ANALYT MESSTECHNIK



OPERATING MANUAL

GASTEC GV-100S and GV-110S Gas Sampling Pumps

Leak test, sampling with GASTEC detector tubes, reading and correcting the result, and maintenance of the GV-100S gas sampling pump and the GV-110S gas sampling pump with a counter.

AMTC-MN-0048

Rev. 2 · October 2026

About this manual

The GASTEC GV-100S gas sampling pump and the GV-110S gas sampling pump with a counter are hand-operated piston pumps for GASTEC detector tubes. One pull of the handle draws 100 mL (full stroke) or 50 mL (half stroke) of air through the tube, and the tube shows the concentration of the target gas on its printed scale. This manual covers the whole measurement: checking the pump for leaks, preparing and inserting the tube, taking the sample, reading the tube and correcting the reading, and the maintenance you can do yourself.

Read Safety (p. 6) before you use the pump for the first time: detector tubes are glass, and an opened tube has sharp ends. To take your first measurement, follow Commissioning (p. 12), Operation (p. 13) and Reading and correcting the result (p. 16) in that order.

GV-100S and GV-110S are the sets you order; the pumps inside them are marked GV-100 and GV-110. The two pumps work the same way, except that the GV-110 has a counter for the number of strokes. Text that applies only to the GV-110 is marked **GV-110S only**. Contact Analyt-MTC about both pumps; see Service, warranty and contacts (p. 24).

Keep this manual for the lifetime of the product. The current revision is on the product page at analyt-mtc.com.

How this manual marks information

WARNING

A hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

A hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Practices not related to personal injury — damage to the product, the process or the sample.

Note
Information that helps understanding; never a hazard.

The figures show the pump as it was when this manual was written; your pump may differ in detail, size or colour.

Document information

Title	GASTEC GV-100S and GV-110S Gas Sampling Pumps — Operating manual
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Revision	Rev. 2 — October 2026
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Revision history

Rev.	Date	Change
2	October 2026	Quality programme: new document type, number and identity pages.
1	October 2026	First issue.

Related documents: The instructions supplied with each box of detector tubes

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Contents

1 **Safety** 6
- Handling detector tubes 6
- Handling the pump 6
- Operating conditions 7
- Disposing of detector tubes 7

2 **Product description** 8
- How the system works 8
- What is in the box 9
- Parts of the pump 10
- Reading a detector tube 10

3 **Commissioning** 12
- Leak test 12
- If the pump leaks 12

4 **Operation** 13
- Before you measure 13
- Taking the sample 13
- Using the counter (GV-110S only) 15
- After the measurement 16
- Reading and correcting the result 16
  - Order of corrections 16
  - Reading the scale 16
  - Temperature 16
  - Humidity 17
  - Number of strokes 17
  - Atmospheric pressure 18
  - Interfering gases 18

5 **Maintenance** 19
- Work for the service 19
- Lubricating the cylinder 20

6 **Troubleshooting** 21
- Finding the cause of a leak 21

7 **Specifications** 22
- Pump 22

8 **Ordering information** 23
- Maintenance parts 23
- Optional accessories 23

9 **Service, warranty and contacts** **24**
Warranty 24
Disposal 24

CHAPTER 1

Safety

Read this chapter before you use the pump for the first time. The rules in this chapter apply every time you use the pump; the procedures in later chapters repeat them where they matter.

Handling detector tubes

⚠ CAUTION

Detector tubes are made of glass and may break, and you may injure yourself or your eyes.

- GASTEC recommends wearing protective goggles and protective gloves when you work with detector tubes, to prevent injuries.
- When you break off a tip, do not grip the tube hard: it can break in your hand.
- Keep the tube away from your eyes while you break off the tips. If glass or reagent gets into your eyes, do not rub them: rinse them at once with plenty of water and see a doctor.
- The ends of an opened tube are sharp. Cover the inlet end with a rubber cap (see Optional accessories (p. 23)).
- To take a tube out of the pump, hold it close to the rubber inlet and pull it straight out. Never bend it and never grip it hard.
- Keep detector tubes out of the reach of children. Where tubes are used in schools, a teacher or parent must supervise their use.

If a tube breaks

⚠ CAUTION

A broken tube leaves sharp glass splinters and loose tube reagent. Do not pick up the pieces or touch the reagent with bare hands: you may injure yourself. If reagent gets on your skin, rinse it off at once with water. Sweep up the glass and the reagent, then wipe the area with a damp cloth.

Handling the pump

⚠ CAUTION

A tube fitted to the pump, and a handle under vacuum, can injure you or others.

- Never point a detector tube fitted to the pump at a person — during the leak test or during a measurement. The tube end can injure.
- Hold the pump by the cylinder and the handle, never by the shaft alone. If the handle lock is released while the pump is under vacuum, the handle snaps back and can pinch or injure your fingers.
- After unlocking the handle, keep a hand on it and ease it in. Letting it go lets the vacuum in the cylinder slam it back, which can damage internal parts or injure you.

NOTICE

Rough handling, modifications and non-genuine parts can make the pump stop working properly or leak. They may also void the warranty.

