TROUBLE SHOOTING GUIDE

ManuFlo ®TM

FOR BATCH CONTROLLER / FLOWMETER ADMIX DISPENSING SYSTEMS

UPDATE:

Common problem with pulse-fail or non start of admix batch systems is; if the pump has not been used for a while it can sieze from sticky admixture. Simply use a rubber mallet and hit the pump on all sides to free it up. Many times it will now release and start up normally.

PROBLEM	POSSIBLE CAUSE	SUGGESTED SOLUTION
•No power to batch controller displays not on	•Blown fuse or holder not tighten	•Check fuse, tighten fuse holder (at rear of controller)
	•+12vdc and O.V. shorted	•Check wiring, rear of controller & at flowmeters, replace cables.
	•No main power supply	•Check power supply, check wiring
•Pulse fails at start of batch	•Air pocket	•Prime line by shorting output drive (C=Contact & A=Active)
	•Restriction gate valve closed	•Open gate valve
	•Empty liquid tank	•Check liquid level
	•Pump not turning	•Check and service pump
	•Solenoid valve not opening	•Check and service solenoid valve or non return valve stuck closed.
	•Seized flowmeter chamber	•Service and clean flowmeter chamber, replace if required
	•Flowmeter pulsehead faulty	•Replace with new pulsehead, or connections corroded.
	•Signal cable cut or bad joint	•Check signal cable

WARNING: In any pulse-fail or repeat malfunction condition, remove the truck mixer from the sock loading point.

•Pulse fails during batch cycle	•Flowrate too slow	•Open restriction gate valve or increase flowrate pulse fail timing capacitor (see service guide).
	•Flowrate too fast	•Chamber clutching, slow down flowrate via restrictor valve check flowmeter specs for performance operating range
	•Blocked filter restricting flow	•Cleanout filter
	•Measuring chamber clutching	•Cleanout chamber or replace
•Display digits count slowly after batch complete	•Non return valve faulty (jammed open)	•Clean, service or replace
•Batch target display counter above batch selection	•Flowrate too fast, excessive overflow	•Turn down gate valve to restrict flowrate or set preact (overflow deduct) function to compensate (ME995 models) •Reduce delivery pipe diameter
•During calibration test more admix collected than indicated	•Flowmeter chamber part missing	•Check flow chamber, Check Orings are seated correctly (MEK20/MES20 roller bush or o'ring)
	•Chamber excessively worn, liquid is slipping through without registration	•Replace with new chamber, recheck calibration
	•S.G. below 1.0	•Replace chamber & restrict flowrate or recalibrate via controller (certain models only) or recalibrate via card.
	•MES20 under excessive pressure with AEA slippery admix	•Place restriction valve after pump and prior to flowmeter

NOTE: After servicing any flowmeter, always perform a volumetric calibration test. Make sure glands are sealed, pulse cable is looped downward, and meters are under cover and protected from water ingress.

•Less admix collected than displayed.	•Possible syphoning effect if fed (mixing) into flowing water line.	•Fit ball valve solenoid or do not feed into flowing water line, or check valve.
	•Liquid flows backward after batches	•Non-return valve faulty, service or replace
•Controller starts counting when power switched on,	•Active and contact power drive short circuited	•Short circuit on PCB, check PCB or replace
does not stop at batch complete	•Contactor sticky or fused	•External pump contactor relay fused or need higher ampere rating, replace contactor
•Controller not counting but flow & or contact drive LED's on	•Controller malfunction, IC failure	•Replace controller, ring Manu for urgent advise.
•Controller counts although pump off (contact drive LED off)	•Dried out main electro capacitor	•Replace electrolytic capacitor (Pre ME995 units)
•Controller counts up a batch cycle but no admixture delivered	•Flowmeter (MES) measuring air	•Can occur with positive displacement pumps, fit a recirculation line on inlet/outlet of pump. See install guide brochure.

