ME3000-RPFS WATER BATCHING SYSTEM

Congratulations on choosing a ***ManuFlo*** ®™ (Manu Electronics) preset batch control system.
You will now join many thousands of satisfied customers worldwide.

Your system comprises:

Information sheets included:

1. ME3000 preset Batch Controller specification and options.
2. Installation Guide (plumbing/commissioning).
3. Basic electrical wiring guide.
4. Flowmeter brochure spec (chosen flowmeter normally RPFS)
5. (if ordered) PLC/computer interface spec brochure
6. ME3000 complete user manual

AUSTRALIAN MADE

Prior to installation:

A. Consider a good viewing AND operating position for the ME3000 Batch Controller.

B. Remove the detachable 10-pin plug from the rear of the ManuFlo controller. Wire the 240vac supply. Wire the Active/contact drive, Neutral and Earth from the solenoid valve or return from the external contactor if driving a pump. If starting a pump, make sure the contactor is of sufficient amperage rating to handle the pump current draw. Consider wiring an override button (N.O. with spring return) for manual batching or top up of water, which will be counted by the controller display. See wiring

C. Install the flowmeter as per the installation guide found on the flowmeter brochure.
Install the Rota Pulse paddlewheel sensor (RPFS-P) in a straight pipe section, with the same diameter pipe as the adaptor tee section, with 10x diameter before, and 5x diameter after, the sensor with no elbows, reducers, valves or restrictions within this pipe run. Where the sensor is housed, the pipe must be full when measuring.

D. Use shielded cable only for connection between flowmeter and Batch Controller.

E. On pipe sizes over 50mm, consider using an air-assisted solenoid butterfly or angle seat valve, as electrically-operated diaphragm valves can be very slow in closing (valves are available from ***ManuFlo*** ®™). Preferably, use a 240vac solenoid coil, as the Manu controller provides 240vac to the coil when started. Otherwise, consult ***ManuFlo***®™ for options.

F. The ME3000 Batch Controllers, when used with flowmeters, have internal preset calibration factory calibrated with water. When using other varying viscosity liquids with some flowmeters, a calibration test will need to be performed, and the K-factor re-programmed to the corresponding result. A calibration check must be performed prior to continuous use and commissioning of the system (see installation guide). Recalibration may be necessary for flowmeters other than PD or Magflow flowmeters. See page 13 of the manual.

If unsure on any aspect of installation or operation, call ManuFlo or your local installer.

Happy batching !!!!!!!!!!!!!

ME3000 MICROPROCESSOR PRESET BATCH CONTROLLER

FEATURES

- **Programmable - counts in ml, Litres, KL, ML.**
- **keypad input for batch setting, and configuration.**
- **2 line x 16 character display for quantity set and dispensed. 3 indicator LEDs. IP64 front face.**
- **Alarm messages shown on LCD display.**
- **Safety features include missing pulse detection.**
- **Functions include Preact and preset maximum limit.**
- **Internal downloadable Event Log.**
- **Single channel, can be used with any size flowmeter.**
- **Optional PLC/Computer control interface.**
- **Optional RS232 printer interface for batch tickets.**

The ME3000 microprocessor-based preset Batch Controller can be used with pulse output flowmeters of any size, for preset liquid batch control applications. Batch counting can be in units of millilitres, Litres, KiloLitres or MegaLitres. The Controller is fully programmable, and has a range of safety features e.g. if no pulses arrive within a configurable batch start period, or if pulses are interrupted during the batch cycle or if the flow rate falls below the allowed minimum, then the pump voltage contact drive is automatically shut off and an alarm is raised.

- **RUN LED** indicates voltage contact output drive when pump or solenoid is activated.
- **FLOW LED** monitors and indicates incoming pulses from field flowmeter.
- **OUTPUT LED** indicates scaled pulses output from Batch Controller e.g. to a PLC/Computer.

Internal audible **ALARM** sounds momentarily upon completion of batch cycle, and continuously if an error occurs.

With the ME3000 Batch Controller using the same instrument housing, and the same 10-pin Weidmuller receptacle plug, as other ManuFlo Batch Controller models, changeover or upgrade is instant with no rewiring necessary. It can be easily interfaced with PLCs (through the optional computer control interface), thus incorporating the controller's safety features and providing a backup batch facility. An optional RS232 interface allows the printing of batch tickets through an associated printer, and the downloading of the internal event log to a laptop/PC for analysis.

The controller operates from standard 220 - 250 vac (or optional 110 vac or 12 - 24 VDC) voltage supplies. Contact output drive is via a relay (optional open contact). Standard controllers are in panel mount form, or optionally can be housed in a metal box or IP65 ABS wall mount enclosure.

Displays	**Configuration**	**Features**
• Quantity set/dispensed • Flowrate • Backflow amount • Grand Total (resetable) • Batch Id (resetable) **Alarms** • No pulses from flowmeter • Batch Limit exceeded • Max Flow Limit exceeded • Pulse Output Rate exceeded • Backflow • Overbatch	• Calibration i/p pulse scaling • Output pulse scaling • Pulse output rate limit • Batch limit • Backflow threshold • Min/Max flow limits • Batch Units • Start/stop delay • 4-20mA current output • Preact • Time and date • Date last calibrated	• Event log (upto 300 batches) • Indicator LEDs - Run/Flow/Output **Optional Outputs** • scaled Open Collector pulse output e.g. to PLC/Computer • 4-20mA output representing flowrate **Optional Interfaces** • PLC/Computer control (stop/start/reset) • RS232 printer interface for batch tickets and event log download.

The ME3000 controller is designed for compatibility with ManuFlo flowmeters and many other types.

