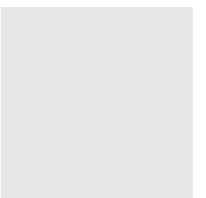
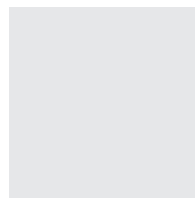
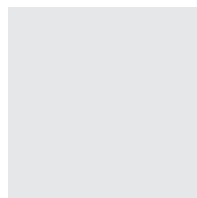
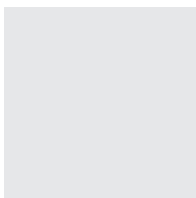
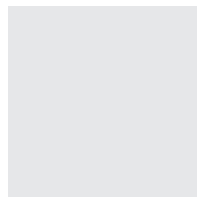
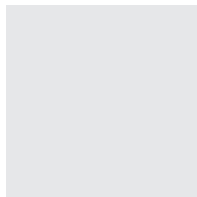
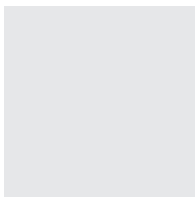
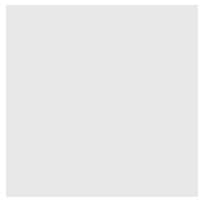
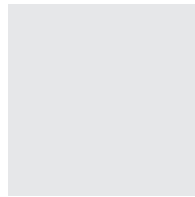
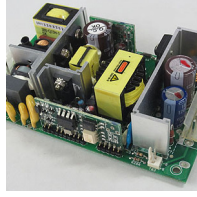
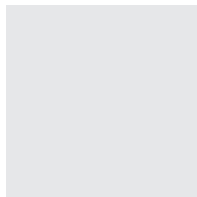
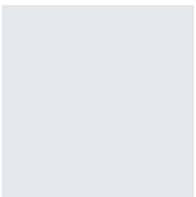
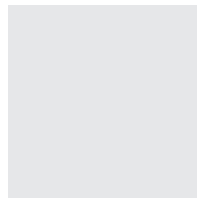
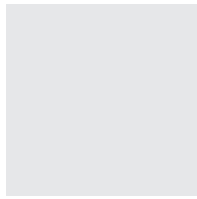
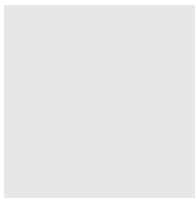


# Gas Analyzer Spare Part Recommendations



Reliable gas analysis data can play an important role in a wide range of industries.

Failure of gas analyzers can interrupt that data flow and contribute to costly production delays or can allow potentially dangerous accumulations of hazardous gas to go un-measured. For example, if a gas analyzer fails to monitor a combustion process accurately, it may lead to improper and inefficient combustion, which will lead to excess fuel use and possibly higher pollutant emissions.

To help you manage your gas analyzers and keep them running smoothly, Nova Analytical Systems has compiled a list of recommended spare parts for analyzer maintenance and repair. This will help you achieve a strong balance between cost-savings, lifetime improvements, and performance accuracy.

The recommended replacement parts for a particular analyzer will obviously depend upon its original design and its intended application. While many analyzers have some spare parts in common, some parts may be unique to a specific design. This book contains some general guidelines on the subject of analyzer parts.



# Types of Gas Analyzers and the Role of Spare & Replacement Parts

There are typically three reasons why parts are of interest to a gas analyzer user.

**Re-action:** Analyzer mal-function due to normal wear or unexpected process upset. Needs repair which may include parts replacement.

**Pro-action:** Analyzer is functioning properly, but user wants some basic high-wear parts on-hand to allow quick remediation and return to uptime if a problem does occur.

**Maintenance:** During normal operation, there are some components in the analyzer that are slowly consumed as they function. These items are sometimes referred to with terms such as 'consumables', 'recommended spares', etc. Replacing these items is considered a normal and important part of running the analyzer successfully.

Gas analyzers can be conveniently sorted by the cabinet type / style, intended application, or the gases that they measure. Knowing a little bit about the design of your analyzer will help you to find the right replacement part for your gas analyzer.

The cabinet type / style usually suggests the duration and style of measurement. Portable instruments are normally suitable for intermittent-use 'spot-check' type measurements. Permanently installed instruments are normally intended for continuous 'round-the-clock' measurements where the analyzer is permanently dedicated to one process. The continuous operation of permanent instruments suggests that component wear will be higher and replacement part requirements will also be higher.

The application has a big influence on the design of the analyzer and therefore the type and frequency of parts requirements. For example, high dust applications require regular inspection of filters. High moisture applications may require occasional inspection of water collection bowls, liquid block membranes, and drain line valves.

