ANALYT MESSTECHNIK



OPERATING MANUAL

SKC IMPACT Sampler

Loading filters and impaction discs, verifying the 10 L/min flow, sampling and recovering samples with the IMPACT Sampler for ambient PM10, PM2.5 and PM Coarse, with care, technical data and ordering information.

AMTC-MN-0029

Rev. 2 · October 2026

About this manual

The SKC IMPACT Sampler is an inertial impactor for particulate matter in ambient and indoor air. At 10 L/min it holds back the particles above its cut-point on an impaction disc and collects the smaller ones on a 47 mm filter. This manual covers the PM10, PM2.5 and PM Coarse models and the PM Coarse Ring.

Start with Product description (p. 6), then work through Operation (p. 9), from preparing the sampler to Flow rate verification and sampling (p. 10). Your sampling procedure or standard sets the filter material, weighing, sampling time and analysis; this manual does not replace it.

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

Abbreviations

Abbreviation	Meaning
EPA	US Environmental Protection Agency
PM	Particulate matter
UL	Underwriters Laboratories

How this manual marks information

WARNING

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

Note

Information that helps understanding; never a hazard.

Numbers in brackets, such as (3), refer to the parts in Figure 1 (p. 6) unless the text names Figure 2.

Document information

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Applies to	SKC IMPACT Sampler 225-390, 225-392, 225-3911; PM Coarse Ring 225-3912
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Manufacturer	SKC Inc.

Revision history

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

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CHAPTER 1

Safety

Read the safety messages in this chapter before you use the IMPACT Sampler. Each one also appears in the procedure where it applies. One concerns the SKC DPS System in explosive atmospheres; the other protects the sample.

Intended use

The IMPACT Sampler is an inertial impactor for sampling airborne particles indoors and outdoors, in urban, industrial and rural settings. It collects the PM10, PM2.5 or PM Coarse fraction on a 47 mm collection filter at 10 L/min, drawn by a sample pump that compensates for the rising pressure drop (see Product description (p. 6) and Choosing the pump (p. 11)). It is also the sampling head of the SKC DPS System.

Do not use it in any of these ways:

- the DPS System in an explosive atmosphere: it is not UL listed for intrinsic safety;
- the DPS System as a U.S. EPA reference or equivalent method for compliance sampling, which it is not;
- a tool, wire or any other object pushed into the inlet nozzles.

Explosive atmospheres and sample handling

⚠ WARNING

The DPS System is not UL listed for intrinsic safety. In an explosive atmosphere it can ignite the atmosphere and cause a fire or an explosion. Use the DPS System only in non-explosive environments.

Note

If the sampler tilts before the inlet is screwed firmly onto the exhaust, the impaction disc can be dislodged. Hold the sampler upright until the inlet is screwed firmly onto the exhaust.

What you may service yourself

You may clean the sampler and replace the BUNA-N exhaust O-ring (see Cleaning (p. 14) and Checking the O-rings (p. 14)). Do not replace the polytetrafluoroethylene (PTFE) inlet O-ring yourself: the manufacturer recommends that only it replaces this O-ring. Send the inlet to Analyt-MTC (see Service and warranty (p. 18)).

CHAPTER 2

Product description

The IMPACT Sampler separates airborne particles by their aerodynamic diameter. Particles above its cut-point stay on a disposable oiled impaction disc; the smaller ones pass on to a 47 mm collection filter. A removable filter cassette carries both media, so you can change them quickly in the field.

Models

Model	Order code	Fraction on the collection filter
IMPACT PM10 Sampler	225-390	particles below the 10 µm cut-point (PM10)
IMPACT PM2.5 Sampler	225-392	particles below the 2.5 µm cut-point (PM2.5)
IMPACT PM Coarse Sampler, with 2 filter cassettes	225-3911	PM Coarse (PM10-2.5) sampling: two filter cassettes in series, ending in a 47 mm final collection filter (Figure 2)

Each sampler comes assembled, with inlet and body, a filter cassette, a calibration adapter and a rain cover. Impaction substrate and collection filters are ordered separately. To sample PM Coarse with an IMPACT PM10 Sampler, add the PM Coarse Ring 225-3912, which includes the second filter cassette. PM Coarse sampling needs additional media: see Loading for PM Coarse (p. 10).

