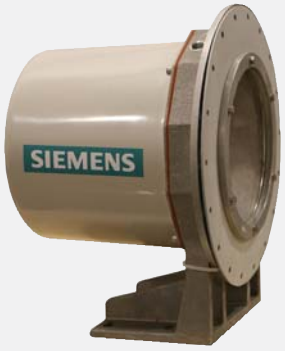
Sensing Heads

SITRANS WFS330

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 level measurement manuals, go to: **www. siemens.com/processautomation**. Under Process Instrumentation, select *Level Measurement* and then go to the manual archive listed under the product family.
- 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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SITRANS

Sensing Heads SITRANS WFS300

Operating Instructions

10/2011

7ML19985CW02-00

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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GERMANY

Order number: 7ML19985CW02
℗ 09/2011

Table of contents

Introduction 1

Note

The SITRANS sensing head 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 sensing head 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 sensing head installation, operation, and maintenance procedures. Flowmeter and integrator instruction manuals are available for download from our web site:

Siemens weighing (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

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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.

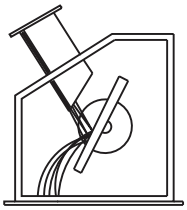
•

Description

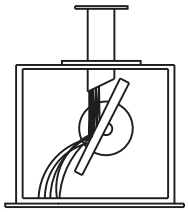
3

3.1 SITRANS WFS300

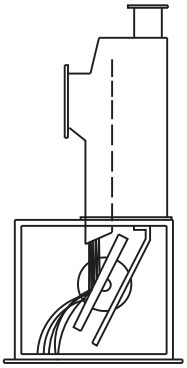
SITRANS WFS300 sensing head is an out-of-process sensing element used for continuous in-line weighing of powdered or granular dry bulk solid materials. It is used with the 40 tph versions of SITRANS WF330 (general purpose), WF340 (vertical material drop), and WF350 (aerated gravity conveyor) dry solids flowmeters.



WF330



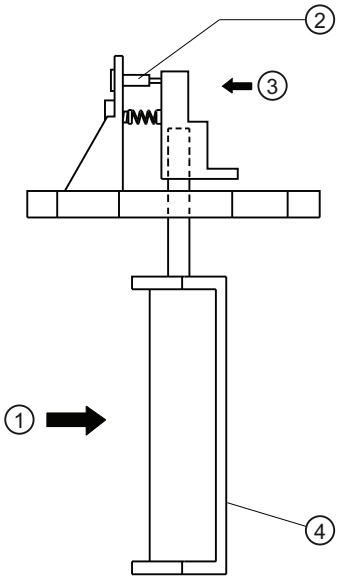
WF340



WF350

3.2 Principle of operation

SITRANS sensing heads are used for continuous weighing of dry bulk solid materials. The material is directed toward the sensing plate. The horizontal impact force of the material deflects the sensing plate, displacing the core of the sensing head LVDT (linear variable differential transformer). The LVDT produces an output signal which is proportional to material flowrate. A viscous fluid damper prevents oscillation of the mechanism and provides mechanical damping of pulsating material flow.



① Impact force
② LVDT
③ Moving beam travel
④ Sensing plate

Installing/mounting

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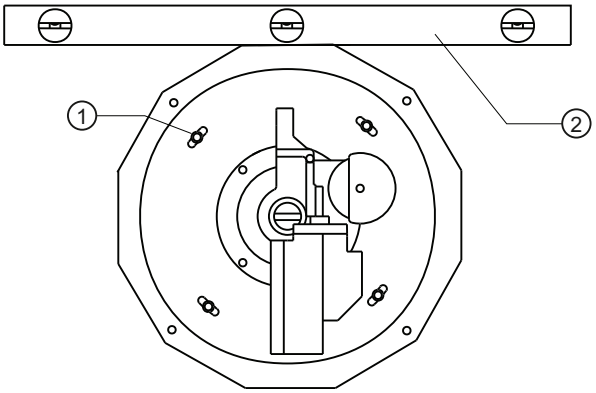
⚠ CAUTION
Installation shall be performed only by qualified personnel in accordance with local governing regulations.

4.1 Sensing head

The WFS300 sensing head is available in two models: side mount and base mount. The base mount version should be used if the flowmeter will be subjected to excessive vibration, for flow rates below 1 t/h, or if handling product temperatures above 60 °C. The side mount version is factory-installed on Siemens flowmeters designed for side mount sensing heads.

4.1.1 Side mount

1. With the flowmeter housing installed, remove the sensing head cover.
2. Loosen the four sensing head mounting bolts.
3. Place a spirit level on the flat top of the sensing head frame: adjust the level by rotating the sensing head, and retighten the mounting bolts.



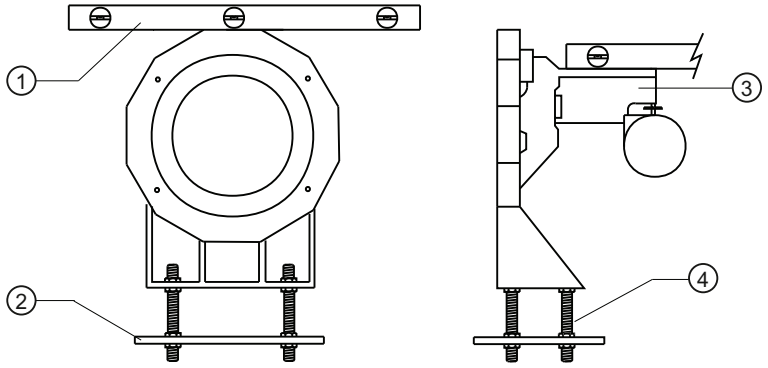
① Mounting bolts ② Spirit level

4.1.2 Base mount

1. With the flowmeter housing installed, mount the sensing head to a rigid support structure.
2. Remove the sensing head fiberglass cover. With the outer gasket in place, bolt the sensing head to the housing.
3. Adjust the sensing head levelling hardware (provided) to establish level in both horizontal planes.

Note

Ensure that the structure used to support the base mount sensing head is capable of supporting the dynamic material impact forces as well as the static weight of the sensing head.



① Spirit level
② Rigid support
③ Moving beam (machined surface)
④ Supporting/levelling bolts

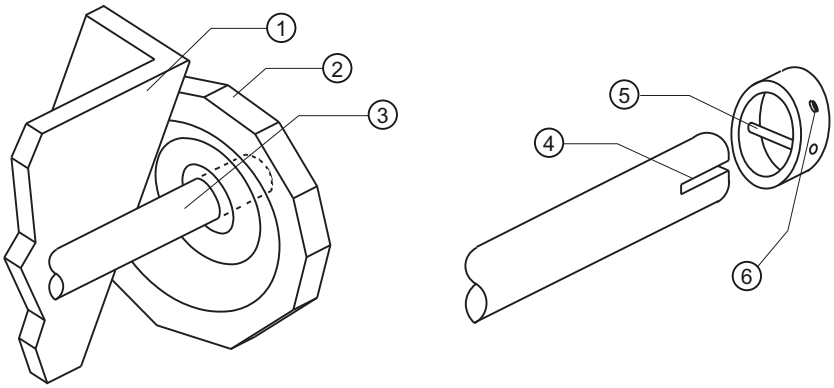
4.2 Sensing plate

1. Open the flowmeter housing access door.
2. Remove the sensing head cover and insert the sensing plate shaft fully into the sensing head shaft socket.

