Welcome

Rinstrum Verification Officers Refresher Training 2025

X00A-837-203

Content – RVO Refresher Training 2025

1.1 About Rinstrum

- Founded in 1992
- 30+ years of experience and expertise
- Ship to over 70 countries
- 30 years of ISO certification across all hubs
- A team of seasoned professionals
- Strong local logistics
- Innovative products and customization

1.2 Marek Swierzy, German Hub Manager

- Marek is an electrical engineer with 18 years of experience in developing hardware and software and a keen interest in creating and understanding technology.
- He built a successful company designing and manufacturing remote display, LEDiT GmbH, which was acquired by Rinstrum in 2016.
- After the acquisition, Marek took over the role as Geschäftsführer (Managing Director) for Rinstrum's European operations.

1.3 Our Products

- Indicators
- Remote displays
- Scales
- Accessories
- Heavy capacity scales
- Loadcells
- Customization

1.4 C300 Series

- Allrounder with a very good value
- Preinstalled firmware options
- Available with ABS or Stainless Steel

  Housing

1.5 Remote Displays

- With or without traffic light function
- IP65 Housing with waterproof field installable connectors
- (Automatic) Brightness level control
- Auto detecting setup
- Customized firmware/communication protocol available

D730 series
75 mm high digits (numeric)

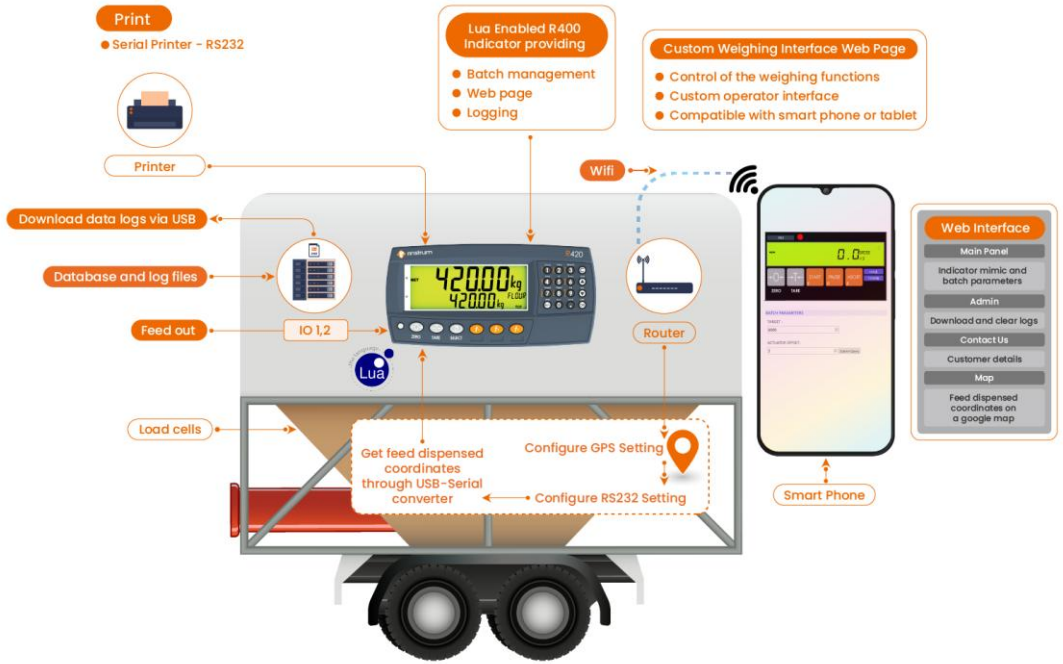
D840 series
100mm high digits (alphanumeric)

D850 series

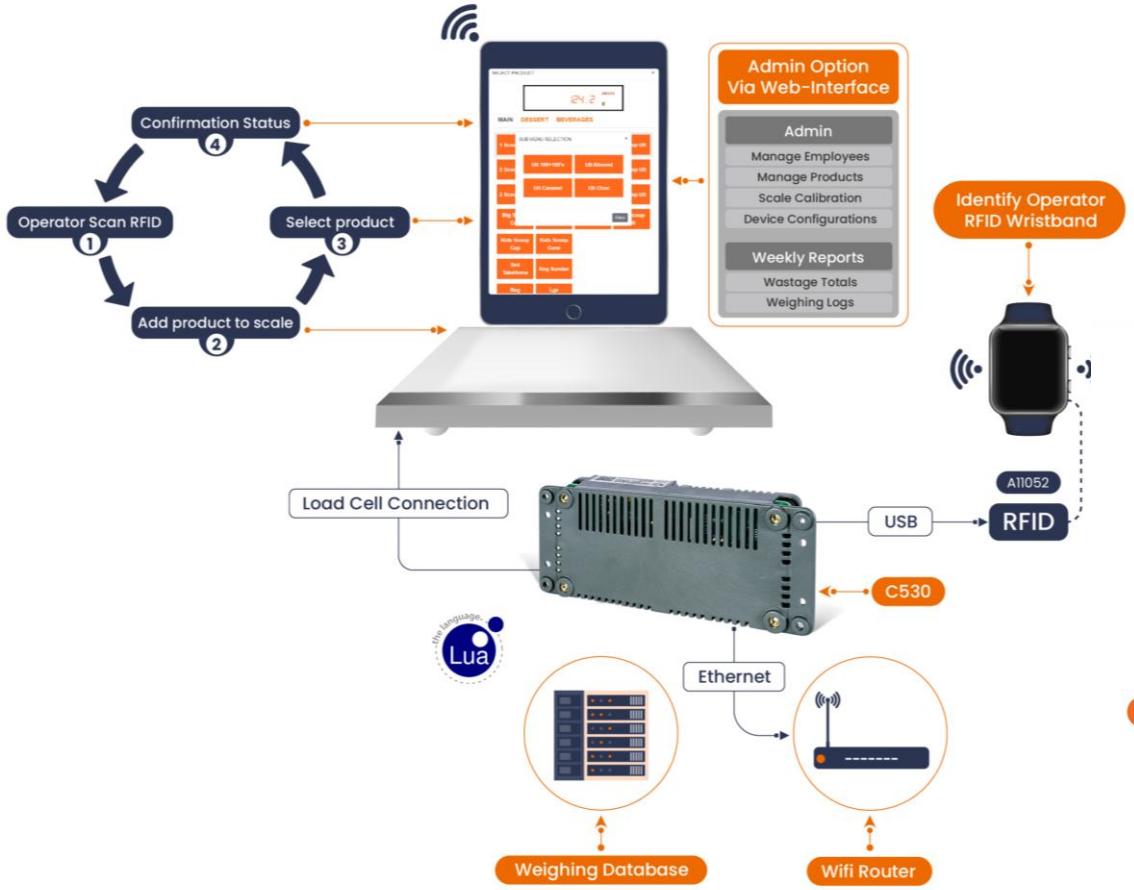
- 140 mm high digits (alphanumeric)

1.6 Custom Software

- Inhouse custom software development using Rinstrum Lua Libs.
- Self-host API documentation of Libraries for 3rd party Developers.
- Easy software updating and Backup features.
- Device ports customizations for Office integration.
- Web-Interface for Custom operations, configurations, and data management
- Monitor, Control and Management through Network.
- Data Streaming for External Control Systems
- Transaction Reporting for External Business Systems
- Accepting Commands from External Business Systems
- Lightweight inbuilt DB or SQL support for external DB.

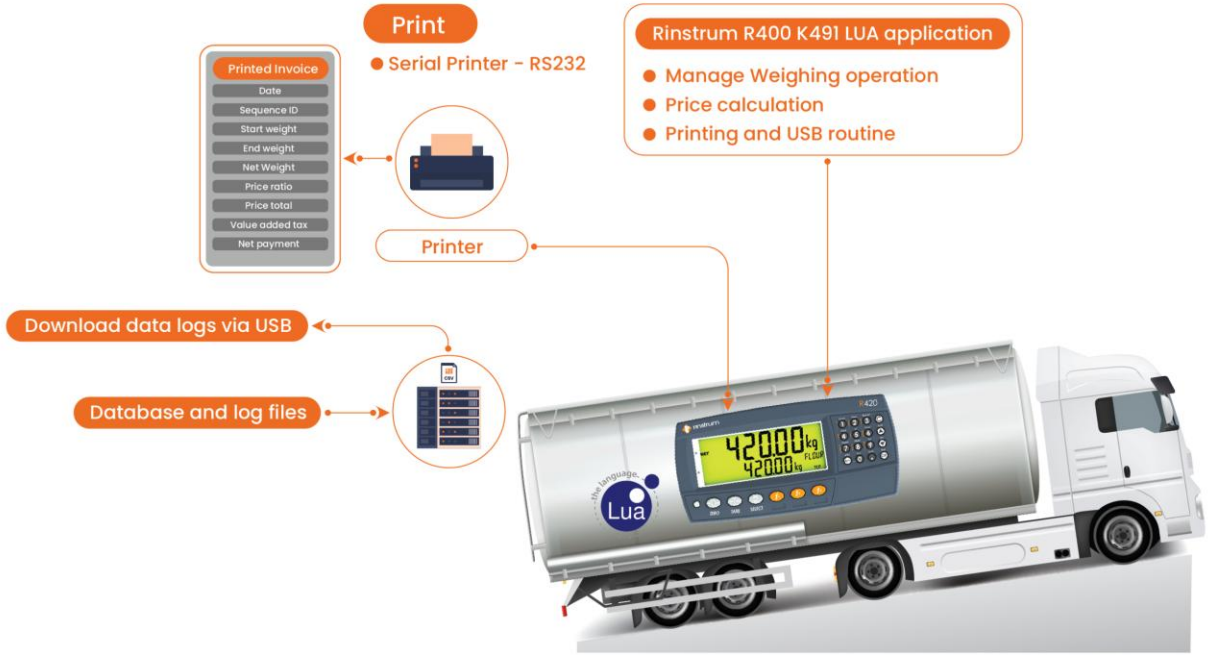


1.6 Custom Software



Check weighing portion control using a tablet display with RFID User ID

Trade approved onboard weighing with Price Computing in French



1.7 Guidelines and Standards

EU-Regulation	EU- and international Norm
• 2014/31/EU (NAWI) • 2014/32/EU (MID)	• EN45501 • OIML R60 & R76 • WELMEC

- Worldwide harmonization of legal metrology
  - OIML recommendations
  - OIML documents
  - OIML Certificate System
- Western European Legal Metrology Cooperation
  - WELMEC guides: harmonization of interpretations
  - Corresponding tables
- EU Regulations
  - EU Directives
  - Publication of normative documents and harmonized standards

1.8 EU Directives

Terminology

scale = measuring instrument = weighing instrument = non-automatic weighing instrument (NAWI)

Definition mentioned in the 2014/31/EU:

- Weighing instrument' means a measuring instrument serving to determine the mass of a body by using the action of gravity on that body. A weighing instrument may also serve to determine other mass-related magnitudes, quantities, parameters or characteristics

- 'Non-automatic weighing instrument' or 'instrument' means a weighing instrument requiring the intervention of an operator during weighing;

1.8 EU Directives

Terminology

Verfication
- Checking if the instrument fullfils all the requirements.

