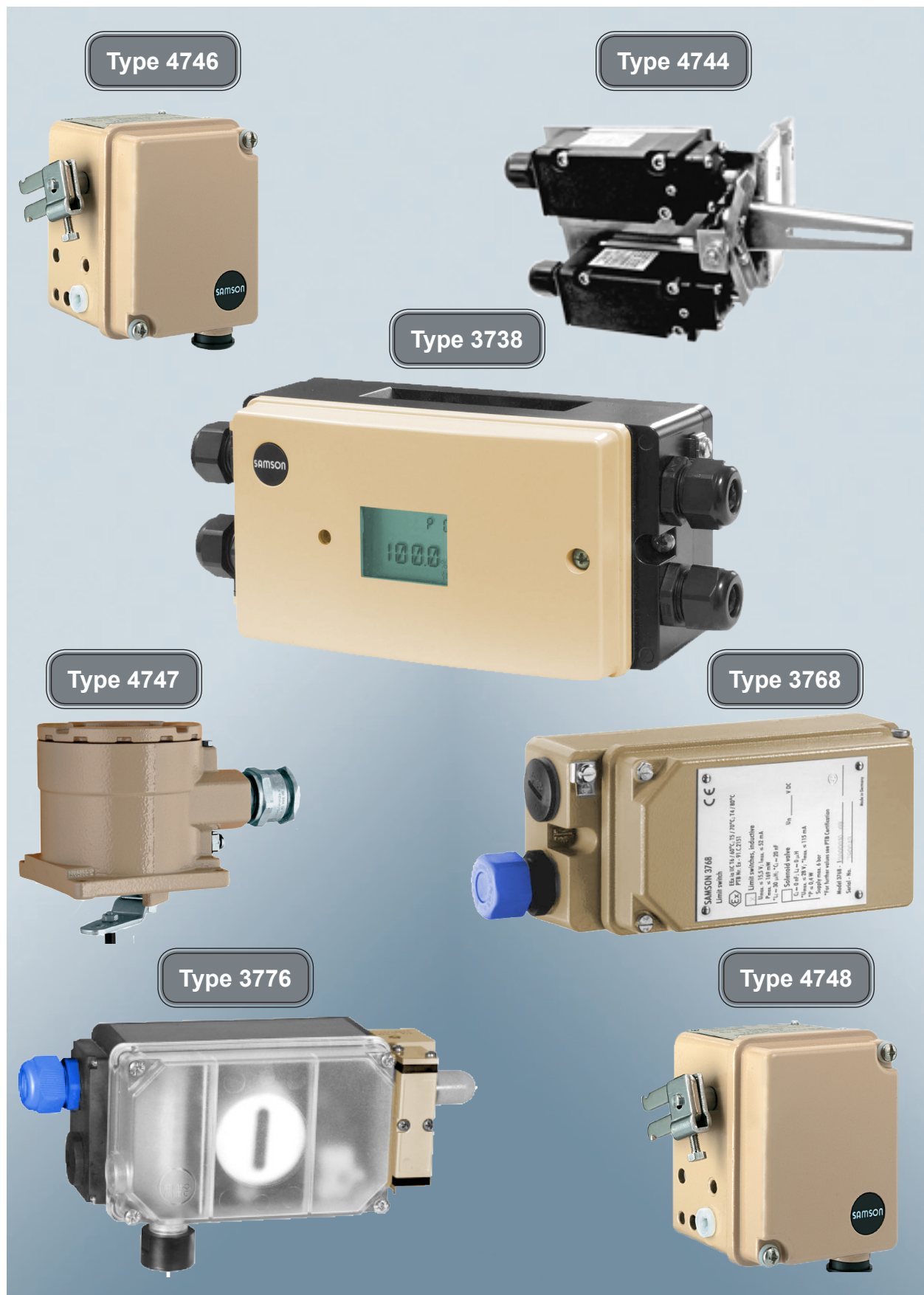


10.5 Limit switches and position transmitters



Actuators and accessories make up 20 % of the total investment in process control systems, thus playing an important role in instrumentation.

Due to the increasing degree of plant automation, not only the number of throttling valves sold is growing. The number of automated on/off control valves constantly increases as well.

In modern plants, half of the control valves are used as throttling valves and the other half as on/off valves. The exact shares may vary depending on the plant type and are determined by the process conditions. When taking a closer look at the share of on/off valves, it becomes obvious that approx. 5 % to 10 % of these valves are used in safety-instrumented systems (SIS), which means that they shut down the plant in case of fault.

The adoption of IEC 61508 and IEC 61511 stirred up a worldwide discussion about plant safety, which led to valve manufacturers having to furnish certificates that prove the execution of the instrumentation and components used.

