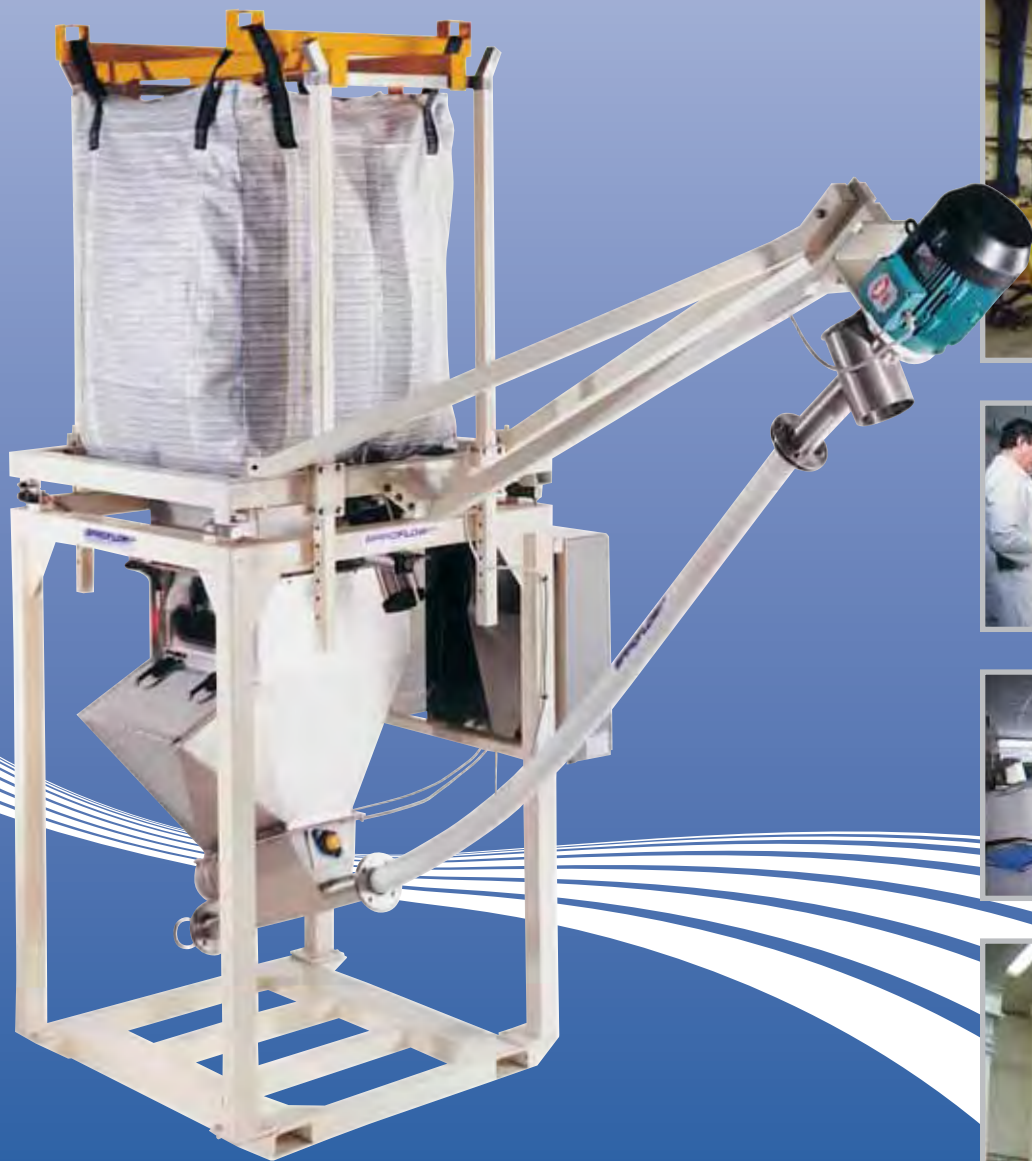


SPIROFLOW

CONVEYING & BULK BAG HANDLING SOLUTIONS



Bulk Bag Discharging

BULK BAG DISCHARGERS for every application

Bulk Bags have been around for over 25 years and Spiroflow has been there since the beginning. Whether you have been using Bulk Bags for years or are thinking about converting from sacks, rigid containers or silos, then safe, efficient and dust free handling methods are essential to gain maximum benefit.