Calibration
- Determining how much the measured value differ from the expected value.

Adjustment
- Making the error smallest as possible.

Conformity Assestment
- Checking the instrument against the requirements in EU directives.

1.8 EU Directive

Measuring instruments (MID)
2014/32/EU

Non-automatic weighing instruments (NAWI)
2014/31/EU

CE Marking
CE Marking can only be placed on an instrument if it complies with EU Directives.

CE M25 0122

1.8 EU Directive

- Instruments placed on the market must comply with the directives.
- Instruments put in use must have had a conformity assessment.
- At the time of putting into use a declaration of conformity must be available.


EC type-approval Certificate


EU quality system Approval

Certificate: CE-301

Rinstrum Europe GmbH

Non-automatic weighing instruments

10 May 2022

1.8 EU Directive

By declaring the conformity of a scale with the essential requirements of the relevant EU regulations, especially 2014/31/EU, the newly placed scale is considered equal to a calibrated scale.

The processed is called

Manufacturer Conformity Assessment process

RINSTRUM is the manufacturer of the scale (indicator and bridge)
The MCA process is closed by RINSTRUM, not by the RVO on site
Therefore, the documents have to be sent to RINSTRUM.

1.9 Prerequisites

- Read and understand Rinstrum MCA Requirements and Policy (X00A-811)
- Valid Certificate as Rinstrum Verification Officer (X00A-811)
- Proof of liability insurance (company of the authorized person). Companies need to submit the liability insurance to Rinstrum.
- Participation of authorized persons in internal trainings on the manufacturer's conformity assessment procedure
- Successful passing of the online test
- Well known and at hand:
  - All relevant EU-regulations (2014/31/EU) and national law
  - All relevant Norms EN 45501:2015, OIML and WELMEC

1.9 Prerequisites

Rinstrum Documents Related to RVO

- Work instruction - Initial Verification Procedure (X00A-803)
- Work instruction - Verification Test (X00A-804)
- Work instruction - Flowchart (X00A-809)
- Template - Verification of Compatibility (X00A-805)
- Template - Test Report (X00A-822)
- Template - Check List for the Execution of First Verification (X00A-808)

The templates used for all documents must be up-to-date, it is ***your*** responsibility.
Updates will be notified via email.
Please log on to Verification Officer Portal and get the latest revisions.

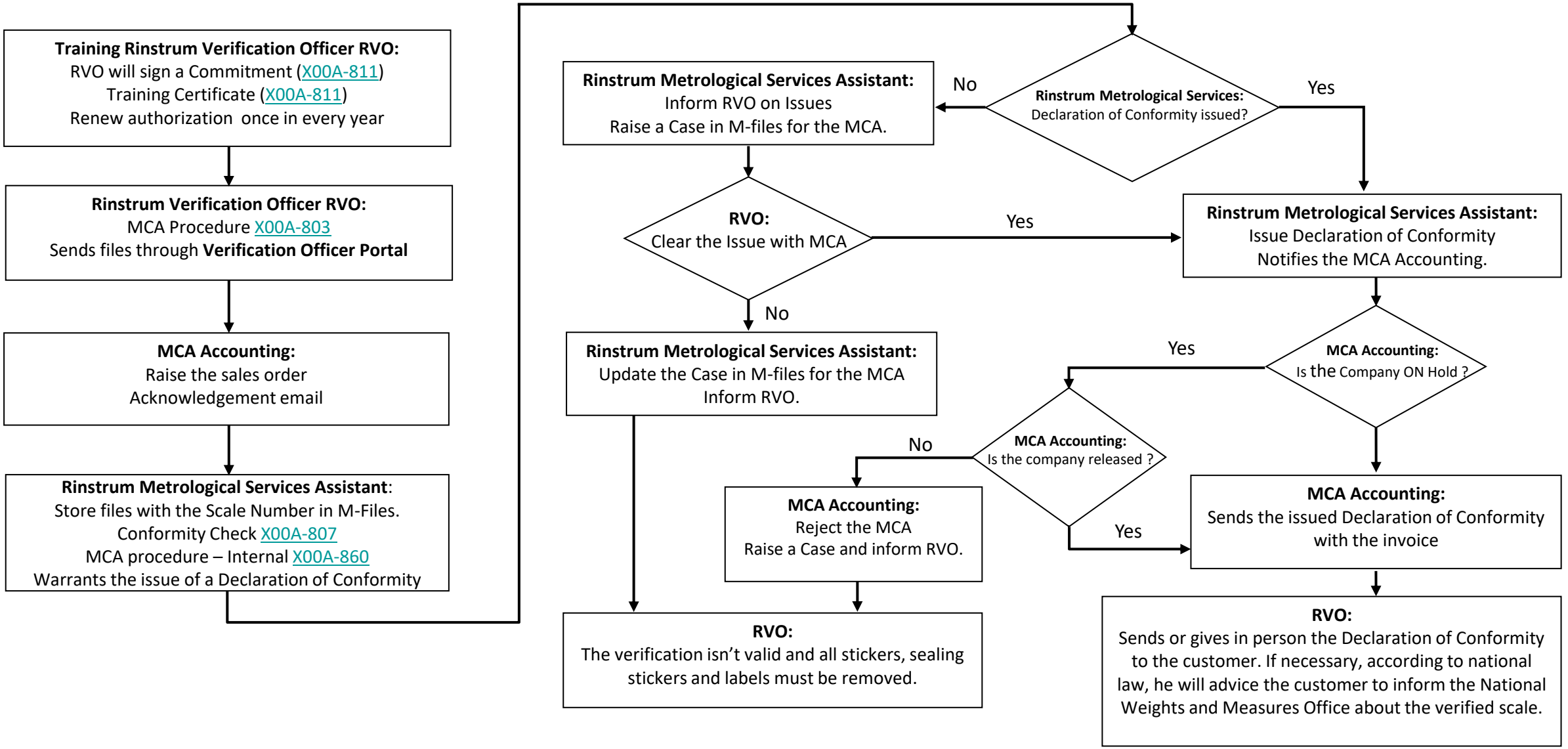
1.9 Prerequisites

Other Documents

- Type Approval Certificate (TAC) for the used load cell
  OIML R60 certified

- Calibration Certificate for the used weights
  (documenting the traceability to national standards)

1.10 MCA Flow Chart (X00A-809)



1.11 Rinstrum MCA Team

Marek Swierzy
General Manager
Rinstrum Europe GmbH
Marek.Swierzy@rinstrum.com

Metrological Service Manager

Saumya Ruwanmali
Sale and Administration Support
Rinstrum Pvt Ltd
saumya.ruwanmali@rinstrum.com

Metrological Service Assistant

Sachini Hithakshika
Sale and Administration Support
Rinstrum Pvt Ltd
Sachini.Hithakshika@rinstrum.com

MCA Accounting

2.1 RVO MCA Procedure

	WI	
Check list		X00A-808
Visual inspection	X00A-803	
Printer	The printout should be checked	
Verification of Compatibility for Modules		X00A-805
Verification tests	X00A-804	X00A-822
Sealing		
CE & Cal Counter and Trade Label	QADC-725	
Email		

2.2 Check List for the Execution of MCA (X00A-808)

- Check list X00A-808

What to be checked	True? Yes / No
Copies of the Standard DIN EN 45501:2015 and Directive 2014/31/EU present.	
Is the MCA executed according to the National laws and Guidelines in the Country of Installation?	
Visual inspection of the scale in accordance with the MCA Procedure X00A-803.	
Scale is according to 2014/31/EU. Documentation on hand / with the product	
If the printer is connected, the printout is checked and ok	
Type Approval Certificate and Test Certificate for the Indicator at hand.	
Test certificate for the Load Cell at hand; a photocopy made.	
Calibrated weights in use, i.e., Calibration Certificates for the weights present. Certificates of Delta-weights must be sent once a year.	
Verification of Compatibility for Modules of Weighing Instruments X00A-805 successful.	
MCA Procedure X00A-803 followed.	
Verification Tests X00A-804 implemented.	
Test Report for the Verification Tests X00A-822 filled and assessed.	
Rinstrum Destructible Labels stuck on the junction box and the load cell connection in the indicator as well as on two screws of the indicator casing to safeguard warranty; photos made.	
Rinstrum Calibration Counter Label and Trade Label stuck on weighing Instrument; photos made.	
Application for the Declaration of Conformity sent to Rinstrum Europe GmbH: via the RVO Portal, - Photocopies of the Test Certificate for the load cell, of the calibration certificates for the calibrated weight-sets mentioned in the test report, of the Verification of Compatibility for Modules of Weighing Instruments X00A-805 and of the Initial Verification Test Report X00A-822. - Photos -of the complete scale with standard weights on the load receptor. - Photos of the Indicator with Rinstrum Calibration Counter Label and Trade Label on. - Photos of the load cell connection in the indicator and of the Junction box sealed with Rinstrum Destructible Labels. - Photocopy of this Check List for the Execution of MCA - filled and signed.	

2.3 Verification of Compatibility (X00A-805)

- Ensure that the modules are compatible

Changes This Year

- Added Scale Number

Manufacturer:

a) Metrological and technical Data :

Weighing instrument (V	accuracy class	class				-	
Scale number:	maximum capacity / verification scale in	Max	e			kg	kg
XXX	One range WI					kg	kg
Type of weighing instru						kg	kg
YYY						kg	kg
	reduction ratio	R				-	
	number of load cells	N				-	
	initial zero setting range	IZSR				kg	
TAC (Type Approval Certificate):	correction for non uniform distributed lo	NUD				kg	
T12994	dead load of load receptor	DL				kg	
	additive tare	T+				kg	
	limits of temperature range	T_{min}	T_{max}	-20	40	°C	°C
Owner of TAC:	length of cable	L				m	
RINSTRUM Pty Ltd.	cross section of wire	A				mm^2	
Electronic indicator	accuracy class	class		III		-	
Manufacturer:	max. number verification scale interval	n_{ind}		4000		-	
RINSTRUM Pty Ltd.	load cell excitation voltage	U_{exc}		5		V	
	minumum inputvoltage for the indicator	U_{min}		0		mV	
Type:	min. input voltage per verification scale	Δu_{min}		0.8		µV	
R320	minimum/maximum load cell resistance	R_{Lmin}	R_{Lmax}	43	3500	Ω	Ω
TC (Test certificate):	limits of temperature range	T_{min}	T_{max}	-20	40	°C	°C
TC11437	fraction of the maximum permissible err	p_{ind}		0.5		-	
and/or TAC (Type Approval Certifi	cable connection (4- or 6 wire)	number of wires				-	
	max. value of cable length per wire cro	$(L/A)_{max}$				m/mm^2	
Load cell(s) (LC)	accuracy class	class				-	
Manufacturer :	maximum capacity	E_{max}				kg	
	minimum dead load	E_{min}				kg	
	rated output	C				mV/V	
Type:	max. number verification scale interval	n_{LC}				-	
	minimum verification scale interval **or**	v_{min}				kg	
	the ratio $Y = E_{max} / v_{min}$	Y				-	
TC (Test certificate):	ratio $Z = E_{max} / (2\,DR)$ **or**	Z				-	
	minimum dead load output return	DR				kg	
	input resistance of single load cell	R_{LC}				Ω	
or TAC (Type Approval Certificate):	limits of temperature range	T_{min}	T_{max}			°C	°C
	fraction of the maximum permissible err	p_{LC}		0.7		-	
Connecting elements	fraction of the maximum permissible err	p_{con}				-	

