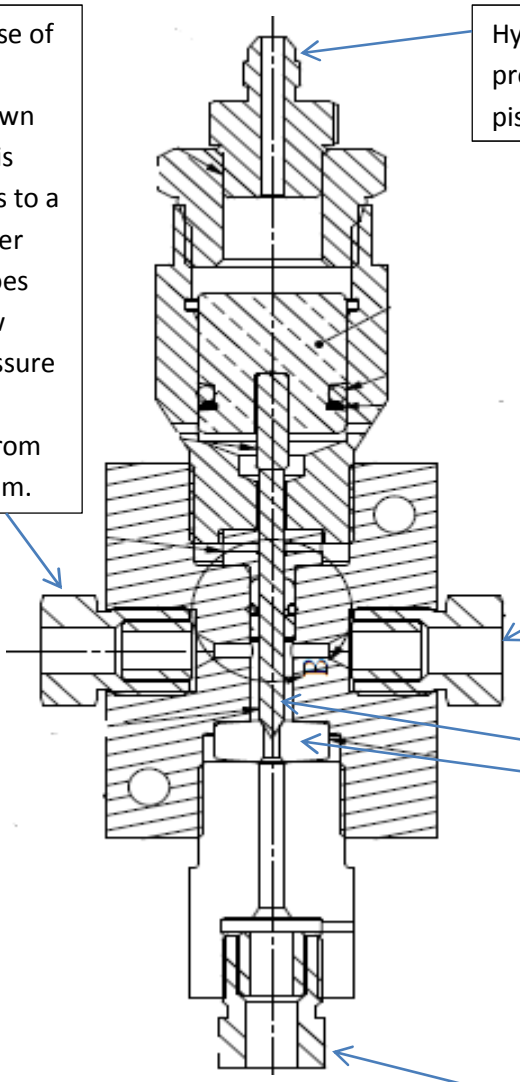
Check your bleed down valve

The bleed down valve is used mostly on intensifier pumps. It is a normally open valve assembly that is closed with oil pressure (some older and more unique models may use air or pneumatically controlled). When oil or air pressure is present at the bleed down valve actuator, the valve will be closed and not allow high pressure water to escape past the bleed down valve. This maintains the high pressure needed to operate the cutting heads or tools usually ran with high pressure pumps. Once the intensifier pump is shut off, the control pressure to close the bleed down valve will be released, the valve opens and allows high pressure water to escape from the high pressure system. Let's see how it works:

In the case of this 94K bleed down valve, this port goes to a transducer which does not allow high pressure water to escape from the system.

Hydraulic oil from cartridge valve A-12706 in the proportional valve manifold, enters here causing piston to move down on top of poppet.

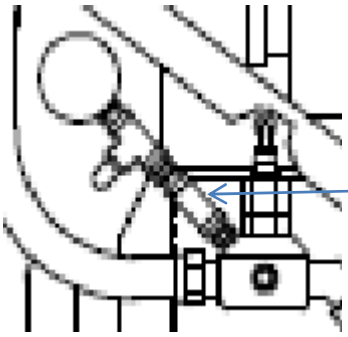


High pressure water in the high pressure water system goes into this port. If the bleed down valve has oil or air pressure closing it, water should not go past the bleed down valve and maintain high pressure water in the system. If water gets past the poppet/seat assembly when the bleed down valve is actuated, the bleed down valve must be taken apart and inspected. Usually the installation of a seal kit will fix the problem. Always make sure to inspect all parts thoroughly.

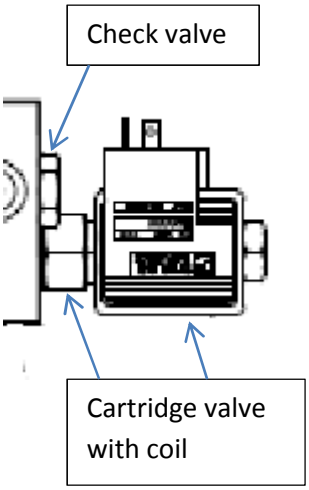
The poppet is pushed down by the piston in the actuator assembly into the poppet which seals against the poppet seat. This does not allow high pressure water to go past the bleed down valve and maintains high pressure in the system.

When control pressure is not present, the force of the piston pushing the poppet into the seat is released all high pressure water to overcome the poppet to poppet seat seal and water comes out at this point.

Where does the oil or air come from to actuate the bleed down valve? In pneumatic or air systems, the air will be controlled by a solenoid to pass air to the actuator just like the system for an on/off valve that supplies water to the cutting head. In an oil system, it can come straight off of the hydraulic pump in older models. On a 5X pump it comes off of the relief valve which is the same point as the hydraulic pump.



The 5X bleed down valve is actuated with oil coming off of a pressure port on the relief valve. A flow control valve is before the bleed down valve to control oil pressure spiking during the shifting process. To set the flow control valve, turn all the way clockwise and back off counterclockwise ¼ turn. Make sure when installing the flow control valve that the arrow on the valve body points away from the gauge.



Another popular way of supply oil to the bleed down valve is the electronically controlled or cartridge valve. In this case the check valve and the cartridge valve are mounted at the end of the proportional valve manifold. When you start the pump, the coil opens the cartridge valve supplying oil to the bleed down valve. The check valve is in between the cartridge valve and bleed down valve keeping oil pressure constant on the bleed down valve during the shifting of the intensifier.

Similar arrangements on the 20X, 7X and other pumps have manifolds known as bleed down manifolds that house the same type components to actuate the bleed down valve. The modern 30SA pumps have a manifold/solenoid assembly with the sole purpose of supplying oil to the bleed down valve.

Whenever you incur problems with intensifier shifting, bleed down valve overtemp, etc. "deadhead" your pump. To do this, have the high pressure water turned off at the on/off valve(s). Turn pump on and let stroke, it should build up to full pressure and stop shifting. If it does not, consider the bleed down valve and troubleshoot. If no problem with the bleed down valve, you may have a leak elsewhere in the high pressure system.

When installing a bleed down valve, make sure of all connections. When hooking up hydraulic line, have the fitting at the end of the hose cracked when installing on bleed down valve actuator. Have someone bump over the pump 3 to 4 times (do not let it start). This can bleed air out of the hose and system.

As with all high pressure and hydraulic components, check for heat where there shouldn't be or excessive heat in hydraulic components areas.