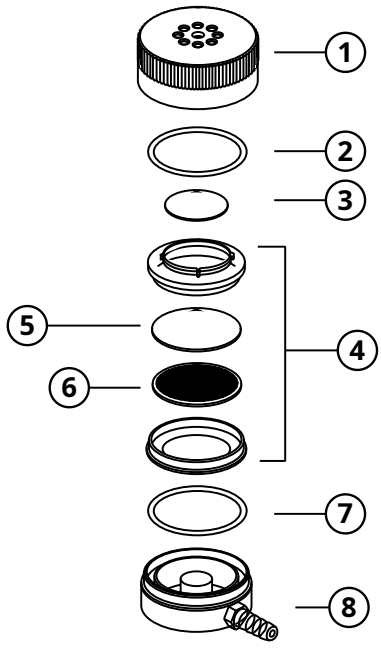


Figure 1. IMPACT PM10 Sampler, exploded. (1) PM10 inlet. (2) PTFE inlet O-ring. (3) 37 mm impaction disc. (4) Filter cassette: top and bottom. (5) 47 mm collection filter. (6) Stainless steel support. (7) BUNA-N exhaust O-ring. (8) Exhaust with barbed fitting.

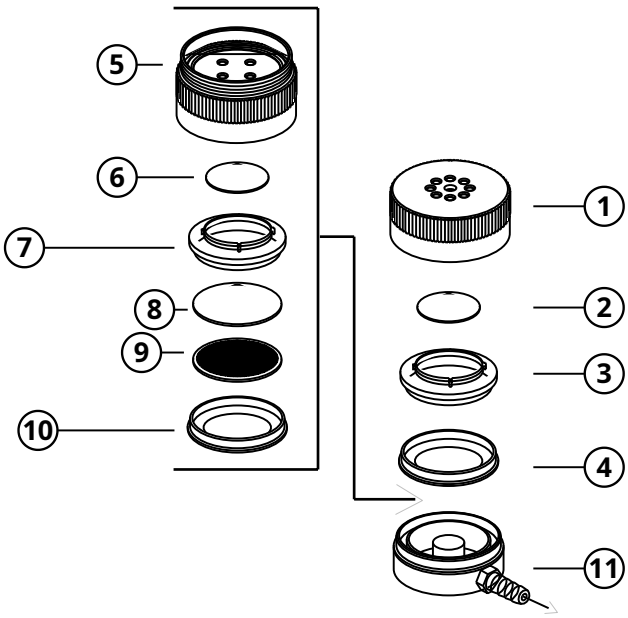


Figure 2. IMPACT PM Coarse Sampler, exploded; O-rings not shown. First stage: (1) PM10 inlet. (2) 37 mm impaction disc. (3) Filter cassette top. (4) Filter cassette bottom, empty. Second stage, fitted between (4) and the exhaust: (5) PM2.5 inlet (coarse ring). (6) 37 mm filter. (7) Filter cassette top. (8) 47 mm final collection filter. (9) Stainless steel support. (10) Filter cassette bottom. (11) Exhaust.



Figure 3. The IMPACT Sampler, assembled.

How it works

A sample pump draws air through the sampler at 10 L/min. The air enters through eight nozzles in the top of the inlet. The nozzles are sized for this flow rate: they form eight air jets aimed at the impaction disc just below them. Particles larger than the cut-point carry too much inertia to follow the air as it turns, leave the streamlines and strike the disc. The air, with the smaller particles, turns sharply, passes through the openings in the top of the filter cassette and deposits them on the 47 mm collection filter.