- Empty the broken glass tips from the head block before it is full, and close the dust cap securely afterwards; otherwise the tips spill out (see After the measurement (p. 16)).
- Do not drop the pump or expose it to strong shocks: it can stop working properly.
- Do not modify the pump and do not take apart the head block, back plate, flow finish indicator or piston. Use only genuine GASTEC maintenance parts. Any of these can cause a leak and may void the warranty.

Operating conditions

Use the pump only at temperatures from 0 to 40 °C (32 to 104 °F). Use each detector tube only within the temperature range given in its instructions. Outside these ranges the pump can leak and the results can be wrong.

⚠ WARNING

Tubes from another manufacturer can lead to property damage, serious injury or death. They also void all warranty and all of GASTEC's performance and data accuracy guarantees. Use only GASTEC detector tubes in a GASTEC pump.

Disposing of detector tubes

Note

A used tube still holds reagent that can react, and some tubes contain substances that count as hazardous industrial waste. Local regulations govern how you dispose of used tubes and of tubes past their "valid until" date. For more information, contact Analyt-MTC.

CHAPTER 2

Product description

A GASTEC measurement needs two things: the gas sampling pump and a GASTEC standard detector tube for the gas you want to measure. The pump draws a known volume of air through the tube; the tube changes colour over a length that shows the concentration.

How the system works

A detector tube is a thin glass tube filled with a detecting reagent that reacts with one substance — a gas or a vapour — and forms a distinct coloured layer, the stain. A calibration scale is printed on the glass, so you read the concentration directly at the end of the stain. Several hundred tube types cover different gases, vapours and concentration ranges; choose the tube for your target substance and the concentration you expect.

The inner diameter of the tubes is closely controlled, and each production lot is tested and calibrated on its own. Every tube carries the quality-control number of its lot.

Each tube is calibrated for a set sample volume. The pump delivers it: a full stroke draws 100 mL, a half stroke 50 mL. Both positions are marked by the red guide line on the pump shaft, and the handle locks in each of them. Pulling the handle fully n times, waiting for each stroke to finish, draws n × 100 mL.

Tubes that need other equipment

Some GASTEC tubes are not used with the GV-100 or GV-110 alone:

Tube type	What it needs
Pyrotec tubes	An optional Pyrotec pyrolyzer, used together with the pump: No. 840 for tubes No. 51H, 51, 51L, 52 and 53, or No. 860 for sulphuryl fluoride (tube No. 231)
Long-term detector tubes, passive dosimeter tubes, Airtec tubes	No pump
Odorant detector tubes	A special gas sampling pump
Injection-type detector tubes	A special syringe
Detector tubes for school education (50 mL air flow)	Special pumps with an internal volume of 50 mL
Liquid detector tubes (water quality, waste water)	No pump
Electric sampling detector tubes	An automatic gas sampling pump of the GSP series

What is in the box

Check the delivery against the table. Detector tubes are not part of the delivery. If anything is missing, contact Analyt-MTC (see Service, warranty and contacts (p. 24)).

Item	Model		Qty
	GV-100S	GV-110S	
Gas sampling pump	GV-100	GV-110 (with counter)	1
Accessory set: lubricant (1) and rubber inlets (3)	GV100-1		1 set
Compact case	GV110-31		1
Instruction manual (GASTEC)	GV110-91		1
Strap	—		1

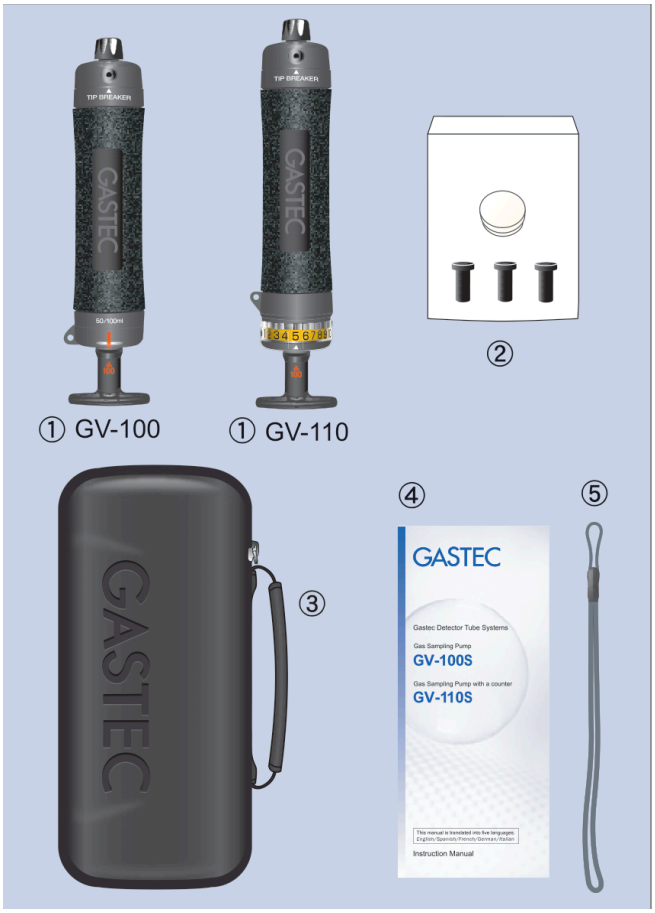


Figure 1. The contents of the set. **1** Gas sampling pump (GV-100 and GV-110) · **2** Accessory set · **3** Compact case · **4** Instruction manual (GASTEC) · **5** Strap

