CAMERON
A Schlumberger Company

Valve Solutions for Pipelines

Any pipeline. Any product. Anywhere.

- Transmission
- Pump stations
- Compressor stations
- Emergency shutdown
- Pigging

Any pipeline.
Any product. Anywhere.

As the OEM of the broadest portfolio of pipeline valves, Cameron provides complete solutions tailored to customer needs, considering product, environment, region, and budget concerns.

Our skilled service team and international distributor network safely support optimal transmission operations with quick access to service technicians, replacement valves, and spare parts.

In addition, we simplify procurement and warranty processes by offering complementary actuators, gears, and valve accessories, increasing uptime and productivity.

Transmission

With nearly 2 million miles (3.25 million kilometers) of pipelines in the world, safety and integrity are key to keeping people and the environment safe, while making pipeline operations as efficient as possible. Potential environmental exposure, injury to personnel, pipeline downtime, and costly infrastructure repairs all can result from valve failure.

We offer a wide variety of valves that can be used in pipeline applications, including ball valves, gate valves, butterfly valves, and check valves. Valves built for gas or crude oil pipelines are designed and tested in accordance with stringent international auditing agency guidelines, including American Petroleum Institute (API) and International Organization for Standardization (ISO) standards.

There are a multitude of valves available, so choosing the right valve for the right application is a crucial element in achieving a safe and efficient pipeline operation. Additionally, once a valve is installed, it must be maintained and serviced to reduce downtime. Every decision, from valve type to advanced testing and certification requirements, can impact performance. If a valve is not accurately matched for the process environment, productivity will suffer and safety will be threatened.

In critical isolation applications, our specialized, engineered valves help ensure that leakage does not occur. In liquid service near waterways or municipalities, where exposure to the environment could endanger a large population of people, the tight mechanical wedging action of our gate valves has been field-proven to provide a bubble-tight seal[†].

The WKM* Saf-T-Seal* through-conduit, double block-and-bleed slab gate valves have a simple one-piece design that makes them resistant to dirty service, helping to ensure that the valves do not become damaged and will continue to seal tightly. The valve's single-piece cast-body center provides the necessary strength to resist pipeline bending moments, and its smooth shape reduces stress concentration.

In addition, our WKM 370D6 trunnion-mounted ball valve incorporates pressure-actuated seats with locked-in, non-metallic face seals and special wave springs. At low working pressures (below 80 psi), this wave spring forces the seat against the ball, helping to ensure a positive seal. In higher working pressures, the seat is forced against the ball by the pressure working across the differential area between the seat insert and the seat O-ring. This means that as the pressure increases, the valve seals tighten, making it more difficult for product or pressure to escape the line.

Another feature crucial to pipeline integrity is double block-and-bleed sealing. The design of our T31* fully welded ball valve incorporates a seat ring that forces pressure on each side of the ball, blocking off the body cavity in both the fully open and fully closed positions. The body cavity then can be bled down or drained through the body port. When the valve body is vented, the integrity of the seat seal can be verified, which helps to validate that the valve still is performing without leaking.

Cameron also offers actuators and valve accessories for pipeline operations. Our LEDEEN* quarter-turn gas-over-oil actuators are used for on/off control of any natural gas transmission ball or plug valve. Additionally, the LEDEEN quarter-turn pneumatic actuator can be used for on/off or modulating control of any ball, plug, or butterfly valve. Both utilize natural gas or nitrogen actuator supply, and the pneumatic actuator also uses compressed air.

[†] Bubble-tight per API 6D standards.

WKM Pow-R-Seal

The WKM Pow-R-Seal* expanding gate valve is ideal for critical isolation applications because of its through-conduit parallel expanding segment design, allowing the valve to double seal and be in-line replaceable.

T31

The T31 fully welded ball valve, with its exclusive rotating seat, is ideal for buried applications. As the seat rotates, it will prevent any buildup while removing existing buildup.

GROVE G4N

The GROVE* G4N through-conduit, double block-and-bleed slab gate valve has fully protected seat faces for long-lasting, drop-tight shutoff ideal for liquid pipelines.

GROVE ball valves

GROVE ball valves are manufactured in a wide range of diameters and pressure classes. The valve is designed for various applications, including transmission pipelines, compressor stations, and pig traps.

WKM Saf-T-Seal

The through-conduit, double block-and-bleed design of the WKM Saf-T-Seal slab gate valve helps ensure reliable and reduced maintenance performance in liquid pipeline applications.

