Australian Government
Department of Industry and Science

National Measurement Institute

Certificate of Approval

NMI 5/6B/92B

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.

Micro Motion MVD Model CMF200 Mass Flowmetering System

submitted by Emerson Process Management Australia Pty Ltd
471 Mountain Highway
Bayswater VIC 3153

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 117-1, Measuring Systems for Liquids Other than Water, dated July 2004.

This approval becomes subject to review on 1/10/19, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variants 1 to 5 approved – interim certificate issued	1/09/09
1	Pattern & variants 1 to 5 – certificate issued	10/02/10
2	Pattern amended – notification of change 1 issued	22/02/10

3	Pattern & variants 1 to 5 amended & updated – certificate issued	10/02/12
4	Pattern & variants 1 to 6 amended & updated – certificate issued	11/09/14
5	Pattern & variants 1 to 6 amended, Variant 7 added – certificate issued	09/03/17

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number ‘NMI 5/6B/92B’ 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.

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

Signed

Stephen Horrocks

TECHNICAL SCHEDULE No 5/6B/92B

1. Description of Pattern approved on 1/09/09

A Micro Motion MVD model CMF200 50 mm bulk mass flowmetering system for bulk metering of liquids other than LPG and milk. Approved products include various grades of liquid hydrocarbons including petrol/ethanol blends and pure ethanol ('E100') and various grades of pure biodiesel and biodiesel/distillate blends (to Australian government standard).

1.1 Field of Operation

The field of operation of the measuring system is determined by the following characteristics (see also Table 1):

▪ Minimum measured quantity, M_{min} (V_{min})	20 kg (10 L)
▪ Maximum flow rate, Q_{max}	1450 kg/min (3625 L/min)
▪ Minimum flow rate, Q_{min}	36 kg/min (18 L/min)
▪ Minimum pressure of the liquid, P_{min}	(#1)
▪ Maximum density of the liquid, ρ_{max}	2000 kg/m³
▪ Minimum density of the liquid, ρ_{min}	300 kg/m³ (#2) 400 kg/m³ (#3)
▪ Liquid temperature range	-200°C to 200°C (#2) -10°C to 50°C (#3)
▪ Maximum viscosity of the liquid, μmax	1242 mPa.s
▪ Ambient temperature range	-40°C to 55°C
▪ Accuracy classes	0.3 and 0.5
▪ Power supply (nominal)	24 V DC/240 V AC
▪ Applications	Static, pipeline or mobile

(#1) Minimum pressure to be greater than minimum vapour pressure of the liquid being measured.

(#2) For mass flow measurement.

(#3) For volumetric flow measurement.

1.2 The Flowmetering System (Figure 1)

(i) Supply Tank

The supply tank incorporates a device for detecting low liquid level, to ensure that air does not enter the pipe work,

(ii) Pump

A positive displacement, centrifugal or submersible turbine type pump may be used to provide flow through one or more flowmeters. The pump is fitted in a positive suction head (flooded suction) installation, i.e. below the liquid level in the supply tank (Figure 1). For all combination of usage, the pump(s) shall be of sufficient capacity to ensure that each flowmeter can operate within its approved flow rate range.

(iii) Non-return Valve

A non-return valve is fitted at least between the pump and the flowmeter to prevent the reverse flow of the liquid and keep the flowmeter full of liquid at all times.

(iv) Gas Elimination

A gas elimination device need not be fitted as the flowmetering system is designed to keep the pipework full of liquid at all times, and on the occasion that small amounts of vapour may form in the pipework, the mass of this vapour will be insignificant compared to the mass of liquid.

(v) Measurement Transducer

The measurement transducer is a Micro Motion MVD flowmetering system consisting of a Micro Motion model CMF200 (#) flow sensor (Figure 2a) interfaced to a Micro Motion model 700 (#) core processor (Figure 2b) that in turn is interfaced to a Micro Motion model 2700 (#) flow transmitter (Figure 2c) to convert digital data received into various signal formats. The model 700 core processor may be mounted integral to the flow sensor, integral to the flow transmitter, or separate from the mass flow sensor and transmitter. When the core processor is integral to the flow transmitter, the flow transmitter may be mounted integral to the flow sensor or mounted separately.

(#) The numbers listed are basic model numbers only – the full model number may have a variety of additional alphanumeric characters, which designate non-metrological features.

The flow transmitter model is identified by a series of alphanumeric codes which represent various applications options, with option code ‘W’ or ‘D” required for custody transfer applications under this approval.