Note

Ensure that the slot in the end of the shaft mates with the roll pin in the back of the socket.

3. Tighten the set screw/hex screw to secure the sensing plate.



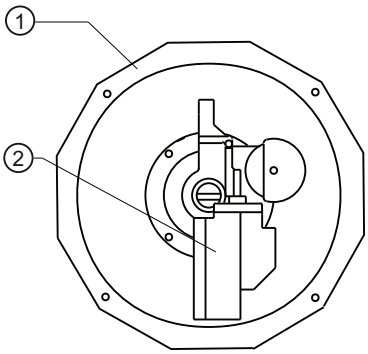
① Sensing plate
② Sensing head
③ Shaft
④ Slot
⑤ Roll pin
⑥ Set screw or hex head screw

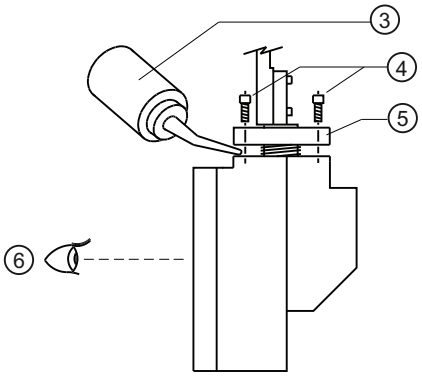
4.3 Viscous damper

1. Remove the two damper cover shipping screws. The damper cover will be held up by a spring.
2. If necessary, top up the damper to near overflowing with the damping fluid supplied.
3. Store the damper cover shipping screws, remaining damper fluid, and filler bottle for future use.

Note

The damper must be full and free of air bubbles, with the damper cover in the UP position, during flowmeter operation.





① Sensing head
② Damper
③ Filler bottle
④ Shipping screws
⑤ Damper cover
⑥ Check that there are no bubbles

Connecting

5

5.1 Unit without LVDT conditioner card

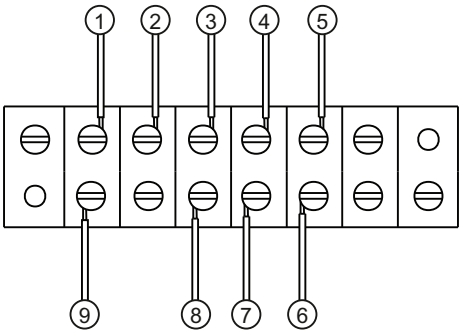


Figure 5-1 Terminal block

LVDT	Integrator (LVDT connection)
① Green	⑨ SIG-
② Black	No connection
③ Yellow	⑧ COM
④ Blue	⑦ EXC-
⑤ Red	⑥ EXC+

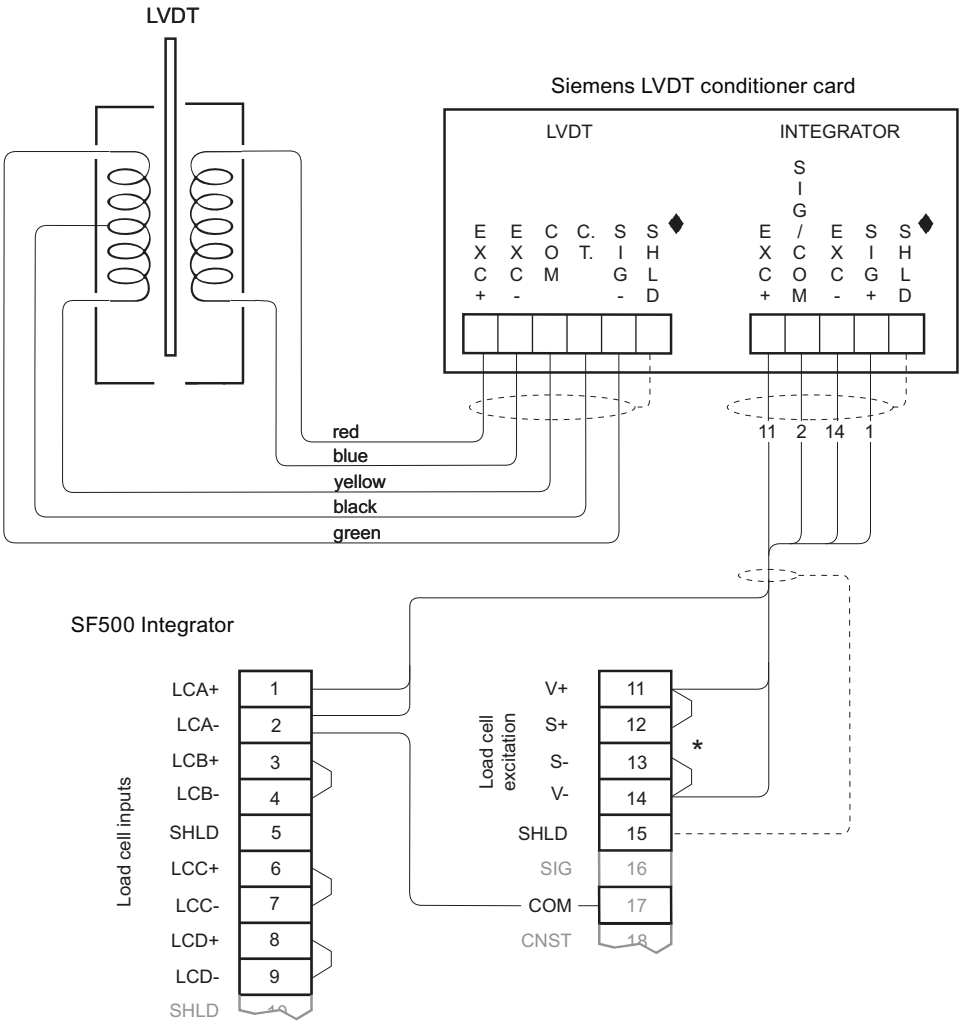
Note

Ground shield at Integrator only.

5.2 Unit with sensing head mounted LVDT conditioner card

LVDT to SF500 Integrator

LVDT to LVDT conditioner card connections are made by Siemens.



*Where separation between the integrator and LVDT conditioner exceeds 150 m (500 ft):

1. Remove the jumpers from SF500 terminals 11/12 and 13/14
2. Run additional conductors:
   - from SF500 terminal 12 to conditioner terminal block marked "Integrator EXC+"
   - from SF500 terminal 13 to conditioner terminal block marked "Integrator EXC-"

For further connection information on specific LVDTs, consult Siemens.

