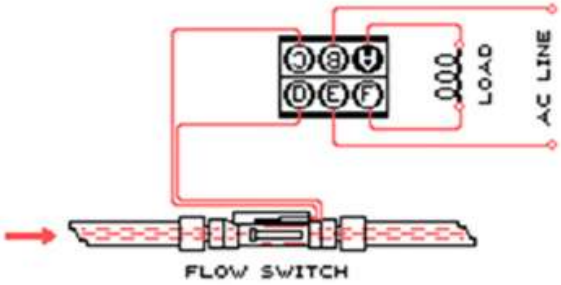
ANGLE OR STRAIGHT BODY?

Aside from the difference in flow path, the **5-20, 21, and 21H flow switches** feature identical internal components. Key factors include **pressure drop, sensitivity, and cleaning ease**, making selection dependent on application needs.

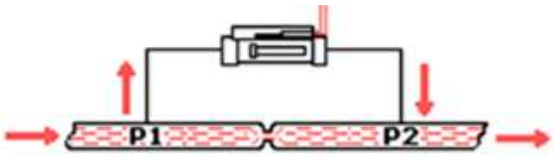
DIRECT FLOW SENSING

Liquids or gases passing through the **flow switch** within its **differential pressure sensitivity and flow rate capacity** trigger detection. **Direct flow sensing** applies when flow rates range between **0.1 to 3 GPM**. The switch is shown connected to a **Button Pack SS Relay** for **higher load capacity**.



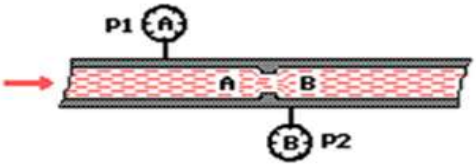
INDIRECT FLOW SENSING

Installing the switch in a **bypass line** enables detection while allowing only a portion of the system's flow to pass through, **broadening application versatility**. Any **flow rate within the unit's pressure range** can be detected **when the required pressure differential is present**.



VENTURI METER SENSING METHOD

The **Venturi meter method** offers a **simple, reliable way** to detect **flow presence or absence** in a pipe. By utilizing **differential velocity-driven suction**, this method measures **flow rate via pressure variations** between two points (A & B). The equation **flow rate = pipe area × velocity** applies.

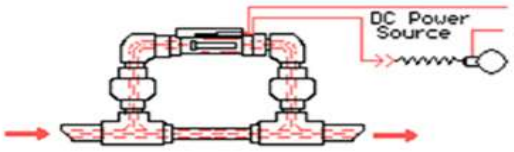


ERECTA SWITCH™

BYPASS FLOW SENSING

The diagram illustrates how a **small percentage** of the system's **flow stream** is redirected through an **unobstructed, close-coupled bypass**. Using a **0.1 GPM set-point switch**, bypass flow as low as **1 pint per minute at 3 ounces of pressure** will **trigger switch actuation**—approximately **1% of a 10 GPM system**.

To introduce fluid into the **bypass**, a **constriction** in the line must create a **differential pressure** sufficient to activate the switch. This constriction can be part of the system's **plumbing, a clogged filter, or a restricted pipe**. Given the **high sensitivity** of our switch, the required constriction is **minimal and localized**, causing **insignificant pressure drop** in the main flow. The **switch is shown connected to a current-limited incandescent bulb**.



The chart demonstrates **expected flow behavior** when sensing **bypass flow in a 1/2" Schedule 40 pipe**. Even a **7% constriction** in the **flow stream** ensures **effective bypass sensing**.

5-21 Set For 0.1 GPM Trip (Water)	Diameter Of Constriction in 1/2" Sch 40 Pipe							
	.187	.250	.312	.375	.437	.500	.562	.602
GPM Pull-in	1.05	1.75	2.55	3.5	4.75	6.0	7.5	—
GPM Drop-out	1.00	1.70	2.5	3.3	4.5	5.75	7.25	—

LOW FLOW TRIM

The **5-20 switch** can be **modified** with a **special trim set** to enhance **small flow detection**. Sold as **5-20-LF**, this **trim upgrade** replaces the standard **clean-out cap and poppet** with an **LF trim (clean-out cap, poppet, and orifice)** for **improved low-flow sensitivity**.

The **performance table** details flow detection with and **without the return spring**. In a **"poppet-up" vertical position**, operating **without the spring** increases **detection sensitivity**, ideal for **pulsating flow applications**.

△P PSI LIQUID	5-20-LF GPM (Water 20°C)							
	.008	.016	.042	.05	.083	.116	.13	.15
Spring	—	—	2.0	3.0	5.0	10	15	20
No Spring	.5	1.0	2.0	3.0	5.0	10	15	20

△P PSI GAS	5-20-LF SCFM (Air 20°C)							
	6	9	12	15	18	21	24	27
Spring	—	—	2.4	3.2	4.5	5.8	7.0	8.6
No Spring	.5	1.0	2.0	3.0	4.0	5.5	6.8	8.6

Outlined PSI is △P at switch actuation threshold.

INDICATOR TRIM

The **5-20 switch** can be **upgraded** with a **visual flow indication feature**, sold as **5-19 Indicator Flow Switch Set**. The upgrade consists of replacing the standard **clean-out cap and poppet** with an **indicator window and flag poppet**, providing **real-time flow visibility**.

ACCESSORY FITTINGS

Fittings **protect the switch body** from **torque stress** applied by **pipe threads** while also **providing thread size adaptability**. For **optimal function**, the **5-21 straight body switch** must include **fittings at the outlet boss**. See **5-XX accessory fittings** for compatibility.

ERECTA SWITCH™