The above described modules have been applied in originally Version.
Date and signature of an authorized representative of the WI-Manufacturer:

2.3 Verification of Compatibility

Weighing instrument (WI)	accuracy class		*class*				-	
Scale number:	maximum capacity	verification scale interval	*Max*	*e*			kg	kg
XXX							kg	kg
Type of weighing instrument:							kg	kg
YYY							kg	kg
	reduction ratio		*R*				-	
	number of load cells		*N*				-	
	initial zero setting range		*IZSR*				kg	
TAC (Type Approval Certificate):	correction for non uniform distributed load		*NUD*				kg	
T12994	dead load of load receptor		*DL*				kg	
	additive tare		*T+*				kg	
	limits of temperature range		T_{min}	T_{max}	-10	40	° C	° C
Owner of TAC:	length of cable		*L*				m	
RINSTRUM Pty Ltd.	cross section of wire		*A*				mm^2	

2.3 Verification of Compatibility

Electronic indicator	accuracy class	*class*		III		-	
Manufacturer:	max. number verification scale intervals	n_{ind}		2000		-	
RINSTRUM Pty Ltd.	load cell excitation voltage	U_{exc}		5		V	
	minumum inputvoltage for the indicator	U_{min}		0		mV	
Type:	min. input voltage per verification scale interval	Δu_{min}		0.8		µV	
R320	minimum/maximum load cell resistance	R_{Lmin}	R_{Lmax}	87	3500	Ω	Ω
TC (Test certificate):	limits of temperature range	T_{min}	T_{max}	-10	40	°C	°C
TC11437	fraction of the maximum permissible error	p_{ind}		0.5		-	
and/or TAC (Type Approval Certificate):	cable connection (4- or 6 wire)	number of wires		4		-	
T12994	max. value of cable length per wire cross secti	$(L/A)_{max}$		331		m/mm^2	

2.3 Verification of Compatibility

Load cell(s) (LC)	accuracy class	*class*		C	-
Manufacturer :	maximum capacity	E_{max}		1000	kg
KELI	minimum dead load	E_{min}		0	kg
	rated output	C		3	mV/V
Type:	max. number verification scale intervals	n_{LC}		2000	-
SQB-A 1t C3	minimum verification scale interval **or**	v_{min}			kg
	the ratio $Y = E_{max} / v_{min}$	Y		10000	-
TC (Test certificate):	ratio $Z = E_{max} / (2\,DR)$ **or**	Z			-
TC6911	minimum dead load output return	DR			kg
	input resistance of single load cell	R_{LC}		400	Ω
or TAC (Type Approval Certificate):	limits of temperature range	T_{min}	T_{max}	-10 / 40	°C / °C
	fraction of the maximum permissible error	p_{LC}		0.7	-
Connecting elements	fraction of the maximum permissible error	p_{con}		0.5	-

2.3 Verification of Compatibility

b) Verification of Compatibility - One range weighing instrument (WI)

(1) Accuracy class of weighing instrument (WI) compatible to class of indicator (ind) and load cell (LC) — I. O. ?

LC	&	IND	equal or better	WI	
C	&	III	equal or better	III	YES

(2) Temp.limits of the weighing instr.(WI) compared with the temp.limits of the load cell (LC) and the indicator (IND)

	LC		IND		WI	
T_{min}	-10	&	-10	≤	-10	YES
T_{max}	40	&	40	≥	40	YES

(3) Sum of the squares of the fractions p_i of the max. permissible errors of connecting elements, indicator and load cells

p_{con}^2	+	p_{Ind}^2	+	p_{LC}^2	≤ 1	
0.25	+	0.25	+	0.49	≤ 1	YES

(4) Number of verification scale intervals of the weighing instrument and the indicator

	n_{Ind}	≥	$n = Max/e$	
One range weighing instrument	2000	≥	2000	YES

(5) Maximum capacity of load cells must be compatible to *Max* of the weighing instrument

Factor *Q* (EN 45 501 No 4.12.1): $Q = (Max + DL + IZSR + NUD + T+)/Max$ = 1.45

$(Q*Max*R)/N$	≤	E_{max}	
722.5	≤	1000	YES

(6a) Maximum number of verification scale intervals of load cell and number of scale intervals of the weighing instrument

	n_{LC}	≥	$n = Max/e$	
One range weighing instrument	2000	≥	2000	YES

(6d) Minimum dead load of the load cells to the actual dead load of the load receptor

$DL*R/N$	≥	E_{min}	
22.5	≥	0	YES

(7) Verification scale interval of the weighing instrument and minimum load cell scale interval must be compatible

$e*R/\sqrt{N}$	≥	$v_{min} = E_{max}/Y$	
0.50	≥	0.10	YES

(8) Minimum input voltage for the indicator, minimum input voltage per verification scale interval and actual output of the LCs

minimum input voltage (unloaded WI)	$U = C*U_{exc}*R*DL/(E_{max}*N)$	≥	U_{min}	
	0.34	≥	0.0	YES
input voltage per verification interval	$\Delta u = C*U_{exc}*R*e/(E_{max}*N)$	≥	Δu_{min}	
	3.75	≥	0.8	YES

(9) Allowed impedance range for the electronic indicator and actual load cell impedance

R_{Lmin}	≤	R_{LC}/N	≤	R_{Lmax}	
87	≤	100	≤	3500	YES

(10) Cable length per wire cross section of the connection cable between the load cell(s) and indicator

(L/A)	≤	$(L/A)_{max}$	
10.00	≤	331.00	YES

2.4 Verification Tests (X00A-804)

- The tests should be conducted in accordance with DIN EN 45501-2015
- The results shall be recorded in the Test Report X00A-822.
- At the beginning of each test ensure that the scale is in its reference position (not tilted), i.e. the bubble is in the center of the marked circle.
- The tests should be performed at a steady ambient temperature.
- At the end of the tests for Test Report, HI_RES should be switched off before the **calibration counter** is recorded.

rinstrum
SMART WEIGHING SOLUTIONS

2.4 Verification Tests

Visually inspect the scale – indicator , weighbridge

a. Damage or other problems which may make the scale unsuitable
b. Metrological characteristics, i.e. accuracy class, Min, Max, e, d
c. Ensure the settings in the indicator – according to OIML
   (USE: OIML, zero range and zero band not more than 4% Max)
d. Identification of firmware
e. Ensure the correct modules are used
f. Prescribed inscriptions and positions for verification and control marks
g. Ensure that the cable shield and earth are connected. If RS232-interface is used, please advise the manufacturer to install a module to avoid damage because of potential differences.
h. Check the construction of the weighbridge to be in accordance with
   EN45501:2015 and WELMEC 2.4

2.4 Verification Tests

X00A-822 Select the appropriate sheet regarding to the tested scale. At the top of each sheet the language English or German can be chosen. All orange data fields must be completed.

- Dual Range max. < 1t
- Dual Range max. > 1t
- Dual Range Truck Scale

- Single Range max. < 10kg
- Single Range max. < 1t Gravity
- Single Range max. > 1t Gravity
- Single Range Truck Gravity

- Hanging scale < 1t
- Single Range medical bed

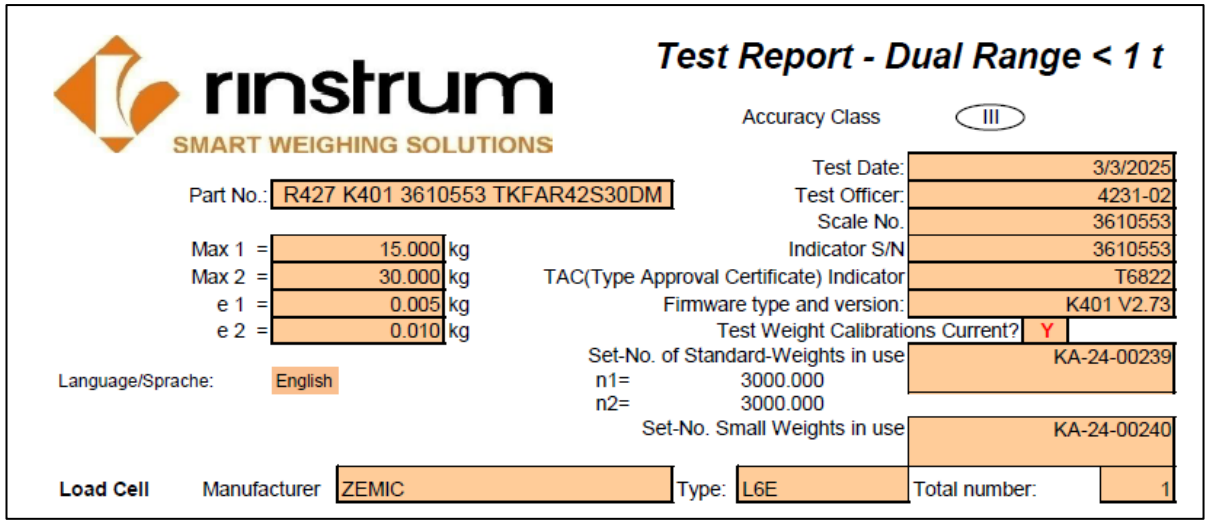
- Single Range Onboard Weighing
- Dual Range Onboard Weighing

2.4 Verification Tests

Test Report Changes – X00A-822

- Change of Part Number format & Scale Number format

OLD Version



rinstrum
SMART WEIGHING SOLUTIONS

Test Report - Dual Range < 1 t

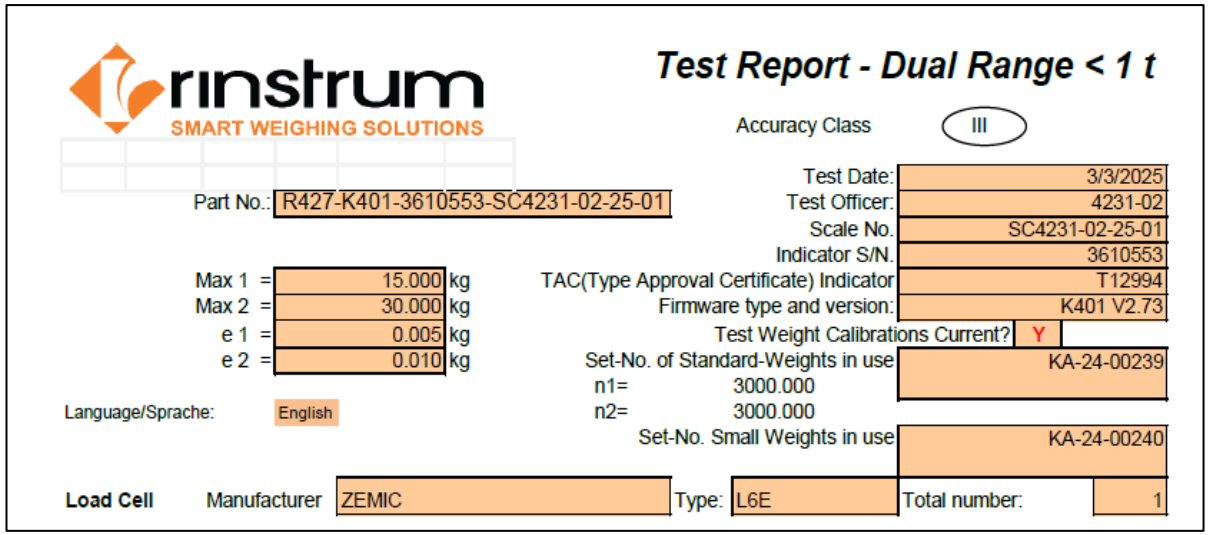
Accuracy Class III

Part No.: R427 K401 3610553 TKFAR42S30DM

Max 1 =	15.000 kg	Test Date:	3/3/2025
Max 2 =	30.000 kg	Test Officer:	4231-02
e 1 =	0.005 kg	Scale No.	3610553
e 2 =	0.010 kg	Indicator S/N	3610553
		TAC(Type Approval Certificate) Indicator	T6822
		Firmware type and version:	K401 V2.73
		Test Weight Calibrations Current?	Y
		Set-No. of Standard-Weights in use	KA-24-00239
Language/Sprache:	English	n1= 3000.000	
		n2= 3000.000	
		Set-No. Small Weights in use	KA-24-00240

