

Technical Introduction

Compact-S is continuous Loss In Weight metering mixing device for spherical, cylindrical and flat raw materials.

Compact-S is suitable for continuous metering of compounds in production processes such as POY, DTY, FDY and other chemical fiber long production process. Compact-S is equipped with 1 precision single screw metering station on each production line and the output is up to 2000kg/h. It is used to meter masterbatches or additives and provide main ingredients can be monitored.

The feedback signal of the screw speed or the feedback signal of the melt metering pump is calculated and obtained by the user.

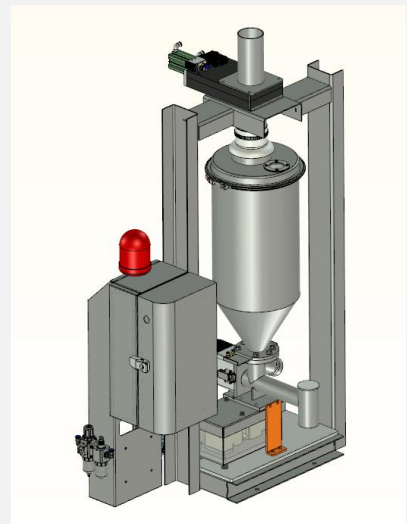
According to their own process needs, any combination of CS45, CS72 two different kinds of Loss In Weight feeding screw module is used.

The Compact-S uses the Loss In Weight operating principle to continuously monitor and calibrate the flow of raw materials. Metering accuracy can reach $\pm 0.5\%$, the entire system is designed to feed raw materials at 170° high temperatures.

The small installation space of the extruder inlet, the entire system is designed to be compact and doesn't occupy a large area. Small area in order to maintain or replace raw materials is more conveniently. It's simple, quick disassembly and easy removal feature takes a very few minutes to clean material in the equipment, which reduces the cleaning time to minimum.

Screw and Feeding range

Note: The correct selection of screw is based on specific raw materials and has been fully tested to confirm. Different raw material characteristics determine the actual feeding range. If you need a specific and accurate feeding range, please provide us with raw materials, we can test and conform in our laboratory. The feeding data in the following table is a theoretical reference value and can only be used as a reference for selection.



| | Single Concave Screw  | Single Auger Screw  | Single Auger Screw  | Screw Speed Range |
|----------------|---|---|--|-------------------|
| Diameter×Pitch | 09*05mm | 12*15mm | 20*24mm | |
| CS45 | 0.5 - 5 dm ³ /h | 2.2 - 22 dm ³ /h | 10 - 100 dm ³ /h | 15 - 150Rev/min |
| Diameter×Pitch | -- | 24*35mm | 32*35mm | |
| CS45 | -- | 20- 200 dm ³ /h | 26 - 260 dm ³ /h | 15 - 150Rev/min |
| Diameter×Pitch | | 46*30mm | 60*35mm | |
| CS72 | | 150 - 1500 dm ³ /h | 250 - 2500 dm ³ /h | 30 -300Rev/min |

| Material | Screw | 0.3 | 0.6 | 1.5 | 3 | 5 | 8 | 10 | 15 | 20 | 30 | 50 | 70 | Kg/h |
|--------------|-------|-----|-----|-----|---|---|---|----|----|----|----|----|----|------|
| Master Batch | 0905B | | | | | | | | | | | | | |
| Master Batch | 1215A | | | | | | | | | | | | | |
| Master Batch | 2024A | | | | | | | | | | | | | |

| Material | Screw | 12 | 18 | 60 | 100 | 120 | 130 | 180 | 190 | 250 | 1300 | 1600 | 1900 | Kg/h | |
|-----------|-------|----|----|----|-----|-----|-----|-----|-----|-----|------|------|------|------|--|
| PET Chips | 2435A | | | | | | | | | | | | | | |
| PET Chips | 3235A | | | | | | | | | | | | | | |
| PET Chips | 4630A | | | | | | | | | | | | | | |
| PET Chips | 6035A | | | | | | | | | | | | | | |