- When the target dosage is reached, the buzzer goes off and the "LM" limit LED is illuminated.
- If the external contactor (power relay) is in close proximity to the Batch Controller, then sometimes when the external contactor disengages, a voltage spike is generated that triggers the LED.
- Install a 0.033 µF 240vac maincap capacitor across the coil of the contactor. This will absorb the voltage spike and eliminate the problem.

Sequential fault finding and rectification

1. If a another Manu controller (any model) is available, simply unplug doubtfull unit and plug in exchange unit. If the new unit is also not operating correctly, then the problem is isolated to the pulse flowmeter or wiring.
2. When checking flowmeter, reset the Manu controller. Remove the flowmeter pulsing head only from meter body. Shake the pulsehead in a forward/backward circular motion. Check the Manu controller - it should have registered a number of counts on the display. If so, the pulsehead and electrical connection are probably OK. If no counts are registered, check that 12VDC is supplied to pulsehead, and if so, replace pulsehead. (Manu controller should be switched off when connecting new pulsehead). If no 12v at meter, then replace signal cable.
3. Flowmeter measuring chamber is jammed, damaged, filter blocked etc. For minimum service time, replace with a new measuring chamber. (For servicing chamber, refer to flowmeter brochure).

System overbatch problem

1. The selector knob number dials on the Manu preset batch controller may not be positioned correctly, and therefore do not correspond to the rotary switch numeric values.

2. To test, set all numbered dials to the zero position, then press the RESET toggle - the alarm should beep momentarily. This will indicate correct alignment of dials. If alarm does not beep, this indicates incorrect alignment of number dials. To rectify, remove the grey-colored cap from dial, unscrew knob and pull knob off. Now check that the exposed switch shafts (black) flat side are horizontal. If not, turn shafts horizontal and refit the numbered dial knob to the zero number setting. For dosage switches, position to zero and push the TEST button. Digits should not count (except in the ME995-3 model). If digits count, then remove grey knob and check as described in 1.

3. If batch controller is tested and found to be operating correctly, then proceed to checking and testing flowmeter components.

If in further doubt, contact your local representative, or ManuFlo at phone +61 2 9938-1425, 9905-4324.

SERVICE ADJUSTMENTS
to safety timings and limits for ME995 - ME188 preset batch controllers.

INITIAL START (T2): Once start toggle is pressed, controller allows a standard 1.5 seconds for pulses to arrive from the flowmeter. If there are no pulses within the 1.5 second time period, the controller will shut down the output voltage drive, and will tuen on the pulse fail LED and alarm warnings. In some applications, the 1.5 second delay may not be long enough, due to slow opening solenoids or slow pressure buildup pumps etc. The initial start time period can be increased by soldering a tantalum capacitor in parallel with the standard capacitor value, found on the rear of the Printed Circuit Board (PCB). See Table 1 and diagram below, for capacitor values and location on PCB.

FLOWRATE (T1): If pulses do arrive within the allocated initial start time, the controller then locks in pulserate safety. Most Manu batch controllers have a standard 30 counts per second (30Hz) pulserate safety setting. If the pulses from the flowmeter drop below the 30Hz, the controller will shut down the output voltage drive, and turn on the Pulse Fail LED and alarm warnings. The 30Hz standard setting is typical with concrete admixture dispensing systems using MES20 (1ml/1 pulse) flowmeters, where if the flowrate drops below 30 millilitres per second the pulse fail safety will activate. The flowrate (frequency) minimum setting can be adjusted by soldering a capacitor in parallel with the standard capacitor found on the PCB. See Table 2 and diagram below, for capacitor values and location on PCB.

Note: The flowrate safety timing is changed if required by very low flowrate applications, or when using flowmeters other than the most commonlyly used (MES20 20mm 1 pulse/1ml output flowmeter). When controller/flowmeter systems are ordered, we supply the safety timing setting to suit your chosen flowmeter, thus always providing the safest possible watchdog system.

