



Sealing All units are designed for outdoor use and are sealed to specification IP 65.

Security Watchdog circuitry
Full wire sealing
Automatic Error Checking
Alarm reporting
Data Storage for 40 transactions

Operating Temperature (excluding transmitter) -20 to 40 deg C

Transmitter
Temperature -30 to 120 deg C
Fitting Universal sealed to replace Veeder Root Head.
Direct drive available for most makes of meter

Approval EN ISO 6551-1995 Level A
Channels 3 Independent
Security Sense Line

Humidity up to 100%

Safety Classification Zone 1
Approval EEx ib IIA T4
Certificate Ex 94C2542
Power Supply Unit is fully flameproof EExd

Temperature Probe PRT
Accuracy +/-0.1 deg C
Discrimination 0.1 deg C
Range -30 to 120 deg C
Set up Factory set (no adjustment required)
Alarm limits Programmable
Display deg F or deg C selectable
Compensation 15, 20 or 31.5 deg C

Location Flexible fitting max 50 metres between units

Product Correction Tables
IP/ASTM Table Selection to specification IP65.
Generalised Crude (A Tables)
Generalised Products
Table 54
Table 53

Display LCD
Batch Min. volume - one unit
6 figures standard units, 4 + 2 decimal places selectable
Max. frequency 2500 Hz

Preset 4/5/6 figure with limit
2 stage start
Max Flowrate
Selectable multi stage closure
Accurate cut off

Flowrate Sampled every 0.6 secs

Totaliser 8 figure

Remote Display Max of 4 displays (various displayed data)

Interfaces RS422
7 switch monitoring contacts
Auto Calibration Port

ID Mode Simple password entry

Delivery Override Key Operated IP 65 Box (option)

Power Supply 110, 220-240V AC
12/24V DC

Relays Max of 11 plug-in
Typical - Pump control (1)
Valve (2)
Additive Injection (8)
Pulse output

Inputs 4 x (4-20mA)
Permissive Input Voltage

Power Consumption 350mA max. (excluding relays)

Linearisation 1, 2, 4 or 8 selectable
Full dynamic interpolation
Accuracy +/- .02 @ measuring condition and 15 deg C if temperature compensation fitted

Manual Input Density for weight indication

Non Volatile Memory

MASTERLOAD II Electronic Meter Controller for Loading Depots

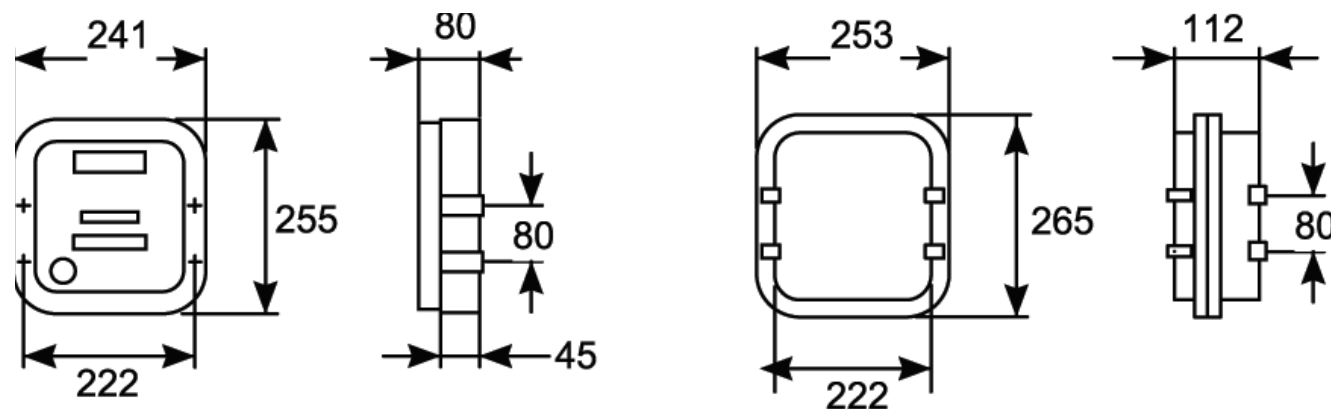


The Avery Hardoll **MASTERLOAD II** is a powerful and versatile microprocessor based electronic meter controller. The unit is capable of enhancing the performance of most makes of positive displacement and turbine meters.

