a flow tube configured to move between an open position, in which fluid flow into the production tubing is allowed, and a closed position, in which fluid flow into the production tubing is restricted;

a piston installed along the production tubing uphole from the flow tube, wherein the piston is operable to move the flow tube from the closed position to the open position and to retain the flow tube in the open position; and

a piston actuator operatively connected to the piston, wherein the piston actuator is configured to operate the piston,

wherein the piston actuator comprises a piston hydraulic control line which uses hydraulic fluid to actuate the piston, and

wherein the piston comprises a communication path configured to establish fluid communication between the piston hydraulic control line and a retrievable safety device installed within the safety valve assembly, enabling the transfer of the hydraulic fluid to the retrievable safety device.

[0007]

[0008]

[0009] The piston may comprise securing means on an outer surface of the piston for attachment to an inner surface of a housing of the safety valve assembly, thereby preventing the piston and the flow tube from shifting uphole.

[0010] According to a second aspect of the present invention, there is provided a method for operating a safety valve assembly as claimed in claim 1, the method comprising:

activating the piston actuator to move the piston downhole, thereby moving the flow tube downhole from the closed position to the open position wherein activating the piston actuator comprises transmitting hydraulic fluid through a piston hydraulic control line to apply hydraulic pressure to the piston, thereby moving the piston downhole;

securing the piston in the safety valve assembly to retain the flow tube in the open position, and

transferring the hydraulic fluid from the hydraulic control line to a retrievable safety device installed within the safety valve assembly through a communication path inside the piston.

[0011]

[0012]

CLAIMS

1. A safety valve assembly for a production tubing, the safety valve assembly comprising:

a flow tube configured to move between an open position, in which fluid flow into the production tubing is allowed, and a closed position, in which fluid flow into the production tubing is restricted;

a piston installed along the production tubing uphole from the flow tube, wherein the piston is operable to move the flow tube from the closed position to the open position and to retain the flow tube in the open position; and

a piston actuator operatively connected to the piston, wherein the piston actuator is configured to operate the piston,

wherein the piston actuator comprises a piston hydraulic control line which uses hydraulic fluid to actuate the piston, and

wherein the piston comprises a communication path configured to establish fluid communication between the piston hydraulic control line and a retrievable safety device installed within the safety valve assembly, enabling the transfer of the hydraulic fluid to the retrievable safety device.

2. The safety valve assembly as claimed in claim 1, wherein the piston comprises securing means on an outer surface of the piston for attachment to an inner surface of a housing of the safety valve assembly, thereby preventing the piston and the flow tube from shifting uphole.

3. A method for operating a safety valve assembly as claimed in claim 1, the method comprising:

activating the piston actuator to move the piston downhole, thereby moving the flow tube downhole from the closed position to the open position, wherein activating the piston actuator comprises transmitting hydraulic fluid through a piston hydraulic control line to apply hydraulic pressure to the piston, thereby moving the piston downhole;

securing the piston in the safety valve assembly to retain the flow tube in the open position, and

transferring the hydraulic fluid from the hydraulic control line to a retrievable safety device installed within the safety valve assembly through a communication path inside the piston.

4. The method as claimed in claim 3, wherein securing the piston in the safety valve assembly comprises attaching securing means on an outer surface of the piston to an inner surface of a housing of the safety valve assembly, thereby preventing the piston and the flow tube from shifting uphole.