



Australian Government
Department of Industry,
Innovation and Science

National Measurement Institute

Certificate of Approval

NMI 6/9C/315

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.

Mettler Toledo VFS120 Forklift Weighing Instrument

submitted by Mettler-Toledo Limited
220 Turner Street
Port Melbourne Victoria 3207

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 76, *Non-automatic weighing instruments, Parts 1 and 2*, dated July 2004.

This approval becomes subject to review on 01/01/22, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variants 1 to 4 approved – certificate issued	15/12/16

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 6/9C/315' 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 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 Certificate 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*.



Mario Zamora

TECHNICAL SCHEDULE No 6/9C/315

1. Description of Pattern approved on 15/12/16

The Mettler Toledo model VFS 120-2-II-1040 Forklift Scale is a class $\text{\textcircled{III}}$ single interval self-indicating non-automatic weighing instrument of 2000 kg maximum capacity with a verification scale interval of 2 kg fitted to a forklift truck (Figure 1 and Table 1).

The instrument is intended to operate only whilst the forklift and its carriage are stationary (i.e. not whilst the forklift is in motion, or whilst the load is being moved). It is however acceptable for the forklift or load to be moved between the zeroing of the instrument and the weighing of the load.

Instruments may be fitted with output sockets (output interfacing capability) for the connection of auxiliary and/or peripheral devices.

1.1 Load Receptor

The load receptor consists of a Mettler-Toledo VFS 120 weighing module fitted to a forklift truck, and on which two lifting forks are mounted as shown in Figure 1a. The maximum fork length which can be used with VFS 120 weighing module is 1524 mm.

The VFS 120 weighing module (Figure 1(c) and 1(d)) contains two tension type load cells within a linkage mechanism. The weighing module is intended to be located on the forklift carriage, with the lifting forks (tines) being supported by the weighing module.

1.2 Load Cells

The VFS 120 weighing module uses two Mettler-Toledo model TSH load cells of 2000 kg maximum capacity each.

1.3 Levelling

A tilt sensor model ZCT210M-NTR (Figure 3) is fitted within the VFS 120 weighing module, such that it will reflect tilting of the lifting forks, and will detect the degree to which the instrument is tilted from its reference (level) condition.

This tilt sensor provides a signal to the indicator. The indicator imposes limits on the level condition, automatically compensates for out of level conditions in longitudinal or transverse directions, and disables the weight determination if acceptable levels of tilt are exceeded (nominally $\pm 5^\circ$ tilt from horizontal).

1.4 Indicator

A Mettler Toledo model IND236 digital indicator (Figure 2) is used, and is connected to the VFS 120 weighing module (which contains the tilt sensor). The indicator is also described in approval NMI S653.

1.4.1 Zero

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

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.

A zero-tracking device may be fitted (however see note below).

Note: There is a risk that the zero-tracking device of an instrument may inappropriately track zero where the instrument load receptor is not actually at zero – resulting in weighing errors. For this type of instrument this risk is heightened (e.g. due to long thin wedge like tines lowering a pallet, leaking of lift cylinder, etc). Hence in most usage situations it is recommended that the zero-tracking device be disabled.

1.4.2 Display Check

A display check is initiated whenever power is applied.

1.4.3 Additional Features

Instruments also have certain additional functions (e.g. counting, animal weighing, over/under functions). These functions and displays are not approved for trade use.

1.4.4 Power Supply

The instrument may be powered by 12-36 V_{dc} power source (e.g. from the forklift truck battery) or other DC power source. The submitter should be consulted regarding the acceptability of alternative power supply arrangements.


1.4.5 Interfaces

Instruments may be fitted with interfaces for the connection of auxiliary and/or peripheral devices. Any interfaces shall comply with clause 5.3.6 of document NMI R76 (the basic intent of which is that it shall not be possible to alter weighing results via the interfaces).

Any measurement data output from the instrument or its interfaces shall only be used for trade in compliance with General Supplementary Certificate No S1/0B (in particular in regard to the data and its format).

1.5 Descriptive Markings

Instruments are marked with the following data, together in one location, in the form shown at right:

Manufacturer's mark, or name written in full	Mettler Toledo
Indication of accuracy class	
Pattern approval number for the instrument	NMI 6/9C/315
Maximum capacity	Max kg #
Minimum capacity	Min kg #
Verification scale interval	e = kg #
Serial number of the instrument

These markings are also shown near the display of the result if they are not already located there.

1.6 Verification Provision

Provision is made for the application of a verification mark.

1.7 Sealing Provision

Provision is made for access to the calibration switch within the indicator to be sealed either using a 'lead and wire' or similar type seal with a drilled screw, or use of a destructible adhesive label (e.g. Figure 2(b)), to restrict access within the instrument housing (as described in the approval documentation of the indicator).

