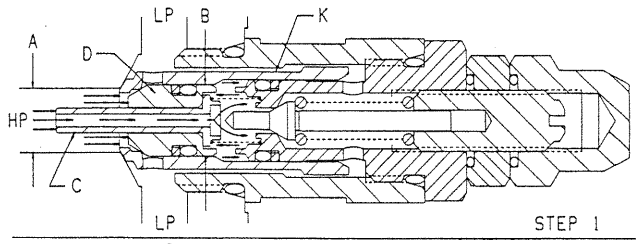
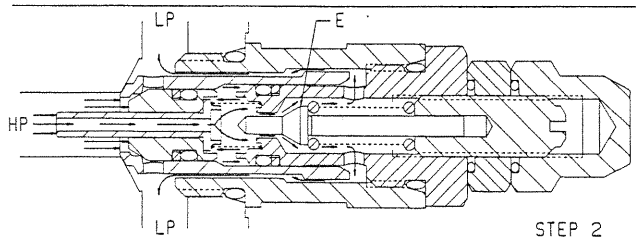
SERVICE INFORMATION

HUSCO COMBINATION WORK PORT RELIEF AND ANTI-VOID UNIT

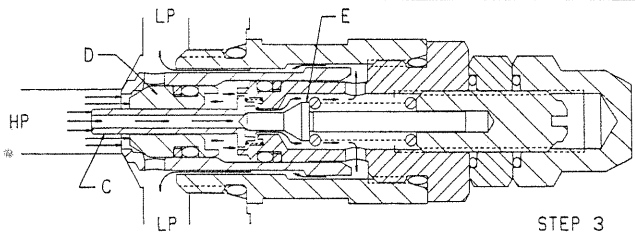


AS WORK PORT RELIEF

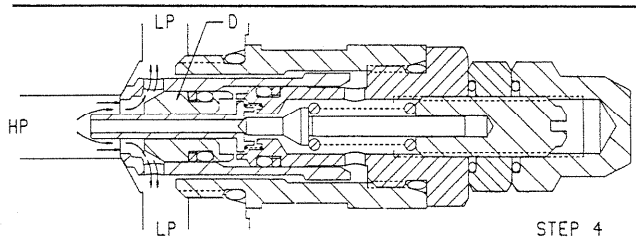
The relief valve is in communication between the high pressure port "HP" and low pressure "LP". Oil is admitted through the hole in poppet "C" and because of the differential area between diameters "A" and "B" relief valve poppet "D" and check valve poppet "K" are tightly seated as shown in the first step.



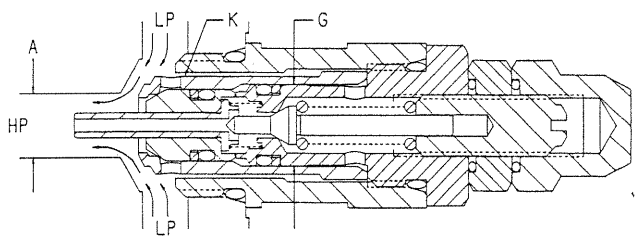
The oil pressure in the high pressure port "HP" has reached the setting of the pilot poppet spring force and unseats the pilot poppet "E" and oil flows around the poppet - through the cross drilled holes and to the low pressure area "LP".



The loss of oil behind Poppet "C", effected by the opening of pilot poppet "E", causes poppet "C" to move back and seat against pilot poppet "E". This shuts off the oil flow to the area behind relief valve poppet "D", and causes a low pressure area internally.

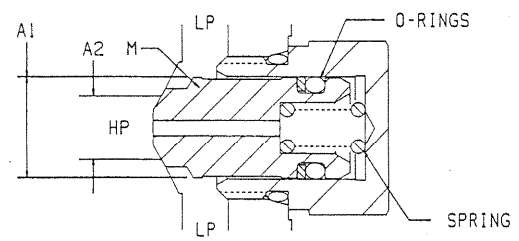


The imbalance of pressure on the inside as compared to that of the high pressure port "HP", forces the relief valve poppet "D" to open and relieve the oil directly to the low pressure chamber "LP" in the valve.