We believe in providing complete and integrated solutions for specific powder handling applications. Many years of co-operation with large volume users of Bulk Bags have resulted in the development of a comprehensive and ever expanding range of dischargers and transfer equipment to suit your product and bag type. The advantages of handling solids and ingredients in Bulk Bags are obvious:

- reduced labour
- better dust control
- increased safety
- cleaner working environment
- increased productivity
- no packaging waste

The advantages of working with Spiroflow are just as clear:

- 25 years of experience
- dedicated testing facility
- advanced design and manufacturing facility
- a wide range of innovative designs and design options
- experienced applications engineers
- turnkey systems



Testing and demonstration.



Good H&S practice requires, as a minimum, that the weight of a bulk bag be supported as it is unacceptable to support bags from their loops for any length of time where operatives are present. It is certainly not good practice to use a forklift truck to hold a bag over a point of discharge. Additionally, it ties up the forklift preventing it from being used elsewhere.

In all but a very few applications, gone are the days where a local fabricator or a company's engineering team can 'knock up' a simple bulk bag discharger support frame. These can never match the safety, reliable discharge and containment offered by the specialist supplier and demanded by today's practices and legislation.

DISCHARGING BY VOLUME

Universal Model (T2)

Our Universal T2 provides controllable discharge by volume. Flow from the Bulk Bag is easily controlled by means of an integral Spiroflow conveyor directly coupled to the base of the discharger.

This type of conveyor can be used to accurately meter Bulk Bag contents to your process vessel in an enclosed and controlled manner.

Our powder handling expertise ensures a transfer method best suited to your product, whether it is by aero mechanical conveyor, flexible or rigid screw, pneumatically or otherwise.

Features

- Full dust control
- Designed to discharge poor flowing materials
- Suitable for all Bulk Bag types and sizes up to 2 metres high and 2 tonnes in weight
- Bag tensioner ensures total emptying of bag contents - no wastage or spillage
- Automatic transfer of contents via integral take-off conveyor
- Quiet operation (no vibrators)

Options

- Bag massagers to aid flow
- Bag spout closure bars for dust free easy untying and re-tying of bag
- Liner remover
- Mobile frame
- Sack tip door
- Hygienic liner clamp

See pages 10/11 for full list of options

- 1.** The loops of the bag are attached to a bag lifting frame and the liner clamped.



- 2.** The bag is lifted by forklift truck on to the robust Bulk Bag support frame. Spring loaded arms on the Bulk Bag support frame gradually raise and tension the bag during emptying. This ensures total emptying of the bag and prevents the bag spout or liner sagging or fouling the take-off conveyor.



- 3.** Integral chute has an access door for easy bag untying. Pinch bars ensure the bag remains tightly closed until the emptying process starts.



- 4.** Pneumatically operated massage system, adjustable in position for optimum effectiveness, ensures consistent flow of difficult products.



- 5.** Integral conveyor transfers bag contents direct to your process.



DISCHARGING BY WEIGHT

Loss-in-Weight Model (T3)

Our Loss-in-Weight Bulk Bag Discharger allows you total control over the amount of product you wish to dispense from the bag. This can be varied for individually selected batch amounts, or fully interfaced with your plant process control for continuous batch production.

The Loss-in-Weight Bulk Bag Discharger T3 incorporates all the proven features of the Universal model, but with the bag support dish mounted on load cells. This enables highly accurate weighing of product as it is discharged from the bag. If necessary, the integral transfer conveyor can also be suspended from the weigh frame as shown opposite, to provide a totally self-contained discharge and loss-in-weight dispensing unit.



Features

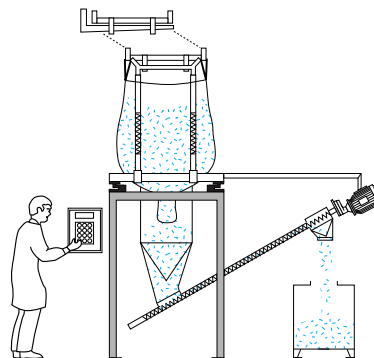
- Batch or continuous weight control - load cells located at mid-section, preventing risk of damage by forklift truck
- Recipe management system
- Bag tensioner ensures complete emptying of bag contents
- Integral conveyor or feeder
- Full dust control
- Designed to discharge poor flowing materials
- Suitable for all Bulk Bag types and sizes up to 2 metres high and 2 tonnes in weight
- Quiet operation (no vibrators)



