



HyperCyl[®]

By Aries Engineering Company, Inc.



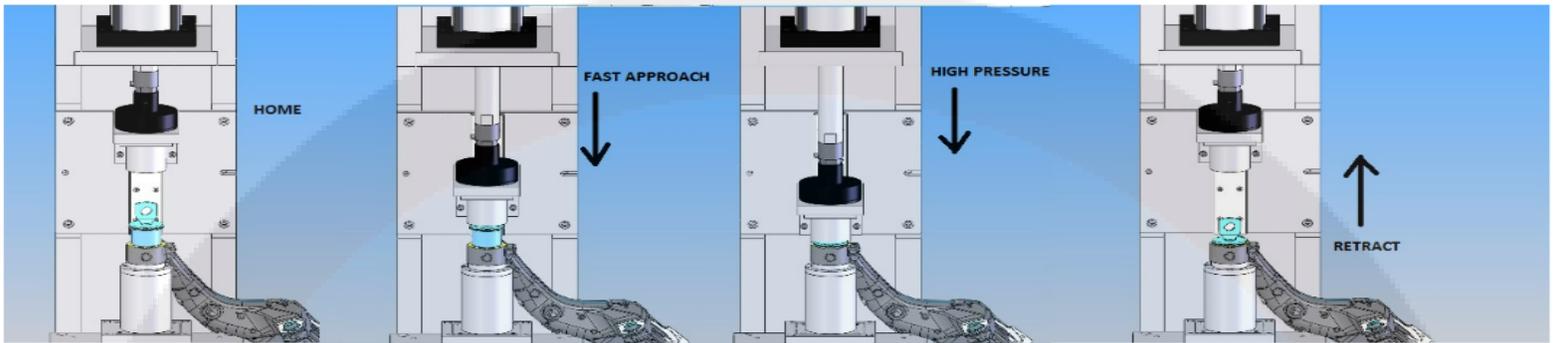
HPS/HPX Series Pneumatic Schematics

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Master Control Sequence

The HPI, HPS and HPT HyperCyl® cylinders require two (2) pneumatic 4-way directional control valves and a plant air supply for proper operation. The HZ series HyperCyl® cylinder requires only one (1) pneumatic 2-way directional control valve.



Control sequence to be followed in order 1 through 5

Step number	Description of operation	A1 port condition	B1 port condition	A2 port condition	B2 port condition
1.	Home (retracted)	Exhausted	Pressurized	Exhausted	Pressurized
2. (Cycle Start)	Fast Approach extend	Pressurized	Exhausted	Exhausted	Pressurized
3.	High Pressure extend	Pressurized	Exhausted	Pressurized	Exhausted
4. (Cycle End)	Fast Approach retract	Exhausted	Pressurized	Pressurized	Exhausted
5.	High Pressure retract	Exhausted	Pressurized	Exhausted	Pressurized
	(Cylinder now at Step 1)				

Notes for 3 position exhaust-centered valves, for e-stops or light curtain breaches:

