

Air Conditioning & Refrigeration System Flush



The original **Qwik System Flush®** was developed by Mainstream Engineering Corporation for the U.S. Air Force in 2001. EPA regulations brought about the need to find alternatives for the R-11 & R-113 flushing agents originally used to

clean the pilot's oxygen breathing systems. **Qwik-SF®** was developed as a biodegradable, non-toxic flushing agent with no long-term environmental or health risks.

This same technology has been reformulated to provide a flushing agent for HFC systems that is still easy to use, ozone safe, biodegradable and non-carcinogenic. **Qwik System Flush®** effectively removes impurities, including oil, sludge, acid and moisture. **Qwik-SF®** is a must for system clean ups and retrofits.

- Safe for *all* refrigerants & oils
- Flushes more moisture, oil, acid, and impurities than R-11*
- Flush systems after burn outs
- Flush systems for HCFC to HFC refrigerant conversions
- Flush systems before new component installation

*For any product evaluations, and independent test results proving product effectiveness, visit www.qwik.com

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Application Bulletin



Abbreviated Instructions

1. Perform a nitrogen purge with waste container in place.
2. Attach *Access Valve*, part number QT1105.
3. Attach a service hose to *Access Valve*.
4. Attach *Line Set Tool* to other end of hose (if there is no other access to a service valve).
5. Place *Line Set Tool* into piping (or use existing service valve).
6. Open *Access Valve* on upside down **Qwik System Flush®** canister while refrigerant hose is attached to both *Line Set Tool* and *Access Valve*.
7. Perform nitrogen purge.
8. Properly dispose of waste.



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Application Bulletin

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Description

Qwik System Flush® (SF) was originally developed by Mainstream Engineering Corporation for the U.S. Air Force in 2001. Stricter E.P.A. regulations forced the need to find alternatives for R-11 & R-113 flushing agents, and the Air Force needed a new product to clean pilot's oxygen breathing systems. **Qwik-SF®** was formulated for this purpose and made to be a biodegradable, non-toxic flushing agent with no long-term mechanical, environmental or health risks.

That same technology has been reformulated to provide a flushing agent for HVAC/R systems. This latest formula of **Qwik-SF®** is also an ozone safe, biodegradable, non-toxic, flushing agent that has no long-term mechanical, environmental or health risks. **Qwik-SF®** is an excellent flushing solvent that actually removes more oil, acid, and moisture than R-11. Visit www.qwik.com for conducted test results. **Qwik-SF®** is a must for system cleanups or retrofits.



Flushes more Oil, Moisture and Acid than R-11!

Equipment Required

The following equipment will be required for each flushing operation:

1. **Qwik System Flush®**. As a general rule, one canister will clean up to a 10-ton system. The amount needed will vary by size and level of contamination. When possible, flush from the inside of a building to the outside.
2. **Qwik-SF® Access Valve**, part number QT1105, or equivalent tool.
3. Refrigerant charging hose.
4. A flare fitting for access to section to be flushed- either a flare fitting that you can braze onto the piping, a **Line Set Tool** (QT1110) or an existing fitting.



Qwik-SF® Access Valve
P/N QT1105

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Equipment Required (continued)

1. An empty waste container to catch waste as it exits the HVAC system. Dispose of waste as you would dispose of used refrigerant oil.
2. Compressed nitrogen.
3. Safety glasses and protective gloves.



Qwik-SF® Line Set Tool
P/N QT1110



Application:

Qwik System Flush® is used in the same manner as R-11 except that Qwik-SF® requires the use of an access valve (shown in photo 1, "Access Valve"). If you have used another brand of access valve (i.e., NuCalgon's 4300-99) in the past, then your access valve injection tool should be compatible with Qwik-SF®. If you do not own an injection tool, Mainstream Engineering's Qwik-SF® injection tool, part no. QT1105, should be available at the location where you purchased Qwik-SF®.

