

# SUPPLY SYSTEM

Collecting water manually is labor intensive. This time can be used more productively, such as for education. New opportunities arise such as water delivery or creating a water management committee, leading to increased self-governance.



Water selling business

Mobile device charging service (If unit is equipped with solar power system)



Purified water leads to improved hygiene. This lowers the risk of diarrhea, among other illnesses caused by lack of sanitation.



- Diarrhea
- Fever
- Stomachache
- Skin Problem

through provision of safe water.



# YAMAHA CLEAN WATER SUPPLY SYSTEM



# YAMAHA CLEAN WATER SUPPLY SYSTEM

## Specifications

| Model  | YCW-008A  | YCW-002A                                   |
|--|---|--|
| Purification method                            | Physical filter + Biological filter + Chlorine disinfection |  |
| Standard installation measurements             | Total length : 10m X 7m Total height : 2m                   | Total length : 4m X 3m Total height : 2.4m |
| Basement                                       | Concrete foundation   | Plastic pallet (included in parts)         |
| Total weight *Including water and filter media | Approximately 27 tons                                       | Approximately 7 tons                       |
| Transportation of YCW *Including filter media  | 20FT container X 2  | 20FT container X 1                         |
| Water supply *24 hours                         | Approximately 8,000 liters                                  | Approximately 2,500 liters                 |
| Households *5 people/household                 | 400 households  | 125 households                             |
| Stored water                                   | Approximately 3,000 liters                                  | Approximately 600 liters                   |
| AC Power                                       | Single phase 220-240V                                       |  |
| Operation time                                 | 24 hour full-auto operation                                 |  |
| Electric power consumption *24 hours           | Approximately 5.5 kWh                                       | Approximately 1.7 kWh                      |
| Pump   | 4 (suction, 2 X supply, chlorine)                           | 1 (suction)                                |
| Water level sensor                             | 4   | 1  |
| Chlorine solution supply                       | Automatic   | Manual                                     |

● Specifications are subject to change without notice. ● Due to factors such as specification changes, actual products may be different in some aspects from those pictured or described here. ● Be sure to read the owner's manual thoroughly before using to ensure proper use.

| Items            | Allowance values in Raw Water | Values after purification by YCW | Guideline of drinking water by WHO |
|------------------|-------------------------------|----------------------------------|------------------------------------|
| Turbidity        | 300 NTU                       | 5 NTU                            | 5 NTU                              |
| Color            | 470 CU                        | 15 TCU                           | 15 TCU                             |
| Iron             | 1 mg/L                        | 0.3 mg/L                         | 0.3 mg/L                           |
| Manganese        | 1 mg/L                        | 0.1 mg/L                         | 0.1 mg/L                           |
| Aluminum         | 0.4 mg/L                      | 0.2 mg/L                         | 0.2 mg/L                           |
| Ammonia          | 3 mg/L                        | 1.5 mg/L                         | 1.5 mg/L                           |
| Coli forms       | 600 /100 mL                   | 0 /100 mL                        | 0 /100 mL                          |
| Total coli forms | 32,000 /100 mL                | 0 /100 mL                        | 0 /100 mL                          |

● NTU (nephelometric turbidity unit) is a turbidity unit defined by WHO water quality guidelines. ● CU (color unit) is a unit of chromaticity. Here, it refers to the appearance color. ● TCU (true color unit) is an absolute color unit defined by WHO water quality guidelines. ● The following items cannot be purified by the Yamaha Clean Water Supply System. - Sea water, agricultural chemicals, heavy metals/organic and inorganic substances other than those specified above. ● The above table indicates the removal rate when microorganisms are maintained in an optimal matured state at Yamaha's test site.