Parts of the pump

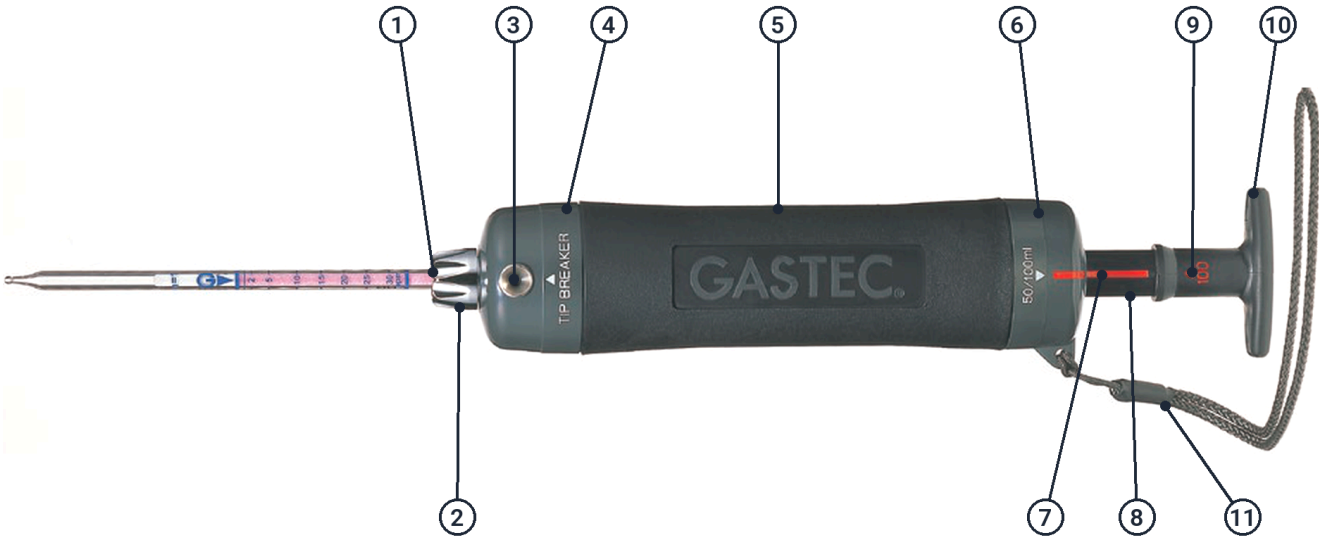


Figure 2. GV-100 pump with a detector tube inserted. The GV-110 has the same parts and adds those in Figure 3.
1 Rubber inlet — holds the detector tube · **2** Inlet clamping nut — keeps the rubber inlet tight · **3** Tube tip breaker · **4** Head block · **5** Cylinder · **6** Back plate · **7** Guide line (red line on the shaft) · **8** Shaft · **9** Guide marks ▲100 and ▲50 on the handle · **10** Handle · **11** Strap

Use the strap wherever you could drop the pump out of reach, for example when you measure inside a tank or over a sewer line.

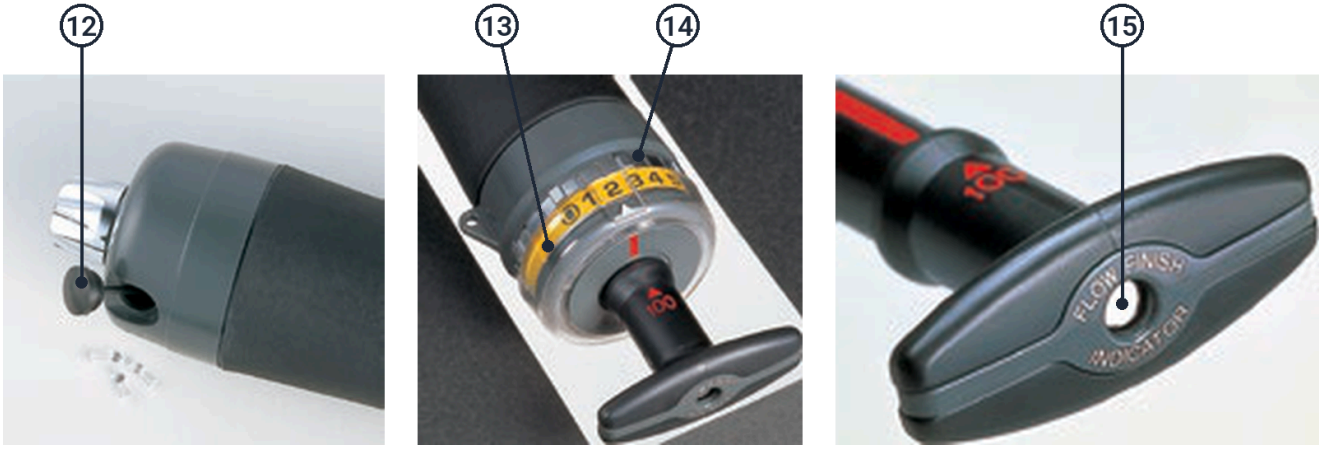


Figure 3. Further parts. Left: head block from the back; centre: counter (GV-110S only); right: handle.
12 Dust cap — remove it to shake out broken glass tips · **13** Counter ring (see Using the counter (p. 15)) · **14** Finger hold · **15** Flow finish indicator — turns white when the sample volume has been drawn

Reading a detector tube

There are two kinds of detector tube. A **single tube** contains everything in one measuring tube; No. 3L is an example. A **twin tube** consists of a primary tube and an analysing tube that you join with a short rubber tube before the measurement; No. 131La is an example. The markings printed on the glass tell you how to use each tube.

