



HyperCyl[®]

By Aries Engineering Company, Inc.



HPI Series Pneumatic Schematics

Table of Contents

Master Control Sequence.....2

HPI 2 Position Spring Return.....3

HPI 2 Position Spring Return ELT.....4

HPI 2 Position Spring Return PT.....5

HPI 2 Position Spring Return w/ 2HNTD & PT....6

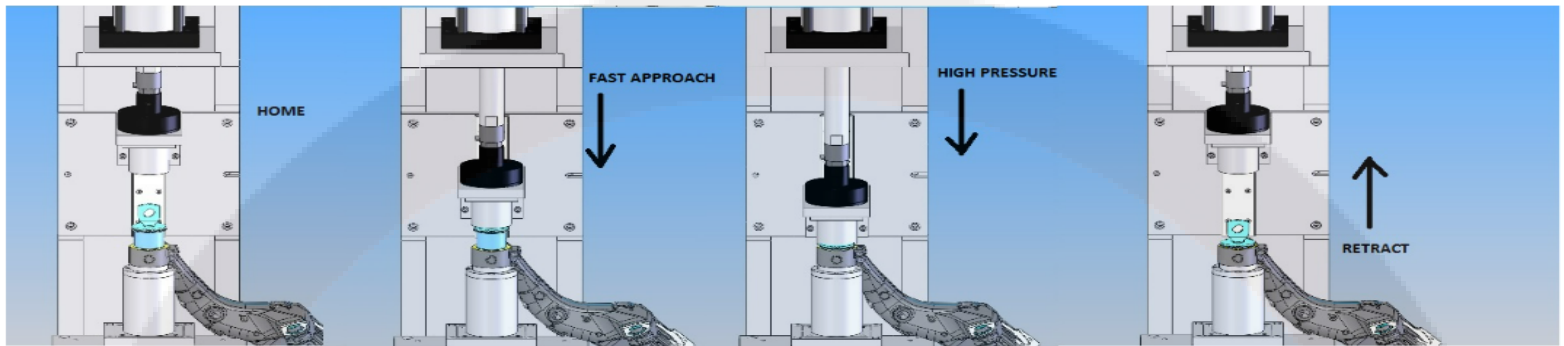
HPI 3 Position Open Center.....7

HPI 3 Position Open Center w/ RL.....8

Contact Information.....9

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:

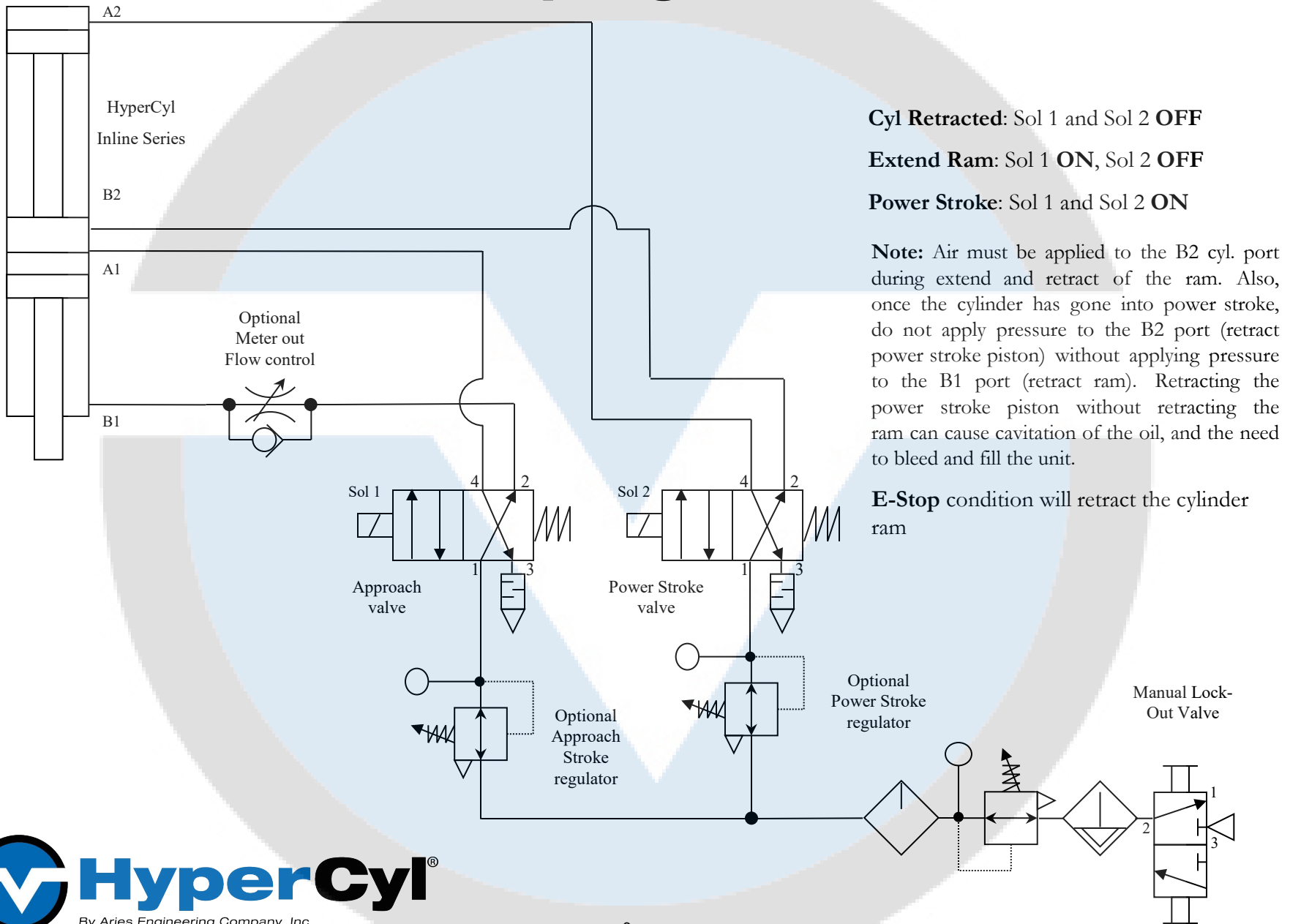
In cycle (steps 2 through 5).

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.

