Australian Government
Department of Industry, Innovation and Science

National Measurement Institute

# Certificate of Approval

# NMI 6/9C/278

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.

UWE Model ATM-60 Weighing Instrument

submitted by Universal Weight Electronics Co Ltd
(formerly Universal Weight Enterprise Co Ltd)
4F, 53 Baoxing Road
Xindian District
New Taipei City 23145
Taiwan ROC.

**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 **1/04/21**, and then every 5 years thereafter.

DOCUMENT HISTORY

| Rev | Reason/Details | Date |
|---|---|---|
| 0 | Pattern & variant 1 to 3 approved – interim certificate issued | 5/02/04 |
| 1 | Pattern & variant 1 to 3 approved – certificate issued | 5/05/04 |
| 2 | Variant 4 approved – interim certificate issued | 24/06/04 |
| 3 | Variant 4 approved - certificate issued | 28/07/04 |
| 4 | Variant 4 amended – notification of change issued | 20/08/04 |
| 5 | Pattern & variant 1 to 4 reviewed – notification of change issued | 25/03/11 |
| 6 | Pattern & variant 1 to 4 **reviewed,** amended (submittor name, address, test procedure) & updated – certificate issued | 26/04/17 |

CONDITIONS OF APPROVAL

## General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI (or NSC) 6/9C/278' 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.

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 6/9C/278

## 1. Description of Pattern approved on 5/02/04

A UWE model ATM-60 class (III) self-indicating non-automatic weighing instrument (Figure 1) with a verification scale interval of 0.02 kg and with a maximum capacity of 60 kg. May also be known as a model PF-3.

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

Instruments are approved for use over a temperature range of 0°C to 40°C and must be so marked.

### 1.1 Basework

The UWE model PF-3 basework (Figure 4) has the load receptor directly supported by a single load cell. The load receptor has maximum nominal dimensions of 420 x 520 mm.

### 1.2 Load Cell

The load cell used is a Tedea Huntleigh model 1263 load cell of 60 kg maximum capacity.

### 1.3 Indicator

A UWE model ATM digital indicator is used (Figure 1). The indicator may be attached directly to the base or mounted on a column; it may also be located remotely.

The indicator is powered via an internal rechargeable battery (6 V) or via a mains adaptor (which also can recharge the internal battery).

Note: The AC/DC mains adaptor supplied was a UWE model A41-9-500D-4 power supply (output 9 V DC, 500 m A) – the submittor should be consulted regarding the acceptability of alternative power supply units.

### 1.4 Zero

Zero is automatically corrected to within ±0.25e whenever power is applied and whenever the instrument comes to rest within 0.5e of zero.

The initial zero-setting device of the pattern 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.

### 1.5 Tare

A semi-automatic and/or an automatic subtractive taring device, each having a capacity of up to one-third of the maximum capacity of the instrument, may be fitted.

### 1.6 Display Check

A display check is initiated whenever power is applied.

### 1.7 Levelling

The instrument is provided with adjustable feet and a level indicator.

### 1.8 Verification Provision

Provision is made for the application of a verification mark.

### 1.9 Sealing Provision

Provision is made for the calibration adjustments to be sealed preventing access within the indicator housing. This may be achieved by various means (Figure 2).

### 1.10 Descriptive Markings and Notices

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 | UWE Co Ltd, Taiwan R.O.C. |
| Indication of accuracy class | (III) |
| Pattern approval number for the instrument | NMI 6/9C/278 |
| Maximum capacity | *Max* ..... kg * |
| Minimum capacity | *Min* ..... kg * |
| Verification scale interval | *e* = ..... kg * |
| Maximum subtractive tare | *T* = - …… kg # |
| Serial number of the instrument | ……. |
| Special temperature limits | 0°C to 40°C |

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

\# This marking is required if *T* is not equal to *Max*.

Instruments of 100 kg maximum capacity or less are NOT FOR TRADING DIRECT WITH THE PUBLIC and are so marked.