### **Applications and sample gas constituents that may drive the need for replacement or maintenance parts:**

- **Power Generation:** hydrogen, carbon dioxide, air  
- Oil vapor and moisture may be in sample gas
- **Landfills:** methane, carbon dioxide, oxygen  
- Water, H<sub>2</sub>S, siloxanes, and other corrosive constituents may be in sample gas
- **Biogas:** methane, carbon dioxide, oxygen, hydrogen sulfide  
- Water, H<sub>2</sub>S, and other corrosive constituents may be in sample gas
- **Syngas from gasification:** hydrogen, carbon monoxide, carbon dioxide, methane, oxygen  
- Dust, ash, tar & heavy HC's, high heat, water, ammonia, and other corrosive constituents may be in sample gas
- **Engine exhaust:** oxygen, carbon monoxide, carbon dioxide, nitric oxide, nitrogen dioxide, hydrocarbons  
- Oil vapor, water, particulate, high heat may be in sample gas
- **Flue gas analysis:** oxygen, carbon monoxide, carbon dioxide, nitric oxide, sulphur dioxide  
- Water, particulate, high heat, acids, and other corrosive constituents may be in sample gas
- **Metal heat treating:** oxygen, carbon monoxide, carbon dioxide, methane, hydrogen, dew point  
- Ammonia, high heat, oil or polymer binder fumes, interference gases, high ambient heat

### **Gas analyzers may measure just one gas, or multiple gases in a process. Gases measured by Nova equipment typically include:**

- Oxygen (O<sub>2</sub>)
- Carbon Monoxide (CO)
- Carbon Dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Hydrogen (H<sub>2</sub>)



## Filters

Filters are mission-critical components for any gas or emissions analyzer. Their primary role is to remove airborne particulates from the gas sample without changing its composition. They may be positioned at or near the sample extraction point. Or, they may be located later on inside the instrument. Some analyzer designs have filters in both places. The position of the filter may cause it to be referred to as a 'primary filter' or a 'finishing filter'.

There are a few filters in the Nova product line that selectively remove oil vapors from the sample gas. These will be incorporated into the analyzer design if the application is known to require it.

Filters are probably one of the highest wearing components in a sampling system and are generally thought of as consumable items. For the money spent, it usually makes most sense for a user to have spare filters on hand.

Plugged filters can block a sample path to the point of reducing or restricting flow through the analyzer.

Low or no flow will prevent fresh sample from entering the gas measurement chambers. However, if the analyzer is operated without the required filters, this will contaminate the wetted path and possibly occlude any optical surfaces or diffusion layers in the gas detectors and sensors. Any of these conditions will produce unreliable measurement data.

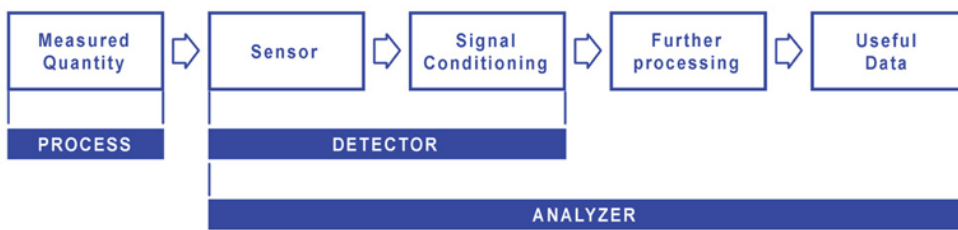
The specific filters required for any given analyzer will be dictated by the original Nova design and will be listed in the back of your operator manual. Here is a chart of many of the filters available from Nova:

Current Nova Reorder No.	Description
<b>TGI1008FILTER</b>	Finishing filter
<b>TGI1061FILTER</b>	Oil absorbing filter
<b>TGI1032FILTER</b>	Particulate filter element
<b>TGI1047FILTER</b>	Particulate filter element
<b>TGI1348FILTER</b>	Liquid block
<b>TGI1078FILTER</b>	Liquid block
<b>TGI1053FILTER</b>	In-line oil filter
<b>TGI1087FILTER</b>	Inline pre-filter

Current Nova Reorder No.	Description
<b>TGI6443FILTER</b>	Engine exhaust probe filter (20pk)
<b>TGI1033FILTER</b>	Particulate filter element
<b>TGI1066FILTER</b>	Inline Charcoal Filter
<b>TGI4083FILTER</b>	Inline Charcoal Filter
<b>TGI7452FILTER</b>	Liquid block
<b>TGI6454FILTER</b>	Liquid block (5pk)
<b>TGI1059FILTER</b>	Oil Vapor Filter Element

# Sensors / Detectors

Sensors and detectors are the heart of an analyzer system. This is the component that ‘sees’ the gas and produces a measurement. Typically the measurement is in the form of an electrical signal that is amplified, attenuated, filtered, or otherwise modified to produce a meaningful data point that can be displayed on the analyzer. Most sources will define a sensor as merely the element that ‘senses’ the measured quantity, while a detector includes both the sensing element and the signal conditioning.



Not all sensors / detectors are the same. Depending on the gas being measured, they may use different physical or chemical principles to make their measurement. Nova primarily uses electrochemical, infrared, thermalconductivity, and paramagnetic sensors / detectors.

