

OPERATION AND MAINTENANCE MANUAL



@dose[®] Neutra
Electronic Metering Pump

Features

- Inbuilt pH controller
- Inbuilt pH transmitter
- Fuzzy logic for accurate online pH control
- With automatic dosing rate adjustment when there is a change in feed pH.
- Wetted parts suitable for most aggressive chemicals.
- Air bleed arrangement built in on the pump head.
- Double ball NRVs ensure long life.
- Wide operating voltage range (180-260V). Automatic voltage compensation to ensure dosing consistency.
- Low Level switch interlock facility available.
- Relay output - potential free for alarm (OPTIONAL)
- RS 485 output (OPTIONAL)

Specifications (Dosing Pump)

- Electrical supply : 230V AC ($\pm 10\%$) 50Hz
- Suction tubing : 4/6mm LDPE
- Discharge tubing : 4/6 mm LDPE
- Dosing rate: 1.5/3/6/10 LPH at 4 kg/cm


Specifications (Sensor)

- pH range: 2 -11 pH
- Body material : Glass
- Maximum operating pressure: 5 kg/cm²
- Cable length: 5 Mtrs
- Mounting thread: $\frac{3}{4}$ " BSPM

Scope of Supply

- Metering pump
- 3 meter suction/discharge tubing
- Foot valve with strainer
- Injection valve (NRV)
- pH sensor with 5 mtr cable.



- Sensor Holder
- O & M manual

 : sensor supplied is for clear water only; special sensors for polluted water are available on request

Material of Construction

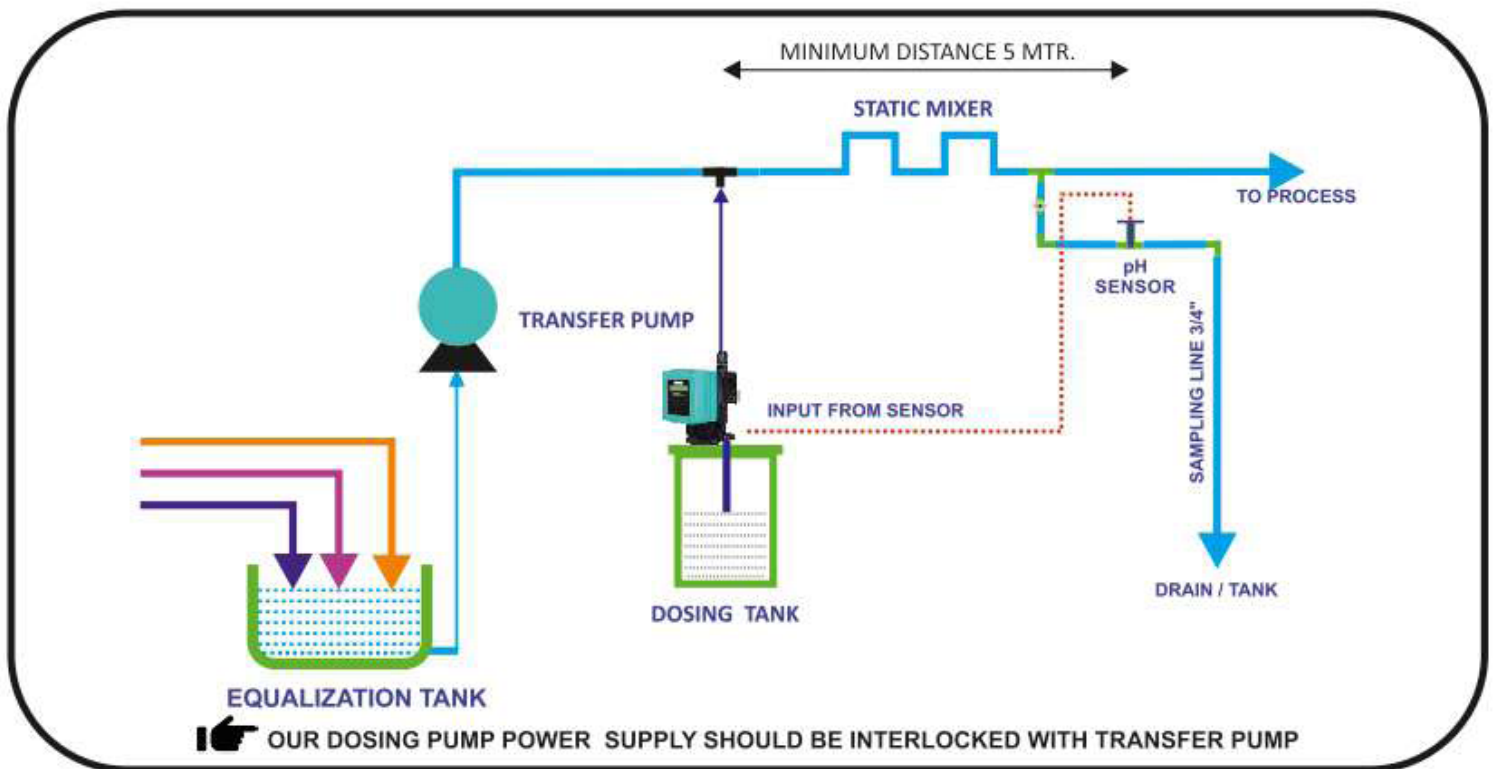
- Pump Head : GFPP
- Diaphragm: GFPP
- Suction/discharge connectors: GFPP
- Tubing : PE
- Ball seal: Viton/PTFE

