BENCHO

BENCHO VACUUM FEED CHLORINATOR

Manufactured, Supplied & Commissioned by :

JEEKEY

28/331/7, AQUATIC COMPLEX
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WARNING

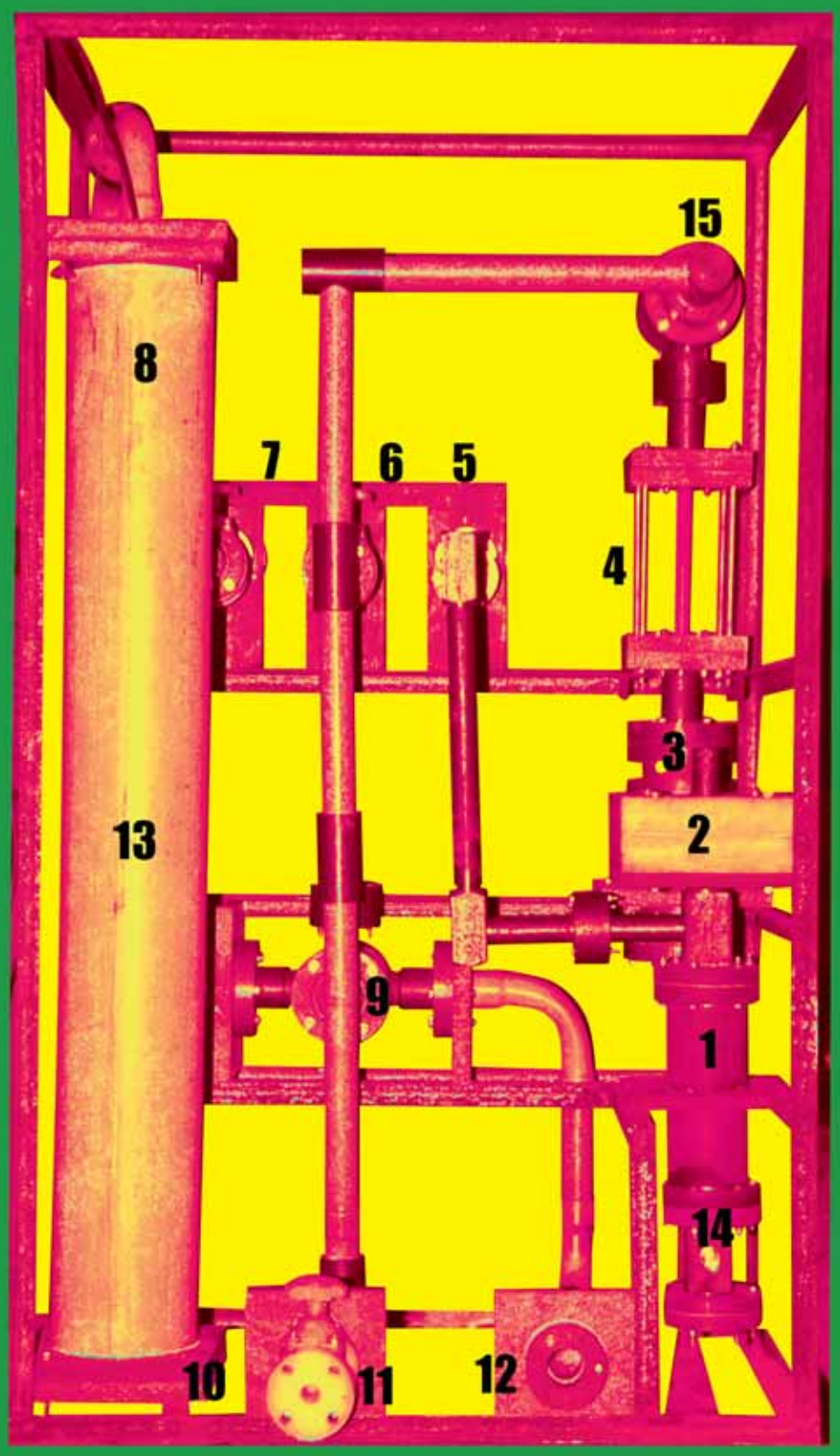
1. CHLORINE IS A DANGEROUS GAS, BUT AN ECONOMICAL SOLUTION FOR DRINKING WATER PURIFICATION
2. OPEN ALL WINDOWS AND DOORS OF THE CHLORINATOR ROOM AND PUT ON EXHAUST FANS BEFORE STARTING CHLORINATION
3. CHECK THE CHLORINE LEAK BY AMMONIA TORCH
4. MAJOR LEAK SHOULD BE INFORMED TO THE HIGHER AUTHORITIES IMMEDIATELY

COMMITMENT TO NATURE

BENCHO

CORROSSION PROOF CHLORINATOR

SEMI AUTOMATIC VACUUM FEED MODEL



1. Primary Chlorine Gas Filter
2. Automatic Vacuum Regulator
3. Secondary Chlorine Gas Filter
4. Rotameter
5. Chlorine Pressure Guage
6. Vacuum Pressure Guage
7. Water Pressure Guage
8. Submersible Pumpset Chamber
9. Injector Assembly
10. Water Inlet
11. Drain Valve
12. HOCL Outlet
13. Submersible Pumpset
14. Chlorine Inlet
15. Chlorine Control Valve

BENCHO

CORROSSION PROOF CHLORINATORS

FOR DISINFECTION OF POTABLE WATER AND SWIMMING POOL WATER

Bencho chlorinator has been designed as per IS:10553 part II 1983 specification by taking into account of its physical and chemical properties - viz its reaction with metal, solubility in water, behaviour at different temperature and its hazards.

Chlorine gas, greenish yellow in colour, two and half times heavier than air reacts with almost all metals. Hence we are using only Teflon, Silver, Hastalloy-C the highly resistant engineering alloys for chlorine gas. In our chlorinator chlorine gas is passing through filters and valves made out of Teflon. Since the Teflon is having very low mechnical strength we are using PVC composite FRP for outside protection.

PURPOSE OF CHLORINATION FOR POTABLE AND SWIMMING POOL WATER

Certain diseases like infectious Hepatits, Typohoid, Cholera etc. are caused through impure water. In addition, some types of bacteria cause distaste and impart colour and odour to water. The only and readily available and economical solution for the above is chlorination.

Surface water resources, normally are polluted. It needs extensive and thorough treatment and to meet this requirement chlorination is performed.

