

Solids Flowmeters

SITRANS WF350

Operating Instructions · 10/2011



SITRANS

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Safety Guidelines

Warning notices must be observed to ensure personal safety as well as that of others, and to protect the product and the connected equipment. These warning notices are accompanied by a clarification of the level of caution to be observed.

Qualified Personnel

This device/system may only be set up and operated in conjunction with this manual. Qualified personnel are only authorized to install and operate this equipment in accordance with established safety practices and standards.

Unit Repair and Excluded Liability:

- The user is responsible for all changes and repairs made to the device by the user or the user's agent.
- All new components are to be provided by Siemens Milltronics Process Instruments.
- Restrict repair to faulty components only.
- Do not reuse faulty components.

Warning: Cardboard shipping package provides limited humidity and moisture protection. This product can only function properly and safely if it is correctly transported, stored, installed, set up, operated, and maintained.

This product is intended for use in industrial areas. Operation of this equipment in a residential area may cause interference to several frequency based communications.

Note: Always use product in accordance with specifications.

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- For a selection of Siemens Milltronics weighing manuals, go to: **www.siemens.com/processautomation**. Under Weighing Technology, select *Continuous Weighing Systems* and then go to the manual archive listed under the product family.

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Solids Flowmeters SITRANS WF350

Operating Instructions

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Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.

⚠ WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.

⚠ CAUTION
with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

CAUTION
without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

NOTICE
indicates that an unintended result or situation can occur if the relevant information is not taken into account.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Introduction

Note

The Siemens solids flowmeter is to be used only in the manner outlined in this manual, otherwise protection provided by equipment may be impaired.

- It is your responsibility to read this manual before installing and starting up any component of the weighing system to which the flowmeter is being applied.
-

NOTICE
For industrial use only
This product is intended for use in industrial areas. Operation of this equipment in a residential area may cause interference to several frequency based communications.

1.1 The manual

This manual covers only flowmeter installation, operation, and maintenance procedures. Sensing head and integrator instruction manuals are available for download from our web site:

Siemens weighing (<http://www.siemens.com/weighing>)

Follow these operating instructions for quick, trouble-free installation, and maximum accuracy and reliability of your weighing system.

We always welcome suggestions and comments about manual content, design, and accessibility. Please direct your comments to:

Technical publications (<mailto:techpubs.smpi@siemens.com>)

Safety notes

2.1 General safety instructions

**CAUTION**

Correct, reliable operation of the product requires proper transport, storage, positioning and assembly as well as careful operation and maintenance. Only qualified personnel should install or operate this instrument.

Note

Alterations to the product, including opening or improper repairs of the product, are not permitted.

If this requirement is not observed, the CE mark and the manufacturer's warranty will expire.

