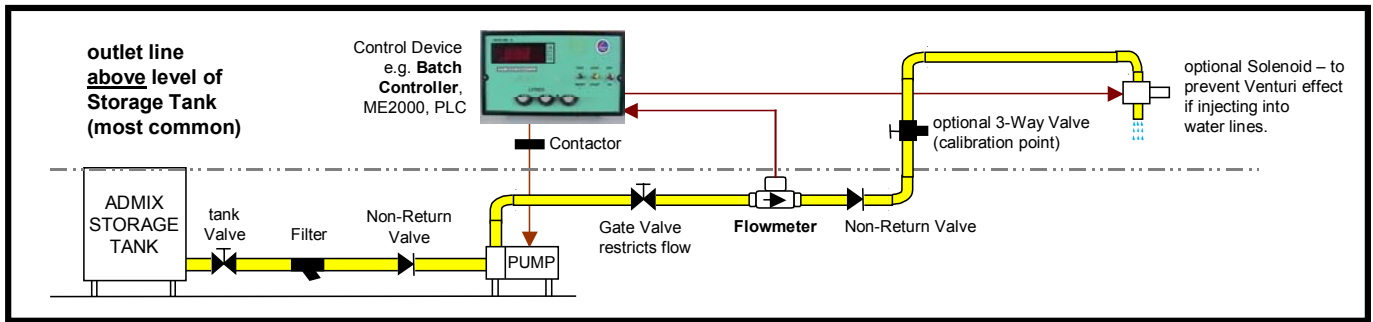


- (1) Locate the most appropriate position to mount the MES20 flowmeter. Preferably:
  - your site's flowmeters should be grouped together off the ground on a stand.
  - protect the flowmeters from the elements by using a cover, which should be lightweight with handles for easy access by service personnel.
  - a vibration free area is recommended, as the MES20 is sensitive to high vibrations which can cause some stray pulses (see the "Installation" section in the MES product brochure).

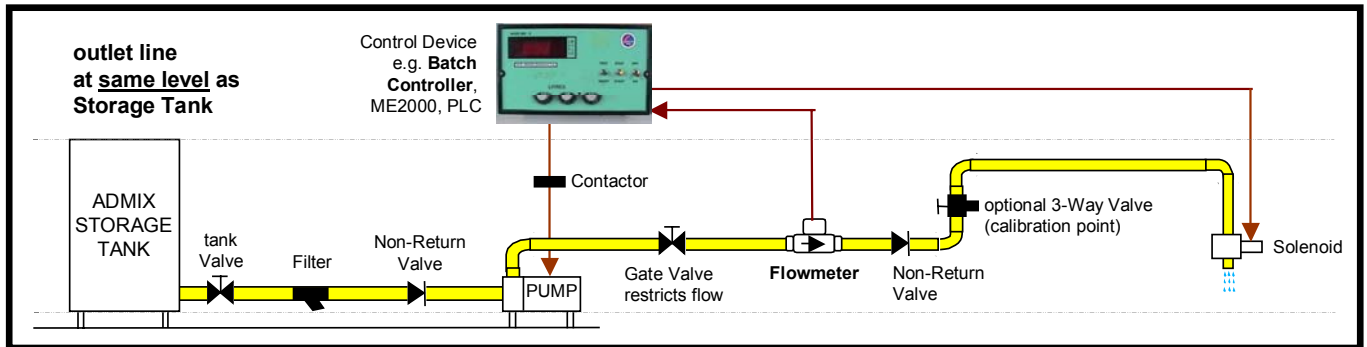
(2) Establish the outlet point position in relation to the storage tank:

**2a) If the outlet point is above the top of the storage tank (the most commonly used setup),** then the equipment you will need is at least: a pump, non-return valves or spring loaded check valves (12psi), flow restriction gate or ball valve, a flowmeter with pulse output and, optionally:

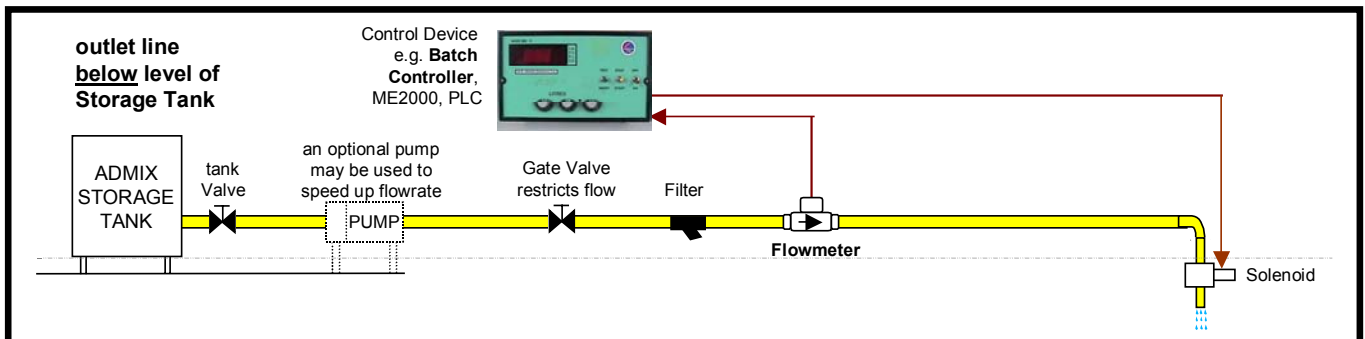
- a solenoid valve (air-assisted ball valve type) for instant shut off of flow, recommended to prevent the Venturi effect when injecting into water lines, but may not be required if the installation has reasonable head height.
- a 3-Way Valve to provide an easily accessible calibration point.