2. Description of Variant 1

approved on 15/12/16

The Mettler Toledo VFS120 forklift scale as described for the pattern but of different models of differing capacities which use weighing modules as indicated in Table 1 below. (The model of weighing module described for the pattern and the specifications of pattern are shown in **bold**.)

TABLE 1

Type	VFS120-1.5-II-1040	VFS120-2-II-1040	VFS120-3-II-1040	VFS120-5-II-1040
Accuracy class	3			
Max. capacity	1500 kg	2000 kg	3000 kg	5000 kg
Min. capacity	20 kg	40 kg	40 kg	100 kg
Verification scale interval, e	1 kg	2 kg	2 kg	5 kg
Number of verification scale interval, n	1500	1000	1500	1000
Carriage height (mm)	411	411	510	639
Load cell model	TSH-2	TSH-2	TSH-3	TSH-5
Software identification	1.XX.00YY (XX and YY are a number between 00 to 99)			

Note: Forklift carriage sizes are also allocated 'classes'. Care shall be taken to distinguish these classes from the non-automatic weighing instrument class (which is represented within an oval).

TEST PROCEDURE No 6/9C/315

Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures (NITP), taking into account the following notes.

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*.

Notes:

Levelling Arrangements and Stability of Ground

The site chosen for weighing should be firm and within 1.5 degrees of level – the level sensing device imposes limits on the level condition, however the stability of the ground surface should also be considered as well as safety concerns.

Gravity Variation

Where the instrument is verified in one location and subsequently moved to another location, the effects of differences in the acceleration of gravity at each location may need to be considered.

Note: The Trade Measurement Section should be consulted regarding any special arrangements which may be necessary in regard to operation of a mobile weighing instrument of this type.

Testing shall be carried out with the forks with which the instrument is to be used in normal operation, and also with the load applied in a manner similar to normal operation (e.g. for an instrument used for weighing pallets, fit the weighing instrument to a forklift truck, place an empty standard size (1200 x 1200 mm, nominal) hardwood/plastic pallet on the forks and raise above the ground.

Testing shall be carried out with the instrument having zero set using an initial zero-setting or semi-auto zero-setting device with a pallet on the forks and having the forks tilted to their reference (level) condition.

Tests (in addition to those in the NITP)

1) Eccentricity

Using a known load of approximately $\frac{1}{3}$ *Max*, carry out tests to determine whether operation is within the maximum permissible errors with this load at the left, right, front and rear of the pallet.

2) Tilting

Carry out tests to determine whether operation is within the maximum permissible errors, with loads of $\frac{1}{2}$ *Max* and close to *Max* by having the forks tilted to their reference (level) condition and then having the forks tilted forward until the instrument is disabled (weighing display showing 'Err 5') and gradually reducing the degree of tilt until a weight value is reacquired.

Repeat the test with the forks tilted backward.

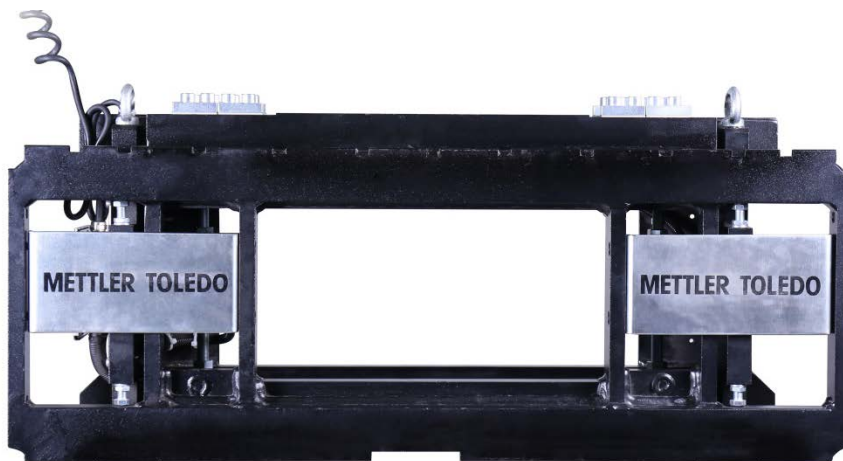
FIGURE 6/9C/315 - 1



(a) 'Triplex mast'

(b) 'Duplex mast'

