CAMTECH MANUFACTURING FZCO

Through Conduit Gate Valve

Empowering Global Flow Control

CAMTECH

CAMTECH MANUFACTURING FZCO is the first and only API accredited valve manufacturing company among UAE, Middle East and GCC, engaged in this business since 1999 for manufacturing mainly Ball Valves, Gate, Globe, Check valves, Butterfly valves, Plug valves, Pig valves & Choke valves in metallurgy such as carbon steel, Stainless steel, Duplex and Super duplex steel, for size range from ½" to 56" and class rating from 150 to 2500.

Our state of the art manufacturing facility based in Jebel Ali Free Zone (UAE) is spread over an area of 10,000 sq.mtr with plant annual capacity of over 40000 components, is fully equipped with modern six axis flexible machining center supported by standalone CNC and associated sub-systems fully equipped to manufacture and supply complete range of valves for Pipelines, Oil and Gas sector, Petrochemical, Refineries, Pharmaceutical, Power, Construction, Water Industries and other process industries.

Camtech Manufacturing FZCO is API (6D, 6A, 600 and Q1) accredited and an ISO 9001, ISO 14001, ISO 45001 certified company with CE marking and ATEX certification for all products. All our valves are designed, engineered and manufactured in strict conformance to API, ASME, ASTM, ANSI, BS, DIN and other recognized international standards where ever applicable. Our continuous and stringent quality consistency is achieved through rigorous quality control processes and latest testing equipment for Fugitive Emission test, Fire safe test, Positive Material Identification, Cryogenic test, Hydro test, Pneumatic test, High pressure gas test.

Over the recent years there is a dramatic increase in facilities handling H2S bearing hydrocarbons. Hence parameters like Hydrogen sulfide concentration, Total system pressure, application temperature, existence of elemental sulfur and chloride content have a bearing on appropriate material selection in this severe environment. Hence all CAMTECH valves are manufactured in strict compliance with NACE MR0175/ISO 15156 to meet customer requirement.

Our central geographical location along with the long term association with major forge masters and foundries locally as well as overseas and with qualified and experienced staff we are proud to say that our commitment are always achieved on time and every time.

Camtech Through Conduit Gate valves offer increased value by incorporating advanced design features. These valves are designs and manufactured with a full bore port, rising stem, OS & Y type with floating seats. These valves are robust in construction and easy In-Line maintainability.

The full port bi-directional flow capability minimizes pressure drop and turbulence. The valve seat faces are outside the flow stream and therefore the seats are protected from the erosive action of the fluid flow. These valves are piggable valves and Pigs and scrapers can be run through the valve without causing damage to the valve and seats.

Through Conduit valves are primarily used in chemical, petrochemical and oil & gas transmission pipelines, onshore terminals, offshore platforms, Suitable for all types of fluids (including abrasive fluids)

Basic Design Standards

Pressure Temperature Rating	:	ASME B16.34
Design Standard	:	API 6D
Testing Standard	:	API 6D / ISO 5208
Fire Testing	:	API 6FA
Flange Details (up to 24")	:	ASME B16.5
Flange Details (26" & above)	:	ASME B16.47
Visual Inspection	:	MSS SP – 55
Face to face	:	API 6D / ASME B16.10

Sizes Range

- 2" - 56" Class 150
- 2" - 56" Class 300
- 2" - 48" Class 600
- 2" - 48" Class 900
- 2" - 36" Class 1500
- 2" - 24" Class 2500

