

## CLAIMS

## WHAT IS CLAIMED IS:

1. A wellbore flow control system, comprising:
  - a base pipe defining an interior passageway and having at least one radial opening
  - 5 defined therein;
  - a flow control housing secured to the base pipe and defining a flow path extending to the radial opening in the base pipe;
  - a piston disposed in the flow path, the piston responsive to the application of an activation pressure from the interior passageway of the base pipe to move in a first direction
  - 10 from an initial position;
  - a plunger disposed in the flow path, the plunger responsive the application of activation pressure to move in a second direction opposite the first direction to engage the flow control housing and thereby close the flow path;
  - a first biasing member operably coupled to the plunger to urge the plunger in the first
  - 15 direction to disengage the flow control housing in response to relief of the activation pressure;
  - and
  - a latch operably coupled to the piston to move in the first direction in response to the application of the activation pressure, the latch operably coupled to the plunger to maintain the plunger disengaged from the flow control housing in response to relief of the activation
  - 20 pressure.
2. The system of claim 1, further comprising an outer sleeve having a connector thereon for selectively coupling the outer sleeve to the flow control housing, wherein the piston, plunger, first biasing member and latch are all carried by the outer sleeve.
3. The system of claim 2, wherein the connector on the outer sleeve includes a thread
- 25 engaged with a corresponding thread defined in an access port of the flow control housing.
4. The system of claim 2, wherein the latch engages the outer sleeve to maintain the plunger disengaged from the flow control housing.
5. The system of claim 1, further comprising a second biasing member operably coupled to plunger to bias the plunger in the second direction into engagement with the flow control

housing when the piston is disposed in the initial position and operable to permit the plunger to disengage the flow control housing when the piston is moved to an activated position and the activation pressure is relieved.

6. The system of claim 5, wherein the first biasing member comprises a relatively strong spring and the second biasing member comprises a relatively weak spring, and wherein the relatively strong spring counteracts the bias of the relatively weak spring.

7. The system of claim 6, further comprising a shear member operably coupled to the relatively strong spring to prevent the relatively strong spring from counteracting the bias of the relatively weak spring when the piston is in the initial position, and wherein the shear member shears in response to the application of the activation pressure to permit the strong spring to counteract the bias of the relatively weak spring.

8. The system of claim 7, further comprising an elongated rod operably coupled between the piston and the plunger by the shear member, the elongated rod placed in tension by the application of the activation pressure.

9. The system of claim 1, wherein the latch comprises at least one of the group consisting of a snap ring, a collet, and one-way ratchet teeth.

10. The system of claim 1, further comprising a flow control screen including an outer sheath and a filter element disposed around the base pipe in fluid communication with the flow path defined in the flow control housing.

11. The system of claim 1, further comprising an end cap coupled to the flow control housing to define a chamber between the piston and the end cap, the end cap defining a pressure relief port therethrough.

12. A method of operating a wellbore flow control system, the method comprising:  
running a base pipe into a wellbore on a tubing string;  
applying an activation pressure to a flow control housing coupled the base pipe by increasing a fluid pressure in the tubing string;

urging a piston and a plunger in opposite first and second directions by the activation pressure, the piston urged in the first direction from an initial position in the flow control housing to an activated position, and the plunger urged in the second direction to engage the flow control housing and thereby close flow path extending through the flow control housing  
5 to the base pipe;

conducting wellbore operations while applying the activation pressure to maintain the plunger engaged with the flow control housing; and thereafter

relieving the activation pressure to permit a first biasing member to disengage the plunger from the flow control housing to thereby open the flow path through the flow control  
10 housing and to permit a latch to lock the plunger in a disengaged position with respect to the flow control housing.

13. The method of claim 12; further comprising installing an outer sleeve into an access port of the flow control housing, wherein the piston, plunger, first biasing member and latch are all carried by the outer sleeve.

15 14. The method of claim 12 further comprising urging the plunger in the second direction with a second biasing member to engage the flow control housing while the piston is disposed in the initial position.

15. The method of claim 14, further comprising shearing a shear member with the activation pressure to permit the first biasing member to counteract a bias of the second biasing  
20 member.

16. The method of claim 12, wherein urging the piston in the first direction further comprises engaging ratchet teeth on the piston with ratchet teeth defined within the flow control housing.

17. The method of claim 16, wherein engaging the ratchet teeth on the piston further  
25 comprises engaging one-way ratchet teeth such that the piston is locked in an actuated position to lock the plunger in the disengaged position.

18. The method of claim 12, wherein conducting wellbore operations while applying the activation pressure further comprises conducting washdown or circulation operations, and

wherein the method further comprises conducting production or injection operations through the flow control housing with the plunger locked in the disengaged configuration.

19. An isolation plug apparatus for a wellbore flow control system, the isolation plug apparatus comprising:

- 5           an outer sleeve having a connector thereon for selectively coupling the outer sleeve to a flow control housing of the flow control system;
- a piston disposed in the outer sleeve, the piston responsive to the application of an activation pressure to move in a first direction from an initial position within the outer sleeve;
- a plunger extending from the outer sleeve, the plunger responsive the application of the
- 10          activation pressure to move in a second direction opposite the first direction;
- a first biasing member operably coupled to the plunger to urge the plunger in the first direction in response to relief of the activation pressure; and
- a latch operably coupled to the piston to move in the first direction in response to the application of the activation pressure, the latch operably coupled to the plunger to lock the
- 15          plunger in a retracted position with respect to the outer sleeve in response to relief of the activation pressure.

20. The apparatus of claim 19, further comprising a second biasing member operably coupled to plunger to bias the plunger in the second direction to an extended position with respect to the outer sleeve when the piston is disposed in the initial position.