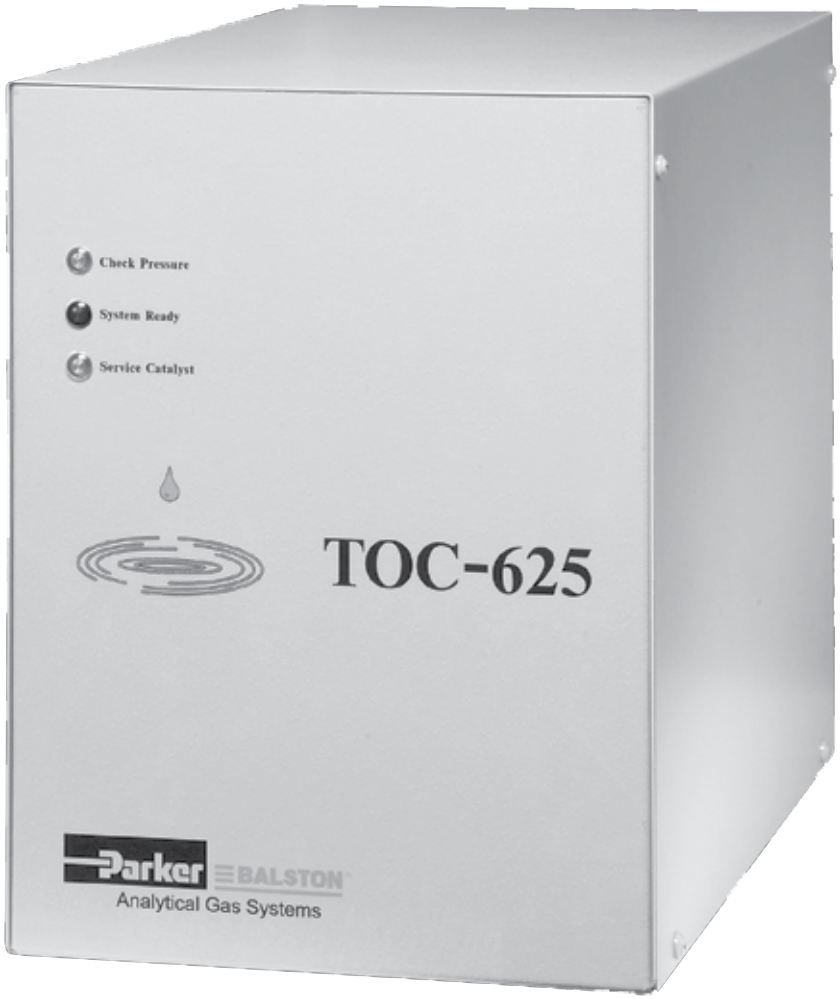

Parker Balston®
Model TOC-625 Gas Generator

Installation, Operation, and Maintenance Manual

aerospace
climate control
electromechanical
filtration
fluid & gas handling
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pneumatics
process control
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Parker Balston

ENGINEERING YOUR SUCCESS.

Parker Balston®
Model TOC-625 Gas Generator

Installation, Operation, and Maintenance Manual

These instructions must be thoroughly read and understood before installing and operating this product. Failure to operate this product in accordance with these instructions could present a safety hazard to the user and will void the safety certification of this product. Modification of the unit will result in voiding the warranty.

If you have any questions or concerns, please call the Technical Services Department at 800-343-4048, 8AM to 5PM Eastern Time (North America only). For other locations, please contact your local representative. Email to: balstontechsupport@parker.com.

Please save product packaging for future use.

Description

General Description

The Parker Balston TOC-625 (see Figure 1), is a completely engineered system that purifies compressed air into carrier/combustion grade gas for the Total Organic Carbon Analyzer. The generator utilizes a combination of filtration, combustion, and pressure swing adsorption technologies to remove hydrocarbons, carbon monoxide, carbon dioxide, and water vapor. The gas produced by the Parker Balston TOC-625 has a hydrocarbon content less than or equal to 0.05 ppm (measured as methane), CO less than 1 ppm, CO_2 less than 1 ppm, and a dew point of -100F (-73C).

The TOC-625 has been certified to the electrical safety requirements as specified by IEC, and CSA standards. These units bear the CSA mark on the product label. Product supplied to EC carry the CE mark (220/230/240 VAC units only) and comply with EMC standards.

Engineered System

The purification process can be broken down into five stages: prefiltration, combustion, cooling, adsorption, and final filtration. Integrated diagnostics monitor system performance and attract operator attention via indicator lights and audible alarm if a system fault occurs.

