



# WASTE SOLUTIONS



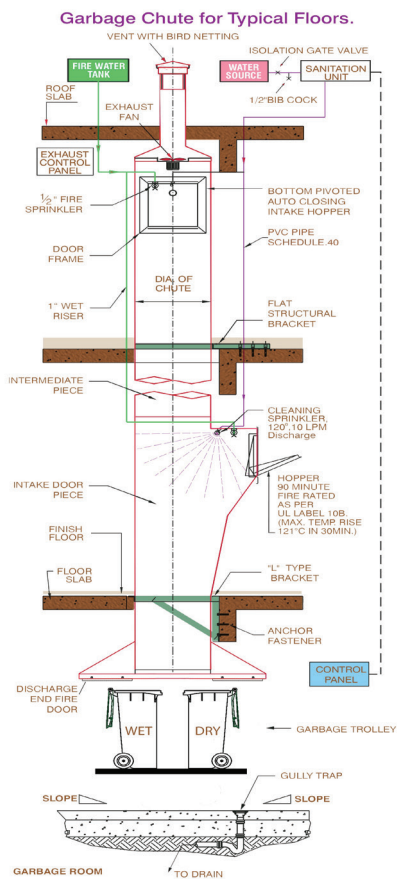
एक कदम स्वच्छता की ओर



## Why Central Chutes?

In the rapidly growing and highly competitive world of today; high-rise buildings, large apartments serving commercial and residential, and construction buildings have become hallmarks of urban development. This development usually comes with a significantly increased challenge in removing solid waste, refuse or garbage from high-rise buildings with multiple levels.

Central Chutes have therefore been developed as effective solutions to the problems of garbage collection and disposal for multiple-leveled high-rise buildings for residential and commercial apartments, with the in-built advantages of convenience, efficiency, safety and hygiene.



## Material Design for Central Chutes

- Stainless Steel in line with the SS 430 / SS 304 Grade/ Codes.
- Garbage Chute Thickness - 1.2, 1.5, 2 mm based on the diameter of the Central Chutes.
- Based on the BS/NFPA codes against fire hazards in high-rise buildings; fiber and plastics are excluded from the design of the Central Chutes.
- To prevent failure from corrosion; galvanized steel is excluded from the design of the Central Chutes.

## Where to Install

Central Chutes can be installed in residential or commercial high-rise buildings, hotels, hospitals, and more. Central Chutes are excellent for installation in a wide variety of ducts, common lobbies, landings, staircase mid-landings, utility ducts, dry balconies and kitchens. Where Central Chutes are installed:

- At floor level; intake hoppers shall be installed to every floor level.
- At mid-landing level; intake hopper shall be installed to alternate floor level.

## Our Super Features

- Central Chutes are developed and installed in line with specifications provided in BS 1703:2005, NFPA 82, IS 6924:2001 and NBC 2005.
- Central Chutes are weather-proof service life with stainless steel.
- Central Chutes are designed with a sanitation system for automated internal cleaning.
- Central Chutes have an exhaust system to provide a lower limit of 20 air exhausts every hour.
- Central Chutes have intake hoppers that can withstand 90 minutes of fire rated. Central Chutes are also designed with intake hoppers that shut automatically, and discharge-end fire doors for optimal safety.
- Central Chutes allow for the separate collection of "Dry" & "Wet" garbage.



## Selection of Central Chutes Size

A weighty decision to make when deciding the best trash chute for residential and commercial high-rise buildings is the garbage chute size diameter. The garbage bag size used depends on the amount of garbage generated. As a convention; the size of the intake Hopper is selected based on the garbage bag size employed for garbage collection and disposal in the high-rise buildings. The diameter of the garbage trash chute is therefore selected based on the size of the intake Hopper. Below are lists of the standard Central Chutes size diameter based on the intake Hopper size and the type of high-rise building it would be used in.

Type of Building	Chute Diameter
Residential	400 / 600 mm
Commercial	600 mm
Hotel & Malls	750 mm
Hospitals	750 mm

## Major Components of Central Chutes

### Intake Hoppers

- The intake hoppers for the Central Chutes are opened at the top, and pivoted at their bottoms. The intake hoppers are designed to be fixed with facing the front wall. While the intake hoppers for linen chutes are designed to be manually operated with lateral opening are hung on the sides.
- The Intake hoppers of the Central Chutes have also been found to retain its integrity throughout a 90-minute fire hazard in a residential or commercial high-rise building.; the intake hoppers of the Central Chutes permit a maximum temperature increase of 121 degree Celsius in 30 minutes for the unexposed surfaces of the trash chute.
- The Central Chutes permit interlocking Intake Hoppers to comply with the "One user at a time" principle for high-rise buildings.



