KILBY ENTERPRISES

OnBoard Air Manual

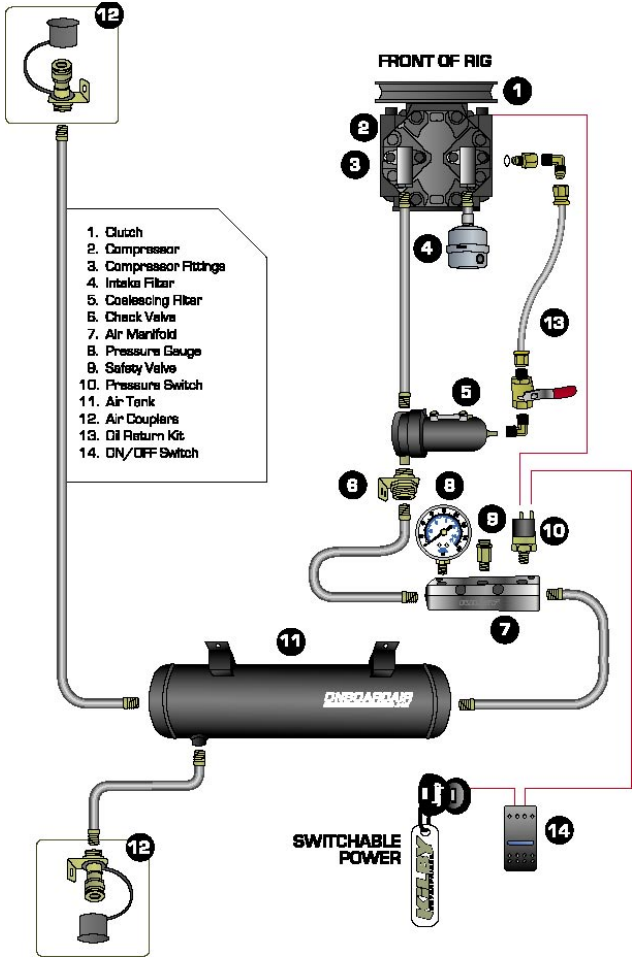
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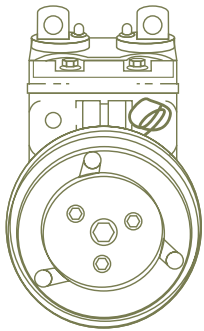
PHOTO BY MARC MILNER



Contents

Congratulations on your purchase of a Kilby Enterprises On Board Air compressor system. This manual details the installation and maintenance of Kilby's state of the art compressor system.

To start, please refer to the installation instructions that are included in the engine bracket kit and mount the compressor to the engine. When you are done with this phase, come back to this manual to complete the installation of the remaining components.

Once you've installed the system, you'll have a lightning fast, reliable compressor system that, when properly maintained, will last for years to come. Please do not alter the system or vary from the instructions! Please read this manual thoroughly before beginning the system installation. The manual addresses each component, how it works and where it fits within the system.

:: York Compressor

Install the York Compressor according to the instructions that were included in the engine bracket kit. Then come back to this manual to complete the installation.

The first item is the York compressor. It comes from the factory with oil already installed but please use the dipstick to make sure there is sufficient amount of oil inside. There should always be at least 10-12 ounces for best results and the absolute least amount of oil is 6 ounces. Anything below this and you're officially out of oil and your warranty is voided!

:: Coalescing Filter

This filter needs to be installed as far away from the compressor as possible! That means 3 to 4 feet away (as the hose is measured) depending on the application. Use the mounting bracket and check valve to mount the filter taking care to keep it away from moving parts and heat. Mount it on the firewall or fender. Pay attention to the arrow indicating air flow when mounting.

Some kits contain a vehicle-specific mounting bracket as well as a universal "L" bracket. If your kit doesn't contain a

vehicle-specific bracket and the universal bracket doesn't work in your application, you will need to fabricate a new one. The oil return kit should be installed according to the provided diagram, making sure the fittings are in the correct order. Turn the valve to the closed position and leave it closed until you need to transfer the oil back to the compressor.

After the compressor, the first item in the line of air travel is the coalescing filter. This filter is designed to remove the oil from the compressed air system, store it in the bowl until full, and then enable you to return it to the compressor. The filter has a sight glass on the side to visually indicate when the bowl is full and needs to be drained. The oil return kit is an optional convenience feature to return oil from the coalescing filter back to the compressor. However, if you live in a part of the country where condensation is a problem, you shouldn't use this feature. Even though a small amount of condensation in the oil won't cause problems, excessive amounts will. If in doubt, do not install the oil return portion of the kit. To use the oil return feature, open the valve for a few seconds to allow air pressure from the system to push the oil back into the compressor, and then close. Always make sure the valve remains closed when not in use! Otherwise the system can not build pressure.