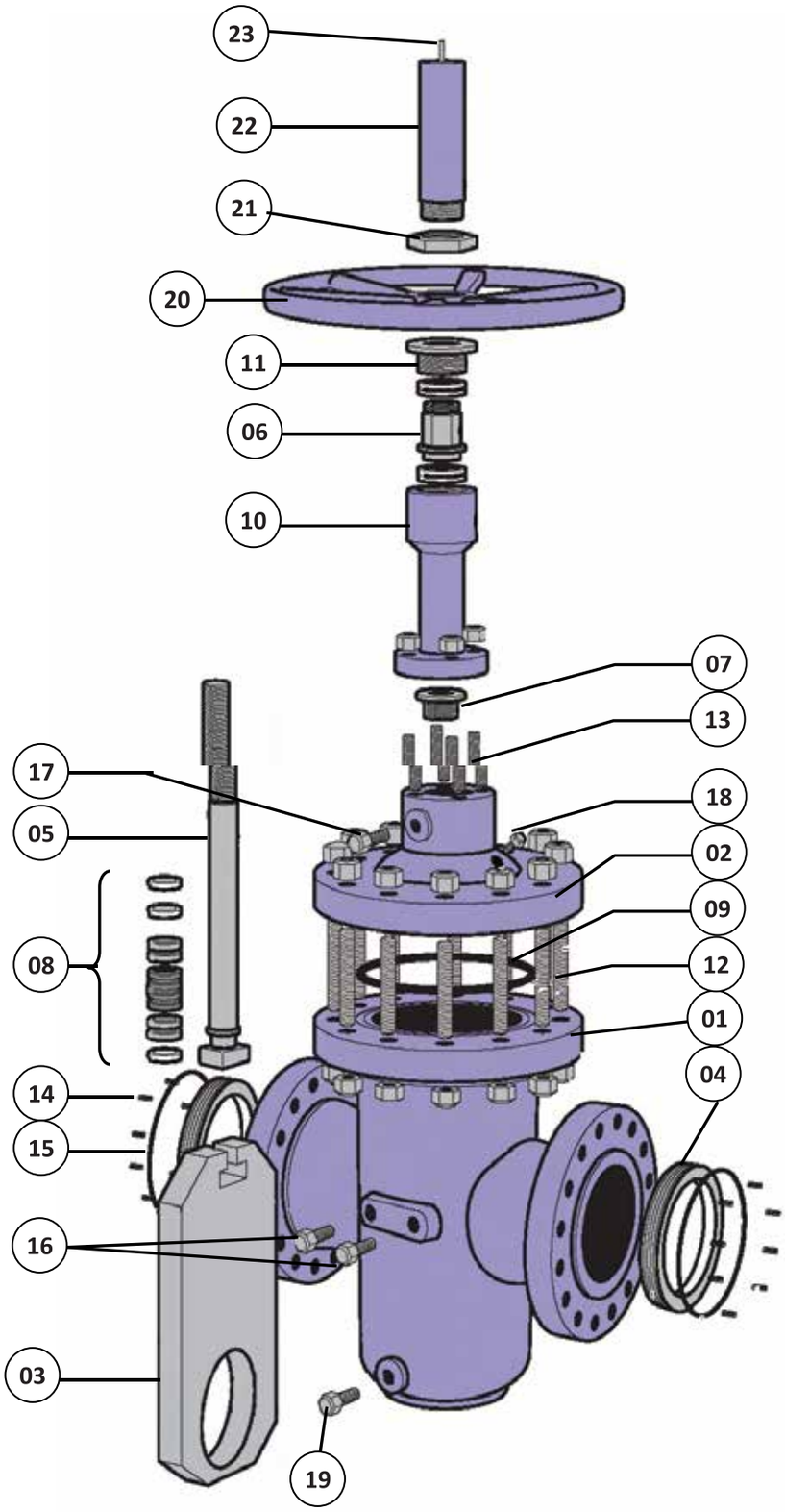
Valve Materials

Through Conduit Gate valves are manufactured using a wide range of materials, from carbon steel to alloys steels. A typical material selection is as follows:

Body / Bonnet / Yoke	:	ASTM A216 WCB / WCC, A217 WC6 / WC9 / C5, A352 LCB / LCC ASTM A351 CF3 / CF3M / CF8 / CF8M, Duplex & Super Duplex steel, Inconel.
Slab / Gate / Seat Ring	:	A105 / LF2 / F6a / F304 / F316 / F304L / F316L / F51 / F55 / Inconel
Seats	:	RPTFE / DEVLON / PEEK / METAL – TCC or Stellite coated.
Stem / Gland	:	F6a / F304 / F316 / F304L / F316L / F51 / F55 / Inconel
O-Ring	:	Viton – B / Viton AED
Stud Bolts / Cap Screws	:	ASTM A193 B7, B7M / A320 L7, L7M / A193 B8, B8M
Hex Nut	:	ASTM A194 2H / 2HM / 7M / 8 / 8M
Seat Spring / Antistatic Spring	:	Inconel X750 / 718
Injector Fittings / NRV / Drain plug / Vent Plug	:	SS 316

Notes : ■ Hot Dip Galvanizing and PTFE coated fasteners can also be provided on request. ■ End connection of Flanged End Raised Face is Standard. Ring Joint, Butt-weld end can also be provided on request. ■ Materials not mentioned above can also be provided, please consult factory for details.