Yamaha delivers safe water

Environmentally-friendly system using slow sand filtration

Easy maintenance

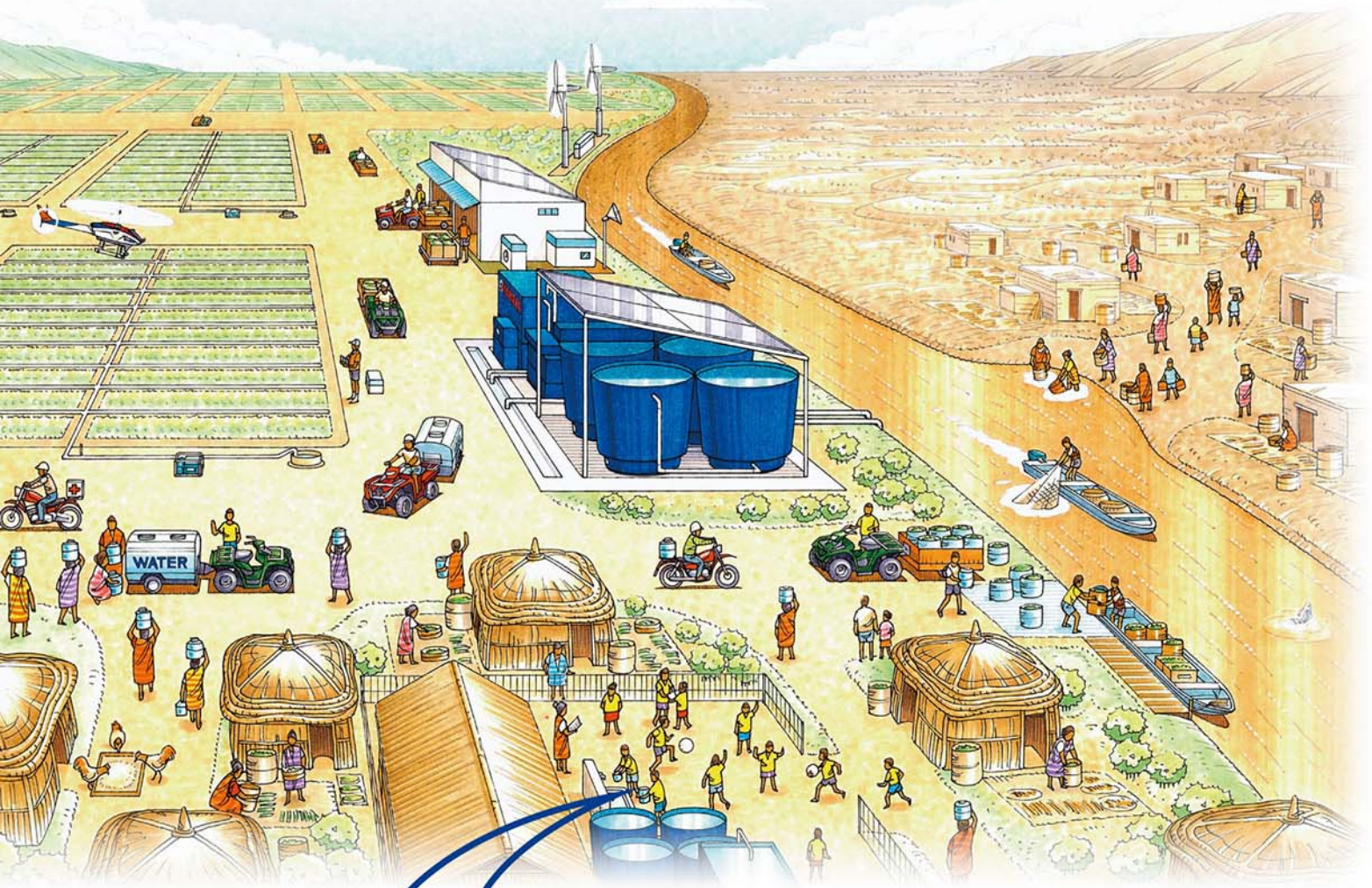
Low running cost



# YAMAHA CLEAN WATER

# SUPPLY SYSTEM The environmentally friendly "slow sand filtration" system

The Yamaha Clean Water Supply System is a water purification system that adds improvements to the "slow sand filtration" method that has been used in many regions of the world. It is an environmentally friendly system because it uses no coagulant chemicals or filters, and it has the capacity to purify 8,000 liters (enough to supply a community of 400 households for 1 day) of surface water daily from sources such as rivers, lakes or ponds. Another big advantage of the Yamaha Clean Water Supply System is its simple structure and easy maintenance.