The model 2700 flow transmitter provides a dual pulse output to the calculator/indicator, the digital communication interface to the model 700 core processor, and power to the core processor and flow sensor. The flow transmitter also displays process data, alarm status and internal totalisers (inventory/control), and has additional non-metrological features.

The model 700 core processor provides a drive frequency to the flow sensor to vibrate the measurement tubes, and monitors the pick-off frequencies as the measurement tubes resonate. This in turn is used to determine the mass flow rate (by the time shift between the two pick-off signals), the density of the flowing medium (by the resonant frequency of the vibrating tubes), and the volume flow rate at flowing conditions (by the ratio of the measured mass and measured density).

Additionally, the model 700 core processor provides the following functions:

- Read/write digital communication interface to the flow transmitter and interface to the flow sensor;
- Storage of the Flow Cal Factor (FCF), density calibration factors, damping factors, slug flow limits/duration, and units of measurement;
- Automatic correction for temperature effects on sensor tubes, and determination of sensor constants at zero flow;
- Concentration measurement using traceable database or norm/standard data, or measurement of alcohol (alcohol percentage and alcohol volume at 20ºC (100% alcohol);
- Volumetric measurement at metering conditions based on measured mass flow and the measured density; and

- Volumetric conversion from metering conditions to reference conditions using API tables 5A, 5D, 6C, 23A, 23D, 24C, 53A, 53D and 54C, and to API tables 5B, 23B and 53B, when using core processor software version 2.5 and higher (refer sub-clause (vi) below).

  Note: When using volume conversion to reference conditions, the temperature of the fluid is to be measured with an external temperature probe; use of the temperature measurement internal to the flow sensor is not allowed for the volume conversion calculation.

(vi) Software Versions

Approved software versions are:

- Model 700 core processor – Refer to Annexure 5/6B/92B - 1
- Model 2700 flow transmitter – Refer to Annexure 5/6B/92B - 2

Software version numbers may be displayed on the 2700 display by performing the following:

- Press SCROLL and SELECT simultaneously for approximately 4 seconds.
- Scroll until 'OFF-LINE MAINT' is displayed, then press SELECT.
- Scroll until 'VER' is displayed, then press SELECT.
- View transmitter version information.
- Scroll to 'EXIT'.

Press SELECT to exit menu display.

The MVD700 core processor can be replaced by another MVD700 fulfilling the following conditions allowing re-sealing without requiring reverification:

- Parameters from the old MVD700 are transferred to the new MVD700 and that the new MVD700 is zeroed via the auto zero function.
- Exchanging the MVD700 Core Processor requires breaking the seal on the connected transmitter.

(vii) Calculator/Indicator

An Enraf Contrec model Trac-40 calculator/indicator (as described in the documentation of approval S367A) or any other compatible NMI-approved calculator/indicator is interfaced to the model 2700 flow transmitter and configured to provide a frequency/pulse output proportional to mass flow/volume throughput at observed temperature, or volume throughput referenced to 15ºC.

The calculator/indicator may display mass flow throughput, volume throughput at observed temperature, or the volume throughput at 15ºC. In the latter case the display facia is clearly marked "Volume at 15ºC" or similar wording. The volume conversion calculations may be performed in the calculator/indicator or in the Micro Motion MVD flowmetering system.

(viii) Checking Facility

When the voltage supply to the transmitter is interrupted, the calculator/indicator is to stop the delivery.

(ix) Transfer Device

A transfer device, which defines the start and stop of the quantity measured, is installed downstream of the mass flowmeter. The transfer device is in the form of a positive shut-off component such as a manually or automatically-operated shut-off valve (e.g. a Daniel model V788B control valve).

The transfer device may also be designed to control the flow rate within the specified flow rate range of the flowmeter.

1.3 Sealing and Verification Provision

Provision is made for electronically "pairing" the model 2700 flow transmitter to the model 700 core processor, securing access to the "pairing" functionality and other factors/settings held in software, and sealing the cover of the transmitter which contains the calibration functions of the instrument. If present, the junction box with the 9-wire connection to the (remote) core processor is sealed against opening.

Provision is also made for a verification mark to be applied.