THROUGH CONDUIT GATE VALVE - SLAB TYPE – FEATURES



01. Body : Body is cast with integral flanges. Full Bore shall be as per API 6D machined permits unobstructed flow, erosion and minimized pressure drop.
02. Bonnet : Bonnets are as cast. Machined with exacting dimensions and tolerance for proper alignment of the body, stem and the slab.
03. Slab : One piece slab is machined, ground and lapped for perfect match to the seat surface for smooth operation and longer life.
04. Seat Ring : Floating seats are machined to precise dimensions and house the seat insert which can be soft seat or metal seat.
05. Stem : Non rotating and rising stem with precision machined threads. Stem is burnished finish to 0.8 microns for low torque. Tee head connection with the slab to prevent lateral strain.
06. Stem nut : Precision machined stem nut engage the stem for accurate control on slab position.
07. Gland : Machined to proper tolerance to exert even pressure on the packing without binding to the stem.
08. Packing : Die molded graphite ring with top and bottom braided ring provide ultimate sealing for wide range of service. Assures long packing life and avoid pitting on stem surface. PTFE V-rings are also provided if required.
09. Gasket
10. Yoke
11. Retainer
12. Body Stud & Nut
13. Yoke Stud & Nut
14. Springs
15. O-ring seal
16. Seat sealant injector fittings.
17. Stem Sealant injection fittings.
18. Vent plug
19. Drain Plug
20. Hand wheel
21. Hand wheel nut
22. Stem Cover
23. Position indicator

THROUGH CONDUIT GATE VALVE - SLAB TYPE – FEATURES

Seat rings / sealing principles

The seat rings are spring loaded with double O-ring design for better performance in both low and high pressure. Seat rings are supplied with thermoplastic seat insert for soft seated valves. Double face seal effect is also achieved due to metallic contact also between the seat ring and the slab. Thus increasing the reliability of the valve performance.
Spring for "B" acting on the seat ring gives reliable sealing at low pressure. At high pressure the combined effect of spring force and force "A" resulting due to pressure acting on upstream side creates better sealing at high pressure.
Metal seats are also provided with HVOF Tungsten Carbide coating seat or stellite coating. **(Figure 1)**

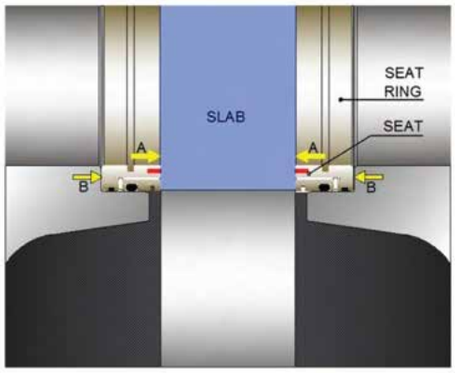


Figure 1

Double Block & Bleed

When the valve is at closed position, and with equal or no pressure, both spring loaded seats can shut off the line pressure independently from both upstream and downstream sides. Thus blocking both sides and the body cavity can be bleed out by opening the drain plug. This creates a Double Block & Bleed scenario. **(Figure 1)**

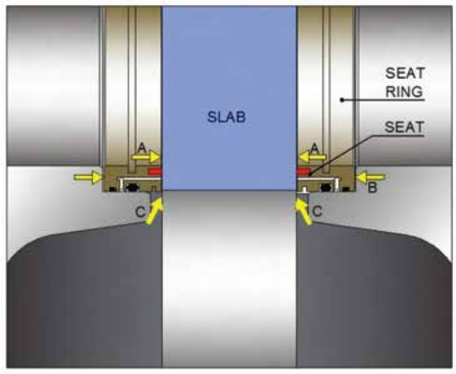


Figure 2

Self Cavity - Relieving Seats

When the valve is at closed position and due to the change in service condition, the fluid in the body cavity may expand and thus increasing the cavity pressure. When cavity pressure "C" is more than the line pressure "A", the seats are pushed away from the slab and allowing the excess pressure to be vented to the line. This allows pressure balance between the body cavity and the line. **(Figure 2)**

Secondary Sealant Injection System

Valves 6" and larger will have secondary sealant injection fittings for the stem and seats. If the seat inserts or stem O-rings are damaged, leakage from the seat and stem can be prevented by injecting emergency sealant into the fittings. This seals off the joints and arrest the leakage.
Figure 3 shows the seat sealant injection system
Figure 4 shows the stem sealant injection system.