LIMIT (LM): The maximum permissible batch limit is determined by the factory-set internal limit value. The factory setting is always at the maximum value. But the limit setting can be reduced by simply desoldering the limit lead wire (connected to the rear of the rotary switch solder pads) and resoldering to set the desired quantity (see diagram below)

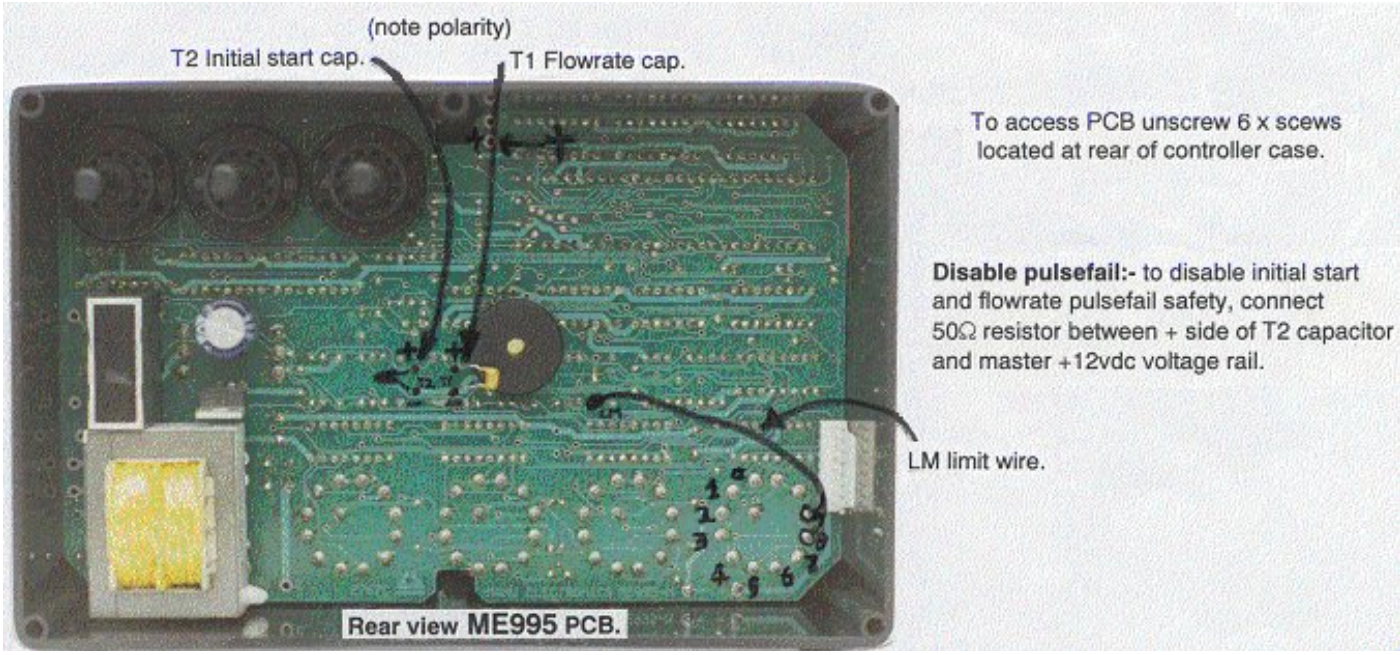
Standard factory set values are T2: 1µF capacitor, T1: 0.02 µF capacitor.
Use the following tables to change factory set values.

Table 1. INITIAL START TIMING (T2)

Extra Capacitor value	Extra timing
1 µF	1.5 seconds
2 µF	3.0 seconds
3.3 µF	4.1 seconds
4.7 µF	5.8 seconds

Table 2. FLOWRATE TIMING (T1)

Total Capacitor value	Frequency Hz (pulses per second)
0.01 µF	30 Hz
0.02 µF	25 Hz
0.03 µF	20 Hz (low flowrate MES20)
0.1 µF	07 Hz
0.2 µF	03 Hz
1.0 µF	0.2 Hz (PSM20-T flowmeters)



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