N 15022

- Switch the power ON to unit. In a few seconds, the display shows SET and RDY(ready), with a zero quantity for RDY, all LED indicators and alarms are off. The unit is ready for batching or configuration.
- BATCHING: When SET/RDY is displayed, entering a batch quantity via the numeric keypad buttons will cause the displayed SET value to change and flash. Then, pressing the SET button locks in the new value, or pressing CANCEL reverts the value to its original setting, and the display digits stop flashing.
- Press the START BATCH button to start batch batching the set quantity. The RDY line title changes to REC (received).
- The voltage contact drive activates, the RUN LED illuminates indicating pump or solenoid are energized, followed by FLOW LED illuminating, indicating pulsing and operation of flowmeter. The digits on the REC (received) display line begin counting upward towards the selected batch quantity.
- Upon REC digits reaching the selected batch quantity the alarm sounds (short beep) indicating completion of batch; RUN, FLOW and OUTPUT LEDs turn off. The displayed SET and REC values should correspond. If REC digits overshoot target, then scale back the difference by changing the Preact value via the Configuration Mode (see below).
- To interrupt batch, push STOP button; REC counting will stop, and drive contact goes off. Push START BATCH to resume batch.
- On batch completion or termination, press RESET. Display REC line title changes to RDY (ready).
- To dispense the same set quantity again, press START BATCH. Otherwise, use the keypad to enter a new batch quantity.
  Warning: if RUN or FLOW LED indicators are on, but controller is not counting, discontinue use and call for service.
- EVENT LOG: using a straight-through female- to-female DB9 cable, connect from the Batch Controller's (optional) RS232 port to a Laptop/PC serial port. On the Laptop, start the HyperTerminal software (supplied as part of Windows), set up a connection at 9600 baud, 8 Data Bits, no parity, 1 stop bit, and capture text to a file. On the Controller, press the CANCEL and RESET buttons (those marked with '#') simultaneously for 5 secs, and the Event Log will download. To stop download, press CANCEL for 2 secs.
- CONFIGURATION: The Controller is factory configured to your requirements, but can be re-programmed by the user if required.
- Configuration Mode is entered from the SET/RDY display by pressing the CANCEL and STOP buttons (those marked with a '*') simultaneously for 5 seconds.
- Use the buttons with the up/down arrows to step through configuration settings.
- When a configuration value is diplayed, entering a new value via the keypad causes the display value to change and flash. Then, pressing SET locks in the new value, or pressing CANCEL reverts value to its original setting, and the display digits stop flashing.
- Use the up/down arrows buttons to step through more configuration settings, or press CANCEL for 2 seconds to exit to the SET/RDY display.

CALIBRATION

1) The Batch Controller is set up for the connected flowmeter using the Calibration Input pulse scaling item under Configuration Mode, to match the flowmeter's output pulse value.

On-site calibration adjustment and test:

2) Must adjust what is shown as received (REC) on the Batch Controller LCD display to match a known amount dispensed. So, set batch quantity to say 190L, and batch into a 200 litre (44 gallon) drum.

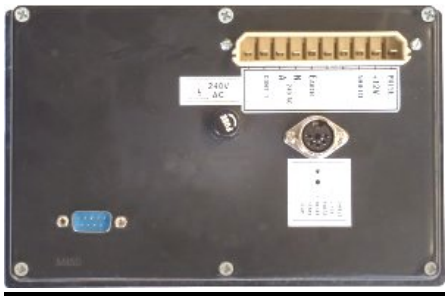
3) If the amount collected is more **than the REC amount shown on the LCD display, then** decrease the Calibration Input **value by the same % difference e.g. if collected 200L when 190L on LCD, this is 10L more or 5% over (10/190x100%). So, decrease the calibration value by 5% i.e. if Calibration Input value is 300, new value is 300-5% = 300-15 = 285.**

4) If the amount collected is **less** than the REC amount shown on the LCD display, then **increase the Calibration Input value** by the same % difference. e.g. if collected 180L when 190L on LCD, this is 10L less or 5% under (10/190x100%).
So, increase the calibration value by 5% i.e. if Calibration Input value is 300, new value is 300+5% = 300+15 = 315.

5) **PREACT:** To calibrate inflight overflow, enter Configuration Mode (as described above), and set the Preact value to the same overflow reading as indicated by the LCD display, where overflow = (the REC quantity) - (the SET quantity).
Example: You set 190 Litres, batch the quantity, 200 Litres is shown on display, and 200 Litres is collected in drum. A valve may take extra time to close, so the received quantity usually overshoots. So, set 10 Litres on Preact to deduct the 10 Litres overshoot. Next batch, the set batch quantity, LCD REC reading and amount collected in drum are all 190 Litres.

SPECIFICATIONS

Power supply	220-250 vac (optional 110 vac or 12-24 VDC)
Fuse	1 Amp (5 x 20mm case)
Frequency input	5 KHz
Event Log	internally records up to 300 batches
Output to flowmeter	12 VDC upto 100mA
Relay	Max. 240 vac, 1 A. Open Contact on request.
Display	2 line x 16 character, for quantity set and dispensed.
Connection	10 pin Weidmuller mating plug and socket
Batch entry	quantity selection and commands via IP64 keypad
Optional Outputs	scaled pulse output; 4-20mA output
Optional interfaces	RS232; PLC/Computer stop/start/reset
Instrument housing	ABS hi-impact case mould
Mounting	Panel mount. Panel cutout :190 L, 122 H mm
External dimensions	206 L, 130 H, 90 D mm.
Weight	1 kg



shown with optional -SC and -5P interfaces

Due to continuous product improvement, specifications are subject to change without notice.

Batch Ticket

29/06/2005	11:30:10	000000000000002512	mL	MANUAL_RESET
29/06/2005	11:30:08	000000000000002512	mL	BATCH_B0001
29/06/2005	11:29:59	000000000000000000	mL	MANUAL_START
29/06/2005	11:29:57	000000000000002500	mL	BATCH_SET
29/06/2005	11:29:49	000000000000000000	mL	BATCHID_RESET
29/06/2005	11:29:42	000000000000000000	mL	GTOTAL_RESET
29/06/2005	11:29:32	000000000000009010	mL	MANUAL_RESET
29/06/2005	11:29:12	000000000000009010	mL	BACK_FLOW
29/06/2005	11:29:11	000000000000000950	mL	BATCH_B0005

Event Log example

ORDER CODES

ME3000 Batch Controller, 240vac.