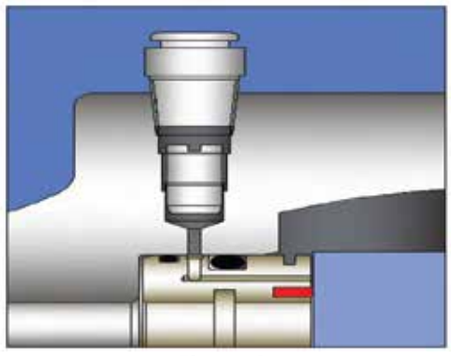


Figure 3

Fire-safe design

Camtech Through Conduit Gate valve is available in the API 6FA fire-tested design. Fire-tests have been witnessed and certified by independent authorities. Fire-tests certification is available and can be provided upon request.

Fully piggable

Camtech Through Conduit Gate Valves are designed to be Fully Piggable. Pigs and other scrapers can be run through the valve without causing any damage to the internal structure of the valve.

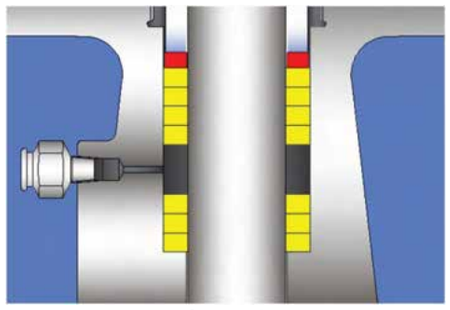
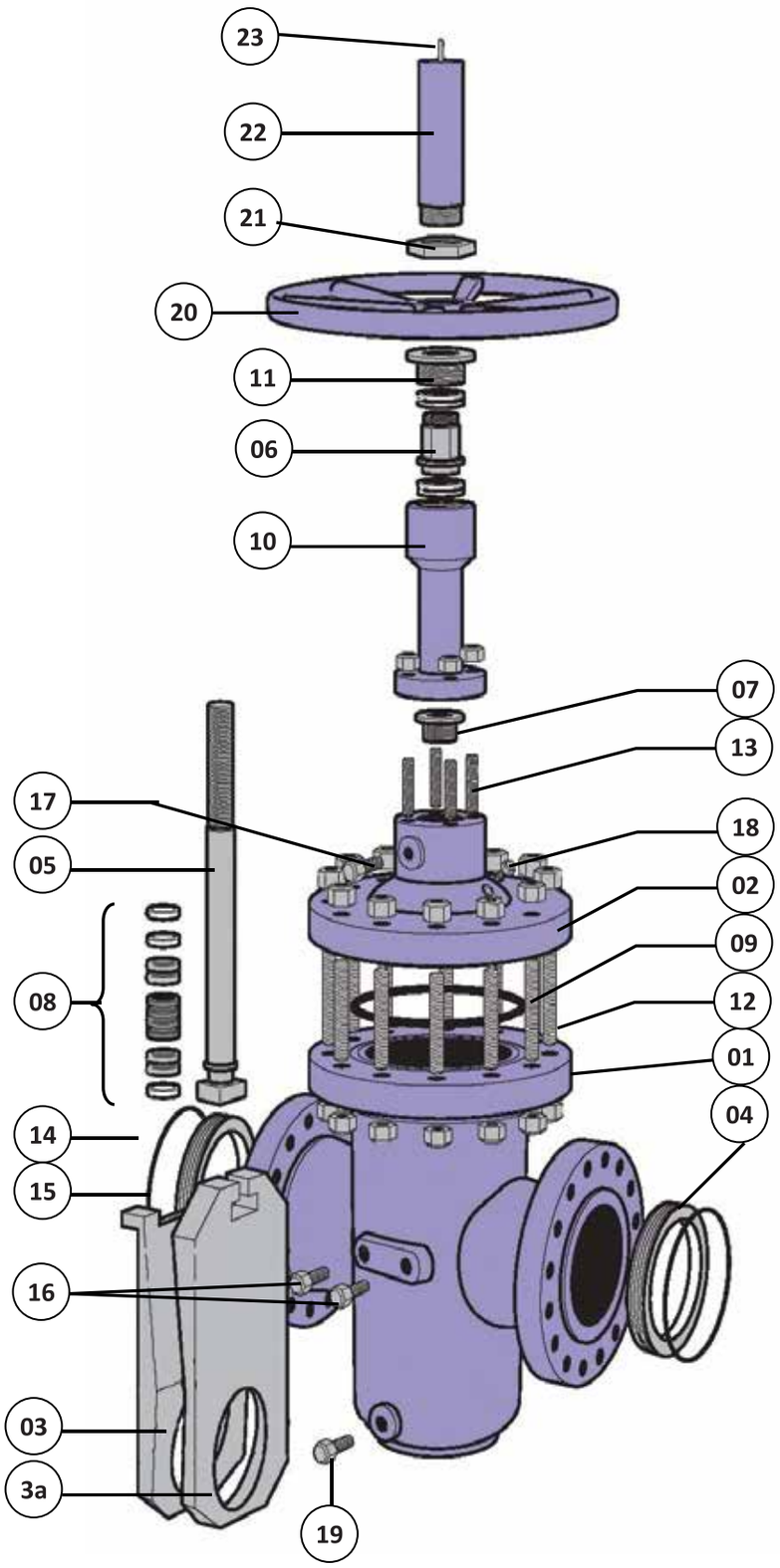