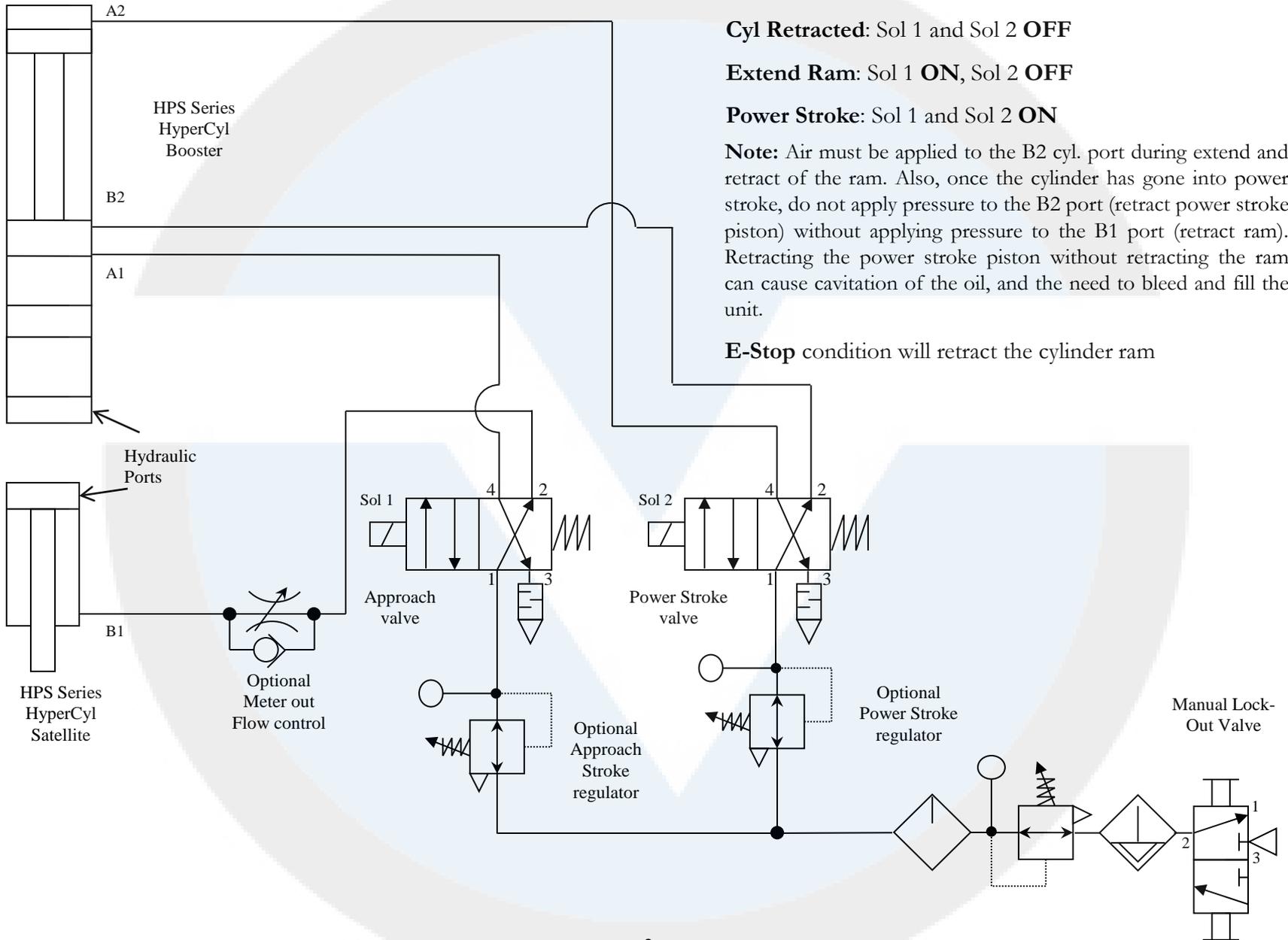
In cycle (steps 2 through 5).

The mid position of the valves is used only for an E-Stop condition (cycle interrupted), or shutdown. Normally, the valve is shifted to one side or the other, and not in the mid position.