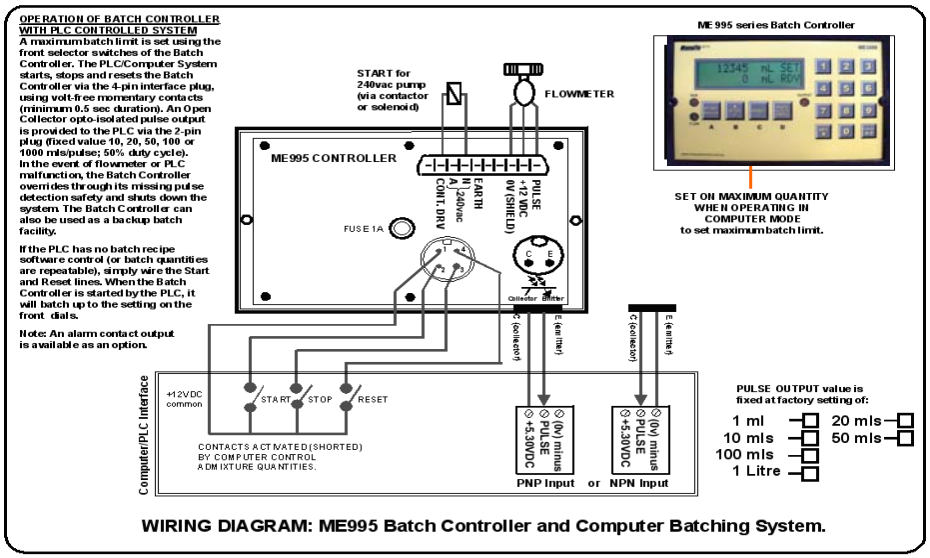
Options:

Code	Description	Code	Description
-110	110 vac powered	**-DC**	12-24 VDC powered
-OC	Open Contact output	**-OP**	Alarm output, Batch complete output, and 4 - 20 mA output.
-L	For connection to a coil-type flowmeter.	**-SSR**	External command: Start/Stop/Reset, for connection to HB2500-SSR housing box.
-SC	RS232 Serial interface	**-5P**	5-pin computer interface plug (start, stop, reset, pulse, +12V) for Jonel, Eagle etc PLCs.
-MC	4-pin PLC/Computer Command (Start/Stop/Reset) interface plug	**-MC2**	2-pin plug for scaled open collector pulse output. Includes 4-pin external command (Start/Stop/Reset) interface plug.

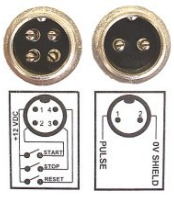
e.g. “ME3000” is the standard Batch Controller, 240vac powered, without any of the options, whereas “ME3000-MC2” is an ME3000 Batch Controller with a scaled open collector pulse o/p, and external Start/Stop/Reset.

ACCESSORIES

Code	Description
TTP-A5	• Thermal Ticket Printer. • with power supply. • suitable for custody transfer dockets for ME3000-SC.
TMP	• ME3000-SC and TTP-A5 printer, wired and mounted in a key lockable rugged IP64 hinged enclosure. automatic ticketing. • prints Batch ID, quantity, time and date. • ribbon and paper easily changed. • Ideal for delivery trucks or loading and discharge locations where a custody transfer docket is required.



WIRING DIAGRAM: ME995 Batch Controller and Computer Batching System.



RPFS ROTA PULSE FLOW SENSOR
(Slip Insertion Paddlewheel)

DATASHEET

FEATURES

- **± 2.5% accuracy @ velocity range 0.5 to 8.5 m/sec.**
- **± 1 % accuracy over linear range 0.7 to 7.0 m/sec.**
- **Repeatability of ±0.6%.**
- **NPN inductive pulse with internal amplification.**
- **Square wave output with short circuit protection.**
- **Inductive coil pulse option for low current applications.**
- **High Pressure options to 2000kpa**
- **50°C or 120°C temperature models.**
- **Simple installation and maintenance.**
- **Large range of pipe adapter fittings in sizes 20 to 110mm.**
  (Larger pipe sizes to 500mm using "Long Stem" –LS version)
- **Stainless Steel 17-4PH paddlewheel rotor without magnets.**
- **Australian made since 1984. (Now with new high speed bush option).**

RPFS-P

DESCRIPTION

The Rota Pulse Flow Sensor (RPFS) paddlewheel insertion type flowmeter uses a proven principle of flow measurement, which is used worldwide. The RPFS comes in four model variants:

- **RPFS-P** for liquids up to 50°C (plug-in cable)
- **RPFS-H** for liquids up to 120°C

All model variants insert directly into a large range of pipe adapter fittings available in PVC, Galvanized Iron, Brass, Stainless Steel or Polypipe materials, covering pipe sizes 20 to 110mm (standard sizes). This makes the RPFS suitable for a wide range of liquid flow measurement, monitoring and batching applications. Using the BSPB & BSPSS fittings adaption to larger size pipes is possible depending on pipe wall thickness, alternatively the Long Stem (-LS) versions with adaptors are then used.

With only one moving part and limited intrusion into the pipe, and combined with its flow-through design, the RPFS allows accurate measurement of liquid flows with virtually no head losses.

Each of the 4 blades of the rotor (paddlewheel) extends approximately one centimetre into the flowing liquid. The RPFS-P sensor generates a square wave pulse with the frequency output proportional to flow velocity and proportional to pipe diameter. The RPFS-P incorporates internal amplification, allowing pulse transmission up to 1000 metres to the receiver device. The RPFS-P model is specially constructed with a metal shielding jacket making it immune to electrical interference.

Magnets are not used in the RPFS models, thereby eliminating iron particles jamming the rotor. The alloy rotor used also makes the RPFS less susceptible to interference from turbulence and particles hitting the rotor, thereby giving superior flow results.

SPECIFICATIONS

	Model		
	RPFS-P	**RPFS-H**	
Supply voltage	5-30VDC	5-30VDC	
Output signal	NPN open collector	NPN open collector	
	50% duty cycle pulse	50% duty cycle pulse	
Current draw @ 5VDC / 24VDC	2.5mA / 10mA	2.5mA / 10mA	
Max. switching current	200 Ma (at 24VDC)	200 mA (at 24VDC)	
Cable length	5 metres, plug-in cable	2 metres cable	
	3-core (3 wire)	2-core shielded (3 wire)	
Fluid temperature	50 °C max.	120 °C max.	
Weather rating	IP67	IP65	
Pressure rating	200psi	400psi	
Accuracy	± 2.5% for 0.5 to 8.5 m/s, ±1% for 0.7 to 7.0 m/s, Repeatability ± 0.6%		
For Pipe Sizes	15 to 110mm standard, Larger pipes via BSPB-LS special adaptor or saddle clamps.		