Installation (Dosing Pump)


-  Always wear protective clothing, face shield, safety glasses and gloves when working on or near your metering pump. Additional precautions should be taken depending on the solution being pumped.
-  Pump is to be protected from sun and rain. If outdoor installation is unavoidable, provide a canopy over the pump. Pump should be accessible for routine maintenance and should not be subjected to ambient temperature above 50° C
- Flooded suction-: The pump is mounted at the base level of the storage tank. This installation is most trouble free and is recommended for low flow output and high viscosity solutions. Since suction tubing is filled with solution, priming is accomplished quickly and chance of losing prime is reduced.
- Suction lift-: When suction lift is less than 1.5 meter for solutions having a specific gravity of water. For denser solutions consult factory.
- The foot valve act as a check valve to keep the pump primed in suction lift applications.
- The valve is designed to submerge in the solution tank or drum and must sit in a vertical position at the bottom. Position approximately 2 inches off the bottom if the tank or drum contains sediment.
- Injection valve prevents back flow from the main line. When installing the injection valve, be sure to position it in vertical so that the valve enters the bottom of the pipe line.
- After cutting an appropriate length of tubing, connect tubing to injection valve and then back to the discharge side of the pump head.

Installation (Sensor)

- ⚠ Measurement cable is for special use, it's not allowed to cut or lengthened privately or Replaced by other cables.
- Sensing point should be at least 5 meter away from the injection point to ensure proper mixing.
- The Sensor is normally supplied with 20 NB sensor holder.
- The sensor should be mounted vertically in the line/sampling line.
- ⚠ The sensor must not be allowed to dry out during use or storage.
- Do not keep the sensor in distilled water.
- The sensor shall be connected in the pressurized line up to 5 Bar.
- Remove pH transmitter box cover on the pump and connect sensor to the PCB.
- Typical mounting set up schematic shown below,



Startup

- Plug the pump in to a 230V AC (Frequency 50Hz/60Hz) power source.
- The ON/OFF switch is used to switch the pump ON and Off.
- The pump will display the current pH value as PV and set point as SP after powered ON.
- Shift to the next screen by pressing  key

On the second screen pump will display the following,

- Mode of operation (Auto/Manual)
- Type of operation (acid/Alkali)
- Pump current output in percentage (0 – 100%)

Change flow rate (only in Manual mode)

- Press ◀ ▶ simultaneously then output start blinking
- Adjust output if required by using ▲ ▼ keys and press ○ key.