### Floor Frames

- The total weight of the Central Chutes is distributed on each floor. Therefore, floor frames are designed in various customized types on every floor of the high-rise residential or commercial building to support the Central Chutes.
- Floor frames for the Central Chutes are usually MS galvanized structural frames developed from 40×40×5mm angles, anchored to floor or beams of the high-rise building.



## Vent



- Central Chutes are designed with vents that aid in the complete removal of the foul odor from garbage collected from residential and commercial high-rise buildings.
- The vents of the Central Chutes are designed to produce a minimal range of 20-40 air changes or exhausts every hour. The vents of the Central Chutes are installed at the roof level, with its exhaust located at a minimum height of 1.2-2m above the roof of the high-rise building, and are remotely operated through a garbage trash chute control panel.
- The vents designed for the Central Chutes used in high-rise buildings are generally of two (2) types:
  - o Full-diameter vents
  - o Reduced-diameter vents

## Sanitation System

- With the aim of providing optimal hygiene; the sanitation system designed with the Central Chutes employs discharge sprinklers with 120 cone profiles attached at the intake portion.
- The sanitation system of the Central Chutes is designed to ensure that the discharge is kept constant, despite fluctuations and variations in the inlet pressure with the floor level height by employing different sprinklers at different floor levels. The sanitation system of the Central Chutes ensures optimal hygiene by with a daily cleaning cycle of approximately two (2) minutes.
- The sanitation system is designed to clean the Central Chutes from inside using water and disinfectant sprayed during the cleaning cycles. These cleaning liquids are supplied with PVC Sch 40 piping fitted along the length of the Central Chutes.
- For convenience; the sanitation system of the Central Chutes is installed at the roof level of the high-rise building, and are operated using a control panel in the garbage room.



## Discharge

- The Central Chutes are designed to discharge trash and garbage from high-rise buildings directly to a trolley or compactor.
- The Central Chutes are also designed to reduce diversion of trash and garbage, permitting a maximum diversion of 15 degrees with the vertical, based on the existing codes.
- With the aim of ensuring safety against fire hazards; the Central Chutes are designed with discharge end fire cut-off doors.



## Garbage Trolley

- For optimal efficiency; the garbage trolley requirement is selected based on the garbage disposal requirements of the high-rise building, with the garbage trolley available in the standard capacities of 240, 330, 660, 770, 1100 liters.
- To meet the specific needs of commercial and residential high-rise buildings and large apartments; customized garbage trolleys can be fabricated for your Central Chutes.

## Fire Safety Central Chutes

### Intake Hopper

- The intake hopper of the Central Chutes has a minimum fire rating of 90 minutes.
- The insulation design of the intake hoppers for the Central Chutes would ensure that the temperature of the side unexposed to the fire would 121 degrees Celsius, where the temperature of the exposed side is 1000 degree Celsius.

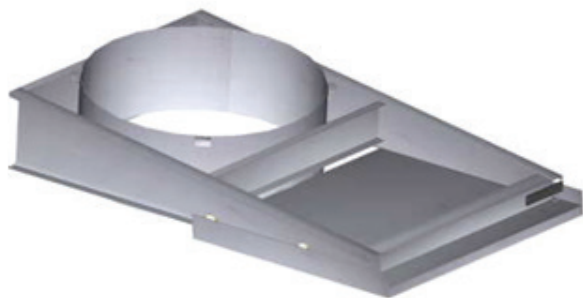


### Fire Sprinklers

- The fire sprinklers are designed as half-inch IPS (BSP) female threading ready for fitting to the one-inch wet riser of the fire protection system.
- The fire sprinklers of the Central Chutes are designed to extinguish fire by opening at 68 degrees Celsius.

### Discharge End Fire Door

In a fire outbreak in the garbage room; the discharge end fire door cuts the fire path at 79 degrees. The two-main grade of discharge doors employed with the Central Chutes are:

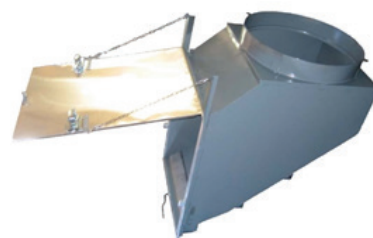


#### Discharge Door 'C' Type

The 'C' type discharge end fire rated doors of the Central Chutes are held on a bearing by a fusible link attached to the top of the slope. In the case of a fire outbreak in the garbage room; this fusible links melt at 79 degrees Celsius and the discharge fire door shuts the upwards path of the garbage trash chute to prevent the spread of the fire. This component is mostly used in garbage chutes.

