

**RSVP
CHLORO TECH**

SAFETY, HANDLING, STORAGE AND MONITORING DEVICES

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SAFETY - AUTOMATIC CHLORINE LEAK ABSORPTION SYSTEM



Introduction:

Chlorine has manifold diverse uses. As its usage and handling rise, the danger associated with it also rises. As such, a potential risk is involved, a severe emergency may suddenly and unexpectedly occur, such eventualities should be anticipated and proper methods should be devised in advance to meet them

Chlorine Leaks:

The leaks in Chlorine Tonner or Cylinder are the leaks around Valves and take-off Flexible Copper Tube Connectors, passing, shearing / breakdown of Valves, puncture on the wall of the Tonner. The common leaks at Valves or Copper Tubing can be met with standard Emergency Kits, but the others will be grave in nature and may suddenly and expectedly happen. It can be extensive and heavy.

RSVP CHLORO TECH has developed this package system to automatically control and absorb the heavy leaks from the chlorine Tonner based on the recommendations of Chlorine Institute Inc., U.S.A., Bureau of Indian Standards, National Safety Council., Alkali manufacturer's Association of India.

Materials Description:

The package system consists of

1. FRP Gas Hood [s]
2. Chlorine gas suction Blower [s] /Fan [s]
3. Absorption Tower
4. Absorption Tank
5. Absorption Circulation Pump [s]
6. Interconnection Pipes, Fittings, Instruments & Valves etc.,
7. Chlorine Gas Leak Detector with Sensor [s]
8. Control Panel

Proper care has been taken in selection of material of construction of equipment, so that they are totally corrosion resistant, reliable and Safe.

Operation:

If the leak is uncontrollable, the FRP Gas Hood is placed over the Tonner manually to cover the leaky Tonner totally. The outlet nozzle of the Hood is connected to Blower suction by a flexible PVC hose and/or PVC/FRP piping or ducting. The Hood prevents the leaky chlorine gas to spread into the atmosphere.

Alternatively, as a precautionary method the Hood / Hoods can always be placed over the Tonner [s] which is /are in operation.

The Absorbent Pumps and suction Blower / Fans are started [Manually or in Automatic mode]. The Blower sucks the leaked chlorine gas, directs it to the Absorption Tower, where chlorine meets

counter currently the absorbent solution. The chlorine gas is absorbed by Absorbent and the air is vented at the top of the tower. As this is absorption accompanied by a chemical reaction, there will be only nil or negligible traces of chlorine in the air vent. The process of starting of Absorbent Circulation Pump and Blower can be done automatically based on the signals from Chlorine Gas Leak Detector sensor[s] located close to the Tonners and in Chlorination Plant.

Sufficient quantity of absorbent is continuously circulated in the Absorption Tower from the Absorbent Tank till the Tonner gets emptied. The spent Absorbent, after completion of neutralisation of all chlorine, will contain only sodium chloride, sodium hypochlorite or sodium sulphate salts which are innocuous. This can be disposed off without any pollution problem

Absorbent:

RSVP CHLORO TECH's Absorption System employs water solutions of sodium hydroxide as Absorbent for chlorine scrubbing and neutralization. This absorbent will end up with sodium chloride and Sodium hypochlorite as follows,



Using a single chemical as absorbent is easier, shelf life of PCS recommended concentration of Absorbent solution is very high, therefore very reliable, very simple, easy to operate and maintain and also very effective. This is very widely used all over the Country and the World.

Alternatively, RSVP CHLORO TECH's Absorption System employs water solutions of sodium hydroxide and sodium thiosulphate as Absorbent for chlorine scrubbing and neutralization. This absorbent will end up with only sodium sulphate and sodium chloride as follows,



The problem of disposing of the liquid effluent and chance of chlorine escaping from spent absorbent do not come into picture at all in the system.