Prefiltration

A single prefilter (Balston Grade BX) is incorporated into the TOC-625. Particulate and aerosol contamination are removed from the compressed air at an efficiency of 99.99% at 0.01 micron. The filter is equipped with a solenoid valve to automatically drain liquid from the filter housing.

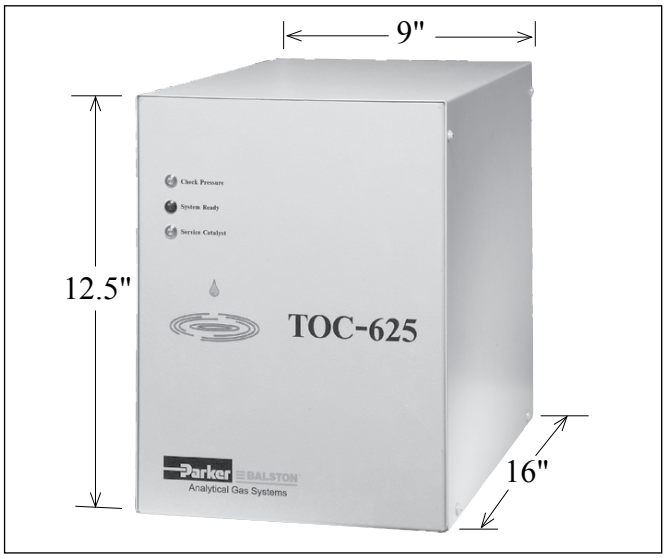

Figure 1: Product Dimensions

Hydrocarbon/Carbon Monoxide Oxidation

An oxidation catalyst is used to convert hydrocarbons (including methane) and carbon monoxide to water vapor and carbon dioxide. The catalyst is housed in a temperature controlled assembly that maintains the catalyst bed at the temperature required for optimal combustion; the hydrocarbon content of the air exiting the catalyst bed is less than or equal to 0.05 ppm and CO is less than 1 ppm.

Cooling

The outlet air from the catalyst assembly is cooled to within 20°F of ambient by a coiled copper tube. Cooling the heated air enhances the operation of the components of the pressure swing adsorption technology.

Water/Carbon Dioxide Removal

Pressure swing adsorption technology is used to reduce the water vapor and CO_2 content in the compressed air to less than 1 ppm.

Final Filtration

The final filter is a high efficiency filter removes particulate contamination to 0.01 micron.

Installation

NOTE: All installation, operation, and maintenance activities for the Parker Balston TOC-625 should be performed by suitable personnel using reasonable care.

General

The Parker Balston TOC-625 is a free-standing bench top unit. The ¼" female npt inlet, outlet, and drain ports are located on the back panel of the generator.

Location

Do not install the generator outdoors. The generator should be installed in an area where the ambient temperature is between 60°F and 100°F (16°C and 38°C). Approximately 6" of space should be allowed around the sides and back of the generator to ensure proper ventilation.

Compressed Air

The Parker Balston TOC-625 requires a source of clean, dry compressed air (60 psig-120 psig/ 4.1 barg- 8.2 barg) for optimal operation. The compressor must supply a minimum flow rate of 2.0 LPM. The temperature and dewpoint of the compressed air should be at or below room temperature and it should be relatively free of compressor oil.

Contamination of the catalyst bed and damage to downstream components will occur if the compressed air contains any halogenated hydrocarbons. If a refrigerated dryer is used on the compressed air line, check for leaks to ensure the TOC-625 is not exposed to the refrigerant. Do not store any of the following near the compressor intake: chemicals containing lead, sulfur, heavy metals, and volatile organic compounds such as methylene chloride, chloroethane, and methyl bromide, etc.

Inlet Supply Plumbing

A shut-off valve and a pressure regulator should be installed directly upstream of the generator. The shut-off valve isolates the unit from the compressed air supply for maintenance activities. The pressure regulator should be set to maintain a constant air supply pressure between 60 psig and 120 psig (4.1 barg and 8.2 barg). The inlet is ¼" female npt, and is located on the back panel of the unit. The inlet fitting to the generator should be a ¼" male npt x ¼" tube to ensure adequate air flow to the equipment. The tubing and fitting should be rated for a minimum pressure of 120 psig.