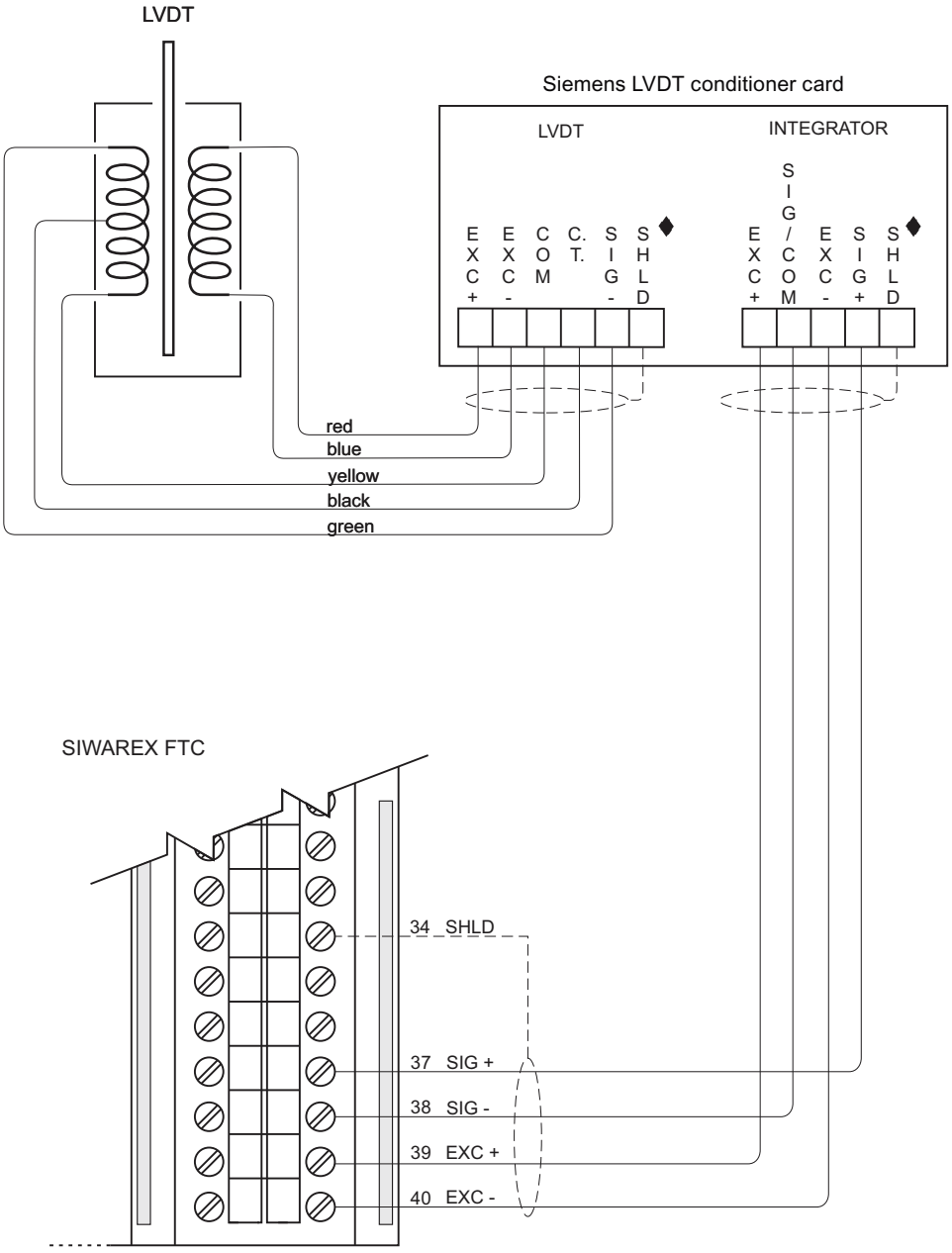
Note

♦Note: Shields are common, but not grounded to chassis. Run cable shields through SHLD terminals and ground at Integrator only.

- Ensure that the connection between TB-2 and TB-17 is made.

LVDT to SIWAREX FTC

LVDT to LVDT conditioner card connections are made by Siemens.

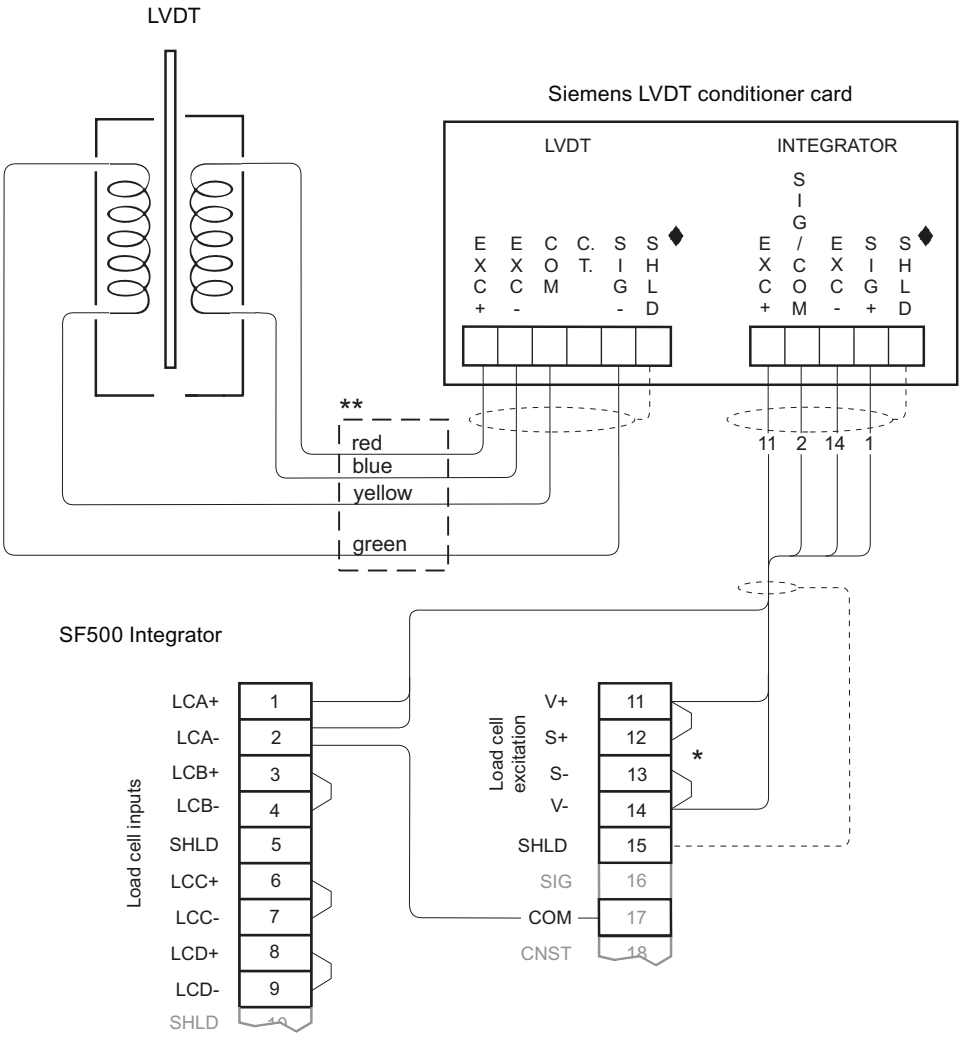


Note

♦Note: Shields are common, but not grounded to chassis. Run cable shields through SHLD terminals and ground at Integrator only.