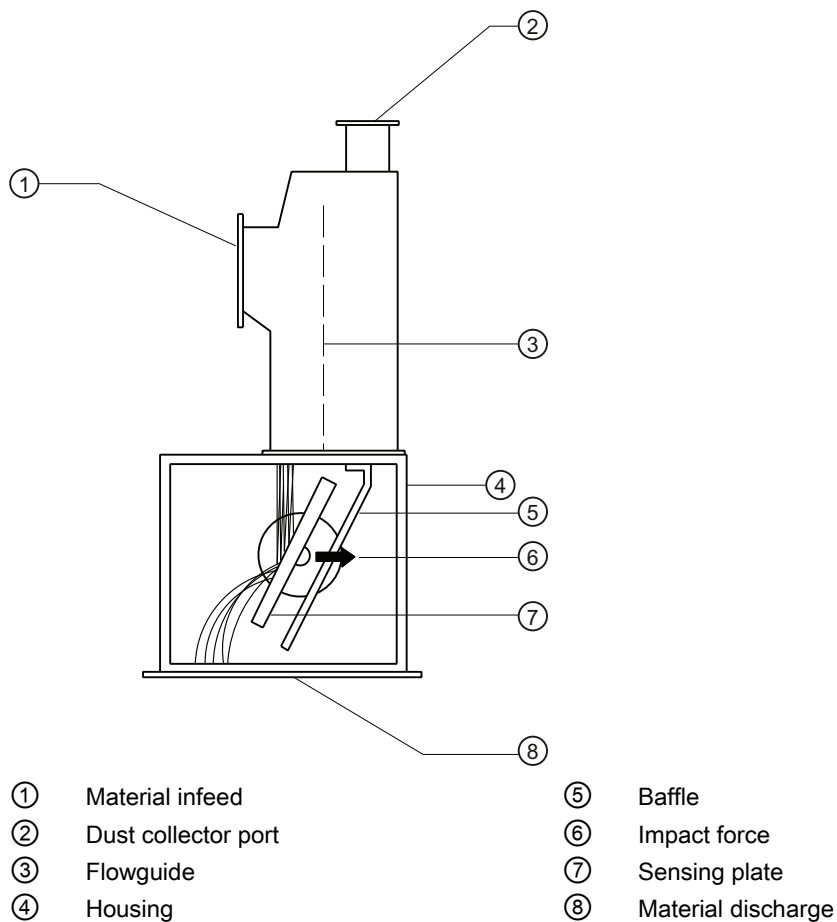
Safety notes

2.1 General safety instructions

Description

3.1 SITRANS WF350

SITRANS WF350 solids flowmeters are heavy-duty low to medium capacity flowmeters for light density powders conveyed by aerated gravity conveyors. The 40 t/h version, combined with a SITRANS WFS300 sensing head, is suitable for material flowrates up to 40 t/h (44 STPH). The 300 t/h version, with a SITRANS WFS320 sensing head, is suitable for up to 300 t/h (330 STPH).



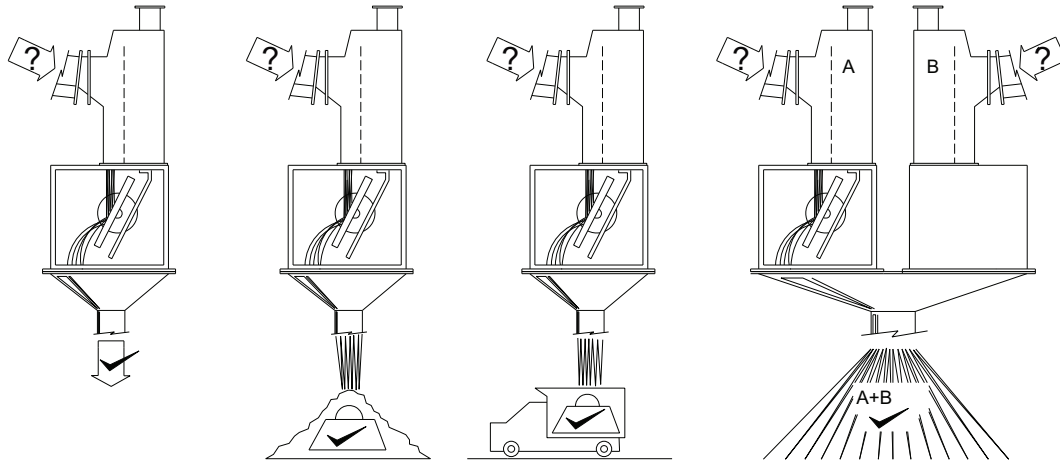
The flowmeter sensing head LVDT output signal is processed by the integrator (ordered separately) to:

Description

3.1 SITRANS WF350

- monitor material flow
- maintain accurate material inventory
- provide batch control for process or loadout purposes¹
- control the ratio of materials in continuous blending processes¹

¹additional equipment required



System components

Components of the SITRANS WF350 solids flowmeter system include:

- SITRANS WF350 flowmeter housing and flowguide
- SITRANS WFS300 or WFS320 sensing head (ordered separately)
- stainless steel sensing plate (ordered separately)
- electronic flowmeter integrator (ordered separately)