## YCW-008A



## YCW-002A

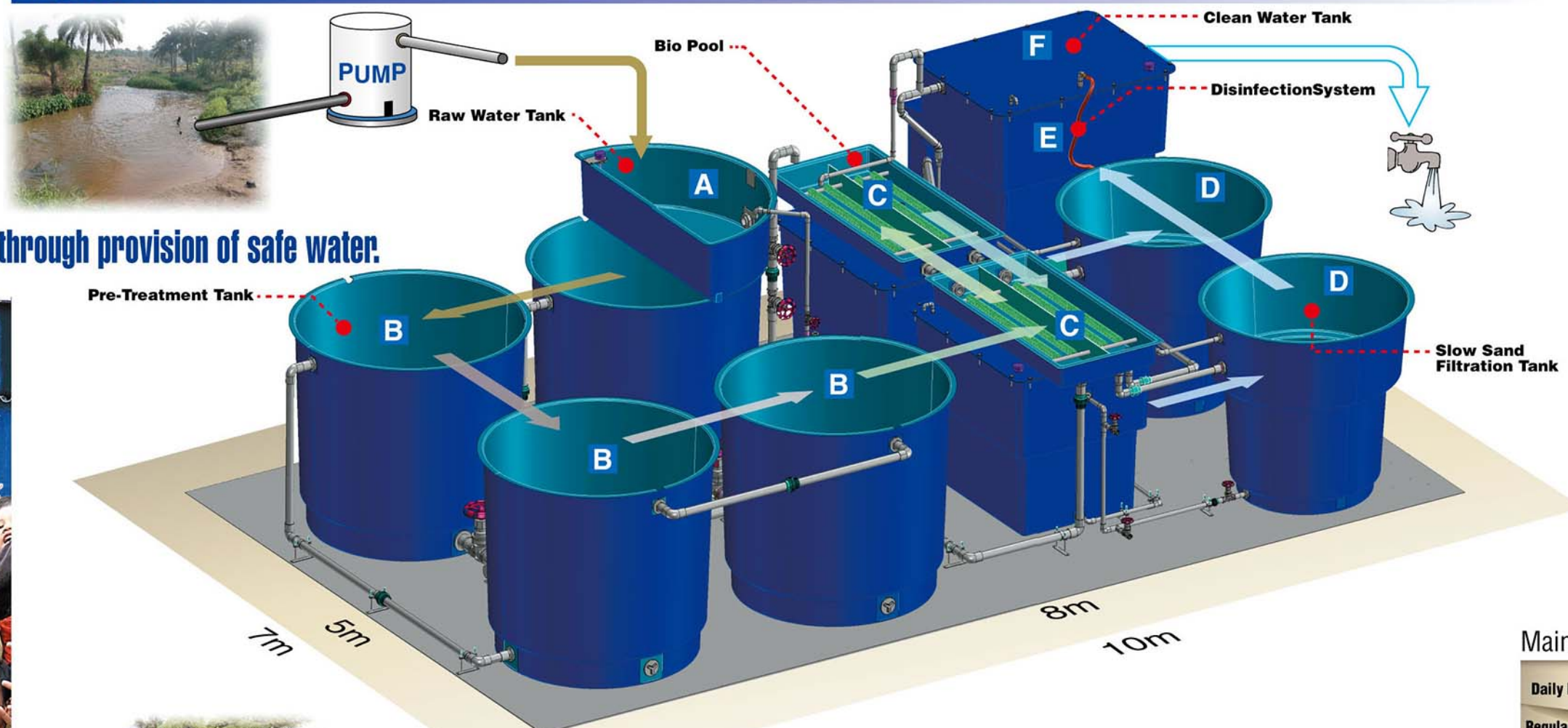


### Feature

| Item                         | Slow sand filtration<br>YCW-008A         | YCW-002A | Rapid filtration   | Membrane filtration                    |
|------------------------------|--|----------|--|--|
| Filtration system            | Microorganism and sand                   |          | Coagulants and sand  | Membrane                               |
| Maintenance                  | ○ No expert staff required               |          | △ Expert staff required  | △ Expert staff required                |
| Running cost                 | ○ No need to change gravel and sand      |          | △ Supply coagulants  | △ Change membrane                      |
| Energy required by main unit | ○ None (water flows downwards naturally) |          | △ Need to supply coagulants / Sand must be rinsed requiring more water pumping | △ Water delivery by high pressure pump |
| Filtration speed             | △ Slow (4-5m/day)                        |          | ○ Rapidly (120~150m/day)   | △ Depend on the filter type            |
| Wastes                       | ○ Drain water                            |          | △ Sludge including coagulants  | △ Old membranes, untreated water       |