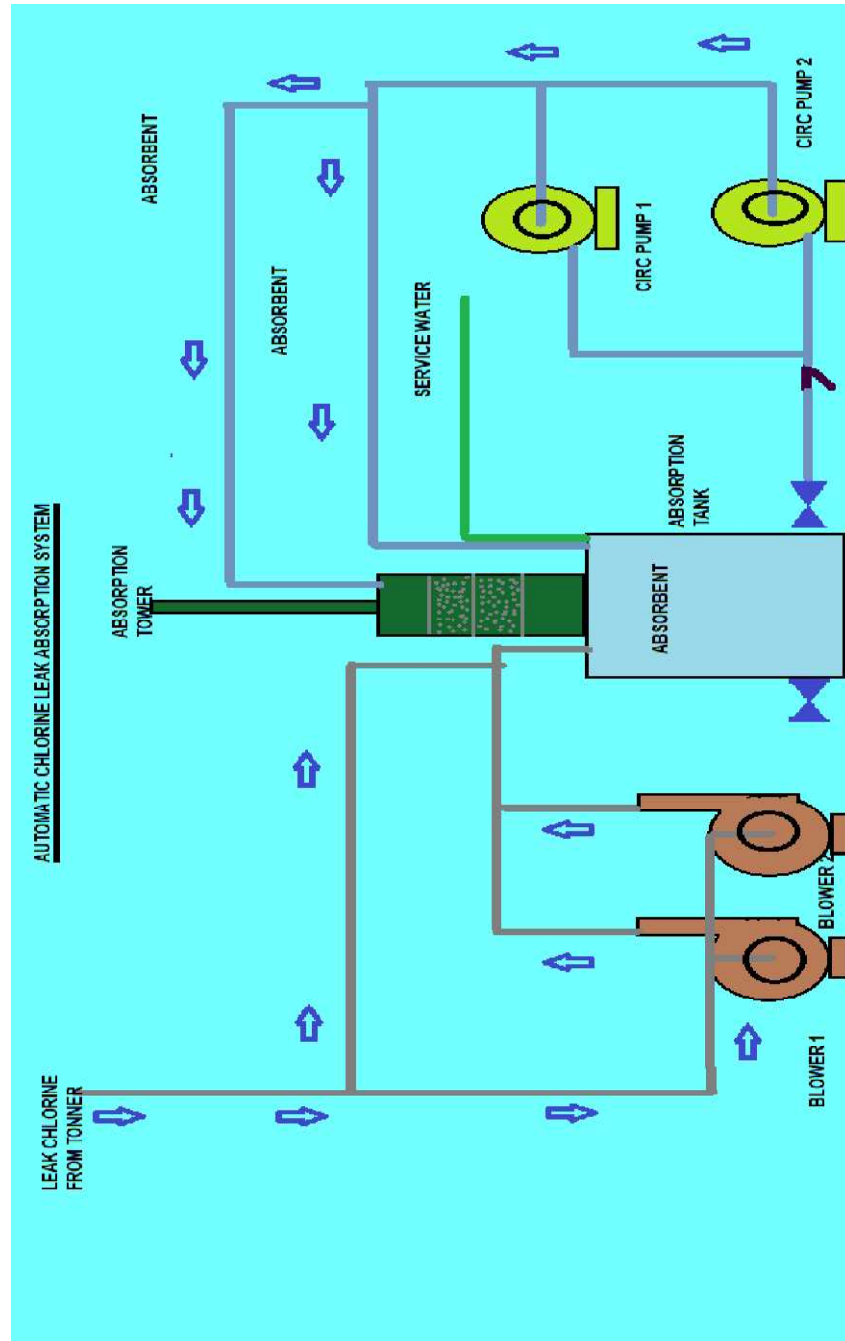
This Automatic Chlorine Tonner Leak Detection and Neutralisation System is mainly designed to be suitable to standard Tonners. It can also be used for similar emergencies in case of cylinders. Any type of automation as may be required by the Client, can be provided. This system can be also be sized to evacuate and absorb leaks from the entire chlorine tonners storage room, chlorination plant area as whole.