Installing/mounting

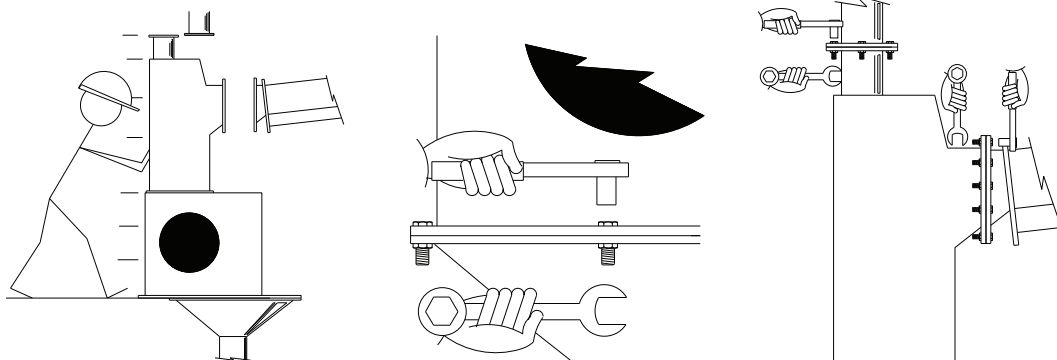
4.1 Location

Install SITRANS WF350 in an area that is suitable for the system approval rating. Position the flowmeter to permit opening the sensing plate housing door for sensing plate access, and removing the sensing head rear cover for calibration purposes.

1. Position the flowmeter into the desired location.
2. If necessary, shim the housing base to level.
3. Fasten the housing discharge to the downstream material chute.
4. Fasten the flowguide to the conveyor/flowguide infeed chute.
5. Fasten the dust collector port to the dust collector pipe.
6. Refer to SITRANS WFS300 or WFS320 operating instructions for sensing head installation, levelling, sensing plate installation, and integrator interconnection instructions.
7. Tune the dust collector port air volume to match that of the aerated gravity conveyor exhaust port, and the downstream dust collector port.

Note

Provide sufficient mechanical support for the flowmeter and chutework.



Service and maintenance

5.1 Maintenance

If material sticks to the sensing plate, incorporate a program to ensure that the impingement area remains clean. If sticking persists, contact your Siemens representative.

Check for wearing of the sensing plate. If wear is excessive, contact your Siemens representative.

Unit repair and excluded liability

All changes and repairs must be done by qualified personnel and applicable safety regulations must be followed. Please note the following:

- The user is responsible for all changes and repairs made to the device.
- All new components must be provided by Siemens.
- Restrict repair to faulty components only.
- Do not re-use faulty components.

5.2 Technical support

If you have any technical questions about the device described in these Operating Instructions and do not find the right answers, you can contact Customer Support:

- Via the Internet using the **Support Request**:

Support request (<http://www.siemens.com/automation/support-request>)

- Via Phone:
 - Europe: +49 (0)911 895 7222
 - America: +1 423 262 5710
 - Asia-Pacific: +86 10 6475 7575

Further information about our technical support is available on the Internet at

Technical support (<http://support.automation.siemens.com/WW/view/en/16604318>)

Service & Support on the Internet

In addition to our documentation, we offer a comprehensive knowledge base online on the Internet at:

Service & Support (<http://www.siemens.com/automation/service&support>)

There you will find:

- The latest product information, FAQs, downloads, tips and tricks.
- Our newsletter, providing you with the latest information about your products.
- Our bulletin board, where users and specialists share their knowledge worldwide.
- You can find your local contact partner for Industry Automation and Drives Technologies in our partner database.
- Information about field service, repairs, spare parts and lots more under "Services."

Additional Support

Please contact your local Siemens representative and offices if you have additional questions about the device

Find your contact partner at:

Local contact person (<http://www.siemens.com/automation/partner>)

Technical data

6.1 Specifications

Model

40 t/h version

300 t/h version

Product

fine powder up to 3 mm (0.13")

Product temperature

-40 to +232 °C (-40 to +450 °F)

Ambient temperature

-40 to +60 °C (-40 to +140 °F)

Accuracy

±1 %, 33 to 100 % of design capacity; extended accuracy range with linearization function of integrator

Accuracy subject to: on factory approved installations the flowmeter system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for at least ten minutes running time.

Technical data

6.1 Specifications

Repeatability

±0.2 %

Capacity range

40 t/h version	0.2 to 40 t/h (0.2 to 44 STPH)
300 t/h version	20 to 300 t/h (22 to 330 STPH)

Construction

painting mild steel flowguide and sensing plate housing and AISI 304 (1.4306) stainless steel sensing plate

optional special materials and coatings for flowguide and sensing plate

Approvals

General	CE, C-TICK
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Stainless steel options meet FDA and USDA requirements for food processing.