Power

The power requirement for the TOC-625 is 120 VAC, 60 Hz. The power requirement for the TOC-625-220 is 230 VAC, 50/60 Hz. The main supply line voltage must be within +/- 10% of nominal rated voltage. There is no power switch on the unit; plug the power cord into the receptacle on the back panel of the generator, then plug the other end into the receptacle on the wall.

Outlet Supply Plumbing

The drain port is ¼" female npt and located on the back of the generator. Plastic tubing may be used to drain the liquid from the compressed air. The drain should be plumbed to a suitable container and disposed of properly. Anchor the tubing since it will be under full pressure when the drain is activated.

The outlet port, located on the back of the generator, is ¼" female npt. Refrigeration grade copper tubing or clean stainless steel tubing should be used at the outlet to avoid contamination of the gas stream. PTFE tape should be used on the threaded fittings to avoid the possibility of contamination from thread sealing compounds. Place a pressure regulator in line; set the outlet pressure at least 10 psig below the inlet pressure to avoid pressure pulsations on the outlet supply.

If the outlet flow rate of the TOC-625 is exceeded, the concentration of impurities in the emergent gas stream will increase. To ensure the integrity of the gas, install a flow controller downstream of the generator unless the TOC analyzer has a flow controller incorporated into its design.

Operation

Start-up

Open the inlet air supply valve and set the inlet pressure between 60 psig and 120 psig. Plug the power cord into the generator, then into the power receptacle. The unit will begin its 30-minute start-up, signalled by the blinking green light. During the first 15 to 20 minutes, the yellow “check catalyst” light will be illuminated while the catalyst module begins to heat up. If an audible alarm should sound during start-up, ensure that the supply pressure is 60 psig minimum.

At the end of the start-up period, the green “System Ready” will illuminate.

NOTE: Newly installed systems should run at or below 625 cc/min, for 24 hours to condition the pressure swing adsorption towers. Generators that have been shut down for a week or more should be run for 24 hours prior to use.

Operation

The TOC-625 is designed to operate continuously, 24 hours per day, as long as both compressed air and power are supplied to the generator. Continuous operation will enhance gas purity by keeping the adsorption towers conditioned; it will also prolong the catalyst heater life. The three diagnostic lights on the front panel provide information regarding system function.

Diagnostics

Check Pressure (top yellow): The “Check Pressure” light will be illuminated and an alarm will sound if the inlet pressure drops below 60 psig or if the there is a system upset in the pressure swing adsorption towers due to a plugged orifice or faulty valve.

System Ready (green): The “System Ready” light will blink during the 30-minute start-up period. It will remain illuminated during operation unless a fault condition is detected.

Service Catalyst (bottom yellow): The “Service Catalyst” light will be illuminated and an alarm will sound to indicate that either the catalyst module is faulty or to indicate the approach of the catalyst module service date.

Two months prior to the 3-year run time service date, the service catalyst light will blink (one minute on, one minute off) and an audible alarm will sound every four hours. At the end of the 3-year run time, the ready light will turn off, the service catalyst light will continue to blink, and the beep rate of the alarm will increase to once per minute.

Shut-down

The catalyst module must be replaced to return the system to its normal operational status.

If shutdown is required; turn off the compressed air supply prior to unplugging the generator. The generator should be unplugged at the wall receptacle, not the generator.

Maintenance

All maintenance procedures should be performed by qualified personnel using reasonable care.

Prior to servicing the TOC-625, shut off the compressed air supply and allow the generator to run for an additional 5 minutes to depressurize all the components. Unplug the electrical cord at the wall’s power receptacle. Allow the unit to cool for 2 hours before attempting to service the catalyst module.

The primary maintenance tasks required for the TOC-625 are changing the prefilter cartridge annually and changing the catalyst module and filter every 3 years. These parts are easily accessed by removing the eight screws from the cover.

Do not use water, aerosols, or other cleaning agents on the generator. Use of any liquid cleaning agent could present a shock hazard. If necessary, wipe the unit down with a clean, dry cloth.

Prefilter Cartridge

To change the inlet filter cartridge, unplug the electrical connector and then use a 1” wrench to loosen the tie nut. Pull down to remove the filter bowl and the element retaining disc to access the filter cartridge (P/N 100-09-BX). Slide the filter cartridge off and replace it with a new one. Reassemble components in reverse order. To ensure a leak-free connection, make sure the o-ring is properly seated on the filter bowl and tie nut before re-assembly. See figures 2 and 3 for component location.