1.4 Descriptive Markings and Notices

Each measuring system shall bear the following information, placed together either on the indicating device or on a data plate:

Pattern approval mark	NMI 5/6B/92B
Manufacturer's identification mark or trade mark	…..
Meter model	…..
Serial number of the instrument	…..
Year of manufacture	…..
Maximum flow rate, Q_{max}	….. kg/min
Minimum flow rate, Q_{min}	….. kg/min
Type of the liquid for which the system is verified	..... (##1)
Environmental class	class C
Accuracy classes	0.3 and 0.5 (##2)

(##1) This may be located separately, e.g., on a metal tag sealed to the instrument.

(##2) Marking of accuracy class 0.3 is mandatory; marking of accuracy class 0.5 is optional.

The minimum measured quantity (V_{min}, M_{min}) is to be clearly visible at the indicating device, e.g. "Minimum Delivery 500 kg", or alternatively or the calculator/indicator is programmed for deliveries equal to or greater than the stated minimum delivery.

2. Description of Variant 1 approved on 1/09/09

A bulk flowmetering system using any Micro Motion flow sensor listed in Table 1 (Figure 3).

TABLE 1

Sensor Model (#1) (#10)	Size (mm)	Mass Flow Rates (Class 0.3) (kg/min) (#2) Pipeline	Mass Flow Rates (Class 0.5) (kg/min) (#2) Static, Mobile	Minimum Delivery (kg) (#2)(#3)	Density Range (kg/m^3)	Liquid Temp. Range (ºC) (#4)
CMF010P	2.5	0.067–1.8	0.033–1.8	0.05	300–2000	-10 to 50
CMF010	2.5	0.033–1.8	0.017–1.8	0.05	300–2000	-10 to 50
CMF025	6	0.46–36	0.23–36	0.5	300–2000	-200 to 200
CMF050	12	2.72–110	1.36–110	5	300–2000	-200 to 200
CMF100 (#6)	25	11.4–450	5.7–450	10	300–2000	-200 to 200
CMF200 (#5)(#6)	50	36–1450	18–1450	20	300–2000	-200 to 200
CMF300 (#6)	80	114–4500	57–4500	200	300–2000	-200 to 200
CMF350H/L/M/P (#6)(#8)(#9)	90	226-4920	113-4920	500	300–2000	-200 to 200
CMF350A/B/C/E (#6)(#7)(#8)	90	453-4920	226-4920	500	300–2000	-200 to 200
CMF400 (#4 a, b, c) (#6)(#8)(#9)	100	680(a)–6800 680(b)–6800 1700(c)–6800	680(a)-6800 340(b)-6800 850(c)–6800	500	300–2000	-200 to 200
CMFHC2 (#6)(#7)(#8)	150	1136–12 600	568-12 600	1000	300–2000	-200 to 200
CMFHC3 (#6)(#7)(#8)	200	2268–22 000	1134–22 000	1000	300–2000	-200 to 200
CMFHC4 (#6)(#7)(#8)	250	3400–30 000	1700–30 000	1000	300–2000	-200 to 200
DS600S (#6)(#8)	150	1140–10 800	570–10 800	1000	300–2000	-200 to 200
DS150	40	124–1260	124–1260	100	480–2000	-10 to 50
DS300 (#6)	80	600–3175	320–3175	500	480–2000	-10 to 50
DH300	80	420–4200	420–4200	500	480–2000	-10 to 50
F025S/H (#6)(#9)	6.4	0.9–23	0.45–23	1	450–1100	-10 to 50
F025A/B/P (#6)(#9)	6.4	3–23	1.5–23	1	450–1100	-10 to 50
F050S/H/A/B/P (#6)(#9)	12.5	9–68	4.5–68	5	450–1100	-10 to 50
F100A/B/H/S (#6)(#9)	25	36–272	18–272	10	450–1100	-10 to 50
F100P/J (#6)(#9)	25	36–183	18–183	10	450–1100	-10 to 50
F200S/H/A/B/P/J (#6)(#9)	50	116–725	58–725	20	450–1100	-10 to 50
F300S/H/A/B/P/J (#6)(#8)	75	362–2268	181–2268	200	450–1100	-10 to 50

(#1) The number listed above is the basic model number only – the full model number may have a variety of additional alphanumeric characters, which designate non-metrological features.