\*According to our survey

### FLOW CHART



- A Raw Water Tank**  
Storage of raw water
- B Pre-Treatment Tank**  
Prior reduction of mud ingredients.
- C Bio-Pool**  
Increase in dissolved oxygen levels by photosynthesis of algae
- D Slow Sand Filtration Tank**  
Harmful bacteria is reduced and turbidity and color ingredients are reduced with sand and microorganism.
- E Disinfection System**  
Disinfect and prevent deterioration of purified water
- F Clean Water Tank**  
Storage of purified water

Change for the better and developing livelihoods through provision of safe water.

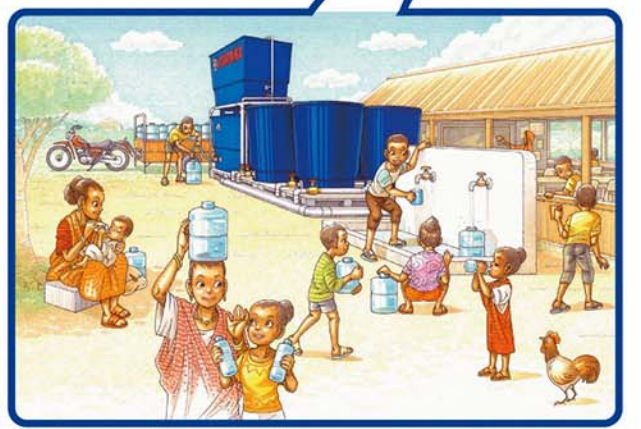
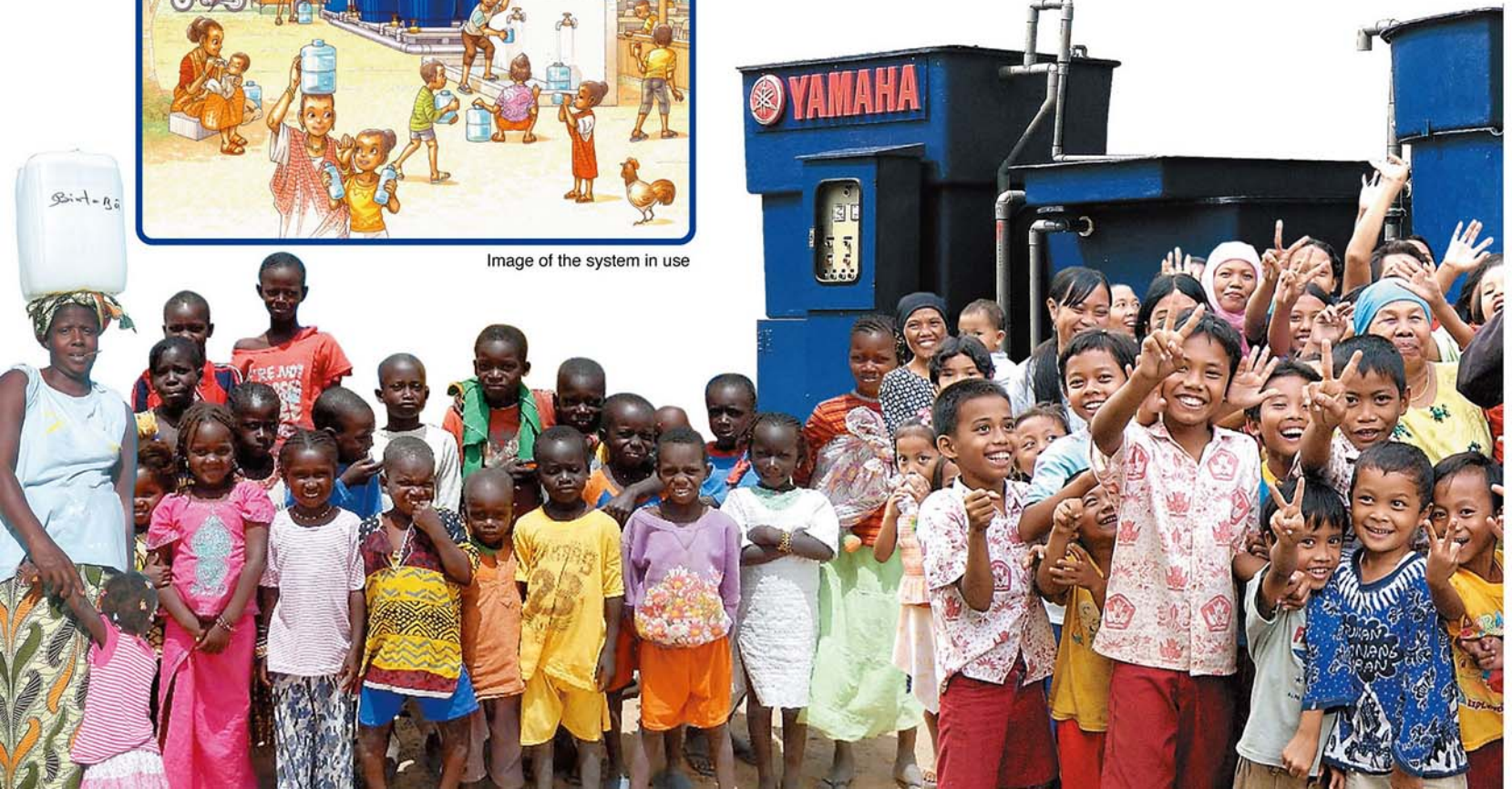


