

-continued

COMPONENT	DIMENSIONS (in inches, ±0.005)
Seal holder 80	Length: 0.54 Diameter of top chamber 88: 0.29 Diameter of bottom chamber 85: 0.25 Length of top chamber 88: 0.43 Length of bottom chamber 85: 0.08 Length of aperture 82: 0.06 Diameter of aperture 82: 0.10
Funnel cap 90	Length: 0.90 Exterior diameter: 0.71 Diameter of interior chamber 94: 0.60 Length of dilator 92: 0.46 Diameter of lumen of dilator 92: 0.98
Threaded cap 100	Length: 0.36 Diameter: 0.59 Proximal diameter of center hole 102: 0.15 Distal diameter of center hole 102: 0.19

Those of ordinary skill will appreciate that the various components and sub-assemblies described with respect to alternate embodiments may be rearranged or combined with each other without departing from the scope of the invention. For example, components of cap assembly **30** may be incorporated as part of seal assembly **20**, and vice versa. As noted above, seal body **20** may not include clamp seal **60** in one embodiment. Also, structures of threaded cap **100** may be incorporated in funnel cap **90**, and vice versa.

Alternate embodiments also include adding a position lock for engaging and disengaging funnel cap **90** and dilator **92** (analogous to the manner by which a conventional ball point pen is depressed), thus requiring a user to engage or depress funnel cap **90** axially in order to engage and disengage dilator **92** from opening bleed back control seal **70**.

Alternatively, funnel cap **90** and dilator **92** may be locked or unlocked in the open or closed positions with a bayonet style lock, where the lock mode would allow the operator to lock dilator **92** in either the open or closed position to either dilate or not dilate aperture **74** of bleed back control seal **70**, whichever is desired.

Other embodiments include using a locking mechanism, such as a detent, using a twist motion of funnel cap **90** (of any suitable predetermined amount of rotation) for locking dilator **92** in the open or closed positions.

In another embodiment, side arm body **10** comprises primary branch **11** and does not include secondary branch **13**. In this embodiment, finger rest **19** may be formed on the exterior surface of primary branch **11** of side arm body **10**.

In another embodiment, there may be a plurality of secondary branches **13** in addition to primary branch **11** of side arm body **10**. In this embodiment, none, some, or all of these plurality of secondary branches **13** may have their own finger rest **19** formed thereon, in addition to or in substitution for a finger rest **19** formed on the exterior surface of primary branch **11**.

In another embodiment, side arm body **10**, snap insert **25**, luer connector **50**, seal holder **80**, funnel cap **90**, threaded cap **100**, spring **110**, and snap retainer **120** may each be formed of other appropriate rigid materials or composite materials, such as metal, metallic alloys, other resins, different plastics, glass, or any suitable composite.

In another embodiment, device **130** may be any device appropriate for inserting into any part of a patient's body, such as insertion into a blood vessel or any other luminal structure or any body cavity. For example, device **130** may be any type of catheter, guidewire, stent, balloon catheter, perfusion balloon, guiding catheter, rapid exchange catheter, over-the-wire balloon, directional coronary atherectomy catheter, or other appropriate device.

Persons of ordinary skill will appreciate that changes can be made to dimensions, sizing, relative dimensions, materials, spatial and angular relationships of and between components, and manufacturing processes and other commercial or industrial techniques, all without departing from the scope of the invention.

We claim:

1. A bleed back control assembly comprising:

a side arm body having a proximal end, a distal end, and a lumen connecting said proximal and distal ends, said side arm body also having a seal cavity formed in said proximal end, said lumen being in fluid communication with said seal cavity;

a seal mechanism coupled to the proximal end of said side arm body, said seal mechanism comprising:

a cap assembly coupled to a seal assembly and coupled to said proximal end of said side arm body, said cap assembly restraining said seal assembly within said seal cavity and said cap assembly operable to engage said seal assembly in response to active user manipulation and disengage from said seal assembly in the absence of active user manipulation and said cap assembly having a lumen having a proximal aperture communicating with the exterior of said cap assembly; and

said seal assembly comprising elastomeric material inhibiting said cap assembly lumen from being in fluid communication with said side arm body lumen; and

wherein said cap assembly is operable to control axial translation and displacement of said seal mechanism; and

wherein displacement of said cap assembly is limited by one or more stop means, wherein said stop means comprises one or more notches formed in the interior of said cap assembly.

2. A bleed back control assembly comprising:

a side arm body having a proximal end, a distal end, and a lumen connecting said proximal and distal ends, said side arm body also having a seal cavity formed in said proximal end, said lumen being in fluid communication with said seal cavity;

a seal mechanism coupled to the proximal end of said side arm body, said seal mechanism comprising:

a cap assembly coupled to a seal assembly and coupled to said proximal end of said side arm body, said cap assembly restraining said seal assembly within said seal cavity and said cap assembly operable to engage said seal assembly in response to active user manipulation and disengage from said seal assembly in the absence of active user manipulation and said cap assembly having a lumen having a proximal aperture communicating with the exterior of said cap assembly; and

said seal assembly comprising elastomeric material inhibiting said cap assembly lumen from being in fluid communication with said side arm body lumen; and

wherein said seal cavity has an interior distal surface including an aperture allowing fluid communication between said side arm body lumen and said seal cavity, said seal assembly comprising:

a seal holder which is movable axially, said seal holder distal to said lumen aperture and having an interior chamber; and

a bleed back control seal held within said interior chamber of said seal holder, said bleed back control