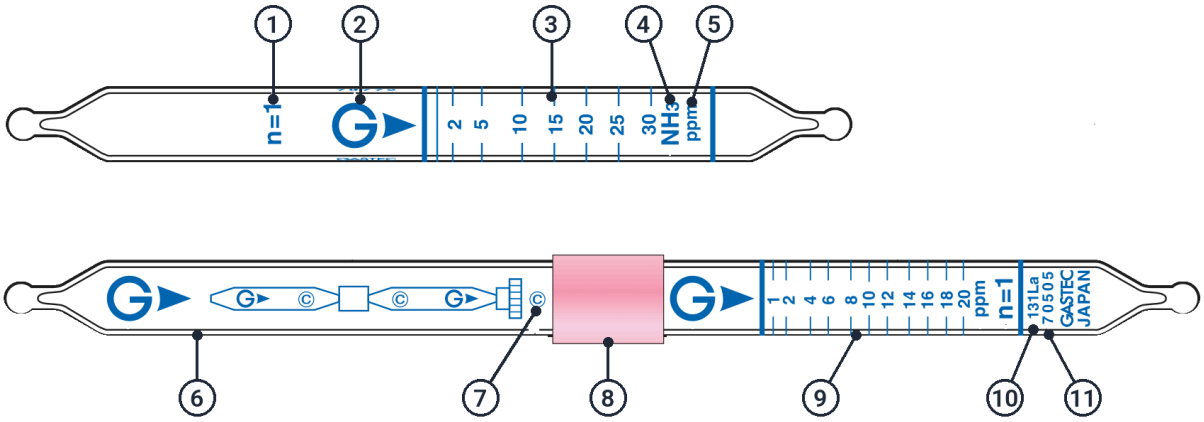


Figure 4. Single tube No. 3L (top) and twin tube No. 131La (bottom). Gas flows from left to right, towards the pump.
1 Standard number of pump strokes (here n = 1) · **2** G▸ mark — direction of gas flow · **3** Calibration scale · **4** Chemical formula of the target substance · **5** Unit of concentration · **6** Primary tube · **7** © mark — connecting end · **8** Connecting rubber tube · **9** Analysing tube · **10** Detector tube number · **11** Quality-control number

Marking	What it tells you
G▸ mark	The direction of gas flow. Insert the tube into the pump with the arrow pointing towards the pump.
Standard number of strokes (n = …)	How many pump strokes you need to read the concentration directly on the scale.
© mark (twin tubes)	The ends to be joined. Connect the primary tube and the analysing tube so that their © marks face each other. The primary tube shows how to connect them.
Detector tube number, quality control (QC) number	The tube type (for example 131La) and its production lot (for example 70505).

CHAPTER 3

Commissioning

A pump that leaks draws less sample through the tube than the tube is calibrated for, so the result comes out wrong — usually too low. Check the pump before every measurement. The test takes about a minute and also shows whether the flow finish indicator works.

Leak test

You need a new detector tube with both tips still sealed; it closes the inlet airtight.

1. Check that the inlet clamping nut is tight.
2. Make sure the handle is pushed fully in: the red guide line on the shaft is not visible. Insert the unopened detector tube into the rubber inlet.
3. Turn the handle until its guide mark ▲100 lines up with the guide mark (red line) on the back plate. The flow finish indicator is out.

   GV-110S only: line up the guide mark ▲100 with the red guide line below the white △ mark on the counter.

NOTICE

GV-110S only: gripping the pump by the counter can stop the counter working and damage it. Never hold the pump by the counter.

4. Hold the pump firmly by the cylinder and pull the handle fully out along the red guide line until it locks. Wait 1 minute. The flow finish indicator must stay in (not white).

⚠ CAUTION

Once unlocked, the handle is pulled in by the vacuum in the cylinder. If you let go, it slams back and can damage the pump or injure you. Keep a hand on the unlocked handle and ease it in.

5. Turn the handle more than a quarter turn to unlock it, then ease it back by hand. Check that the handle returns to its starting position — the guide line on the shaft is no longer visible — and that the flow finish indicator has come out again.



Figure 5. Result of the leak test. Left and centre: no leak — the handle has returned fully and the guide line is hidden. Right: the pump leaks — the handle stops short and the red guide line is still visible.

If the pump leaks

Do not measure with a leaking pump. Find and correct the cause as described in Finding the cause of a leak (p. 21), then repeat the test.

If the flow finish indicator does not go in when you pull the handle, or does not come out again, it may itself be the cause of a leak. Do not try to repair it: contact Analyt-MTC (see Service, warranty and contacts (p. 24)).

