

# DISINFECTING - TUNNEL/CHAMBER

## Steps To Build a Disinfecting Chamber



### OVER VIEW

Tunnels for sanitizing / disinfection is Especially used at entrance to the high-risk areas, disinfection tunnels can be adapted to all types of places and products and of space. The innovative system has many advantages, highlighting the drastic reduction in the consumption of water and disinfectant, up to 15 times compared to a traditional spray disinfection system.

Moreover, misting guarantees a uniform distribution of the disinfectant / sanitizing agent across the surface of the person to be treated at the same time minimizing moisture ingress in the high-risk zone. Not only can be used with any disinfectant or sanitizer approved, either pure or dissolved in water, types of alcohol, but it could also work with ozone water, electrolyzed water, etc.

To further reduce the consumption, the modules can optionally incorporate an automatic start system when they detect a person and automatic shutdown after a programmable time without person.

<b>BILL OF MATERIALS</b>		
<b>S.No</b>	<b>Description</b>	<b>Quantity</b>
1.	Walkway Tunnel / Chamber & Accessories	1 LS
2.	High Pressure Pump & Accessories	1 LS
3.	Fogging Pipes & Accessories	1 LS
4.	Fogging Nozzle, Adaptors & Accessories	12 Sets
5.	Storage Tank – 500 Ltr	1 No
6.	Water Inlet Pipe & Accessories	1 LS
7.	Installation Accessories ( Bolt & Nut, Screws, Clamps, Adhesives, etc., )	1 LS

## **TUNNEL/CHAMBER**

The Length X Width X Height of the tunnels are sized based on the place where the disinfection has to be carried out.

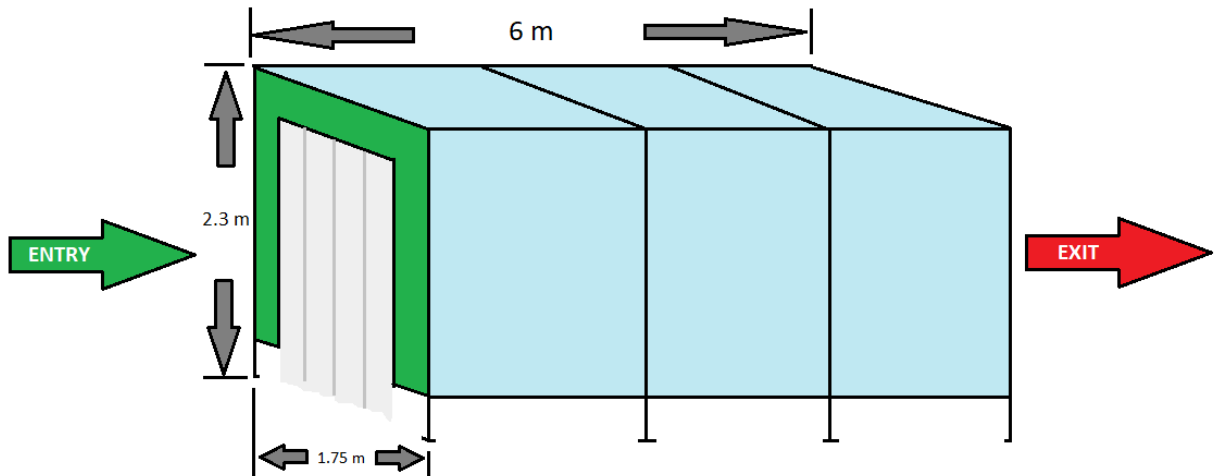
For Sanitizing Human **Individually or along with Two Wheelers** the Tunnel entry shall be sized as **1.75m x 2.3m (Width X Height )** , which will comfortably accommodate people with luggage both in foot and on wheels.

The Length of the Tunnel is sized based on the crowd to be handled along with uniform all around sanitization.

Based on the Average walking speed of the a Human of **1.4 m/s** and considering the 1 m social distancing between one and another, we have arrived the tunnel length to be **6 Meters in Length to sanitize a crowd of 1000 people in 15 minutes.**

Based on the above the **Tunnel Dimension is: 6 m (L) X 1.75 m (W) X 2.3 m (H)**

## **LINE DIAGRAM OF TUNNEL**



The respective tunnel is constructed with the skeleton fabricated of MS Tubular sections fastened by Welds / Bolt & Nuts respectively to make the chamber sturdy, portable and Light weight for easy handling . The Structure is coated with two coats of PU based enamel paint over zinc chromate primer to prevent rusting and long term protection.