## 2. Description of Variant 1 approved on 5/02/04

With certain alternative UWE indicators (Figure 3), namely models ABM, AFM, AFS, AFW, APF, APS and APM, in which case the instrument model number is either according to the basework used (e.g. PF-3) or according to indicator (e.g. ABM-**, where ** represents the instrument capacity, as in the pattern ATM-60).

These alternative indicators have similar basic functions to the model ATM indicator of the pattern, but may have reduced functions, similar functions accessible with a reduced number of operator keys, or alternative housing materials.

The model APM instrument/indicator may have has its battery and the battery recharging circuitry incorporated in the instrument basework.

## 3. Description of Variant 2 approved on 5/02/04

Certain other models and capacities as listed in Tables 1 & 2. Various model baseworks are shown in Figure 4.

TABLE 1

| Instrument Model (#1) | Basework Model (#2) | Maximum Capacity (#3) | Maximum Platform Size mm x mm | Table 2 details |
|---|---|---|---|---|
| AFM-F60 and ATM-F60 | PF-3 | 60 kg | 420 x 520 | A |
| AFM-F150 and ATM-F150 | PF-3 | 150 kg | 420 x 520 | B |
| AFM-F300 and ATM-F300 | PF-3 | 300 kg | 420 x 520 | C |
| AFM-L150 and ATM-L150 | PF-4 | 150 kg | 500 x 600 | B |
| AFM-L300 and ATM-L300 | PF-4 | 300 kg | 500 x 600 | C |
| AFM-L550 and ATM-L550 | PF-4 | 550 kg | 500 x 600 | D |
| AFS-60 (or AFS-60II) | FS (or FS-II) | 60 kg | 425 x 525 | A |
| AFS-150 (or AFS-150II) | FS (or FS-II) | 150 kg | 425 x 525 | B |
| AFS-300 (or AFS-300II) | FS (or FS-II) | 300 kg | 425 x 525 | C |
| AFW-F60 | OFW-F | 60 kg | 425 x 525 | A |
| AFW-F150 | OFW-F | 150 kg | 425 x 525 | B |
| AFW-F300 | OFW-F | 300 kg | 425 x 525 | C |
| APF-60 | MPF | 60 kg | 420 x 520 | A |
| APF-150 | MPF | 150 kg | 420 x 520 | B |
| APF-300 | MPF | 300 kg | 420 x 520 | C |

(#1) The instrument model number by which the instrument is typically known when used with the corresponding model indicator. Instruments may also be known according to basework model number (#2). Refer to variant 1.

(#2) The instrument may be known by the basework model number (typically when used with alternative Commission approved indicators. Refer to variant 3.)

(#3) Instruments of 100 kg capacity or less are not for trading direct with the public and are so marked.

TABLE 2

| Table 2 details (see Table 1) | A | B | C | D |
|---|---|---|---|---|
| Maximum capacity | 60 | 150 | 300 | 550 |
| Typical verification scale interval | 0.02 kg | 0.05 kg | 0.1 kg | 0.2 kg |
| Maximum number of verification scale intervals *nmax* | 3000 | 3000 | 3000 | 2750 |
| Load cell model: Tedea Huntleigh | 1263 | 1263 | 1263 | 1263 |
| Load cell classification | C3 | C3 | C3 | C3 |
| Load cell maximum capacity (*Emax*) | 100 kg | 200 kg | 500 kg | 635 kg |
| Number of load cells | 1 | 1 | 1 | 1 |
| Minimum value of verification scale interval for basework ($v_{min}$ of load cell) | 0.0067 kg | 0.0133 kg | 0.0333 kg | 0.0423 kg |
| Load cell sensitivity at *Emax* | 2 mV/V | 2 mV/V | 2 mV/V | 2 mV/V |
| Input impedance | 415 ohm | 415 ohm | 415 ohm | 415 ohm |
| Excitation voltage (maximum) | 15 V | 15 V | 15 V | 15 V |
| Cable length (±0.1m) | (#4) | (#4) | (#4) | (#4) |
| Number of leads (plus shield) | 4 | 4 | 4 | 4 |

(#4) The load cell cable length of 2, 2.5 or 3 m supplied with the basework shall not be shortened.