Options

- Bag massagers to aid flow
- Bag spout closure bars for dust-free and easy untying & re-tying of bag
- Liner remover
- Mobile frame
- Sack tip door
- Hygienic liner clamp

See pages 10/11 for full list of options



Our specialised batch controller provides both 'bulk' & 'trickle' feed for loss-in-weight dispensing. The Pause-Resume feature pauses the discharging operation when one bulk bag is empty and retains in memory the amount dispensed. When a fresh bulk bag is placed on the discharger, the controller recalls the remaining weight required and resumes discharging.

All components, including the bulk bag conveyor are 'above' the load cells and are weighed, while the lower frame (shaded) is isolated from the load cells and secured to the floor.

SIMPLE SUPPORT FRAME

Model (T1)

We offer T1 Simple Support Frame Bulk Bag Dischargers for those applications where:

1. The product to be discharged is completely free flowing, thus requiring no flow aids.
2. The product is dust free and thus requires no containment.
3. Uncontrolled 'choke feeding' from bulk bags is acceptable, thus no other regulation of the flow is required once the neck ties are released.
4. There is the continuous presence of an operator.

Our Simple Bulk Bag Discharger Support Frames are robust and can be constructed from epoxy painted carbon steel or stainless steel as the environment dictates. Bulk bag loading into the frame can be by forklift truck or hoist.



Customised Model T1 mounted on a wheeled frame that can also be moved by a forklift truck.



Stainless steel Model T1 with optional bag spout clamp.

Spiroflow will only offer Simple Support Frames for those applications where we are confident of their suitability. We have so much experience that the design of even our simplest support frames benefit from this.

DISCHARGING SINGLE TRIP BAGS

Knife Model (T4)

Single Trip Bulk Bags, are widely used within plant environments for low value or hazardous products and therefore require a dust-free and controllable emptying method.

Our T4 discharger can empty these disposable bags, which have no bottom spout, without wastage or spillage, even those containing poor flowing products, using various discharge aids and transfer conveyors to suit the application.

Features

- Static or pneumatic knife
- Double dust suppression membrane
- Vibratory discharge aid

Options

- Mobile frame
- Overhead electric bag hoist

1. The T4 consists of a robust frame and discharge dish with a knife to pierce the base of the bag. A double membrane with dust extraction facility ensures total containment of dust emitted during bag piercing operation.



2. The double membrane ensures that the bag sits deep within the dish and no dust escapes during discharge.



3. The bag is ruptured by the knife and product flows from the discharge dish into the integral transfer conveyor.



DISCHARGING WITH HEIGHT RESTRICTION

Low Loader Model (T5)

Spiroflow's T5 Low Loading Discharger empties Bulk Bags and sacks in process areas where restricted headroom causes problems in handling bags or where only a low lift forklift truck is available.

The discharger is coupled directly to a flexible spiral or other suitable conveyor which meters ingredients from the bag either volumetrically or by weight. Ingredients may then be fed direct to either mixing or other process equipment to provide a fully automatic ingredients unloading, proportioning and transfer system.

The height of the access door has been designed to receive small sacks, of particular benefit to processors who have switched over to Bulk Bags, but still continue to receive minor ingredients in 25kg sacks.

Processors with batching operations may choose to have several bag frames for use with one discharge station, allowing them to partially empty, re-tie and store Bulk Bags.

Features

- Removable top frame
- Dust-tight spring loaded docking seal
- Bag tensioner ensures total emptying
- Integral conveyor or feeder
- Dust control

Options

- Loss-in-weight batch control
- Bag massagers to aid flow
- Bag spout closure bars for dust-free and easy untying and re-tying of bag
- Mobile frame
- Sack tip door
- Liner remover
- Hygienic liner clamp



The discharger base unit has a dust-tight docking seal on to which the top frame and bag is placed. A spout clamp allows the bag to be untied without dust emission or spillage, via an access door.



1. No bag in place.



2. Loading bag into top frame.



3. Lifting top section from floor.



4. Returning top section.

5. Bag loaded ready to discharge.



DISCHARGING IF NO FORKLIFT TRUCK IS AVAILABLE

Integral Hoist Model (T6)

Our T6 Bulk Bag Discharger is a fully self-contained unloading station for dust-free and controllable Bulk Bag emptying.

