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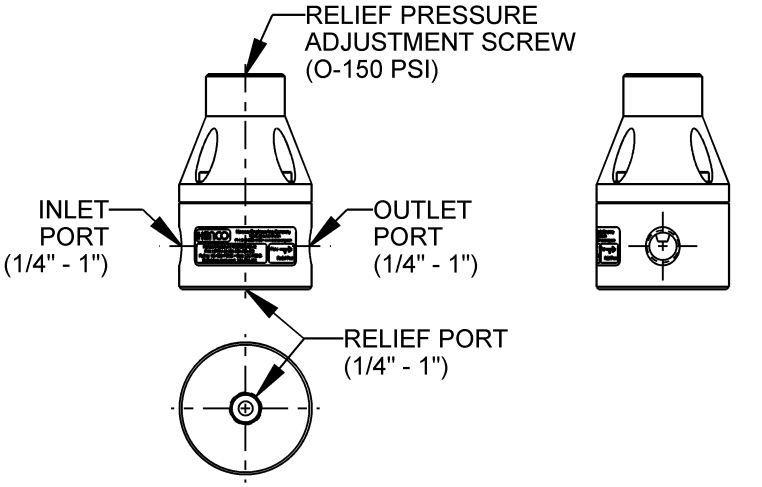
MODEL KPRV AND KBPV RELIEF VALVE INSTALLATION/OPERATING INSTRUCTIONS

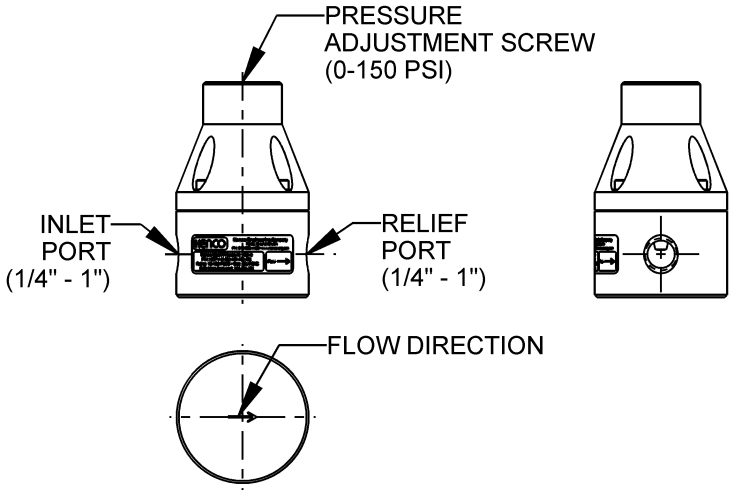
PRINCIPLE OF OPERATION

Kenco Pressure Relief Valves (KPRV) are 3 way, 2 position direct acting relief valves. They are designed to protect fluid systems from overpressure caused by line blockages or fluid system component failures. Kenco Back Pressure Valves (KBPV) are 2 way, 2 position direct acting relief valves used to ensure the pressure in a pump discharge line is higher than the pressure in the pump suction line. The higher discharge pressure ensures no fluid can inadvertently flow through the pump during the suction stroke by keeping the pump discharge check valve closed. These valves also ensure no unwanted fluid can be siphoned through the pump during operation.
Note: When using a KBPV back pressure valve to raise pump discharge pressure, Kenco Engineering recommends for safety that a KPRV pressure relief valve be placed in the pump discharge line as close to the pump as possible.



KPRV VALVE

(Fluid flow travels freely from the Inlet Port to the Outlet Port
No fluid flow through relief port until set pressure is reached)



KBPV VALVE

(No fluid flow until set pressure is reached)

INSTALLATION OF KPRV VALVE

Install the KPRV Valve as close to the pump as possible. Make sure there is no shut off valve installed between the pump and the KPRV valve that could prevent the KPRV valve from protecting the pump if the shut off valve was inadvertantly closed while the pump was running. Direction of flow travels from the inlet port to the outlet port as shown on the label. The relief port should be plumbed to a source that has no back pressure and in a way that is self draining. Plumbing directly to a drain or supply tank vented to atmosphere is best. In either case, make sure the KPRV is located above the source it is draining to and that the piping is oriented so that it slopes away from the relief port to the drain. The KPRV relief pressure is factory set to 50 psi unless stated otherwise on the label. See "Relief Pressure Adjustment" for directions on changing or adjusting the relief pressure.