## 4. Description of Variant 3 approved on 5/02/04

Certain baseworks of this approval used with a compatible Commission-approved (by Supplementary Certificate) indicator provided the conditions set out below are

met. In this case instruments may be known according to the basework model number (e.g. model PF-3).
In addition to the markings specified in clause **1.10 Markings**, instruments are marked with the NMI approval number for the indicator used, together in the same location.
The approved baseworks and their limiting characteristics are given in Table 1 & 2.
The conditions to be met 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.
- The number of verification scale intervals is less than or equal to the $n_{max}$ value specified.
- 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.

$$\text{Indicator Sensitivity} \leq 1000 \times Ex \times LC\_Sens \times e / E_{max}$$

where Ex = Excitation from indicator (V)
LC_Sens = Load cell sensitivity (mV/V)
$E_{max}$ = Load cell maximum capacity (nominal) (kg)
e = verification scale interval of the instrument (kg).
Indicator Sensitivity = Minimum sensitivity value per verification scale interval for the indicator (μV)

## 5. Description of Variant 4 approved on 24/06/04

Certain other models and capacities of UWE weighing instruments as listed in Tables 3 and 4. Figure 5 shows model APM and APS indicators, Figure 6 shows a model APS basework and Figure 7 shows a model APS-II basework.

TABLE 3

| Instrument Model (#1) | Basework Model (#2) | Maximum Capacity (#3) | Maximum Platform Size mm x mm | Table 4 details |
|---|---|---|---|---|
| APM-6 | PM | 6 kg | 280 x 320 | E |
| APM-15 | PM | 15 kg | 280 x 320 | F |
| APM-30 | PM | 30 kg | 280 x 320 | G |
| APS-6 | PS (or PS-II) | 6 kg | 280 x 320 | E |
| APS-15 | PS (or PS-II) | 15 kg | 280 x 320 | F |
| APS-30 | PS (or PS-II) | 30 kg | 280 x 320 | G |

(#1) The instrument model number by which the instrument is typically known when used with the corresponding model indicator. Instruments may also be known according to basework model number (#2). Refer to variant 1.

(#2) The instrument may be known by the basework model number (typically when used with alternative approved indicators. Refer to variant 3.)

(#3) Instruments are of less than 100 kg and are not for trading direct with the public and are so marked.

TABLE 4

| Table 4 details (see Table 3) | E | F | G |
|---|---|---|---|
| Maximum capacity | 6 | 15 | 30 |
| Typical verification scale interval | 0.002 kg | 0.005 kg | 0.01 kg |
| Maximum number of verification scale intervals *nmax* | 3000 | 3000 | 3000 |
| Load cell model: Tedea Huntleigh | 1022P | 1022P | 1022P |
| Load cell classification | C3 | C3 | C3 |
| Load cell maximum capacity (*Emax*) | 10 kg | 20 kg | 35 kg |
| Number of load cells | 1 | 1 | 1 |
| Minimum value of verification scale interval for basework ($v_{min}$ of load cell) | 0.0067 kg | 0.0133 kg | 0.0333 kg |
| Load cell sensitivity at *Emax* | 2 mV/V | 2 mV/V | 2 mV/V |
| Input impedance | 415 ohm | 415 ohm | 415 ohm |
| Excitation voltage (maximum) | 15 V | 15 V | 15 V |
| Cable length (±0.1m) | (#4) | (#4) | (#4) |
| Number of leads (plus shield) | 4 | 4 | 4 |

(#4) The load cell cable length of 1 or 1.5 m supplied with the basework shall not be shortened.

