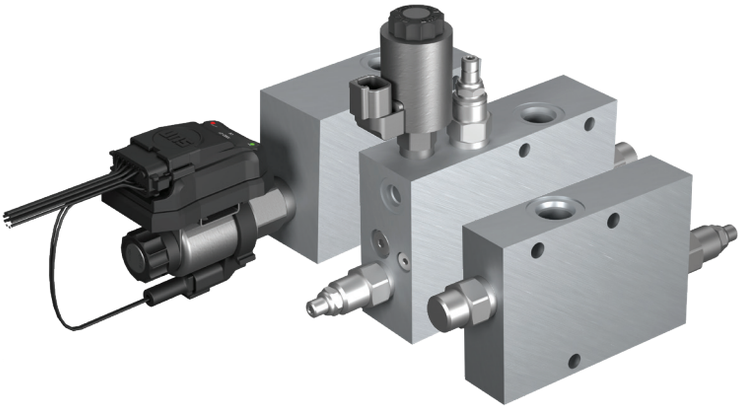
Adjustable Priority Flow Control

Sun Hydraulics has developed a range of adjustable priority flow control solutions that have already found their way into rock breaker hammer control applications. As a priority flow control circuit, it also offers much wider application in general attachment controls and in applications where priority flow control is required such as steering control and concrete mixing.

FEATURES

- Available off the shelf in adjustable, solenoid-operated relief, and proportional versions
- Flow ranges from 15-120 gpm (60-480 L/min)
- Valves, manifolds and controllers all built to withstand harsh environments
- Solenoid-selectable pressure limiting versions
- Electro-hydraulic flow control (FPFK) using the XMD driver



These system solutions provide an efficient way to supply priority flow in demanding applications using a single pump. Common applications include attachments for vehicles such as skid steers, backhoes and excavators.

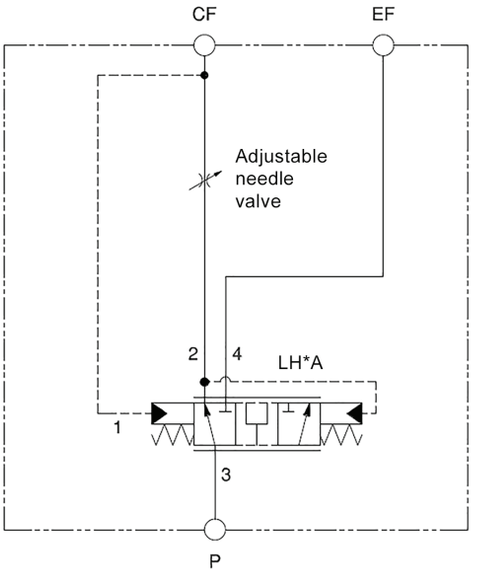
Sun offers three types of adjustable priority flow control solutions that leverage Sun technologies for smooth, reliable, efficient control of mobile equipment attachments. All models are available with multiple flow rates and in 5000-psi (350-bar) and 3000-psi (210-bar) versions.

Adjustable priority flow control - XP*B

In this circuit, the priority flow control manifold divides the inlet flow of port P into a priority flow to port CF, with the excess or secondary flow going to port EF. The priority flow can be adjusted easily using the Sun adjustable needle valve.

In operation, Sun's LH*A priority valve (a bypass/ restrictive priority modulating element) will act as a pressure compensator to ensure that the flow to port CF will remain constant during pressure changes. This will ensure a very stable flow rate for a given needle valve setting to control the attachment being driven.

With this design, the priority flow is achieved with very low pressure losses across the needle valve and modulating element and is independent of the pressure at ports CF and EF.