CHAPTER 4

Operation

Each tube type has its own instructions, supplied with the box: measuring range, number of strokes, sampling time, corrections and interfering gases. Read them together with this chapter — the pump procedure is the same for every tube, the details come from the tube.

Before you measure

- Choose the GASTEC detector tube for your target substance and the concentration you expect.
- Look up the tube's standard number of strokes (n) and sampling time and, for a twin tube, the order in which the tubes are connected.
- Check whether the reading needs correcting for temperature, humidity or atmospheric pressure. If it does, measure these at the time of sampling and write them down (see Reading and correcting the result (p. 16)).
- Check whether interfering gases may be present. If they are, measure them and check in the tube's instructions whether they affect the reading.
- Check the pump for leaks (see Commissioning (p. 12)).

Note

Detector tubes react to how they are stored, opened and read. An error in any of the points below gives a wrong result.

- Use GASTEC detector tubes with the GASTEC pump. Tubes and pump from different manufacturers give wrong results.
- Use only tubes that have been stored as specified and whose "valid until" date has not passed. Store tubes in a refrigerator at 0 to 10 °C (32 to 50 °F), or as stated on the tube box, or in a cool, dark place — for example a drawer or locker in a cool room at 15 to 25 °C (59 to 77 °F), away from direct sunlight and fluorescent light.
- The tube must be at the temperature of the place of measurement. Leave a tube from the refrigerator there for about 15 minutes before you use it.
- Break off the tips immediately before the measurement. A tube left open gives wrong results.
- Read the tube immediately after sampling: the stain can lengthen or fade.
- Use each tube only once — even if it showed no colour change.
- Use the pump only at 0 to 40 °C (32 to 104 °F), and each tube only within the temperature range in its instructions.

Taking the sample

CAUTION

A tube fitted to the pump, and an unlocked handle under vacuum, can injure you or others. Never point a tube fitted to the pump at a person, and do not let go of the unlocked handle.

CAUTION

A tube can break while you break off its tips. You may injure yourself. Keep the tube away from your eyes and do not grip it hard while you break off the tips; GASTEC recommends protective goggles and gloves (see Handling detector tubes (p. 6)).

1. **Open the tube.** Break off both tips with the tube tip breaker on the pump, or with the tube tip holder No. 722 (not included; ask Analyt-MTC). Insert one end of the tube straight into the tip breaker and turn the tube one full turn, so that the diamond cutter scores the glass. Hold the tube close to the breaker and bend it towards the handle: the tip snaps off and drops into the head block. Repeat with the other end.

   For a twin tube, open both ends of both tubes and join the ends marked © with the connecting rubber tube.

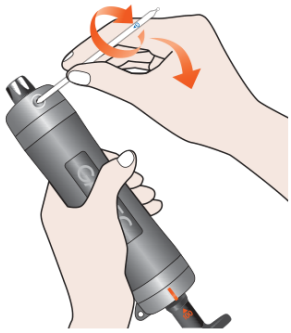


Figure 6. Scoring the tip: turn the tube one full turn in the tip breaker, then bend it towards the handle.

2. **Insert the tube.** Make sure the handle is pushed fully in — the guide line on the shaft is not visible. Insert the tube into the rubber inlet with the G► arrow pointing towards the pump.

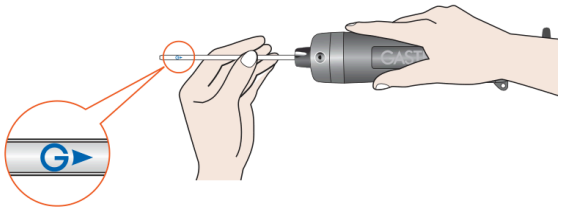


Figure 7. The arrow on the tube points towards the pump.

3. **Set the stroke.** Turn the handle until the guide mark for your sample volume lines up with the guide mark (red line) on the back plate: ▲100 for a full stroke (100 mL), ▲50 for a half stroke (50 mL). The markings on the tube or the tube's instructions tell you which stroke to use.

   GV-110S only: to count the strokes, set the counter first (see Using the counter (p. 15)).

NOTICE

GV-110S only: holding the counter while you pull the handle can stop it counting correctly and can damage it. Do not hold the counter while you pull the handle.

4. **Draw the sample.** Point the open end of the tube at the measuring point. Hold the pump by the cylinder and pull the handle along the guide line until it locks — fully for 100 mL, halfway for 50 mL.

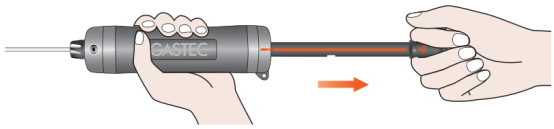


Figure 8. Hold the cylinder and pull the handle straight out until it locks.

5. **Wait for the end of the sample.** Leave the handle locked for the sampling time given in the tube's instructions. You can confirm that the full volume has been drawn in two ways:
   - **Flow finish indicator:** while air is still flowing, the vacuum holds the white indicator inside the handle. It comes out when the full 100 mL or 50 mL has been drawn.
   - **Handle play:** with the handle still locked at the 50 mL or 100 mL position, move it gently in and out along the shaft. While air is still flowing you feel the vacuum resisting; when you feel no resistance, sampling is complete.

   Then turn the handle more than a quarter turn to unlock it, and guide it slowly back to its starting position.



