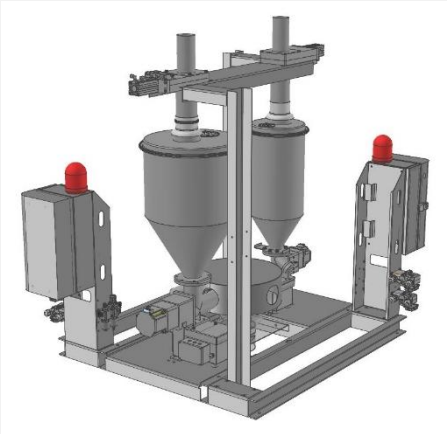
Technical Introduction



Compact-M is continuous Loss In Weight metering mixing device for spherical, cylindrical, flat metering and recycled plastics.

Compact-M can be combined with any other Sonner metering systems, suitable for continuous metering of compounds in production processes, such as chemical fiber long and short fiber production processes. PS, PET, PP and other foam sheet production process.

Compact-M can be configured with 2 to 4 precision single screws simultaneously on each production line. In metering station output can reach up to 2200kg/h and users can change according to their own process needs. Any combination of CS45, CS72 two kinds of Loss In Weight feeding screw module.

Compact-M uses the Loss In Weight operating principle to continuously monitor, calibrate and measure the flow rate of raw materials. Accuracy can reach up to ±0.5%. Entire system is designed to feed raw materials at 170° high temperatures and have a tight fit for the entire system with a tight installation space at the extruder inlet.

Small footprint in order to repair maintenance or replace raw materials is more convenient. It's simple, quick disassembly and removal, easy to clean raw materials, reduce standby time to reduce Minimal, and safe and reliable opera

Feeding screw and feeding range

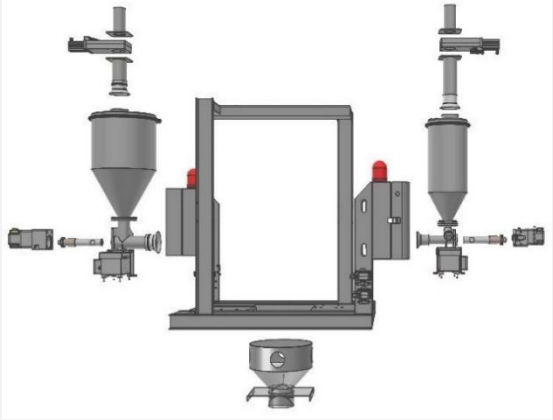
Note: The correct selection of screw is based on specific raw materials and has been fully tested to confirm. Different raw material characteristics determine the actual feeding range. If you need a specific and accurate feeding range, please provide us with raw materials, we can test and conform in 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 – 150 Rev/min
Diameter×Pitch	--	24*35mm	32*35mm	
CS45	--	20- 200 dm^3/h	26 - 260 dm^3/h	15 – 150 Rev/min
	Single Auger Screw	Single Auger Screw	Single Auger Screw	
Diameter×Pitch	46*30mm	60*35mm	60*65mm	
CS72	150 - 1500 dm^3/h	250 - 2500 dm^3/h	350 - 3500 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
MB	0905B													
MB	1215A													
MB	2024A													

Material	Screw	12	18	60	100	120	130	180	190	250	1300	1900	2500	Kg/h
PET	2435A													
PET	3235A													
PET	4630A													
PET	6035A													
PET	6065A													