Setting Mode



Change Set Point

Press ◀ ▶ keys at the same time





Press ▲ keys to adjust set point



Press ▶ keys to shift the digit position.

Press ○ key to store the set point.


Pump Setting

Press   keys at the same time.

PASSWORD-000

Press   keys to enter Password 333


PASSWORD-333

Press  key to enter setting menu.

OPRN MODE :

Press  key




OPRN MODE : AUTO

Press  or  keys to select **Auto** or **Manual** mode and Press  key

CONTROL :

Press  key




CONTROL : ACID

Press  or  keys to select **Acid** or **Alkali** mode and Press  key

DISPLAY COLOR :

Press  key

DISPLAY COLOR-0.5

Press   keys to change the value if required and Press  key

PID SETTINGS ?




Press  key

PR GAIN:

Press  key

PR GAIN:020


Press  key

Press   keys to change the value if required and Press  key

INT GAIN:

Press  key


INT GAIN:001

Press  key (Do not change default value)

DER GAIN:

Press  key

DR GAIN:001

Press  key (Do not change default value)




EXIT ?

Press  key

RLY OPERN DELAY?

Press  key

RLY OPERN DELAY?
15

press   keys to change the value if required press  key.

QUIT?
15


Press  to Exit

INITIATIVE ENGINEERING
NEUTRA



Calibration

*Be ready with **7 pH** and **4** or **9.2** or **10** pH Buffer Solutions.

Press   keys at the same time.



PASSWORD-000

Press   keys to enter Password 123




PASSWORD-123

Press  key



CALIBRATE ZERO

Insert pH Sensor into **7 pH** buffer Solution and then press  key




CALIBRATE ZERO
ACT VAL 06.88

Press  key Controller will set ZERO Automatically.





CALIBRATE SPAN ?

Insert pH Sensor into **4** or **9.2** or **10** pH Buffer Solution and then press  key



CALIBRATE SPAN
ACT VAL 03.88

Press   keys to adjust as per Buffer Value.



CALIBRATE SPAN
REQ VAL 04.00

Press  key



EXIT ?

Press  key to Exit

Calibration

- pH sensors are electro chemical sensors and their sensitivity decreases with influence of time and medium. In order to get an accurate measurement, it is suggested to often calibrate sensor's slope. The recommended calibration period would be monthly.
- If the sensor is stored for a long time, please put the sensor in the water or KCL solution for 12 hours and then calibrate.
- Typically a two-point calibration is required for pH electrodes. Two standard buffer solutions are required (for example pH 7.0 and 4.0). Usually the buffer solutions are selected to bracket the later measurement range.
- Rinse off the electrode with water between measurements.

Sensor Maintenance

- Under normal conditions (e.g. clean medium, stable, non-extreme pH values) cleaning is recommended every 14 days with monthly calibration.
- Install a filter before sensor when there is molecule in the medium to protect

the pH glass bulb.

- Electrodes are naturally consumed by loss of salt from the reference system, etc. A drift in measured values after some time is therefore normal measuring behavior.
- If the measured values drift, the electrode must be cleaned and calibrated! ! Cleaning and calibrating cycles can be adjusted depending on the application and process parameters.

☛ Service life and warranty! All pH and redox electrodes are wear parts. Their operational capability ("service life") depends on care and conditions of usage! Depending on the application, the time until an electrode must be replaced could vary from a few days to several years.