Maintenance

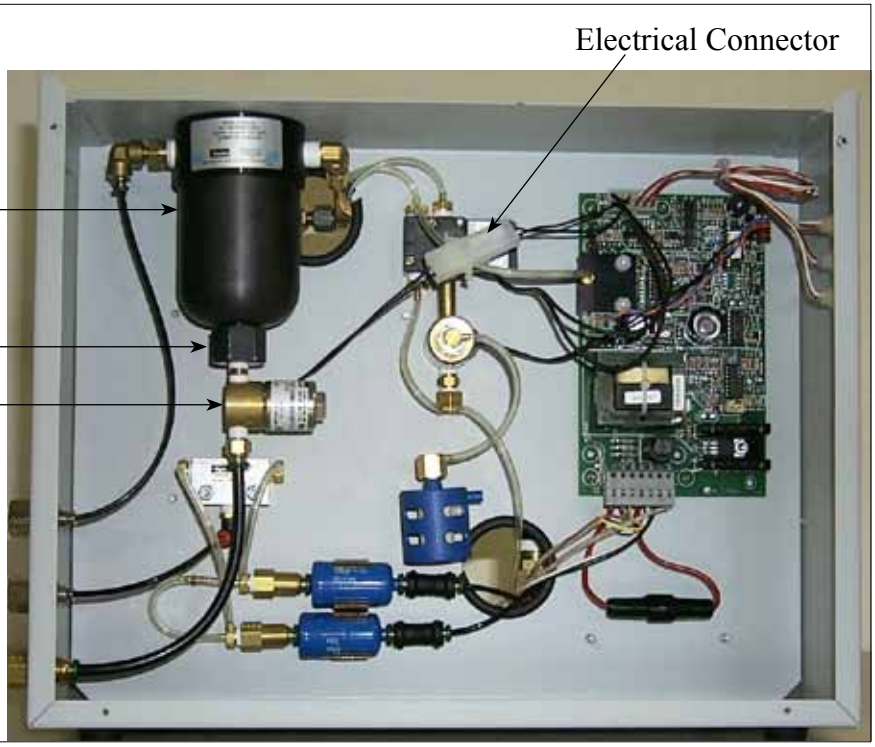

Figure 2

Catalyst Module/Filter Replacement

The catalyst Module used in the TOC-625 is part number B01-0093. The catalyst module used in the TOC-625-220 is part number B01-0106. The disposable filter unit is part number 9922-05-BQ. Both items should be replaced every 3 years.

Contact the local representative for ordering information and pricing. These items may be disposed of in accordance with local regulations.

The tools required to change the catalyst module are as follows: Phillips-head screwdriver, 2 each 9/16" wrench, and ½" wrench. Follow the procedure below and use Figures 4, 5, and 6 as a guide.

1. Turn off the compressed air and leave the generator plugged in for 5 minutes to allow the system to depressurize.

2. Unplug the generator from the wall receptacle. Allow two hours for the catalyst module to cool before removing the cover.