Figure 9. Unlock the handle by turning it, then guide it back. Inset left: during sampling, the flow finish indicator is in. Inset right: sampling complete, the white indicator is out.

6. **Repeat if needed.** If the tube needs more than one stroke, repeat steps 3 to 5 until you reach the number of strokes.
7. **Remove and read the tube.** Hold the tube close to the rubber inlet and pull it straight out. Read it at once, as described in Reading and correcting the result (p. 16).

Using the counter (GV-110S only)

The counter of the GV-110 counts the strokes you have taken, up to ten. It moves on by one with every full stroke.



Figure 10. From left: setting the counter to 0 · the counter after five strokes · resetting to 0 · switched off (N).

NOTICE

Wrong handling can break the counter or make it miscount.

- The counter does not count half strokes (handle set to ▲50).
- The counter ring cannot be turned while the handle is pulled out. Do not force it: the counter can break.
- Do not hold the counter while you sample; it may then not count correctly.

1. Turn the outer counter ring until **0** is at the white △ mark.
2. Take your samples. After each stroke, the number at the white △ mark shows how many strokes you have taken. The counter stops at **10**.
3. To reset it, turn the counter ring in the direction of the arrow (third picture in Figure 10) until **0** is at the white △ mark again.

If you do not want to count, turn the counter ring in the direction of the arrow (fourth picture in Figure 10) until **N** is at the white △ mark. The pump then works without counting.

After the measurement

The broken glass tips collect in the head block. Empty it before it is full:

1. Open the dust cap on the head block, on the side opposite the tube tip breaker.
2. Shake out the glass tips and dispose of them carefully.
3. Close the dust cap securely. If it is not properly closed, glass tips fall out of the opening.

Dispose of used detector tubes according to your local regulations (see Disposing of detector tubes (p. 7)).

Reading and correcting the result

Read the tube as soon as sampling is complete. With the standard number of strokes, the scale shows the concentration directly; the tube's instructions tell you whether the reading needs correcting for the conditions at the sampling point, and with which factors.

Order of corrections

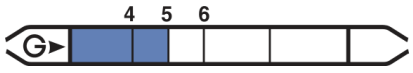
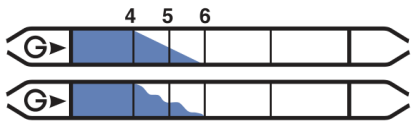
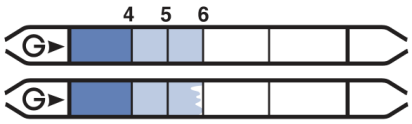
Where a tube needs several corrections, apply them in this order:

1. Read the scale (Reading the scale (p. 16)).
2. Correct for temperature (Temperature (p. 16)) or for humidity (Humidity (p. 17)), as the tube's instructions require.
3. Correct for the number of strokes, if you did not take the standard number (Number of strokes (p. 17)).
4. Correct for atmospheric pressure (Atmospheric pressure (p. 18)).

Also consider whether interfering gases or other external influences at the measuring point could have affected the tube (Interfering gases (p. 18)).

Reading the scale

Read the scale at the end of the stain, immediately after sampling. Marking the end of the stain on the glass with a pen makes it easier to read and lets you check the reading later. The examples below are exaggerated; in each one the reading is 5.

End of the stain	Where to read
	**Straight.** Read at the end of the stain: 5.
	**Slanted or uneven.** Read in the middle of the slant. Here the stain ends between 4 and 6: the reading is 5.
	**Pale at the end.** Read midway between the end of the dark part and the end of the pale part. Here the dark part ends at 4 and the pale part at 6: the reading is 5.

Temperature

If the tube's instructions call for a temperature correction, read the temperature at the sampling point to the nearest 5 °C (9 °F); corrections apply from 0 to 40 °C (32 to 104 °F). What counts is the

temperature of the tube. Since the tube has to reach the ambient temperature before you use it, this is normally the air temperature.

The instructions give either a correction factor or a correction table. Between two listed temperatures, take the mean of the two neighbouring values (proportional allocation).

Example 1 — correction factor

The tube reads 2.5 ppm at 15 °C (59 °F). The instructions list these factors:

Temperature °C (°F)	0 (32)	10 (50)	20 (68)	30 (86)	40 (104)
Correction factor	1.45	1.20	1.00	0.90	0.85

15 °C lies between 10 °C (50 °F) and 20 °C (68 °F), so the factor is (1.20 + 1.00) ÷ 2 = 1.10.
True concentration = 2.5 ppm × 1.10 = **2.75 ppm**.

Example 2 — correction table

The tube reads 0.5 % at 35 °C (95 °F). The instructions give a table of true concentrations for each reading and temperature:

Tube reading	20 °C (68 °F)	30 °C (86 °F)	40 °C (104 °F)
0.6 %	0.6	0.55	0.5
0.4 %	0.4	0.35	0.3

1. Find the values for 35 °C (95 °F), between 30 °C (86 °F) and 40 °C (104 °F): for a reading of 0.6 %, (0.55 + 0.5) ÷ 2 = 0.525; for 0.4 %, (0.35 + 0.3) ÷ 2 = 0.325.
2. Find the value for a reading of 0.5 %, between 0.4 % and 0.6 %: (0.525 + 0.325) ÷ 2 = 0.425. True concentration = **0.425 %**.

