

Innovative Solutions for Healthy Living



Panama Water Management Pvt. Ltd.



PanamaBlue

Water Purification System

The PanamaBlue Water Purification System is a unique stand-alone system for supplying clean, safe and quality drinking water for small communities and emergency relief requirements. All operations are simple and easy to undertake and the unit can be setup for use quickly in rural or urban environments where poor quality raw water needs to be upgraded to high quality drinking water quickly.

Key Features:

- No Electricity required for treating water
- No Chemicals required for treating water
- Flow rate of upto 1000 liters per hour
- Unlike RO's there is No Wastage of Scarce Water
- Portable (Dry weight of 16kgs)

Operational Advantages:

- Lifespan of upto 10 years with proper maintenance
- Easy to Install and Operate
- Training requires less than 1 hour
- Units can be clubbed to increase output
- Low O & M costs

Installation Opportunities:

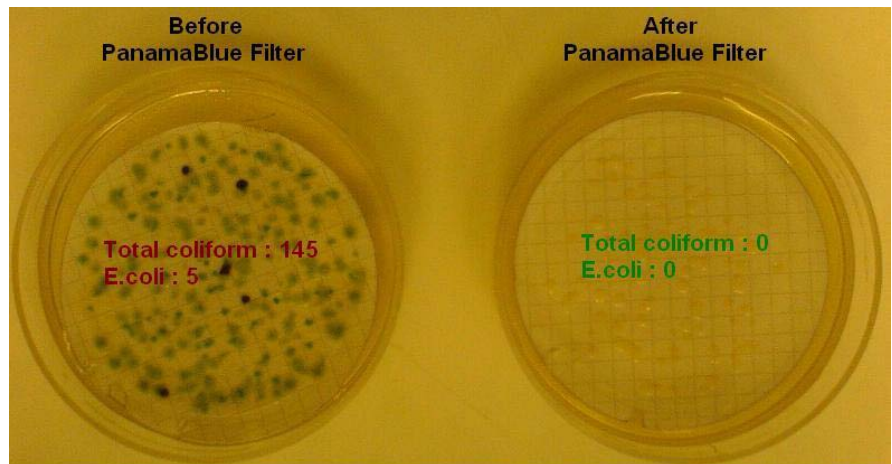
- Temporary Labour Camps
- Urban Slums
- Refugee Camps & Disaster Relief
- Remote Campsites
- Military Bases
- Villages & Small Towns
- Functions & Festivals
- Religious & Pilgrimage Centers
- Schools & Educational Institutes
- Residential Housing
- Clubs & Recreational Centers
- Pre-Filters for RO Systems



Suitability of Local Water

Not all water is suitable for filtering through the PanamaBlue unit and testing for unsuitable contaminants should be undertaken before use.

YES – The PanamaBlue unit **will significantly remove** biological contaminants and pathogens including bacteria, viruses, protozoa, cysts, parasites, etc., making the water safe to drink.



YES – The PanamaBlue unit **will remove** turbidity and dirt from the water. However, the dirtier the water, the more often the filter needs cleaning to remove sediments on the filter fibres.

NO – The PanamaBlue unit **will not remove** dissolved salts, chemicals and minerals. If these are present at unsafe levels, additional treatment will be required.

Adding Chlorine to Drinking Water Tanks:

Water produced from the PanamaBlue unit is free of biological organisms and safe to drink; however, prolonged storage of this water in tanks may cause deterioration in water quality. In hot climates, tank water may stay safe for a few days whereas in colder climates it may stay safe for weeks.

To maintain water quality it is good practice to disinfect drinking water tanks and water pipes with a small amount of Chlorine to prevent the growth of unwanted pathogens and organisms in the stored water. Add sufficient Chlorine into the drinking water tanks to maintain a residual free Chlorine level of between 0.2 and 0.5 mg/L. As a guide for every 1000 L of tank water, add about $\frac{3}{4}$ teaspoon of Chlorine powder (at 65% available Chlorine) or 1 $\frac{1}{2}$ teaspoons of Chlorine powder (at 35% available Chlorine). First mix the Chlorine in a small bucket of water to make a solution before adding to the water tank.

Operation & Maintenance:

The PanamaBlue systems robustness results in O&M costs being negligible. A simple 2-3 minute daily manual agitation using the Cleaning Handles on the top of the unit is sufficient for cleaning the membrane and backwashing the unit. An additional monthly recommended chlorine disinfection wash takes just 2-3 hours allowing the operator to maximize the on-line time.