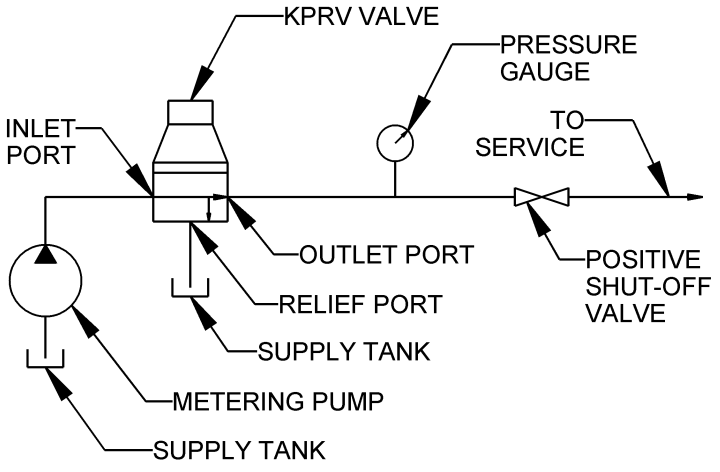


Figure 1

INSTALLATION OF KBPV VALVE

A KBPV Valve should be used when the minimum pump discharge pressure is higher than the service pressure. A pulsation dampener/hydraulic accumulator installed between the pump and the KBPV Valve can aid in the performance of the KBPV Valve by absorbing the pressure spikes common with a metering pump. This will smooth out the flow to the KBPV Valve and keep it from having to repeatedly cycle between fully open and closed. This also has the added benefit of prolonging the life of the valves internal moving parts. For safety, the installation of a KPRV is recommended. The KBPV and KPRV are both factory set to 50 psi unless stated otherwise on the label. See "Relief Pressure Adjustment" for directions on changing or adjusting the relief pressure.

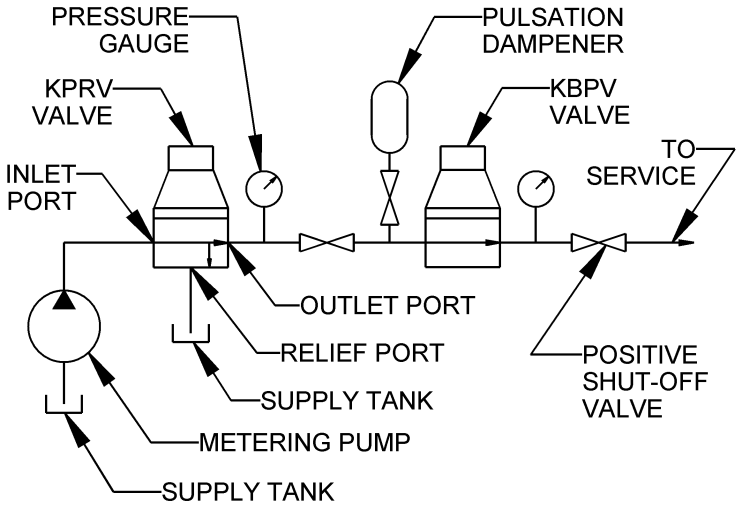


Figure 2

RELIEF PRESSURE ADJUSTMENT

The pressure range of both the KPRV and the KBPV valve is 0-150 psi. Never try to exceed the rated maximum relief pressure of 150 psi. Doing so may cause damage to the valve and/or to the system the valve is installed in. The factory set relief pressure of both the KPRV and KBPV valves is 50 psi. Adjustment will be required if a relief pressure other than 50 psi is required.
Adjusting the pressure ot the KPRV and KBPV valve is accomplished by turning the Relief Pressure Adjustment Screw (see figure 3). When adjusting the relief pressure of the KPRV or KBPV valve, it is recommended to start the adjustment with the relief pressure set to zero. This is accomplished by turning the adjustment screw counter clockwise until it is flush with the top of the valve.