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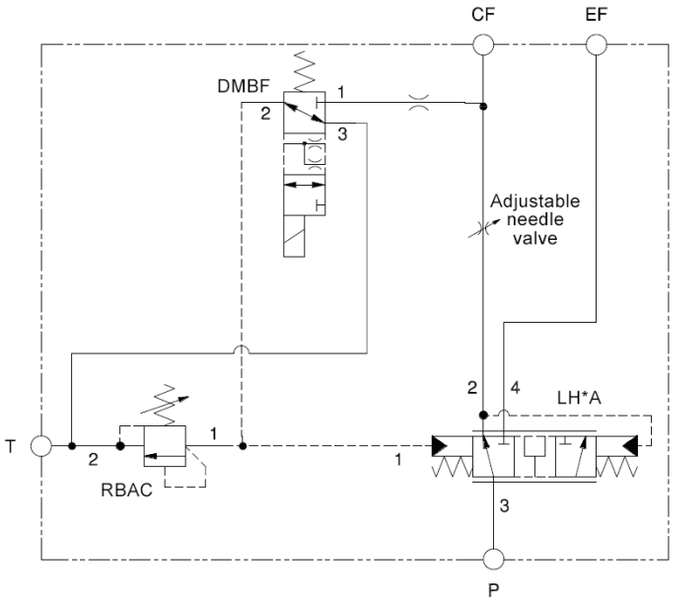
Adjustable flow and solenoid-operated load-relief valve - XP*S



In this design, when the FLeX Series DMBF three-way, two-position directional spool valve is energized, the priority flow control divides the inlet flow of port P into a priority flow to port CF, with the remaining flow going to port EF. This allows the operator to switch the priority flow on and off easily. When the DMBF is energized, the pilot signal pressure to port 1 of the LH*A will be limited to the setting of the RBAC, which acts as a load-sense relief.

The priority flow to port CF, like in the previous circuit, can be adjusted using the needle valve, and the maximum pressure to CF can be independently adjusted with the RBAC relief valve.

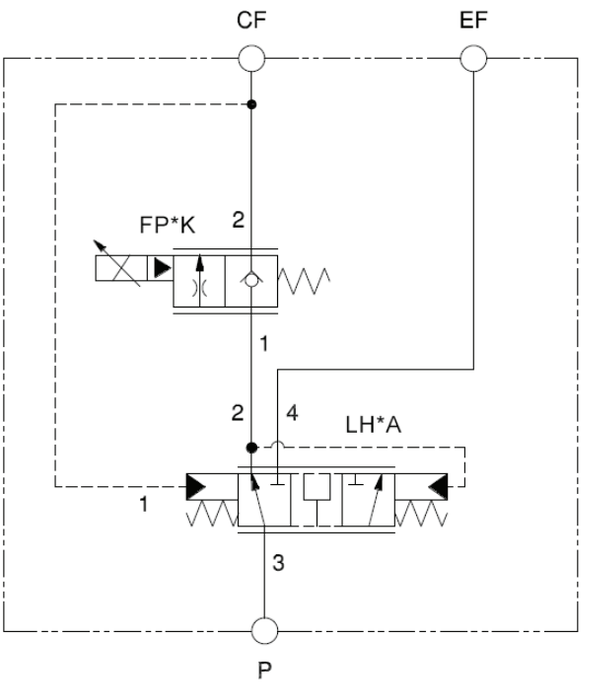
When the DMBF is not energized, all the flow will be diverted from port CF at 100 psi (7 bar) to port EF.

Remotely adjustable priority flow control using the XMD driver - XP*P

This electro-hydraulic priority flow control manifold divides the inlet flow of port P into a priority flow to port CF, with the excess flow going to port EF. It provides electro-proportional priority flow control using the FP*K electro-proportional throttle valve with reverse flow check coupled with the XMD electro-hydraulic valve driver.

When the FP*K valve is given a proportional command signal, the output of the controlled priority port will start to increase proportionally to the signal provided. The LH*A acts as a pressure compensator to ensure that flow to port CF remains constant during pressure changes. This will allow for very stable, continuous flow for a given command signal to control even the most demanding applications like hydraulic hammers and rock breakers.

The FP*K valve will provide optimal performance when combined with a factory-tuned XMD. Using the XMD driver in conjunction with the FP*K will give the user optimum command control and ease of setting using the XMD mobile app.



Sun Hydraulics develops intelligent machine control solutions for mobile and industrial hydraulics markets.

Building on a reliable foundation of Sun cartridge valve technology and decades of manifold design expertise, we create standard and custom hydraulic products that address the most demanding applications.

As a partner with Sun Hydraulics, you get smart designs, quality products and the full support of our global team.

To learn more about applying a Sun adjustable priority flow control solution in your application, contact your local distributor or the Sun Hydraulics team.

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