MANU ELECTRONICS PTY LTD
41 Carter Road, Brookvale NSW 2100
Website: http://www.manuelectronics.com.au

SENSOR CONSTRUCTION — RPFS

Model	RPFS-P	RPFS-H		
Body	Delron (Acetal)	Brass		
O-rings x 2	Neoprene	Viton		
Rotor	Stainless Steel 17-4PH			
Bushes	Delron			
Axle	Tungsten Carbide			
Lockcap	PVDF	Brass		
Dimensions Overall (approx.)	130L x 30W mm	150L x 30W mm		

SPARE PARTS

PW-N Spare wheel

PWAH Axle

PC5 5 mtr m12 lead

LC Locking Cap

BS020 Orings

ORDERING CODES:-

NOTE: All RPFS sensors are supplied with a screw-down LC locking cap

Item	Description	
RPFS-P	NPN transistor 5-25VDC sinking pulse, liquid temperature to 50°C	
RPFS-H	NPN transistor 5-25VDC sinking pulse, liquid temperature to 120°C	

MAINTENANCE — RPFS

Recommended Periodic Checks:

With clean liquids, sensor check of the paddle wheel is recommended once every year. In applications with reclaimed or contaminated fluids, regular quarterly maintenance checks are recommended.

Removal of RPFS from Pipe adaptor Fitting 'Square' Keyway Type Nipple Adaptor:(see FIG 5)

1 - Unscrew the black PVC locking cap (anti-clockwise).

2 - Place a small to medium sized flat thin bladed screwdriver in the join where the insertion sensor body meets the nipple adaptor (See FIG 4), twist the screw driver to prize the two apart till the slots clear the keyways, then pull or twist upwards until the sensor is released (never pull via the cable).

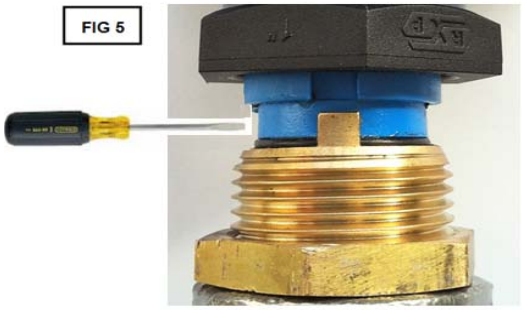
Removal of RPFS from Pipe adaptor Fitting 'Triangular' Keyway Type Nipple Adaptor:(see FIG 6)

1 - Unscrew the black PVC locking cap (anti-clockwise).

2 - Hold the neck of the Tee piece in your left hand, grasp the RPFS body with your right hand and turn slowly anti-clockwise until the sensor hydraulically raises out of slot then pull upwards out of the socket (never by the cable).

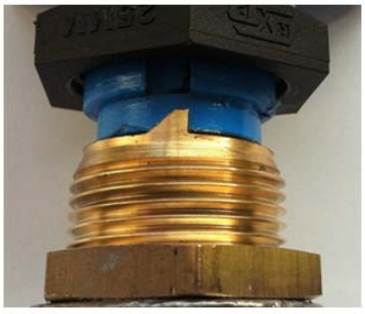
**When returning the sensor to nipple adaptor insert so the keyway and slots line up then then push down until they locate. Screw the black locking cap clockwise to hold the sensor in place (hand tightened only).

FIG 5



Standard fitting 'Square' Keyway

FIG 6



New 'Triangular' turn replace fitting

Cleaning:

1 - If the paddlewheel (rotor) and or sensor body is coated with scale, immerse the sensor section in diluted hydrochloric acid, scour gently if required.

2 - For ease of removal or refitting of sensor we strongly recommend to lubricate the body O-rings using petroleum jelly.

3 - If the paddlewheel requires servicing, push out the axle using a small hole punch or similar implement, remove the paddle wheel and service or replace rotor and/or axle as required (spare parts available from ManuFlo).

Fault Diagnosis & Rectification:

- If the RPFS sensor ceases to count, the paddlewheel may be blocked, remove inspect and clean as described above.
- If the RPFS pulses when there is no flow, a nearby 50Hz AC field is probably causing these false counts. Move the flow sensor away from the 50Hz field, or move the source of the field if practical.
- If the standard cable length supplied is not sufficient and needs extending contact ManuFlo for suitable 'screened' cable and never run extended cable across or near to other cables that are potential EMF sources.
-

Adapter Tee keyway fittings are available in:

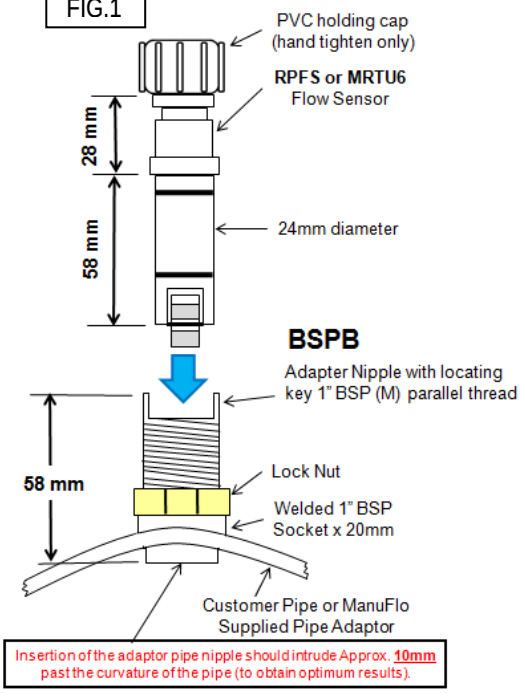
1. PVC Class 18 Cat. 19 Slip tees (F-glue-ends) pressure pipe
   Sizes: 20, 25, 32, 40, 50, 65, 80 & 100 mm.
   PVC high pressure saddle clamps: 40, 50, 80 and 100mm.
2. Galvanized Iron threaded connections:
   BSP (F): pipe sizes 25, 32, 40 & 50 mm;
   BSP (M) pipe sizes 80 & 100mm.
3. Gunmetal BSP(m) threaded connection end pipe tube tees 20 mm.
4. Polypipe saddle clamps in pipe sizes 40, 50, 63, 75, 90, 110 mm
5. PVC saddles 40, 50, 80 and 100mm.
6. Stainless steel 25, 32, 40 & 50mm, larger sizes fabricated on request.
7. FOR PIPE SIZES 110mm and larger refer to the RPFS-LS model

**Further custom made fittings are available on request.

Use ManuFlo **BSPB, BSPB-LS** (Long Stem) Brass or **BSPSS** Stainless Steel pipe adapter keyway nipple - with locknut, which has a 1" OD BSP thread for screwed insertion into 1"(female BSP) half-sockets which can be welded directly to pipe, the BSPB fittings can be coupled to any 1" BSP female entries including saddle clamps.