Frequently, Ball valves (up to DN 100) and Butterfly valves are used for on/off service. The actuators are usually single-acting or double-acting piston actuators or diaphragm actuators.

According to a study conducted by the CHEMIE TECHNIK (CT) magazine, the market share of the typical on/off valves (Butterfly/Ball valves) in terms of value amounts to 9 % and is thus nearly as high as the share of Control valves (10 %).

As a result, on/off valves constitute a considerable market potential.

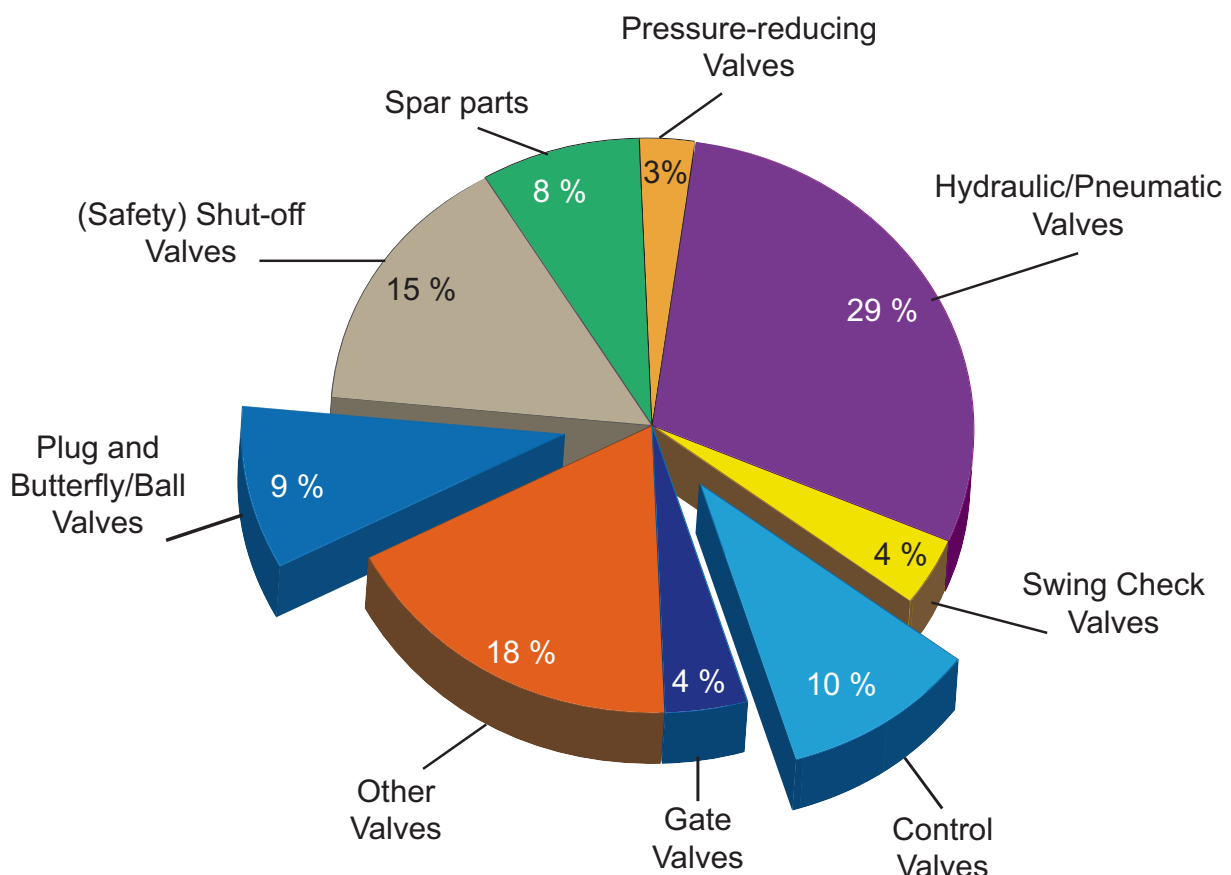


Figure 10.5.-1: Source: CT market analysis, in CHEMIE TECHNIK, Edition 31, Issue 11

Final control elements often work under adverse operating conditions and are rarely freely accessible. For this reason it is important for the personnel in the control room to know which position the valve occupies at any point in time. This need is usually resolved by the use of stroke transmitters and/or limit switches which are connected to the valve actuator and which provide corresponding analog or digital signals to the control room (Figure 10.5.2.-1). Fundamentally we can distinguish between two different methods which are briefly explained below. (See also Table 10.5.4.-1)