5.3 Unit with remote-located LVDT conditioner card

LVDT to SF500 Integrator



*Where separation between the integrator and LVDT conditioner exceeds 150 m (500 ft):

1. Remove the jumpers from SF500 terminals 11/12 and 13/14
2. Run additional conductors:
   – from SF500 terminal 12 to conditioner terminal block marked "Integrator EXC+"
   – from SF500 terminal 13 to conditioner terminal block marked "Integrator EXC-"

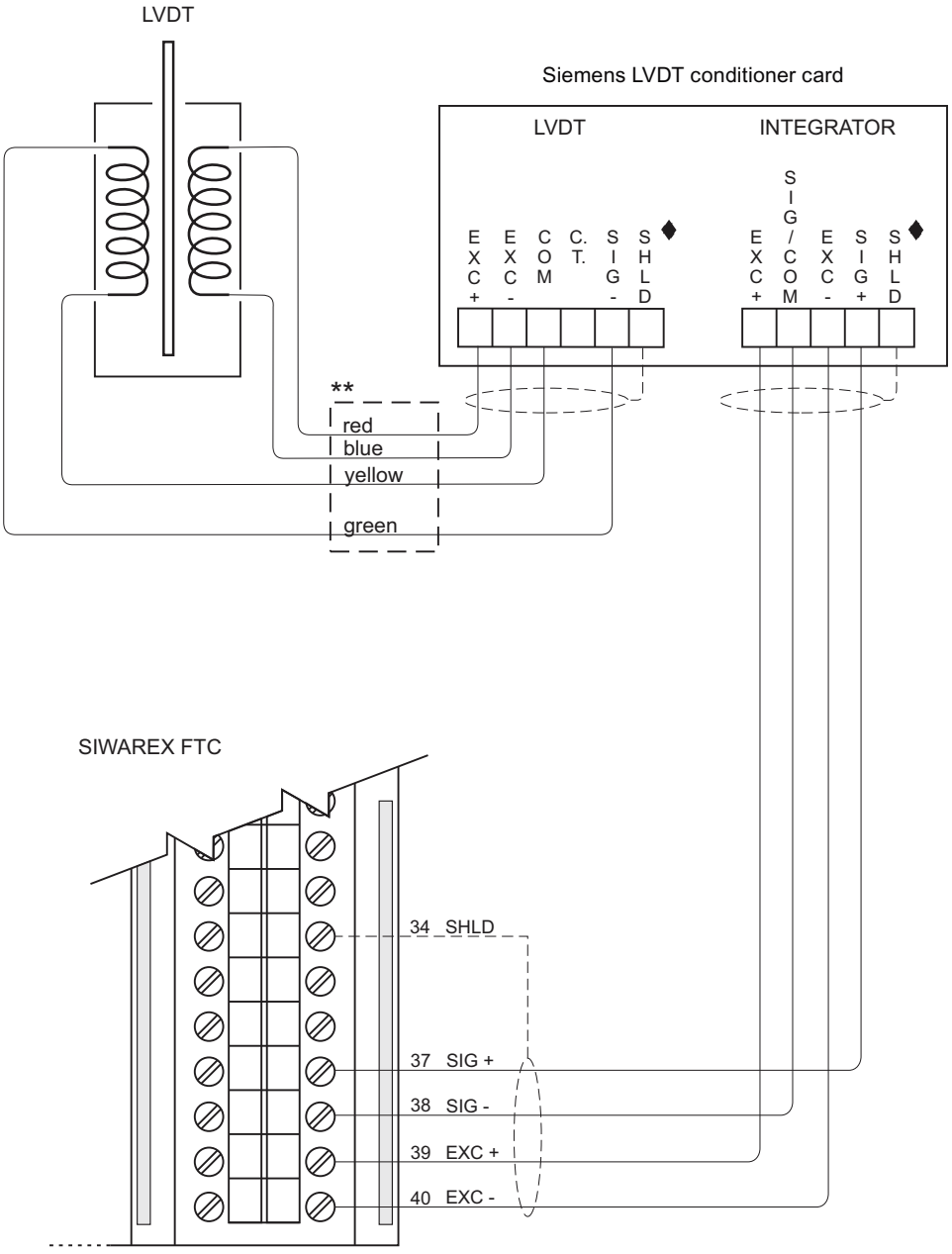
For further connection information on specific LVDTs, consult Siemens.

Note

♦Shields are common, but not grounded to chassis. Run cable shields through SHLD terminals and ground at Integrator only.

- Ensure that the connection between TB-2 and TB-17 is made.

LVDT to SIWAREX FTC



Note

♦Shields are common, but not grounded to chassis. Run cable shields through SHLD terminals and ground at Integrator only.

Commissioning

6

6.1 Calibration

A test weight is a calibration reference used to simulate a material impact force (test rate) on the flowmeter sensing plate during the integrator span calibration. The test weight is also used to perform a test to verify that the flowmeter sensing head is level.

The test rate should be 60 to 80% of the system design rate.

To determine the test rate produced by a specific test weight, calculate:

$$\text{Test Rate (TPH)} = \frac{\text{Test Weight (grams)}}{\text{65* grams/TPH}}$$

Alternatively, to determine the test weight required for a specific test rate, calculate:

$$\text{Test Weight (grams)} = \frac{\text{65* grams}}{\text{1 TPH}} \times \text{Test Rate (TPH)}$$

Note

*For WF350 flowmeters, use 80 grams (instead of 65 grams) when calculating Test Rate or Test Weight.

Example

If the test weight used with a WF330 flowmeter is 500 grams:

$$\text{Test Rate} = \frac{\text{500 grams}}{\text{65 grams/TPH}}$$
$$= 7.69 \text{ TPH}$$

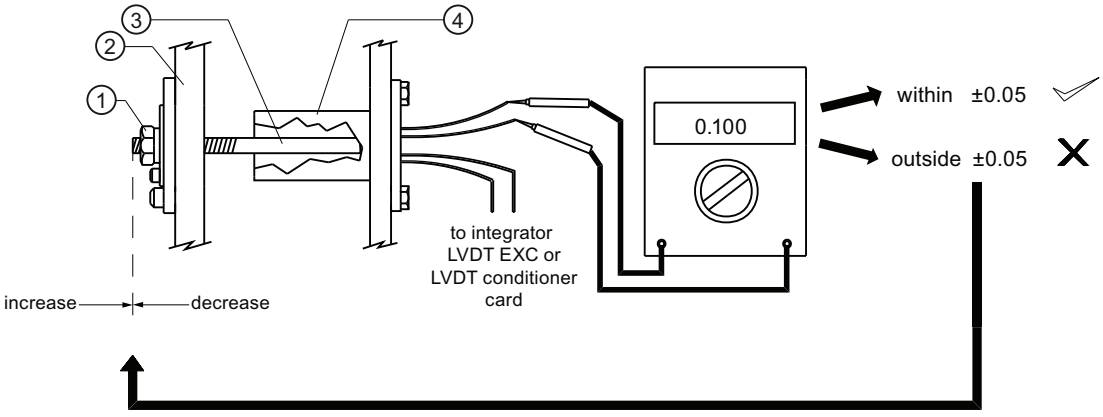
Note

Use metric tons per hour (t/h) or short tons per hour (STPH) as applicable for TPH.

6.2 LVDT Output

Zero adjustment (if required)

1. Connect a voltmeter across the LVDT green and yellow wires.
2. With no load applied to the sensing plate, observe the V AC reading on the voltmeter.
3. If the LVDT output is 0.10 ± 0.05 V AC, skip to Span Test, otherwise, proceed as follows:
   - Loosen the locknut on the LVDT threaded core.
   - Turn the core in/out of the LVDT until 0.10 ± 0.05 V AC is obtained.
   - Tighten the locknut, ensuring the measured value is maintained.



① Locknut
② Moving beam
③ LVDT core
④ LVDT

Note

Ensure the new position of the LVDT core allows free movement within the LVDT bore.