Figure 4

THROUGH CONDUIT GATE VALVE – EXPANDING GATE TYPE – FEATURES



01. Body: Body is cast with integral flanges. Full Bore shall be as per API 6D machined permits unobstructed flow, erosion and minimized pressure drop.

02. Bonnet: Bonnets are as cast. Machined with exacting dimensions and tolerance for proper alignment of the body, stem and the gate.

03. Gate: Gate is machined, ground and lapped for perfect match to the seat surface for smooth operation and longer life.

03 a . Segment : Ground and lapped finish for better sealing.

04. Seat Ring: Floating seats are machined to precise dimensions and house the seat insert which can be soft seat or metal seat.

05. Stem: Non rotating and rising stem with precision machined threads. Stem is burnished finish to 0.8 microns for low torque. Tee head connection with the gate to prevent lateral strain.

06. Stem nut: Precision machined stem nut engage the stem for accurate control on gate position.

07. Gland: Machined to proper tolerance to exert even pressure on the packing without binding to the stem.

08. Packing : Die molded graphite ring with top and bottom braided ring provide ultimate sealing for wide range of service. Assures long packing life and avoid pitting on stem surface. PTFE V-rings are also provided if required.

09. Gasket

10. Yoke

11. Retainer

12. Body Stud & Nut

13. Yoke Stud & Nut

14. Springs

15. O-ring seal

16. Seat sealant injector fittings.

17. Stem Sealant injection fittings.

18. Vent plug

19. Drain Plug

20. Hand wheel

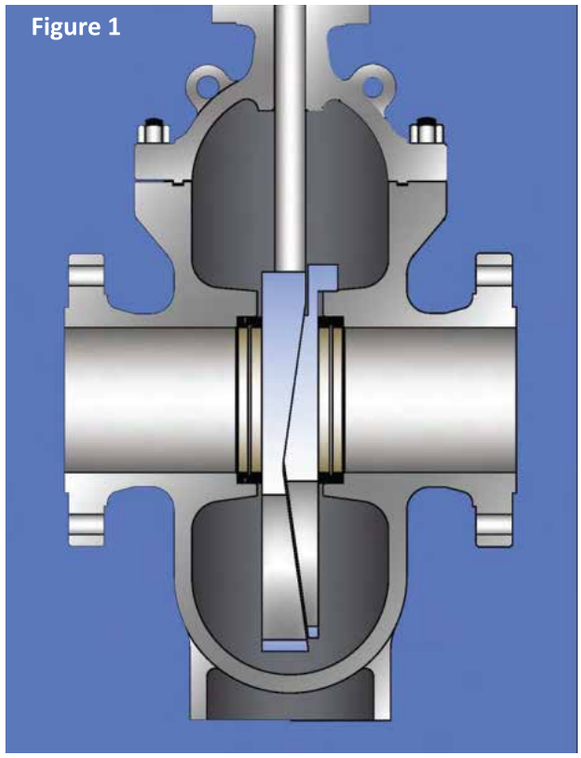
21. Hand wheel nut

22. Stem Cover

THROUGH CONDUIT GATE VALVE – EXPANDING GATE TYPE – FEATURES

Principle of operation

The expanding gate valve does not require line pressure to seal and is recommended when a tight mechanical seal is required. The design provides a mechanical seal between the seats and the gate in both high and low pressure applications.



There are two piece wedged shape assembly consisting of a Gate and a Segment. The Gate is attached and driven by the stem. Positive sealing is achieved in both high and low pressure conditions by expanding the Gate and the Segment out towards the seats while in a closed position.