(#2) For volumetric flow and density measurement, the applicable values for maximum flow rate (Q*max*), minimum flow rate (Q*min*), and minimum measured quantity (*Vmin*) *in volume units are defined as:*

Q_{max} (L/min) = ((Q_{max} (kg/min) / Density* ρ_{max} (kg/m³)) × 1000 L/m³)

Q_{min} (L/min) = ((Q_{min} (kg/min) / Density* ρ_{min} (kg/m³)) × 1000 L/m³)

V_{min} (L) = (M_{min} (kg) / Density* ρ_{min} (kg/m³) × 1000 L/m³)

* Actual product density of measured product; do not use values from Table 1

a) Liquid temperature range limited to -10°C to 50°C

b) Product density range of measured product for volumetric measurement

i. CMF/D600 sensors limited to 400-2000 kg/m³

ii. F25/50/100/200 sensors limited to 450-1100 kg/m3

c) D150/D300/F300 not approved for volumetric measurement

(#3) For minimum deliveries (minimum measured quantities) *(Mmin*) less than 200 kg, the scale interval of the calculator/indicator is 0.1 kg; for deliveries greater than 200 kg the scale graduation is 1 kg.

For minimum deliveries (minimum measured quantities) *(Vmin*) less than 200 L, the scale interval of the calculator/indicator is 0.1 L; for deliveries greater than 200 L the scale graduation is 1 L.

(#4) Includes high temperature CMF200/300/400 (A, B, C, E) and high pressure CMF 400P; CMF400 flow rates vary depending on manufacture date based on serial number (a) serial number up to 411000; (b) serial number from 411000 up to 14200000; (c) serial number higher than 14200000.

(#5) The model CMF200 sensor is described for the pattern.

(#6) Pressure compensation is required when the pressure effect on mass flow is more than 1/5 of the Maximum Permissible Error (Class 0.3 or 0.5) due to nominal pressure at flowing conditions differing from calibration pressure and/or a varying pressure from nominal at flowing conditions. Compensation may be static (configured in electronics) or dynamic (external pressure transmitter) based on manufacturer's published pressure effect factor. Pressure compensation is required for DS600 and DS300.

(#7) CMFHC2 requires 800ECP software Version 3.60 or higher; CMFHC3 requires 800 ECP Software Version 3.9or higher; CMF350 requires 800 ECP software version 4.0 or higher

(#8) Requires LD (compensation to be disabled during water calibration) Compensation feature enabled for large diameter meter boundary layer effects when measuring liquid hydrocarbons.

(#9) Requires pressure compensation on density when measuring volumetric flow and/or density for custody transfer applications; additionally, F025/050/100/200 requires factory calibration option for 0.10% mass flow and 0.0001 g/cc density calibration. F300 requires factory calibration option for 0.10% mass flow (F300 for mass flow measurement only).

(#10) Individual determination of the Flow Temperature coefficient (FT) and the Density Temperature coefficient (DT) and calculation is mandatory for Concentration Measurement/%Alcohol applications.

Note: When used with the model 700 (the pattern) or model 800 (variant 2) core processor, and the model 2700 (the pattern) or models 1700, 2500, 3500 or 3700 (variant 3) flow transmitters or model 510 dual pulse convertor (variant 4), then the pattern and variants are suitable for accuracy class 0.3 pipeline applications.

3. Description of Variant 2 approved on 1/09/09

With a Micro Motion model 800 core processor in place of a model 700 core processor. The model 800 has the same functionality as the model 700 except that 800 core processors with software Revision 3.6 include Smart Meter Verification functionality for meter verification while the meter is still sealed. (The Software revisions 3.5 and earlier of the 800 core processor require meter verification to occur only when the meter is unsealed). Approved versions of the 800 core processor software are shown in Annexure 5/6B/92B - 3

The MVD800 enhanced core processor can be changed with another MVD800 fulfilling the following conditions allowing re-sealing without requiring reverification:

- Parameters from the old MVD800 are transferred to the new MVD800 and that the new MVD800 is zeroed via the auto zero function.
- Exchanging the MVD800 enhanced Core Processor requires breaking the seal the connected transmitter.

4. Description of Variant 3 approved on 1/09/09

With Micro Motion models 1700, 2500, 3500 or 3700 flow transmitters (Figure 4) in place of the model 2700 flow transmitter. The model 1700, 2500, 3500, and 3700 flow transmitters provide the same basic functionality as the 2700 with the following features:

- Model 1700 flow transmitter is identical to the model 2700 with some non-metrological features omitted;
- Model 2500 flow transmitter, 24 V DC (nominal), DIN rail mounted (no display);
- Model 3500 flow transmitter/indicator/controller, rack or panel-mounted; and
- Model 3700 flow transmitter/indicator/controller, field-mounted.

Approved software versions for this variant are:

- Model 1700 – refer to Annexure 5/6B/92B - 2;
- Model 2500 – refer to Annexure 5/6B/92B - 2; and
- Models 3500/3700 – refer to Annexure 5/6B/92B - 4.