It has an integral "I" beam and hoist for loading bags into the discharger and is directly connected to an enclosed conveyor for direct transfer of product to process machinery. Bulk Bags may be brought to the discharger by pallet truck and stored ready for lifting without the need for forklift truck assistance. Full dust control features are incorporated.

Features

- Space saving integral bag hoist with runway beam
- Dispensing of contents by volume or weight
- Integral conveyor or feeder
- Quiet operation
- No forklift truck required
- Full dust control

Options

- Bag massagers to aid flow
- Bag spout closure bars for dust-free and easy untying and re-tying of bag
- Liner remover
- Loss-in-weight batch control
- Extended gantry frame and hoist for multi-bag processing
- Sack tip door
- Bulk Bag lifting frames, fully load tested, to suit existing hoist equipment.
- Hygienic liner clamp

See pages 10/11 for full list of options



1. Rigging bag.



2. Hoisting bag.



3. Traversing bag into position.



4. Bag loaded ready to discharge.



An optional low height hoist is available where headroom is restricted. The above low height unit has an overall height of under 3.5m, discharging a 900mm bulk bag.

DISCHARGING RIGID IBC's, OCTABINS, SACKS & BULK BAGS

Multi-discharger Model (T7)

Our T7 is a versatile emptying system which allows processors to discharge materials from bulk bags, rigid bins, octabins or sacks.

The Multi-discharger employs a controllable discharger and a subframe. A Bulk Bag or rigid container is placed on the subframe which has fork channels to allow loading onto the discharger. The discharger has an integral hopper and flexible spiral conveyor, which feeds the contents from the bag either volumetrically or by weight to process or packaging machinery.

The discharger also has an interlocked access door through which the operator can untie the spout of a Bulk Bag, or if necessary unload small sacks of product into the conveyor.

This unit is particularly suitable for batching operations requiring ingredients from several sources and methods of supply.



Features

- Adaptor frame for use with rigid bins
- Allows for changing raw material delivery methods
- Sack tip door
- Full dust control
- Integral conveyor or feeder
- Discharge by volume or weight

Options

- Full range of discharge aids
- Bag spout closure bars
- Mobile frame



THE SOLUTION FOR TOTAL DUST CONTAINMENT

Bulk Bag Discharger Model (T9)

A number of products handled in Bulk Bags are of a fine, powdery and invasive nature and total containment during unloading is necessary to prevent contamination of the local atmosphere and health and safety hazards. The problem is exacerbated where the product is volatile, toxic or presents an explosion risk.

Spiroflow has developed the T9 Bulk Bag discharger for use where total dust containment is essential.

Patented Features

- Sealing device for bottom spout
- Automatic spout stretching
- Assurance of complete product discharge
- Variable height adjustment for different sizes of bag
- Static grounding system with FIBC resistance monitoring
- Corner massagers



1. Bag is placed on discharger by hoist or forklift truck.



2. Spout pulled through the discharge dish (pinch bars open).



3. Pneumatic stretching device actuated to provide smooth path for product through spout and into downstream vessel, valve or conveyor.



4. Bag Massagers at each corner assist flow and ensure total emptying.

FOR THE MOST HYGIENIC OF APPLICATIONS

Pharmaceutical Discharger (T10)

At Spiroflow, we specialise in 'high containment' bulk bag filling and bulk bag discharge systems, and offer a range of Bulk Bag (FIBC) Dischargers specifically for use in pharmaceutical applications.

The worldwide acceptance of bulk bags has brought big changes to bulk materials handling - not least in the pharmaceutical industry where they are replacing the use of rigid IBC's. Bulk bags, and equally important, their filling and discharge systems have made strident advances in hygiene and containment - in fact offering containment levels as good as $25\mu\text{g}/\text{m}^3$. Lined bulk bags avoid cross contamination between batches and eliminate the need for and cost of cleaning/re-validation associated with traditional rigid bins.

