 71.0)
Maximum Capacity (Max):	30 000 kg ≤ MAX ≤ 80 000 kg (see Table 2)
Minimum Capacity:	20e
Verification Scale Interval:	≥ 5 kg (n=3000 max) see Table 2
Class:	III
Load Receptors:	Dual parallel track decks, each ≤ 22.5 m x 1 m (see Table 2)
Conditions of Approval:	As detailed in Certificate #2317

Description:

VARIANT 1

The variant approves the Dini Argeo DTW Series weighbridge with certain maximum capacities and deck dimensions as detailed in Table 2.

Load Cell:

Each weighing bar incorporates 2 x Dini Argeo Type STU-1K S-type load cells used in compression.

NOTE:

- The complete weighing instrument configuration must be compatible with the indicator and the load cells.
- The Emax capacity and the number of load cells used depend on the weighing instruments maximum capacity and must meet the following:

Correction factor (Q) > 1

$$Q = (\text{Max} + \text{DL} + \text{IZSR} + \text{NUD} + \text{T+}) / \text{Max}$$

Max = maximum capacity of instrument

DL = dead load of the load receptor (including any attachments/mechanism)

NUD = 20% of Max

T+ = additive tare

$$E_{\text{max}} \geq Q \times \text{Max} \times R/N$$

E_{max} = Load cell maximum cap

Q = see above

Max = maximum cap of instrument

R = Reduction ratio = 1 (for complete load cell instrument)

N = number of load cells

$$E_{\text{min}} \leq \text{DL} \times R/N$$

E_{min} = load cell minimum capacity

DL = Dead load of the load receptor (including any attachments/mechanism)

R = Reduction ratio = 1

N = number of load cells

- When configuring the instrument, the minimum value of the verification interval for the load cell (V_{min}) must be ≤ e/√N, (where 'e' = verification scale interval of the weighbridge, and 'N' = total number of load cells).

Indicator:

The weighbridge may be used with an alternative Trading Standards approved compatible indicator. The below criteria must be satisfied.

Criteria:

The weighbridge may be connected to any other Trading Standards approved compatible digital indicator and the conditions to be met are:

The conditions to be met are given below, and include calculations using the following terms:

Ex = Indicator Excitation voltage (V)

LC_Sens = Load cell sensitivity (mV/V)

Emax = Load cell maximum capacity (kg)

Indicator Sensitivity = Minimum sensitivity value per verification scale interval for the indicator (μV)

e = Verification scale interval of the instrument (kg). In the case of multi-interval or multiple range instruments, any reference to 'e' refers to the smallest verification scale interval 'e1'.

e1, e2, ... = Verification scale interval of each range for multiple range instruments (or partial weighing ranges for multi-interval instruments), e1 refers to the smallest verification interval.

Max = The maximum capacity of the instrument. In the case of multiple range instruments, 'Max' refers to the maximum capacity of the highest range.

Maxr = The maximum capacity of the instrument for a multiple range instrument, i.e. the maximum capacity of the highest range.

Max1, Max2 ... = The maximum capacity of each range for a multiple range instrument.

nLC = The maximum number of verification intervals for which the load cell or basework is approved (e.g. 3000 for a 'class C3' load cell).

DR = Dead load return value for the load cell. Note: Many load cells do not have a specified DR value.

The conditions are:

- The excitation voltage used is within the range approved for the baseworks.
- The maximum load applied to the basework (live load plus any dead load) does not exceed the load cell maximum capacity.
- The verification scale interval is not less than the minimum value specified. In the case of multi-interval or multiple range instruments, the verification scale interval refers to the smallest verification scale interval (i.e. e1).
- The number of verification scale intervals is less than or equal to the nmax value specified. In the case of multi-interval or multiple range instruments, the number of verification scale intervals refers to the largest number in any weighing range or partial weighing range (i.e. the largest of Max1/e1, Max2/e2 etc).
- The signal voltage per verification scale interval is not less than the minimum sensitivity value per verification scale interval for the indicator (as specified in the approval documentation for the indicator), i.e. $\text{Indicator Sensitivity } (\mu\text{V}) \leq 1000 \times \text{Ex} \times \text{LC_Sens} \times \text{e} / \text{Emax}$