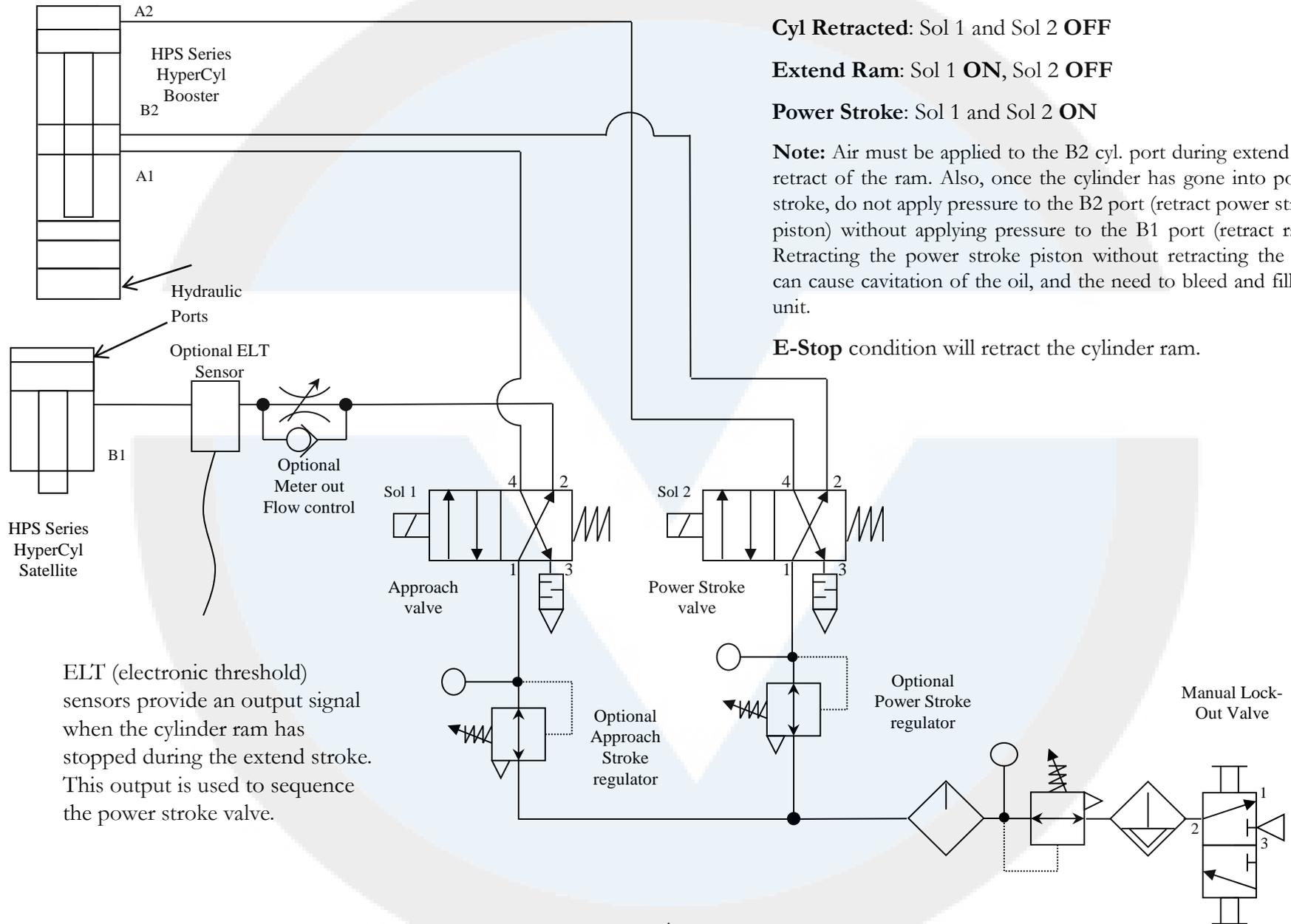
Not in cycle (step 1)

When not in cycle, and the e-stop is cleared, B1 and B2 must return to their pressurized condition prior to the start of the cycle. For example, the operator breaches the light curtain to load, unload, or change a part. The machine is not in cycle. The valves shift to their mid position. When the operator is clear of the light curtain, the valves must be shifted to the position in which B1 and B2 are pressurized before the start of the next cycle.