3. Remove the 8 Phillips head screws and lift off the cover.

4. Disconnect the Molex electrical connector below the catalyst tower (see Figure 4).

5. Disconnect the Wago connector on the circuit board and push it through the hole in the panel (see Figure 5) .

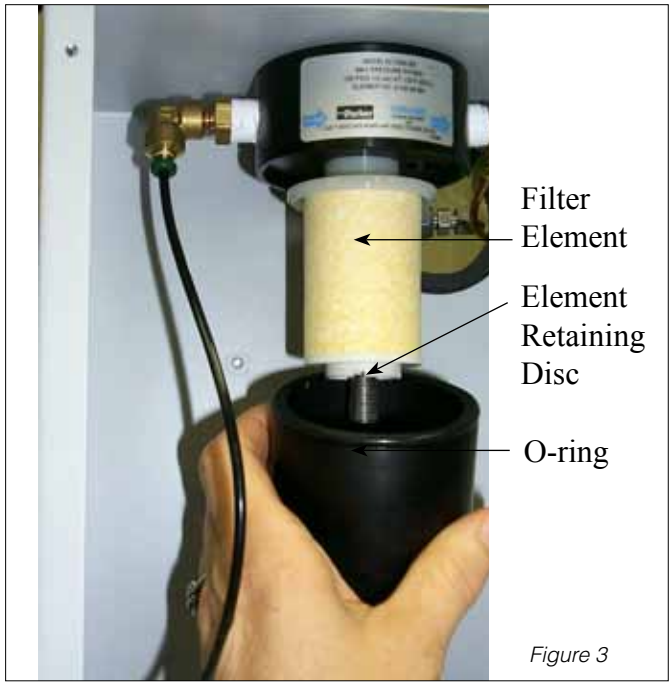

Figure 3

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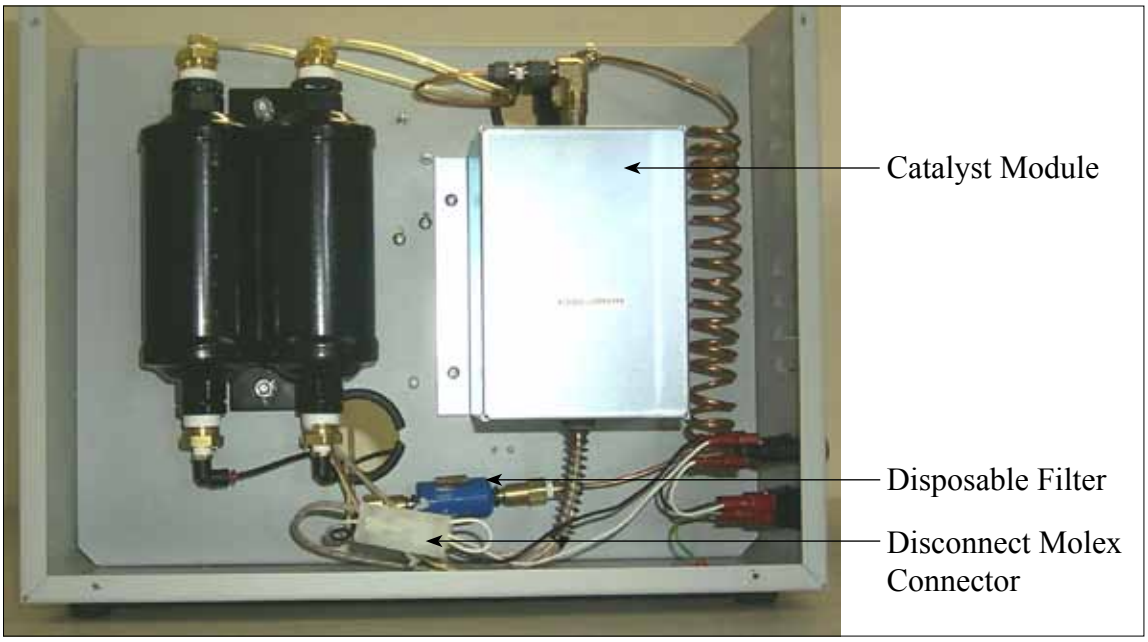