Pump Stations

Product enters a pipeline with great velocity, but loses this momentum over time and distance, preventing the fluid from efficiently getting from one transfer point to another. To keep this fluid moving through the pipeline and to its final destination, pump stations are positioned along liquid pipelines to adjust the pressure and pump the product along the line. Pump stations are critical to increasing the throughput of a liquid pipeline.

A check valve usually is required in pump stations to prevent backflow when the pump is shut off. Check valves are designed to allow the product to move in one direction and prevent it from flowing in the reverse direction. Without the right kind of check valve, the turbulence from the pump can cause the valve disc to flutter, which can wear the internal components of the valve.

The TOM WHEATLEY* swing check valve prevents this backflow in a fraction of a second. The full-bore design ensures a low pressure drop and less turbulence than reduced-bore valves or alternative swing check valve designs.

Pump stations require isolation valves, which can be gate, ball, plug, and/or butterfly valves. These valves are utilized in pump stations for various situations. For example, an isolation valve could be placed on either side of the pump station, allowing for servicing of the pump station or following a check valve, in case valve components or the valve itself need to be replaced. They must provide zero leakage because, when closed, the valve isolates pressure from the pump station, allowing for service or repair. Valve failure can cause a process shutdown and could lead to destruction of the infrastructure, enviromental damages, or unsafe conditions.

The WKM triple offset butterfly valve is designed to be ideal for pump station isolation as well as throttling applications because of its true triple offset geometry, which creates a bi-direction bubble-tight sealing.

TOM WHEATLEY

The TOM WHEATLEY swing check valve has a removable top cover where the internal components can be replaced when maintenance is required. This allows a damaged valve to be restored to as-new condition, reducing the time spent on repair and downtime.

WKM TOV

The WKM TOV triple offset butterfly valve meets the demanding requirements for bi-directional shutoff, delivery, and quality.

WKM Saf-T-Seal

The WKM Saf-T-Seal slab gate valve is utilized in pump stations due to its smooth continuous bore that is designed to reduce turbulence.

Compressor Stations

Along a natural gas pipeline, you will find compressor stations that are used to compress the gas to a specified pressure, allowing it to continue to travel along the pipeline.

The gas enters the compressor station with low pressure and velocity through an inlet valve, which can be a trunnion mounted ball valve like our T31 fully welded ball valve. Once past the inlet valve, the gas is compressed through the compressor allowing the fluid media to travel down the pipeline at higher flow rates.

Because the gas is compressed to a higher pressure level, a considerable amount of vibration can occur. This vibration has to be mitigated to protect the station and reduce valve wear. The valves in compressor stations also must be reliable and able to withstand these vibrations. In addition, they also must be quick-turn and have a bubble-tight seal.

Due to their unique non-slam design, the TOM WHEATLEY piston check valve is ideal in pulsating applications typically caused by reciprocating compressors due to its design to safely prevent backflow and avoid damage to compressors. The orifice and ball check design of the valve controls the close speed, dampening piston movement, and eliminates slamming or chattering in the event of sudden pressure surges or erratic flow conditions. The piston check valve top-entry design allows for easy access and replacement of all valve internal parts with reduced downtime.

When smaller, quick turn check valves are needed, the WHEATLEY* series 500 fire-tested check valves are ideal for compressor stations. The valve's full-open, through-conduit design allows for low pressure drop and minimal turbulence.

ENTECH

ENTECH* nozzle check valves have a non-slam design to prevent reverse flow, and their short stroke length reduces closing time and eliminates water hammer, thus avoiding damage to the compressor.

TOM WHEATLEY

TOM WHEATLEY piston check valves have provided years of uninterrupted service in compressor stations, where conventional check valve designs would experience wear.

NEWCO

Cameron quick-turn, stocked NEWCO* gate, globe, and check valves are utilized regularly in compressor stations around the world.

Emergency Shutdown Valves

An emergency shutdown valve (also referred to as shutdown valve, SDV, ESV, ESD, or ESDV) stops the flow of hazardous fluid or external gases in potentially dangerous, emergency situations.

Emergency shutdown valves help ensure pipeline safety and provide protection against harm to the environment, equipment, or people. The valves in this application must seal bubble-tight and have zero leakage.

Cameron valves have been delivering long-lasting, safe, and in-line repairable critical isolation/emergency shutdown solutions since the T31 ball valve went to market in the 1960s.

Our valves, like the GROVE ball valves and WKM Saf-T-Seal gate valves, often are installed at specific shutdown points throughout the pipeline. These valves help ensure that in the case of scheduled maintenance or an emergency situation, the pipeline can be securely isolated.