Standard Structure

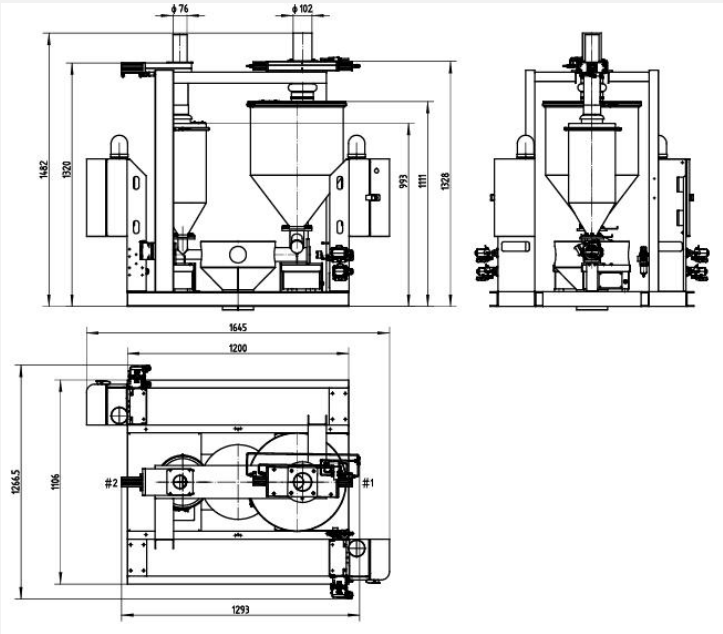


Refill Valve	: D70mm – CS45, CS72-50
	: D100mm – CS72-100
	: Aluminum alloy, Hard oxidation treatment
Dosing Hopper	: 20L - CS45 ; 50L - CS72; 100L – CS72
	: 304 Stainless Steel
Single Screw	: 316 Stainless Steel
	: D9/D12/D20/D24/D32mm - CS45
	: D46/60mm - CS72
Motor Reducer	: 0.12kw, 220V/1Phase - CS45
	: 0.2kw, 220V/1Phase - CS72
Weighing Unit	: 75kg - CS45
	: 100kg - CS72-50
	: 300kg – CS72-100
Static Mixture	: 304 Stainless Steel; Static Mixture Design
Level Control	: 304 Stainless Steel; Rotation Switch; High Level and Low Level Control

Design parameters

Material	: Contact Part: Stainless steel, mirror polishing
Sealing	: Silicone or PTFE
Material Temperature	: ≤170℃ (Standard)
Ambient Temperature	: 0℃-50℃
Ambient Humidity	: ≤80%
Protection Class	: IP54
Power Supply	: 220V±10%, AC, 1P, 50Hz
Loading Power	: 1.5 KW (Max.)
Weight	: 200kg
Exterior Color	: RAL7035

Mechanical Drawings



Paid Spare Parts List

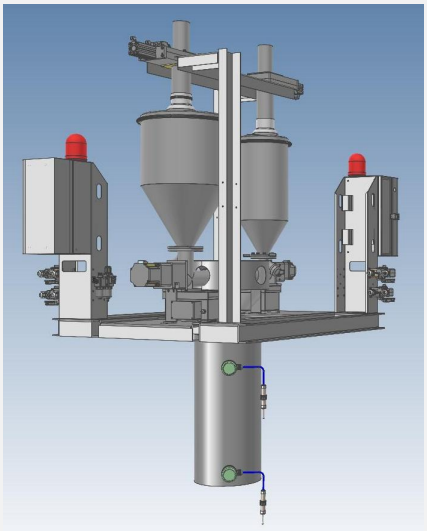
Material Name	Model Specifications	Material Code
Inlet Soft Connection	D114mm/Silicone	413ISC00114S001I02
Inlet Soft Connection	D89mm/Silicone	413ISC00089S001I01
Outlet Soft Connection	D60mm/Silicone	413ISC00060S001I01
DC Motor	S90B120220AGU-20K-T	430MDC120090010
DC Motor	S104B200220GU-10K-T	431MDC200104010
DC Drivers	FLDBLS-07	440DCD000750001
LIW Control Panel	EC-LW	4110ECLW0STM32000I02

Associated Configuration

7" HMI Operation Controller	M240 HMI Operation Controller
PC Host Computer	20" Data Collection System
Communication Module	->TCP/IP Communication Module
CCO Silo for Level Control	CCO168-500
CCO Silo for Level Control	CCO325-500
Refill Valve	ISV70 - 70mm Slide Valve
Refill Valve	ISV100 - 100mm Slide Valve

Provide Tracking principle

Each Loss in Weight scale is controlled by software through high- and low-level signal detection of CCO components. Acceleration and deceleration are to achieve a long time in the CCO buffer. Silo raw materials in the high and low material positions. Thus, ensuring a stable and safe supply of spinning extruder output. Even the spinning position is broken and the extruder metering pump stops. Loss In weight scale can be automatically. Deceleration or shutdown, after the metering pump resumes the operation and it automatically start the Loss in Weight scale. The new recovery automatic fill level remains tracked.