Figure 4

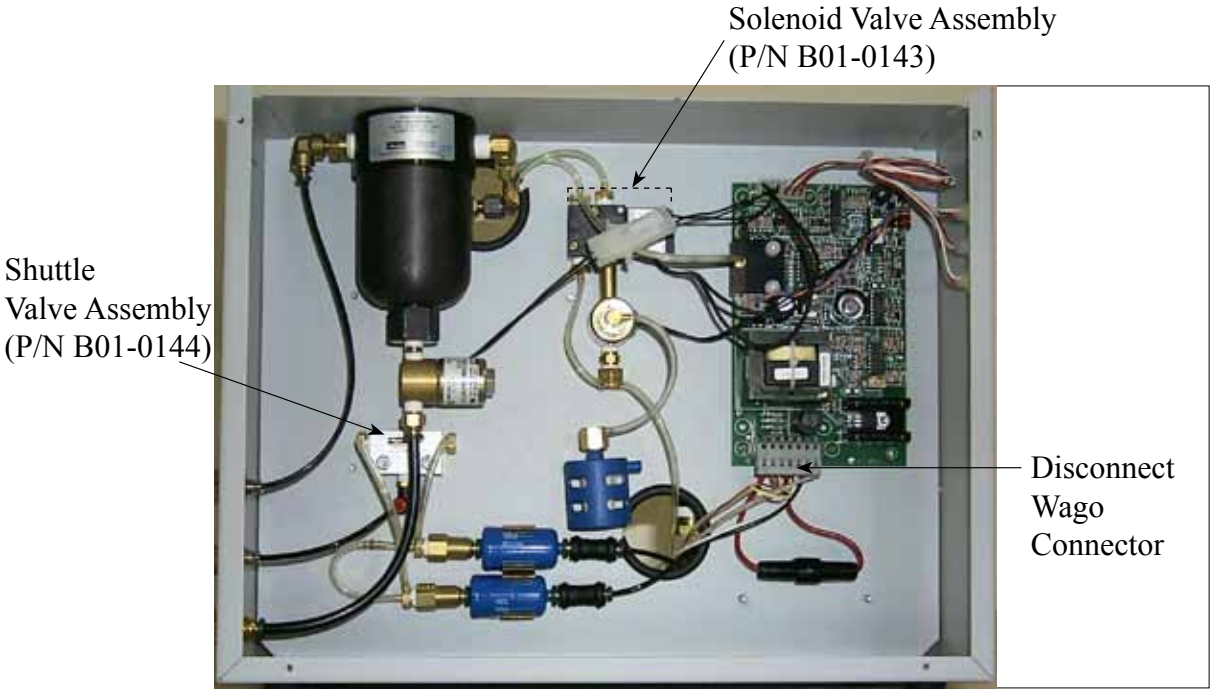

Figure 5

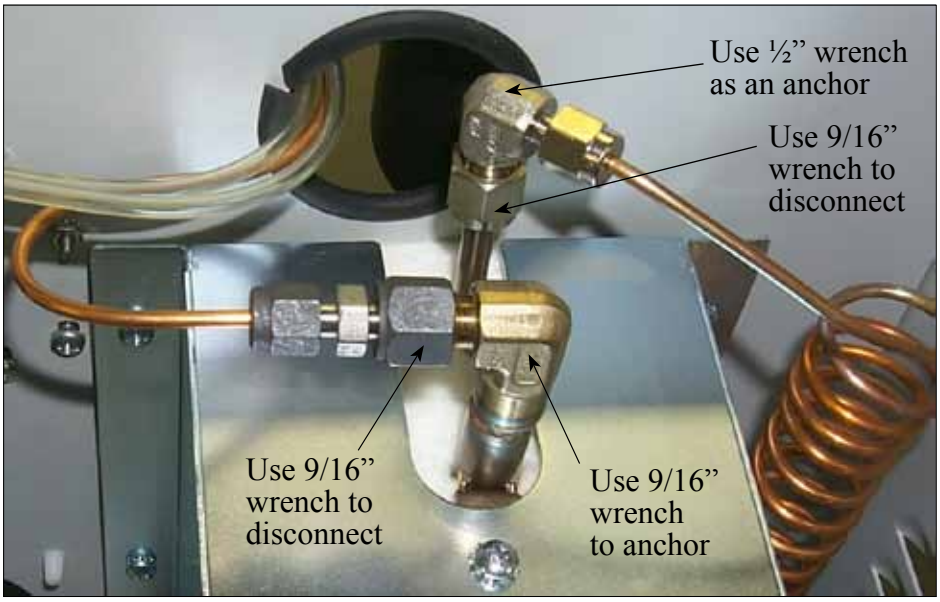

Figure 6

6. Use both 9/16" wrenches, one as an anchor, to disconnect the catalyst tower inlet tubing. Use the ½" wrench as an anchor and the 9/16" wrench to loosen the compression fitting's nut (see Figure 6).

7. Remove the four Phillips head screws holding the catalyst module in place. Remove the module and replace it with the new one.

8. Reattach the module to the panel, replace the tubing connections, and reconnect both the Wago and Molex connectors.

9. To replace the disposable filter unit, pull the filter out of its bracket (see Figure 7).

10. To remove the disposable filter from the fittings attached to it, push the fitting's green collar into the fitting, and then pull the filter in the opposite direction.

11. Replace the filter by pushing it into each fitting, making sure the flow arrow is going in the proper direction.

12. To check for leaks at the catalyst module's inlet and outlet connections, pressurize the inlet to the generator and place a liquid leak detecting solution on the fittings that were disconnected. Repair any leaks by tightening the fittings.