The model 1700, 2500, 3500 and 3700 flow transmitters are identified by a series of alphanumeric codes which represent various configuration options. Models 1700 and 2500, require Weights and Measures option code 'W' or 'D' for custody transfer applications. Models 3500 and 3700 require Weights and Measures option code '2' for custody transfer applications.

The models 2700, 3500 and 3700 flow transmitters are NMI-approved calculator/indicators when used with the Micro Motion MVD flowmetering system. Refer to the manufacturer's instructions for sealing requirement for the model 2500, 3500, and 3700 flow transmitters.

Sealing of the 1700 and 3700 is identical to the 2700 in that the electronics are placed into secure (custody transfer) mode and the housing sealed with a lead seal. Sealing of the panel-mount 3500 is achieved by placing the electronics into secure mode and a lead seal applied to a housing screw. Sealing of the 2500 is obtained by setting the

device to secure mode and completing the following:
- The connections to the MVD 2500 service port shall be removed and the connection sealed to avoid connecting to the service port. This sealing also prevents the MODbus from being used.
- Additionally, the housing in which the MVD 2500 is placed shall be sealed against unauthorised opening to prevent changes to the wiring of the pulse output and the current output.

5. Description of Variant 4 approved on 1/09/09

With Micro Motion model 510 dual pulse convertor for use with the model 2500 or model 2700 flow transmitter, to convert the two 90º-shifted output pulses of the flow transmitters to two 180º-shifted output pulses with the same frequency. The pulse width is adjustable. The pulse convertor is used to provide pulse outputs that mimic the pulse shape of a magnetic pulser on a mechanical flowmeter.

6. Description of Variant 5 approved on 1/09/09

With a MODbus output either:

(a) directly from the core processor (via an MVD Direct Connect power supply/intrinsic-safely barrier) to a compatible approved controller/ calculator/indicator ("flow computer"). The controller/calculator/indicator must provide functionality for electronically "pairing" it to the core processor and securing access to the core processor as provided by the 2700 flow transmitter (clause 2.3 Variant 3); or

(b) from a model 1700, 2700, 3500, or 3700 flow transmitter. When in secure mode, the MODbus connection is read only except that process totalisers may be reset at no flow.

7. Description of Variant 6 approved on 11/09/14

The following models are used for the measurement of Invert Liquid sugar (potable water mixed with sucrose):

Micro Motion MVD model CMF300

Field of operation:

Minimum measured quantity, M_{min}	200kg
Maximum flow rate, Q_{max}	1600 kg/min
Minimum flow rate, Q_{min}	57kg/min
Liquid temperature range:	30°C to 70°C
Dynamic viscosity	15 to 120 mPa.s (#3)
Accuracy Class	0.5

Micro Motion MVD model CMF400

Field of operation:

Minimum measured quantity, M_{min}	500 kg
Maximum flow rate, Q_{max}	1600 kg/min
Minimum flow rate, Q_{min}	850kg/min
Liquid temperature range:	30°C to 70°C

Dynamic viscosity	25 to 350 mPa.s (#3)
Accuracy Class	0.5

(#3) The flowmeter is adjusted to be correct for the liquid for which it is to be verified/ certified as marked on the data plate.

Description of Variant 7 **approved on 09/03/17**

With NMI-approved Micro Motion model 5700 flow transmitter in place of the model 2700 flow transmitter. The model 5700 flow transmitter provide the same basic functionality as the 2700 with additional output functionality. The model 5700 as a commission-approved calculator/indicator when used with the Micro Motion MVD flowmetering system. Refer to NMI certificate pattern approval S732.

TEST PROCEDURE No 5/6B/92B

Instruments shall be tested and verified in conjunction with any tests specified for the instruments to which the pattern is connected, as appropriate, and in accordance with any relevant tests specified in the National Instrument Test Procedures, using the type of liquid with which they will be used and which is marked on the instrument.

Maximum Permissible Errors

The maximum permissible errors applicable are those applicable to the system to which the instrument approved herein is fitted, as stated in the approval documentation for the system, or in Schedule 1 of the *National Trade Measurement Regulations 2009*.

It is forbidden to adjust the calibration of the meter to an error other than as close as practical to zero error.

Maximum Permissible Errors

For accuracy class 0.3:

The maximum permissible errors are:

±0.2% for calibration adjustment of the meter; and

±0.3% for in service tolerance of the measuring system.