Dimension drawings

7.1 SITRANS WF350 40 t/h version - outline and mounting

7.1 SITRANS WF350 40 t/h version - outline and mounting

- | | |
|--|---|
| ① Through holes, qty D | ⑧ Access and bolt holes to suit sensing head |
| ② Flowguide | ⑨ Minimum allowance for sensing head installation |
| ③ Housing | ⑩ 8 holes, 19 mm (0.75") dia.
191 mm (7.5") bolt circle dia. |
| ④ Hinged, gasket door | ⑪ Dust collector port |
| ⑤ Minimum allowance for sensing plate installation | ⑫ Sensing head center line |
| ⑥ Through holes, qty 24 | ⑬ Flowguide center line |
| ⑦ Flowguide center line | |

Size	A	B	C	D
B	203 (8)	76 (3)	356 (14)	12
D	305 (12)	102 (4)	457 (18)	14

Dimensions in mm (in)

Note

- Mild steel or stainless construction.
- Sensing head support should be rigid and independent of housing.

- | | |
|--|--|
| ① Through holes, qty E | ⑦ Access and bolt holes to suit sensing head |
| ② Flowguide | ⑧ Minimum allowance for sensing head and cover removal |
| ③ Housing | ⑨ 8 holes, 22 mm (0.88") dia. 241 mm (9.5") bolt circle dia. |
| ④ Hinged, gasket door | ⑩ Sensing head center line |
| ⑤ Minimum allowance for sensing plate installation | ⑪ Sensing head shaft center line |
| ⑥ Through holes, qty 24 | ⑫ Flowguide center line |

Size	A	B	C	D	E
C	254 (10)	127 (5)	419 (16.5)	4 @ 90 mm (4 @ 3.5")	16
E	356 (14)	152 (6)	521 (20.5)	4 @ 114 mm (4 @ 4.5")	16
F	508 (20)	178 (7)	673 (26.5)	6 @ 102 mm (6 @ 4")	20

Dimensions in mm (in)

Note

- Mild steel or stainless construction.
- Sensing head support should be rigid and independent of housing.

Dimension drawings

7.2 SITRANS WF350 300 t/h version - outline and mounting

Application examples

Note

For best performance and limited maintenance requirements, keep in mind material compatibility and flow patterns.

8.1 Materials

Material characteristics for best results:

- low cohesion (flows well through chutes, like a liquid)
- low adhesion (does not stick to surfaces)
- low abrasion (will not wear out chutes, flowguide, or sensing plate)
- low causticity (will not damage internal flowmeter components)