Humidity

If the tube's instructions call for a humidity correction within 0 to 40 °C (32 to 104 °F), measure the absolute humidity at the sampling point with the GASTEC water vapour detector tube No. 6, then multiply the reading by the factor for that humidity.

Example. The nitric acid detector tube No. 15L reads 5 ppm; the water vapour tube shows 6 mg/L.
From the table, the factor for 6 mg/L is 0.68.
True concentration = 5 ppm × 0.68 = **3.4 ppm**.

Absolute humidity (mg/L)	4	6	8	10	12	14
Correction factor (f)	0.55	0.68	0.85	1.0	1.13	1.3

Number of strokes

Some tubes can measure beyond their printed scale if you take more or fewer strokes than the standard number. The tube's instructions then list, for each number of strokes, the measuring range and a stroke-correction factor. Multiply the scale reading by that factor.

Example: tube No. 3L. The standard is one stroke for 1 to 30 ppm.

Measuring range	Strokes (n)	Correction factor	Sampling time
0.5–1 ppm	2	1/2	approx. 2 min
1–30 ppm	1 (standard)	1	approx. 1 min
30–78 ppm	1/2	2.6	approx. 30 s

Note
The stroke-correction factors are fixed values, so a result taken with a non-standard number of strokes is less precise than one taken with the standard number. Use it as a guide value only. If you need the full precision of the tube, ask Analyt-MTC.

Atmospheric pressure

GASTEC detector tubes are calibrated at a normal atmospheric pressure of 1013 hPa (760 mmHg). Within ±10 % of this — 912 to 1114 hPa (684 to 836 mmHg) — no correction is needed. Outside this range, correct the reading:

True concentration = tube reading × 1013 ÷ atmospheric pressure in hPa
or = tube reading × 760 ÷ atmospheric pressure in mmHg

Interfering gases

Detector tubes work by a chemical reaction, so a gas with chemical properties similar to the target gas can change the reading. Before you measure, check whether such gases are present, and look up their effect in the tube's instructions. The interference table there shows the effect of each listed gas at roughly the same concentrations as the target gas.

Note
Substances or concentrations not listed in the table can also affect the reading under some conditions. If you suspect interference, ask Analyt-MTC before you measure.

CHAPTER 5

Maintenance

Maintenance keeps the pump airtight. The main causes of leaks are a loose inlet clamping nut, a damaged or worn rubber inlet, and old or insufficient lubricant — and you can put all three right yourself.

Work for the service

The following parts are essential to the airtightness of the pump. Have them repaired or replaced only by GASTEC or its representative; contact Analyt-MTC (see Service, warranty and contacts (p. 24)):

Flow finish indicator	A faulty flow finish indicator can make the pump leak. If you notice anything unusual, contact Analyt-MTC.
Head block	The cutter in the tube tip breaker can be used for up to about 20 000 detector tubes. When it no longer scores the glass cleanly, contact Analyt-MTC to have the head block replaced.
Counter (GV-110S only)	If it does not count or turn as described in Using the counter (p. 15), contact Analyt-MTC.

NOTICE

Shocks, modifications and non-genuine parts can make the pump stop working properly or leak, and may void the warranty.

- Do not expose the pump to strong shocks: it can stop working properly.
- Do not modify the pump, and do not take apart the head block, back plate, flow finish indicator or piston. Doing so can make the pump leak and may void the warranty.
- Use only genuine GASTEC maintenance parts (see Maintenance parts (p. 23)). Other parts may void the warranty.

Lubricating the cylinder

You need the GASTEC lubricant (supplied in the accessory set) and a soft cloth or paper.

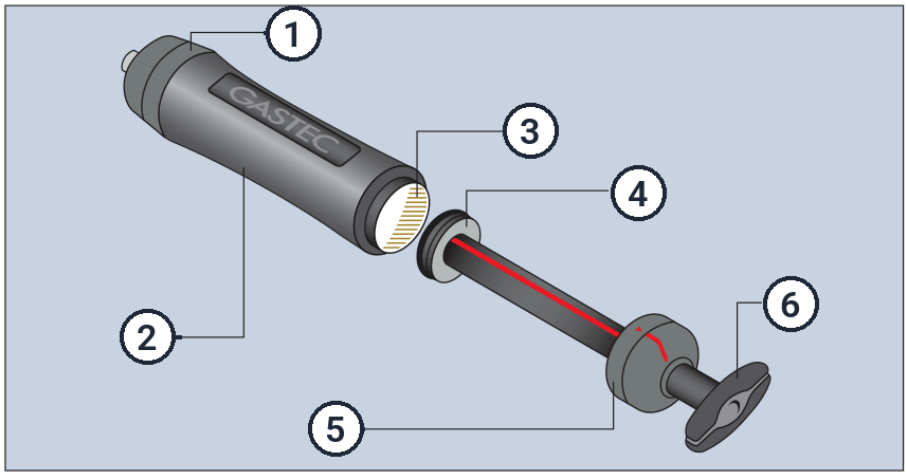


Figure 11. Pump with the piston withdrawn.
1 Head block · **2** Cylinder · **3** Lubricant on the inside wall · **4** Piston · **5** Back plate · **6** Handle

1. Turn the back plate anticlockwise and pull the piston out of the cylinder.
2. Wipe the old lubricant from the inside of the cylinder and from around the piston with a soft cloth or paper.
3. Spread fresh lubricant evenly around the inside wall of the cylinder, at its open end.
4. Push the piston back into the cylinder and turn the back plate clockwise to tighten it.
5. Move the handle in and out about ten times to spread the lubricant over the whole cylinder.
6. Check the pump for leaks (see Leak test (p. 12)).