Image of the system in use



### Installation Process

|    |  |  |
|----|--|--|
| 01 | <b>SURVEY</b>                          | • Check raw water quality • Check installation site etc.   |
| 02 | <b>QUOTATION</b>                       | • Yamaha Clean Water Supply System • Local construction  |
| 03 | <b>CONTRACTS</b>                       | • Contract with concerned parties • Confirm necessary permits  |
| 04 | <b>LOCAL CONSTRUCTION</b>              | • Foundation for basement • Electricity supply • Intake • Drain  |
| 05 | <b>SET UP</b>                          | • Install the Clean Water Supply System, and water running test (1 week) • Stabilize water quality (2-3 weeks) |
| 06 | <b>TRAINING</b>                        | • Maintenance training (1 day)   |
| 07 | <b>WATER QUALITY CHECK / HAND OVER</b> | • Water quality check by official organizations (2 weeks) • Transfer ownership from Yamaha to purchaser        |

### Basic Requirements

|    |   |   |
|----|---|---|
| 01 | Piping distance from raw water intake to YCW          | <b>Within 300m</b><br><small>(In case exceeded, will investigate if it applicable with additional water pump.)</small>  |
| 02 | Elevation difference between raw water intake and YCW | <b>Within 10m</b><br><small>(In case exceeded, will investigate if it applicable with additional water pump.)</small>   |
| 03 | Measurements  | <b>YCW-008A : 10m x 7m, YCW-002A : 4m x 3m</b>  |
| 04 | AC Power  | <b>Single phase 220-240V*</b>   |
| 05 | Raw water quality                                     | <b>Raw water shall not contain</b><br>- sea water, -heavy metals, -agricultural, -industrial wastewater<br><small>*Solar power system can be fitted if no electricity is available.</small> |

### Maintenance

|                              |   |                         |
|------------------------------|---|-------------------------|
| <b>Daily Maintenance</b>     | Check: water intake, power supply, total system, water flow rate<br>Cleaning: bio-pool, slow sand filtration tank<br>Water quality check: transparency, odor, taste Drain: raw water tank, pre-treatment tank | <b>Everyday</b>         |
| <b>Regular Maintenance 1</b> | Water quality check: pH, residual chlorine<br>Refill chlorine solution  | <b>Once a week</b>      |
| <b>Regular Maintenance 2</b> | Sand scrape: slow sand filtration tank  | <b>Every 3-4 months</b> |
| <b>Regular Maintenance 3</b> | Sand scrape: pre-treatment 4th tank,<br>Cleaning: raw water tank, clean water tank, overflow tank and bio-pool  | <b>Every 6 months</b>   |
| <b>Water Quality Check</b>   | Request water quality check to official organizations according to local regulations  | <b>Every 6 months</b>   |

\*Each item requires approximately one hour.