Qwik System Flush® is most commonly used to clean residual contamination after a compressor burnout or any time you install new system components with a previously used line set. The following instructions describe using Qwik-SF® in a proper compressor burnout/changeout procedure but are also applicable to any other Qwik-SF® use, such as conversion of HCFC refrigeration components to HFC refrigeration components.

When a compressor burns out, highly acidic oil is formed. Although the majority of this oil remains in the compressor, some oil is always present in the plumbing and remaining components of the system. If you are changing the entire system, including any piping between components in a split system, then there are no issues. However, if you are not replacing the piping between the components or other parts of the system, then perform the following steps:

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1. Recover any refrigerant in the system.
2. Open the system and cut out the following components:
 - filter-drier(s),
 - expansion valve(s),
 - compressor(s).

In a burnout / changeout, the filter-drier and compressor would need to be replaced anyway.

3. Place a waste container where both nitrogen and flush carrying waste will be exiting the system (see equipment required #5).
4. Connect the nitrogen gas supply (see equipment required #6) to a flare fitting (see equipment required #4) and perform a nitrogen purge at each area that you intend to flush. Let the nitrogen flow for at least 5 minutes or longer if debris continues to exit.
5. The ideal use for the nitrogen is to physically blow as much contaminated oil out of the system that you can. Use your judgement to open the system anywhere you expect oil is trapped, and then use the nitrogen to blow this oil and other debris from the system. Never purge through an expansion device (capillary tube, orifice plate, TXV, etc.) as this will likely clog the device.
6. Next, use **Qwik System Flush®** to clean wherever you used nitrogen as a purge (see figure -1). Once again, if it is practical, the best method for cleaning piping or system components is to replace all the piping and system components. However, if replacement is impractical, it has to be cleaned by something more effective than nitrogen. A nitrogen purge is not capable of removing all of the contaminated oil from the inside surface of a line set and should only be the start of a thorough cleaning process.
7. After you use nitrogen to purge the system, the most effective way to remove the remaining residual oil from the pipe lines is to use Mainstream's **Qwik System Flush®** (see figure -1). **Remember that it is still necessary to perform a nitrogen purge before and after using Qwik-SF®.** The **Qwik System Flush®** solvent has excellent absorption capacity, (see test results at www.qwik.com) therefore, a relatively small amount of **Qwik System Flush®** is needed. The



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1. more contamination that you remove with a nitrogen purge **before**, the less **Qwik System Flush®** will be wasted removing contamination that does not require a solvent. Nitrogen is much less expensive than any flushing solvent and should be used liberally in comparison.
2. Repeat a nitrogen purge on all areas where **Qwik System Flush®** was introduced into the line set. Never exceed 100 psig. When you purge these areas, you will see the solvent exiting the line as a liquid. Continue purging the line for an additional minute after you no longer see **Qwik System Flush®** exiting the system.
3. A flushing solvent cannot be used for components such as the compressor, filter/drier, or expansion device. Always remove filter-driers when performing a flush, and never try to flush through expansion devices. Once you have cleaned or replaced as much of the piping and components in the system as possible, continue to step 10.
10. Connect the new components, installing **BOTH** a new liquid-line filter/drier and a new suction line filter/drier into the system. The purpose of the suction line drier is to catch residual acidic oil remaining in the system before it can enter the suction line of the compressor and contaminate the compressor oil, leading to premature compressor failure.
11. Leak test, evacuate and charge the system with refrigerant.
12. As an option to further assure all acid and moisture has been removed, use **QwikInjector®** to introduce **QwikShot®** (acid treatment) into the operating system. One bottle will treat up to a 5-ton system.
13. Allow the system to operate for a minimum of 15 minutes, and then use **QwikCheck®** to test for acid. If acid is detected, wait an additional 30 minutes and retest for acid. If acid is still detected, then install new filter/driers again as discussed in step 10 and repeat steps 12-13.

Qwik System Flush®
should **never**
be used in
a compressor,
expansion device,
or filter/drier.

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