The impaction disc sits on top of the filter cassette. A 37 mm porous plastic disc, pre-oiled, is the recommended substrate: the oil stops particles from bouncing off and reaching the filter. If you want to analyse the larger particles chemically, use a 37 mm quartz or PTFE filter in place of the disc.

For PM Coarse (PM10-2.5) two filter cassettes are stacked (Figure 2 (p. 6)). The first carries the PM10 inlet and an impaction disc. Below it, the coarse ring with its PM2.5 inlet holds the second cassette, with a 37 mm filter and the 47 mm final collection filter. This takes more media than the single-cassette models.

Where to use it

The sampler suits indoor and outdoor monitoring in urban, industrial and rural settings. It is also the sampling head of the SKC DPS System, a portable particulate sampling kit that adds a Leland Legacy pump, external batteries, a mounting bracket and media in a lockable carry case (see Ordering information (p. 16)).

⚠ WARNING

The DPS System is not UL listed for intrinsic safety. In an explosive atmosphere it can ignite the atmosphere and cause a fire or an explosion. Use the DPS System only in non-explosive environments.

Note

Not a reference method. The DPS System provides data similar to those of U.S. Federal Reference Method samplers, but it is not a U.S. EPA reference or equivalent method for compliance sampling.

What you need

- the IMPACT Sampler, with its filter cassette, calibration adapter and rain cover; for PM Coarse with a PM10 sampler, the PM Coarse Ring 225-3912;
- preweighed 47 mm collection filters and 37 mm impaction discs (or 37 mm filters for chemical analysis of the larger particles); for PM Coarse also 37 mm filters for the second cassette;
- a constant-flow sample pump that holds 10 L/min as the filter loads, such as the SKC Leland Legacy (see Choosing the pump (p. 11)), with flexible tubing for the 3/8 in. inside-diameter barbed fitting;
- a flowmeter for 10 L/min and flow-verification tubing;
- the filter cassette opener 225-397 and the forceps 225-8371; for fixed-site sampling, the mounting bracket 225-399.

Order codes of all media and accessories: see Ordering information (p. 16).

CHAPTER 3

Operation

Operation runs from the prepared media to the samples for the laboratory: prepare the media and load the collection filter and the impaction disc; verify the flow rate; take the sample and verify the flow rate again; then recover the media and ship them.

Before each sample, prepare the media, check that the sampler is clean and its exhaust O-ring sound (see Cleaning (p. 14) and Checking the O-rings (p. 14)), then load the collection filter and the impaction disc — in that order.

Preparing the media

Collection filters. Condition and preweigh the 47 mm filters in a clean place, following the weighing procedure of your method. Record each weight as the pre-sample weight.

Impaction discs. The pre-oiled disposable discs 225-395B, 225-395 and 225-395A are ready to use; the oil reduces particle bounce. Use a new disc for every sample. If the larger particles are to be analysed chemically, use a 37 mm quartz or PTFE filter instead of the disc.

Loading the collection filter

The sampler is delivered assembled. Handle filters only with the forceps.

1. Unscrew the inlet (1) from the exhaust (8).
2. Lift the filter cassette (4) out of the exhaust.
3. Open the cassette with the filter cassette opener: push the cassette sideways into the U of the opener until the two halves come loose, then gently pull them apart.
4. Check that the stainless steel support screen (6) lies in the bottom half of the cassette.
5. With the forceps, place a preweighed 47 mm filter (5) on the support screen.
6. Press the cassette top into the cassette bottom.
7. Put the cassette back into the exhaust.

