

**Definition:**

Vonberg check valves are designed to allow free flow in one direction, indicated by an arrow on the valve body, and positive shut-off in the opposite direction.

Three distinct body styles are manufactured – in-line, slip-in cartridge, and threaded cartridge. These valves are directly interchangeable with industry common products.

Standard spring crack pressures are 3 – 5 PSI with non-standard crack pressures such as 10, 25, 50, 65, or 100, available for an additional charge. Check valves are manufactured in either a ball or poppet type. In both cases, the seat is metal to metal with no internal packings. All springs are made from stainless steel while balls are chrome plated.

Body sizes range from ¼” through 1 ¼” with any thread option available (NPTF, JIC, SAE, ORS, G). Check valve bodies can be made from aluminum, steel, or brass in 3000 to 5000 PSI pressure ratings. Internal leakage is 5 drops/minute maximum at rated pressure.

In addition to the body styles previously mentioned, three other types of check valves are supplied by Vonberg:

1. **Throttle (orifice) check valve** – allows free flow in the direction of the arrow and restricted flow in the opposite direction. This restricted flow can be controlled by drilling any number of orifice holes.
2. **Plunger check valve** – a two-position normally closed valve. By depressing the plunger, this valve shifts to the open position. Like other valves, this valve can be designed to your customer’s specific application (i.e. – longer plunger, larger ports, or bodies, panel mount or actuator knob).
3. **Pilot to open (PO) check valve** – can be a single or double check in an in-line or aluminum manifold body. These valves allow free flow in the direction of the arrow and prevent return of fluid in the opposite direction until pressure is applied through the pilot line. There are a multitude of product designs available.

**Applications:**

Generally speaking, in-line ball checks are recommended for body sizes of ½” or less with low to medium system flows (under 10 GPM). Poppet in-line checks are used in body sizes above ½” and higher system flow applications (above 10 GPM). Our threaded cartridge checks are only provided in poppet type. The slip-in cartridge valves are available in either a ball or poppet type.

The most common usages of the throttle (orifice) check valves are speed control of hydraulic cylinders and reducing cavitation in motors. Throttle checks are sometimes classified as “the poor man’s flow regulator.” That is, you can control the speed of an actuator but not have the pressure compensated feature that all Vonberg flow regulators possess. Throttle check valves can also be used to apply backpressure in hydraulic circuits.

Pilot check valves will positively lock a cylinder or part of a circuit while a directional control valve is in the neutral position. This permits the holding of heavy loads in any desired position on hydraulic outriggers, boom lifts or bucket cylinders. Many industrial specifications require that these valves be mounted on any load holding or stabilizing cylinders to prevent the load from moving or falling in the event of a hydraulic line failure. (Vonberg velocity fuses can also be used).

Plunger check valves can be used in a wide variety of Industrial and Mobile applications. Most often this valve is used in a low flow position of a circuit and would provide a pressure signal in the actuated (plunger retracted) position or close the circuit in the neutral (plunger extended) position. Example applications include closing the circuit to a joystick control should an operator leave his seat and opening a circuit to manually override an overload condition in a crane application.

Vonberg check valves are used in numerous hydraulic circuits whether it is industrial or mobile. Our expanded product line, offers customers a wide variety of valves to meet any application.

**Sales Features:**

1. Broadest range of thread options in the industry (NPTF, SAE, JIC, ORS, or G).
2. Large component inventory for short product lead times.
3. Competitively priced, high quality products.
4. Flexible manufacturing plant that can produce special products to meet customer demands.
5. Low pressure drop over the full product range.

**Typical Markets:**

1. Hydraulic power units (in-line style)
2. Hydraulic lifts including platform, aerial basket and table (lift and outrigger cylinders, cartridge or in-line)
3. Mobile hydraulic cylinder manufacturers (cartridge)
4. As mentioned earlier, check valves can be used in all industrial or mobile application including: construction equipment, medical, robotic, chemical, instrumentation, mining, railroad, maintenance, fire apparatus and refuse.

**Notes:**

- Acronym Listing
  - GPM – gallons per minute
  - PSI – pounds per square inch
  - NPTF – Dryseal American Standard Taper Pipe Thread, per SAE J476a.
  - SAE – Straight Thread O-ring Boss connection, per SAE J1926.
  - JIC – Joint Industry Council, 37° Flared Hydraulic Tube Connection, per SAE J514.
  - ORS – O-Ring Face Seal connection, per SAE J1453.
  - G – Termed “G” threads, per ISO 228, formerly BSPP (British Standard Pipe Parallel) connection.