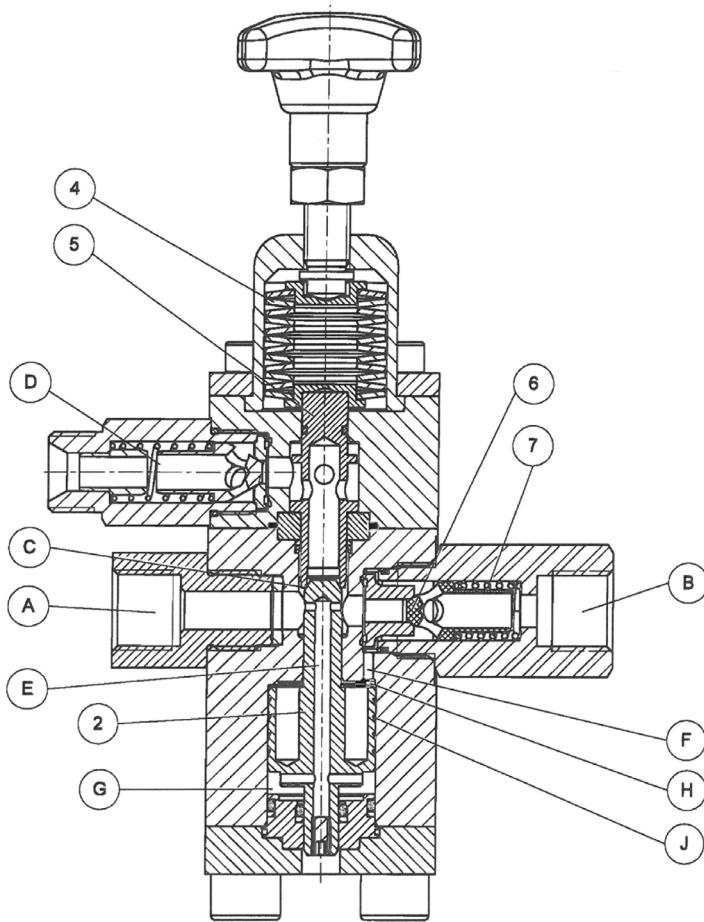


## How the 22665/22675 Unloaders Work



When the pump is started and the discharge terminal (spray gun) is closed, the piston (2) always is pushed down immediately (due to different surface sizes on the upper side and the lower side of the piston). The attached drawing shows the piston (2) in its upper position. The pump flow passes through the bypass; at the same time, the bypass valve cone (D) creates a little back pressure in the system. When the discharge terminal (spray gun) is opened, the bypass pressure drops in the outlet (B), which is connected via the bore (F) with the upper surface of the piston (2). However, the lower surface of the piston, which is connected via the bore (E) is still under the backpressure. So, the piston moves upwards and closes the bypass opening (C). The operating pressure increases.

With the handwheel, the plate springs (4) are compressed to a certain load which hold the bypass valve body (5) in its lowest position against the operating pressure of the system. When the spray gun is opened, the water streams through inlet (A) and opens kick-back

valve (6) on the outlet side (B). In doing so, the water must overcome the pressure on spring (7) which in turn causes a decrease in pressure of approximately 260-320 PSI (18-22 bar); this depends on the quantity of flow. The higher pressure coming from inlet (A) goes through bore (E) and also acts under the piston in area (G); the lower pressure in outlet (B) goes through bore (F) and acts above the piston in area (H). The piston (2) stays in its upper position when the spray gun is open and the bypass opening (C) remains closed. If the nozzle size in the spray gun is too small for the flow rate and the adjusted pressure from the spring pack, the bypass valve body (5) moves upwards, which creates a second nozzle on position C and excess water is bypassed.

The following takes place when the spray gun is closed:

Kick-back valve (6) closes as there is no more flow going to the spray gun. The differential pressure between inlet (A) and outlet (B) effected by kick-back valve (8) is no longer present. The different pressures on upper and lower piston surfaces (2) move the piston down which in turn frees the bypass opening (C). The operating pressure drops and the water is run off under bypass pressure effected by the kick-back valve (D).

The water in the still pressurized hose (B) goes through labyrinth (J) and bore (E); then, it goes through bypass (D); at the same time the pressure on outlet (B) is reduced to the bypass pressure.