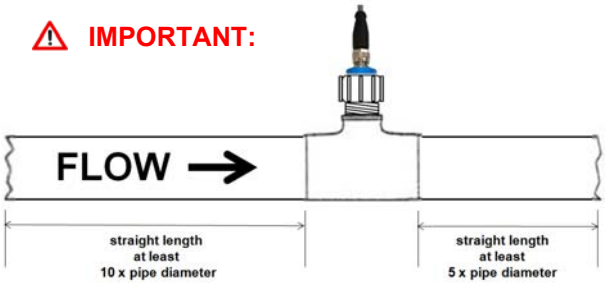
Installing Into Existing Pipe Lines

FIG.1



Installation Conditions

- **IMPORTANT**: A minimum of 10x pipe diameter before (upstream of) the sensor and at least 5x pipe diameter after sensor of straight pipe section must be fitted, with no bends, reductions, enlargements, restrictions, valves etc within this section. This will help eliminate flow turbulence to ensure optimum accuracy performance.
- The RPFS sensor must measure in a full pipe flow section.
- Can be installed in a horizontal, inclined or vertical pipe position.
  (Note: If mounted in horizontal or inclined pipe, make sure insertion position of sensor is at top or 45° from top, not on the underside).

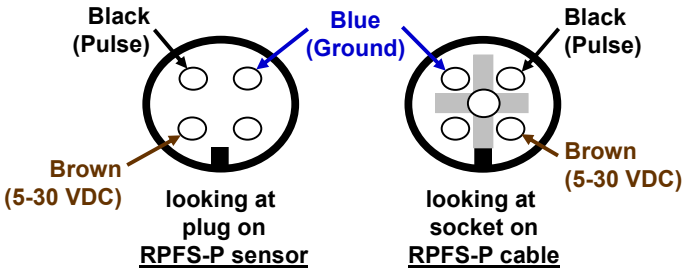


Selection of pipe diameter:
(For best results, use the table below):

Pipe size (mm)	Flowrange (Litres/min)		Pulses/Litre (approx.) (1)(2)
	Min	Max	
20	13	160	116
25	20	250	75
32	30	410	46
40	50	640	30
50	90	1000	20
63	132	1580	11.7
65	120	1690	12
75	180	2250	8.3
80	190	2560	7.3
90	244	3240	5.7
100	300	4005	4.6
110 (-LS)	343	4845	3.8
125 (-LS)	426	6255	3.0
140 (-LS)	516	7850	2.4
150 (-LS)	600	9010	2
160 (-LS)	650	10200	1.8
200 (-LS)	950	16000	1.16
250 (-LS)	1480	25000	0.7

ELECTRICAL INSTALLATION/DATA Cable connection:

RPFS-P# Black = Pulse
Brown = + 5-30 VDC
Blue = O.V. ground/shield



RPFS-H# White = Pulse
Red = + 5-30 VDC
Shield = O.V. ground/shield

If connecting to non-ManuFlo equipment, a 2K2 pull-up resistor may be required between (+) and Pulse.

For extra cable length, use shielded cable only!

⚠ WARNING: To avoid electrical interference the RPFS-H and RPFS-L should not be installed within 30cm of any AC fields, otherwise 50Hz could be detected and create oscillations.

(1) For >315mm diameter pipes:
Pulses per Litre = 50273 / [(Pipe diameter in mm) $^{2.016}$]

(2) NOTE: Due to gravitational forces, the pulse output value can differ up to 6% between a vertical flow that is upwards or downwards. Where possible, perform a calibration check to determine pulse rate given the pipe diameter and flow conditions. Once calibrated, meter will give linear and repeatable results within the flow range

ORDER CODES FOR PIPE ADAPTOR FITTINGS

RPFS

Material	GAL	PVC	PVC	Polypropylene	Polypropylene	STAINLESS	BRASS	BRASS
Type	T-Piece	slip T-piece	Saddle Clamp	Saddle Clamp	Saddle Clamp	T-Piece	T-piece	Socket
For	Gal pipe	Pressure pipe	Pressure pipe	Pressure pipe	Poly Pipe Black	S/Steel pipe	Brass pipe	
20 mm		PVC20					BRA20	
25 mm	GAL25 (-T2)	PVC25				SS25	BRA25	
32 mm	GAL32	PVC32				SS32		BSOC: 1" BSP Brass pipe socket adaptor for 25-100mm pipes also BSPB & BSPSS nipple adaptor
40 mm	GAL40	PVC40	PVC40SC	SCP40	SC40	SS40		
50 mm	GAL50	PVC50	PVC50SC	SCP50	SC50	SS50		
63 mm				SCPE63	SC63			
65 mm		PVC65		SCP65	SC75			
75 mm					SC75			
80 mm	GAL80	PVC80	PVC80SC	SCP80	SC90			
80 mm	GAL80-F *(Table D flanged)*							
90 mm				SCPE90	SC90			
100 mm	GAL100	PVC100	PVC100SC	SCP100	SC114			
100 mm	GAL100-F *(Table D flanged)*							
110 mm				SCPE110	SC110			BSOC: 1" BSP Brass pipe socket adaptor for 100-500 mm pipes also BSPB-LS Long Stem nipple adaptor
125 mm				SCPE125-LS	SC125-LS			
140 mm					SC140-LS			
150 mm			PVC150SC-LS	SCP150-LS	SC160-LS			
160 mm				SCPE160-LS	SC160-LS			
200 mm			PVC200SC-LS	SCP200-LS	SC200-LS			
225 mm				SCPE225-LS	SC225-LS			
250 mm				SCP250-LS	SC250-LS			
280 mm					SC280-LS			
300 mm			PVC300SC-LS	SCPE300-LS	SC315-LS			
	Galvanised iron threaded ends BSP (female) 2000 kPa Note: 25mm can be supplied with straight pipe sections already fitted (Part GAL25-T2)	PVC T-piece Class 18 Cat 19 Glue-in (female) 1100 kPa	PVC 1400 kPa	PVC ≤ 150mm: 1600 kPa > 150mm: 1000 kPa	Poly-pipe agricultural Saddle Clamps ≤ 150mm: 1600 kPa > 150mm: 1000 kPa	Stainless Steel 316 T-piece. BSP (female) threaded entry 2000 kPa	Brass T-piece BSP (female) threaded entry 2000 kPa	1" BSP Brass pipe socket adaptor **& BSPB BSPB-LS BSPSS** nipple adaptors **(see Fig 1 Page 3)**