Certified By:



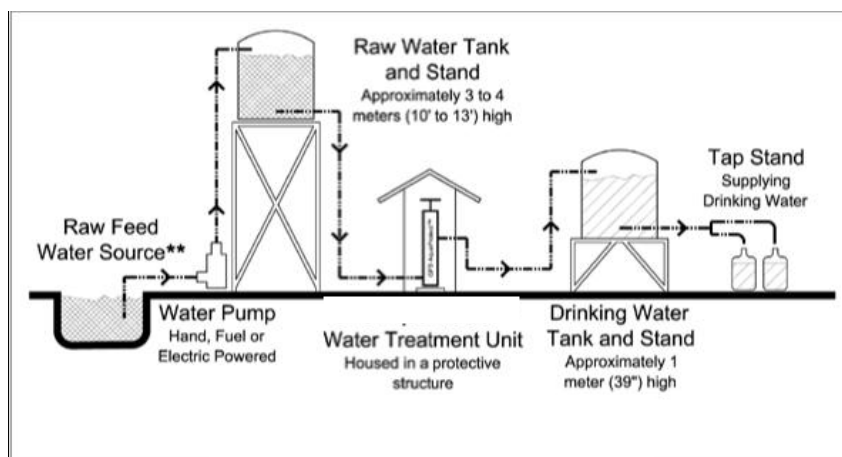
Site Requirements:

For the PanamaBlue unit to operate properly it may require additional equipment such as hoses, pipes, pumps, storage tanks, pressure regulators and taps depending on the individual site requirements.

Installations where roof water tanks are available allows the unit to become an 'in-line filter' connected to the existing water supply system while other installations will require more extensive site work and equipment.

How the PanamaBlue unit works:

The unit *requires no power* to operate and instead relies on gravity water pressure. Raw water flows through the unit with a water head pressure of between 2 to a maximum of 4 meters (0.2 to 0.4 bar (3 to 6 psi)) to produce upto 1000 liters of quality drinking water per hour subject to the quality of the source water. One possible configuration:



Note: Never pump or connect mains water pressure directly to the PanamaBlue unit without a pressure regulator as excessive pressure can damage the filters fibres.

Help and Support

Please contact Panama SGI Water Management Pvt. Ltd. if you have any questions. Our team is always ready to help answer your queries.

Operating Instructions

Where to setup the PanamaBlue unit:

- To prevent theft, vandalism and damage the unit must be installed inside a closed room or shed sheltered from the sun, rain, wind and other elements.
- Mount the unit in a sturdy position with sufficient space around it for maintenance and cleaning.
- Provide good access for people to line up and collect water without problems.
- Ensure the area around is clean and clear of stagnant water and backwash liquids can drain away.
- The PanamaBlue unit is a valuable asset and requires daily care for continued operation. A local trained supervisor should be appointed to oversee operations. A daily operations log should also be maintained.

Assembling the PanamaBlue unit:

1. Screw in the Cleaning Handles to the top of the unit.
2. The unit can be setup to operate as a wall mounted unit or as a free standing unit. Brackets for mounting and legs for standing are supplied along with the bolts and screws needed.
3. All fittings use 20mm (3/4 inch) connectors and clamps and fittings are supplied to assist in connecting pipes. Taps **T1** and **T2** can be folded down.
4. Connect the dirty water pipe to **T1**, the backwash pipe to **T2** and the drinking water outlet pipe to **T3**.
5. It is good practice to soak and flush drinking water containers, hoses, taps and other equipment with a 0.1% chlorine solution to eliminate residual contamination (1 teaspoon of chlorine powder per 5L of water).



Internal Filter Module

The filter module is permanently located inside the PanamaBlue and does not need to be accessed or replaced providing it is maintained in accordance with instructions. Raw water entering the unit should not contain any sharp objects, unsuitable chemicals, minerals or excessive turbidity.

Regular cleaning of the unit is essential for maintaining a continuous flow of quality drinking water.

Operating the PanamaBlue unit:

1. To ensure the correct flow of water is maintained turn off all taps before commencing on each step below.
2. Open **T1** (dirty water in) and **T4** (vent). This fills the unit with dirty water.
3. Close **T4** (vent) when water flows out and briefly open **T6** (air purge) to clear the lines of any trapped air.
4. Open **T1** (dirty water in) and **T3** (clean water out) to commence the flow of quality drinking water.

Manual Cleaning (Daily):

Undertake manual cleaning at least once a day or more often if the outflow of water slows.