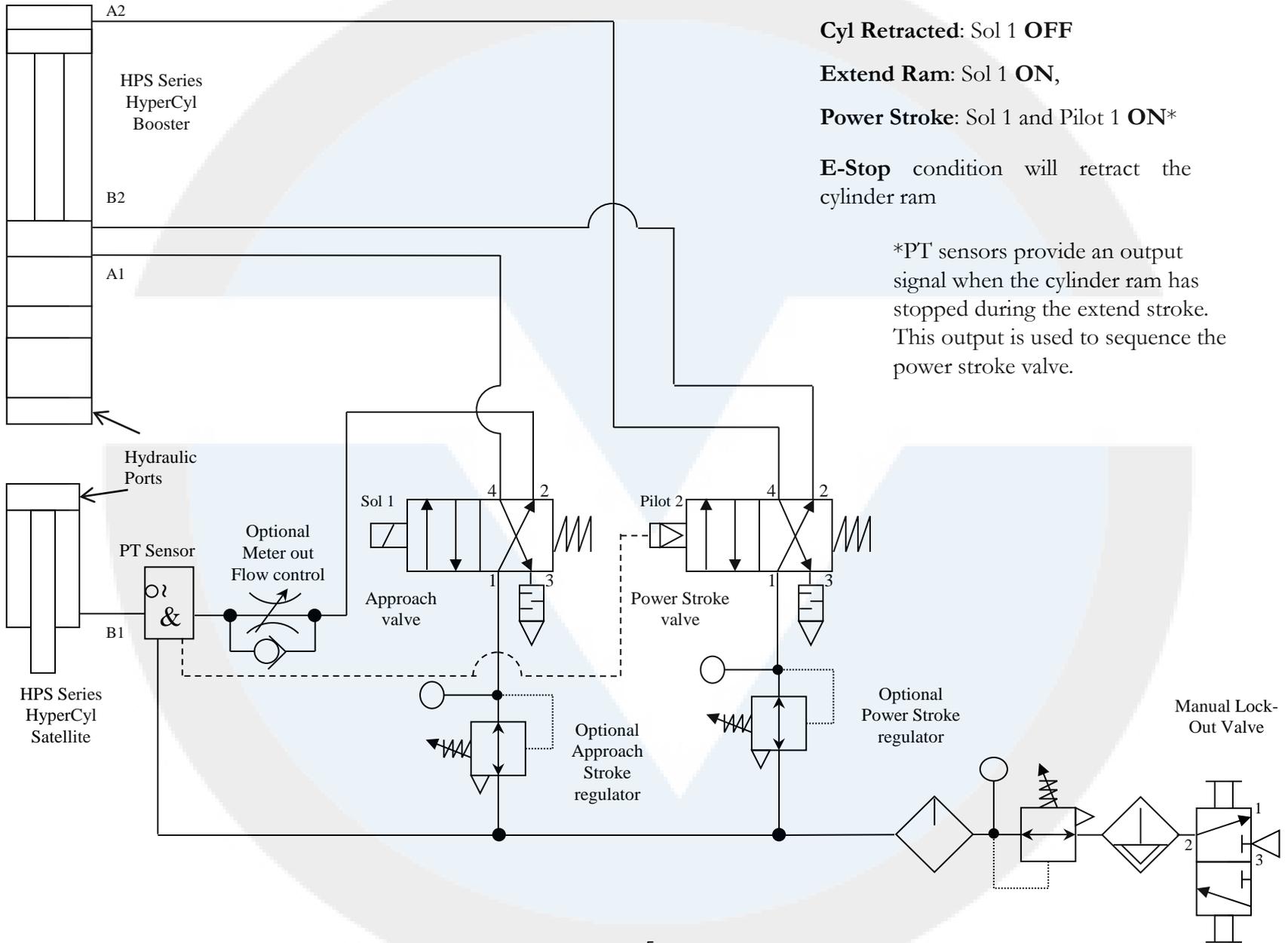
HPS/HPX 2-Position Spring Return Schematic