Load Cell Manufacturer ZEMIC Type: L6E Total number: 1

NEW Version



rinstrum
SMART WEIGHING SOLUTIONS

Test Report - Dual Range < 1 t

Accuracy Class III

Part No.: R427-K401-3610553-SC4231-02-25-01

Max 1 =	15.000 kg	Test Date:	3/3/2025
Max 2 =	30.000 kg	Test Officer:	4231-02
e 1 =	0.005 kg	Scale No.	SC4231-02-25-01
e 2 =	0.010 kg	Indicator S/N.	3610553
		TAC(Type Approval Certificate) Indicator	T12994
		Firmware type and version:	K401 V2.73
		Test Weight Calibrations Current?	Y
		Set-No. of Standard-Weights in use	KA-24-00239
Language/Sprache:	English	n1= 3000.000	
		n2= 3000.000	
		Set-No. Small Weights in use	KA-24-00240

Load Cell Manufacturer ZEMIC Type: L6E Total number: 1

2.4 Verification Tests

Substitution of standard weights at verification (for Max.>1t)

- When testing instruments at the place of use (application), instead of standard weights any other constant load may be used, provided that standard weights of at least 50% Max are used.
- If it isn't allowed to transport more than 20t of weights on the roads, like in Hungary, it is permitted to do Repeatability Test for a scale with Max up to 60t with a contingent of only 20t standard weights. Provided that the repeatability max.error is not more than 0,2e. Repeatability Test must then be performed at a total load of about 50% Max, made up of the standard weights + Truck + substitution material.
- If the repeatability error is not more than 0,3e the portion of standard weights may be reduced to 35% Max
- If the repeatability error is not more than 0,2e the portion of standard weights may be reduced to 20% Max

Procedure for using substitution material:

- Put the contingent of standard weights onto the scale that you would like to substitute. Note down which weight the indicator shows. Then load substitution material onto the scale until the **indicator shows exactly the same weight**.
- After that, gently add the standard weights up to the next test load. Same procedure would be downwards.

rinstrum
SMART WEIGHING SOLUTIONS

2.4 Verification Tests

Tests

1. Repeatability Test
2. Accuracy of zero device
3. Accuracy of tare device
4. Weighing / Linearity Test
5. Tare (Weighing Test)*
6. Eccentricity Test
7. Test with coasting load (Truck Scales)
8. Tilting test (for medical bed Class III only)

2.4 Verification Tests

Test 1: Repeatability Test

- The instrument's automatic zero-setting and zero-tracking device may be in operation during this test.
- Before testing repeatability, the scale has to be pre-loaded with Max.
- At least **three** weighing with **about 80% Max** are necessary.
- It is allowed to zero the instrument between the weighing, if it doesn't show zero.

➢ Evaluation of Error is calculated in the sheet. The error between the three readings shouldn't be more than the absolute value of the permissible error.

2.4 Verification Tests

1. Repeatability Test (indicator in hi-res mode): accordance to EN45501-2015, A.4.10

* The zero tracking device may be in operation for the repeatability test.

Substitution of standard weights: Standard weights of at least 1 t or 50% Max must be available

load must be about		L		I	I error	mpe		OK?	e error	
[e]	[kg]	[e]	[kg]	[kg]	[kg]	[kg]	[e]	[Y,N]	[e]	
1000	**1,000**	1000	**1,000**	**1000.00**	**0.00**	1.00	1.0	Y	**0.00**	
1000	**1,000**	1000	**1,000**	**1000.00**	**0.00**	1.00	1.0	Y	**0.00**	
1000	**1,000**	1000	**1,000**	**1000.00**	**0.00**	1.00	1.0	Y	**0.00**	
				Δ I error:	**0.00**	1.00	1.0	Y		
						Test passed?		Y		

Actual sample load

Indication

Indication Error

Max Permissible Error

2.4 Verification Tests

Test 2: Accuracy of zero device

- High-Res Mode must be switched off.
- A weight close to Zero must be loaded onto the scale.
- Indicator must now be **set to Zero by pressing the Zero-button**
- A weight close to Zero must be loaded onto the scale.
- Note down the number of added weights.

➢ Evaluation of Error is calculated in the sheet.

2.4 Verification Tests

2. Accuracy of Zero Device (hi-res mode: off): accordance to EN45501-2015, A.4.2.3

ΔL	Error at Zero	mpe		OK?
[kg]	[kg]	[kg]	[e]	[Y,N]
0.25	**0.250**	**0.250**	0.25	Y
		Test passed?		Y

2.4 Verification Tests

Test 3: Accuracy of tare device

- High-Res Mode and Zero tracking must be switched off.
- This test is to be performed in the same manner as Test 2.
- A weight between 1/3 and 2/3 of Max must be loaded onto the scale.
- Indicator must now be **tared by pressing the Tare-button**.
- Standard weights of 1/10e must be gently added, until indication changes from one scale interval to the next above.
- Note down the number of added weights.

➢ Evaluation of Error is calculated in the sheet.

2.4 Verification Tests

3. Accuracy of Tare Device (hi-res mode: off): accordance to EN45501-2015, A.4.6.2

ΔL	Error at Tare	mpe		OK?
[kg]	[kg]	[kg]	[e]	[Y,N]
0.25	**0.250**	**0.250**	0.25	Y
			Test passed?	Y

2.4 Verification Tests

Test 4: Weighing / Linearity Test

- Apply **5 test loads and similarly remove them back to zero**.
- The loads selected shall include Min and Max and values at or near to those at which the maximum permissible error (mpe) changes (500e and 2000e).
- **The scale should not be allowed to return to zero between loads.**
- If substitution material is used, you must first load from zero up to the maximum quantity of standard weights. Then remove the weights and substitute the previous weights with substitution material. Repeat the procedure until Max is reached. Unload in reverse order to zero.

➢ The calculation sheets calculates the total error E_{error} - $E_{zero.}$ If this total error is less or equal to 0,5e, Tare Test 5 has not to be performed.

2.4 Verification Tests

4. Weighing / Linearity Test (Indicator in hi-res mode): accordance to EN45501-2015, A.4.4.1

load must be about		L		I	E error	mpe		Eerror - Ezero	OK	
[e]	[kg]	[e]	[kg]	[kg]	[kg]	[kg]	[e]	[kg]		
20	**20**	20	**20.0**	**20.00**	**0.00**	0.50	0.5	**-0.25**	Y	
200	**200**	200	**200.0**	**200.00**	**0.00**	0.50	0.5	**-0.25**	Y	
500	**500**	500	**500.0**	**500.00**	**0.00**	0.50	0.5	**-0.25**	Y	
1000	**1,000**	1000	**1,000.0**	**1,000.00**	**0.00**	1.00	1.0	**-0.25**	Y	
2000	**2,000**	2000	**2,000.0**	**2,000.00**	**0.00**	1.00	1.0	**-0.25**	Y	
1000	**1,000**	1000	**1,000.0**	**1,000.00**	**0.00**	1.00	1.0	**-0.25**	Y	
500	**500**	500	**500.0**	**500.00**	**0.00**	0.50	0.5	**-0.25**	Y	
200	**200**	200	**200.0**	**200.00**	**0.00**	0.50	0.5	**-0.25**	Y	
20	**20**	20	**20.0**	**20.00**	**0.00**	0.50	0.5	**-0.25**	Y	
								Test passed?	Y	

If the maximum calculated error in Weighing Test is less or equal to 0,5e, no additional Tare Test has to be performed.

Does Test 5 have to be performed? N

2.4 Verification Tests

Test 5: Tare (Weighing Test)

- The Test Report sheet calculates if this Test has to be undertaken or not.
- This test has to be performed **if the total error in Test 4 is more than 0,5e.**

- A load between **1/3 and 2/3 Max** should be applied and **then be tared**.
- Apply **5 test loads and similarly remove them back to zero**.
- The loads selected shall include Max (maximum possible NET load) and Min and values at or near to those at which the maximum permissible error (mpe) changes (500e and 2000e).
- **The scale should not be allowed to return to zero between loads.**
- If substitution material is used, you must first load from zero up to the maximum quantity of standard weights. Then remove the weights and substitute the previous weights with substitution material. Repeat the procedure until Max is reached. Unload in reverse order to zero.

2.4 Verification Tests

Does Test 5 have to be performed? **Y**

5. Tare (Weighing Test) - Indicator in hi-res mode: accordance to EN45501-2015, A.4.6.1

Tare a load between 1/3 Max and 2/3 Max and test up to Max.at 5 load points. Please test at the loads where mpe changes.

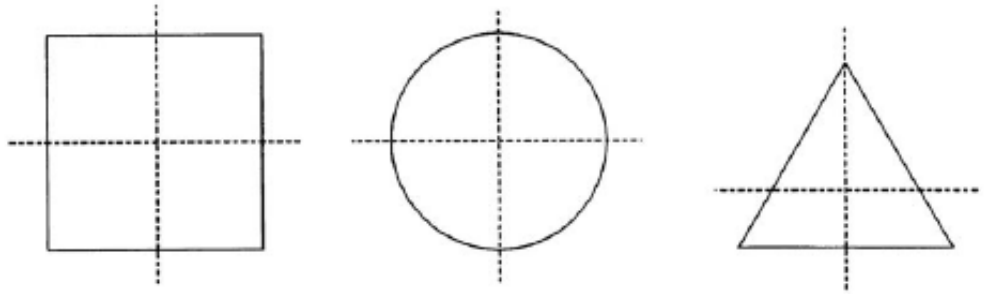
Tared load: **500.00** [kg]

L	e	I	E error	mpe		Eerror - Etare	OK?	
[kg]		[kg]	[kg]	[kg]	[e]	[kg]	[Y,N]	
20.0	20	20.000	0.00	0.50	0.5	-0.25	Y	
100.0	100	100.000	0.00	0.50	0.5	-0.25	Y	
300.0	300	300.000	0.00	0.50	0.5	-0.25	Y	
400.0	400	400.000	0.00	0.50	0.5	-0.25	Y	
500.0	500	500.000	0.00	0.50	0.5	-0.25	Y	
400.0	400	400.000	0.00	0.50	0.5	-0.25	Y	
300.0	300	300.000	0.00	0.50	0.5	-0.25	Y	
100.0	100	100.000	0.00	0.50	0.5	-0.25	Y	
20.0	20	20.000	0.00	0.50	0.5	-0.25	Y	
						Test passed?	Y	

2.4 Verification Tests

Test 6: Eccentricity Test

- Zero-setting or zero-tracking device shall not be in operation.
- Large weights should in preference to several small weights.
- For an instrument **with a load receptor having not more than four points of support**, the four quarter segments roughly equal to ¼ of the surface of it shall be loaded in turn. The test load shall be **1/3 Max**.