GAL80 - 80mm Galvanized Iron pipe adapter
(80mm ϕ x 600mm long)

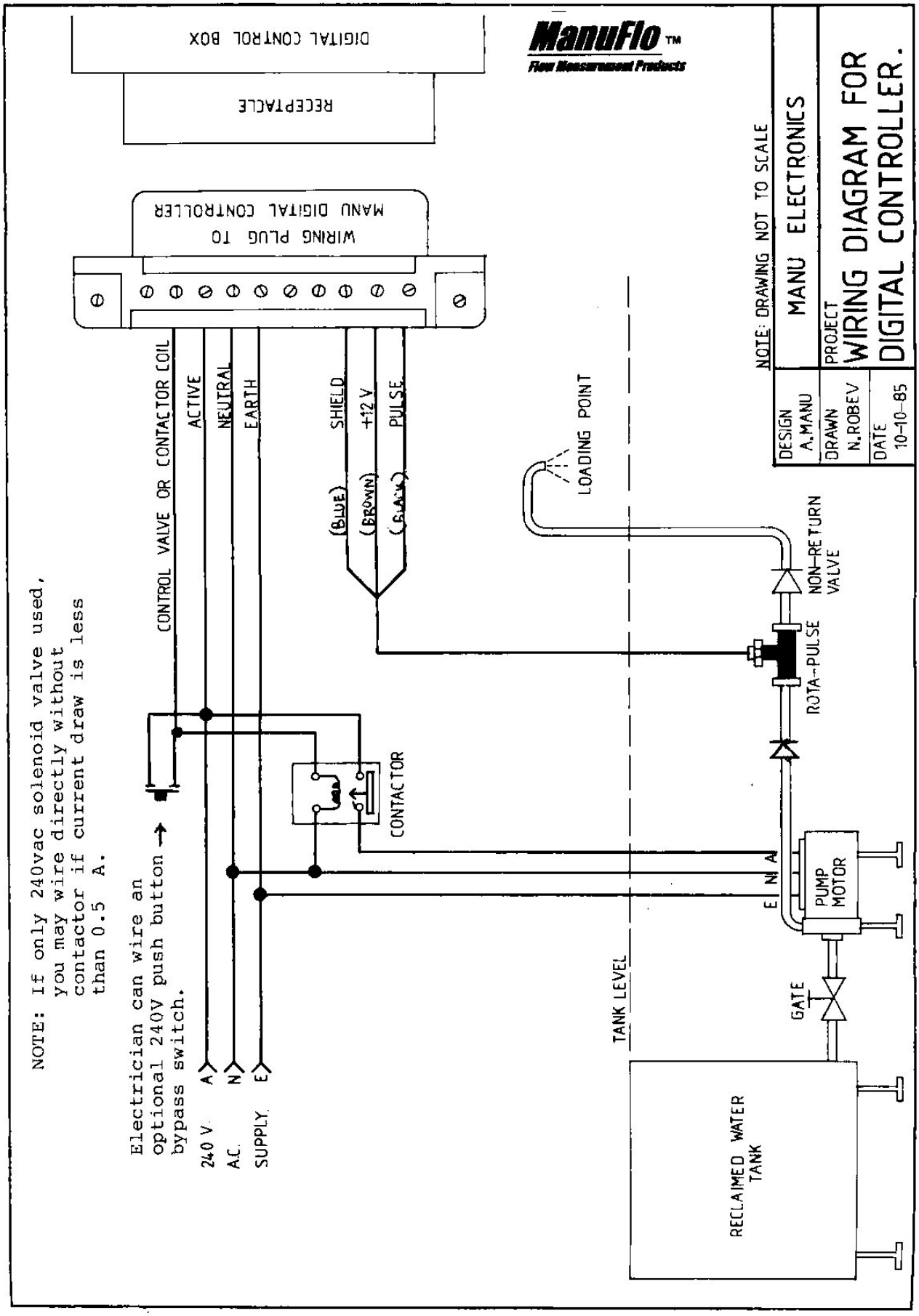
BSPSS Stainless Steel adapter nipple for 25-100mm pipes