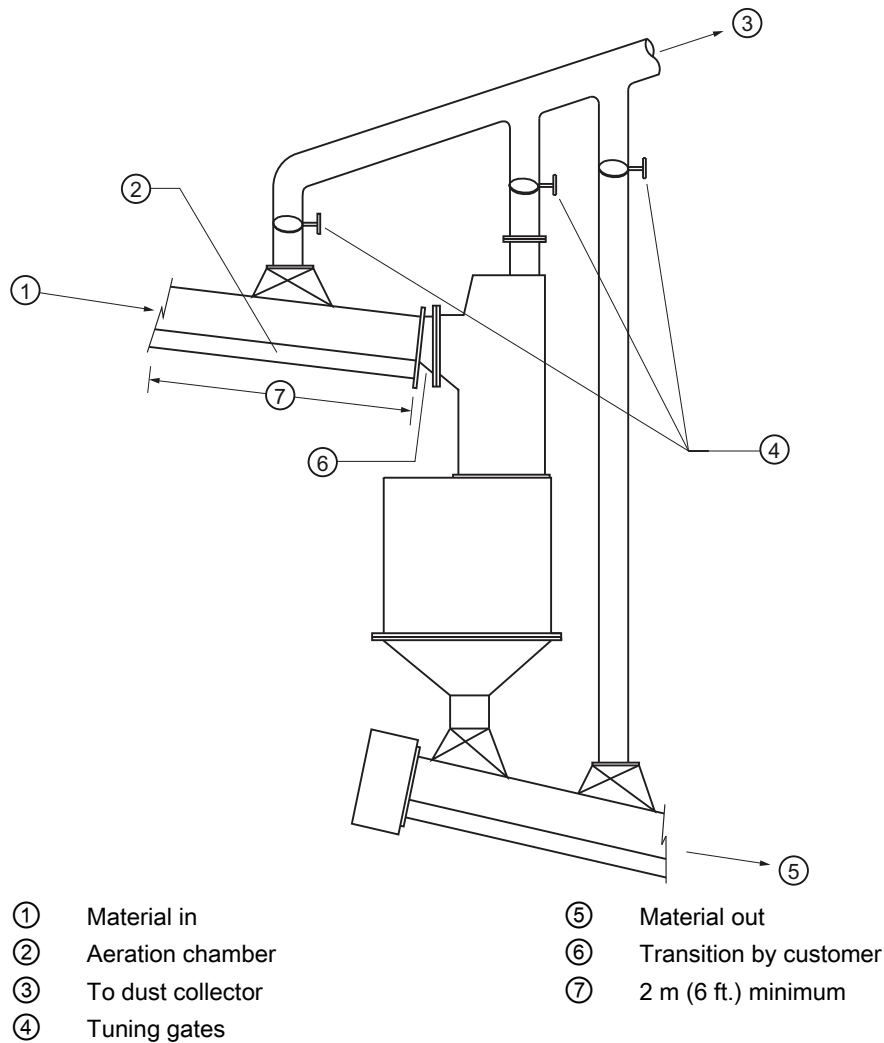
Materials such as powdered alumina, limestone, and finished cement are ideally suited to aerated gravity conveyor and SITRANS WF350 flowmeter applications.

8.2 Material feed

Aerated gravity conveyor

SITRANS WF250 and SITRANS WF350 are specifically designed for use with aerated gravity conveyors. The constant velocity and non-pulsing material discharge of an aerated gravity conveyor are considered ideal for accurate, repeatable performance. The conveyor discharge/flowmeter infeed transition chute should be as short as possible and at the same angle as the flowmeter flowguide. Fabricate the transition chute so the conveyor aeration chamber is not vented directly into the flowmeter.

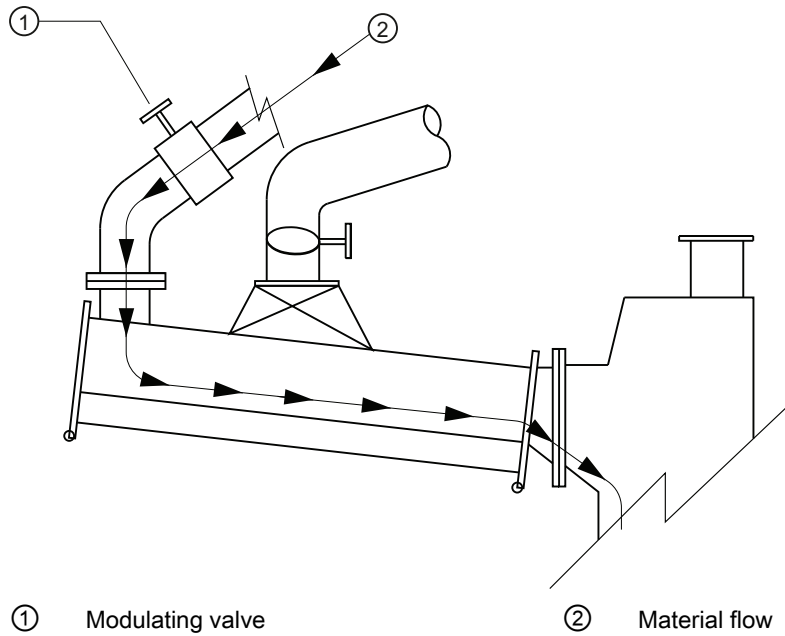
Make sure the the flowmeter discharge chute is large enough so material cannot back up into the flowmeter housing.



A mechanical or automatic modulating valve may be required for:

- material flowrate control
- pulsing conveyor infeed damping

If a modulating valve is used, reverse the direction of material flow after the valve and before the material enters the aerated gravity conveyor.



For more information

www.siemens.com/level

www.siemens.com/weighing

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