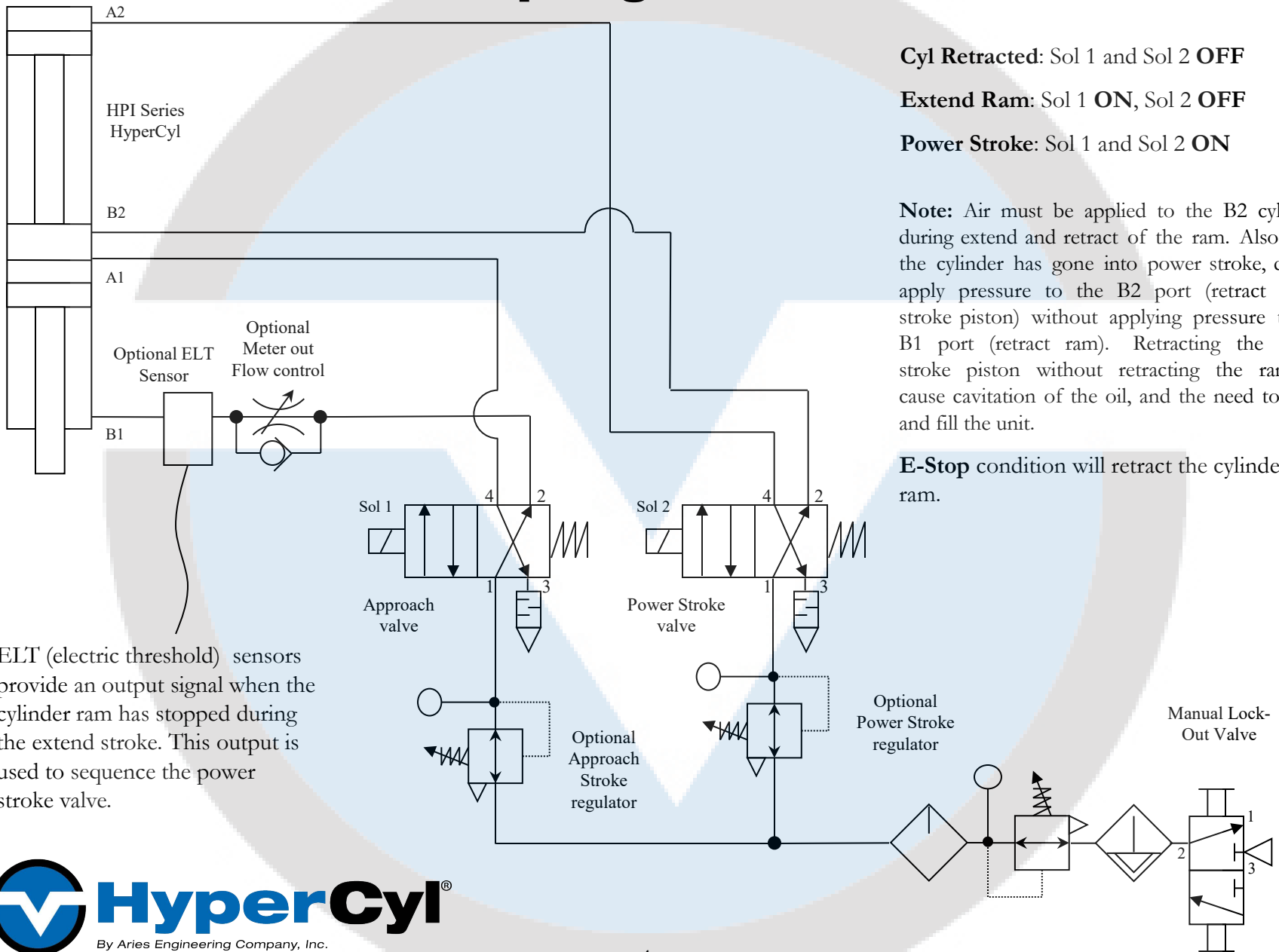
Not in cycle (step 1)

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.

HPI 2-Position Spring Return Schematic



HPI 2-Position Spring Return ELT Schematic



The diagram illustrates the hydraulic circuit for the HyperCyl system. Key components and their functions are as follows:

- HyperCyl Inline Series:** The main hydraulic cylinder assembly with ports A1, A2, and B1.
- Approach valve:** A 3/2-way valve controlled by Solenoid 1 (Sol 1). It directs flow from the main cylinder to the ram cylinder.
- Power Stroke valve:** A 3/2-way valve controlled by Pilot 1. It directs flow from the main cylinder to the ram cylinder during the power stroke.
- PT Sensor:** A pressure transducer located at port B1, providing an output signal for flow control.
- Optional Meter out Flow control:** A flow control valve used to regulate the speed of the ram cylinder's movement.
- Power Stroke regulator:** A pressure regulator set to 30 to 100 psi, used to control the pressure during the power stroke.
- Manual Lock-Out Valve:** A valve used to manually lock the ram cylinder in place.

Operational States:

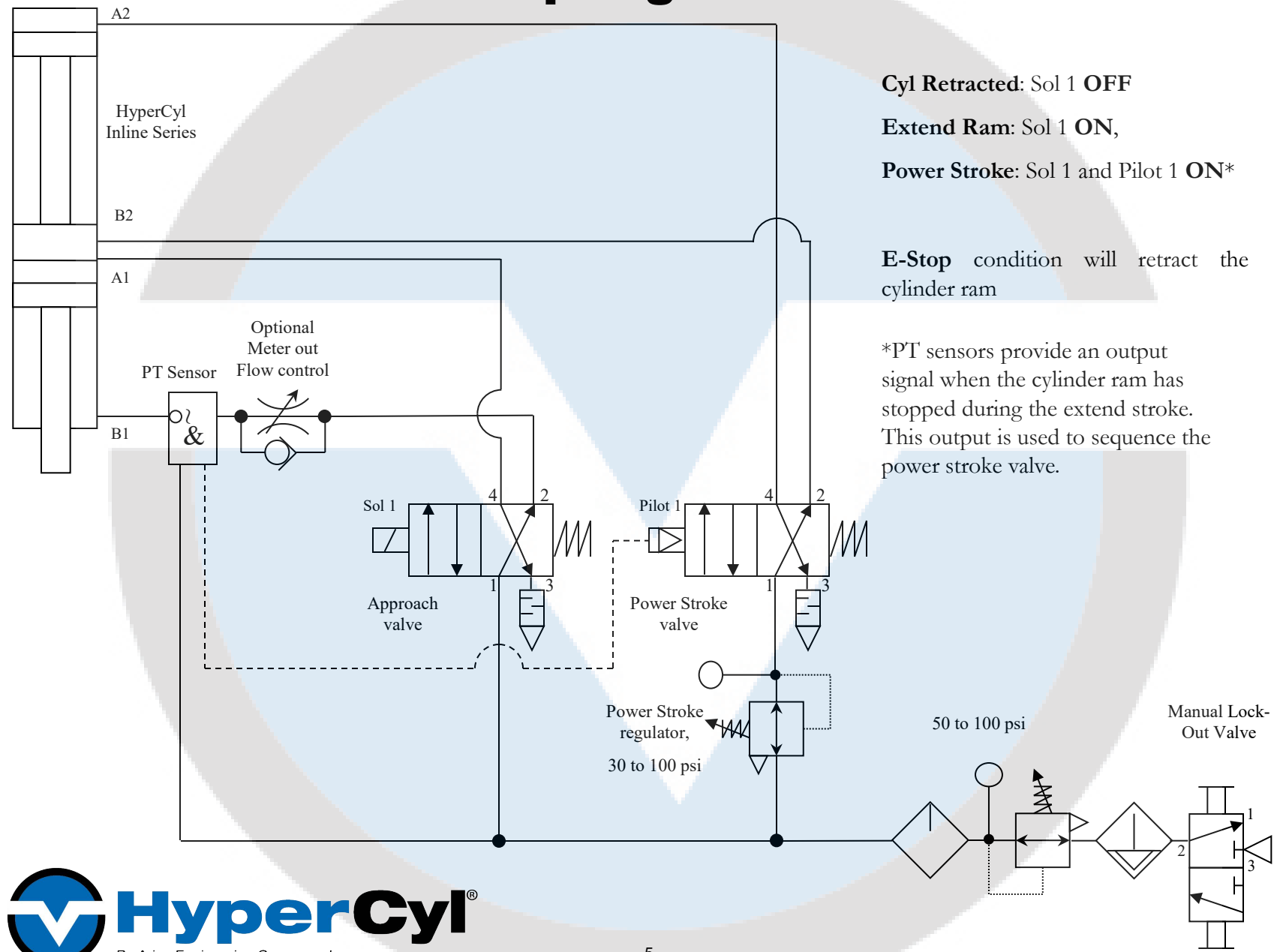
- Cyl Retracted:** Sol 1 OFF
- Extend Ram:** Sol 1 ON,
- Power Stroke:** Sol 1 and Pilot 1 ON*