Low Level Area: When the material level reaches the low-level area, all Loss in Weight scales will automatically synchronize into the acceleration mode. When the raw material level exceeds the low material area, all Loss in Weight scales will automatically synchronize into the deceleration mode and the entire system will run in the medium level area for a long time

High Level Area: Extruder output is reduced due to spinning equipment in case of wire breakage. Loss In Weight scale systems have the potential to enter high-level areas and all Loss in Weight scales are used in long-term operation. In deceleration mode, if the high fill level is still triggered then all Loss in Weight scales stop synchronously. After waiting for the spinning machine return to normal position, the raw material is below the high material level, So the system is back up and running. Enter the downward area of the fill level into the middle level area.

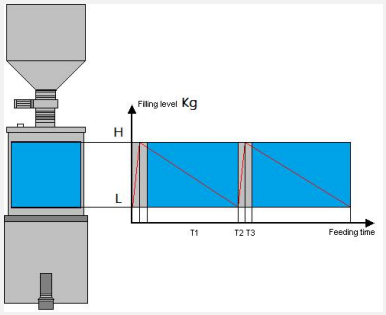
Static Mixer

When each material is accurately measured by the Loss-In-Weight feeder, enter the static mixer designed by Sonner then mix together; Sonner design static mixer according to static mixing principle, materials have an efficient mixing in a short time, then enter the extruder.

Loss-In-Weight-Refill Control Time

Typical Refill Number as below form:

Typical Maximum Capacity	150kg/h	420Kg/h	840kg/h
Diameter of Refill valve	70mm	70mm	100mm
Volume of Dosing Hopper	20L	50L	100L
Bulk Density	0.7kg/l	0.7kg/l	0.7kg/l
Typical Refill Weight	11.2kg	28kg	56kg
Refill Number	≤15 times/hr	≤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.

CFE72-4630A Typical Accuracy Testing Table

Accuracy Test Report

Customer And Feeder Information

Customer:		Order No.:	
Feeder Type:	CS72-100L	SN.:	SH21324025-2
Screw:	4630A	Scale:	100
Speed Range(rpm/min):	30-300	Motor(kw):	0.2

Material

Name:	PET	Shape:	Granule
Fluidity:	Good	Bulk Density(kg/l):	0.6

Running

Setpoint(kg/h):	100	Actual Current(A):	0.1
Screw Speed(rpm):	25.6	Feeder Factor:	65.9
Test Time:	2024-07-06 15:02:49	Test Person:	Wuzhiping

Measuring Result

Sample(S)	5	10	15	30	60	120
No:	152	75	50	24	11	5
S dev(g)	1.588	1.684	1.900	1.896	1.371	1.870
S dev(%)	1.142	0.606	0.456	0.228	0.082	0.056
2S dev(%)	2.283	1.212	0.912	0.455	0.165	0.112
Mean(g)	139.117	277.984	416.793	833.115	1666.037	3332.090
Setpoint(g)	138.889	277.778	416.667	833.333	1666.667	3333.333
SP dev(%)	0.164	0.074	0.030	-0.026	-0.038	-0.037

60s Samples

1667.123	1662.474	1665.170	1668.798	1664.964
1663.551	1666.746	1665.737	1663.860	1666.612
1669.281	1665.194	1664.370	1663.710	1663.375

Shanghai Sonner Intelligent Equipment Co.,Ltd
www.sonnerfeeder.com
Version: V1.0

Weighing Accuracy

Weigh Module	CSP-75/100/300
Load cell Range	75Kg/100Kg/300kg
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.