## TEST PROCEDURE

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

### Maximum Permissible Errors

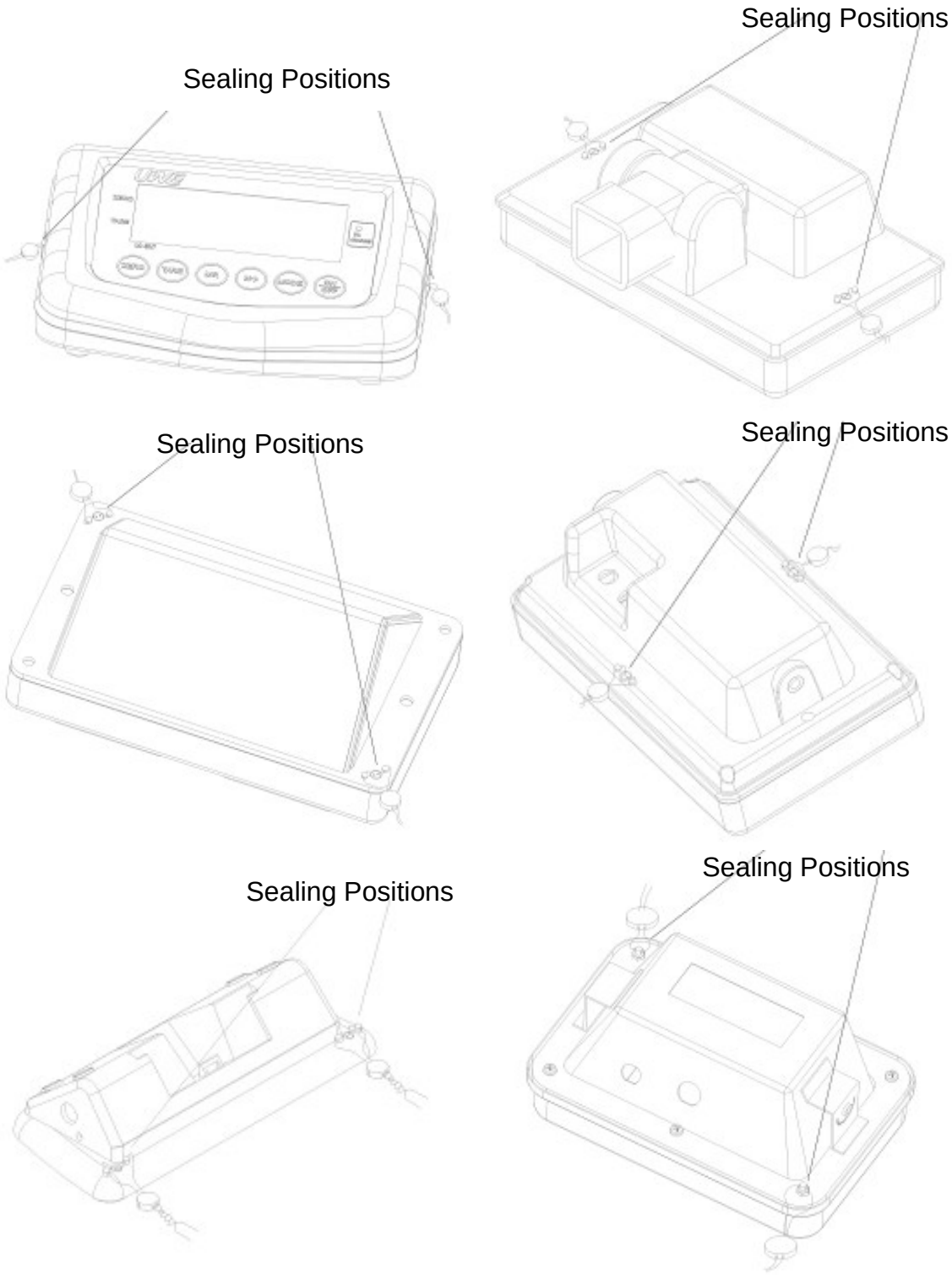
The maximum permissible errors are specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

Ensure that instruments are only being used within the special temperature limits stated elsewhere in this Technical Schedule.