For accuracy class 0.5:

The maximum permissible errors are:

±0.3% for calibration adjustment of the meter; and

±0.5% for in service tolerance of the measuring system.

For verification purposes, provision is to be made for a thermometer and a pressure gauge to measure the temperature and pressure of the liquid at the flowmeter. Verification may be made volumetrically by a meter prover or by mass flow rate using a master meter verified as a reference meter for mass metering for the product being measured with a flow rate equal to or greater than the flowmetering system.

ANNEXURE 5/6B/92B – 1

MVD700 Core Processor		
version	**Checksum**	**date**
2.0	51FF	18 December 2001
2.1	2B3F	1 July 2002
2.2	9005	15 April 2004
2.3	D75B	12 May 2004
2.4	474F	13 April 2005
2.5	14AD	20 January 2006
2.6	D732 *)	06 June 2007
2.7	F666 *)	23 April 2008
2.8	1DEA *)	6 August 2008
3.0	D00D *)	1 November 2009
3.0 – ETO17153	97D6 *)	7 December 2009
3.11 – ETO19413 **)	14AD	15 July 2011
3.12	1F1B *)	15 July 2010
3.13 – ETO18951	8BF8 *)	17 August 2011
3.2	18D0	3 December 2012
3.3	B0D1	29 July 2013
3.40	73A9	3 March 2014
3.42	F00C	28 April 2014
3.50	11AA	14 April 2016
3.52	3C4A	28 June 2016

*) Indicated as 14AD, corrected from v3.2

**) Linearization feature

ANNEXURE 5/6B/92B – 2

Software versions with no checksum		
Part	**Version**	**Remark**
MVD1700 MVD2700	3.2, 3.3, 3.4, 3.4.1, 3.5.3, 3.6, 3.7, 4.1, 4.2	
MVD2500	4.0, 4.1, 4.2	

MVD1700 / MVD2700 / MVD2500		
version	**Checksum**	**date**
5.0/1.0	7A7F0B39	10 October 2006
5.1/1.0	95F0BC47	19 March 2007
5.12/1.0	A14FBFB9	8 May 2007
5.2/1.0	746CBE79	3 March 2008
6.0/1.1	BB615B55	1 July 2009
6.1/1.2	13176BE6	3 August 2010
6.11 – ETO19266	9B13F21A	14 June 2011
6.4/1.3	B77B25C9	9 January 2013
6.5/1.3	88FB1B5C	22 April 2013
6.6/1.3	9ECE81F1	30 October 2013
6.7/1.3	4A5365D4	18 November 2016
7.0/1.3	B77B25C9	9 January 2013
7.1/1.3	88FB1B5C	22 April 2013
7.2/1.3	9ECE81F1	30 October 2013
7.3/1.3	4A5365D4	18 November 2016

ANNEXURE 5/6B/92B – 3

MVD800 Enhanced Core Processor		
version	**Checksum**	**date**
3.11	891378AB	7 April 2006
3.21	9893B999	16 November 2006
3.30	A73D25DA	13 march 2007
3.42	7FA82CE8	5 October 2007
3.50	D9343F05	3 November 2008
3.52	132CCB63	2 June 2009
3.6	A9CA4E81	15 September 2009
3.61 – ETO17170	9AA358FF	16 December 2009
3.7	BE73CD62	15 July 2010
3.71 – ETO18982	580D32B6	24 May 2011
3.8	8CA8E7D1	15 December 2011
3.81 – ETO20775	7931CE3D	20 September 2012
3.9	58CB3E0C	3 December 2012
3.91 – ETO21156	65F98DD7	27 November 2012
3.94	47EB3E10	8 May 2013
3.96	756C1BFD	29 July 2013
4.00	C582F843	17 February 2014
4.02	8D61C368	13 March 2014
4.14	40860C63	13 August 2015
4.20	2983A9BE	14 April 2016
4.21– ETO21931 *)	D6349259	3 June 2016