#### Discharge Door 'D' Type

The D-type discharge-end fire rated door employed for the Central Chutes is fitted horizontally against gravity by a fusible link. In the event of a fire outbreak; the fusible link melts at 79 degrees Celsius, and the discharge fire door shuts the upwards path of the garbage trash chute to prevent the spread of the fire. This component is mostly used in linen chutes.





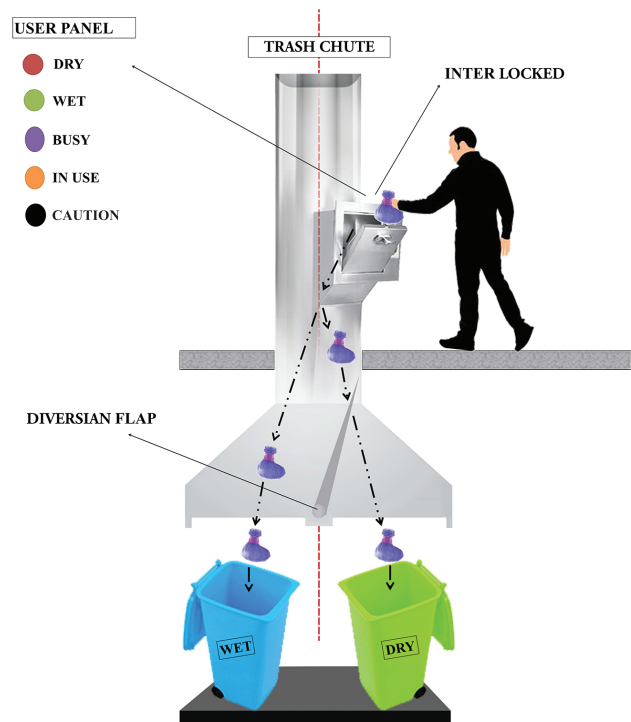


## Segregation

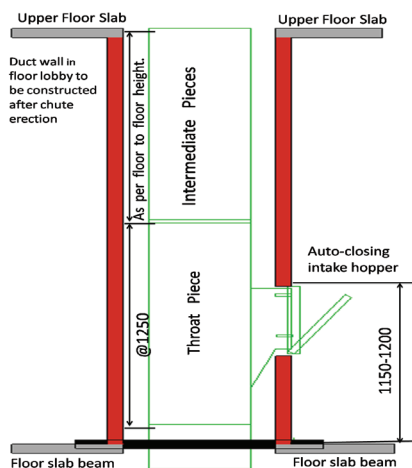
- The operations of the Central Chutes are designed to meet the current municipal requirements for the separation of garbage into 'dry' (recyclable) and 'wet' biodegradable garbage.
- The Central Chutes enable the fully automated segregation of garbage from high-rise buildings using a single chute.
- To ensure efficiency; the Central Chutes operate 'one user at a time', and the intake hoppers of the garbage chutes are locked by default.

## Operational Sequence

- To operate the Central Chutes, press the 'wet' or 'dry' button.
- While the Central Chutes are being operated on a floor; the busy indicators and intake hoppers remain locked for all the other floors.
- The Central Chutes switch between 'wet' and 'dry' modes by rotating the flap doors in the garbage rooms. The Central Chutes provide an indicator of the selected garbage mode as the intake hoppers are operated.
- The intake hoppers are opened manually, and the individual garbage bags are dropped down the Central Chutes to be disposed on a trolley.
- The intake hoppers are automatically set to close, and reset the system for the subsequent garbage and trash disposal consuming a total change over time of 10 seconds.



Elevation of Garbage Chute Duct



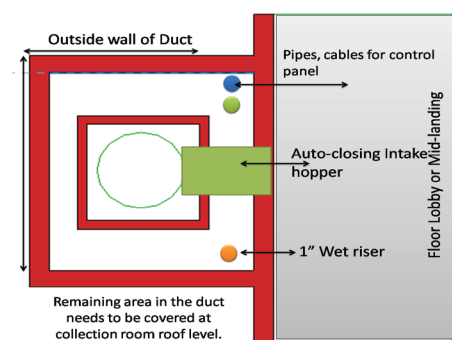
## Building Requirements for the Installation of Central Chutes

- The front wall of the high-rise building should be constructed after the installation of the Central Chutes
- In the design of the high-rise building; 6 Amp. MCB, earth, neutral, single phase power point should be provided near the highest intake floor level for the control panel of the exhaust of the Central Chutes
- An access door of dimension 600×600 mm should be provided in the design of the high-rise building at 200mm above the highest intake hopper door.
- Predefined water connections with isolations valves should be provided in the high-rise buildings for the installation of the Central Chutes.