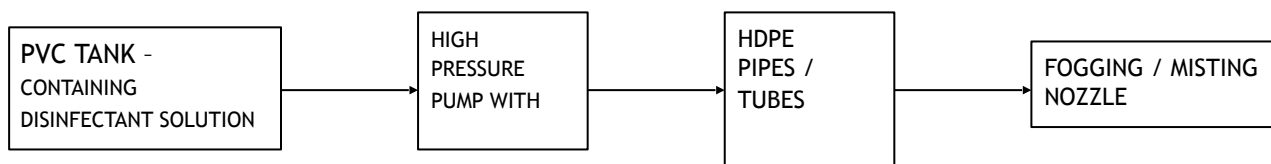
The Sides and Top ( Except the Entry & Exit ) are covered with Cladding by Water Resistant PVC Flex to Concentrate the sprayed Disinfectant inside the chamber and also minimize the wastage of the fogged matter into the atmosphere. The Cladding is Pasted with Skeleton by Polymer based adhesive. The skeleton is made in such a way that it is elevated above the ground by 0.3 m with Leg like projection all around respectively to drain the water condensed after fogging and to make it feasible for porting to near by location. Optional wheels can also be attached to legs for easy trolleying. The Pneumatic Fogging Pipes and Fixtures are clamped within the skeleton with optimal positioning to serve the purpose, respective electrical lines to operated the Tunnel is fixed along with light fixtures in the Entry, Exit & Walk Way for commuting in dusk.

DESCRIPTION	SPECIFICATION	QTY
TUNNEL SKELETON	Made of - MS - 40 mm x 40 mm x 2 mm Thick Tubular Section	1 ls
SIDE CLADDING	PVC Flex	1 LS
ANTI RUST COATING	2 Coat PU Paint over Zinc Chromate primer	1 LS

LIGHT FITTINGS	20 W - LED TUBE LIGHTS	4 NO
ELECTRICAL WIRES	1.5 sq.mm X 2 Core - Copper Cable	1 LS ( as per site requirement )
ELECTRICAL SWICTHES	5 amp x 4 nos in 4 Way Module	1 NO

## **FOGGING SYSTEM**

The fogging system is through which the Disinfecting Hypochlorite Solution is used to sterilize people in Large gatherings. The process flow of the system in as in the below line diagram.



High pressure fogging system is used to generate fog at very high pressure and speed. These are compact sized devices especially designed for disinfecting, cooling and humidification process. Our systems are based on micro cool technology which ensures gentle and flawless fogging production. It creates high pressure fog in the area where humidity, moisture and temperature controlling is required. These are strengthened with various electronic control, which make these extensively useful and easy to control.

## **HIGH PRESSURE PUMP:**

The sophisticated system that pressurizes liquid up to 1000 PSI (70 BAR ), Using a specialized high pressure pump module. The pressurized fluid on pumped along the

hydraulic manifold and is finally released into the air through tiny highly specialized



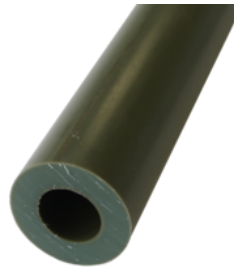
low flow atomization nozzles.

The pressure can be regulated between 0-100 BAR, standard operation pressure for the fogging system in 20-40 BAR. The flexible, adaptive, light weight and compact feature of the high pressure system permits rapid and simple installation onto any structure.