BSPB brass adapter nipple for 25-100mm pipes

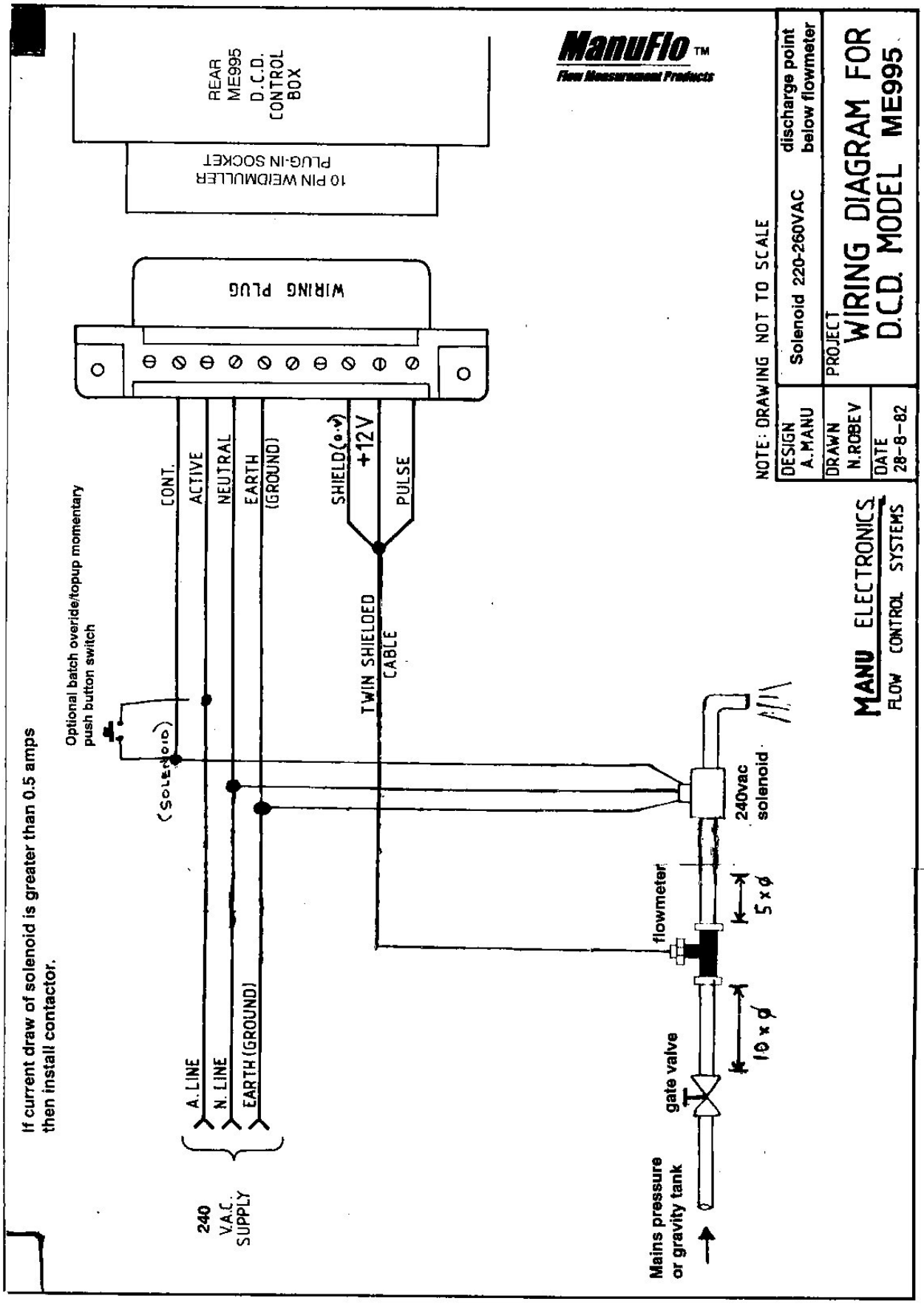
Due to continuous product improvement, specifications are subject to change without notice.

**** Pipe fitting options for the RPFS are as per the table however other fitting types may also be available on request****