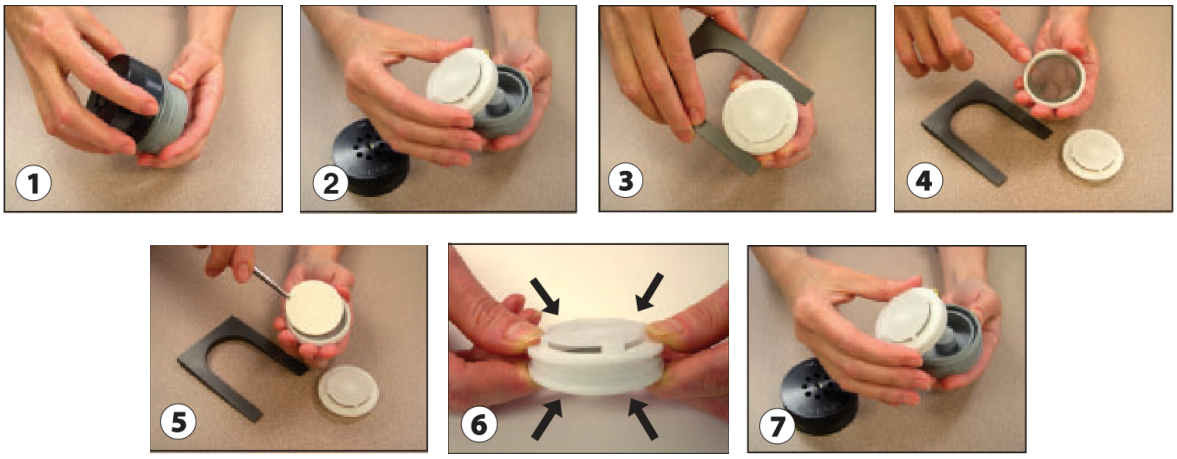


Figure 4. Loading the collection filter; the photo numbers are the step numbers.

Inserting the impaction disc

For PM10 and PM2.5 sampling, insert the impaction disc only once a collection filter is loaded in the cassette.

1. Check that the cassette holds a collection filter (see Loading the collection filter (p. 9)).

   > **Note**
   > If the sampler tilts before the inlet is screwed firmly onto the exhaust, the impaction disc can be dislodged. Hold the sampler upright until the inlet is screwed firmly onto the exhaust.

2. Lay the impaction disc (3) on the cassette top with its rough side up. Discs from SKC are stamped “UP” on that side.

   > **Note**
   > Do not overtighten the inlet on the exhaust, and do not use the barbed fitting as a lever when you tighten it.

3. With the cassette in the exhaust, screw the inlet onto the exhaust until it is just tight, then tighten it by hand by a quarter turn — no more.



Figure 5. Inserting the impaction disc: **2** disc on the cassette top (step 2) · **3** inlet screwed onto the exhaust (step 3) · right: PM Coarse Sampler, assembled.

Loading for PM Coarse

The IMPACT PM Coarse Sampler, and a PM10 sampler fitted with the PM Coarse Ring, use two filter cassettes. The numbers in this section refer to Figure 2 (p. 6).

1. **First cassette (3, 4):** leave it empty — no collection filter and no stainless steel support. Lay the impaction disc (2) on its top, rough side up.
2. **Second cassette (7, 10):** load the stainless steel support (9) and a preweighed 47 mm collection filter (8) as in Loading the collection filter (p. 9). In place of an impaction disc, lay a 37 mm collection filter (6) on its top. The second cassette is the one supplied with the coarse ring or with the PM Coarse Sampler.
3. Place the cassette assembly on the exhaust (11) and screw inlet and exhaust together until just tight, then a quarter turn more by hand. The cautions above apply.

> **Note**
> **Outdoors.** Fit the rain cover supplied with the sampler for every outdoor sample (see Taking the sample (p. 12)).

Flow rate verification and sampling

Verify the flow rate with the loaded sampler in line, sample, verify the flow rate again, then recover the media for the laboratory. Follow the operating instructions of your pump and flowmeter as well.