1. Fill the unit with raw water and turn off all taps.
2. Rotate the Cleaning Handles 3 times anticlockwise to release the O ring seals.
3. Move the Cleaning Handles back and forth vigorously for 1 minute. This agitates and cleans the filter module inside. Some leakage of water may occur around the rotating shaft – this is not a problem.
4. Open T4 (vent) and T2 (backwash out) to allow the backwash water to drain out. Continue moving the Cleaning Handles during this stage.
5. If necessary repeat till the backwash water is the same colour as the dirty water being treated.
6. Rotate the Cleaning Handles 3 times clockwise to reseal the O rings.
7. The Manual Cleaning procedure is now complete and one can restart the unit as per the Operating Instructions.

Manual Cleaning Diagrams

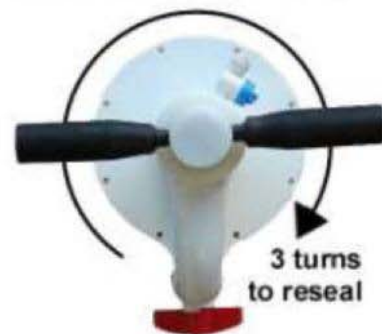
- 1) Rotate the Cleaning Handles three turns anticlockwise to release the O ring seal



- 2) Move the Cleaning Handles back and forth vigorously for 1 minute to clean



- 6) Rotate the cleaning Handles three turns clockwise to reseal the O ring



Chemical Cleaning (Monthly):

Chemical cleaning should be done once a month or more often if the flow of drinking water slows. It is done using Chlorine to remove organic and other matter not easily removed by Manual cleaning. Chlorine comes as dry granules (eg. Calcium Hypochlorite or Sodium Hypochlorite). To make a chlorine solution of the required 0.1% Chlorine and doing the Chemical cleaning the following procedure should be followed:

1. Undertake a Manual cleaning but do not refill the PanamaBlue unit with water.
2. Fill the Chlorine Tank with water till $\frac{3}{4}$ full.
3. Add Chlorine to the Chlorine Tank and use a mixing stick to stir until dissolved. Choose only one of the options below:
 - 2 teaspoons of chlorine powder with 65% available chlorine (700g/kg)
 - 3 teaspoons of chlorine powder with 55% available chlorine (550g/kg)
 - 4 teaspoons of chlorine powder with 35% available chlorine (350g/kg)
 - 6 teaspoons of chlorine powder with 25% available chlorine (250g/kg)
 - 100ml of liquid chlorine (Sodium Hypochlorite) with 12% of available chlorine.
4. Open **T5** (Chlorine) to allow the Chlorine Tank to drain, then close **T5**.
5. Fill the PanamaBlue unit with water by opening **T1** & **T4** until water flows out of **T4** and then close both taps.
6. Move the Cleaning Handles back and forth a few times to mix the Chlorine inside the unit.
7. Leave to soak for at least 2 hours.
8. Next do a manual cleaning to remove the Chlorine solution.
9. The chemical cleaning is now complete. The unit can now start working



Note: if high amounts of Iron are present, use 500gms of Citric Acid to clean instead of Chlorine after the Chemical cleaning process is completed. In addition Chlorine is a dangerous compound and should be used only after taking all necessary precautions.

PanamaBlue unit Technical Specifications:

Dry Weight	12 kgs
Height	143 cms
Width	18 cms
Length	25 cms
Average Flow Rate ¹	500 – 700 L/hr
Maximum Flow Rate ¹	1000 L/hr
Fibre Material	PVDF (Polyvinylidene Flouride)
Fibre outside Diameter	800μ
Number of Fibres per element	500
Membrane pore size	0.1 μ
Recommended Feed Pre-screening size	500 μ / 0.5mm
Maximum recommended Raw Water Turbidity ²	500 NTU
Filtered Water Turbidity	< 0.1 NTU
Log Reduction Value for particles 2-5 9m	>4 LRV
Operational pH range	2 - 10
Bacteria & Cyst Removal	LRV >4+ (normally LRV 6)
Virus Removal	99.97%
Iron & Manganese	Removed if Oxidized first or Colloidal
Arsenic Manganese	Removed if Oxidized first
Minimum Differential Pressure	0.5 m
Maximum Differential Pressure ³	4 m
Recommended operating Temperature Range	0° to 40°C
Maximum operating Temperature	45°C
Recommended operating pH Range	2 – 10
Maximum operating pH	10.5
Recommended Chlorine exposure during cleaning	200 ppm
Maximum Chlorine exposure during cleaning	1000 ppm
Membrane Lifespan ⁴	Upto 10 years

¹ Flow rates achieved depend on the input water quality.

² Unscreened or coarse raw waters can increase membrane wear-and-tear and reduce operating lifespan.

³ Differential Pressure above permitted can damage the membrane fibres.

⁴ Lifespan is dependent on raw water quality, proper maintenance and cleaning.