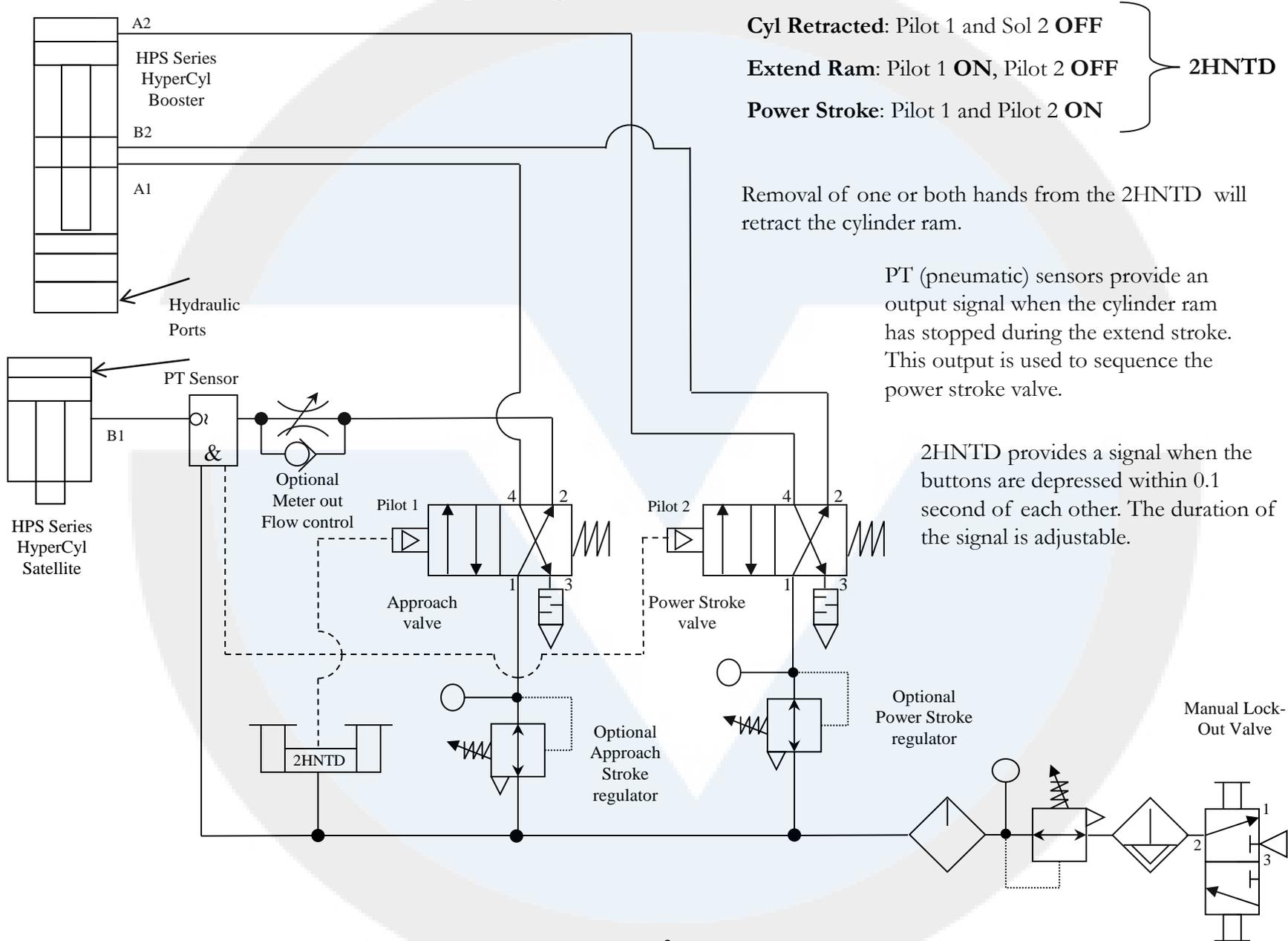
HPS/HPX 2-Position Spring Return ELT Schematic