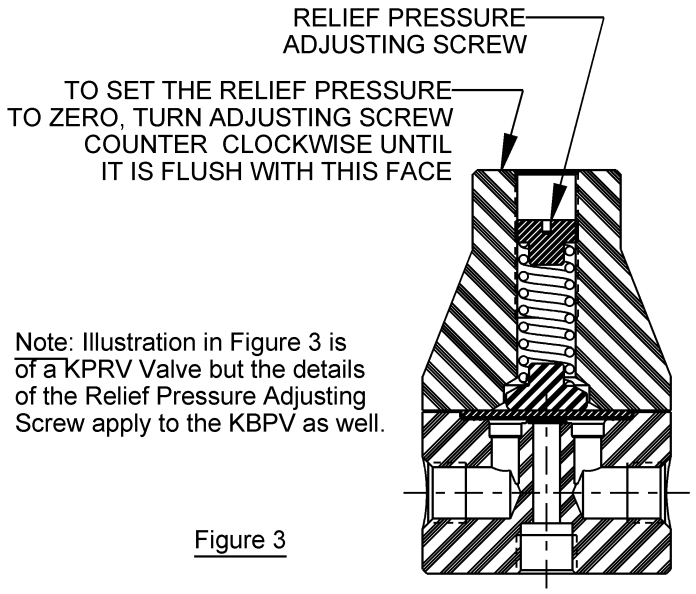
KBPV BACK PRESSURE VALVE

1. The first step in the adjustment process is to set the relief pressure to zero. As noted above and in Figure 3, turn the adjusting screw counter clockwise unitl the screw is flush with the top of the valve.
2. With the KBPV valve installed in the system as shown in Figure 2, make sure the system fluid is free to flow downstream of the valve. If there are any shut off valves downstream of the KBPV, make sure they are open.
3. Start the pump and note the pressure reading on the gauge between the pump and the KBPV. It should be reading close to zero. If it is not reading zero, go back and verify step 1.
4. Start increasing the pressure by gradually turning the adjustment screw clockwise. It may take a few turns to get the pressure to start going up. Continue to turn the screw unitil the desired pressure is reached.
5. Once the set pressure is reached, cycle the pump on and off a couple of times to verify the relief pressure.

KPRV PRESSURE RELIEF VALVE

Because the flow from the inlet port to the outlet port is unobstructed on the KPRV, the outlet port must be able to be choked down, or restricted in order to raise the system pressure enough to force the KPRV to relieve the pressure.This is best accomplished by installing a shut off valve down stream of the KPRV valve. Since this procedure can cause damage to the hydraulic system it is installed in if not done correctly, Kenco Engineering recommends that the pressure relief setting of the KPRV be done on a bench before installation. It is also highly recommended that the relief pressure setting of the KPRV be set to zero before starting the procedure.

1. Set the relief pressure of the KPRV valve to zero. As noted above and in Figure 3, this is accomplished by turning the Relief Pressure Adjusting Screw counter clockwise until the screw is flush with the top of the valve.
2. Install a pressure gauge and shut off valve to the outlet port of the KPRV valve. Make sure the pressure gauge is before, or upstream of the shut off valve as shown in Figure 1. Also ensure that the shut off valve is open all the way.
3. Install a test pump to the inlet port of the valve.
4. Install a drain line to the shut off valve connected to the outlet. Drain line should be plumbed to a non pressurized drain source.
5. Install a drain line to the relief port of the KPRV valve. Drain line should be plumbed to a non pressurized drain source. Make sure the KPRV valve is properly oriented so that the fluid exiting the relief port will freely drain away from the port.
6. With the shut off valve open all the way, start up the pump and adjust the flow rate to match the application. Look at the pressure gauge and make sure the pressure is below the desired set pressure.
7. Slowly start closing the shut off valve while watching the pressure gauge. You should see the pressure start to rise, but stay below the desired set pressure. Continue the process of closing the shut off valve while watching the pressure gauge until the shut off valve is closed all the way.
8. With the shut off valve closed all the way, all of the fluid from the pump is now going through the relief port on the KPRV valve. The pressure should be below the desired set relief pressure. If it is not, verify that the test set up is correct and that the KPRV valve is large enough to handle the flow rate selected.
9. The KPRV pressure relief setting can now be adjusted. Slowly turn the relief pressure adjusting screw clockwise while keeping an eye on the pressure gauge. You should see the pressure start to rise.
10. Continue to turn the adjusting screw clockwise until the desired set relief pressure is reached.
11. Once the desired set pressure is reached, open up the shut off valve. Note that the pressure drops back below the desired set pressure.
12. Now slowly close the shut off valve again and verify that the test system pressure is the desired relief pressure If it is not, readjust the KPRV valve and repeat the test until satisfied with the results.
13. With the adjustment completed, Kenco Engineering recommends that the KPRV valve be tagged with the new set relief pressure before being installed.



Note: Illustration in Figure 3 is of a KPRV Valve but the details of the Relief Pressure Adjusting Screw apply to the KBPV as well.

Figure 3

Kenco Relief Valves are available with threaded NPT or socket weld connections in sizes ranging from 1/4" to 1". They are also availble in PVC and 316 SS wetted materials. For options other than those shown in the ordering guide below, consult the factory. Use the ordering guide to generate the P/N for the Kenco Relief Valve with the features needed for your particular application.

ORDERING GUIDE

VALVE TYPE:
KPRV = PRESS. RELIEF VALVE
KBPV = BACK PRESS. VALVE

CONNECTION TYPE:
T = NPT (FEMALE)
S = SOCKET WELD

CONNECTION SIZE:
25 = 1/4"
50 = 1/2"
75 = 3/4"
10 = 1"

BODY MATERIAL:
(WETTED)
P = PVC
S6 = 316 S.S.

SPRING CASE MATERIAL:
(NON-WETTED)
P = PVC

DIAPHRAGM MATERIAL:
TE = PTFE(WETTED)/
EPDM(NON-WETTED)