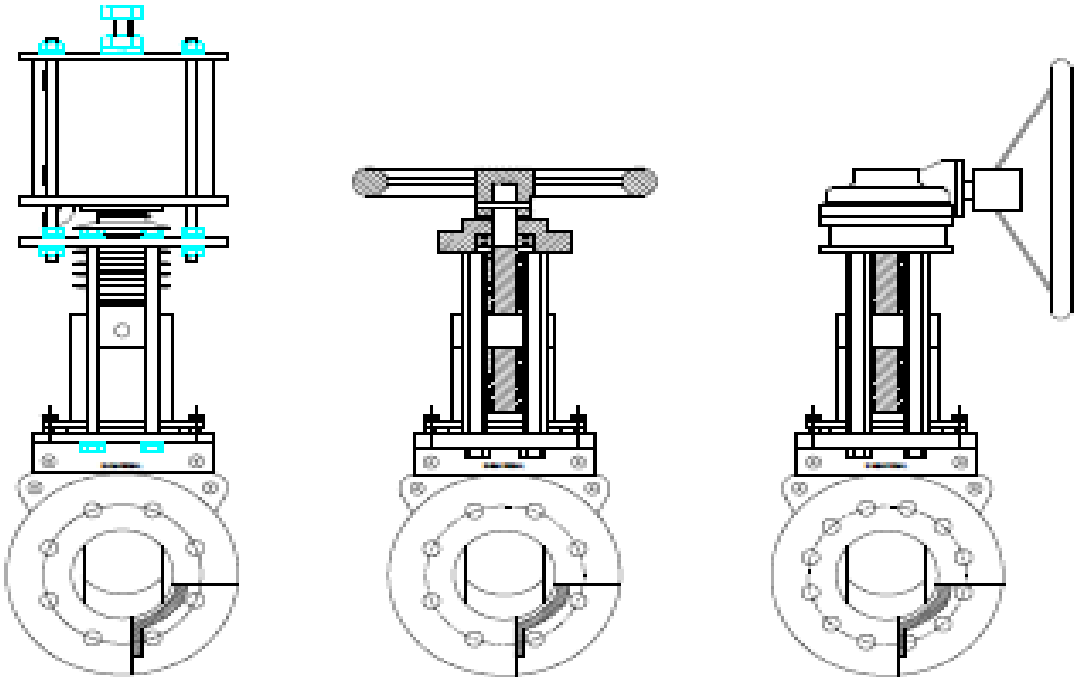


Shearseal Knife Gate Valves

Manufactured by TSE



Shearseal Design

Most knife gate valve manufacturers describe their valve as rugged and dependable. In the Shearseal Valve, these qualities are not idle claims. The product has been designed and built in Australia without any cost cutting measures adopted by many mass producers

Compare a Shearseal Knife Gate Valve with any of its competitors. The Shearseal valve is stronger. The additional strength comes from built in reserves where it is most need in full bodied castings, reinforced gland and stuffing box sections extra thickness in the stainless steel gate, heavy duty stainless stem, and bronze drive nut, large diameter hand wheel and ball thrust races in all sizes. Four gland bolts – not two. O-ring sealing standard at no extra cost.

Every component used in the construction of a Shearseal Knife Gate Valve is built to last, as you would expect in any valve having easily replaceable seat rubber for maximum service life. Seat pressure rating 1034 kpa (689 kpa for valves 200mm and bigger up to 750mm)

The superior design and construction of valves follows three decades of development of the o-ring seating principle. Rubber seated knife gates are used around the world in traditional knife gate valve markets, with an increasing number of new users, who have found in this design all the advantages of pocket less knife gate construction without compromising fluid tightness, directionality, bore dimensions and finish.

All valves can be flange drilled either to wafer or lugged/tapped to any specification required for the job such as Table C, D, E, F and H, ANSI 150 and 300, DIN 10, PN10 and 16 as well as S.A.B.S 1123 to name a few. If you require anything else or require special needs it can be accommodated.