Fully Closed Position

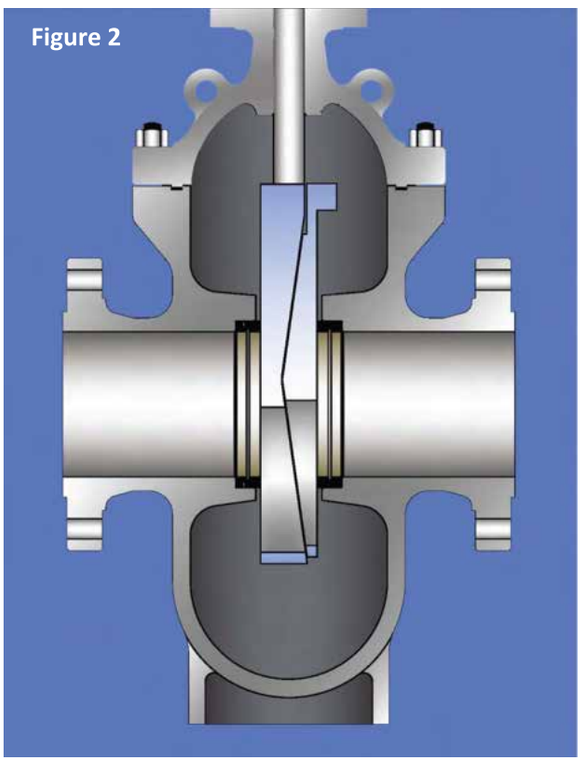
In the full closed position, the segment stop has engaged with the lower body stop and the gate is wedged downward, expanding the gate and segment to form a tight seal against the upstream and downstream seats. (Figure 1)

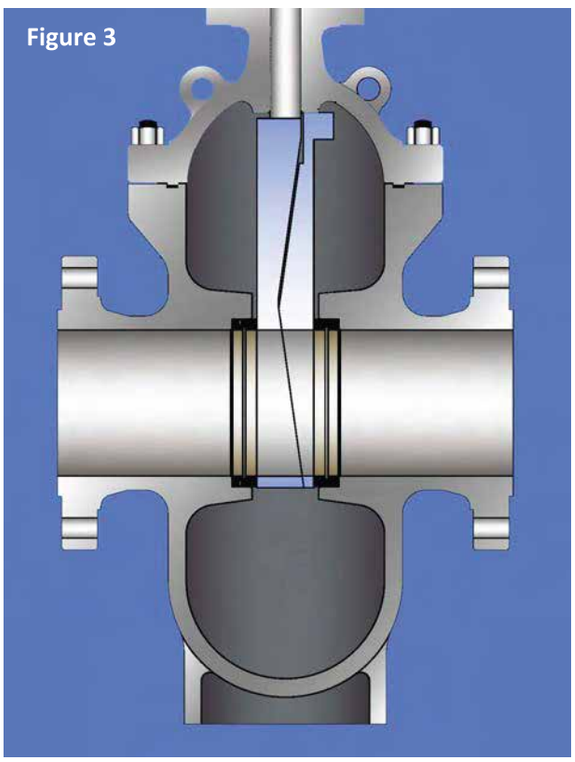
Mid Position

When operating towards the open position, the gate travels across the wedge angle of the segment. This retracts the assembly so that is will slide freely between the seat faces.
(Figure 2)

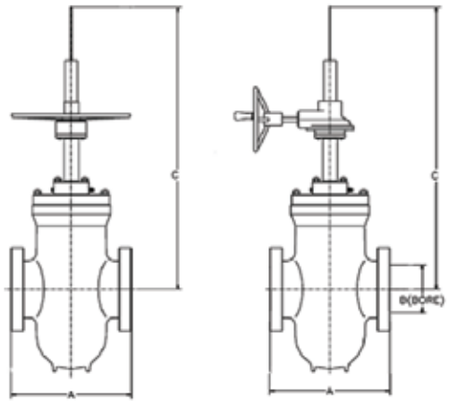
Fully Open Position

In the full open position, the segment stop has engaged the bonnet stop and the gate is wedged upward. This expands the segment and the gate into the seats, isolating the flow from the cavity. (Figure 3)





THROUGH CONDUIT GATE VALVE – DIMENSIONS



Notes

- All dimensions are in mm. and sizes are in NPS.
- Weights are relevant to flanged end valves.
- Dimension C & weights are subject to change without notice.
- For dimensions and weights for other sizes, consult factory.
- Dimension A mentioned is for flanged end valves only.
- Dimension C mentioned is for valve closed position.
- Some dimensions standard do not exist, these dimensions are manufacturer standard.