It is a very Comprehensive Safety System and should be necessarily provided where Chlorine Tonners are used

SAFETY - AUTOMATIC CHLORINE LEAK ABSORPTION SYSTEM



Process drawing (reference):



SAFETY AND HANDLING DEVICE EMERGENCY KIT –“A” FOR CHLORINE CYLINDERS



EMERGENCY KIT- A (FOR CYLINDERS)

The potential leak areas in a Cylinder [capacity of around 85 kgs/100 Kgs] are

- Leaks from Valves
- Leaks in the Cylinder

This Emergency Kit ‘A’ has the tools and fixtures to hold back / arrest leaks in these potential areas.

Features:

- Simple
- User-friendly
- Direct & Quick Mounting
- Rugged
- Versatile
- Field Tested
- Economical
- Separate Emergency Kits have to be used for Chlorine Cylinders of around 85 kgs or 100 kgs



List of Items:

01	Base bar Assembly	1
02	Hood	1
03	Hood Vent Valve	1
04	Hood Tightening bolt	1 Set
05	Chains	1 Set
06	Yoke For Chains	1
07	Gasket for Hood	1
08	Yoke with Base	1
09	Yoke tightening bolt	1 Set
10	Rubber patch for base	1
11	Wooden Drift Pin	1
12	Hammer	1
13	Valve Cap nut	1
14	Tools Set	1
15	Spare Gasket	1 Set
16	Coiled Copper Connector	1
17	Valve Yoke	1
18	Chlorine Cylinder valve Key	1
19	Protective Clothing (PVC)	1 Set
20	Gas Mask With Canister	1
21	Box -Steel	1
22	Manual	1

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ITEM: EMERGENCY KIT "B"

AREA USE: CHLORINE TONNER / TON CONTAINER

Emergency Kit B:

The potential leak areas in a Ton Container [or Tonner with capacity of around 930kgs] are

- Leaks from Valves
- Leaks in the Container Body
- Leaks from Fusible

This Emergency Kit 'B' has the tools and fixtures to hold back/arrest leaks in these potential areas.

Easy to handle tools and fixtures enable the users to stop/ handle dangerous leaks in the shortest possible time. Moreover, clear Instruction Manual is provided with each Kit, to guide the user with step by step procedures in handling these tools and fixtures in arresting/containing the leak.

This is a very simple, user- friendly life saving kit and is a must in area where Chlorine container is used.



Pre caution:

Please note that during gas leaks, Emergency Kits should be used by trained Personnel wearing fully working, Self Contained Air Breathing Apparatus.

Regular Mock- Drillson handling Tonner/ Cylinder leaks should be provided to all Operation / Maintenance Personnel, so that everyone is well trained in handling Tonner / Cylinder Leak Emergencies.



ITEM: EMERGENCY KIT "B" AREA USE: CHLORINE TONNER / TON CONTAINER

Salient Feature:

- Simple
- User-friendly
- Direct & Quick Mounting
- Rugged
- Versatile
- Field Tested
- Economical

Bill of Quantity

SI No	Description	Qty
Device 1 – Valve Leaks		
01	Front Bar	1 No
02	Hood (Big)	1 No
03	Hood vent Valve	1 No
04	Hood tightening Bolt	1 No
05	Gasket For Big hood	1 No
Device 2 – Plug Leaks		
01	Hood Small	1 No
02	Gasket For Small hood	1 No
03	Yoke for Plug	1 No
04	Gasket for Cap Nut	1 No
05	Stud on Yoke	1 No
06	Cap Nut	1 No
Device 3 – Body Leaks		
01	Chain / BELT for Body	1 No
02	Yoke	1 No
03	Yoke Tightening bolt	1 No
04	Rubber patch for Base	1 No
05	Base For body	1 No
ADDITIONAL		
01	Drift Pin	1 Set
02	Hammer	1 No
03	Valve Cap nut	1 No
04	Tools Set (Spanners & Scrappers)	1 Set
05	PTFE Tape	1 No
06	Flexible Copper Connector	1 No
07	Valve yoke	1 No
08	Protective Clothing's	1 Set