: : Check Valve

The check valve installs between the coalescing filter and air manifold. Pay special attention to the arrow indicating air flow. The check valve also serves as part of the mount for the coalescing filter. Assemble the check valve assembly into its bracket, screw the coalescing filter onto the check valve and find a suitable location to mount the assembly.

The check valve is a one-way valve that allows air to flow in one direction only. The York compressor can leak down when it's not compressing air. The check valve is used to prevent the air built up in the air tank from leaking back out through the compressor. Proper placement of the check valve is critical. It MUST be placed between the coalescing filter and air manifold as shown in the diagram! Installing the valve after the coalescing filter allows the oil return kit to be used while preventing stored air in the air tank from rushing back through the compressor. Placing the check valve in line before the pressure switch prevents the switch from detecting the momentary pressure drop caused by activation of the oil return system and unnecessarily cycling the compressor.

:: Air Manifold

The air manifold is generally installed on the driver side fender in Jeep applications and somewhere on the firewall in truck applications. It needs to be installed between the check valve and the air tank. Loosely install the pressure switch, safety valve, air gauge, hose fittings and any other accessory fittings to determine suitable mounting clearances. Position the manifold where you can access these components and remove the fittings if necessary, preferably without having to unbolt the manifold.

Use Teflon tape on all threaded connections unless there is already a factory sealant on the threads. The use of liquid Teflon is o/k, but it doesn't seal as well as the tape. It's best to final assemble the manifold on a bench in a vise. Protect the manifold by wrapping it in a clean rag before clamping the vise. Plug any ports not being used.

:: Pressure Switch

Use only quality crimp connections and route the wires away from sharp edges. One terminal of the pressure switch will connect to the wire coming from the dash mounted switch and the other terminal connects to the wire on the clutch. It does not matter which terminal of the pressure switch you connect these wires to.

When you turn the toggle switch to the "on" position, the pressure switch will determine if there is enough air pressure in the system. If there is adequate pressure, the compressor will not come on. If the pressure is too low, the pressure switch will engage the clutch allowing the compressor to pressurize the system. Once the designated pressure is reached, the pressure switch disengages the clutch.

: : Safety Valve

The Safety Valve supplied with the kit is pre-set and non-adjustable.

If the pressure switch fails to shut the compressor off due to a malfunction, the safety valve (aka "pop-off valve" or "pressure release valve") will release the excess air pressure at a fast rate. This is a safety feature so the excessive pressure doesn't cause any damage to the components. In the event of a safety valve activation, shut the compressor off. Inspect and test the pressure switch for proper operation. If it appears to operate correctly, you may need to replace the safety valve.

: : Pressure Gauge

If mounting an additional in-cab gauge, use one of the additional ports supplied on the manifold.

The pressure gauge allows you to monitor the system pressure and to check for leaks. If you have a liquid filled gauge, do not cut the vent cap, as this will eventually allow the fluid to leak out.

:: Air Tank

Install the air tank under the vehicle. In Jeep applications, try to position the tank behind the transfer case with the mounting feet pointing up.

In all applications, consider suspension travel, brake line interference and drive shaft clearances when installing the air tank. In truck applications, try to mount the air tank under the bed where there is adequate clearance. Consider mounting the air tank on the outside of the frame rail if conditions allow.

It's best to test fit the air tank with all fittings loosely installed. Check hose routing as well before mounting the tank. In applications where the air tank is subject to any potential impact, the use of a drain valve at the bottom IS NOT recommended. In lieu of the drain valve, use a hex plug on the bottom port. You can drain the air tank by removing the plug. Plug any ports not being used prior to installation.

: : Air Hose

All Kilby Airboss Systems come with Goodyear "Instagrip" hose. Do not use clamps with this hose! Trim the hose end with a smooth square cut. Lubricate the fitting, the hose or both. Soapy water works great.

Slide the hose over the fitting until first barb is inside the hose. Place end of fitting against a flat object (bench, wall, etc.) and grip the hose one inch from end. Push with a steady force until end of hose is covered by the yellow plastic cap. Be careful to route the hose away from any heat source or moving parts.

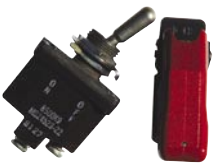
> Although the Goodyear "Instagrip" hose is not the strongest hose on the market, it will withstand a great amount of abuse. It's an inexpensive hose that is easy to work with and more than adequate for this application. Keep in mind that in some extreme situations, the heat coming out of the compressor might exceed the hose limitations when running the compressor at high speeds or for long periods. We recommend that you carry a small section of spare hose and two hose menders in your tool box in case of emergency.