AS ANTI-VOID

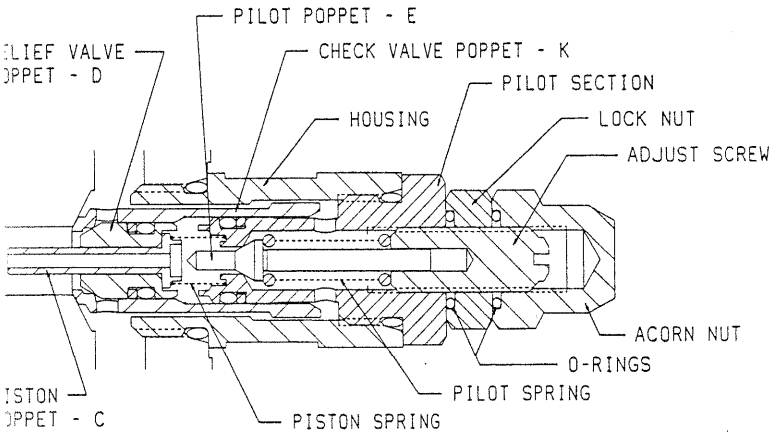
The anti-void unit supplies oil to the high pressure port "HP" when cavitation has occurred. A lower pressure exists in the port "HP" compared to the low pressure chamber "LP". The difference between the effective area of diameter "A" and "G" causes imbalance of the check valve poppet "K" which unseats, thus allowing oil from the low pressure chamber "LP" to enter the port "HP" and fill the void.



AS SEPARATE ANTI-VOID

The anti-void check valve opens when cavitation occurs in the high pressure port "HP" and supplies oil from the reservoir "LP" to help fill this void. The poppet "M" is held on its seat by the port pressure "HP", acting on the larger area behind the "O" ring. When pressure "HP" drops below atmosphere, the tank pressure "LP" operating on the annular area A_1-A_2 will overcome the port pressure "HP" and the spring force to open the poppet. When the void is eliminated the spring will return the poppet which will then be tightly seated by the port pressure "HP".

MAINTENANCE PROCEDURE FOR HUSCO COMBINATION WORK PORT RELIEF AND ANTI-VOID UNIT



There are several variations to the Work Port Relief. However all are similar in nature regarding service and repair.

HOW TO SET PRESSURE ON WORK PORT RELIEF

A good pressure gage must be installed in the line which is in communication with the work port relief. A load must be applied in a manner to reach the set pressure of the port relief unit. Then, follow these steps:

- Remove acorn nut and loosen lock nut.
- Set adjusting screw to desired pressure setting.
- Tighten lock nut and reassemble acorn nut.
- Retest in similar manner as above.

The Void Control Feature is not adjustable but is designed to operate whenever the work port pressure is lower than the reservoir pressure.

SERVICE AND REPAIR INFORMATION

The cartridge type work port reliefs used in the HUSCO valves are typically of the pilot poppet type with external adjustment. Any mal-functioning is usually the result of foreign matter lodging between the piston, relief valve poppet, and check valve.

To perform service, clean the surrounding area and remove the complete relief valve cartridge. Examine the seat in the main valve housing and if grooves or ridges are present, the valve must be returned to HUSCO for re-machining.

The design of the pilot poppet and its seat provides positive seating and very seldom requires any maintenance. Therefore, the pilot section can be removed from the cartridge housing without disturbing the setting. With it will come the check valve poppet and other internal parts. These are easily disassembled and should be examined for foreign matter. All seats and seating surfaces should be smooth and free of nicks, scratches or grooves. Examine O-rings and back up washers for any damage and replace if necessary. All moving parts should slide freely, with only seal friction being present.

After inspecting and cleaning, immerse all parts in hydraulic oil and re-assemble. Since pressure setting was not disturbed, unit can be tested for proper functioning under actual working conditions.

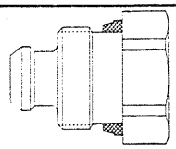
If operating difficulties indicate that the pilot poppet is leaking or sticking, remove internal parts of the pilot section, and follow the same procedure as above plus follow "How to Set Pressure" previously discussed.

If unit still does not function properly, you may wish to return the cartridge to HUSCO.

DIFFICULTY	PROBABLE CAUSE	REMEDY
Can't get Pressure	Poppet D, E or K stuck open or contamination under seat.	Check for foreign matter between poppets D, E or K and their mating parts. Parts must slide freely.
Erratic Pressure	Pilot poppet seat damaged.	Replace the relief valve.
	Poppet C sticking in D.	Clean and remove surface marks for free movement.
Pressure setting not correct	Normal wear. Lock nut & adj. screw loose.	See "How to set pressure on work port relief."
Leaks	Damaged seats.	Replace the relief valve.
	Worn O-rings.	Install seal and spring kit.
	Parts sticking due to contamination.	Disassemble and clean.

TROUBLE SHOOTING - ANTI-VOID

Trouble resulting in malfunctioning can usually be traced to foreign matter plugging the sensing hole or preventing free movement of poppet. Also check seat for scratches, nicks or other marks.



SHUT-OFF VALVE

Shut-off valves are available to fit most work port and main relief valve machining locations.