13. Replace the unit's cover. Plug the power cord back into the wall receptacle.

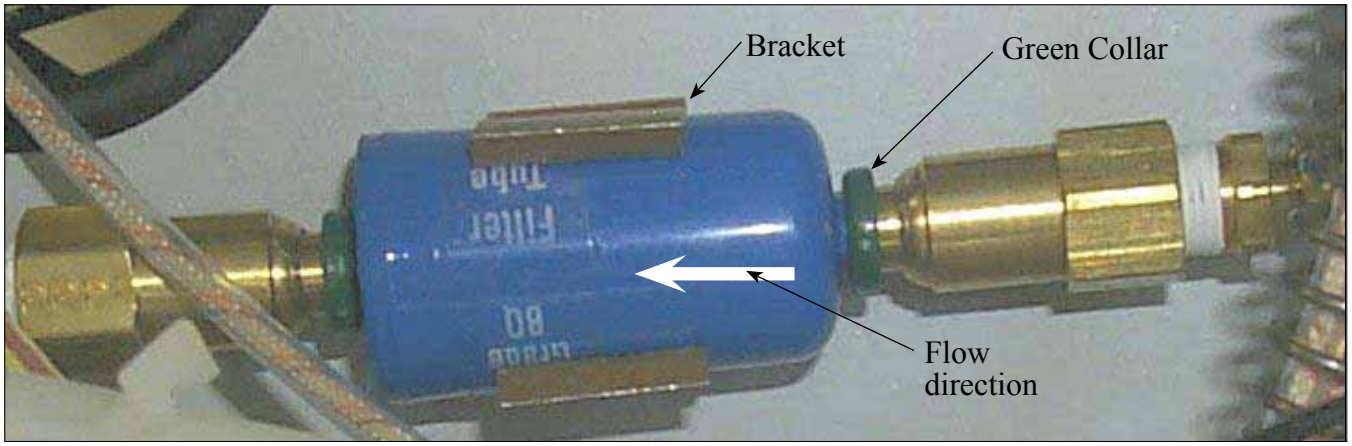

Figure 7

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Fuse Replacement

The fuses are located on the back panel, above the power cord receptacle. Before servicing the fuses, unplug the power cord from the wall receptacle.

A flat-head screwdriver is needed to access the fuses. To maintain the safety and performance integrity of the product, use only the fuse type and size specified in the specifications section of this bulletin.

Specifications

System Specifications

Model Number	TOC-625
CSA Certification Standard:	CAN/CSA-C22.2 No.61010-1-04,2nd ed.
IEC Safety Standard:	IEC 61010-1:2001,MOD
UL Safety Standard:	UL 61010-1, 2nd ed.
IEC Installation Category:	II
IEC Pollution Degree:	2
Product Start-up Time	30 minutes
Maximum Outlet Flow	625 cc/min
Inlet Pressure	60 psig to 120 psig
Inlet Hydrocarbon Concentration	100 ppm methane
Outlet Hydrocarbon Concentration	<0.05 ppm
Outlet Carbon Monoxide Concentration	<1.0 ppm
Outlet Carbon Dioxide Concentration	<1.0 ppm
Air Consumption	2 LPM
Min/Max Ambient Temperature	60°F to 100°F
Max Relative Humidity	80%
Altitude	2000 m
Outlet Dew-point	-100°F
Pressure Drop at Max Flow	7 psig
Electrical Requirements (1)	120 VAC, 60 Hz; 230 VAC, 50/60 Hz
Fuse Type	Type T, 250V, 2 amps
Max Power Consumption	150 VAC at 120 VAC; 220 VAC at 230 VAC
Weight/Shipping weight	28 lbs/34 lbs
Product Dimensions	12.5"H x 9"W x 16"D
Inlet, Outlet, and Drain Port Sizes	¼" female NPT

1 Main supply line voltage must be within +/-10% of nominal rated voltage for 120 VAC and 230 VAC installations.

2 Main supply line voltage must be within +/- 4% of nominal rated voltage for 100 VAC installations.

Ordering

Ordering Information

For assistance:
Call 800-343-4048, 8AM to 5PM Eastern Time (North America only).
Email:
balstontechsupport@parker.com

Model Number	Description
TOC-625NA	Parker Balston TOC Gas Generator, 625 cc/min., 120 VAC 50/60 Hz (1)
TOC-625JA-100	Parker Balston TOC Gas Generator, 625 cc/min., 100 VAC 50/60 Hz, JA-100 cord set (2)
TOC-625-220	Parker Balston TOC Gas Generator, 625 cc/min., 230 VAC 50/60 Hz (3)
TOC-625UK	Parker Balston TOC-625-220, UK cord set (3)
TOC-625AU	Parker Balston TOC-625-220, Australian cord set (3)
TOC-625EU	Parker Balston TOC-625-220, European cord set (3)

Notes:
1 Main supply line voltage must be within +/-10% of nominal rated voltage for 120 VAC installations.
2 Main supply line voltage must be within +/- 4% of nominal rated voltage for 100 VAC installations.
3 Main supply line voltage must be within +10%, -14% of nominal rated voltage for 230 VAC installations.