- For an instrument with a load receptor having more than four points of support, the test load of (1/n-1) Max shall be applied over each support on an area of 1/n of the surface area of the load receptor.
- Where two points of support are too close together for the test load, the doubled load shall be distributed over twice the area on both sides of the axis connecting the two points of support.
- Eccentricity for Dual range scale should be tested at **1/3 of Max**.

2.4 Verification Tests

6. Eccentricity Test (Indicator in hi-res mode) accordance to EN45501-2015, A.4.7

Load position

1	4			
2	3			

number of load carrier: 4

Load positions in one line (e.g. weighing belt)?

load must be about	L			I	I error	mpe		OK?
[kg]	[e]	pos	[kg]	[kg]	[kg]	[kg]	[e]	[Y,N]
667.0	600	1	600.0	600.00	0.00	1.00	1.0	Y
667.0	600	2	600.0	600.00	0.00	1.00	1.0	Y
667.0	600	3	600.0	600.50	0.50	1.00	1.0	Y
667.0	600	4	600.0	601.00	1.00	1.00	1.0	Y
		5				0.00	0.0	
		6				0.00	0.0	
		7				0.00	0.0	
		8				0.00	0.0	
		9				0.00	0.0	
		10				0.00	0.0	
							Test passed?	Y

Max = 2,000 kg

6. Eccentricity Test (Indicator in hi-res mode) accordance to EN45501-2015, A.4.7

Load position

1	4	5			
2	3	6			

number of load carrier: 6

Load positions in one line (e.g. weigh

load must be about	L			I	I error	mpe		OK?
[kg]	[e]	pos	[kg]	[kg]	[kg]	[kg]	[e]	[Y,N]
400	40	1	400	400.0	0.0	5.00	0.5	Y
400	40	2	400	400.0	0.0	5.00	0.5	Y
400	40	3	400	400.0	0.0	5.00	0.5	Y
400	40	4	400	400.0	0.0	5.00	0.5	Y
400	40	5	400	400.0	0.0	5.00	0.5	Y
400	40	6	400	400.0	0.0	5.00	0.5	Y
		7				0.0	0.0	
		8				0.0	0.0	
		9				0.0	0.0	
		10				0.0	0.0	
		11				0.0	0.0	
		12				0.0	0.0	
							Test passed?	Y

Max = 2,000 kg

2.4 Verification Tests

6. Eccentricity Test (Indicator in hi-res mode) accordance to EN45501-2015, A.4.7

Load position

1	4	5	8		
2	3	6	7		

number of load carrier: 8

Load positions in one line (e.g. weighing belt)?

load must be about	L			I	I error	mpe		OK?
[kg]	[e]	pos	[kg]	[kg]	[kg]	[kg]	[e]	[Y,N]
7,143	375	1	7,500	7502.0	2.0	10.00	0.5	Y
7,143	375	2	7,500	7504.0	4.0	10.00	0.5	Y
7,143	375	3	7,500	7500.0	0.0	10.00	0.5	Y
7,143	375	4	7,500	7500.0	0.0	10.00	0.5	Y
7,143	375	5	7,500	7500.0	0.0	10.00	0.5	Y
7,143	375	6	7,500	7502.0	2.0	10.00	0.5	Y
7,143	375	7	7,500	7500.0	0.0	10.0	0.5	Y
7,143	375	8	7,500	7500.0	0.0	10.0	0.5	Y
		9				0.0	0.0	
		10				0.0	0.0	
		11				0.0	0.0	
		12				0.0	0.0	
							Test passed?	Y

Max = 50,000 kg

6. Eccentricity Test (Indicator in hi-res mode)

Load position accordance to DIN EN45501 - 3.6.2 (A.4.7)

1	2	3	4	

number of load carrier: 4

Load positions in one line (e.g. weighing belt)?

load must be about	L			I	I error	mpe		OK?
[kg]	[e]	pos	[kg]	[kg]	[kg]	[kg]	[e]	[Y,N]
667.0	675	1	675.0	674.80	0.20	1.00	1.0	Y
667.0	675	2	675.0	675.00	0.00	1.00	1.0	Y
667.0	675	3	675.0	674.60	0.40	1.00	1.0	Y
667.0	675	4	675.0	675.20	0.20	1.00	1.0	Y
		5				0.00	0.0	
		6				0.00	0.0	
		7				0.00	0.0	
		8				0.00	0.0	
		9				0.00	0.0	
		10				0.00	0.0	
							Test passed?	Y

Max = 2,000 kg

2.4 Verification Tests

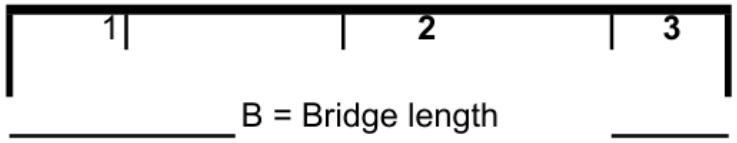
Test 7: Test with coasting load (Truck Scales)

- A truck load of **at least 50% Max** but **not exceeding 80% Max** shall be driven onto the weighbridge from each of the access roads.
- Measurements shall be carried out in each of the three bridge segments.
- The distance from the middle position to the first or end position shall be more than 0,1B , where B is the length of the bridge.
- Length and width of scale should be entered.

2.4 Verification Tests

7. Test with coasting load - Only for a weighbridge (0,5Max<L<0,8Max)
(Hi-Res-Mode on) accordance to EN45501-2015, A.4.7.4

25000 kg < L < 40000 kg



Dimension 15 m x 1 m

Distance from the middle position to the beginning or end shall be >0,1B

Driving from left

L			I	Ierror	mpe		OK?	
[e]	pos	[kg]	[kg]	[kg]	[kg]	[e]	[Y,N]	
1608	1	32,160	32,164	4.0	20.0	1.0	Y	
1608	2	32,160	32,168	8.0	20.0	1.0	Y	
1608	3	32,160	32,166	6.0	20.0	1.0	Y	
						Test passed?	Y	

Driving from right

L			I	Ierror	mpe		OK?	
[e]	pos	[kg]	[kg]	[kg]	[kg]	[e]	[Y,N]	
1608	3	32,160	32,166	6.0	20.0	1.0	Y	
1608	2	32,160	32,168	8.0	20.0	1.0	Y	
1608	1	32,160	32,164	4.0	20.0	1.0	Y	
						Test passed?	Y	

2.4 Verification Tests

Test 8: Tilting test (for medical bed Class III only)

- The bed must be in reference position, without inclination, no load on it.
- Indicator must now be **set to Zero by pressing the Zero-button**.
- Max. load must be put onto the bed and the indicated weight must be written into the test report.
- Then, the bed must be inclined until the bubble in the levelling device touches the marking in all four directions.
- Now the indicated weight without any load and with Max load must be written to the test report in every inclined direction.
- This test is not necessary for medical beds Class IIII

2.4 Verification Tests

8. Tilting Test (Indicator in hi-res mode) accordance to EN45501-2015, A.5.1

the scale must be zeroed in reference position, then read indication at Zero and Max in reference and in tilted positions.

Reference position **Tilted position** **2e= 1 kg**

load must be about	indication	indication	indication	indication	indication	mpe	OK?
[kg]						[kg]	
0.00	0.00	0.00	0.00	0.00	0.00		
Error		0.00	0.00	0.00	0.00	1.00	
		Y	Y	Y	Y		Y
250.000	250.00	250.00	250.00	250.00	251.00		
Error	0.00	0.00	0.00	0.00	1.00	0.25	
Etotal		0.00	0.00	0.00	1.00		
		Y	Y	Y	N		N
					Test passed?		N

2.4 Verification Tests

Earth Gravity

- If necessary, verify the earth gravity for the place of use

Place of installation

- Name and town of the installation

Calibration Counter

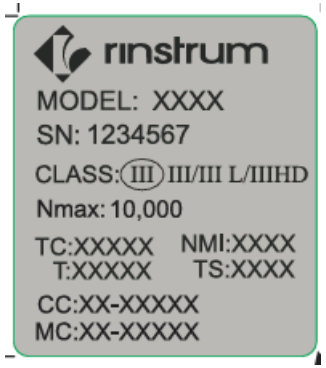
- The high-resolution mode (HI_RES) shall be switched off. Then calibration counter should be recorded.

7. Earth Gravity

Verification for: g=		X	Not required
place of installation:	Tenter Weg 10, 42897 Remscheid		
Calibration Counter C:	9		

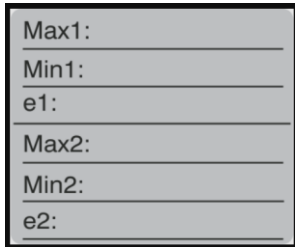
2.5 Seals and Labels

Included in each Package



Trade Label – Landscape or portrait.

- Custom printed for each indicator.
- Includes model & Serial number.



Capacity Label

- Fillable using a marker pen

Order Seperately

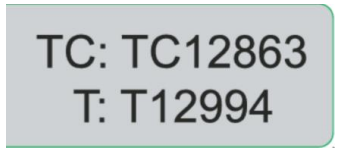
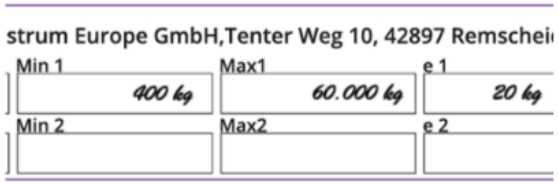
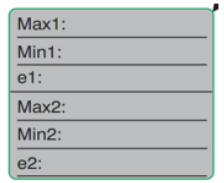
Calibration Counter Label

- Fillable using a marker pen
- Carries a unique scale number

Void Seal

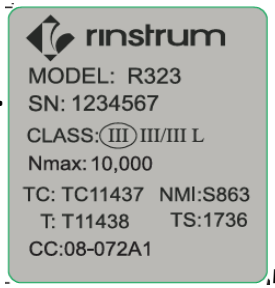
2.5 Seals and Labels

Trade Label

OLD	NEW
Contains blank spaces for serial number, T and TC number 	The label comes with the serial number, T number, and TC number printed on it. 
Contains blank spaces for capacity details. 	Capacity details are included in a separate label that comes with the label kit. 
• Available Printed from Rinstrum	• Printed-on-Demand. • Included with the indicator as a kit part.