CLASS 150

SIZE	2	3	4	6	8	10	12	14	16	18	20	24	28	30	32	36
A	178	203	229	267	292	330	356	381	406	432	457	508	610	610	711	711
B (BORE)	49	74	100	150	201	252	303	334	385	436	487	589	684	735	779	874
C	450	610	700	895	1130	1290	1480	1660	1850	2080	2300	2680	3085	3490	3690	3895
WEIGHT(Kg)	35	60	85	145	230	350	450	600	730	890	1120	2010	2465	2920	4145	5370

CLASS 300

SIZE	2	3	4	6	8	10	12	14	16	18	20	24	28	30	32	36
A	216	283	305	403	419	457	502	762	838	914	991	1143	1346	1397	1524	1727
B (BORE)	49	74	100	150	201	252	303	334	385	436	487	589	684	735	779	874
C	450	615	710	900	1135	1400	1580	1740	1930	2160	2420	2800	3220	3640	3845	4050
WEIGHT(Kg)	55	85	115	240	365	500	755	1050	1480	2040	2650	4260	5280	6300	7600	8900

CLASS 600

SIZE	2	3	4	6	8	10	12	14	16	18	20	24	28	30	32	36
A	292	356	432	559	660	787	838	889	991	1092	1194	1397	1549	1651	1778	2083
B (BORE)	49	74	100	150	201	252	303	334	385	436	487	589	684	735	779	874
C	470	625	720	910	1145	1410	1590	1740	1970	2260	2420	2590	3200	3820	4110	4400
WEIGHT(Kg)	65	110	160	290	640	900	1135	1700	2360	2780	4210	6010	6960	7910	11500	14200

CLASS 900

SIZE	2	3	4	6	8	10	12	14	16	18	20	24
A	368	381	457	610	737	838	965	1029	1130	1219	1321	1549
B (BORE)	49	74	100	150	201	252	303	322	373	423	471	570
C	470	630	725	915	1150	1415	1595	1800	2010	2270	2540	2650
WEIGHT(Kg)	105	165	285	530	970	1310	2010	2600	3210	4050	5110	9200

CLASS 1500

SIZE	2	3	4	6	8	10	12
A	368	470	546	705	832	991	1130
B (BORE)	49	74	100	144	192	239	287
C	480	650	740	980	1350	1480	1680
WEIGHT(Kg)	120	260	380	910	1530	2290	3300

CLASS 2500

SIZE	2	3	4	6	8	10	12
A	451	578	673	914	1022	1270	1422
B (BORE)	42	62	87	131	179	223	265
C	485	665	750	985	1365	1495	1700
WEIGHT(Kg)	145	295	405	975	1605	2365	3435

Note: Additional Sizes are according to manufacturer's standard . Please consult factory for dimensional details of valves.

TECHNICAL DATA

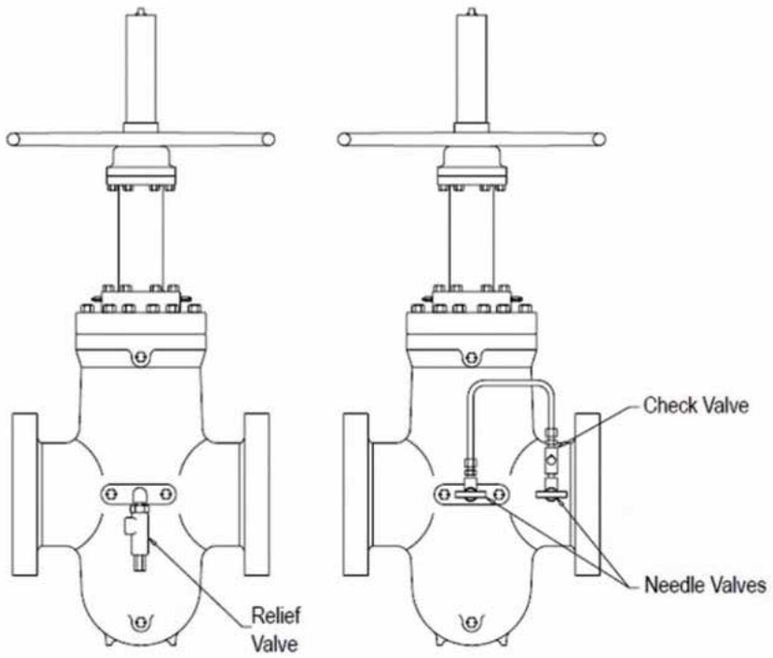
Cv VALUE

SIZE	Cv VALUES AT DIFFERENT PRESSURE CLASS				
	CL 150	CL 300	CL 600	CL 900	CL 1500
2”	425	425	380	330	310
3”	1320	1300	1150	1080	980
4”	2180	2050	1960	1890	1750
6”	5560	5300	4600	4300	3600
8”	11200	11050	8860	8410	6890
10”	18900	18100	14530	14080	11200
12”	29100	28900	22730	21025	16800
14”	31850	30800	28800	23850	/
16”	42900	42200	39145	33580	/
18”	55890	53200	51360	45000	/
20”	71350	70380	64550	56810	/
24”	108820	98260	93565	84835	/
28”	114355	109500	98850	/	/
30”	165800	151350	135620	/	/
32”	205580	192275	161460	/	/
36”	245360	233200	187300	/	/