Additional requirement for multi-interval operation: In the case of indicators which are configured to form a multi-interval weighing instrument the instrument shall comply with one of the following conditions:

(i) The smallest verification scale interval (e1) shall satisfy the following:

$$e1 \geq \text{Max} / \text{nLC}$$

(ii) Or, the smallest verification scale interval (e1) shall satisfy the following:

$$e1 \geq 2 \times \text{DR} \times \text{Max} / \text{Emax}$$

Of course (ii) cannot apply where a value of 'Deadload return' DR is not given.

Additional requirement for multiple range operation: In the case of indicators which are configured to form a multiple range weighing instrument the instrument shall comply with one of the following conditions:

(i) The smallest verification scale interval (e1) shall satisfy the following:

$$e1 \geq 0.4 \times \text{Maxr} / nLC$$

(ii) Or, the smallest verification scale interval (e1) shall satisfy the following:

$$e1 \geq DR \times \text{Maxr} / E_{\text{max}}$$

Note: condition (ii) cannot apply where a value of 'Deadload return' DR is not given.

ZERO SETTING DEVICES:

Zero may be automatically corrected to within ±0.25e whenever the instrument comes to rest within 0.5e of zero. Zero may be set by pressing the zero button.

Initial zero setting is ≤ 20% of maximum capacity of the instrument.

The instrument may have a semi-automatic zero-setting device (to set the instrument to within ±0.25e of zero) with a nominal range of not more than 4% of the maximum capacity of the instrument.

METROLOGICAL MARKINGS

Instruments must carry the following markings:

- Manufacturer' name ----
- Serial number ----
- Accuracy class ----
- Pattern approval No for the Basework TS2317.... **
- Maximum capacity Max kg *
- Minimum capacity Min kg *
- Verification scale interval e =..... kg *
- Serial number: ----

* These markings shall also be shown near the display

**This marking must be put on the indicator along with the approval number of the indicator.

TEST PROCEDURES:

As detailed in Certificate #2317

Sealing:

As detailed in Certificate #2317

Mark of Verification:

An adhesive destructible label or an approved type seal that inhibits access to calibration on the indicator and the junction box should carry a Mark of Verification. Removal of seal deems the instrument not verified.

TABLE 2 - Configuration Details

Single Interval Configuration

Weighbridge version	Module Dimensions (m)	Content	Max Capacity (kg)	Verification Scale Interval (kg)
DTW1430A	3.50 x 1.00 x 0.22	6 modules – 8 weighing bars	30 000	10
DTW1460A	13.50 x 1.00 x 0.22	6 modules – 8 weighing bars	60 000	20
DTW1860A	18.00 x 1.00 x 0.22	8 modules – 10 weighing bars	60 000	20
DTW1880A	18.00 x 1.00 x 0.22	8 modules – 10 weighing bars	80 000	50
DTW2280A	22.50 x 1.00 x 0.22	10 modules – 12 weighing bars	80 000	50

Multi-Interval / Multi-Range Configuration

Weighbridge version	Module Dimensions (m)	Content	Max Capacity (Max1/Max2) (kg)	Verification Scale Interval (kg)
DTW1430A	3.50 x 1.00 x 0.22	6 modules – 8 weighing bars	15 000 / 30 000	5/10
DTW1460A	13.50 x 1.00 x 0.22	6 modules – 8 weighing bars	30 000 / 60 000	10/20
DTW1860A	18.00 x 1.00 x 0.22	8 modules – 10 weighing bars	30 000 / 60 000	10/20
DTW1880A	18.00 x 1.00 x 0.22	8 modules – 10 weighing bars	60 000 / 80 000	20/50
DTW2280A	22.50 x 1.00 x 0.22	10 modules – 12 weighing bars	60 000 / 80 000	20/50