ME3000 / ME995 wiring with RPFS or other powered flowmeters



ME3000 / ME995 wiring with RPFS or other powered flowmeters

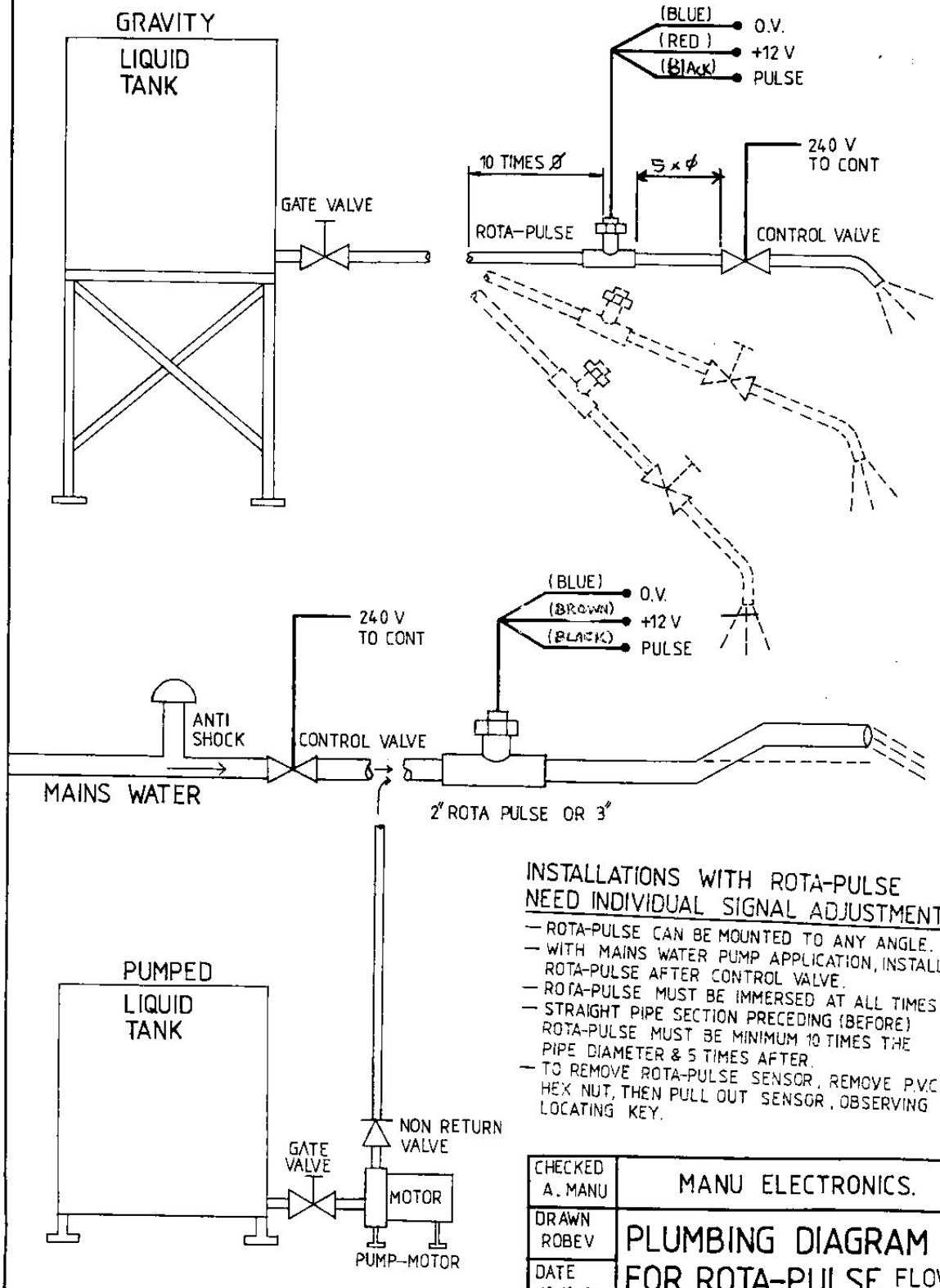


PLUMBING / INSTALL options guide for RPFS or other ManuFlo flowmeters

IMPORTANT: STRAIGHT PIPE SECTION BEFORE ROTA PULSE FLOW SENSOR MUST BE MINIMUM 10 x PIPE DIAMETER BEFORE & 5 TIMES AFTER

MANU ELECTRONICS
UNIT 4, 104 OLD PITTWATER RD
BROOKVALE N.S.W. 2100
PHONE: 938 1425

VARIOUS APPLICATIONS



INSTALLATIONS WITH ROTA-PULSE NEED INDIVIDUAL SIGNAL ADJUSTMENT

- ROTA-PULSE CAN BE MOUNTED TO ANY ANGLE.
- WITH MAINS WATER PUMP APPLICATION, INSTALL ROTA-PULSE AFTER CONTROL VALVE.
- ROTA-PULSE MUST BE IMMERSED AT ALL TIMES.
- STRAIGHT PIPE SECTION PRECEDING (BEFORE) ROTA-PULSE MUST BE MINIMUM 10 TIMES THE PIPE DIAMETER & 5 TIMES AFTER.
- TO REMOVE ROTA-PULSE SENSOR, REMOVE P.V.C. HEX NUT, THEN PULL OUT SENSOR, OBSERVING LOCATING KEY.

CHECKED A. MANU	MANU ELECTRONICS.
DRAWN ROBEV	PLUMBING DIAGRAM FOR ROTA-PULSE FLOW SENSOR
DATE 10-10-85	

TROUBLE SHOOTING GUIDE

ManuFlo ®TM

FOR BATCH CONTROLLER / ROTA PULSE FLOW METER SYSTEMS

PROBLEM	POSSIBLE CAUSE	SUGGESTED SOLUTION
•No power to batch controller or displays not on	•Blown fuse or holder not tightened	•Check fuse, tighten fuse holder (at rear of controller)
	•+12vdc and O.V. shorted	•Check pulse cable from DCD to RPFS meter
	•No main power supply	•Check power supply, check wiring
•Pulse fails at start of batch (1.5 seconds after typical)	•Check calibration (K-factor) setting	•000 calibration –pulse-fails. Make sure a calibration value is set.
	•Seized paddlewheel	•Remove RPFS, inspect; clean with acid, check axle/bushes make sure paddlewheel spins freely
	•Solenoid valve not opening	•Check and service solenoid valve, check output control voltage is 240vac(N & C, pins 7&9) when pushing start button
	•Restriction or service gate valve closed	•Open gate valve
	•Empty water tank	•Check water level
	•Pump not turning	•Check and service pump
	•Pump foot valve failed	•Empty pipe, Install non-return valve
	•Signal cable cut, bad joint at JB, oxidized cable- leakage	•Check signal cable for 12VDC at junction box near RPFS meter If no power, cable cut or oxidized- repair/replace. Unwire RPFS, take up to batch-room, remove extension cable and hardwire RPFS direct into the Batch controller (P,+,-), spin wheel should count on display, if so, then extension cable or connections at JB faulty, if no counts & 12vdc present then RPFS faulty
	•RPFS not positioned in pipe	•Check RPFS slots are in keyway position, lock cap secured Paddlewheel not inserted into flow stream
	•RPFS Flowmeter faulty	•Replace with new RPFS
•Pulse fails during batch cycle program.	•Flowrate too slow	•Open restriction gate valve, or increase minimum flowrate in Pipe diameter too big for flowrate (reduce pipe dia. or increase flow)
	•Pipe buildup restricting flow	•Cleanout pipelines, calcium buildup on pipe walls -recycle systems
	•Paddlewheel problem	•Calcium buildup on wheel, soak in diluted acid. Warn bushes.
•Backflow alarm after batch complete	•Non return valve faulty (jammed open)	•Clean, service or replace
	•Solenoid valve not properly closed	•damaged seal, faulty solenoid
•Batch target display counter counts past batch selection	•Flowrate too fast excessive overflow	•Turn down gate valve to restrict flowrate or set preact (overflow deduct) function to compensate
		•Reduce delivery pipe diameter
•Intermittent overflow past batch select or water does not stop Over batch alarm sounds	•Faulty solenoid valve not closing	•service solenoid valve, check air pressure properly, insufficient air pressure
•Wet loads, more water collected than indicated	•Paddlewheel bushes worn	•Check paddlewheel
	•Wheel dirty, flowing over range	•Replace with new paddlewheel, recalibrate
•Dry loads, less water collected than indicated	•Requires recalibration test	•Set new calibration figure.
•Controller starts counting when power switched on	•Active and contact power drive short circuited	•Contactor fused due to excessive current draw from pump •Relay fused due to excessive current draw on solenoid coil - install higher current rated contactor or install contactor • Interference on pulse cable input –use shielded cable only.

ANY OTHER PROBLEMS REFER TO ME3000 USER MANUAL –Trouble shooting guide.

Sequential fault finding and rectification

1. If a another ManuFlo controller (any model) is available, simply unplug doubtful 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 ManuFlo controller. Remove the flow sensor and spin the paddlewheel. Check that the ManuFlo controller has registered a number of counts on its display. If so, the lectrical connections are probably OK. If no counts are registered, check that 12VDC is supplied to the flow sensor. If supplied, then switch off the ManuFlo controller and replace the RPFS flow sensor.
3. The flow sensor paddlewheel is jammed, damaged etc. (For servicing, refer to the flow sensor brochure).

If in further doubt, contact your local representative, or ManuFlo on ph +61 2 9938 1425 or 9905 432