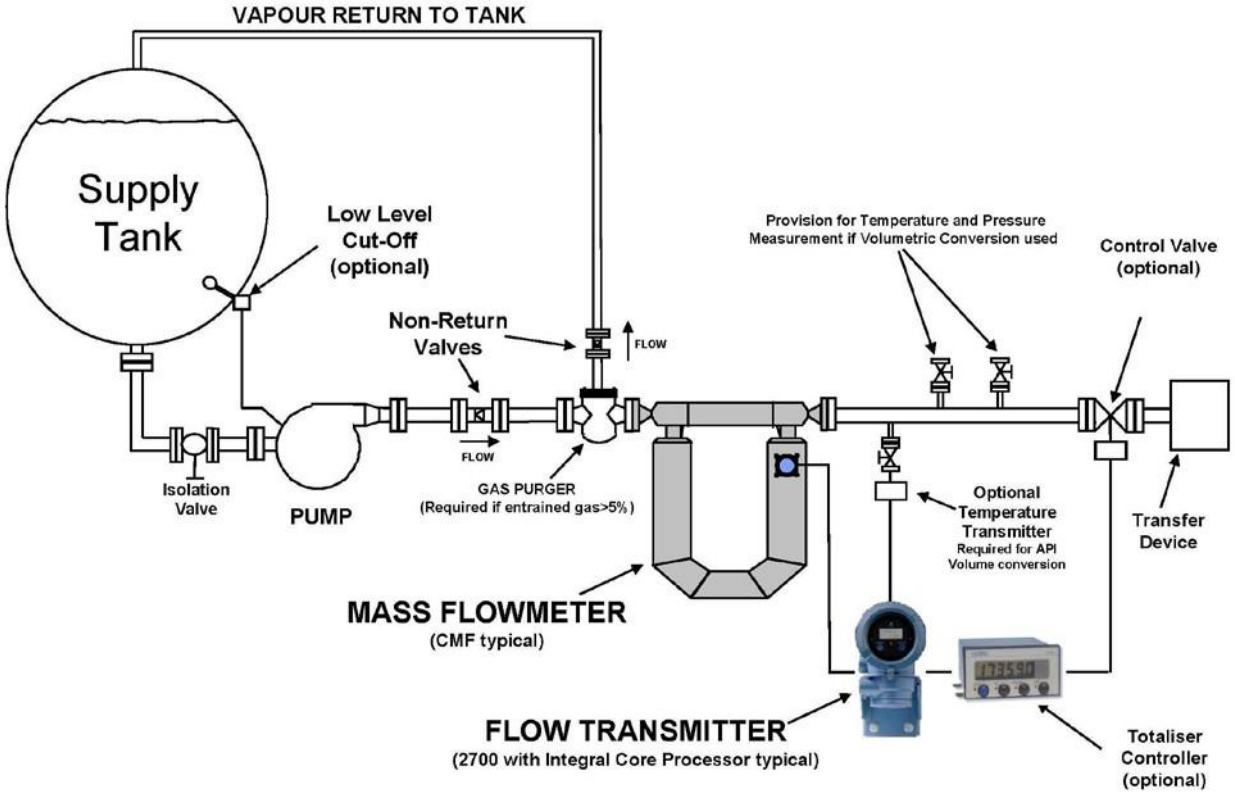
Note: For the 800ECP v3.80 or higher: by writing ETO number 13511 in Modbus register 5005, the linearization feature is enabled.

*) Density Based Correction coefficients removed. To be used in gas application measuring Hydrogen or Helium.