Chlorine when added to water takes 15-30 minutes of retention time to reach with all substances present in water.

DESIGN & OPERATION

Bencho Make Vacuum feed Chlorinators are having the latest Vacuum Technology. This semi automatic Chlorinator will develop the required vacuum (300hg) with a water pressure of just 0.5kg/cm^2, which is sutible for upto 5kgs/hr Chlorinator. The Chlorine gas from the cylinder enters the chlorinator where it is filtered to remove any foreign material which might be present. Water under pressure flows through the injector at high velocity and causes a vacuum which opens a spring opposed check valve opens, a vacuum signal is carried to the vacuum regulator, mounted on the cabin. This vacuum vauses the daiphragm to open the chlorine inlet safety valve to admit the gas into the regulator. The spring-opposed dia-phragm regulates the vacuum at this point.

The gas passes through the flowmeter and the rate control valve and then to the injector where the chlorine is thoroughly mixed and dissolved in the water and carried to the application point as a solution. If the water supply to the injector is stopped, or the

operating vacuum is lost for any other reason, the spring loaded gas inlet valve immediately closes to isolate the chlorinator from the gas supply, any gas, under pressure which might enter the regulator is vented from the system through built-in pressure relief valve. If the source of chlorine gas is exhausted or the gas line plugged and excess vacuum valve in regulator closes to prevent any moisture being pulled back into the regulator or the gas supply lines. The ejector is provided with a diaphragm operated back check valve to insure that water does not leak back into the regulator when the system is shut down.

OPTIONAL FACILITIES AND GUARANTEE

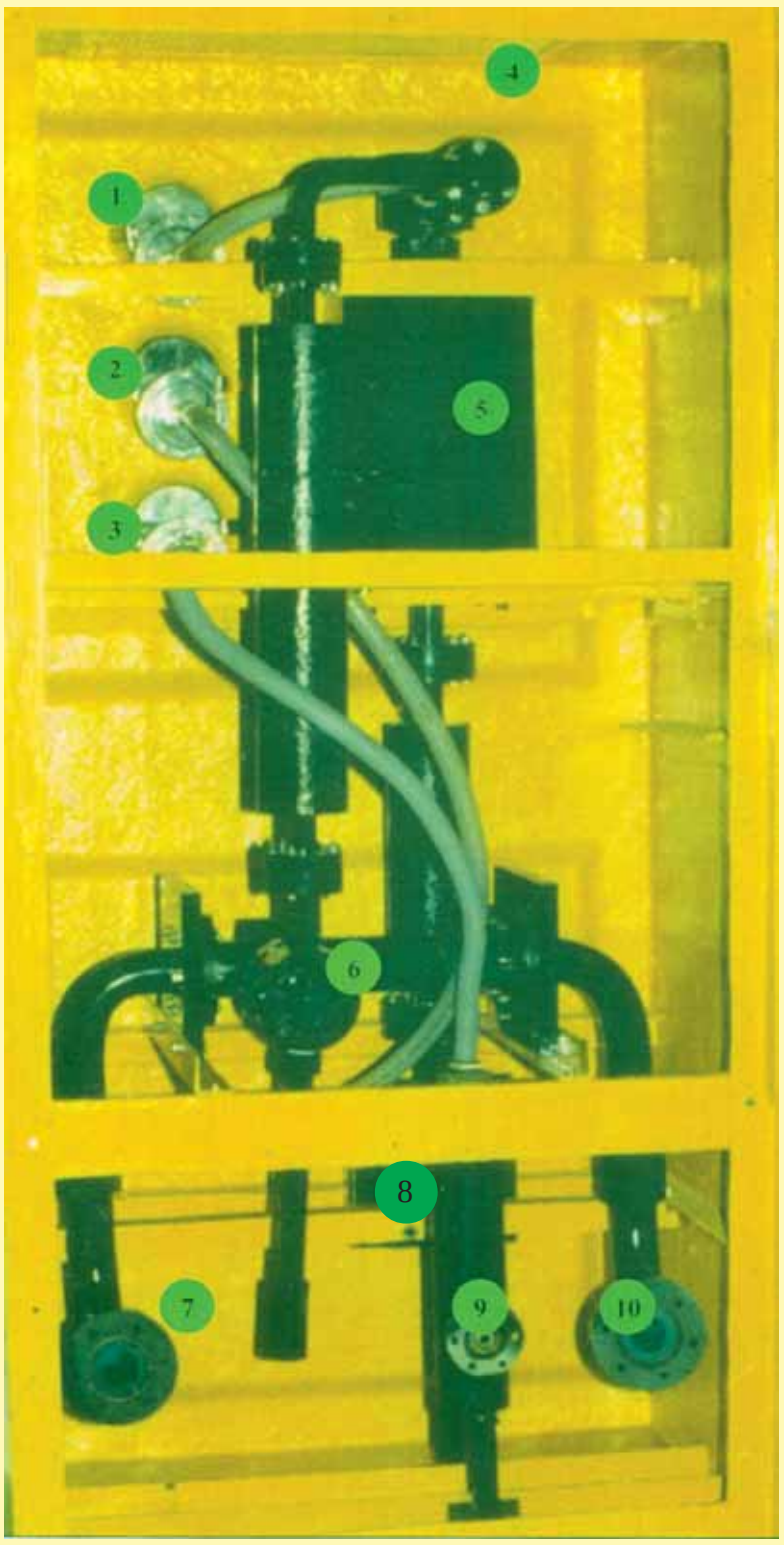
We can supply a chlorinator with automatic regulation. This automatic regulator will stop the entire chlorination if found any leakages in the plant. It also will give an alarm to the operator.

We take utmost care in manufacturing our chlorinators. The equipment is guaranteed for a period of five years against any manufacturing defects. If found any fault due to materials or workmanship during guarantee period we will replace the equipment immediately on free of cost.