ITEM: EMERGENCY KIT "B" AREA USE: CHLORINE TONNER / TON CONTAINER

	a) Shoes	
	b) Gloves	
	c) Hood for head	
	d) Clothing to cover body	
09	Gas Mask Canister Type	1 No
10	Steel Box	1 No
11	Instruction book Let	1 No
12	Cylinder Key	1 No
13	Wooden Drift pin Small	1 No
14	Wooden Drift pin big	1 No





RSVP CHLORO TECH HALF HOOD –SAFETY AND HANDLING DEVICES

If the leak is uncontrollable, the FRP Gas Hood is placed over the Tonner Operation Area manually to cover the leaky Tonner. The outlet nozzle of the Hood is connected to Blower suction by a flexible PVC hose and/ or PVC/ FRP piping or ducting. The Hood prevents the leaky chlorine gas to spread into the atmosphere.

Alternatively, as a precautionary method the Hood / Hoods can always be placed over the Tonner [s] which is /are in operation / Connected.

Technical specifications:

SL NO	Half Hood	
01	Connected to	Chlorine Tonner
02	Type	Half Hood
03	MOC	FRP
04	Outlet	BLOWER SUCTION– HDPE HOSE / FRP DUCT
05	Tonner Inlet Diameter	770 MM
06	Construction	Two Piece Construction
07	Temperature range	15 to 65 Deg C
08	Provision	To Operate valve in Tonner
09	Size	1050*1050*450 MM*

Image:





RSVP CHLORO TECH **LEAK DETECTOR -CHLORINE**

CHLORINE is a pungent smelling, Corrosive, Green/Yellow gas. It is very heavy gas and readily absorbed by most materials. Its properties relay mainly on its oxidizing power. The monitoring aspect of chlorine to avoid serious health risks, corrosive to metals like M.S. Aluminium etc. HUSAINI offers chlorine gas leak detector with electrochemical sensor which only detects ® Chlorine in air (No cross sensitivity to any other gases like HCl, So , NH , to avoid false alarm).

Features:

- Direct Digital read out in PPM Alarm Set point
- can be adjusted to any range (From 0 to Full)
- Continuous monitoring with fast response
- Long Life Electrochemical Sensor
- Recorder output 4 to 20 mA.
- Easy maintenance and calibration.
- No cross sensitivity to HCl, SO₂ , NH₃
- Optional Battery Back-up
- Panel mounted or Portable model are also available
- Alarm Set Point can be adjusted to any range from 0 to 100 PPM