Typical mounting to a Forklift Truck

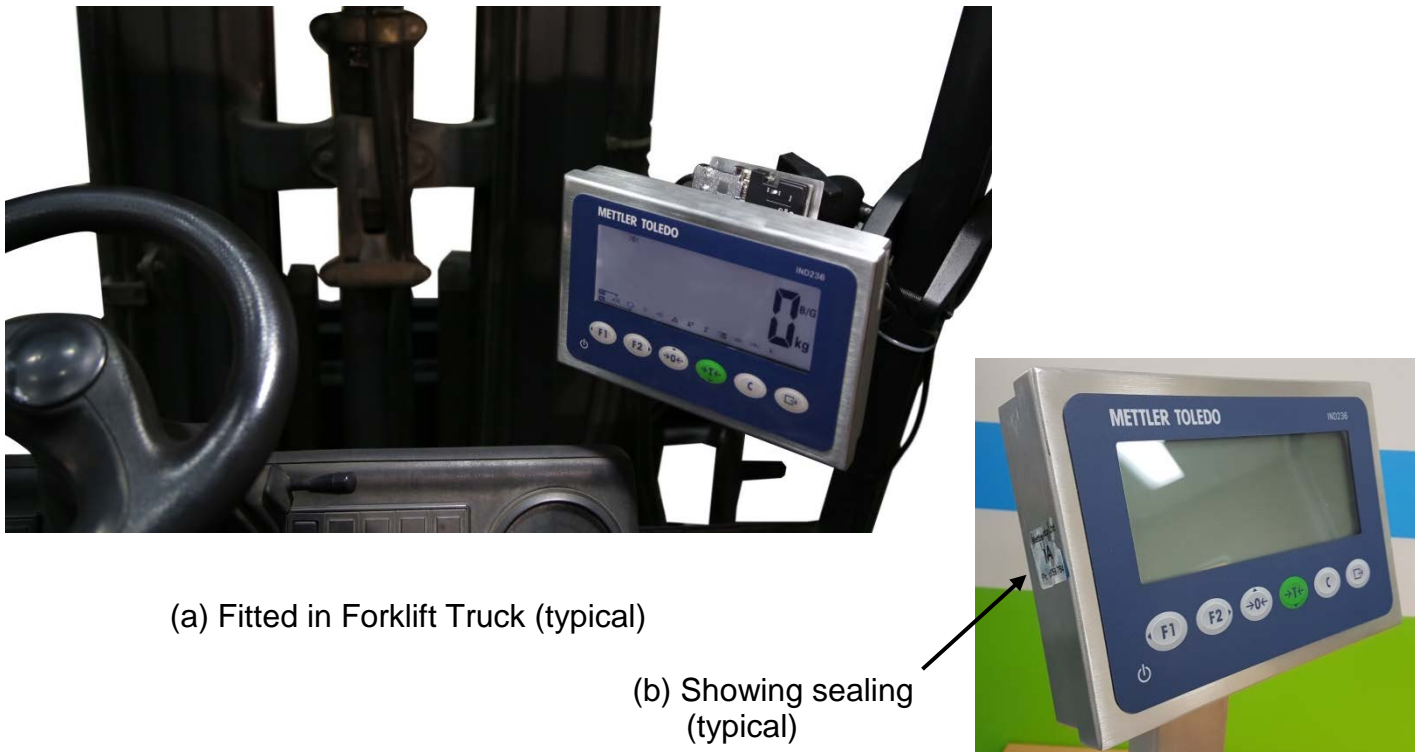


(c) Mettler Toledo model VFS 120 Weighing Module (front view)



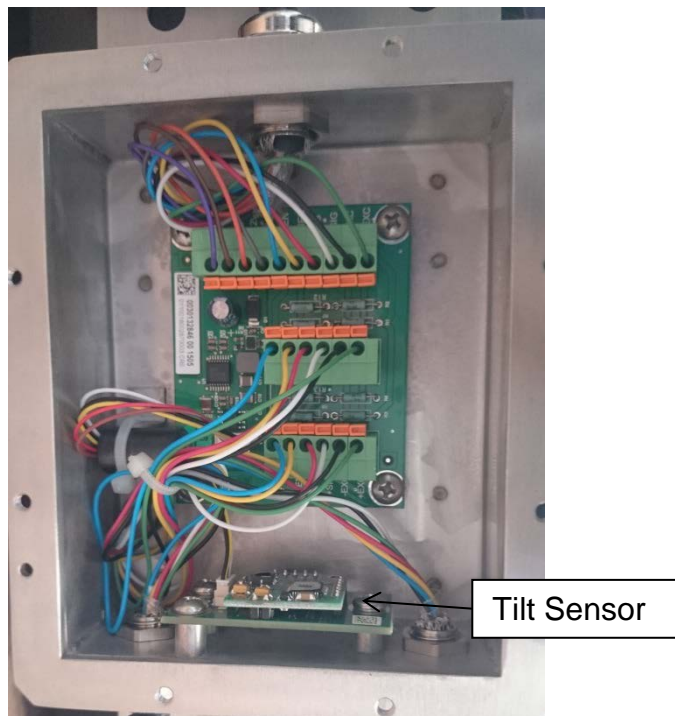
(d) Mettler Toledo model VFS 120 Weighing Module – rear view

FIGURE 6/9C/315 - 2



Mettler Toledo Model IND236 Digital Indicator

FIGURE 6/9C/315 - 3



Tilt Sensor Shown Within Weighing Module

~ End of Document ~