Choosing the pump

As particles build up on the filter, the pressure drop across the sampler rises. Use a constant-flow pump that compensates for it and keeps 10 L/min, for example the SKC Leland Legacy, Cat. No. 100-3002. The Leland Legacy runs for 24 hours at 10 L/min against a pressure drop of up to 12 in. H_2O. It can also be programmed in advance with the start time and duration of the sample, and then starts on its own or by hand.

Verifying the flow rate

Verify the flow through the complete sampling train: the sampler in line, loaded with a collection filter and an impaction disc. The verification train runs from the flowmeter through the calibration adapter and the sampler to the pump.

1. Check that the rain cover is off the inlet, and that the sampler is loaded and fully assembled (see Loading the collection filter (p. 9) and Inserting the impaction disc (p. 10)).
2. Screw the calibration adapter 225-394 onto the inlet.
3. Connect the pump inlet to the sampler outlet (the barbed fitting on the exhaust) with flexible tubing.
4. Connect the flowmeter outlet to the inlet of the calibration adapter with the flow-verification tubing.
5. Run the pump and verify that the flow through the verification train is 10 L/min. The pump and flowmeter instructions describe how.
6. Disconnect the flowmeter and its tubing from the calibration adapter, and unscrew the adapter from the inlet.

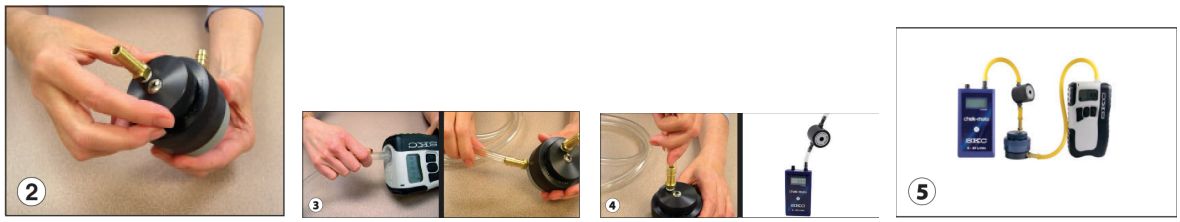


Figure 6. Verifying the flow rate; the photo numbers are the step numbers.

Note

High Flow chek-mate. With an SKC High Flow chek-mate Flowmeter (375-50300 series), the Pulsation Dampener 375-150 is required: fit it in line in the verification train (steps 4 and 5).

Taking the sample

1. If the media you used for the verification are not the sample media, replace them with new preweighed media (see Preparing the media (p. 9)).
2. Fix the mounting bracket 225-399 at the sampling location, at breathing-zone height (6 ft or 2 m), with cable ties or other fasteners. Mount the sampler by threading the clamp knob of the bracket into the bottom of the sampler.
3. Put the screw of the rain cover into the screw hole in the top of the inlet and turn the cover until it is tight. Use the rain cover for every outdoor sample.
4. Start the pump. Record the start time and the other data your method requires.
5. When the sampling time has elapsed, stop the pump. Record the stop time and the other data.
6. Take off the rain cover, reconnect the verification train and verify the flow rate again (see Verifying the flow rate (p. 11)).
7. Disconnect the pump and tubing from the sampler.



Figure 7. Taking the sample: sampler on the mounting bracket (step 2), rain cover fitted (step 3), and the IMPACT Sampler in use with the DPS System.

Removing the filter and the impaction disc

1. Unscrew the inlet from the exhaust.
2. Take the impaction disc out of the recess in the cassette top. If the larger particles are to be analysed chemically, put it in a suitable container for the laboratory, such as a glass jar (see Ordering information (p. 16)).
3. Lift the filter cassette gently out of the exhaust.
4. Separate the two halves with the filter cassette opener: push the cassette sideways into the U of the opener until the halves come loose, then gently pull them apart.
5. Take the collection filter out with the forceps and put it in a suitable container for the laboratory.