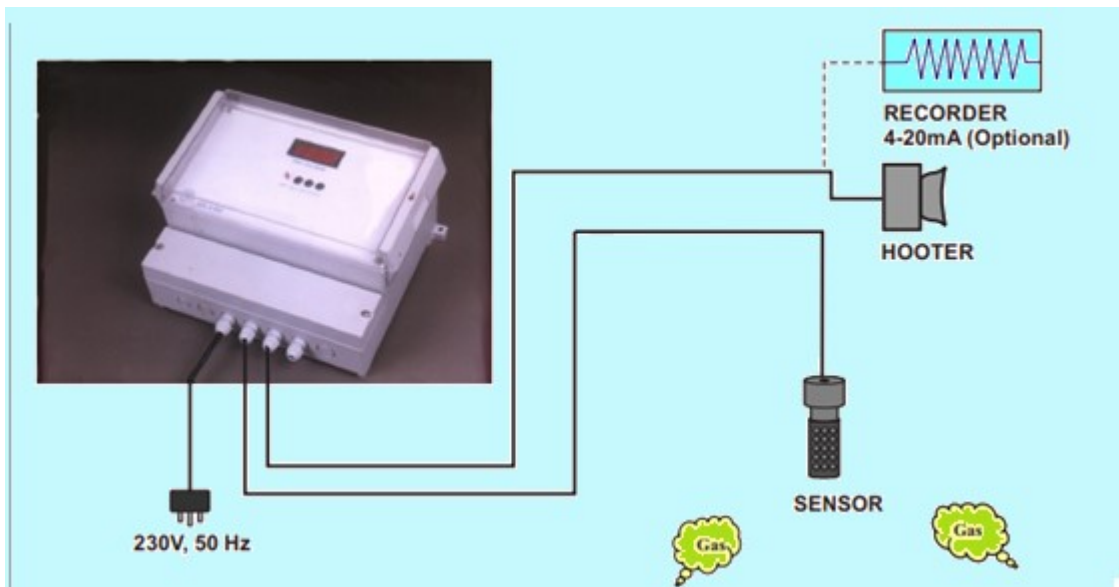


INDUSTRIES:

- ❖ Acid, Alkalis and Dyes Manufacturing Plants
- ❖ Caustic soda plants
- ❖ Municipal Water Works
- ❖ Paper Mills
- ❖ Water Treatment Plants
- ❖ Off Shore and Refiners
- ❖ Chlorination Plants
- ❖ Power Station and Cooling Towers
- ❖ PVC manufacturing Plants
- ❖ Swimming pools

Technical specifications:

Power supply	230V±10%., 50HZ±5%, 110V Optional
Power consumption	8VA
Measurement Range	0 to 5 ppm, or 0-10ppm or 0-50ppm or 0-100 ppm chlorine [Alarm set point adjustable]
Response time	≤ 1 Second
Alarm level	Adjustable between ppm range provided
Resolution	0.1ppm @ 1%
Type of Alarm	3½ digit, 12.5mm digit height, 7 segment LED Display, Audible by horn/hooter
Output 2 set points	1NO/1NC Potential free contacts rated at 220V, 5A for each Alarm1 and Alarm2 Recorder Output- 4-20mA DC, [optional]
Operating temperature	Between 5Deg C to 45Deg C
Protection	IP 67 - Poly Carbonate Enclosure
Principle of Operation	Amperometric Electro-chemical sensor
Cable	2 m co-axial cable with BNC plug
Sensor Dimension	Height - 125mm, Diameter - 40 mm
Mounting	Panel Mounted or Wall Mounted or Portable Model



Handling, Storage, Testing and Monitoring Devices



Chlorine is a highly hazardous chemical in nature. Therefore proper handling, safety, Precaution is to be taken in areas where chlorine is stored and handled. Exposure to even low concentration of Chlorine can cause health problems to plant personnel. It can spoil the machineries by corroding them slowly when it leaks. Chlorine leak never gets arrested by itself, it goes worse if not arrested properly in time.

Devises for Handling and Storage:

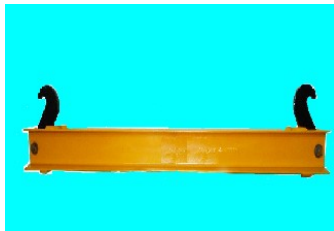
Tonner Roller Supports / Trunnions:

To hold the ton containers securely in place and also to facilitate the positioning of Ton Containers properly, so that the inbuilt valves fixed (Liquid and Gas Side) lie one over the other vertically.

MOC: Body – CI, Rollers – MS/CI/PP.



Lifting Beam with Adjustable Hook:



To facilitate the safe lifting of Chlorine Tonners, this holds the containers securely whilst hoist and trolley are used to Lift, Place and positioning.

MOC- MS

Hoists:

To Lift Containers securely, Manual and Electric Hoists are available. Normally 2/2.5/3 Tons hoists are recommended and with Min. 3 Mtrs lifts are sufficient.



Weighing Scale:

Weighing Containers are available in 2 type's operation method.

1. Crane type.
2. Platform type

Crane type:

It is fixed along with the Lifting beam and Chain hoists so that every time the container is lifted the weigh can be read / seen.

Platform type:

Electronic load type Weighing Scale, Shows the accurate readings on the Digital LED Display at the spot / remote panel away from the platform (Optional), provision of Empty / low Weight alarm is possible (optional)