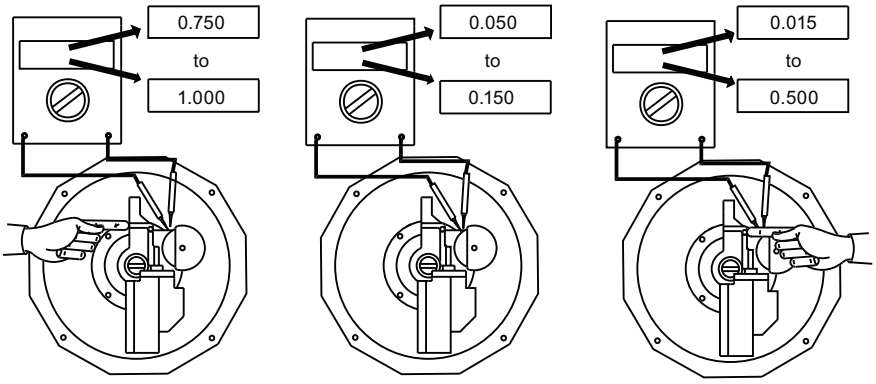
6.3 Span test

1. Gently push the sensing head moving beam to the right. The LVDT output should steadily increase until a level of 0.75 to 1.0 V AC is achieved.

2. Gently push the sensing head moving beam to the left. The LVDT output should steadily decrease until zero is reached and then start increasing again to 0.015 to 0.5 V AC.
3. Ensure the LVDT output always returns to 0.10 ± 0.05 V AC, (to the right hand side of zero) when pressure on the moving beam is released.

Note

The LVDT core must not contact the inside of the LVDT over the range of core travel. The actual LVDT core travel during this procedure is less than 3 mm (1/8").



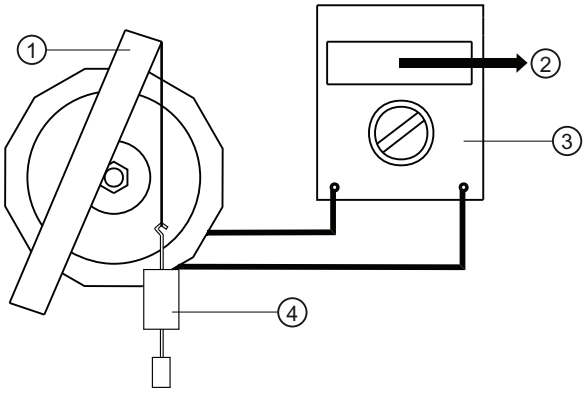
6.4 Sensing head level test

1. With the voltmeter still connected to the LVDT output, hang the test weight directly off the sensing plate.
2. Check to ensure that the LVDT output does not change by more than 0.01 V AC.

Note

If the change is greater than 0.01 V AC:

1. Adjust the sensing head level, [refer to Sensing head (Page 11)] until the change with and without the test weight on the sensing plate is less than 0.01 V AC.
2. Remove the test weight and readjust the LVDT Output Zero, if necessary. If the level test is performed after the integrator has been calibrated, a new integrator zero and span calibration, span adjust, and factoring, should be performed.



① Sensing plate
② Changes < 0.01 V AC
③ Voltmeter
④ Test weight

6.5 Integrator calibration

Refer to the Integrator operating instructions for integrator calibration instructions.

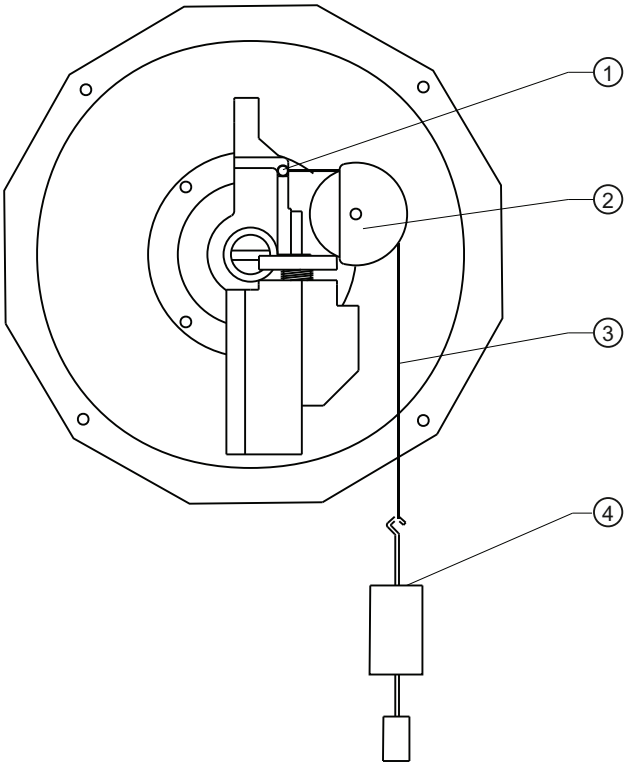
6.6 Zero calibration

Refer to the Integrator operating instructions for zero calibration instructions.

6.7 Span calibration

After a successful zero calibration, apply the test weight for the span calibration:

1. Attach one end of a string (monofilament fishing line or fine flexible cable) to the test weight.
2. Route the other end of the string over the calibration pulley.
3. Attach the free end of the string to the string fixing bolt.



① String fixing bolt
② Calibration pulley
③ String
④ Test weight

Note

Ensure that:

- there is no material flow during zero and span calibrations
- the test weight is suspended free of any obstructions

Accurate calibration is not assured until material tests and a manual span adjustment have been performed, as outlined in the Integrator operating instructions.

Service and maintenance

7

7.1 Maintenance

Establish a program of routine maintenance to ensure the highest achievable level of performance. Follow good housekeeping practices in the area of the flowmeter.

Typical maintenance program

Maintenance description	Frequency			
	Regular	Monthly	Semi-annual	Annual
Clean area around flowmeter	✓	✓	✓	✓
Check sensing plate surface[1]	✓	✓	✓	✓
Check damping fluid		✓	✓	✓
Check sensing head inner gasket		✓	✓	✓
Check sensing plate wear		✓	✓	✓
Check test weight Rate display			✓	✓
Test flowmeter linearity				✓

[1] Remove any material buildup in the impact area of the sensing plate.

7.2 Spare parts

Siemens recommends the following spare parts be kept on hand:

- sensing inner gasket
- sensing head outer gasket (base mount version only)
- damping fluid
- sensing plate

Contact Siemens or your distributor for spare parts ordering information. For a list of parts and part identification diagram, please see Appendix A (Page 47).

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.

7.3 Inner gasket replacement

Should it ever be necessary to replace the sensing head inner gasket, refer to the Sensing head (Page 11) and Dimension drawings (Page 41) sections of these operating instructions prior to performing the following procedure.

1. Remove the WFS300 fibreglass cover (4 bolts).
2. Bolt down the viscous damper cover to the shipping position (2 bolts).
3. Remove the sensing plate from the sensing head.
4. Remove the inner retaining ring (4 bolts).
5. Remove the LVDT cable TY WRAPs (2) and disconnect LVDT connections.
6. Remove the inner gasket.
7. Install the new inner gasket and reverse the procedure (steps 1 through 6).
8. Perform the LVDT output zero procedure.
9. Referring to the integrator operating instructions, perform an integrator zero and span calibration. Perform a span adjust if calibration accuracy appears affected.

7.4 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)

Diagnosing and troubleshooting 8

8.1 Range springs

The range spring establishes the range of sensing head moving beam travel for a given range of material flow. This spring is installed in the flowmeter sensing head at the factory. The spring is selected according to the specified design rate of the application.

