

How To Choose the Right Flow Valve

Selecting the correct flow valve for your application can bring changes to your steering system you never knew existed. There are a few things that need to be considered when determining which flow valve is best for your application. 95% of the time, the flow valve that comes in the pump from the factory is the best choice. Depending on the track, driver preference, and steering system, a different flow valve may be required.

How to identify which flow valve you have?

Each flow valve comes from the factory with an identification mark (I.D.) on the hex of the flow valve. If there are no letters or numbers on the valve, then it is the standard valve that comes with the pump. If the valve has a letter B-E stamped on it, then you have a more assist flow valve. The ID:E valve will give you the most flow and assist. If the valve has a number 4-7 on it, then you have a more feel flow valve. The ID:4 valve will give you the least amount of flow and most feel.

How does the flow valve work?

The flow valve is very simple to understand. Think of it like changing a jet in a carburetor. The bigger the flow valve you use, ID:B-E, the more fluid will be coming out of the pump. This will give you more assist in the steering system, but will take away some of the feel. The smaller the flow valve you use, ID:4-7, the less fluid will be coming out of the pump. This will give you more feel, but take away some of the assist.

What valve do I need to use with my steering rack?

The size of your steering rack will be the biggest determinate as to which size flow valve is needed. If you have a rack that is 3.5" or larger, then an ID:E flow valve would be the first option to place in the pump and try. If you feel the steering is too light and you have too much assist, then you can back the flow valve down in size to an ID:D or ID:C. A larger flow valve is required on faster racks because the slave is pushing the fluid in and out faster, thus more fluid is required to work the cylinder.

What valve do I need to use with my steering box with no quickner?

A steering box only system may or may not require a flow valve change. If you have a quick steering box, 6-to-1 or 8-to-1, you may have to increase the flow valve size to an ID:E valve. If you have too much assist and not enough feel, you can then drop down in flow valve size. The key is to find the best match between the pump, driver feel and steering box. If you experience a tight spot while turning the wheel left and right, it is called "pump catch." To resolve this issue, you will want to increase the flow valve size until it goes away. If you are running a 12-to-1 box you may need to start with an ID:C valve. See how the steering feels. You may have to adjust accordingly with a higher valve to get more assist or a smaller valve to get more feel. Make sure you don't drop the flow down too low to a point where you experience pump catch. If you have a 16-to-1 box or higher the standard flow valve should work best and then changing it would be per driver preference.

What flow valve do I need to use with my steering box with a quickner?

A steering system with quickner will more than likely require a larger flow valve. The reason for this is the servo inside the steering box is moving either 1.5 times or 2.0 times faster. Due to the quickness, more fluid is required to fill the void as the servo moves. If you do not have enough fluid coming into the servo you may experience "pump catch" in the middle of the corner. This will feel like a tight spot in the steering system when turning the wheel left and right at race speeds. The size of the steering box will also determine what size valve will be required. If you have a high ratio box with a quickner you may want to start with an ID:C valve. If you experience pump catch or need more assist then increase the flow valve size. If you are using a lower ratio box, then you may want to start with an ID:E valve. If you need more feel than the ID:E valve provides, just drop down in flow valve size. Make sure you don't drop down too low to the point where you experience pump catch.

How do I adjust my flow valve to the race track and car?

A car with wide tires and a lot of positive caster may also require more fluid flow out of the pump (ID:B-E flow valves). If you race on smaller tracks with tight corners or a higher banked track, a larger flow valve, ID:B-E, can be used to give you more assist through the corners. If you race on a larger track with long straightaways and sweeping corners, a smaller flow valve, ID:4-7, can be used to gain more feel and stability in the steering system. When selecting a flow valve for a race track only car, the driver should use the valve that feels the best at race speeds.

How do I adjust the flow valves for street rod applications?

On street driven cars, you must consider finding a happy medium between the ease of parking the car and highway stability. Also pump speed at lower RPM's must be taken into consideration to optimize the pump.

Which pressure relief valve do I need?

KRC offers three pressure relief valves, 1200psi., 1450psi. and 1600psi. On higher banked race tracks and cars with short steering arms, wide tires, a big bar soft spring setup and/or a lot of positive caster, a higher pressure relief valve should be used, as well as possibly a higher volume flow valve. You will know if you are having pressure problems when you drive into the corner and around the apex of the turn the steering assist feels like it goes away for a split second. That is created by the pump going into bypass. Our 9.6cc pumps come with 1600psi. of pressure relief. This has been a running change over the past several years. If you are unsure as to which relief valve you have in your pump, please call us with the serial number off the back of the pump.