Some types of sensors / detectors are slowly consumed as they are used. Others types are not consumed, but they may be sensitive to contaminants in the sample. The service life of many sensors / detectors can usually be measured in years of reliable performance.

During their life, almost all sensors / detectors are subject to analytical drift that accumulates through normal use. The analyzer as a system should have regular calibration intervals to reduce drift and reestablish measurement accuracy.

If at some point the calibration procedure fails to eliminate the accumulated drift, or there is no more adjustment room left in the amplifier circuits, it may mean that the sensor / detector needs replacement. It is usually best to consult with the Service Department at Nova first before going to the expense of replacing the sensor / detector.

The specific sensor / detector installed in your Nova gas analyzer has been selected by Nova on the basis of several design considerations. Therefore, a replacement sensor / detector should be installed as per Nova’s recommendation. This information will be contained in the operators manual that accompanied your instrument.

Here are a few of the sensors & re-order numbers that are relevant to Nova analyzers:

Nova Reorder No.	Description
TGI1837SENSOR	Oxygen sensor
TGI2546SENSOR	Oxygen sensor
TGI6559SENSOR	Oxygen sensor
TGI3271SENSOR	PPM Oxygen sensor
TGI1735SENSOR	CO sensor
TGI3484SENSOR	CO sensor

Nova Reorder No.	Description
TGI2725SENSOR	NO2 sensor
TGI2726SENSOR	NO sensor
TGI6450SENSOR	SO2 sensor
TGI3256SENSOR	NO sensor
TGI1235SENSOR	CO sensor
TGI5769SENSOR	Infra-red Detector



## Miscellaneous Parts

For analytical instruments such as gas analyzers, every part is important. Even many subsystems in an analyzer will have an effect on the analytical result and the service life of the instrument.

Some parts come into contact with raw sample gas. Some parts have mechanical movement. Some parts handle power and power distribution. Other parts contain sensitive electronics.

To help you keep your gas analyzer running at its best, we've put together this short list of miscellaneous parts. This is not a complete list; but many of these parts may be candidates for replacement sometime during the life of the instrument. Many of these items, such as batteries and recharger systems, are obvious

but their overall performance is extremely important. The reality is that no machine lasts forever. There will be a necessary amount of maintenance and repair to eventually perform on your Nova analyzer. To accommodate this reality, you will note that your Nova analyzer has an intuitive internal layout that allows easy access and repair. Nova instruments are not 'black boxes' or unserviceable systems. Many of the parts are user-replaceable.

Nova Reorder No.	Description
TGI3000FLOWMETER	Flow meter
TGI3346REGULATOR	Regulator
TGI4966REGULATOR	Regulator
TGI3302BATTERY	Battery
TGI5618BATTERY	Battery
TGI1349WIRE	Recharger
TGI6562PWRSUPPLY	Recharger
TGI3288WIRE	Recharger
TGI3052PUMP	Pump
TGI50317SUB	Dew Point Calibration Kit
TGI4696MISC	Printer Paper (5pk)
TGI50368SUB	14 inch S.S. probe
TGI3730FLOWMETER	Flow meter
TGI4296PUMP	Sample Pump
TGI2674PUMP	Sample Pump

Nova Reorder No.	Description
TGI2891PUMP	Sample Pump
TGI5611PUMP	Sample Pump
TGI6529PUMP	Sample Pump
TGI5443VALVE	Solenoid Valve
TGI5661VALVE	Solenoid Valve
TGI5905VALVE	Solenoid Valve
TGI5622REGULATOR	Pressure Regulator
TGI6123MISC	Magnetic Wand
TGI4786THERMOCPL	Thermocouple
TGI3007CONTROLLER	Temperature Controller
TGI2671PWRSUPPLY	Power Supply 12VDC
TGI2672PWRSUPPLY	12VDC, Switching, Rohs
TGI3464PWRSUPPLY	Power Supply (Thermo Cooler)
TGI2327SWITCH	Flow Switch
TGI2820SWITCH	Float Switch



## Ordering with Nova Analytical Systems

Nova manufactures many types of continuous and portable gas analyzers for a variety of industries. Obviously, not all of the possible analyzer parts have been discussed in this guide. The manual that accompanied your analyzer will have some additional information on spare parts for your specific instrument.

For assistance with Nova analyzer spare parts, we invite you to contact us using this webpage:  
<http://info.nova-gas.com/spare-parts>

It is important that you accurately provide your contact information, your analyzer model and serial numbers, and the parts you need. This information will help us contact you with the recommendations that you need.



## We Can Help You

Regardless of the environment or applications, Nova can provide a gas analyzer to meet your needs. Harsh conditions or extreme temperatures are not a problem for our systems. Simple installation and modular design mean that our systems are easy to maintain and replace in the event of a malfunction, and built-in, guided troubleshooting makes diagnosing issues a snap.

**Contact Nova Analytical Systems today and request further information or a quote for your gas analysis needs.**



**Looking for Odd Parts?**

Visit our Spare Parts Store today