☛ Warranty for Dosing Pump -:18 Months

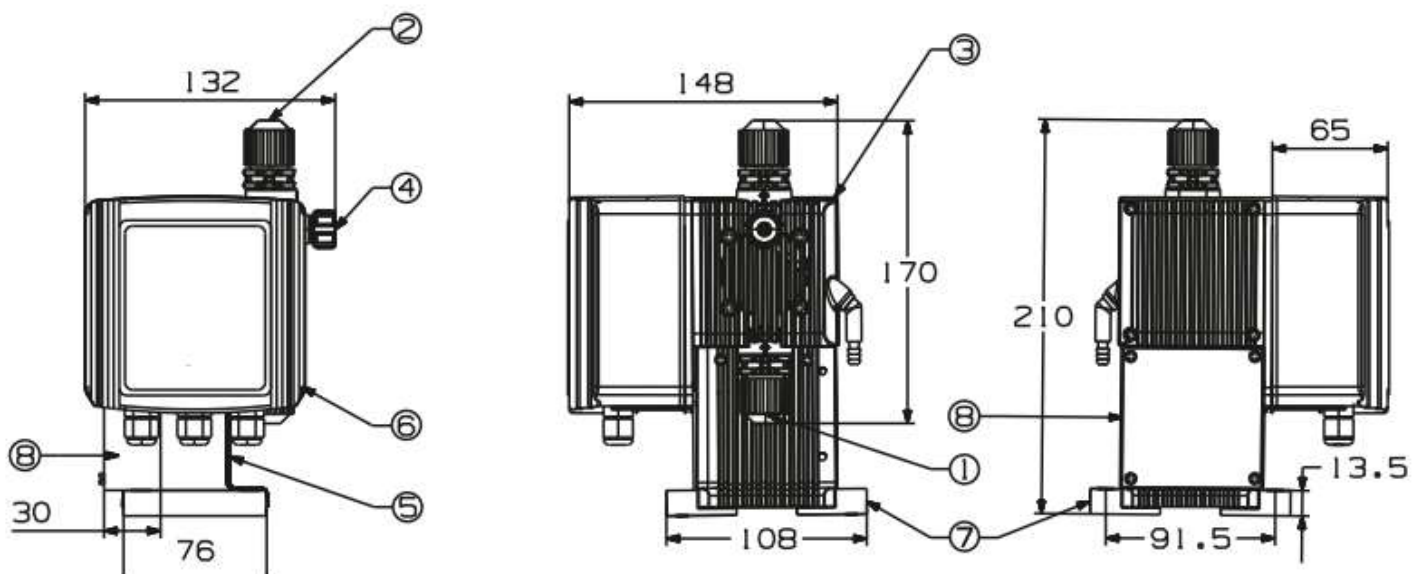
☛ Warranty for pH Sensor -:No Warranty

Trouble Shooting

Problem	Possible Causes	Trouble Shooting
No display when powered ON	A. Bad connection of power supply B. Instrument fault	Check to see if there is 230 VAC between power terminals B. Check by professional technicians.
Unstable Display	A. Sensor fault B. The cable is damaged C. Incorrect installation D. Calibration expired	a.Take out the sensor from the pipeline & calibrate B.Replace the sensor which cannot be calibrated C. Find the correct measurement point and use the flow device
Excessive Pump Output	Syphoning Little or no pressure at injection point Excessive strokes per minute	Move injection point to a pressurized point Make sure injection check valve installed properly Consult factory

Problem	Possible Causes	Trouble Shooting
Pump will not prime/loss priming	Pump not turned on or plugged In No demand as per the set point. Foot valve not in vertical position in the tank. Pump suction lift is too high Suction tubing is curved or coiled inside the tank Air trap in suction tubing No solution in the tank/container Airlock on suction side	Turn on the pump/plug in Prime the pump in manual mode Foot valve must be vertical Maximum suction lift is 5 feet. Suction tubing must be vertical Untighten the air bleed valve, run the pump till air trap is out then tighten. Refill the container/tank and reprime Check tubing for pinholes, cracks, replace if necessary
Low output or failure to pump against pressure	Pump maximum pressure rating exceeded by injection Worn seal rings & balls Ruptured diaphragm Tubing run on the discharge side may be too long Clogged foot valve strainer	Injection pressure cannot exceed pump rated pressure Check & replace Check & replace Longer tubing may create frictional losses sufficient to reduce pump pressure rating Clean or replace

