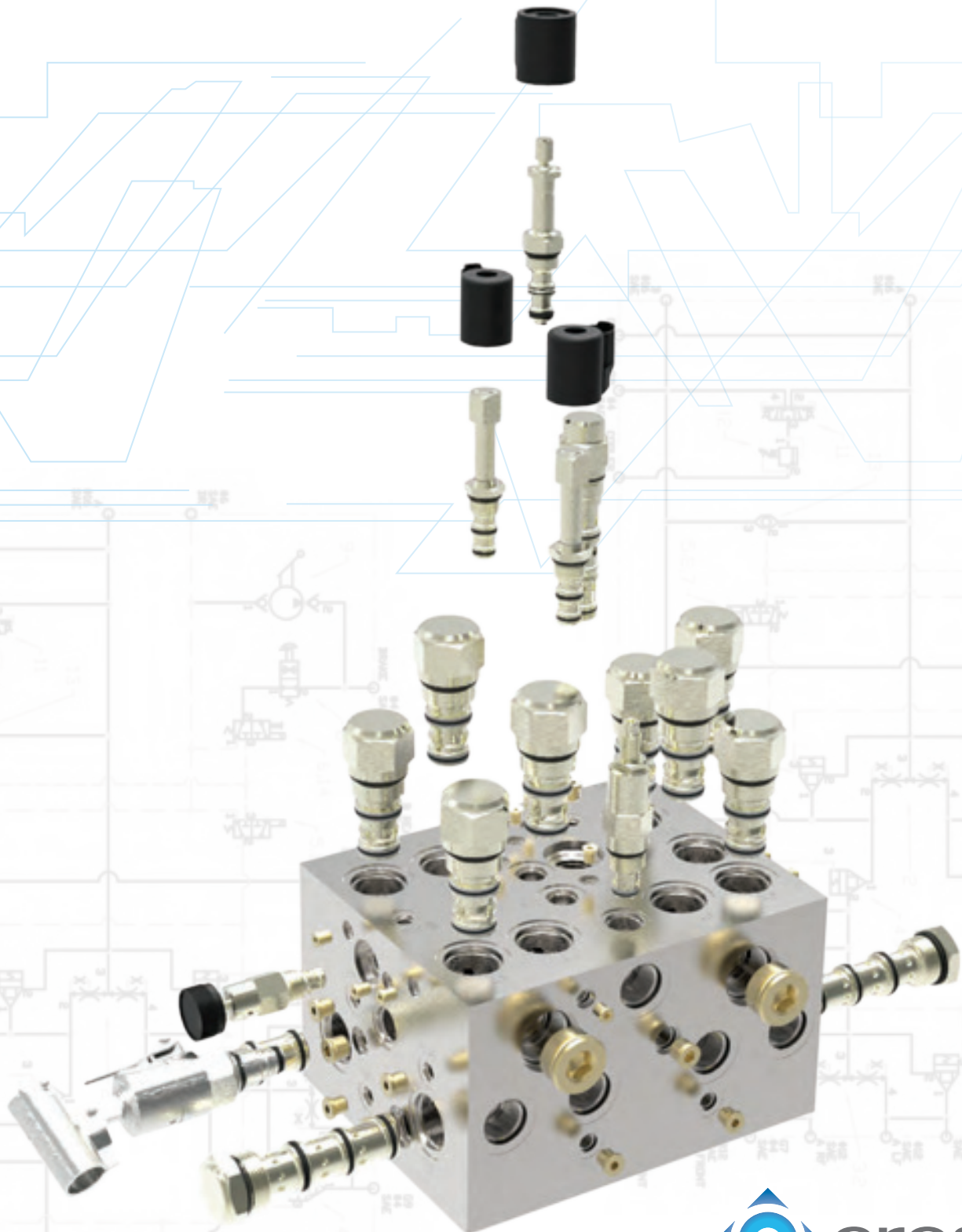


# SICV 101: A Guide for Mobile OEM's



## SICV'S AND MOBILE MACHINES.

**Screw-In Cartridge Valves (SICV's)** have been around for decades, but they have really come into their own in the past 10-15 years. SICV's come in just about any function you can imagine and there is a huge array of sizes available from .1 up to 100 gallons per minute (gpm) in some valves. In the old days, lots of manual, lever operated valves were used on mobile machinery and cartridge valves were just used here and there as a supplement. **Today, it is possible, and beneficial, to design a complete hydraulic system for your machine using cartridge valves and custom designed manifolds.**

Years ago, custom designed manifolds were prohibitively expensive when purchased in small quantities. There were two reasons for this.

1. Manifolds were designed and drawn by hand and required a lot of expensive engineering time.
2. Manifolds were machined on manual milling machines, which required skilled labor, manual tool changes, and a lot of time. Time is money.

**Today, 3D Computer Aided Drafting (CAD) and Computer Numerical Controlled (CNC) machining centers with automatic tool changers have lowered the cost of low quantity production manifolds to a point that is affordable for every OEM.**

### THE BENEFITS OF CUSTOM MANIFOLDS AND SICV

As an OEM, if you enlist an experienced designer and take a total system approach to your machine's hydraulic design, you can improve it in many ways. Here are some examples:

**1. Space Savings.** A well-considered manifold design will fit into your machine's structure and occupy less space. With today's Tier 4 engine emissions systems, available space is often hard to come by.

**2. Flexibility.** Perhaps your machine's system is best designed with one all-inclusive manifold or perhaps you could benefit from "distributed control," where two or more manifolds are strategically located on your machine to optimize performance and reduce plumbing. An experienced designer can review your machine and make a recommendation that will be best for you.





**3. Fewer Leaks.** Leaks have long been a complaint in hydraulic systems. Reducing the number of connections also reduces the number of potential “leak points.” Every additional connection and fitting is another place where a system could leak. Today there are several types of O-ring seal fittings that will virtually eliminate leaks in your system when designed into your manifold and

plumbing. Also, by putting multiple valves in a custom machined manifolds, many external hydraulic fittings and connections can be eliminated. Most of the time, this reduces your plumbing to an uninterrupted piece of hose or tubing with a fitting on each end, one for the manifold connection and one for the appropriate actuator connection. This simplifies routing and bundling of hose as well.

**4. Assembly Time.** Because you have likely eliminated any discrete components and simplified the plumbing and routing, you can now plumb your machine more quickly and with fewer problems to troubleshoot. This will also help you

standardize your plumbing kits because you have fewer parts to keep up with and order. Remember, time is money.

**5. Cost Efficient.** SICV’s are very competitively priced, plus each component can be selected for the specific flow rate required for each function. You don’t buy valves that are bigger than what you need. Your total cost of valving, including manifold, will almost certainly go down. Coupled with the savings on plumbing, your system cost could be dramatically reduced.

**6. Ease of Service.** SICV’s are just what they say. They are screw-in valves that are easily removed from their cavity and replaced without disturbing the plumbing. Down time, spilled oil, and cleanup is minimized.

**7. Optimized Performance.** Because each SICV valve is selected and sized for its specific function, performance can be optimized for the machine’s hydraulic system. Additionally, the use of proportional SICV’s allows you to tailor their response to the machine and operator’s requirements through your Programmable Logic Controller (PLC).

One last word of caution, “Don’t forget the filtration!” If you want your system to perform consistently, you need clean oil and a filtration system that will keep it clean. Your system designer can also make recommendations in that area, as well as provide some tips for keeping the system clean while assembling it. If you do all these things, you will end up with a very professional, reliable, and smooth operating machine that can be easily serviced. The fact that it will also reduce the total cost of your machine is the icing on the cake!

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