- Accurate, dynamic meter calibration
- Precise, programmable preset and flow control
- Flexible low cost entry to depot automation
- Two way data interchange to a range of office based terminal automation systems
- Additive injector and pump control
- Temperature compensation to ASTM tables
- Automatic calibration

DISPLAY UNIT (ALL TYPES)

POWER SUPPLY UNIT



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A Flight Refuelling company



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IP THE INSTITUTE OF PETROLEUM

MASTERLOAD II is an intrinsically safe system ideal for use in Zone 1 hazardous areas. The system is comprised of a pulse transmitter mounted on the meter, a display unit giving readouts of batch volume, flow rate and a totaliser.

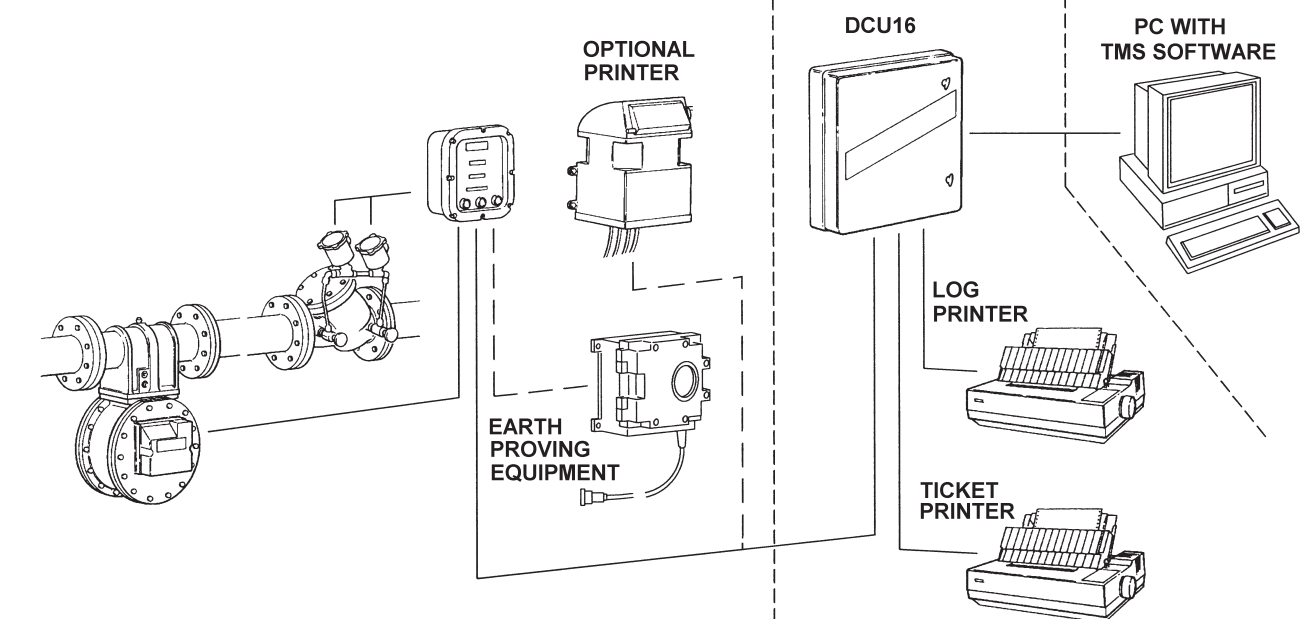
PULSE TRANSMITTER



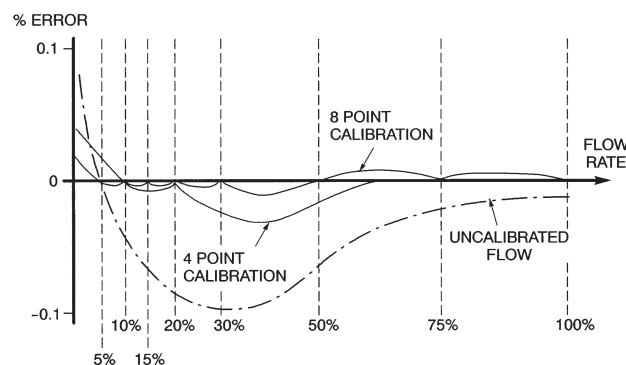
DISPLAYS of Batch delivery, preset value, rate of flow/temperature and totaliser are clearly displayed on large figure Liquid Crystal Displays (LCD's). These displays may easily be configured at site to show a range of alternative values such as volume corrected to 15, 20 or 31.5 deg C. Up to three Additional display enclosures, with either repeat or supplementary information can be installed at convenient locations.

Masterload Flexibility

Stage One: a low cost entry to depot automation. Each meter can be converted to give all the benefits of electronic meter control with minimum disruption.