BENCHO

COMMITMENT TO NATURE

BENCHO



1. Vacuum Pressure Guage
2. Water Pressure Guage
3. Chlorine Pressure Guage
4. Chlorine Controle Valve
5. Rotameter
6. Vacuum Generator
7. Water Inlet
8. Automatic Vacuum Regulator
9. Chlorine Gas Filter
10. HOCL Outlet
11. Submersible Pumpset
12. PVC Chamber

BENCHO

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The gas passes through the flowmeter and the rate control valve and then to the injector where the chlorine is thoroughly mixed and dissolved in the water and carried to the application point as a solution. If the water supply to the injector is stopped, or the

operating vacuum is lost for any other reason, the spring loaded gas inlet valve immediately closes to isolate the chlorinator from the gas supply, any gas, under pressure which might enter the regulator is vented from the system through built-in pressure relief valve. If the source of chlorine gas is exhausted or the gas line plugged and excess vacuum valve in regulator closes to prevent any moisture being pulled back into the regulator or the gas supply lines. The ejector is provided with a diaphragm operated back check valve to insure that water does not leak back into the regulator when the system is shut down.

OPTIONAL FACILITIES AND GUARANTEE

We can supply a chlorinator with automatic regulation. This automatic regulator will stop the entire chlorination if found any leakages in the plant. It also will give an alarm to the operator.

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MODEL KRG 105

WALL MOUNTED/CYLINDER MOUNTED GAS CHLORINATOR

The KRG Model 105 Wall Mounted/Cylinder Mounted Chlorinator is a vacuum operated, solution feed chlorinator, designed to provide continuous and constant measured quantity of gas while in operation. It is suitable for use with Chlorine, Sulphur Dioxide or Ammonia Gas, intermittent “Stop/Start” control or automatic “shut off” can be achieved by interruption of the motive water supply.
These units are ideally suited for Water and Water Treatment applications, Food Processing, Swimming Pools, Recirculating Water Systems, Control of Algae and Odour.

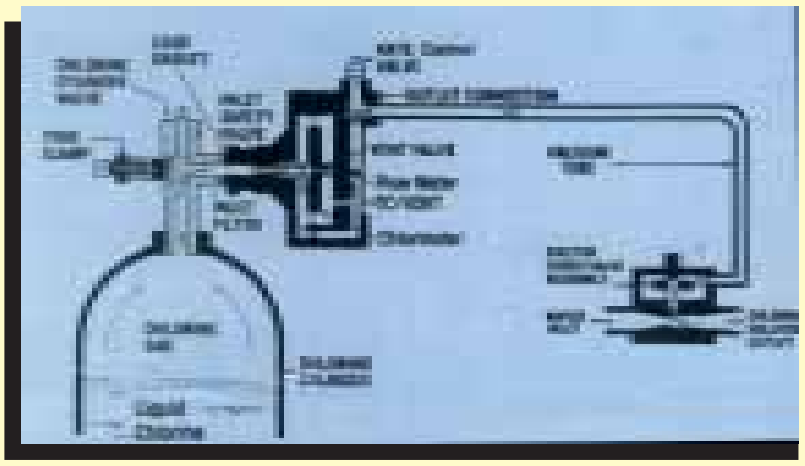
DESIGN FEATURE

Vacuum operated assures safety for plant operating personnel and equipment. Low initial cost of installation and maintenance, rugged corrosion resistant construction all contribute to the most economical chlorination system available.

PRINCIPLE OF OPERATION

The Chlorine gas from the cylinder enters the chlorinator where it is filtered to remove any foreign material which might be present. Water under pressure flows through the ejector at high velocity and causes a vacuum which opens a spring opposed check valve opens, a vacuum signal is carried to the vacuum regulator, mounted on the cylinder. This vacuum vauses the daiphragm to open the chlorine inlet safety valve to admit the gas into the regulator. The spring-opposed diaphragm regulates the vacuum at this point.
The gas passes through the flowmeter and the rate control valve and then to the ejector where the chlorine is throughly mixed and dissolved in the water and carried to the application point as a solution. If the water supply to the ejector is stopped, or the operating vacuum is lost for any other reason, the spring loaded gas inlet valve immediately closes to isolate the chlorinator from the gas supply, any gas, under

pressure which might enter the regulator is vented from the system through built-in pressure relief valve. If the source of chlorine gas is exhausted or the gas line plugged and excess vacuum valve in regulator closes to prevent any moisture being pulled back into the regulator or the gas supply lines. The ejector is provided with a diaphragm operated back check valve to insure that water does not leak back into the regulator when the system is shut down. The ejector is designed either for mounting directly in the pipeline or wall mounting type.



Schematic diagram

MATERIALS OF CONSTRUCTION

Components exposed to dry gas under pressure are chlorine resistant alloys. ABS, UHDPE, PTFE, PVC, Silver, Tentalium and extra heavy duty borsilicate glass are used in the construction of the chlorinator and ejector.

OPTIONAL ACCESSORIES

Also available when required, are alarm devices, pressure reducing valves, gas manifolds, booster pumps, solution change over valves, gas masks, residual chlorine testing sets and electrically operated valves.

TECHNICAL SPECIFICATIONS

Flow Meters :
100 grams/hour to 20000 grams/hour.

Meter Ratio :
18:1 for any meter.

Dimensions :
150 x 150 (6”x6”)

Operation water supply to ejector :
25&32 mm approximately dependent upon installation requirements. maximum allowable pressure 15 kgs./ sq. cm.

Operating back pressure :
Maximum 6 kgs./sq. cm.

Tubings connections :
Safety Vent & Vacuum tubing 12.5 mm flexible PVC/Tuflon

GUARANTEE

The apparatus is guaranteed against all inherent manufacturing defects for a period of two year from the date of despatch. This does not apply into the case of mis-handling or serious neglect whilst on site, nor to items not of our manufacturers, which are subject to the guarantee in force by the manufacturers.