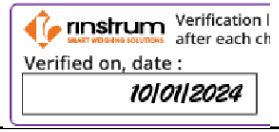
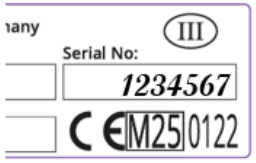
2.5 Seals and Labels

Trade Label

OLD	NEW
• Clear polyester film is applied over the label	• Made with indelible temper evident material. • No clear film needed.
• Two void labels are applied at both ends 	• Made with tamper evident void destructible material. • No additional void labels are needed.
• One label for panel mount ABS and Stainless-steel indicators.	• 2 designs for panel mount ABS and Stainless-steel indicators. • Contains all class details in one label. 

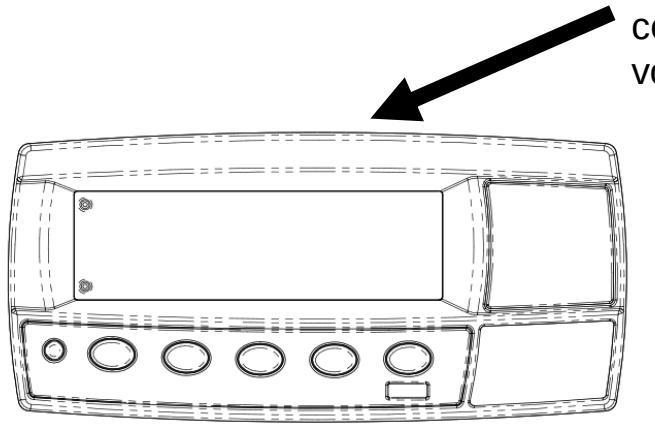
2.5 Seals and Labels

Calibration Counter Label

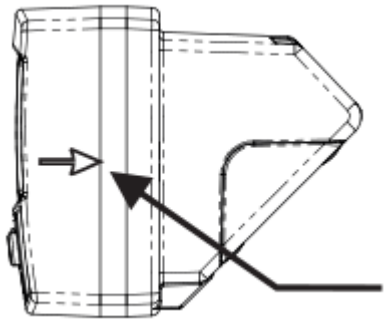
OLD	NEW
• Contains blank spaces for calibration Count in the certification label. • CE details in the trade label. 	• CE and Cal Count are in the same label. • Blank spaces for Calibration Count included in the label. 
Contains blank spaces for verification Date in the certification label. 	No verification date needed.
• Available Printed	Available Printed-on-demand
• Indicator serial number has been used as the scale number in all test certificates 	Calibration Counter label comes with a unique Scale Number. 