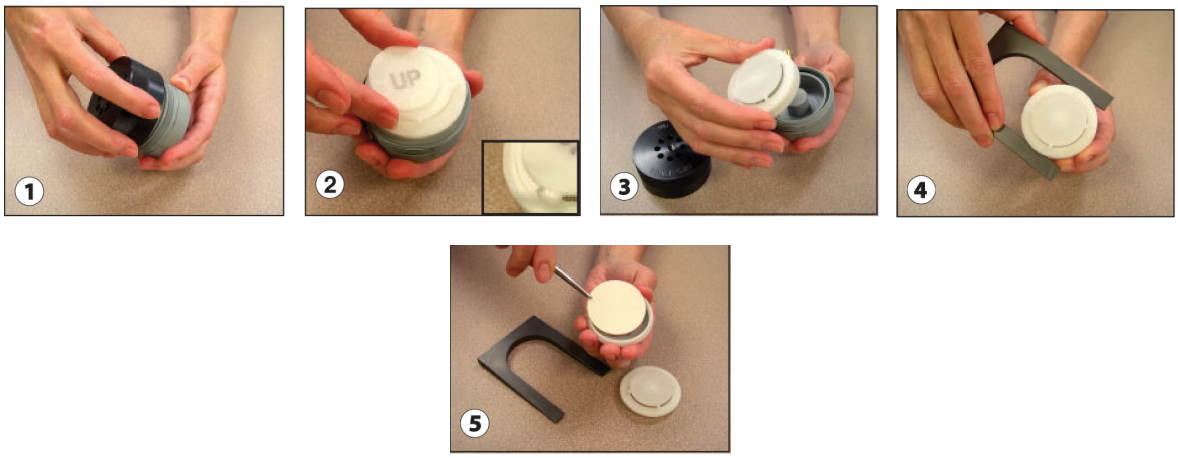


Figure 8. Removing the filter and the impaction disc; the photo numbers are the step numbers.

> **Note**
> **PM Coarse.** Follow steps 1 to 5 for the second filter cassette only, and send its 37 mm and 47 mm filters to the laboratory in separate containers. If you want the larger particles analysed as well, send the impaction disc of the first cassette too.

Shipping and analysis

Pack and transport samples and blanks so that nothing is lost and nothing contaminates them; the Petri dish slides 225-2-01 hold filters for transport. Have the samples analysed gravimetrically, chemically or both by an accredited laboratory.

The DPS System contains lithium-ion batteries and may be subject to special shipping regulations (see Ordering information (p. 16), footnote 2).

CHAPTER 4

Maintenance

Cleaning

Oil from the impaction discs and other residue build up on the sampler, especially on the top of the filter cassette. Clean the inlet, the exhaust and the filter cassette after every five runs, or sooner if you see material building up.

> **Note**
> Never put a tool, wire or any other object into the inlet nozzles.

1. Take the sampler apart.
2. Wash the parts in water with a liquid detergent or soap.
3. Rinse them, and let all parts air-dry completely in a clean environment.

Checking the O-rings

Inspect the BUNA-N exhaust O-ring (7) for wear. Its surface must be smooth, with no cracks, cuts or other damage, and it must sit properly in its groove. Replace it with spare part P31988 if it is damaged, stretched or has become thin.

> **Note**
> Do not replace the PTFE inlet O-ring (2) yourself — the PM Coarse model has two. The manufacturer recommends that only it replaces this O-ring; send the inlet to Analyt-MTC.

CHAPTER 5

Specifications

Flow rate	10 L/min
50 % cut-point	2.5 µm or 10 µm, depending on the model
Impaction substrate	37 mm disposable pre-oiled porous plastic disc, recommended to reduce particle bounce 37 mm quartz or PTFE filter, for chemical analysis of the larger particles
Collection filter	47 mm; choose the material for the application
Material	Aluminium inlet; brass barbed fitting for tubing of 3/8 in. inside diameter
Dimensions	2.6 in diameter × 1.8 in height × 3.8 in length (7 × 5 × 10 cm)
Weight	0.5 lb (0.23 kg)

CHAPTER 6

Ordering information

Order from Analyt-MTC with the order codes.