For best operation, the range spring should provide 0.75 to 2.4 mm (0.030 to 0.094") of moving beam travel from the static zero to the design rate operation position. The moving beam travel may be inferred from the value of the LVDT output, as measured between the LVDT green and yellow wires.

With the 2.5 V AC, 2.9 kHz LVDT excitation supplied:

- 0.75 mm of moving beam movement = 0.188 V AC
- 2.40 mm of moving beam movement = 0.600 V AC

Should the design rate of the flowmeter application change, it may be necessary to select and install another range spring to obtain the optimum moving beam travel (LVDT output) range.

Range spring removal

1. Loosen the range spring locknut.
2. Remove the range spring mounting bolt and three flange mounting bolts.
3. Remove the range spring from the range spring assembly.

Range spring replacement

1. Install the new range spring in the range spring assembly.
2. Mount the range spring assembly by the three flange mounting bolts.
3. With the moving beam in the static zero position, thread the range spring until the base just touches the static beam and then turn one complete revolution more.
4. Install the range spring mounting bolt and tighten the range spring locknut.

Flowmeter recalibration

After you have removed and replaced the range spring, recalibrate the flowmeter and integrator. (See the Integrator operating instructions for details.)

1. Perform the LVDT output zero procedure.

2. Perform an integrator zero and span calibration.
3. Perform a span adjust and factoring as required.

8.2 Troubleshooting

Every SITRANS sensing head is subjected to extensive quality assurance procedures to ensure the highest possible degree of quality, reliability, and performance is achieved.

The following table indicates the probable cause, and proper course of action to be taken should the specified fault symptom occur.

Symptom	Cause	Action
Integrator rate display doesn't change when sensing plate is moved.	Wrong or bad integrator connection.	Refer to Connecting (Page 15).
	Viscous damper cover in shipping position.	Refer to Viscous damper (Page 13).
	Integrator not prepared for operation.	Program and calibrate the integrator.
Span adjustment does not have enough range.	Range spring not suited to application.	Refer to Range springs (Page 33).
Measurement results are not repeatable.	Sensing head not level.	Refer to Sensing head (Page 11) and Sensing head level test (Page 25).
	Moving beam travel is mechanically limited.	Ensure moving beam does not hit travel stops between -20% and 150% flowrates.
	Leaf springs are damaged.	Replace leaf springs, recalibrate flowmeter and integrator.
	Material flow patterns vary.	Refer to the Applications section of the flowmeter operating instructions
Accuracy varies with material flowrate.	Non-linear operation.	Refer to Linearity (Page 34).

8.3 Linearity

To test linearity, at least 3 test weights are used. Each weight represents a different test rate. Record the integrator rate display value associated with each test weight applied to the flowmeter.

If all the recorded display values are accurate, the flowmeter measurement is linear.

Example

For a WF330 flowmeter design rate of 12 TPH, the following three test weights could be used:

- 780 g (1.72 lb) = 100% Design Rate = 12.0 TPH
- 585 g (1.29 lb) = 75% Design Rate = 9.0 TPH
- 390 g (0.86 lb) = 50% Design Rate = 6.0 TPH

If non-linear results are obtained, ensure:

- at no flow, the moving beam does not rest on the zero stop bolt.
- at 150% Design Rate, the moving beam does not reach the full flow stop nut.
- at 150% Design Rate, the LVDT output does not exceed 1.0 V AC.
- the damper piston does not touch the damper cylinder wall at any flow rate.
- the LVDT core does not touch the inside of the LVDT at any flow rate.
- the viscous damper fluid is free of large air bubbles and the fluid level is correct.
- the range spring operates in compression from 0 - 100% flow rate.
- the sensing head leaf springs are in good condition.

If the test weight linearity test is successful, yet actual material test results are nonlinear, ensure there is no air circulation in the housing sensing plate area. If there is no significant air circulation in the flowmeter housing while you are running material, the material flow pattern is probably non-linear.

Non-linear material flow patterns can often be corrected by minor modifications to the material infeed, or upstream piping. Some integrators are equipped with a linearization function to compensate for non-linear material flow patterns. Stand-alone linearizing devices are also available for this purpose.

Electronic linearization should not be used to correct non-linear test weight results.

Technical data

9

9.1 Specifications

Operating range

minimum	0 to 0.2 t/h (0 to 0.2 STPH)
maximum	0 to 40 t/h (0 to 44 STPH)

Particle size

fine powder to 13 mm (0.5")

Product temperature

-40 to +232 °C (-40 to +450 °F)

Ambient temperature

-40 to +60 °C (-40 to +140 °F)
-40 to +50 °C (-40 to +122 °F) with optionally internally mounted LVDT card

Accuracy

± 1 % of full scale, higher accuracy with linearizing 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.

Repeatability

± 0.2 %

Construction

dust-tight cast aluminum frame with fiberglass rear cover

Mounting

Side mount or base mount (to suit application)

Sensor type

LVDT (linear variable differential transformer

LVDT excitation

2.50 V AC @ 2.9 kHz (supplied by integrator or LVDT conditioner card)

LVDT output

0 - 0.75 V AC @ 2.9 kHz

Damping fluid

1 - 100 cm^2/s (100 - 10,000 cs) silicone (Dow Corning 200 recommended)

Options

epoxy painted external aluminum casting surfaces

Approvals

General	CE, C-TICK

9.2 Sensing plate

Construction

304 (1.4306) stainless steel

Options

316 (1.4404) stainless steel
abrasion resistant lining
PTFE coating for low cohesion and low friction

9.3 LVDT conditioner card

Power

± 5 V DC (typically from a Siemens integrator)

Ambient temperature

-40 to +50 °C (-40 to +122 °F)

Input

0 to 0.75 V AC from LVDT

Output

0 to 50 mV DC to Siemens integrator; maximum 300 m (1000 ft) separation between conditioner card and integrator

Approvals

General	CE, C-TICK

Enclosure

NEMA / Type 4 / IP65 (remote mounted unit)

9.4 Cable

For connection between LVDT conditioner card and integrator

Belden®[1] 8404, 4 conductor, shielded 20 AWG (0.5mm^2) or equivalent	150 m (500 ft) maximum
Belden 9260, 6 conductor, shielded 20 AWG (0.5 mm^2) or equivalent	300 m (1000 ft) maximum

[1] Belden is a registered trademark of Belden Wire & Cable Company.