Replacement Parts

Part Number	Description
B01-0093	Catalyst module (120 volt) used in the TOC-625-NA
B01-0106	Catalyst module (240 volt) used in the TOC-625-220
B01-0144	Shuttle valve assembly
B01-0143	Solenoid assembly (4)
B01-0142	Solenoid harness(5)

Notes:
4 Order the extraction tool when replacing the solenoid valve assembly (P/N B01-0143). Purchase part number WM9918-ND from DIGI-KEY.
5 Solenoid harness must be ordered when ordering the solenoid assembly (P/N B01-0143) if your serial number was issued prior to TOC6250054A or TOC6252200064A.

Service Schedule

Maintenance Kit: P/N MKTOC625-12

	Grade BX Filter	Catalyst Module	Disposable Filter
Part Number	100-09-BX	—	—
Quantity	1 each	—	—
Change Frequency	Annually	—	—

Maintenance Kit: P/N MKTOC625-36

	Grade BX Filter	Catalyst Module	Disposable Filter
Part Number	100-09-BX	B01-0093 (120 Volt)	9922-05-BQ
Quantity	1 each	1 each	1 each
Change Frequency	3 years	3 years	3 years

Maintenance Kit: P/N MKTOC625-220-36

	Grade BX Filter	Catalyst Module	Disposable Filter
Part Number	100-09-BX	B01-0106 (230 Volt)	9922-05-BQ
Quantity	1 each	1 each	1 each
Change Frequency	3 years	3 years	3 years

Note: To ensure consistent product performance and reliability, use only genuine Balston replacement parts and filter cartridges.
Note: Fuse Part Number 13192 for both 120 volt and 230 volt units

Optional Accessories

	Part Number
Gas Receiver	72-007
Installation Kit	IK76803
Inlet Pressure Regulator with Pressure Gauge	72-130-V883
Outlet Pressure Regulator, Pressure Gauge, and Shut off Valve	W-405-4032-000

Troubleshooting and Service

All troubleshooting and service activities should be performed by suitable personnel using reasonable care.

Disconnect electrical power before starting any maintenance procedure.

Troubleshooting

Symptom	Course of Action
"Check Pressure" light is on	Check that inlet pressure equals 60 psig minimum. Check that 4-way valve switches every 5 minutes.
No outlet/low outlet pressure	Check system plumbing for leaks. Check that maximum flow rate equals 625 cc/min.
No power 	Check that the generator power cord is firmly plugged in. Check the generator fuses: • Unplug the generator • Use a flathead screwdriver to remove the fuse receptacle for mits holder • Check the fuse; change if necessary
"Service Catalyst" light is on	Replace catalyst module
Fluctuations in baseline	Install reciver (P/N 72-007)

If you have followed the troubleshooting procedures and are still having trouble, call the toll-free number listed below. Please have the serial number of the generator available (see below).

Don't Forget To:

1 Complete and mail or fax in your warranty registration card.

2 Keep your product certification in a safe place.

3 Call the Technical Services Department at **800-343-4048,** 8AM to 5PM Eastern Time with any questions. For locations outside North America, please contact your local representative. Send emails to: balstontechsupport@parker.com.

Serial Numbers

The serial number label for the unit is located on the back panel near the power receptacle. For your own records, and in case service is required, please record the following:

DATE IN SERVICE _____ SERIAL NO. _____

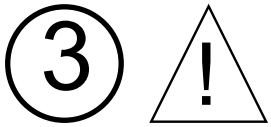
Please have the serial number available when calling for assistance.

WARRANTY (NORTH AMERICA ONLY)

(FOR INFORMATION CONTACT YOUR LOCAL REPRESENTATIVE)

Parker Hannifin guarantees to the original purchaser of this product, that if the product fails or is defective within 12 months from the date of purchase, when this product is operated and maintained according to the instructions provided with the product, then Parker guarantees, at Parker's option, to replace the product, repair the product, or refund the original price for the product. This warranty applies only to defects in material or workmanship and does not cover: ring and valve wear on compressors, routine maintenance recommended by the instructions provided with this product, or filter cartridges. Any modification of the product without written approval from Parker will result in voiding this warranty. Complete details of the warranty are available on request. This warranty applies to units purchased and operated in North America.

Explanation of Warning Symbols

Symbol	Description
	Caution, refer to accompanying documents for explanation.
	Refer to the caution/warning note indicated for explanation.
	Caution, risk of electric shock.

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