However, improperly handled bulk bags can be the cause of dust and spillage during discharge and afterwards during the disposal of empty bags. Our Pharmaceutical Bulk Bag Dischargers offer total containment of bulk bags during discharge and their subsequent removal. They are complete with a liner spout clamping system that ensures the total containment. Interlocked, power operated pinch bars are provided to clamp the bulk bag neck so that the neck ties can be released safely. Dependent upon the potency of the active ingredient, releasing the neck ties, cutting open sealed liners, feeding them through the clamp ring and over the discharge spout all takes place within a negative pressure enclosure connected to a HEPA filtration system either through an access door or through a sealed glove box arrangement.

Once the liner is clamped to the outlet spigot (and, where fitted, the access door is locked shut) the pinch bars can be released to allow product to discharge from the bulk bag into the hopper. The disconnection of the bulk bag neck takes place under partial vacuum and can be safely stowed within the body of the bulk bag before it is lifted off for folding or compaction.

The liner clamp has the option of pneumatic or manual operation. Where pneumatic operation is provided, for safety reasons, the operator has to remove his hands from the gloves and continuously press two operating buttons, one on either side of the cabinet or close the interlocked dust tight clamp housing access door.

As an option, our Pharmaceutical Bulk Bag Dischargers can be furnished with connectors and clamps for proprietary liner clamping systems such as the 'DovePac' IBC/FIBC docking system from ILC Dover who specialise in barrier and isolation technology.



The quality is in the detail:



Crevice-free Welds



Piping Details



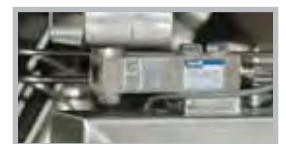
Bag Massager



Control Box



Rigging Frame



Load Cells



Safety Interlocked Hinges

OPTIONAL EQUIPMENT

1. Bag Massagers



Side massagers.

Bag massagers are used to aid the consistent flow of difficult materials from a Bulk Bag and are located either in the base of the support dish, at the corners or on the side frame. They are actuated by pneumatic cylinders and their position and frequency of actuation is fully adjustable. They are particularly effective where storage of bags has created a compaction problem, when traditional (and noisy!) vibration may cause further compaction and hinder discharge.



Corner massagers.



Base massagers.

2. Yoke Type Spout Closure Bars (patented)



Spout closure bars have several functions: they prevent dust by allowing untying of the bag without product release; their aperture can be set to control the flow rate from the bag; they can close off the spout if used in a batch weighing operation; they allow the bag to be re-tied and removed from the discharging frame.

3. Hygienic Liner Clamp



Our Hygienic Liner Clamps offer easy management of loose liners preventing product spillage and, combined with the tensioning action of the sprung loaded bag support arms, prevent the distension of the liner into downstream equipment. When housed in a cabinet under negative pressure, they offer 'total containment'.

4. Metering Feeders



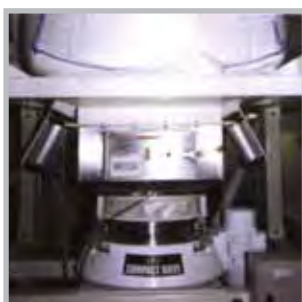
Using our own flexible screw conveyor technology, or proprietary equipment, we are able to offer a comprehensive range of gravimetric and volumetric metering feeders for the reliable and accurate dosing of ingredients or additives into mixers, reactors, process vessels or liquid flows.

5. Spout Stretcher (patented)



Pneumatic stretching and sealing device assists the flow of poor flowing or very light product through the bag spout and into a downstream vessel, valve or conveyor. It also provides total dust containment of dusty or noxious products.

6. Sieve



An integral vibratory sieve provides assurance that product from a Bulk Bag is suitably screened for lumps and other impurities before entering the discharge chute.

7. Mobile Frame



A robust mobile frame, with towing facility if required, provides a versatile arrangement for processors who require discharge of Bulk Bags at several locations. (This option is not available for Type 6 with Integral Hoist).

OPTIONAL EQUIPMENT

8. Mobile Trolley



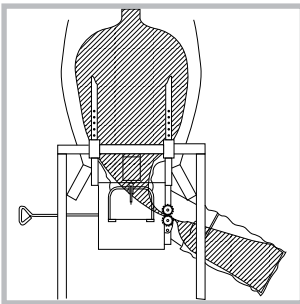
This useful device, often used with a Type 5 Low Loader, can also be supplied as a storage frame for Bulk Bags. If located on a mezzanine, it can provide direct loading into packaging or process machine hoppers.