Cameron also offers actuator solutions for emergency shutdown situations, and can provide remote control in environments where manual operation can be difficult or dangerous. Actuators have the advantage of operating a valve quickly when responding to an electric signal sent from a remote location, or automatically when detecting an abnormal pipeline condition. Our LEDEEN line of pneumatic, hydraulic, direct gas, gas-over-oil, and electric actuators are field-proven to be reliable, safe methods for valve operations for all oil and gas applications.

WKM Saf-T-Seal

The WKM Saf-T-Seal slab gate valves often are used in emergency shutdown (ESD) situations because of the lubricated seats that promote long life, reduce operating toque, and maintain effective sealing in an emergency situation.

GROVE ball valves

The stem of Cameron GROVE B4 valves has an anti-blowout design and incorporates a double-barrier system, making it ideal for emergency shutdown applications.

LEDEEN direct gas actuator

LEDEEN quarter-turn direct gas actuators are used for on/off control of any natural gas transmission ball or plug valve utilizing a high-pressure natural gas or nitrogen actuator supply.

Pigging

A pipeline inspection gauge, commonly referred to as a pig, is used to clear the pipeline of debris to keep the product running smoothly through the line. This also helps ensure that the product contamination does not occur. In addition, there are major safety advantages to clearing a line, as built up debris can degrade the integrity of the pipe wall over time.

Running a pig through a pipeline without through-conduit valves potentially can cause damage to the valve, pipeline, and pig, which would result in costly repairs and lost profit due to downtime.

Pigging a pipeline starts with a pig trap – a funnel-shaped Y-section in the pipeline that includes a launcher and a receiver. The launcher inserts the pig into the pipeline, where it is either pushed along by line pressure or pulled through the pipe by a cable. The receiver acts as a point to remove the pig from the line, as well as any debris the pig has knocked loose.

Certain valves, like Cameron WKM Pow-R-Seal gate valves, T31 fully welded ball valves, or TOM WHEATLEY swing check valves, are ideal for these pig traps because of their smooth, through-conduit design that does not obstruct the line bore. The WKM Pow-R-Seal gate valve's full bore makes it possible to run pigs, scrapers, or hot tap cutters through the valves without damaging the valve, lodging the scraper, or jamming it with metal cuttings.

WKM Pow-R-Seal

The WKM Pow-R-Seal expanding gate valve's full-bore design reduces pressure drop and allows passage of all types of scrapers (pigs).

TOM WHEATLEY

TOM WHEATLEY swing check valves have a full-bore, through-conduit design, and will allow the passage of various pipeline inspection gauges and spheres.

Pipeline Services

As the largest global service network for valves operating in the oil and gas industry, the Cameron service network is there, whenever and wherever you need it.

For pipeline, compressor station, and pump station operators, our service team is ready to meet routine, emergency, or preventative maintenance challenges.

- Field services and repair
- 24/7, 365 days/year support
- Preventative maintenance programs
- Pipeline integrity programs
- Pre-commissioning process analysis
- Flange management
- Onsite bolting services
- Embedded programs with engineering and/or technical support
- Extensive trusted network of service partners

CASE STUDY T31 ball valve repair

The customer challenge

A T31 fully welded ball valve in buried service had been damaged during commissioning from improper cleaning from a third-party service company and needed to be replaced. Cameron was called in to ensure all measures were taken to ensure safety before the valve was replaced, since the nearest valves in either direction of the pipeline were approximately 12 miles (20 km) away.

The Cameron solution

To avoid excessive blow-off gas, two plug valves were placed close to the ball valves, followed by two isolation valves. In order to achieve full isolation, hot tapping of the pipeline was required.

Once all safety measures and support features were in place, the process of removing the damaged ball valve could proceed. The valve was lifted with the crane, the actuator removed, and special portable rotating cutting equipment was used to cut the pipeline on either side of the valve. Once the pipeline was cut, the valve was lifted out of the line and a new T31 fully welded ball valve, which previously had been delivered by the Cameron team due to our rapid response capability, was installed. Radiographic examination of the welds between the new valve and the pipeline showed that the process had been carried out successfully by our installation team.

The result

In all, the entire process stopped gas supply for only four days; significantly less than it would have taken if the valve had been a split-body design in buried service. The overview and supervision by a Cameron service engineer for commissioning and start-up would have helped avoid this problem during initial installation, but the Cameron services team still was able to help the customer get their line up and running with creative problem solving and valve expertise.

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