CHAPTER 6

Troubleshooting

Finding the cause of a leak

If the pump fails the leak test (see Commissioning (p. 12)), work through the table, then repeat the test. If the pump still leaks, contact Analyt-MTC.

Where	Possible cause	What to do
Inlet clamping nut	Not tight enough	Tighten the nut.
Rubber inlet	Damaged or worn	Replace it with a new rubber inlet.
Cylinder or piston	Lubricant old or insufficient	Lubricate the cylinder (see Lubricating the cylinder (p. 20)).

CHAPTER 7

Specifications

The pump draws a fixed sample volume; everything else about a measurement — range, sampling time, accuracy, corrections and interfering gases — is set by the detector tube and given in the tube's instructions.

Pump

Models	GV-100 (set GV-100S); GV-110 with counter (set GV-110S)
Type	Hand-operated piston pump with handle lock
Sample volume per stroke	100 mL (full stroke); 50 mL (half stroke)
End-of-sample indication	Flow finish indicator in the handle
Stroke counter (GV-110)	Counts up to 10 full strokes; half strokes are not counted
Tube tip breaker	Built into the head block; the cutter can be used for up to about 20 000 detector tubes
Operating temperature	0–40 °C (32–104 °F); each detector tube within the range in the tube's instructions
Detector tubes	GASTEC standard detector tubes

CHAPTER 8

Ordering information

Order from Analyt-MTC with the order codes.

Maintenance parts

Description	Order code	Pack
Accessory set: lubricant (1) and rubber inlets (3)	GST_GV100-1	1 set
Rubber inlets	Ask Analyt-MTC	10 per pack
Lubricant	GST_GV100-2	1
Inlet clamping nut	Ask Analyt-MTC	10 per pack

Optional accessories

Description	Order code
Rubber caps for the opened inlet end of a detector tube, to prevent injuries. Blue caps fit the tubes with the largest outer diameter (7 mm), pink caps all other tubes. Reusable; 20 caps of one colour per pack.	DTP-1-20 (blue) DTP-2-20 (pink)
Tube tip holder No. 722. Snaps off the tips of detector tubes and collects them so that no glass is scattered; holds 130 tips.	GST_722
One-hand operation adapter. Holds a vacuum of 50 mL or 100 mL in the pump, so that you can prepare pump and tube beforehand and take the sample with one hand, moving a small rod in the adapter with one finger.	GST_GV-700
Extension hoses for sampling downwards from a distance in confined spaces such as manholes and tanks; fitted to the pump inlet. Length 5 m, 10 m or 30 m.	GST_351A-5 GST_351A-10 GST_351A-30
Extension hose guard rubber, needed to use twin tubes with an extension hose	GST_358
Replacement extension hose guard rubber, to replace the tip of the extension hose	GST_359
Telescopic sampling bar. Glass-fibre probe for sampling horizontally or upwards in narrow spaces. Length adjustable from 62.4 cm to 2.84 m (2.1 to 9.3 ft); weight 590 g (1.3 lb).	GST_350BP-2
Hot probe for very hot gases such as engine exhaust or flue gas at approx. 60 to 600 °C (140 to 1112 °F). Cools the sample to near ambient temperature before it reaches the detector tube.	GST_340
Hot probe holder, holds the hot probe firmly. Cannot be used with twin tubes or with the oxygen detector tube No. 31B.	GST_345A
GASTEC Handbook — measuring workplace and indoor air, water and soil with detector tubes: the tube systems, tube specifications, calibration tools, measuring tips and the properties of the substances measured.	—

CHAPTER 9

Service, warranty and contacts

Contact Analyt-MTC with questions about the GV-100S and GV-110S pumps and GASTEC detector tubes. Contact Analyt-MTC in particular

- if you have a question about a measured result;
- if the pump still leaks after the steps in Finding the cause of a leak (p. 21);
- when the head block needs replacing, or the flow finish indicator or the counter needs repair (see Work for the service (p. 19));
- when you need a repair or regular maintenance of the pump.

Contact

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Before you contact Analyt-MTC

Have the following at hand so that Analyt-MTC can help you quickly:

- the pump model: GV-100S or GV-110S;
- for a question about a result: the detector tube number and QC number (see Reading a detector tube (p. 10)), the number of strokes, and the temperature, humidity and pressure at the sampling point;
- for a leak: the result of the leak test (p. 12) and what you have already tried.

Warranty

Warranty matters follow Analyt-MTC's terms of sale. Modifying the pump, taking apart the parts listed in Work for the service (p. 19), or using parts other than genuine GASTEC parts may void the warranty.

Disposal

Dispose of the pump under local regulations; separate metal, glass and plastic parts for recycling where possible.

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Sales, service and calibration

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