9. Lifting Frame & Liner Clamp



Bulk Bags are often supplied with long inner liners which require clamping at the top to prevent fouling the take-off conveyor.

10. Liner Remover and Tensioner



Liners can be removed from the bag after discharge and contained without emission of dust with use of this powered retraction device and compaction facility.

11. Bag Folder



A bag folding table provides a practical solution to bag disposal problems and allows extraction of residual product from the bulk bag.

12. Glove Box



Glove box arrangement for untying bags containing hazardous product, preventing operator exposure to product.

13. Static Protection



Designed for use in hazardous atmospheres with a Type C static dissipative bag, the earth monitoring device automatically checks that the bag is correctly earthed before discharge can commence.

14. No Tools Support Arm Adjustment



This development significantly reduces the time it takes to alter the height of the support arms to accommodate differing height bags.



15. Sack Tip Door



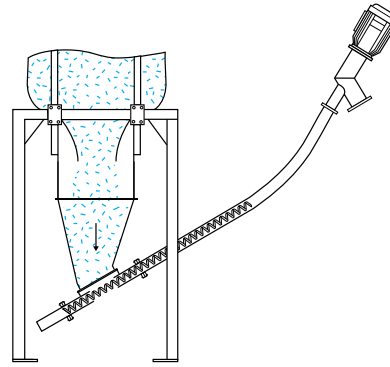
We can supply a large sack tip door so that if your supply of Bulk Bags is interrupted, delivery of raw materials can be accepted in small sacks and handled by the Spiroflow discharger.

CONVEYING EQUIPMENT TO SUIT YOUR PRODUCT

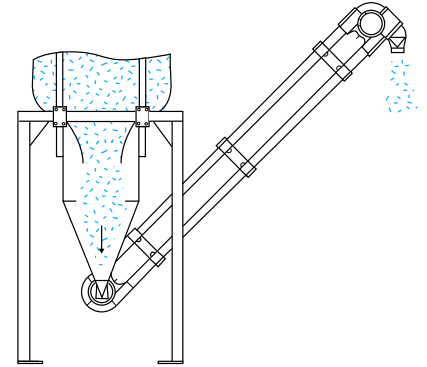
Choosing the right conveyor system to integrate with your Bulk Bag Discharger is determined by several factors, for example:

- Nature of product and flow properties
- Length of conveyor
- Angle of lift
- Flow rate required
- Accuracy and/or consistency of flow rate
- Degradation or separation considerations

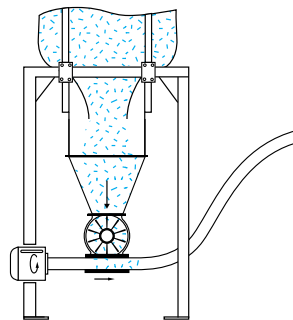
These are just some of the criteria which our technical team take into consideration when designing our system. Spiroflow's 30 years experience in conveying, weighing and metering dry solids and ingredients is your assurance that the right selection is chosen to suit your particular requirements. Our vast database of materials and extensive testing facility is at your disposal, together with our project design team who are geared to handle complete powder handling schemes.



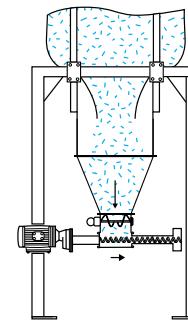
Flexible Screw



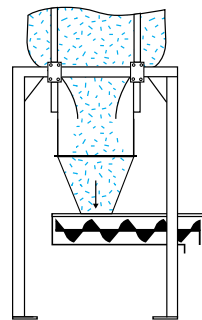
Aero-Mechanical



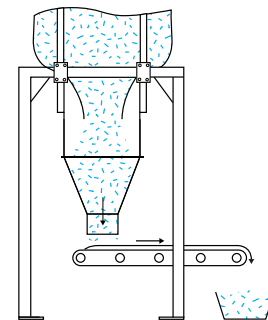
Pneumatic



Feeder



Rigid Screw



Belt

We believe that after-sales support and service form an integral part of the product. This fundamental belief is the basis of many long term partnerships we have enjoyed with our customers.

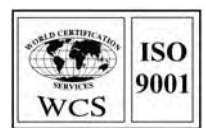
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