Injector assembly

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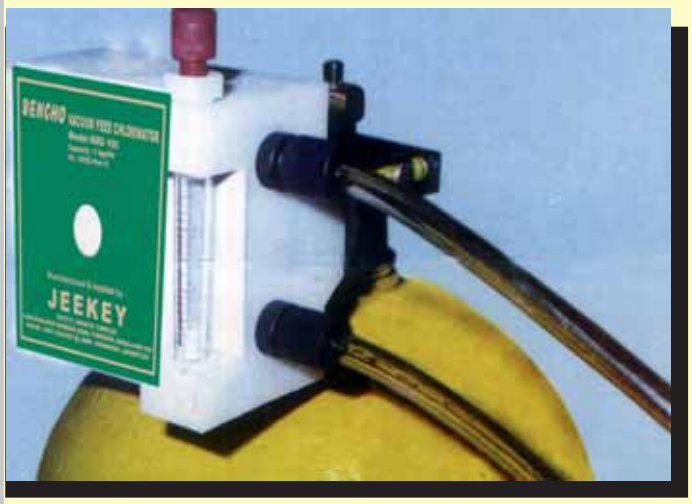
MODEL KRG 105
WALL MOUNTED/CYLINDER MOUNTED
PRESSURE FEED TYPE VACUUM CHLORINATOR AS PER IS 10553 PART 2 (1983)



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PRINCIPLE OF OPERATION

The Chlorine gas from the cylinder enters the chlorinator where it is filtered to remove any foreign material which might be present. Water under pressure flows through the ejector at high velocity and causes a vacuum which opens a spring opposed check valve opens, a vacuum signal is carried to the vacuum regulator, mounted on the cylinder. This vacuum vauses the daiphragm to open the chlorine inlet safety valve to admit the gas into the regulator. The spring-opposed diaphragm regulates the vacuum at this point.
The gas passes through the flowmeter and the rate control valve and then to the ejector where the chlorine is throughly mixed and dissolved in the water and carried to the application point as a solution. If the water supply to the ejector is stopped, or the operating vacuum is lost for any other reason, the spring loaded gas inlet valve immediately closes to isolate the chlorinator from the gas supply, any gas, under

pressure which might enter the regulator is vented from the system through built-in pressure relief valve. If the source of chlorine gas is exhausted or the gas line plugged and excess vacuum valve in regulator closes to prevent any moisture being pulled back into the regulator or the gas supply lines. The ejector is provided with a diaphragm operated back check valve to insure that water does not leak back into the regulator when the system is shut down. The ejector is designed either for mounting directly in the pipeline or wall mounting type.

MATERIALS OF CONSTRUCTION

Components exposed to dry gas under pressure are chlorine resistant alloys. ABS, UHDPE, PTFE, PVC, Silver, Tentalium and extra heavy duty borsilicate glass are used in the construction of the chlorinator and ejector.

OPTIONAL ACCESSORIES

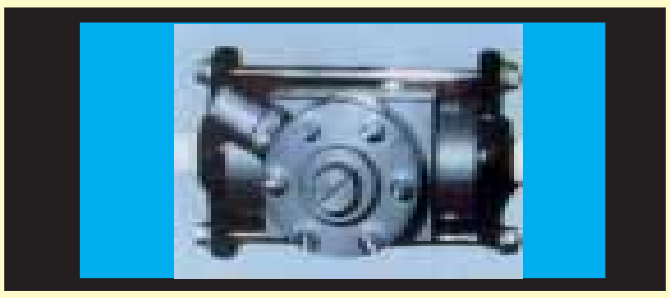
Also available when required, are alarm devices, pressure reducing valves, gas manifolds, booster pumps, solution change over valves, gas masks, residual chlorine testing sets and electrically operated valves.

PVC CHAMBER

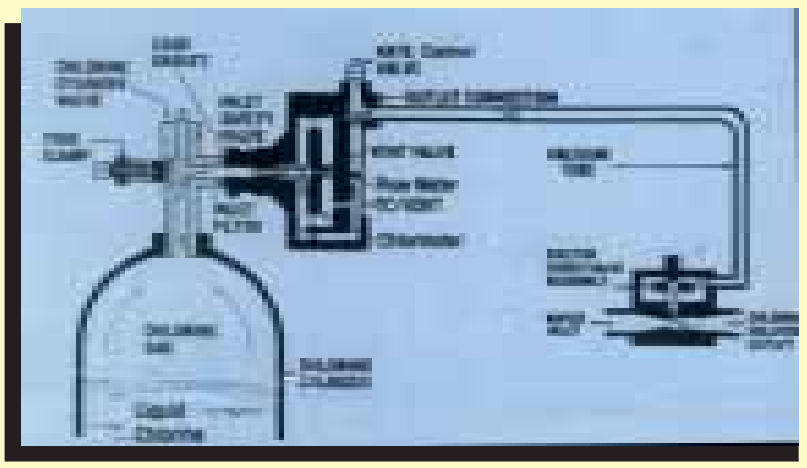
Submersible pumpset PVC chamber to fit the submersible pumpset. It is madeout of special grade PVC and fitted with the top and bottom rigid PVC square plates. Dimension of the chamber is 200 mm & 1600 mm (approx).

OUTLET CONNECTION

Chlorine solution outlet connection will be given to the pumping main or OH tank.



Pressure Feed Injector assembly



Schematic diagram

TECHNICAL SPECIFICATIONS

Flow Meters :
100 grams/hour to 20000 grams/ hour.

Meter Ratio :
18:1 for any meter.

Dimensions :
150 x 150 (6”x6”)

Operation water supply to ejector :
25&32 mm approximately dependent upon installation requirements. maximum allowable pressure 15 kgs./sq. cm.

Operating back pressure :
Maximum 6 kgs./sq. cm.

Tubings connections :
Safety Vent & Vacuum tubing 12.5 mm flexible PVC/Teflon

GUARANTEE

The apparatus is guaranteed against all inherent manufacturing defects for a period of two year from the date of despatch. This does not apply into the case of mis-handling or serious neglect whilst on site, nor to items not of our manufacturers, which are subject to the guarantee in force by the manufacturers.