Description	Pack	Order code
IMPACT SAMPLERS		
Each with inlet and body, filter cassette, calibration adapter and rain cover. Order impaction substrate and collection filters separately.		
IMPACT PM10 Sampler	1	225-390
IMPACT PM2.5 Sampler	1	225-392
IMPACT PM Coarse Sampler, with 2 filter cassettes	1	225-3911
DPS SYSTEM[1, 2]		
Leland Legacy sample pump with connection case, charger (100–240 V) and 2 external battery assemblies with adapters (packed separately); IMPACT Sampler, 2 filter cassettes, calibration adapter, rain cover, 25 disposable impaction discs, filter cassette opener, tubing with quick-connect fitting, flow-verification tubing and mounting bracket, in a heavy-duty lockable carry case.		
DPS System, PM10	1	100-3901
DPS System, PM2.5	1	100-3903
COLLECTION FILTERS, 47 MM — ONE PER SAMPLE[3]		
Quartz filters, Tissuquartz, 432 µm thick	25	225-1823
PTFE filters, 2.0 µm, with polymethylpentene (PMP) support ring[4, 5]	50	225-1747

1 For use in non-explosive environments only; not UL listed for intrinsic safety. The DPS System gives data similar to U.S. Federal Reference Method samplers but is not a U.S. EPA reference or equivalent method for compliance sampling.
2 The DPS System contains lithium-ion batteries and may be subject to special shipping regulations.
3 Recommended filters for use with the Leland Legacy pump.
4 The back pressure of PTFE filters can vary within one lot.
5 Maximum operating temperature 464 °F (240 °C), set by the PMP support ring.

Description	Pack	Order code
IMPACTION SUBSTRATE, 37 MM — ONE PER SAMPLE		
Impaction discs, pre-oiled, ready to use, disposable; recommended to reduce particle bounce	10 25 50	225-395B 225-395 225-395A
Quartz filters, Tissuquartz, 432 µm thick; for chemical analysis of the larger particles	25	225-1822
PTFE filters, 0.3 µm, laminated, without support pad; for chemical analysis of the larger particles	100	225-1722
ACCESSORIES		
PM Coarse Ring, converts an IMPACT PM10 to an IMPACT PM Coarse; includes a filter cassette	1	225-3912
Mounting bracket	1	225-399
Filter cassette opener	1	225-397
Forceps, stainless steel	1	225-8371
Petri dish slides, for filter transport	100	225-2-01
Glass jars, for chemical analysis	8 36	Ask Analyt-MTC 225-8377
SPARE PARTS		
Inlet only, 10 µm; interchangeable on the IMPACT body	1	P54202
Inlet only, 2.5 µm; interchangeable on the IMPACT body	1	P54204
Exhaust	1	P21279
Exhaust O-ring	1	P31988
Rain cover	1	225-398
Calibration adapter	1	225-394
Filter cassette	1	225-396
Stainless steel support	1	225-2647A

CHAPTER 7

Service, warranty and contacts

Contact and support

ANALYT-MTC Messtechnik GmbH

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www.analyt-mtc.com

Before you contact Analyt-MTC

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

- the catalogue number of your sampler: 225-390 (PM10), 225-392 (PM2.5) or 225-3911 (PM Coarse);
- the pump, flowmeter, media and sampling procedure you use.

Service and warranty

Analyt-MTC is your contact for media, spare parts, technical questions and warranty matters concerning your SKC IMPACT Sampler, including the replacement of the PTFE inlet O-rings (see Checking the O-rings (p. 14)). Warranty is handled under Analyt-MTC's terms of sale. Analyt-MTC's contact details are above and on the back cover.

Disposal

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

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