GA Drawing



1.Suction Valve

2.Discharge valve

3.Dosing Head

4.Air Release valve

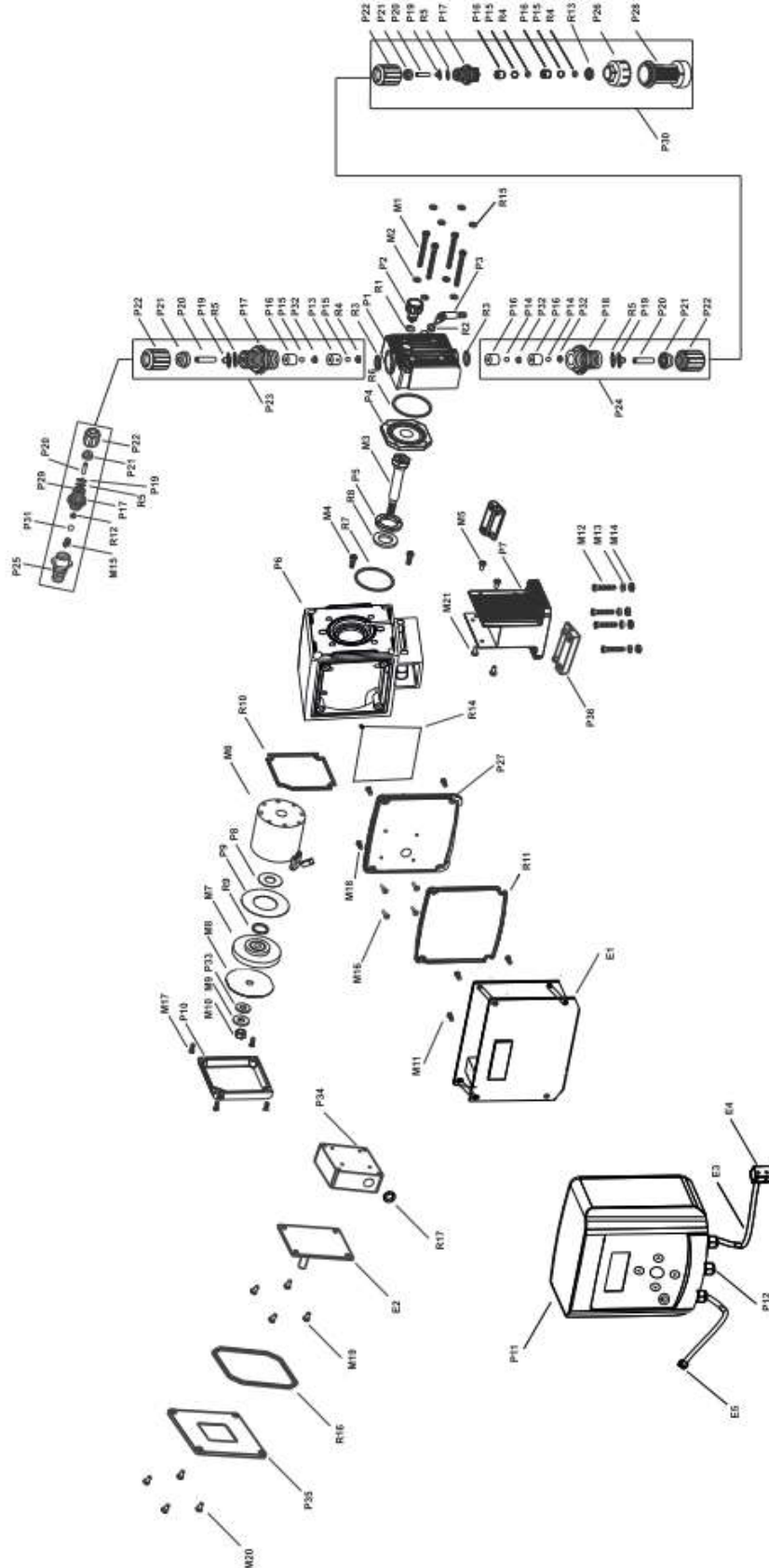
5.PCB Mounting Bracket

6.PCB Housing

7.Stand Clip

8.Transmitter Box

Exploded View



(ALL DETAILS SHOWN IN THE MANUAL ARE SUBJECT TO CHANGE WITH/WITHOUT NOTICE)