For connection between LVDT conditioner card and remote LVDT conditioner card, or directly between LVDT and integrator

Belden 8404, 4 conductor, shielded 20 AWG (0.5 mm^2) or equivalent	300 m (1000 ft) maximum

Dimension drawings

10

10.1 WFS300 side mount outline and mounting

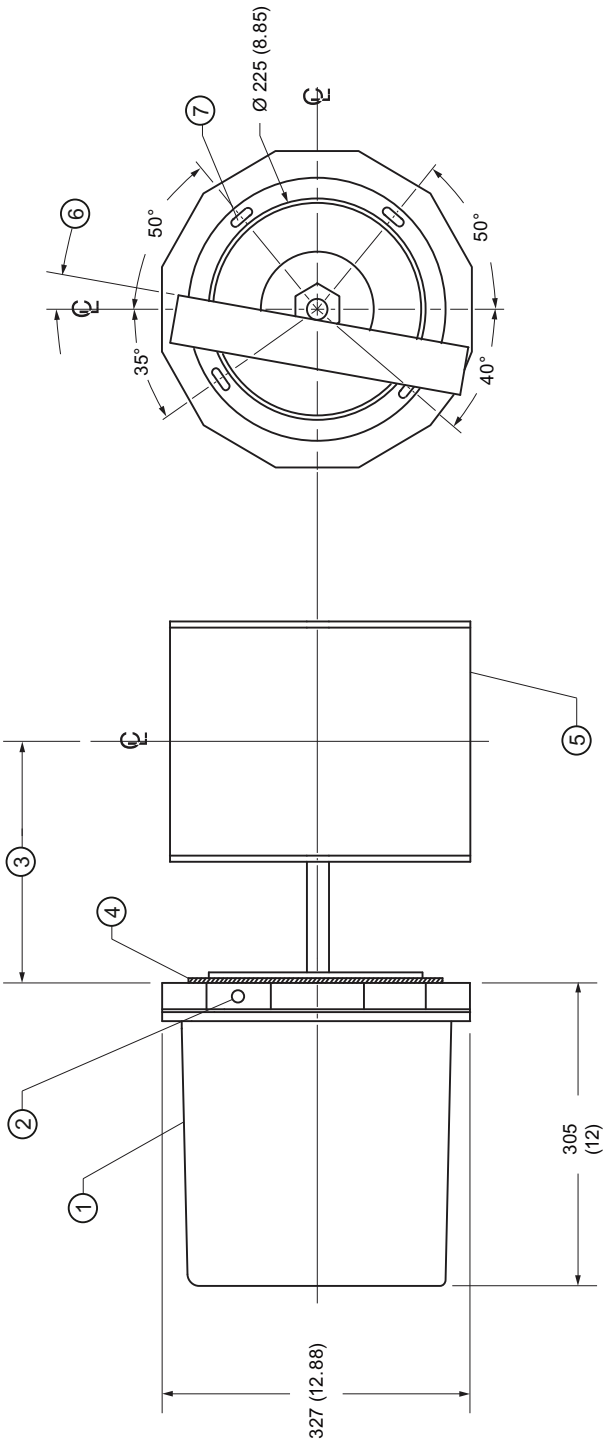


Figure 10-1 WFS300 side mount, dimensions in mm (in)

①	Fiberglass cover	⑤	Sensing plate
②	Conduit entry 1/2" NPT (internal)	⑥	As required
③	Refer to flowmeter drawing for the dimension from the sensing head mounting hole to the flowguide centerline.	⑦	250 mm (9.84") BCD
④	Outer gasket		

Note

Ensure that the outer gasket seal to the flowmeter housing wall is dust tight.

10.2 WFS300 base mount outline and mounting

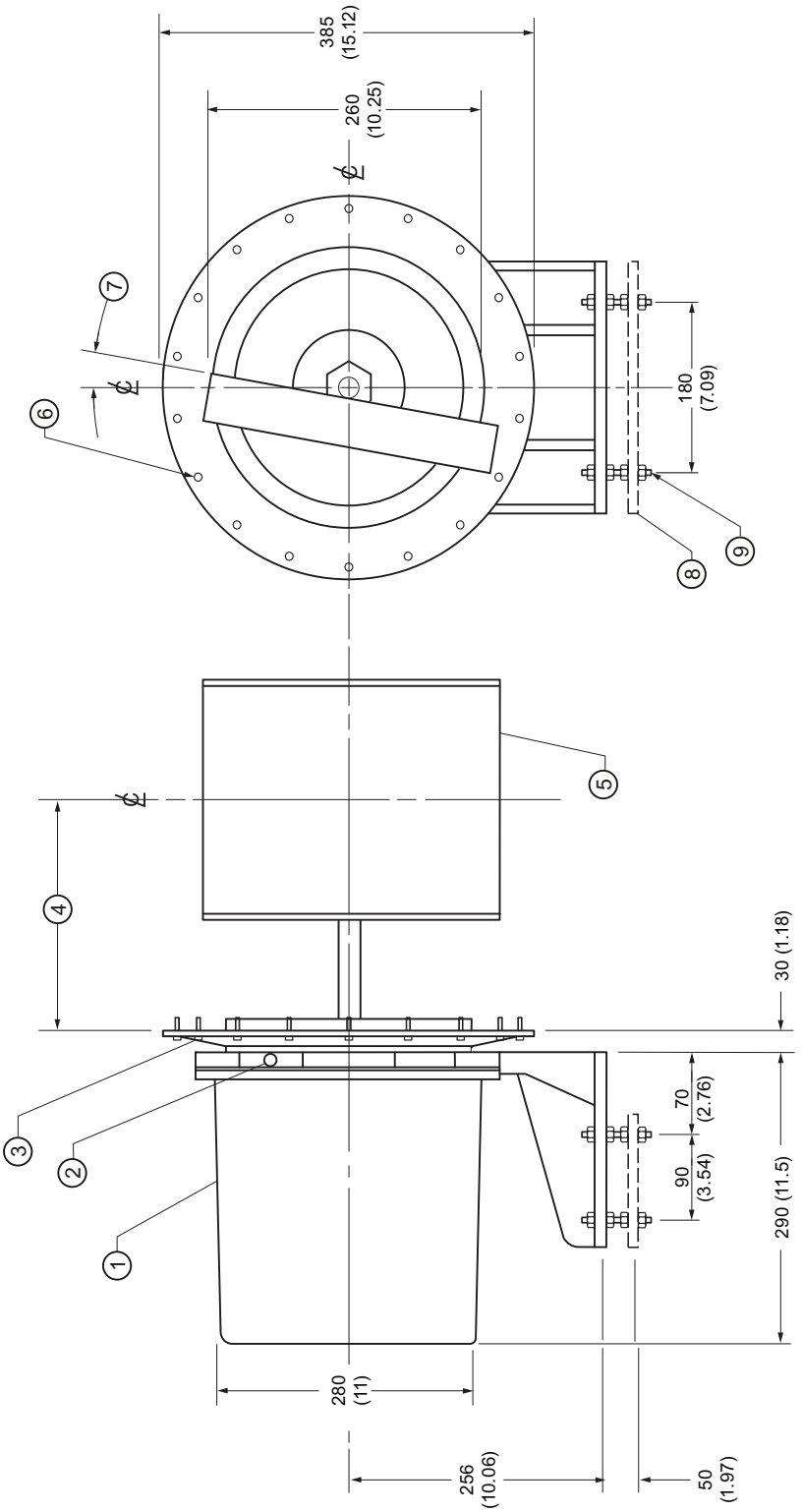

385
(15.12)
260
(10.25)
180
(7.09)
30 (1.18)
70
(2.76)
90
(3.54)
290 (11.5)
280
(11)
256
(10.06)
50
(1.97)
1
2
3
4
5
6
7
8
9

Figure 10-2 WFS300 base mount, dimensions in mm (in)

①	Fiberglass cover	⑥	8 mm (0.31") dia., 18 bolts on 360 mm (14.17") BCD
②	Conduit entry 1/2" NPT (internal)	⑦	As required
③	Outer gasket	⑧	Support plate (customer supplied)
④	Refer to flowmeter drawing for the dimension from the sensing head mounting hole to the flowguide centerline.	⑨	10 mm (0.38") dia. (4 leveling rods)
⑤	Sensing plate		