FIGURE 6/9C/278 – 1


UWE Model ATM-60 Weighing Instrument

FIGURE 6/9C/278 – 2




Showing Sealing for Various Model Indicators

FIGURE 6/9C/278 – 3


Model AFM


Model APF


Model AFS


Model APS


Model AFW


Model APM

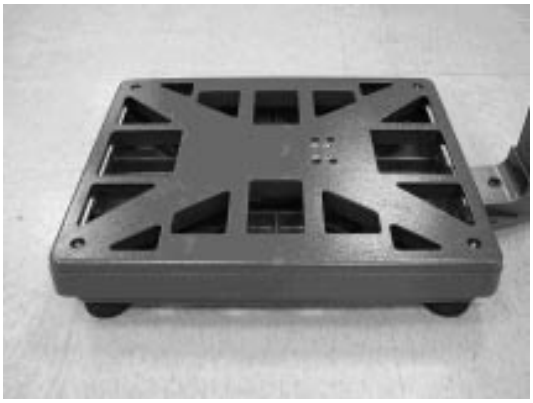
UWE Digital Indicators

FIGURE 6/9C/278 – 4

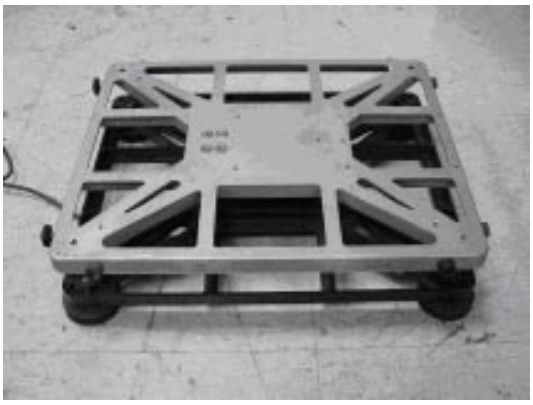
Model FS

Model FS-II

Model PF-3



Model PF-4