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COMMITMENT TO NATURE

ISO9001:2008

UKAS MANAGEMENT SYSTEMS

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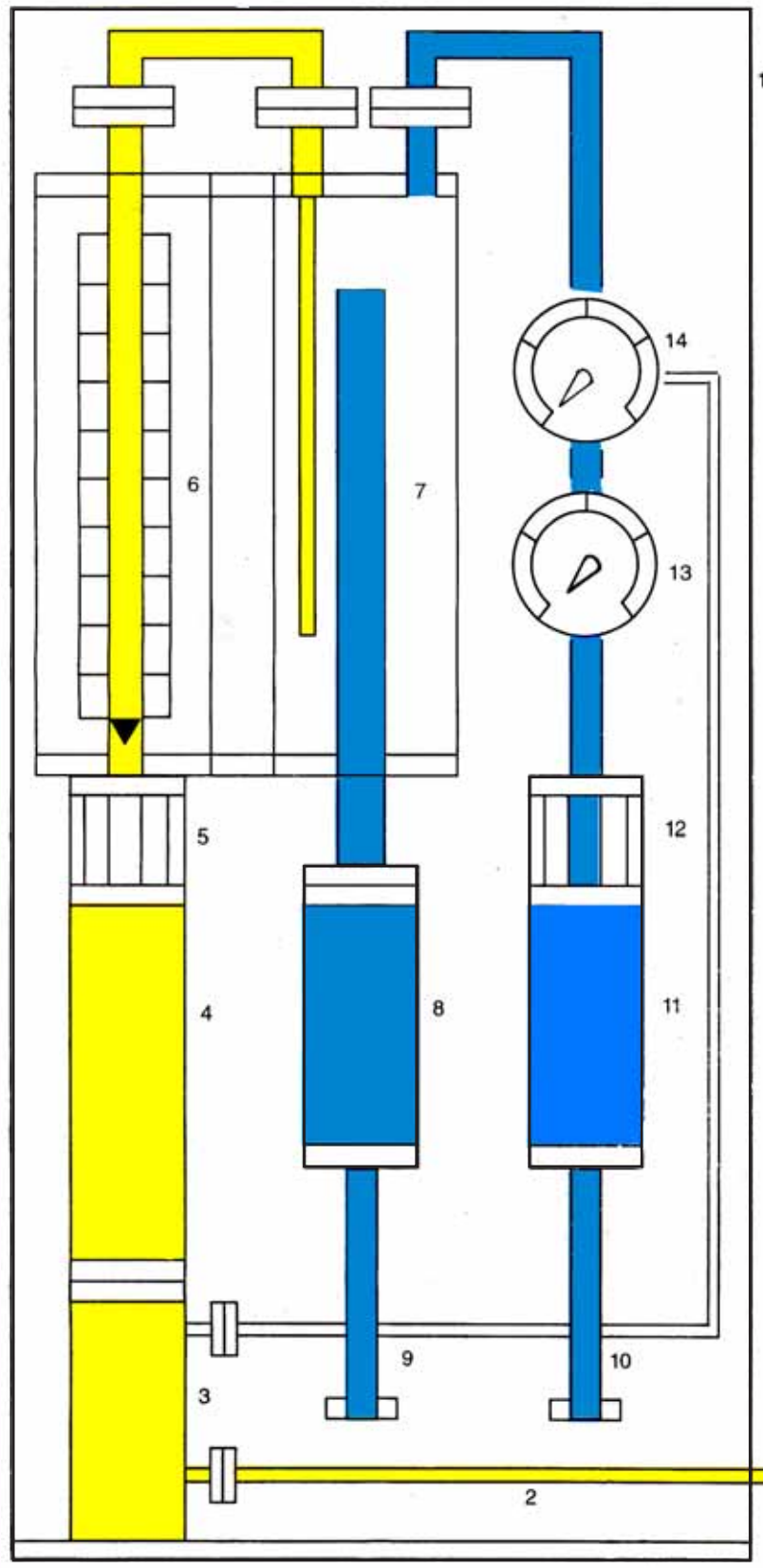
CORROSSION PROOF CHLORINATOR



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CORROSSION PROOF CHLORINATOR

1. CHLORINE VALVE (PRESSURE CONTROL)
2. TEFLON TUBE (STEEL BRAIDED)
3. CHLORINE GAS FILTER (PRIMARY)
4. CHLORINE GAS FILTER (SECONDARY)
5. CHLORINE VALVE (REGULATING)
6. ROTAMETER
7. MIXING CHAMBER
8. DIFFUSER
9. HOCL OUTLET
10. WATER INLET
11. WATER FILTER
12. CONTROL VALVE (WATER)
13. PRESSURE GUAGE (WATER)
14. PRESSURE GUAGE (CHLORINE)
15. FIBRE GLASS CABINET

    1650 X 640 X 280 MM

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CORROSSION PROOF GRAVITY FEED CHLORINATORS

FOR DISINFECTION OF POTABLE WATER AND SWIMMING POOL WATER.

Bencho chlorinator has been designed by taking into account of its physical and chemical properties - viz its reaction with metal, solubility in water, behaviour at different temperatures and its hazards.

Chlorine gas, greenish yellow in colour, two and half times heavier than air reacts with almost all metals. Hence we are using only Teflon, the gighly resistant engineering plastic for chlorine gas. In our chlorinator chlorine gas is passing through filters and valves made out of Teflon. Sine the Teflon is having very low mechanical strength we are using PVC composite FRP for outside protection.

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PURPOSE OF CHLORINATION FOR POTABLE AND SWIMMING POOL WATER

Certain diseases, like infectious Hepatitis, Typhoid, Cholera etc. are caused through impure water. In addition, some types of bacteria cause distaste and impart colour and odour to water. The only and readily available and economical solution for the above is chlorination.

Surface water resources, normally are polluted. It needs extensive and thorough treatment and to meet this requirement chlorination is performed.

Chlorine when added to water takes 15-30 minutes of retention time to react with all substances present in water.

SPECIAL FEATURES OF OUR CHLORINATOR

BENCHO make KRG SERIES Chlorinators are not required any booster pumpset or ejector system which require pumpset. Hence we can save electrical energy. All other chlorinators available in India and abroad requires booster pumpset and if the power is not there we have to stop the chlorination.

OPTIONAL FACILITIES AND GUARANTEE

We can supply a chlorinator with automatic regulation. This automatic regulator will stop the entire chlorination if found and leakages in the plant. It also will give an alarm to the operator.

We take utmost care in manufacturing our chlorinators. The equipment is guaranteed for a period of two years against any manufacturing defects. If found any fault due to materials or workmanship during guarantee period we will replace the equipment immediately free of cost.