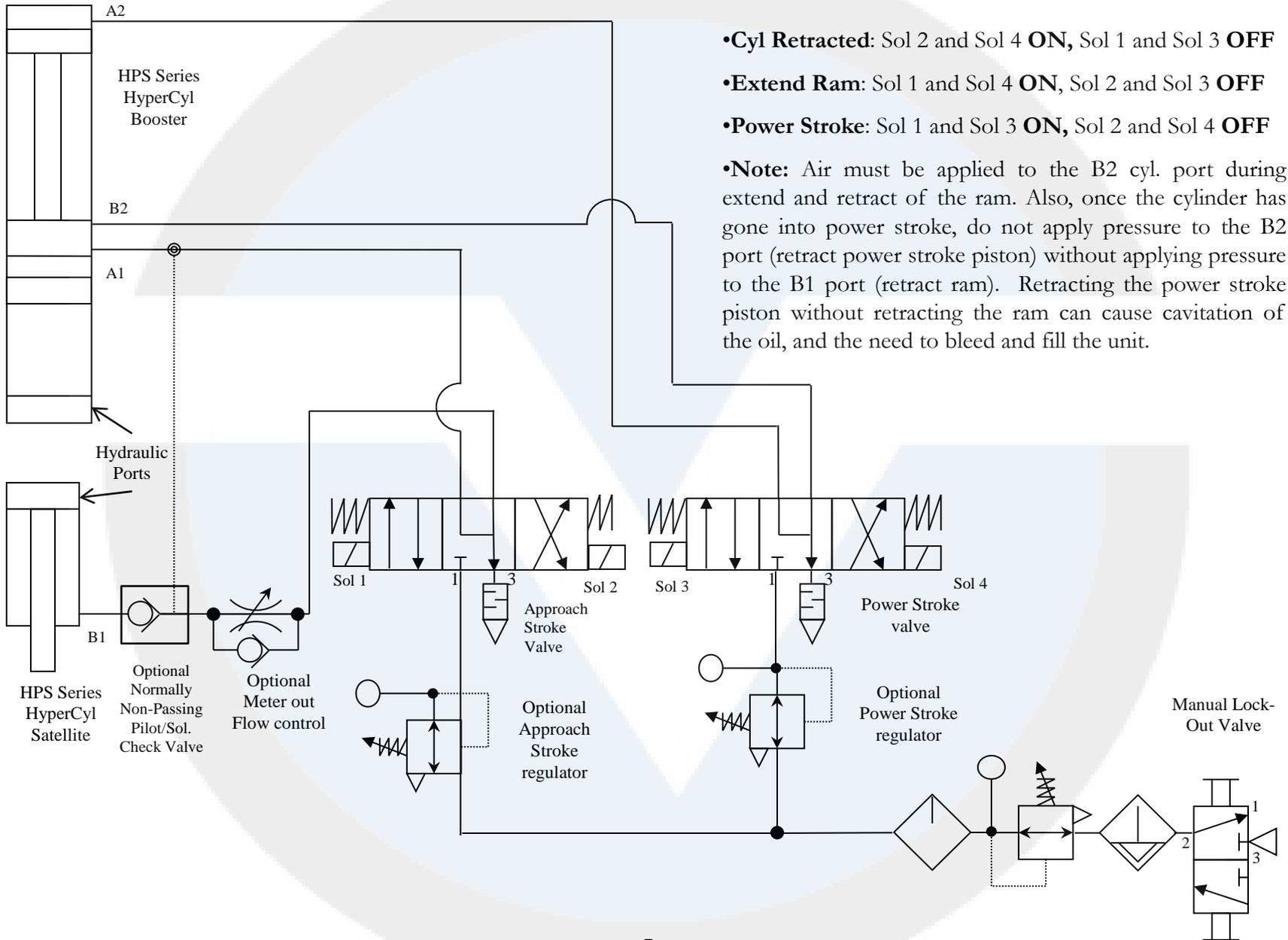
HPS/HPX 2-Position Spring Return PT Schematic