Part List

1	DOSING HEAD	P1	39	NRV BODY "O" RING	R5
2	AIR RELEASE VALVE	P2	40	DIAPHRAGM "O" RING	R6
3	ARV NOZZLE	P3	41	SOLENOID HOUSING "O" RING	R7
4	DIAPHRAGM	P4	42	PLUNGER WASHER	R8
5	DIAPHRAGM SPACER	P5	43	SOLENOID SPACER "O" RING	R9
6	SOLENOID HOUSING	P6	44	SOLENOID HOUSING COVER WASHER	R10
7	MOUNTING BRACKET	P7	45	PCB HOUSING WASHER	R11
8	PVC WASHER	P8	46	INJECTION VALVE ADAPT. WASHER	R12
9	PVC RING	P9	47	FILTER TOP CAP WASHER (14X19X2)	R13
10	SOLENOID HOUSING COVER	P10	48	SOLENOID HOUSING SQ. WASHER	R14
11	PCB HOUSING	P11	49	BOLT HEAD CAP	R15
12	GLAND	P12	50	TRANSMITTER HOUSING GROMMET	R16
13	DISCHARGE NRV BALL HOUSING	P13	51	TRANSMITTER BOX GASKET	R17
14	NRV BALL GLASS (DIA 6MM)	P14	52	PCB	E1
15	NRV BALL GLASS (DIA 6MM)	P15	53	pH TRANSMITTER	E2
16	NRV BALL HOUSING	P16	54	MAIN SUPPLY CABLE	E3
17	NRV BODY (DISCHARGE)	P17	55	2 WAY CONNECTOR	E4
18	NRV BODY (SUCTION)	P18	56	TRANSMITTER CONNECTOR	E5
19	NRV NOZZEL	P19	57	DOSING HEAD FIT BOLT (M4X40)	M1
20	TUBING	P20	58	DOSING HEAD FIT WASHER (M4)	M2
21	TUBING CAP	P21	59	PLUNGER	M3
22	TUBING CONNECTOR	P22	60	SOLENOID FIT. BOLT (M4 X 8)	M4
23	DISCHARGE VALVE ASSEMBLY	P23	61	MOUNTING BRACKET SCREW (M4X9.5)	M5
24	SUCTION VALVE ASSEMBLY	P24	62	SOLENOID ASSEMBLY	M6
25	INJECTION VALVE ADAPTOR	P25	63	SOLENOID SPACER	M7
26	SUCTION FILTER TOP CAP	P26	64	SS SPRING	M8
27	COUPLING PLATE	P27	65	SPRING FITTING WASHER	M9
28	FOUR RIB ADAPTOR	P28	66	SPRING FITTING NUT (M8)	M10
29	INJECTION VALVE ASSEMBLY	P29	67	PCB FITTING (M3X6.5)	M11
30	SUCTION FILTER ASSEMBLY	P30	68	BOLT (M6X20)	M12
31	INJECTION VALVE BALL (DIA. 8MM)	P31	69	WASHER (M6)	M13
32	SMALL STEP WASHER PTFE	P32	70	NUT (M6)	M14
33	PTFE PLUNGER WASHER (25X8.5X1.5)	P33	71	INJECTION VALVE SS SPRING	M15
34	TRANSMITTER BOX	P34	72	COUPLING PLATE FIT SCREW (M4X9.5)	M16
35	TRANSMITTER BOX CAP	P35	73	SOLENOID HSG COVER SCREW (M4X13)	M17
36	STAND CLIP	P36	74	PCB HSG. FITTING BOLT (M3X10)	M18
37	ARV BODY "O" RING	R1	75	TRANSMITTER FITTING SCREW (M4X6.5)	M19
38	ARV NOZZLE "O" RING	R2	76	TRANSMITTER HSG. PLATE SCREW (M4X9.5)	M20
39	DOSING HEAD "O" RING	R3	77	TRANSMITTER HSG. FITTING SCREW	M21
40	BALL SEAL	R4			