2.5 Seals and Labels

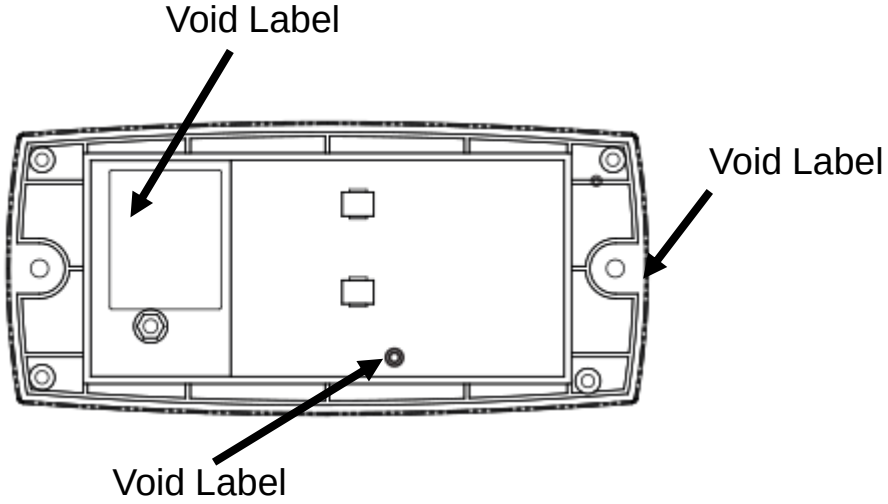
Sealing the R320 Indicator

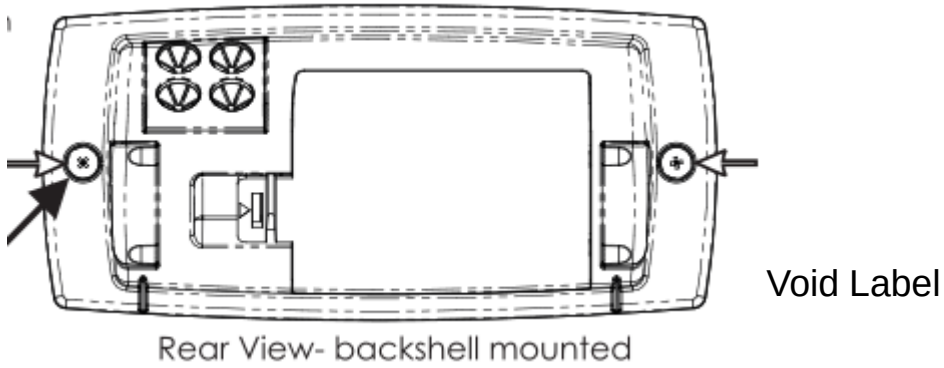


Option 1



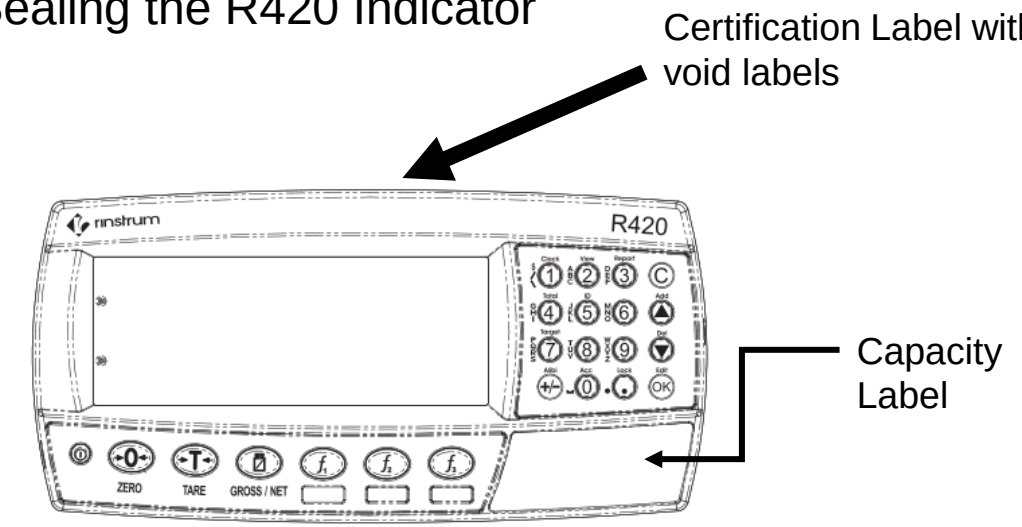
Option 1



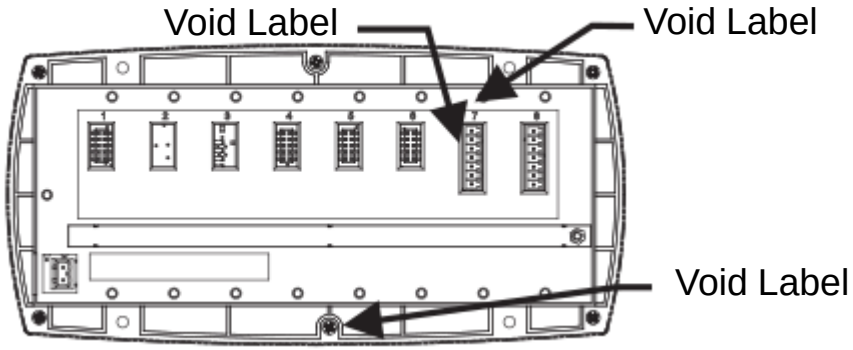


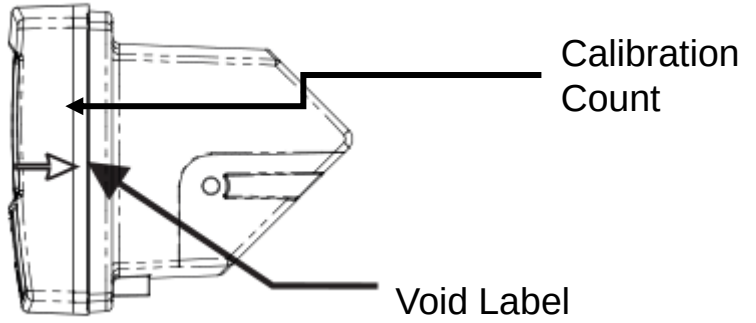
2.5 Seals and Labels

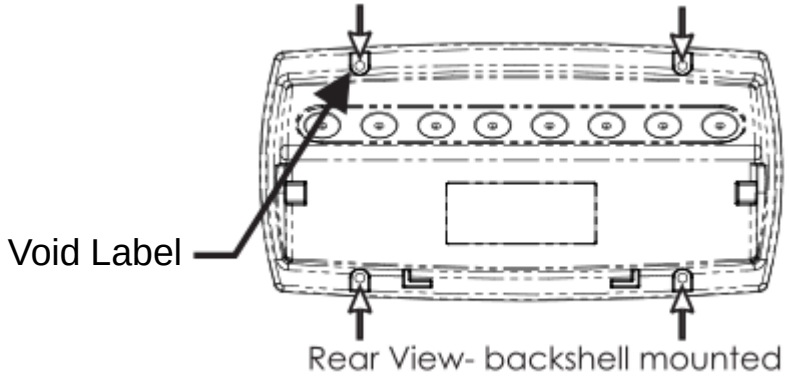
Sealing the R420 Indicator

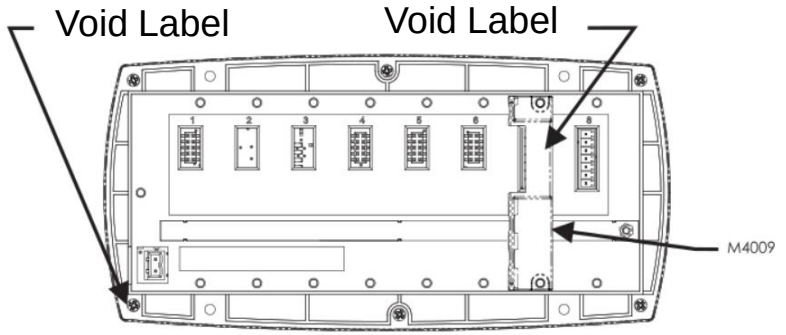


Option 1



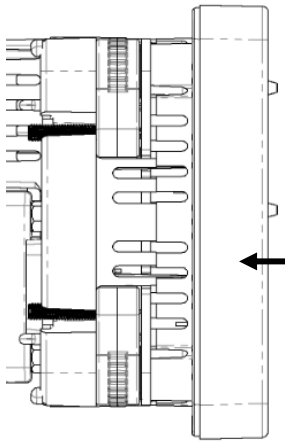




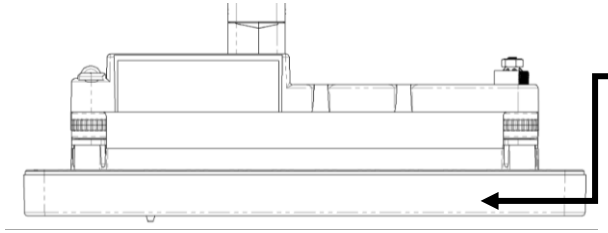


2.5 Seals and Labels

Sealing the C520 Indicator



Calibration
Count Sticker

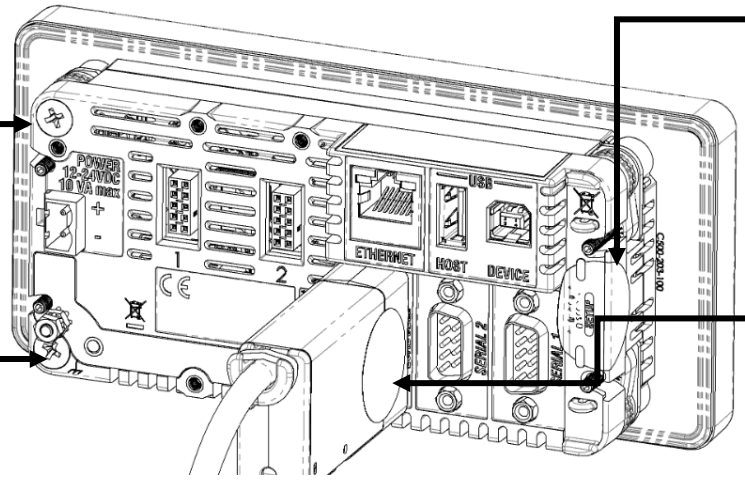


Certification Label
with void labels

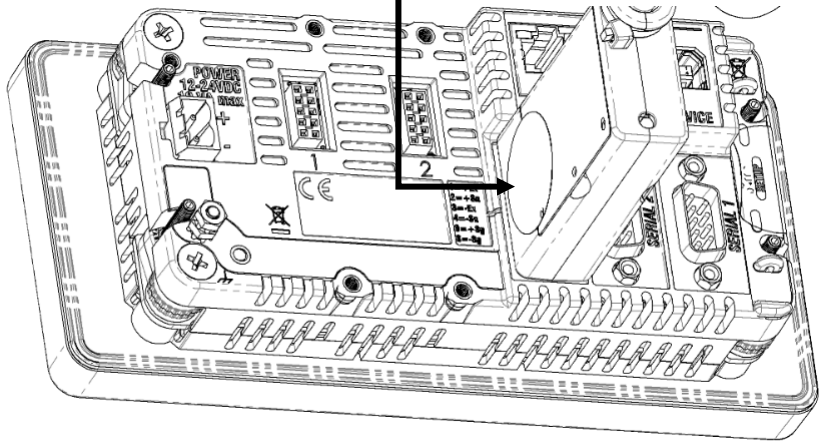
Void Label

Void Label

Void Label

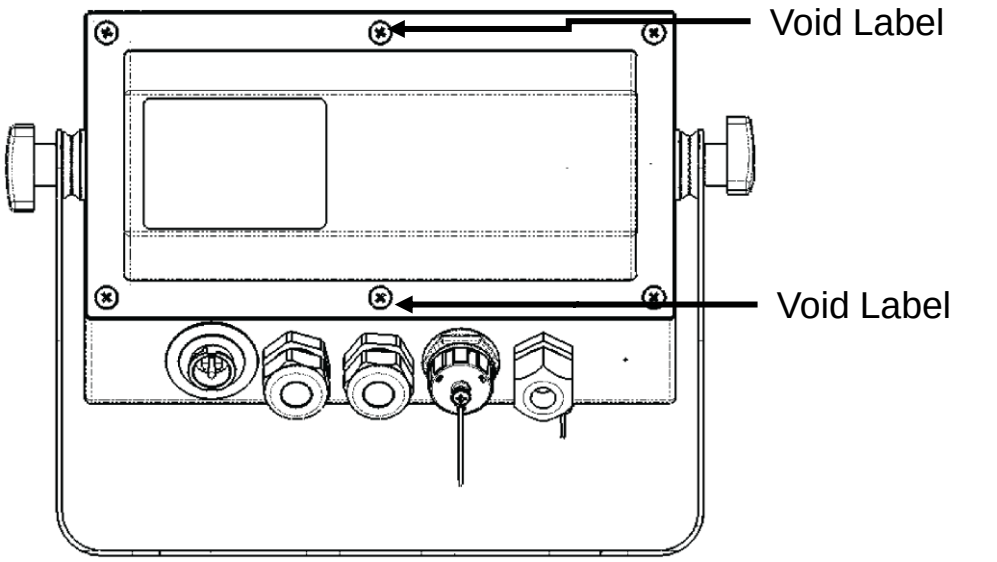


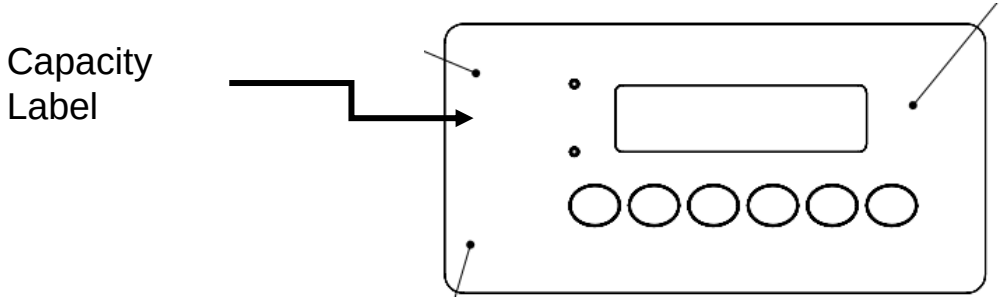
Void Label

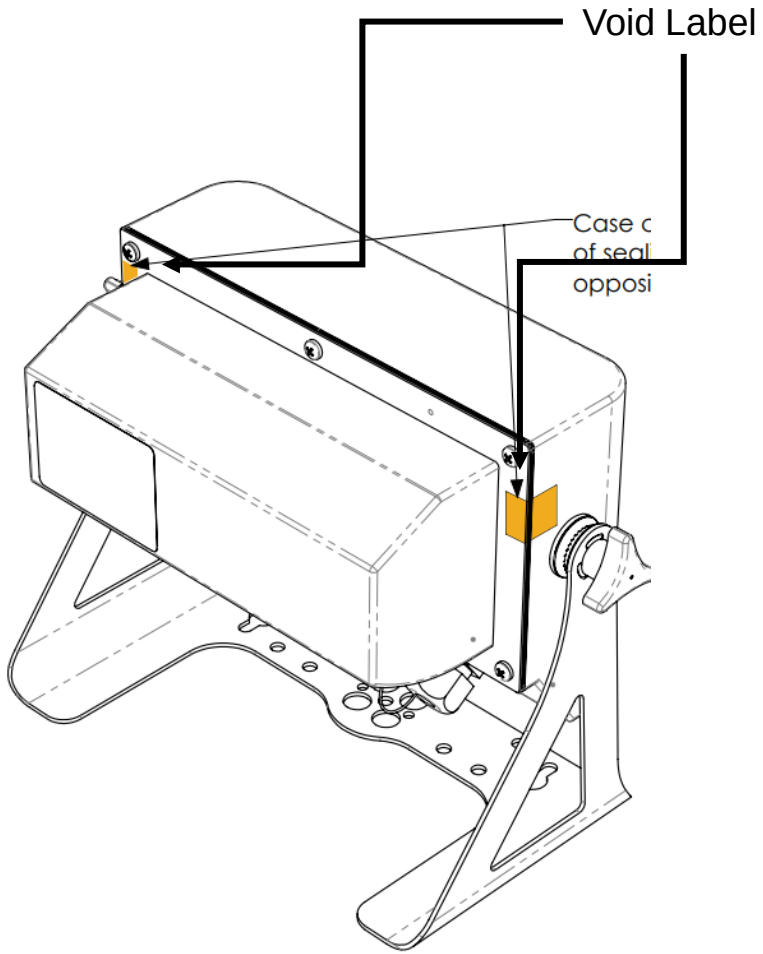


2.5 Seals and Labels

Sealing the C520 Indicator

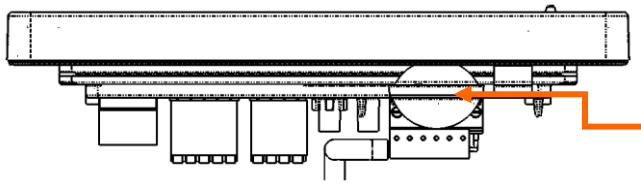


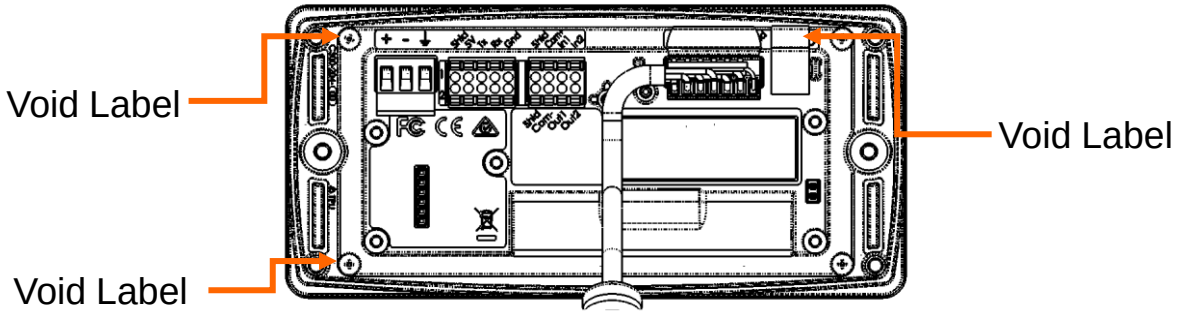




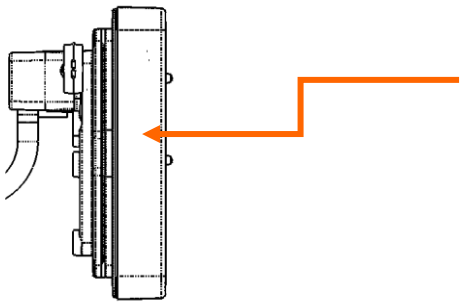
2.5 Seals and Labels

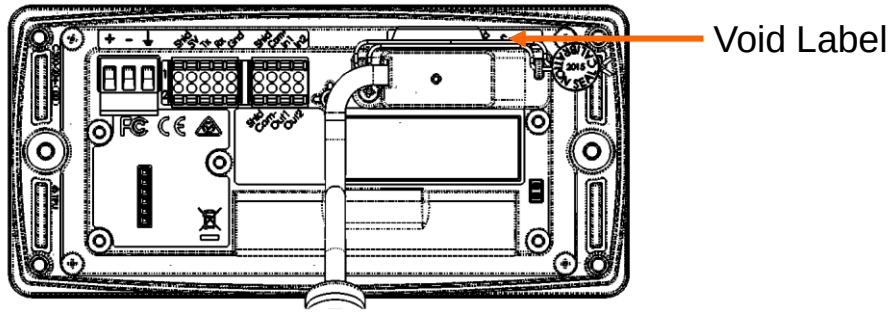
Sealing the C320 Indicator





Connector Only

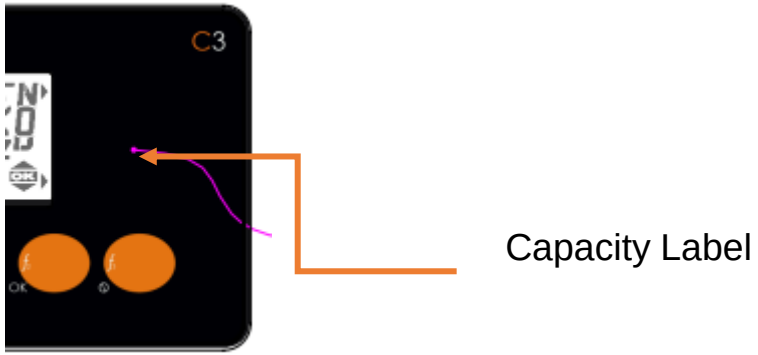




Connector + M6009

2.5 Seals and Labels

Sealing the C320 Indicator



2.5 Seals and Labels

Sealing the C350 Indicator (Pending approval of type Certificate)

2.5 Seals and Labels

Sealing the C357 Indicator (Pending approval of type Certificate)

2.5 Seals and Labels

Sealing the Junction Box

2.6 Documents to Rinstrum

Document	Format
X00A-808	Pdf or scanned Pdf\Image
X00A-805	Excel or Pdf
X00A-822	Excel or Pdf
Photos	Images
Certificate of used standard weights (Copy)	Pdf
Certificate of the used delta-weights (Copy)	Pdf
TC Loadcell (Copy)	Pdf

- The filenames of X00A-805,808,822 must be:
  SheetNumber_Series of Indicator_SerialNumber_VerificationOfficer
  e.g. “X00A-816_R320-K356_3131313_rvo12121.pdf”.
- Submits all the necessary files and photos to Verification Officer Portal.

2.7 Declaration

- Rinstrum will issue the Declaration of Conformity after processing.
- Send the Declaration of Conformity to the customer.
- According to national law, if requested, RVO should ask the customer for informing the local authority about the verified scale and sending all requested documents.

2.8 Clarification and Rejection

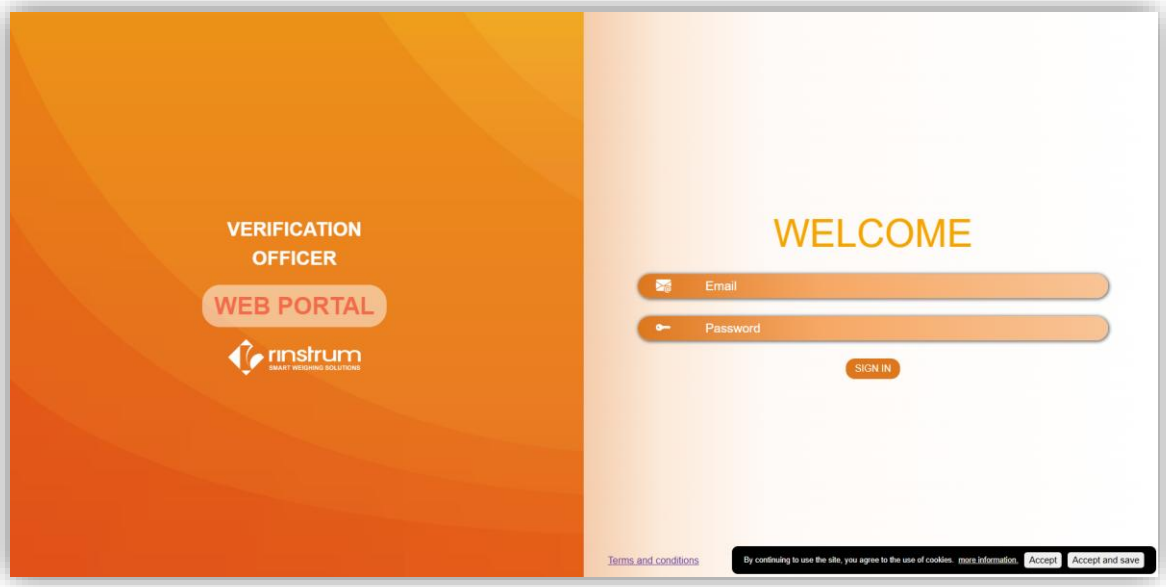
- When there is an issue with the MCA files, it will be on clarification state and RVO will be informed regarding this.