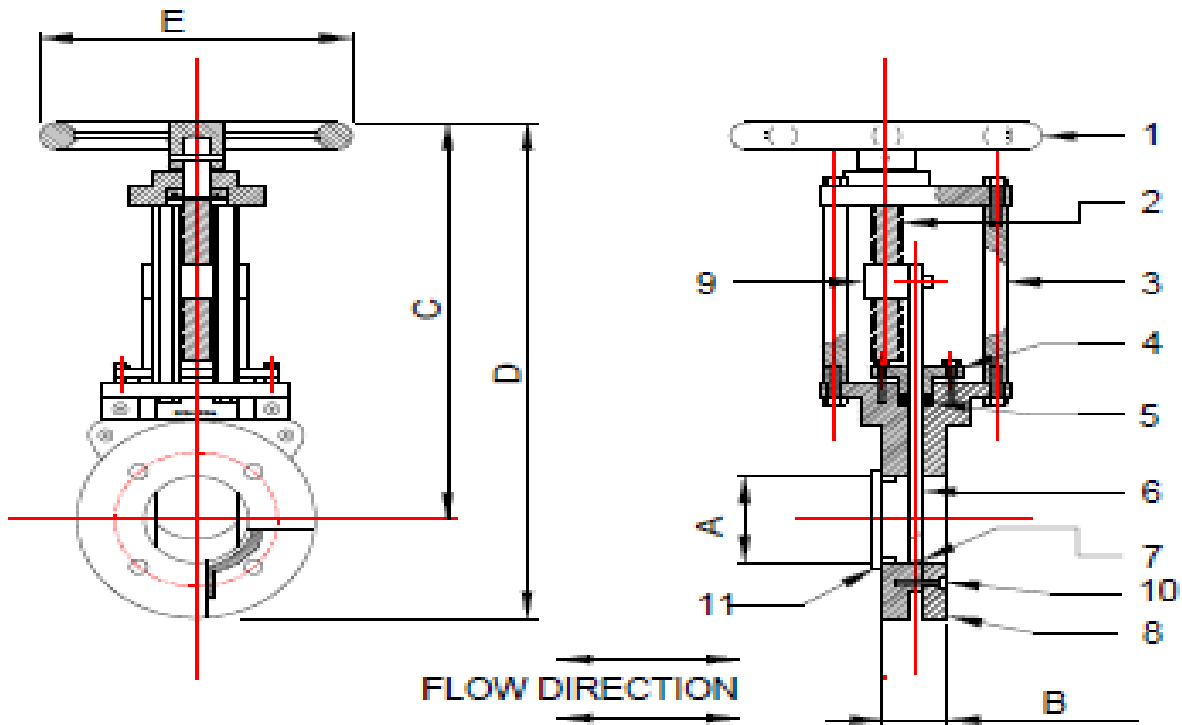
Shearseal Series 1 Features

- Bi directional drop tight sealing at 1034 kpa(689 kpa for sizes 200mm and over)
- Minimal pressure drop and flow restrictions – resilient seat is fitted into body recess clear of line of flow for extended seat life.
- Improved gland and stuffing box design. Tapered seating faces direct packing towards gate surfaces, reducing gland compression required for gland sealing.
- Non rising stem for reduced valve height in open position ideal in confined spaces safer for operators.
- Split body design – can be easily dismantled for seat replacement.
- Provision for optional blade scrapers to clean gate faces below packing gland. Helps prevent gland fouling and wear in sticky or highly abrasive line service.
- Ball thrust faces supplied on all sizes. Single start stem thread for minimum rim pull in valve operation
- Hexagonal mounting pillars for sizes $\varnothing 300$ mm and smaller with steel channel for sizes $\varnothing 300$ mm and above provide a solid foundation for all actuators including pneumatic, hydraulic, electric and lever operators.
- Maximum bore clearance. No seat ring projection, gate guides or jams to obstruct flow and cause build up of solids.



$\varnothing 100$ mm Shearseal Series 1 with $\varnothing 4$ " DANC Air cylinder

Shearseal Series 1 Components and Dimensions



Item	Description	Material
1	Hand wheel	SG Iron or Mild Steel
2	Spindle	316 Stainless Steel(Standard)
3	Pillars	Mild Steel Hex or Steel Channel
4	Gland	SG Iron
5	Packing	Composite
6	Gate	316 Stainless Steel(Standard)
7	Seat	Nitrile, EPDM, Polyurethane, Viton, Neoprene, PTFE
8	Body	SG Iron
9	Drive Nut	LG2 Bronze or Ni Resist
10	Bolting	High Tensile
11	Deflection Cone	Polyurethane or Ni hard(Optional)

Valve size in mm	A	B	C	D	E
50	50	48	367	450	230
80	75	51	367	450	230
100	100	51	464	570	230
150	150	57	545	675	275
200	200	70	616	770	275
250	250	70	760	980	380
300	300	76	838	1070	380
350	350	76	995	1265	380
400	400	90	1105	1400	380
450	450	90	1400	1750	650
500	500	114	1400	1750	650
600	600	114	1640	2050	650