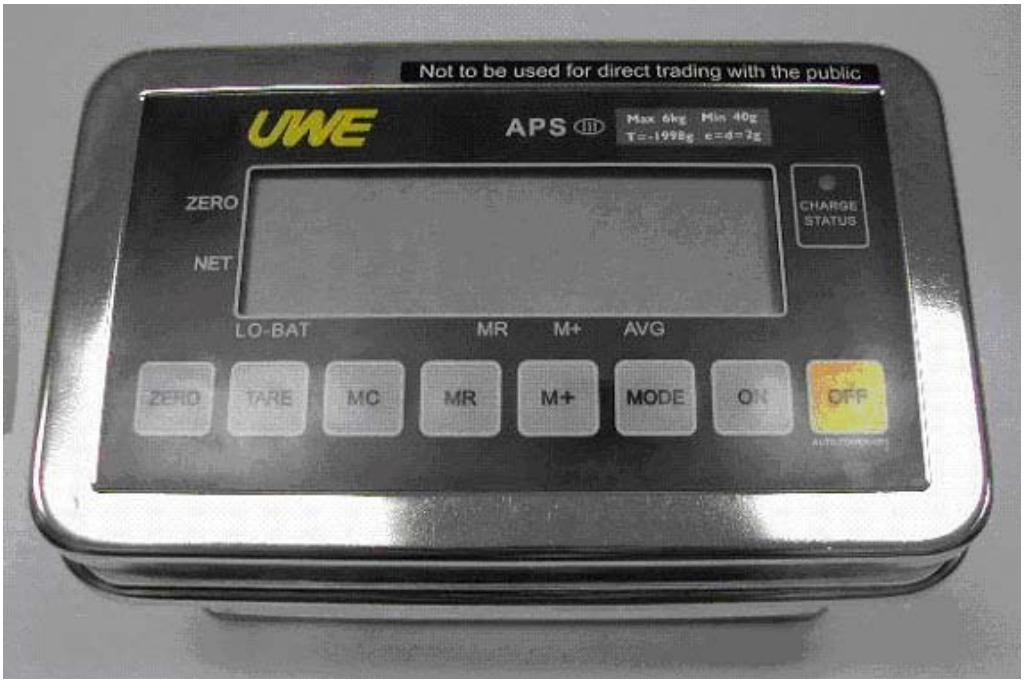
Model OFW-F

Model MPF

UWE Baseworks

FIGURE 6/9C/278 – 5


UWE Model APM Digital Indicator




UWE Model APS Digital Indicator

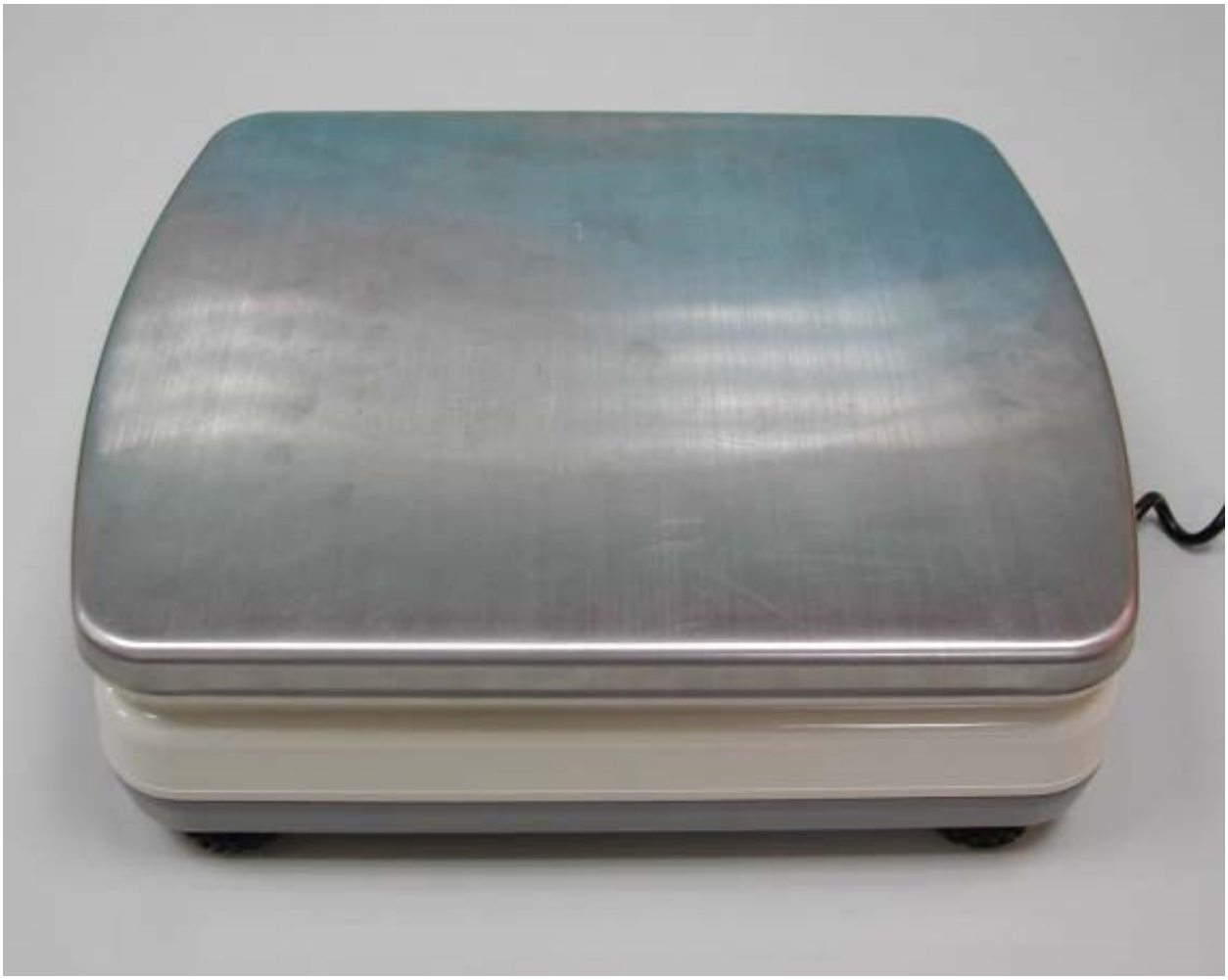
FIGURE 6/9C/278 – 6

Typical UWE Model APS Basework

FIGURE 6/9C/278 – 7

Typical UWE Model APS-II Basework

FIGURE 6/9C/278 – 8



Typical UWE Model PM Basework

~ End of Document ~