Standard Structure

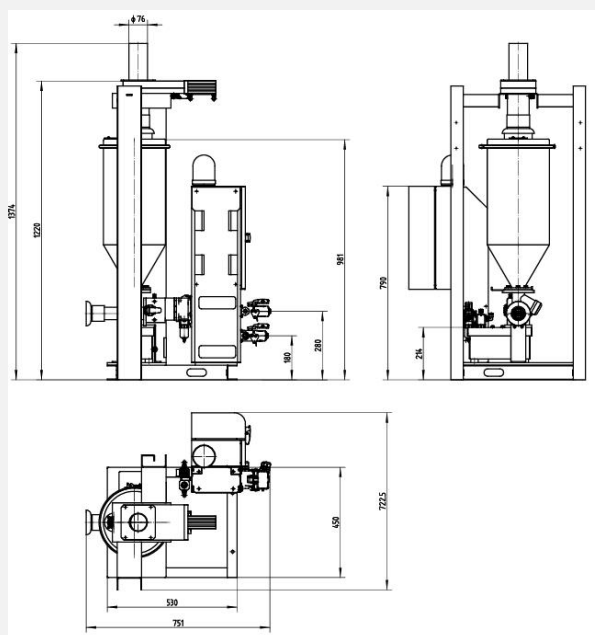
| | |
|----------------------|---|
| Refill Valve : | D70mm – CS45 CS72-50 Aluminum alloy, Hard oxidation treatment |
| Dosing Hopper : | 20L - CS45 50L - CS72 304 stainless steels |
| Single Screw : | 316 stainless steels D9/D12/D20/D24/D32mm - CS45 D46/D60mm - CS72 |
| Motor Reducer : | 0.12kw, 220V/1Phase - CS45 0.2kw, 220V/1Phase - CS72 |
| Weighing Unit : | 75kg - CS45 100kg - CS72 |
| Pump Signal module : | 16-bit DI |



Design parameters

| | |
|------------------------|---|
| Material : | Contact Part: Stainless steel, mirror polishing |
| Sealing : | Silicone or PTFE |
| Material Temperature : | ≤170°C (Standard) |
| Ambient Temperature : | 0°C-50°C |
| Ambient Humidity : | ≤80% |
| Protection Class : | IP54 |
| Power Supply : | 220V±10%, AC, 1P, 50Hz |
| Loading Power : | 0.3 KW (Max.) |
| Weight : | 70kg |
| Exterior Color : | RAL7035 |

Mechanical Drawings



Paid Spare Parts List

| Material Name | Model Specifications | Material Code |
|------------------------|----------------------|----------------------|
| Inlet Soft Connection | D89mm /Silicone | 413ISC00114S001102 |
| Outlet Soft Connection | D60mm /Silicone | 413ISC00060S001101 |
| DC Motor | S90B120220AGU-20K-T | 430MDC120090010 |
| DC Motor | S104B200220GU-10K-T | 431MDC200104010 |
| DC Drivers | FLDBLS-07 | 440DCD000750001 |
| LIW Control Panel | EC-LW | 4110ECLW0STM32000102 |

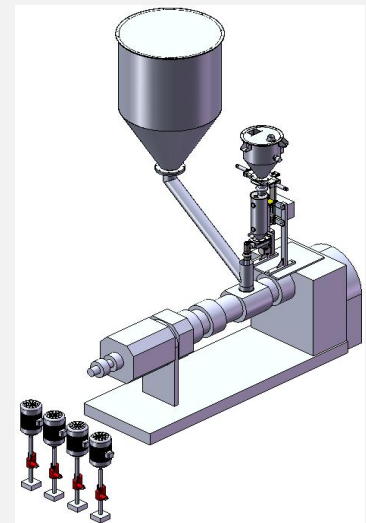
Associated Configuration

| | |
|-----------------------------|-------------------------------------|
| 7" HMI Operation Controller | M240 HMI Operation Controller |
| PC Host Computer | 20" Data Collection System |
| Communication Module | ->TCP/IP Communication Module |
| DI16 Pump Detection Module | Support RPM Signal or ON/OFF Signal |
| Refill Valve | ISV70 - 70mm Slide Valve |

Provide Tracking Principle

RPM Mode: RPM Operating Mode: It means a proximity switch is mounted on the output shaft of the metering pump. The Sonner DI16 speed detection module on the signal processing to calculate the metering pump real-time speed. The speed signal is transmitted to the M240 Loss In Weight control system via a Modbus RTU communication port and calculated real-time spinning machine extruder output.