CHLORINE DOSAGES FOR THE TREATMENT OF WATER

Table 1

PURPOSE OF CHLORINATION	DOSAGE IN PPM	CONTACT TIME IN MIN.	RECOMMENDED RESIDUAL TYPE	PPM
Disinfection :				
With Combined Residual[2]	1.0-5.0	Requirements determinded by local health authorities		
With Free Residual[3]	1.0-10.0			
Ammonia (NH_3-N) Removal	10xNH_3 -N Content	20+	Free	0.1
Taste & Odour Control	10xNH_3 -N Content plus 1-5 ppm	20+	Free	0.1
	2.22xS Content			
Hydrogen Sulphide (H_2S) Removal	to Free Sulpher	Instantaneous	Free of Combined	0.1
	8.9xS Content to Sulphate			
Iron (Fe) Removal[4]	0.64xFe Content	Instantaneous	Combined	0.1
Manganese (Mn) Removal[4]	0.65xMn Content	Variable	Free	0.5
Red Water Prevention	Maintain a Free Residual in Dead Ends	Variable	Free	0.1
Colour Removal	1.0-10.0	15	Free or Combined	0.1
Algae Control	1.0-10.0	Variable	Free	0.5+
Slime Control	1.0-10.0	Residual Needed	Free	0.5+
Control of Iron and Sulphur Bacteria	1.0-10.0	Throughout System	Free	1.0+
Coagulation Aid for Preparation of :				
Activated Silica Na_2SiO_3	2.0 lb per gal. Na_2SiO_3			
Chlorinated Copperas ($FeSO_4$. $7H_2O$)	1 part per 7.8 parts $FeSO_4$.$7H_2O$	Not Applicable		

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GRAVITY FEED WALL MOUNTED GAS CHLORINATOR

1. PRIMARY CHLORINE GAS FILTER, 2. SECONDARY CHLORINE GAS FILTER
3. DOSAGE CONTROL VALVE, 4. ROTAMETER, 5. MIXING CHAMBER
6. WATER FILTER, 7. HOCL OUTLET, 8. WATER INLET
9. DIAPHRAGM TYPE CHLORINE PRESSURE GUAGE
10. CHLORINE 'U' BEND, 11. WATER 'U' BEND, 12. TEFLON TUBE

These units are ideally suited for Water and Water Treatment applications, Food Processing, Swimming Pools, Recirculating Water Systems, Control of Algae and Odour.

DESIGN FEATURE

Gravity Feed Chlorinator operated assures safety for plant operating personnel and equipment. Low initial cost of installation and maintenance, rugged corrosion resistant construction all contribute to the most economical chlorination system available.

PRINCIPLE OF OPERATION

The Chlorine gas from the cylinder enters the primary chlorine gas filter and secondary chlorine gas filter where it is filtered to remove any foreign material which might be present.

The gas passes through the primary filter and secondary filter and dosage control valve and enter to the rotameter and mixing chamber through glass non retrun valve. Water comes through the water filter where it is filtered to remove any foreign material which might be present and water enter to the mixing chamber where the chlorine gas is throughly mixed and dissolved in the water and carried to the application point as a solution. The control valve is provided with a diaphragm operated back check valve to insure that chlorine gas not leak back into the regulator when the system is shut down. You can regulated the rate of flow of chlorine gas through control valve slowly.

MATERIALS OF CONSTRUCTION

Components exposed to dry gas under pressure are chlorine resistant teflon, special grade rigid PVC, Borosilicate Glass, Silver and Hastalloy-C, Hastalloy-C Spring are used in the construction of the chlorinator.

OPTIONAL ACCESSORIES

Also available when required, are alarm devices, pressure reducing valves, gas manifolds, booster pumps, solution change over valves, gas masks, residual chlorine testing sets, Amonia and electrically operated valves.

TECHNICAL SPECIFICATIONS

Flow Meters :

100 grams/hour to 20000 grams/hour.

Meter Ratio :

18:1 for any meter.

Tubings connections :

Teflon Tubing 12.5 mm, flexible

GUARANTEE

The apparatus is guaranteed against all inherent manufacturing defects for a period of two year from the date of despatch. This does not apply into the case of mis-handling or serious neglect whilst on site, nor to items not of our manufacturers, which are subject to the guarantee in force by the manufacturers.