E-Stop condition: will retract the cylinder ram

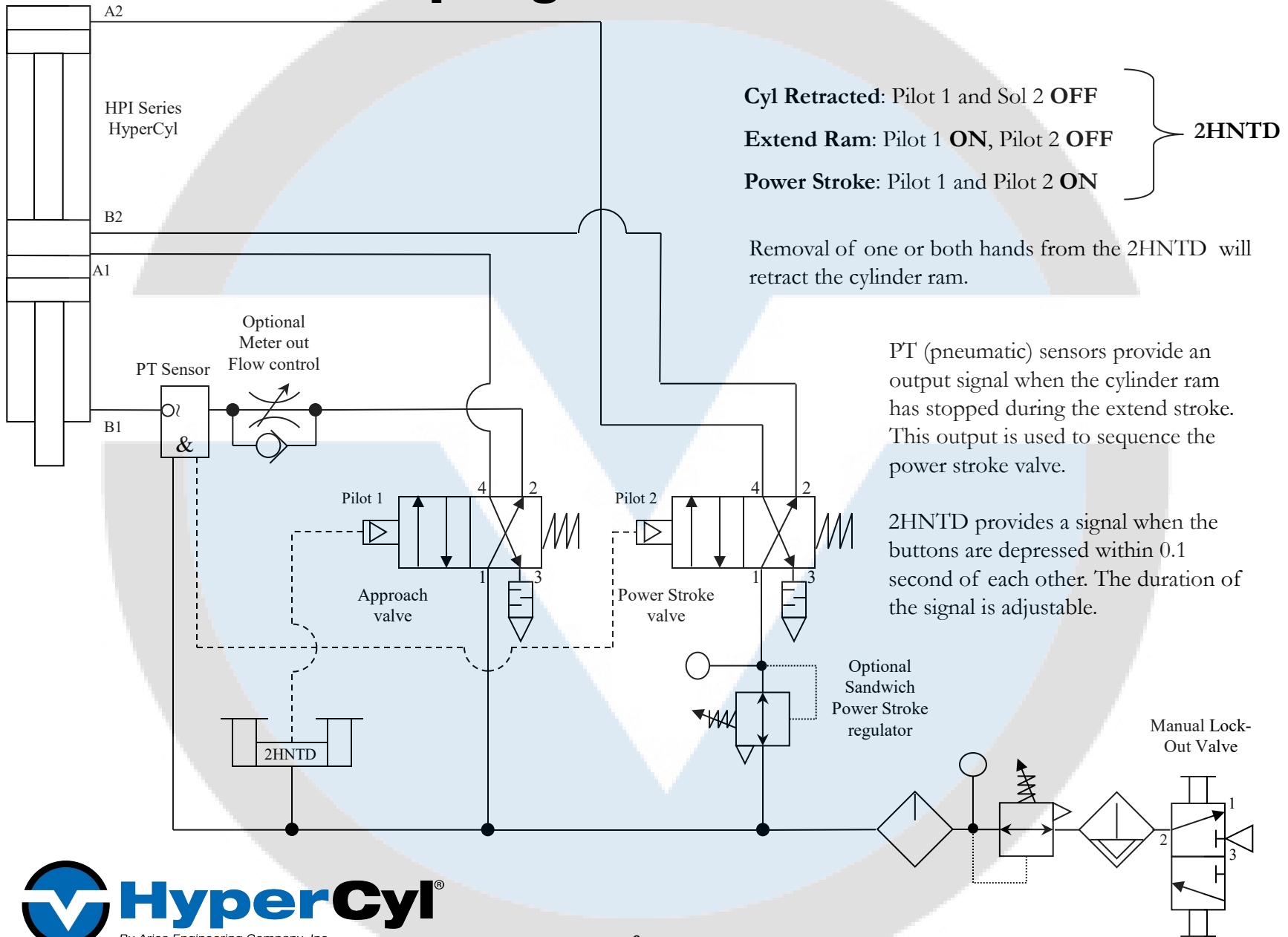
*PT sensors provide an output signal when the cylinder ram has stopped during the extend stroke. This output is used to sequence the power stroke valve.