ANNEXURE 5/6B/92B – 4

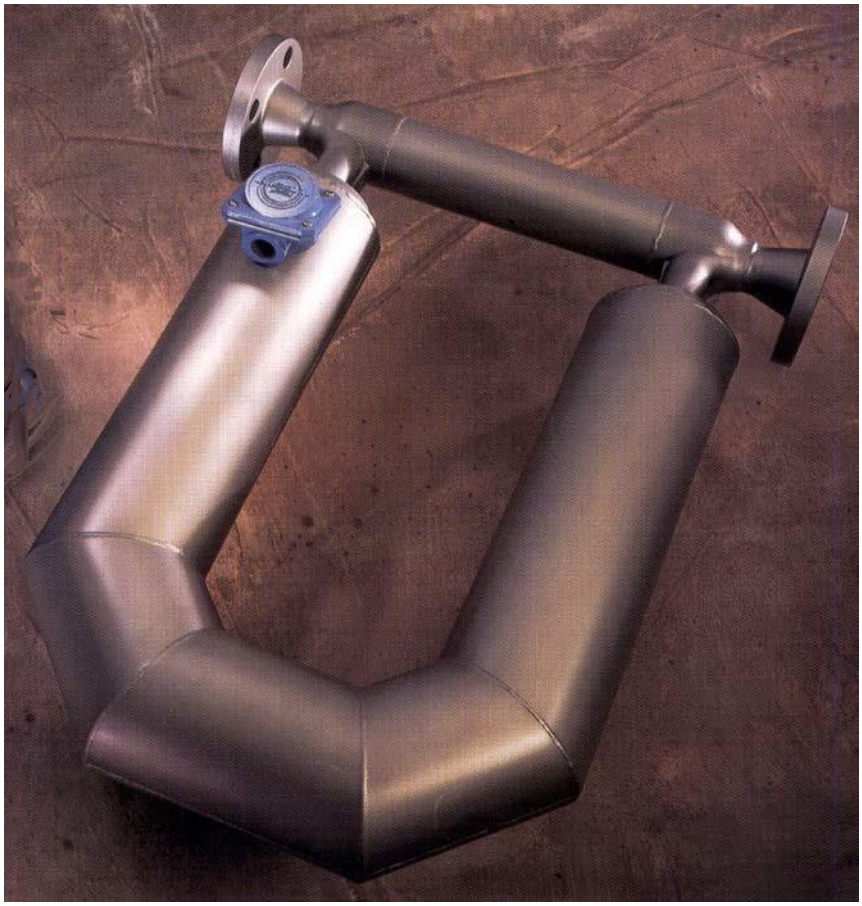
MVD3500 / MVD3700		
version	**Checksum**	**date**
7.0/1.1	A1C34F1C	11 April 2007
7.1/1.1	D5783FCF	18 January 2008
7.2/1.1	20609FD3	20 February 2009
8.0/1.2	158A12BD	24 August 2010
8.02 – ETO18947	1CC007C4	7 June 2011
8.1/1.3	4279A001	30 January 2012
8.14/1.3	62F125F2	27 April 2012
8.2/1.4	368139C5	28 March 2013
8.21 – ETO23686	D507F464	1 July 2014
8.3/1.4	8F65A9E9	2 April 2014
8.4/1.4	227B10D2	30 July 2015
8.41 – ETO26097	31D36D05	5 April 2016

FIGURE 5/6B/92B – 1



Typical Micro Motion MVD Model CMF200 Mass Flowmetering System

FIGURE 5/6B/92B – 2



(a) Micro Motion Model CMF200 Flow Sensor

(b) Model 700 Core Processor

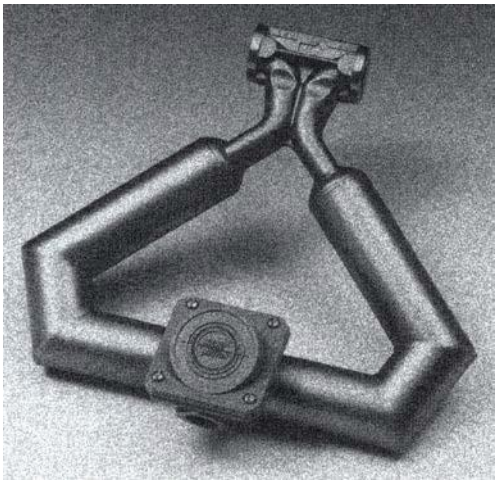
(c) Model 2700 Flow Transmitter

FIGURE 5/6B/92B – 3

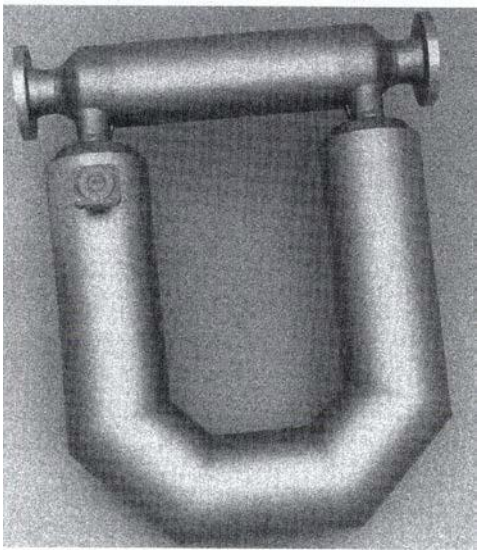
Model F100

Model DH300

Model CMFHC3



Model CMF050



Model CMF300

Model CMF400

(not to scale)

Various Model Micro Motion Flow Sensors

FIGURE 5/6B/92B – 4

Micro Motion Flow Transmitters – Top to bottom: model 3500 rack mount, model 3700 field mount, and model 3500 panel mount

Model 5700 Flow Transmitter

Model 2500 DIN-mount Flow Transmitter

~ End of Document ~