:: Air Couplers

Do not mount coupler(s) in the manifold! Select suitable locations at the front and rear of the vehicle for the couplers. For your convenience we've included generic brackets for mounting the couplers.

> Custom installations may require that custom brackets be fabricated by the installer. When selecting a suitable location for the coupler, don't forget to consider the hose routing.
>
> If the bracket provided does not work in your application, you can remove the bulkhead fitting from the bracket and mount it through a suitable surface. The bulkhead fitting requires a 3/4" diameter hole for installation. Be sure to route the hose away from any moving parts or heat sources.

:: ON/OFF Switch and Wiring



Select a suitable location for the switch and install. Find a 12V switched power source and tap into that circuit using a 10 amp inline fuse. Run the other end of the fused wire to the switch, then from the switch to one side of the pressure switch, and then from the other side of the pressure switch to the clutch of the compressor.

The compressor and clutch are grounded when installed. Therefore, you do not need to run an additional ground wire. Be sure your 12V power source is switched by the ignition key. Otherwise, if you leave the switch on, there will be a constant drain on the battery. Because the clutch draws approximately 4-5 amps, you must use 16-18 gauge wire and quality crimp lugs.

:: Checking the System

Once your installation is complete, you should re-check all components and hardware.

After all attachments have been checked, use a soapy water solution on all connections to check for leaks. It is normal for the system to lose a few lbs (approx 5 lbs) of air immediately after shutting off. This is due to the check valve having equal pressure on both sides. Once the air pressure leaks off on the compressor side of the check valve, it will seat and stop any further leaking. If you still have air pressure loss after those initial few lbs, you have a leak and need to keep checking.

:: System Operation

All York compressors pump oil. There is an internal passage between the suction chamber and lower crankcase that serves as the crankcase vent. When running, the compressor will suck oil from the crankcase and deposit it in the suction chamber of the compressor through this passage. From there, the oil is pumped into the discharge chamber and out the air line. This is normal, but needs to be addressed. This is why we use the

coalescing (oil removal) filter in the oil return system. Under normal conditions, the York compressor uses 10-12 ounces of ordinary 30 wt engine oil for lubrication. The compressor comes from the factory with approximately 14 ounces of Ester Oil installed. It's o/k to run this oil initially and re-fill with engine oil when needed. Use the dipstick on a regular basis to check the oil level and add as needed. Anything below 6 ounces of oil is considered "running out" and will void the warranty.

Many factors contribute to the rate that the oil leaves the compressor, such as engine speed, type of oil, amount of oil in the compressor, temperature and the intake filter. The faster you run the engine, the faster the compressor runs. Keep in mind that the faster the compressor runs, the faster it pumps the air (and oil!) out. It also builds heat in the compressor. The hotter the compressor gets, the thinner the oil gets and the faster it leaves the compressor. Also, if you have a restricted intake filter, it will cause the compressor to pull more air from the crankcase, taking more oil with it. Do not use a restrictive intake filter. During shipping, an excessive amount of oil can accumulate in the suction chamber, causing the compressor to pump a large amount of oil initially. This is normal. Do not run the system until all connections are complete!

: : Compressor Speed

You should always run the compressor at the slowest rpm possible to get the job done. What that means is, airing up your tires should be done at idle, unless you're in a hurry and need to go faster. At idle, the compressor will put out approx

3-4 cfm which will air up a 35/12.50/15 tire from 10 psi to 30 psi in approximately 30-40 seconds. If a higher speed is needed, install a hand throttle or similar device to hold the rpm higher. We do not recommend sustained use above 2000 rpm. The output isn't much better and it will result in excessive compressor heat. Keep the continuous use rpm at 2000 or below.

Short runs above 2000 rpm are o/k for instance, when the compressor engages while driving so it can top off the air tank. Most air impact guns can be run at anywhere from idle to 2000 rpm while smaller tools like a die grinder or air ratchet will require a higher sustained rpm around 1500-1700. You will need to test your individual tools to determine their requirements.

:: Air Accessories

Any air accessory should be treated as that, an accessory. Do not build your air compressor system around an accessory. Instead, utilize accessories that are compatible with the air compressor system.

After you've installed your air compressor system, you can connect your accessories. Air suspension systems should pull air from the tank, not the manifold. Follow the manufactures' instructions regarding connecting to the air compressor system, using the air tank as the main source. Pneumatic sway bars, air lockers, air horns and other smaller accessories can be connected to the air tank or manifold. Follow the manufactures instructions for installing these items.

Be sure to visit our web site to see all that Kilby Enterprises has to offer!

www.KilbyEnterprises.com