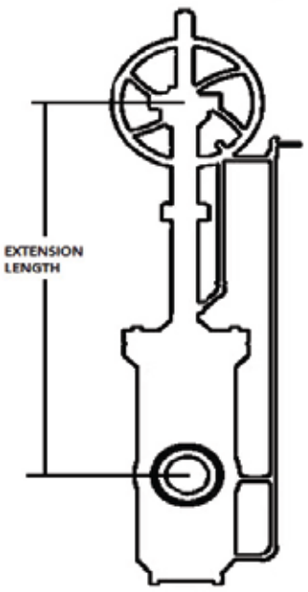
The flow co-efficient ‘Cv’ of a valve is flow rate of cold water in gallons per minute at 60^{0}F with a pressure drop of 1 psig across the valve.

PRESSURE / THERMAL RELIEF PROVISION FOR EXPANDING GATE VALVE

The expanding gate valve design is enforced bi-directional sealing valve; the pressure will be trapped in the body cavity when the valve is in fully open or closed position. The high cavity pressure can be result of thermal expansion of the fluid trapped in the body cavity. This pressure buildup is relieved to the upstream side of the valve or directly to the atmosphere. The below sketch shows the thermal relief provided.



THROUGH CONDUIT GATE VALVE – ADDITONAL FEATURES



STEM EXTENSION

Gate Valves can be provided with optional stem extensions to permit buried or underground installations in remote or inaccessible areas.

The stem extension is also provided with the extension of the body fittings such as vent, drain and sealant injection fittings extended to any desired length.

When these valves are intended to use in buried application, these valves are made "water tight" and all piping well supported.

While ordering stem extensions, please specify if the valve is intended for buried application. Also the extension height has to be mentioned from valve centerline to the operator handwheel centerline.

Stem extensions can also be provided and can be field installed on valves already in service.

MOUNTING FLANGE

All Gate Valves are provided with standard ISO 5210 mounting flange, which helps in field replacement of gear box, or actuators as required onsite without disturbing the valve from the line in service.

TRANSITION PIECES

Conduit Gate Valves can be supplied with transition pieces which are welded during the manufacturing process. These transition pieces can be supplied to camtech by the customer or be provided by camtech to suit customer requirements.

METAL SEATED GATE VALVES

The selection of a metal seated valve is dependent on the service conditions such as:

- Abrasive fluids
- Service temperatures over the pressure/temperature ratings of the soft seat insert materials
- Service conditions requiring full reliability such as Emergency Shut Down Valves (ESDV).

PLATING AND COATING

A range of coating and plating materials are available to suit specific service requirements for metal seated gate valves. Tungsten Carbide coating applied with high velocity spray systems can be applied in-house using CAMTECH HVOF system.

Stellite hardface can also be provided depending upon the requirement or service condition.

Depending on service conditions Electroless Nickel Plating (ENP) can be applied on seat ring as well as the gate or slab.

QUALITY SYSTEM, INSPECTION AND TESTING.

The CAMTECH Quality Control department verifies all processes from material receipt, in process, to final customer inspection. Major NDT facilities are in-house like the PMI, ultrasonic, to check the material quality and the product quality. All products are supplied with Certified Test Reports including Pressure Testing, NDT, chemical-physical analysis, along with any other specified test certifications. All of the valves are hydrostatically tested per API 6D Standard.
A complete range of equipment and instrumentation are available to perform standard and special tests.

In addition to conventional hydrostatic testing, Camtech is fully equipped to carry enhanced gas tests, at ambient, low and high temperatures. Leakages can be verified by means of mass spectrometer and calibrated flow meter for accurate readings.

Camtech reserves the right to change this information without notice.

CUSTOMER REFERENCE

CAM-CSV-00 (2023)

Head Office & Manufacturing Facility

CAMTECH MANUFACTURING FZCO
PO Box 17788, Plot No. S40309, Jebel Ali Free Zone, South
Dubai, United Arab Emirates
Telephone No : +971 4 8813133
Fax No : +971 4 8815051, 8819166
Email Address : camtech@emirates.net.ae
Website : www.camtechvalve.com