Power Stroke: Sol 1 and Pilot 1 **ON***

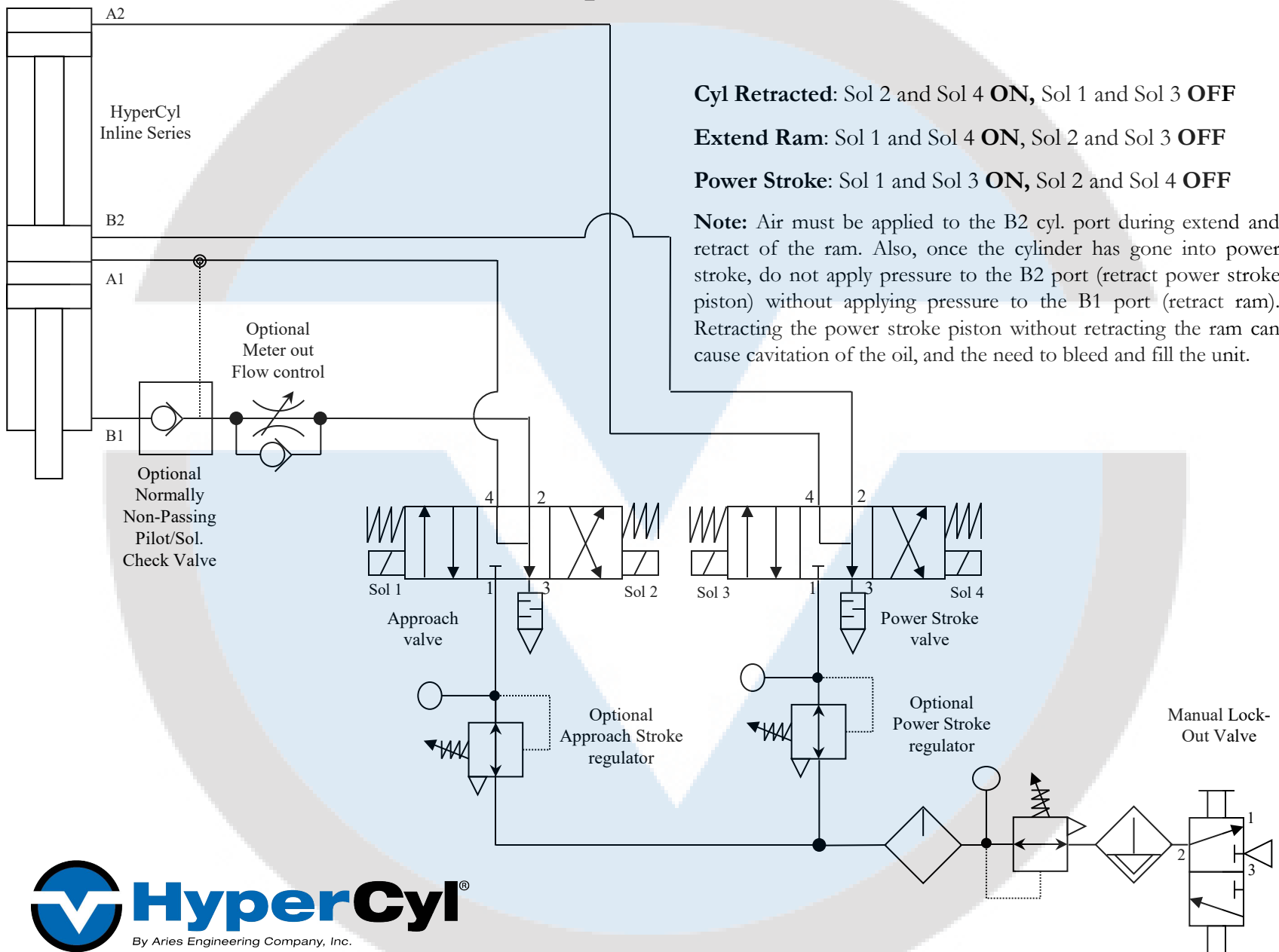
*PT sensors provide an output signal when the cylinder ram has stopped during the extend stroke. This output is used to sequence the power stroke valve.