DYNAMIC CALIBRATION provides accurate error correction across the entire flow range. Most meters are calibrated at only 1 flow rate - generally 100%. In reality, meters operate at a variety of flow rates. Masterload calibration is corrected at all flow rates to provide the highest level of accuracy. With a choice of 1, 2, 4 or 8 calibration points across the flow range - the system allows the user the flexibility to configure each Masterload to suit the requirements of his own application. Masterload performs a curve fitting exercise to provide the required correction.



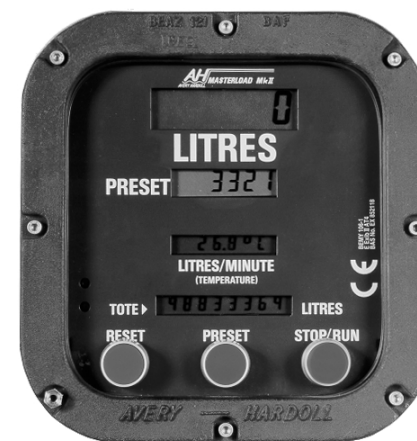
TYPICAL ERROR CURVES

Retro fit: Masterload has been widely used to enhance the performance of most makes of positive displacement and turbine meters and can be supplied with new equipment or as a retrofit to existing meters.

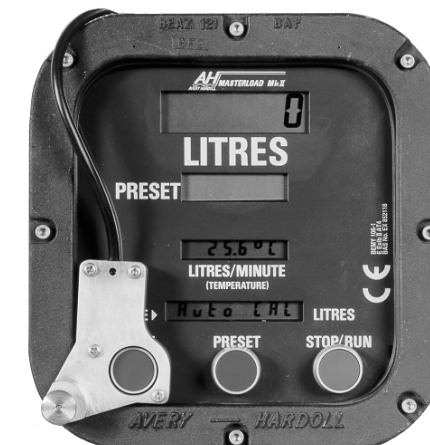
Stage Two: introduces simple communication to the depot office providing local printing of delivery tickets and a meter log.

Stage Three: the site can be up graded to a PC bases automation system such as the Avery Hardoll Terminal Management System (TMS).

TEMPERATURE COMPENSATION is an optional facility providing a range of temperature related displays. Using a Platinum Resistance thermometer (PRT), the display may be configured to show product temperature or mean batch temperature. Alternatively, full temperature correction to standard temperature or to the IP/ASTM tables 53 and 54 may be configured.

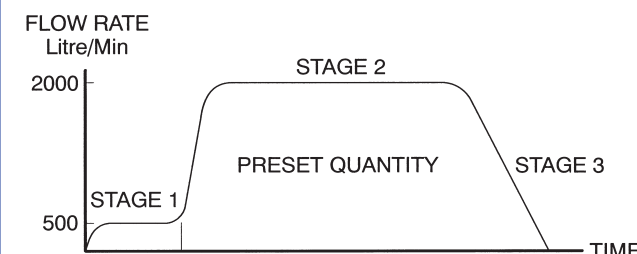


PRESET DISPLAY UNIT



PRESET DISPLAY UNIT FITTED WITH AUTOCAL LINK

PRESET BATCH CONTROL is provided by a solenoid operated flow control valve. Masterload controls the valve for slow start to prevent the build up of static, opens to a programmable maximum flow rate and provides a ramped closure to eliminate hydraulic shock. Final closure is accurate to within 0.05 of a litre when used with an Avery Hardoll preset valve.



PRESET BATCH DELEIVERY

DATA COMMUNICATION to RS422 specification offers comprehensive two way data communication between the meters and the office system. Approved to EN ISO 6551-1995 Level A, Masterload offers the highest level of data security available.

AUTOMATIC CALIBRATION when calibrated against a Masterload Reference Meter. A simple infra red connection links a Masterload meter to a Masterload Reference meter. This allows calibration to be carried out completely automatically thus reducing down time, volume of product passed and the potential for human error. Calibration Certificates are computer generated to the IP or customers own specification.

VOLUME TO WEIGHT CONVERSION provides a reading in weight. Available as either a simple manually entered density figure for low cost batch conversion or a dynamic input from an in-line densitometer which when linked to temperature correction offers the highest level of accuracy.

ADDITIVE INJECTION CONTROL provides a relay output to control either four piston injectors with pump control with monitoring and reporting of injector stroke. The system provides a post injection purge to prevent contamination on multi-additive lines whilst retaining a high level of additive accuracy. Selection of additives may be controlled either by selector switch, pin number or terminal automation system.

DRIVER INTERFACE is as simple as setting a digital watch. Using a maximum of 3 buttons, the operator can easily enter load information from simple menu instructions. When connected to a Data Capture Unit (DCU) or Terminal Management System, the same buttons are used to enter passcodes. PIN numbers and pot numbers which can be varified by the system.