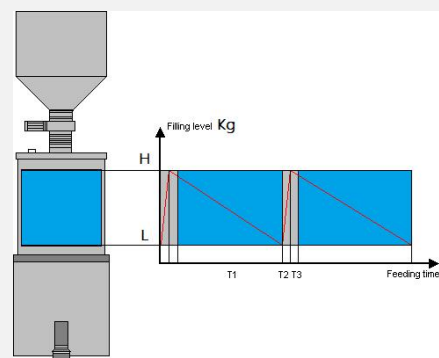
ON/OFF Mode: Signal detection is carried out by the operating signal of the frequency converter connected to the metering pump. The Sonner DI16 DI Signal Detection Module calculates the operating status of each metering pump for signal processing. The operating signal is transmitted to the M240 weightlessness control system via a Modbus RTU communication port and calculated real-time spinning machine extruder output



Loss-In-Weight-Refill Control Time

Typical Refill Number as below form:

| | | |
|--------------------------|--------------|--------------|
| Typical Maximum Capacity | 150kg/h | 500Kg/h |
| Diameter of Refill valve | 70mm | 70mm |
| Volume of Dosing Hopper | 20L | 50L |
| Bulk Density | 0.7kg/l | 0.7kg/l |
| Typical Refill Weight | 11.2Kg | 35Kg |
| Refill Number | ≤15 times/hr | ≤15 times/hr |



Feeding Accuracy

| | |
|------------------------|---|
| Sampling Measurement | Usually take 15 samples and 60s for one sample (If need Special Requirement, please reference below accuracy form for 5s/10s/15s/30s) |
| Feeding Range | 15: 1 Times Screw |
| Linear Accuracy | ±0.25%-0.5% at 60sec |
| Repeatability Accuracy | ≤0.5% at 2 Sigma, Flow Characteristics of Material Determine Repeatability Accuracy |

Repeatability Accuracy:

It is based on the standard sample variance, which describes the flowrate of the screw feeder in a period of time and the discrete situation of several flow samples in each sampling period. It is one of the important indicators to describe the repeatability error of the screw feeder. The repetition error can be quantified based on the standard deviation.

Linear Accuracy:

It describes the accuracy of each operating point with in the operating range of the feeder from the minimum federate to the maximum feed rate. That is the error between the actual feeding amount and the set amount in the whole range. Smaller the error higher is the linear accuracy of the feeder.

CFE45-1215A Typical Accuracy Testing Table



Weighing Accuracy

| | |
|------------------------------|---|
| Weigh Module | CSP-75/100 |
| Load cell Range | 75Kg/100Kg |
| Protection Class | IP65 |
| Comprehensive Error | < ±0.03% |
| Weighing Resolution | 1: 4'000'000 |
| Operating Temperature | -10 to +60 °C |
| Weight Signal Output | Digital Output Signal Via RS485 |
| Baud Rate Range | 9600 – 38400 baud |
| Sampling time | 6ms – 4500ms programmable |
| Voltage | 24VDC |
| Communication distance | < 500m |
| Operational characteristics | 10ms dynamic weighing scanning cycle; 32-bit DSP high-precision weight calculation |
| Interference characteristics | Intelligent assessment of impact disturbance, the impact of continuous vibration disturbance on feeding operation |
| Suspension characteristics | Double shock absorber anti-mechanical interference design |

The second generation of Sonner has completely independent intellectual property rights of weighing technology, based on 32-bit. DSP arithmetic function chip circuit design and perfect dynamic scale. Weighing software provides customers with highly dynamic weighing technology.