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UKAS MANAGEMENT SYSTEMS

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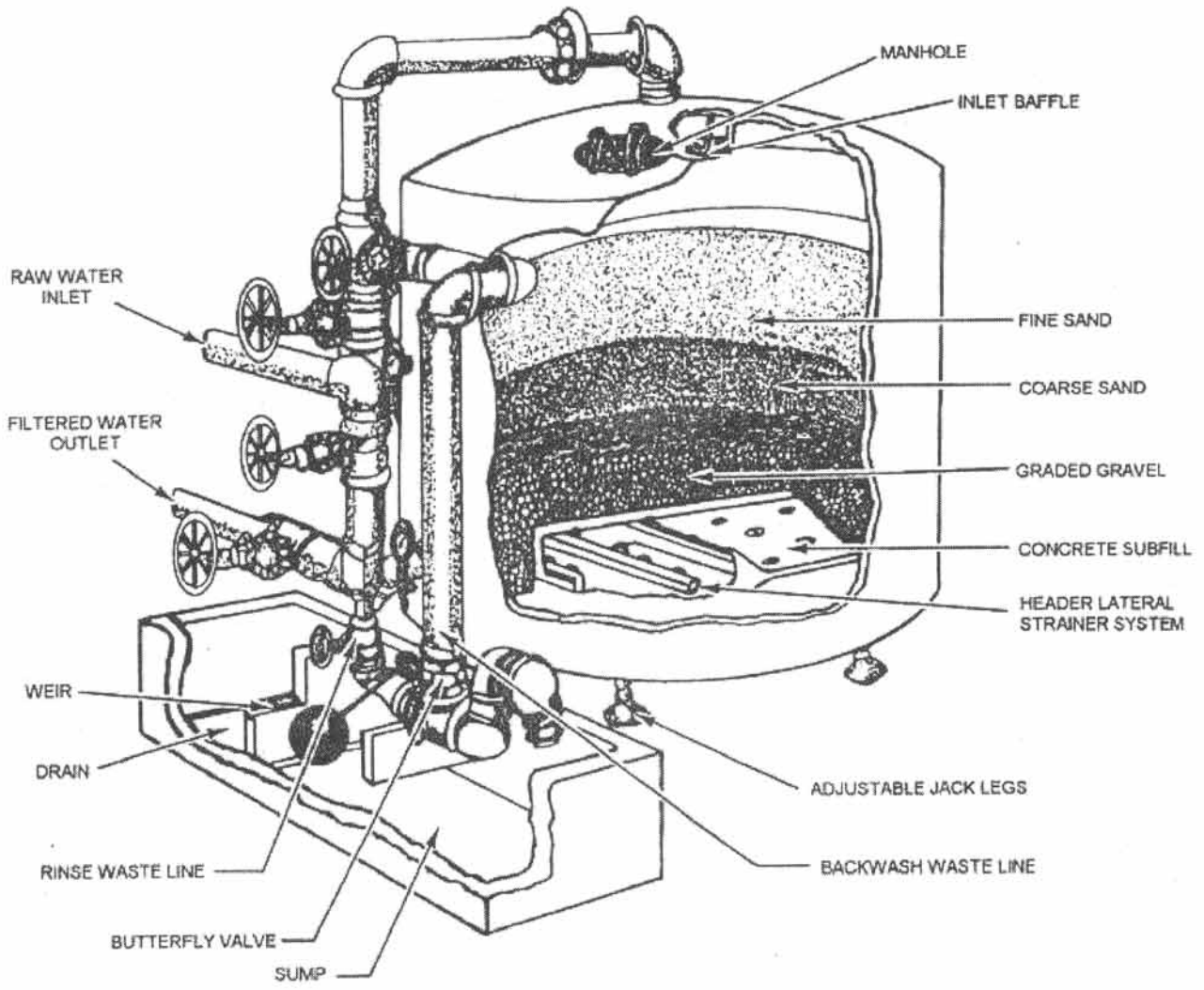
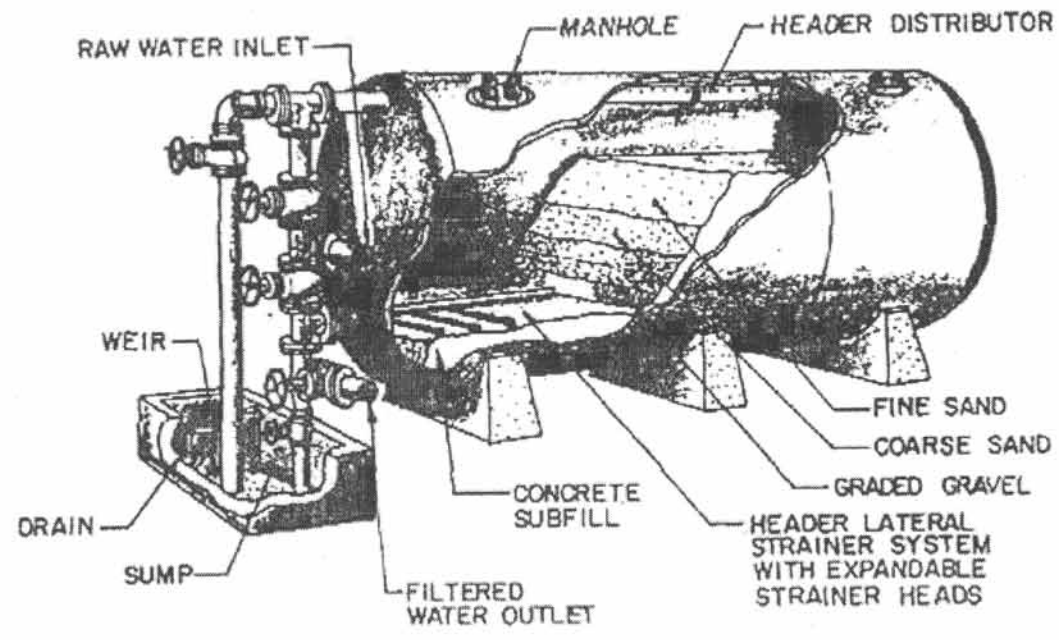
PRESSURE FILTER

MANUAL & AUTOMATIC MODEL


MANHOLE
INLET BAFFLE
RAW WATER INLET
FILTERED WATER OUTLET
FINE SAND
COARSE SAND
GRADED GRAVEL
CONCRETE SUBFILL
HEADER LATERAL STRAINER SYSTEM
WEIR
DRAIN
ADJUSTABLE JACK LEGS
RINSE WASTE LINE
BACKWASH WASTE LINE
BUTTERFLY VALVE
SUMP


RAW WATER INLET
MANHOLE
HEADER DISTRIBUTOR
WEIR
DRAIN
SUMP
FILTERED WATER OUTLET
CONCRETE SUBFILL
HEADER LATERAL STRAINER SYSTEM WITH EXPANDABLE STRAINER HEADS
FINE SAND
COARSE SAND
GRADED GRAVEL

Working Principle :

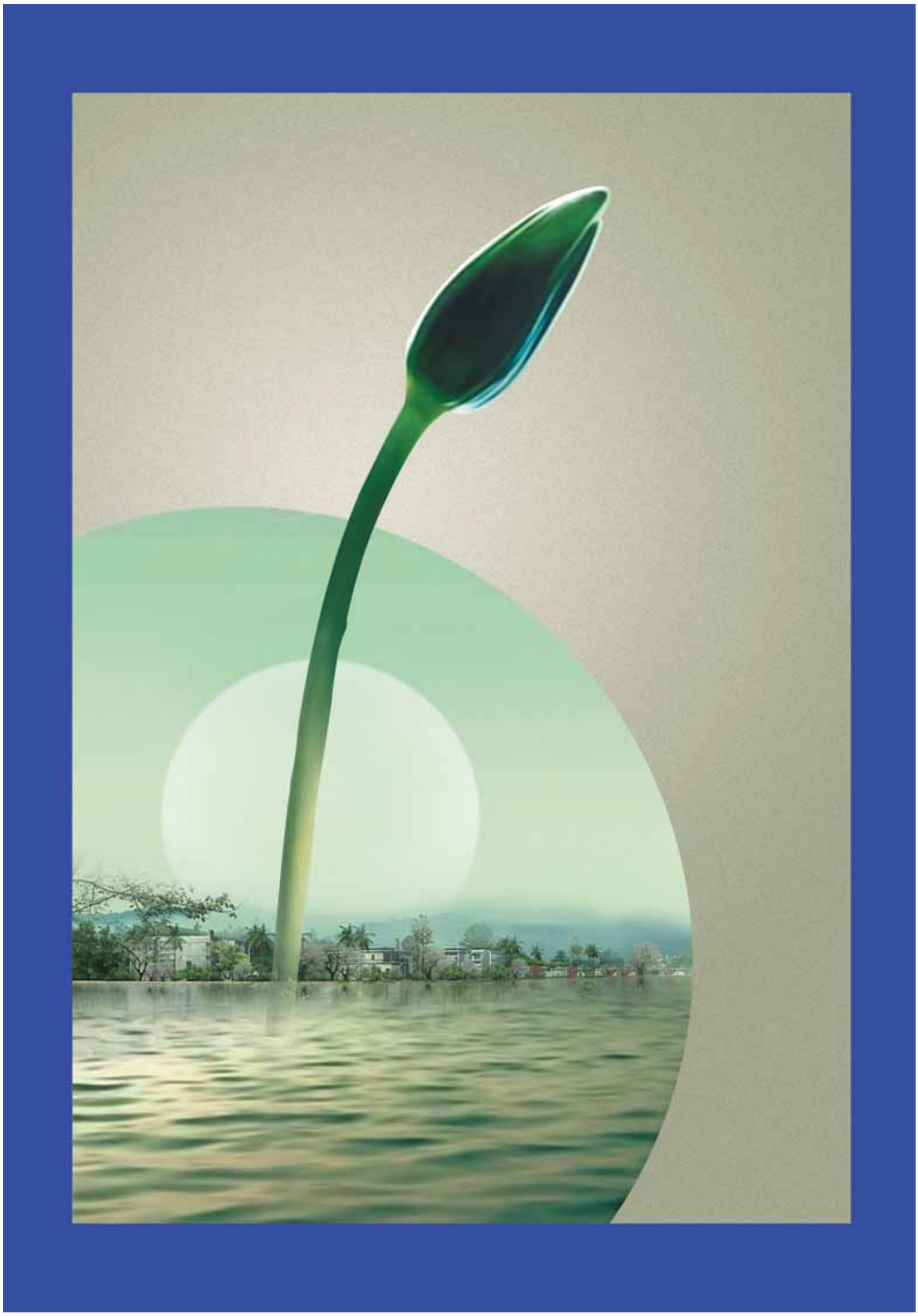
In sand filters water enters in the filter and percolates through the filter bed. Suspended matter present in the water comes in contact with the media particles and is trapped on the top of the bed. Followed by this, clean water comes out through the filtration nozzles and through the filter outlet. Periodically cleaning of this filter is done by backwashing. Water is introduced in the reverse direction of the service flow that is from the outlet nozzle upwards causing suspension of the turbid material in the filter bed & finally flushing out through the backwash valve. The filter is then down rinsed & clear water is taken in the system.