OPERATING PARAMETERS		
1	DISCHARGE CAPACITY	180 LPH /3 LPM
2	DESIGN PRESSURE	70 kg/cm <sup>2</sup>
3	LIQUID TO BE HANDLED	WATER
4	LIQUID DENSITY	1000 kg/m <sup>3</sup>
5	TEMPERATURE OF THE LIQUID	AMBIENT
6	SUCTION PRESSURE	FLOODED
7	DUTY	CONTINUOUS
8	PUMP TYPE	TRIPLEX PLUNGER PUMP
9	PLUNGER DIAMETER	20 mm
10	PUMP SPEED	300 RPM
12	STROKE LENGTH	15 mm
13	DISCHARGE CAPACITY	180 LPH
14	DISCHARGE PRESSURE	70 kg/cm <sup>2</sup>
15	RELIEF VALVE SET PRESSURE	80 kg/cm <sup>2</sup>
16	B.H.P. AT RATED FLOW	0.75 HP
17	DRIVER POWER & SPEED	1 HP / 1440 RPM

18	RELIEF VALVE	SPRING LOADED RESET TYPE
19	BASE PLATE	COMMON FOR PUMP&MOTOR
20	COUPLINGS	NA
21	PRESSURE GUAGE	SS GLYCERIN FILLED
22	PLUNGER	SS 304
23	PLUNGER PACKING	SS 304
24	STUFFING BOX	SS 304
25	BASE PLATE	M.S CHANNEL &L- ANGLE
26	MOTOR CAPACITY	1.3 KW / 1.5HP , 1 PH, 230 V AC
27	MOTOR PUMP COUPLING	DIRECT COULING

## FOGGING PIPE LINE



The HDPE Pipes are used for piping the disinfectant liquid from the Pump upto the nozzles. The Pipes are clamped to the Tunnel Structure with appropriate clamps.

**(High Density Polyethylene** that ensures their flawless performance and long functional life. These pipes are quite useful for carrying potable water, slurries, hazardous wastes, wastewater, cables, chemicals and compressed gases as well as oils)

### SPECIFICATION:

- Diameter : 3/8"
- Wall Thickness: 4 mm
- Color: Black
- Temperature: -40°C~120°C

- Working Pressure : 1000 PSI

**ADVANTAGES:**

- Strong & Durable
- Light Weight
- Convenient Jointing
- Leak Proof
- Resistant to moisture, corrosion, abrasion & wearing
- Termite proof and UV resistant
- Longer lasting & maintenance free

**FOGGING / MISTING NOZZLE**

Misting nozzles create a very fine mist or fog. Droplets are typically small enough that buoyancy is significant compared to gravity, allowing drops to appear to float. In actuality, in the absence of upward airflow particles are simply falling very slowly.

The released fluid forms a super fine “fog” of 10 microns sized droplets that is suspended in the air. The fog produced by the system is so fine it completely evaporates in the air without any wetting or dripping making the system highly versatile



Effective, reliable, long lasting fogging systems need high-quality misting nozzles. The nozzle orifice is key to a high-quality misting nozzle. The perfect roundness of the hole is critical to give consistency at every nozzle. This provides an accurate, hard-wearing misting nozzle which produces a fine and consistent fog droplet size. The fogging system is supplied with stainless-steel nozzles.

<b>Material</b>	SS
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<b>Finishing</b>	polished
<b>Pressure</b>	high and low pressure
<b>Orifice Size</b>	0.1 mm
<b>Thread Size</b>	10/24



The amount of fog can be increased, decreased or blanked off as required. Nozzles are easy to maintain, because they can be taken apart for cleaning. Respective SS adaptors are used for interconnection of pipes and Nozzle Pointing Distance and Direction.

### **STORAGE TANK:**

PVC Tank - Chemical Grade of 500 Litres Capacity is to be provided along with ¾” Ribbed PVC Hose for interconnection of Tank & Pump for respective quantity.

The PVC tank should be raised to a minimum height of 0.6 m above the ground to facilitate Gravitational flow of liquid to the pump, also fitted with screen filter at the outlet to filter to prevent the dust from entering the fogging system through the pump.

Optional water level controller shall be fitted to control the water level in the Storage Tank and also prevent the dry run of Motor & Pump, which will cause damage to the system





## Preparation of chlorine Solution

### 1. Preparation of Chlorine solution using Hypochlorite Solution

Concentration of commercially available Hypochlorite solution	Required Chlorine Concentration	To Prepare 1000ml	
		Solution in ml	Add water in ml
5%	2%	400	600
	1%	200	800
	0.50%	100	900
10%	0.50%	50	950
	1%	100	900
	2%	200	800