- This will extend the processing time of the MCA.
- Once RVO clears the issue, MCA will be processed, and Declaration of conformity will be issued.
- If the issue can’t be resolved, MCA will be rejected. This will be informed to RVO and stickers places in the scale should be removed.
- RVO can perform a new MCA for the scale and send documents to the RVO Portal

3.1 Verification Officer Portal

- RVO Portal is accessible through – rvo.rinstrum.com
- How to Use Guide – Video Link/X00A-803

Features

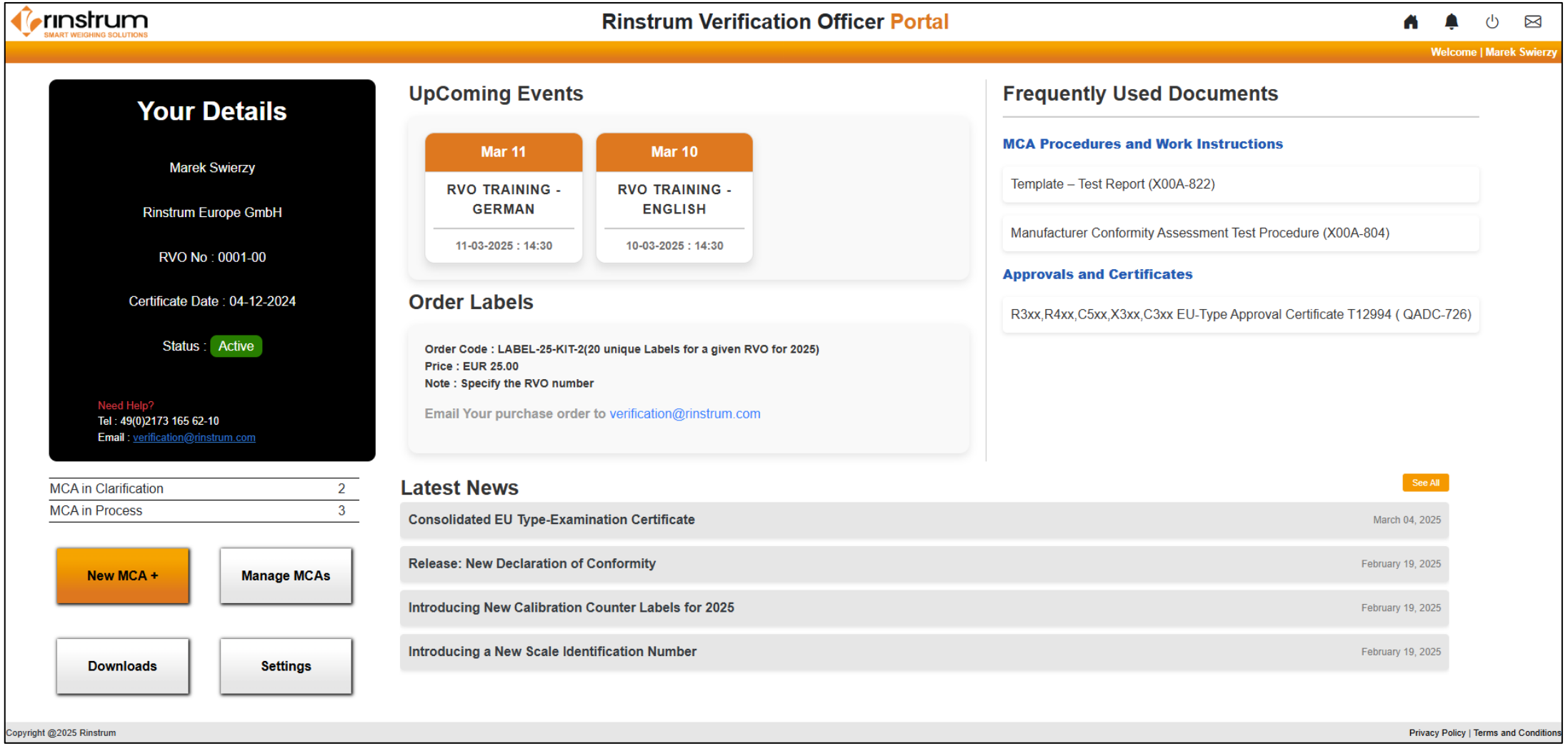
- MCA submission for verification
- MCA Clarifications
- Declaration conformity issuance
- Trainings/Education material.
- Announcements for RVOs etc



This will effectively be used as the primary communication channel between RVOs and Rinstrum Metrological Service.

Active RVOs will be assigned with access credentials.

3.1 Verification Officer Portal



4.1 UKCA Approvals

- Rinstrum has applied for UKCA approvals and currently under processing.
- RVOs can apply for a training with Rinstrum for performing MCA with UKCA approvals.
- Email us at verification@rinstrum.com for more information.

4.1 Rinstrum Onboard Weighing Approval

4.1 Rinstrum Onboard Weighing Approval

EU-type examination certificate

Number **T12994** revision 0
Project number 3897089
Page 1 of 1

Issued by

NMi Certin B.V.,
designated and notified by the Netherlands to perform tasks with respect to conformity assessment procedures mentioned in Article 13 of Directive 2014/31/EU, after having established that the measuring instrument meets the applicable requirements of Directive 2014/31/EU, to:

Manufacturer

Rinstrum Pty Ltd
Unit 4/31 Henry Street
Loganholme, Queensland, 4129
Australia

4.1 Rinstrum Onboard Weighing Approval

R420 Indicator

M4211
Tilt Compensation module

M4501
Data Storage Module

M4907
Tilt Sensor Module

4.2 Changes effective from 1st April 2025

- Consolidate all Type examination certificates (Txxxxx) into one Certificate.
- Introduce a unique serial for the scale rather than using the serial number of the indicator.
- Combine Policy, Commitment and RVO certificate a single document
- Naming conventions for Scales
- Label updates

Conclusion

- This training is focused on refreshing the knowledge of the RVO to perform successful MCA.
- Training includes an online test.
- RVO Certification, Commitment and Policy (X00A-811)

Thank you.!

rinstrum
SMART WEIGHING SOLUTIONS