Note

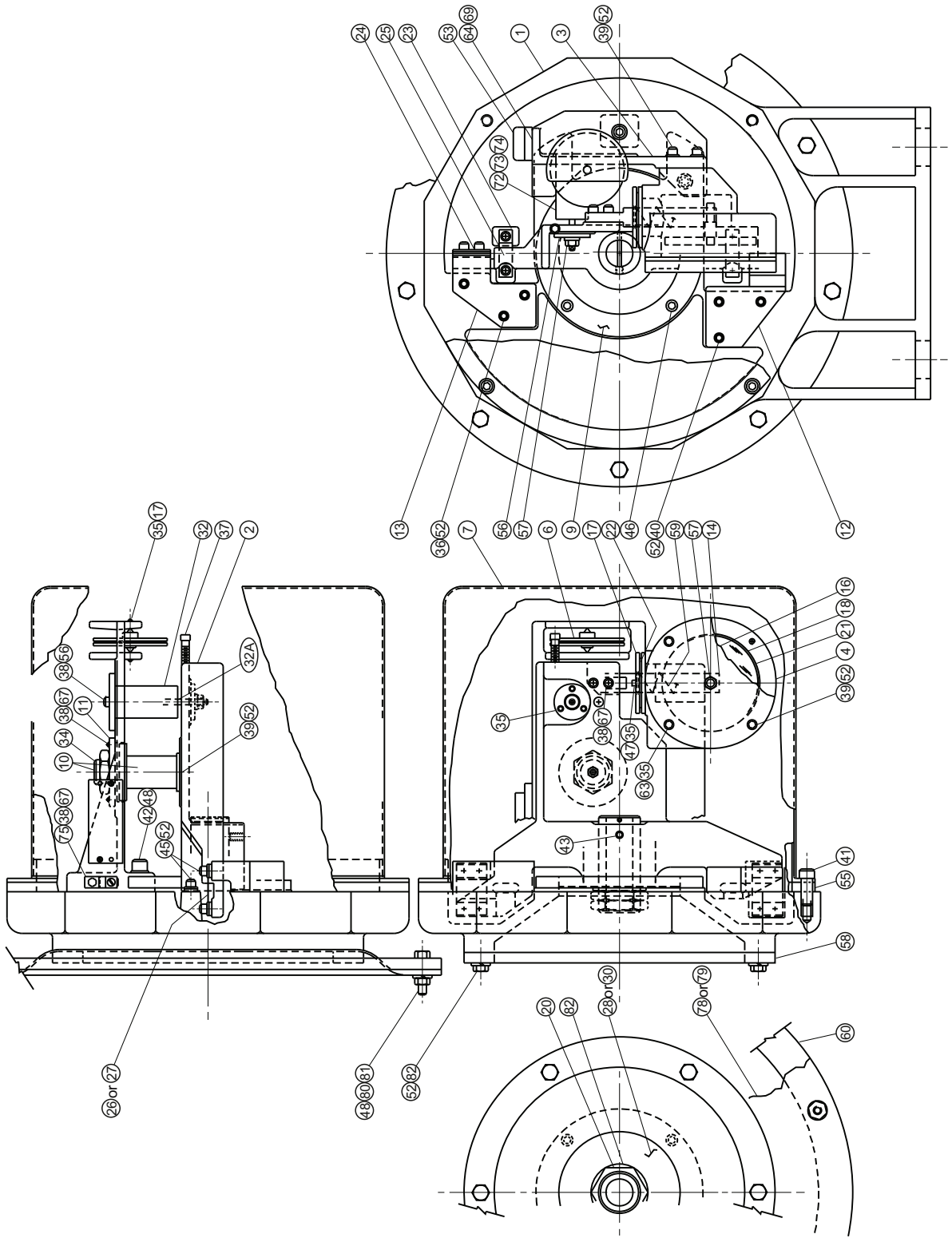
1. The sensing head support plate should be rigid and independent of the flowmeter housing.
2. Ensure that the outer gasket seal to the flowmeter housing wall is dust tight.

Appendix A

A

A.1 WFS300 part identification diagram

A.1 WFS300 part identification diagram



1	WFS300 body (cast frame) (side mount or base mount)
2	Moving Beam (Dynamic Beam)
3	Block (Static Beam)
4	Block (Damper Body)
5	(not applicable)
6	Calibrating Wheel
7	Fiberglass Cover
8	(not applicable)
9	Inner Diaphragm Ring
10	Range Spring
11	Range Spring Adjustment Plate
12	Lower Hinge Block
13	Upper Hinge Block
14	Damper Piston Rod
15	(not applicable)
16	Damper Window
17	Damper Cover
18	Damper Piston
19	(not applicable)
20	Bushing Locknut (2)
21	O-Ring, 3 1/4 x 3 1/2 x 1/8
22	O-Ring, 1 3/8 x 1 5/8 x 1/8
23	Hinge Spring Spacer (8)
24	Hinge Spring Spacer (8)
25	Hinge Spring, 0.3mm/25mm (2)
26	Hinge Spring, 0.55mm/25mm (2)
27	Hinge Spring, 1.0mm/25mm (2)
28	Diaphragm, silicone
30	Diaphragm, neoprene
31	(not applicable)
32	LVDT (inside)
32A	LVDT Core
33	Pivot Bearing (2)
34	Lock Nut
35	Cap Screw M4 x 12 mm, stainless (6)
36	Cap Screw M6 x 40 mm, stainless (3)
37	Cap Screw M4 x 30 mm, stainless (1)
38	Cap Screw M5 x 15 mm, stainless (10)
43	Set Screw (sensing plate) M6 x 20mm, stainless
44	(not applicable)
45	Cap Screw M6 x 16 mm, stainless (12)
46	Cap Screw M6 x 12 mm, stainless (4)
47	Lock Washer M4, stainless (2)
48	Lock Washer M8, stainless (3, add 18 for base mount)
49	(not applicable)
50	(not applicable)
51	(not applicable)
52	Lock Washer M6, stainless (24, add 6 for base mount)
53	Terminal Block (or 53A)
53A	LVDT Conditioner Card
54	(not applicable)
55	Edge Foam Seal
56	Calibrating Flange
57	Nut M6, stainless (2)
58	Inner Gasket Ring (base mount only)
59	Damper Spring
60	Outer Gasket Ring (base mount only)
61	(not applicable)
62	Teflon Washer
63	Nut M4, stainless (2)
64	Split Lock Washer M3, stainless (2)
65	(not applicable)
66	Washer M5, stainless (2)
67	Split Lock Washer M5, stainless (6)
68	(not applicable)
69	Cap Screw M3 x 20 mm, stainless (2)
70	O-Ring, 7/16 x 5/8 x 3/32
71	(not applicable)
72	LVDT Housing
73	LVDT Spring Washer
74	LVDT retainer nut Diaphragm, silicone or neoprene
75	Ground Lug
76	(not applicable)
77	Lock Nut, Pulley (2)
78	Outer Gasket, silicone
79	Outer Gasket, neoprene

39	Cap Screw M6 x 20 mm, stainless (7)
40	Cap Screw M6 x 30 mm, stainless (3)
41	Cap Screw M8 x 20 mm, stainless (4)
42	Cap Screw M8 x 30 mm, stainless (3)
80	Cap Screw M8 x 35 mm, stainless (18) (base mount only)
81	Nut M8, stainless (18) (base mount only)
82	Cap Screw M6 x 25 mm, stainless (6) (base mount only)

For more information

www.siemens.com/level

www.siemens.com/weighing

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