**2b) If the outlet point is at the same level as the storage tank,** then the equipment you will need is at least: a pump, a flow restriction gate or ball valve, a flowmeter with pulse output, and a solenoid valve to stop free flow.



**2c) If the outlet point is below the level of the storage tank,** then the equipment you will need is at least: a flow control solenoid valve, a flow restriction gate or ball valve, and a flowmeter with pulse output.



## **SELECTION OF PIPE LINE DIAMETERS** (for MES20 20mm flowmeters)

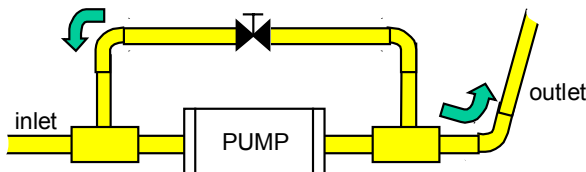
► For low flowrates and small batch quantities of liquid (approx < 2000mls), use ½" diameter pipe or hose (after the flowmeter). ► For medium to high flowrates, use ¾" to 1" diameter pipe. ► For very high flowrates, use 1¼".

NOTE: Pipeline can be flexible reinforced hose (NOT flexible expandable soft hose), rigid PVC or metallic.

*Warning: Running flowmeters over their maximum flow rating will damage them and cause overdosing.*

## **PUMP SELECTION**

► When 20mm MES20 flowmeters are used with fluids of specific gravity 1 - 1.25, then use centrifuge pumps of 0.5 - 1 horse power (e.g. 1" Onga 413 or Davey pumps. When using larger capacity flowmeters, a proportionally larger pump will apply). A flowrate upto 0.8 Litres per second can be achieved, depending on head height. ► For higher density fluids, positive displacement (PD) pumps or other types of positive displacement pumps are more suitable. Because of pressures generated by PD pumps, it is important to be able to restrict the flow – this can be achieved by using an inlet-to-outlet bypass flow valve to recirculate the flow line.



**Note:** This method of restriction of flow eliminates air being counted by MES flowmeters when admix storage tank is empty.

## **FILTERS**

A considerable amount of foreign particles can be transferred into admix storage tanks. Therefore, it is advisable to install a box filter prior to positive displacement type flowmeters, to prevent blockage or damage to the flowmeter measuring chamber unit (Amiad™ Ystrainer 800-micron filter is recommended).

## **COMMISSIONING BATCH CONTROL SYSTEMS**

- Determine the most appropriate position to mount the Batch Controller so it will be clearly visible to the operator and within easy reach.
- Mount the Controller either in a panel cutout or in a standalone ManuFlo housing box.
- Electricians must refer to the relevant ManuFlo wiring diagram (supplied with the Controller). Ensure that there is no power to the Controller before connecting the flowmeter signal cable into the 10pin Weidmuller plug. When wiring the flowmeter, use 2-core shielded cable (use more cores if wiring more flowmeters) - this will supply the flowmeter(s) with 12VDC from the Manu Batch controller.
- Connect the applicable power supply voltage to the controller(s). For pump applications, a heavy duty contactor (10 Amps for Onga413 pump) must be wired into the system. Contactors can be supplied by ManuFlo.
- Power up the system. Reset and start a number of times to prime the system, until fluid appears at the outlet line and the Batch Controller digits begin counting.

**A volumetric calibration test should be performed when commissioning a new installation: place a calibrated vessel at the discharge point, set a batch quantity on the ManuFlo Batch Controller, batch the quantity and then check that the delivered quantity is what was requested. A calibration check should also be performed periodically (say every 3 months):**

- on the Batch Controller, select an amount of liquid e.g. 1000 mls. Then press Reset, then Start.
- at the calibrated container, check that the amount dispensed is as requested (e.g. 1000 millilitres).
- An overflow may occur due to the inability of the pump to stop instantly. The amount of overflow will depend on how fast the liquid is being dispensed and/or the closing time of the solenoid valve. The Batch Controller will count the overflow as part of the displayed total dispensed.
  - if the system is totally controlled via PLC/Computer, overflow will be adjusted by the computer; otherwise,
  - where a ME995 series Batch Controller is fitted with a Preact, simply set the Preact to the amount of overflow i.e overflow = (actual amount dispensed, as shown on the Batch Controller display) minus (amount requested).

If required, slow down flow velocity by using a restriction gate valve, or install a quick-acting solenoid valve.

**Note:** If the flow is restricted excessively, the Batch Controller Pulse Fail circuitry will shut down the system for safety reasons, in which case open up the restriction gate valve.

**For safety**, when using ManuFlo Batch Controllers in a system controlled by a PLC/Computer with batch recipe software: **on the Batch Controller use the front selector switches to set the maximum batch limit and/or doserate.** Thereafter, in the event of a flowmeter or PLC malfunction, the Batch Controller will override the computer and stop the batch.

If unsure about any aspect of installation, please check the appropriate wiring diagram, product brochure and troubleshooting guide.

**ManuFlo**®™

**Flow Measurement Products**

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