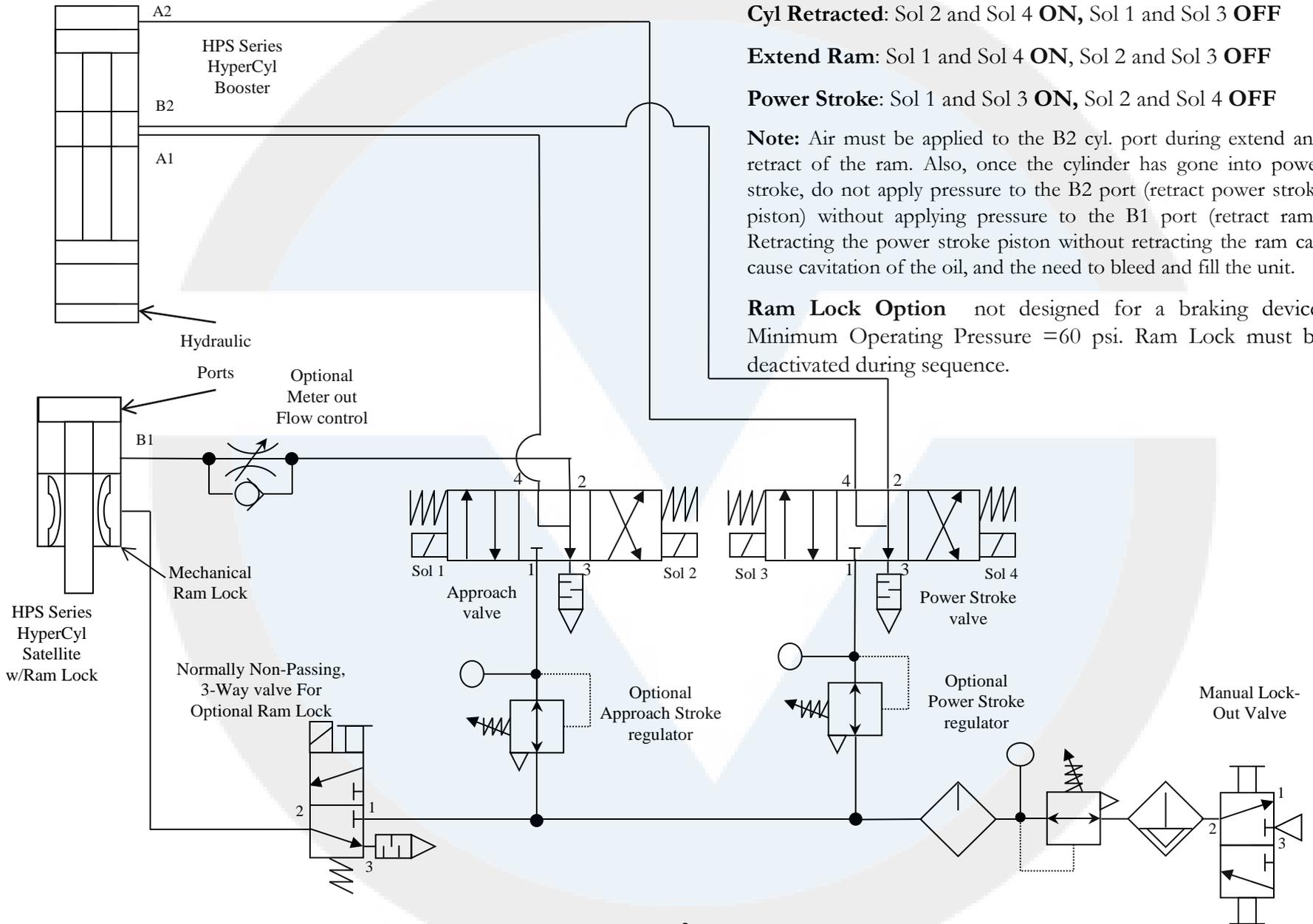
HPS/HPX 2-Position Spring Return 2HNTD with PT Schematic



HPS/HPX 3-Position Open Center Schematic



HPS/HPX 3-Position Open Center with Ram Lock Schematic



Cyl Retracted: Sol 2 and Sol 4 **ON**, Sol 1 and Sol 3 **OFF**

Extend Ram: Sol 1 and Sol 4 **ON**, Sol 2 and Sol 3 **OFF**

Power Stroke: Sol 1 and Sol 3 **ON**, Sol 2 and Sol 4 **OFF**

Note: Air must be applied to the B2 cyl. port during extend and retract of the ram. Also, once the cylinder has gone into power stroke, do not apply pressure to the B2 port (retract power stroke piston) without applying pressure to the B1 port (retract ram). Retracting the power stroke piston without retracting the ram can cause cavitation of the oil, and the need to bleed and fill the unit.

Ram Lock Option not designed for a braking device. Minimum Operating Pressure = 60 psi. Ram Lock must be deactivated during sequence.

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