No: of Intake Hoppers	Size of Water Connection
0-7	1" NB
0-15	1.5" NB
0-25	2" NB"
0-40	2.5" NB
0-50	3" NB

- A half-inch bib cock should be provided at the roof level of the high-rise building for the sanitation system of the Central Chutes.
- A pressure reducing valve should be provided for the Central Chutes, where the water connection is supplied by a hydro-pneumatic mechanism.
- A one-inch wet riser should be fitted in the Central Chutes for the fire protection system along the total height of the high-rise buildings.
- Special fire sprinklers developed for the Central Chutes should be fitted at the topmost intake hoppers, lowest-intake hoppers, and on alternate floors from the top.

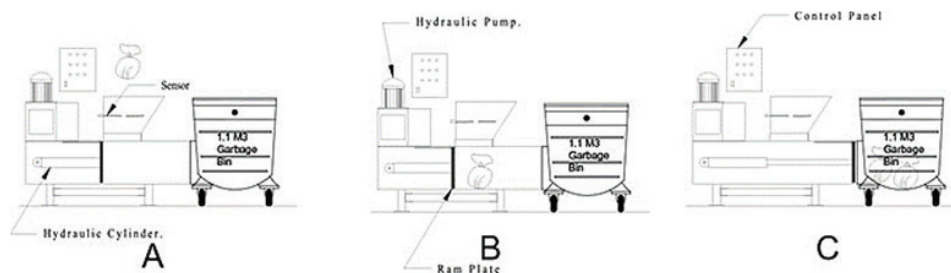
**Plan of Garbage Chute Duct**



Chute Diameters	Duct / Slab Opening
18" (450mm)	24" x 24"
24" (600mm)	30" x 30"
30" (750mm)	38" x 36"
32" (800mm)	38" x 38"

## Garbage Room

- The garbage room for the Central Chutes should be air-tight and non-ventilated without windows or louvers. Floor tiles and wall tiles with a minimum height of 1.8 m should be provided for the garbage room of the Central Chutes.
- The floor of the garbage room should be sloped towards a gully trap attached to a basement sump or drainage system.
- In the process of wiring the garbage room for the Garbage Chutes; 6 Amp. MCB, earth, neutral cables should be provided.
- An outside opening flush door (40mm) with a minimum width of 1m should be provided for the garbage room.
- The chute duct slabs in the garbage rooms should be closed only after the installation of the Central Chutes.
- The garbage room that should be provided in a high-rise building for the installation of a standard Central Chutes should be 1.5W×1.5L×2.4H, while the garbage room size for Garbage Chute that segregates 'wet' garbage from 'dry' should be 2.0W×1.5L×2.4H.



## Static Garbage Compactors for High-Rise Building

- The static garbage compactor is operated with a fully automated hydraulic system at a pressure of 30,000 psi, and employs an automatic On/Off switch, employs laser beam sensors for garbage bags.
- Possesses the capacity to reduce the garbage trash volume by 20% with an input capacity of 18,000 liters per hour, or 750kg per hours. The standard capacity of the garbage compaction chamber is 200 liters.
- The static garbage compactor is designed for automatic garbage disposal into garbage bins.
- The static garbage compactor is fabricated with steel plates, while the compacting ram of the system is fabricated with steel plates to ensure effective operation at a pressure of 40,000psi. The static garbage compactors are also designed to cut large sized objects with hardened steel blades.
- To operate the static garbage compactor at its standard cycle time of 40 seconds; a hydraulic power pack is installed and mounted. The static garbage compactor is driven by a 3 phase T.E.F.C motor with a rating of 7.5hp, 1450 rpm, and class 'F' insulation.
- An external oval gear pump-type with mechanism for balancing pressure is employed with the static garbage compactor for residential and commercial buildings.
- The electrical control cabinet of the static garbage compactor is designed in compliance with the IP 55 codes, as well as an electrical interlock system for floor intake hoppers.
- The garbage compactor system further operates an automated disinfected spray.



## Organic Waste Composter

A major issue facing modern society is waste management. More simply put, what should we do with the waste we produce? A growing emphasis has been placed on the three R's: Reduce, Reuse, and Recycle. Composting provides a means of accomplishing all three of the R's. Through composting the amount of garbage sent to the landfill is reduced, the organic matter is reused rather than dumped, and it is recycled into a useful soil amendment.

Our Composters are fully automatic and highly compact composting machine which uses special microorganisms to break down and decompose all kinds of organic waste into compost within 24 hrs with a volume reduction of 85-90%. When organic waste is added to it, moisture is sensed by the humidity sensor, due to which the heater turns ON and the composting tank gets heated. Due to this, the water content in the organic waste is evaporated and it goes out to the atmosphere as water vapor through the exhaust system.