Applications :

Pretreatment to all forms of Industrial Water Treatment
Potable Water Treatment
Filter High Quanitity of Water
Thermoelectric Power Plants
Irrigation & Farming
Aqua Culture
Tertiqary Treatment
RO Pretreatment
Swimming Pool Water
Filtration of Gray Surface Water
Pre Filtration for Membrane Systems
Filtration in Swimming Pools
Production of Drinking Water
Treatment of Waste Water
Preparation of Cooling Water

Advantages :

Easy to Operate
Requires least Maintenance
Excellent Filter quality at Higher Flow rate than Conventional ones
Low Pressure Drop
Required Less Space
A Single Unit elevates and Separates Oil
Lifts Oil any Distance without the need of Expensive Pumps
Maintains Skimming Efficiency with Flutuating Fluid Level
Can be used in Depths as Shallow as one foot, or as deep as 100 feet
Requires no tank modifications in most applications
Operates in Turbulent Liquid using Optional Tail Pulley cage and tether assembly
Easy mounting and fast cleaning, with minimal maintenance
Inverter Control drive for precise operation control and safety
Minimum Maintenance.



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BENCHO make

REVERSE OSMOSIS PLANT

Reverse Osmosis, Water Filters and Water Purification Systems

Reverse osmosis is similar to the membrane filtration treatment process. However there are key differences between reverse osmosis and filtration. The predominant removal mechanism in membrane filtration is straining, or size exclusion, so the process can theoretically achieve perfect exclusion of particles regardless of operational parameters such as influent pressure and concentration. RO (Reverse Osmosis), however involves a diffusive mechanism so that separation efficiency is dependent on influent solute concentration, pressure and water flux rate [1]. It works by using pressure to force a solution through a membrane, retaining the solute on one side and allowing the pure solvent to pass to the other side. This is the reverse of the normal osmosis process, which is the natural movement of solvent from an area of low solute concentration, through a membrane, to an area of high solute concentration when no external pressure is applied.

PROCESS

Formally, reverse osmosis is the process of forcing a solvent from a region of high solute concentration through a semipermeable membrane to a region of low solute concentration by applying a pressure in excess of the osmotic pressure.

The membranes used for reverse osmosis have a dense barrier layer in the polymer matrix where most separation occurs. In most cases the membrane is designed to allow only water to pass through this dense layer while preventing the passage of solutes (such as salt ions). This process requires that a high pressure be exerted on the high concentration side of the membrane, usually 2–17 bar (30–250 psi) for fresh and brackish water, and 40–70 bar (600–1000 psi) for seawater, which has around 24 bar (350 psi) natural osmotic pressure that must be overcome.

This process is best known for its use in desalination (removing the salt from sea water to get fresh water), but since the early 1970s it has also been used to purify fresh water for medical, industrial, and domestic applications.

Osmosis describes how solvent moves between two solutions separated by a semipermeable membrane to reduce concentration differences between the solutions. When two solutions with different concentrations of a solute are mixed, the total amount of solutes in the two solutions will be equally distributed in the total amount of solvent from the two solutions. Instead of mixing the two solutions together, they can be put in two compartments where they are separated from each other by a semipermeable membrane. The semipermeable membrane does not allow the solutes to move from one compartment to the other, but allows the solvent to move. Since equilibrium cannot be achieved by the movement of solutes from the compartment with high solute concentration to the one with low solute concentration, it is instead achieved by the movement of the solvent from areas of low solute concentration to areas of high solute concentration. When the solvent moves away from low concentration areas, it causes these areas to become more concentrated. On the other side, when the solvent moves into areas of high concentration, solute concentration will decrease. This process is termed osmosis. The tendency for solvent to flow through the membrane can be expressed as “osmotic pressure”, since it is analogous to flow caused by a pressure differential.

STANDARD FEATURES

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Permeate & concentrate flow meters
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Programmable time delay and set points
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R. O. PLANTS

We design and manufacture the Reverse Osmosis Plants according to the need for tap water, brackish water & sea water application. The production range starts from 100 LPH (Liter per hour) to 100 M3 per hour for 400 TDS to 45,000 TDS.

Produce high-quality demineralised water, Most modern membrane technology, Modular design, Low water-rejection rate, Low operational and maintenance costs, 3 years warranty

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