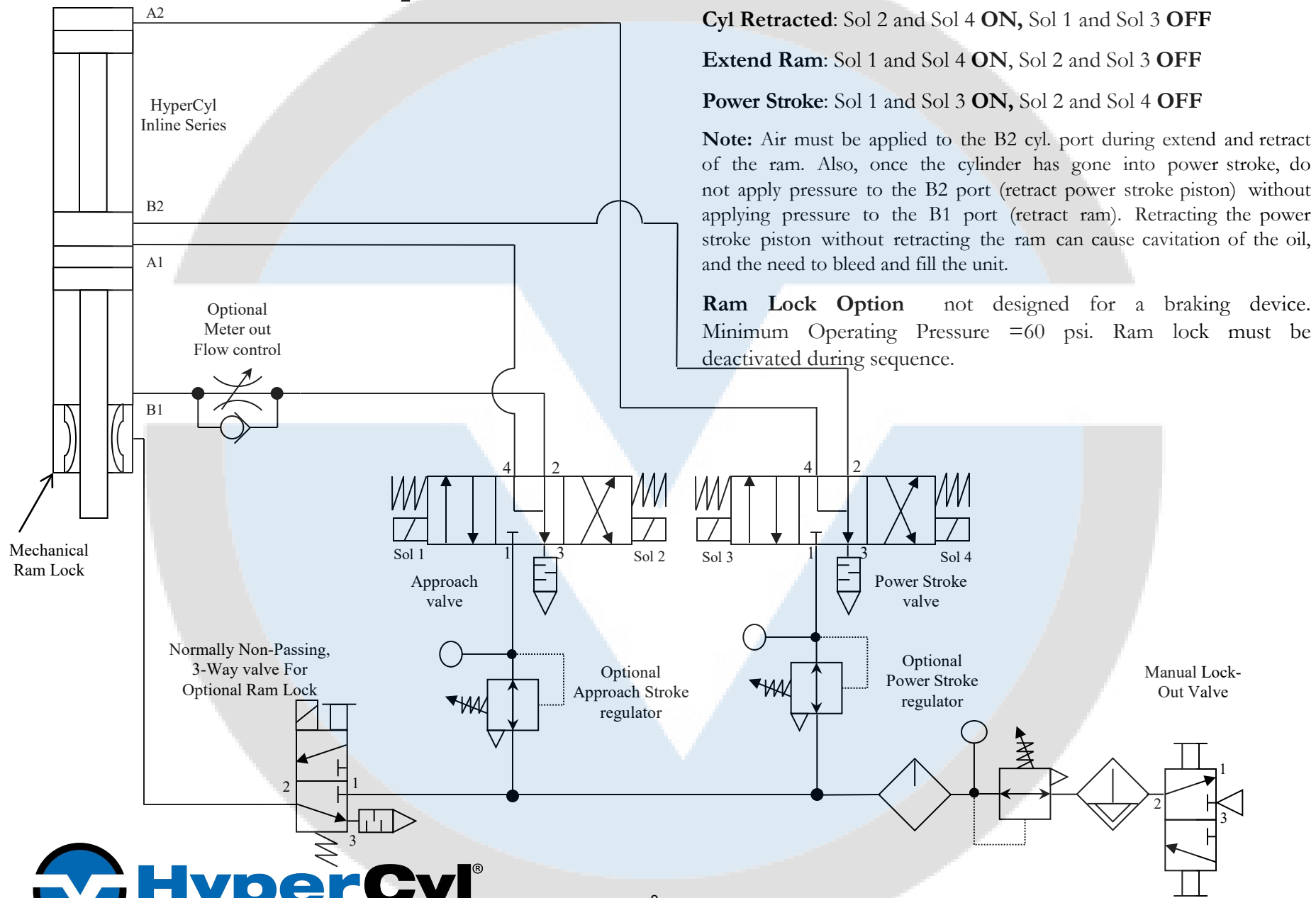
HPI 2-Position Spring Return with 2HNTD and PT



HPI 3-Position Open Center Schematic



HPI 3-Position Open Center with Ram Lock Schematic



HyperCyl®

By Aries Engineering Company, Inc.

Contact Information

**Aries Engineering Co., Inc.
130 Aries Drive
Dundee, MI 48131**

Phone: (734) 529-8855

Fax: (734) 529-8844

E-Mail: service@hypercyl.com

www.HyperCyl.com



HyperCyl®

By Aries Engineering Company, Inc.