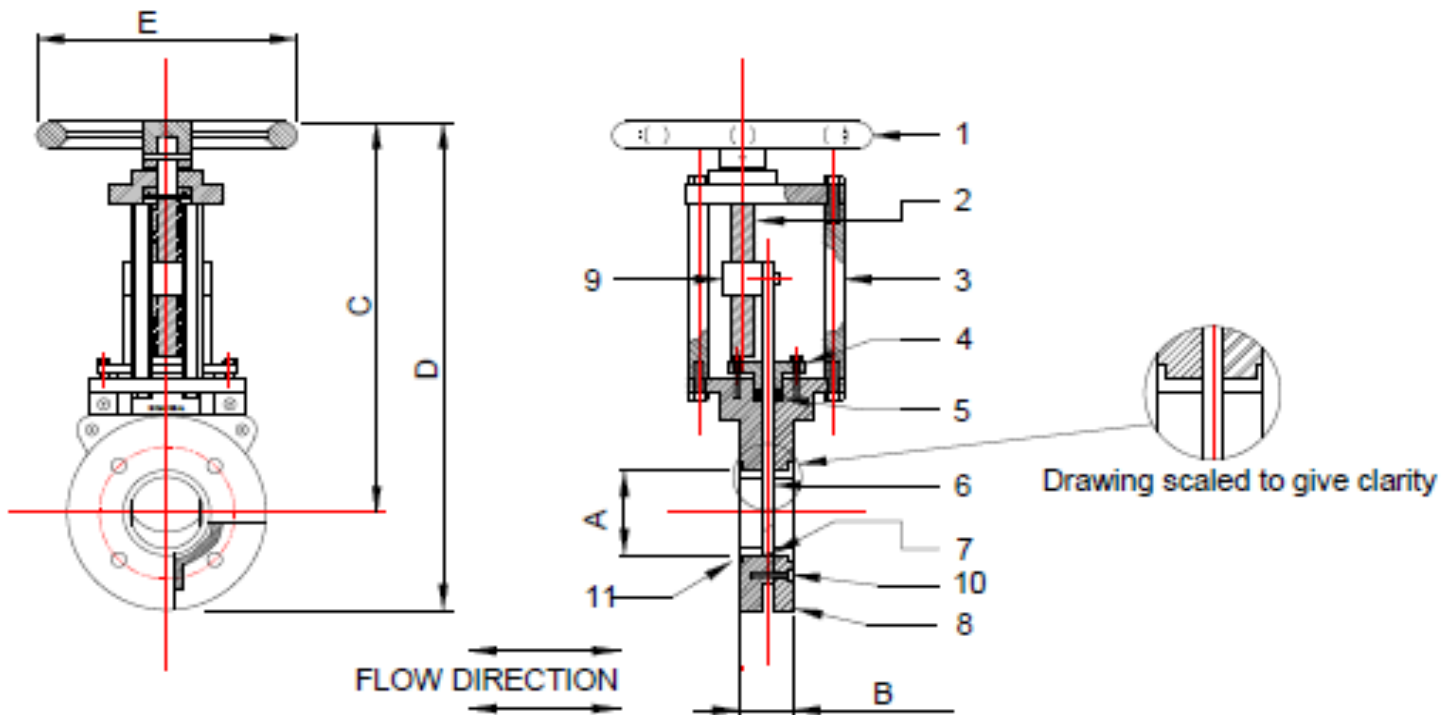
Shearseal Fig 20 Polyurethane liner valve

- Moulded polyurethane bore liner acts as a deflection cone to give extended service life over the standard knife gate valves especially designed for highly abrasive application such as fly ash, mining operations and coal washeries.
- Bi directional drop tight sealing at 1034 kpa(689 kpa for sizes 200mm and over)
- Minimal pressure drop and flow restrictions – resilient seat is fitted into body recess clear of line of flow for extended seat life.
- Improved gland and stuffing box design. Tapered seating faces direct packing towards gate surfaces, reducing gland compression required for gland sealing.
- Non rising stem for reduced valve height in open position ideal in confined spaces safer for operators.
- Split body design – can be easily dismantled for seat replacement.
- Provision for optional blade scrapers to clean gate faces below packing gland. Helps prevent gland fouling and wear in sticky or highly abrasive line service.
- Ball thrust faces supplied on all sizes. Single start stem thread for minimum rim pull in valve operation
- Hexagonal mounting pillars for sizes $\text{\O}300\text{mm}$ and smaller with steel channel for sizes $\text{\O}300\text{mm}$ and above provide a solid foundation for all actuators including pneumatic, hydraulic, electric and lever operators.
- Maximum bore clearance. No seat ring projection, gate guides or jams to obstruct flow and cause build up of solids



$\text{\O}100\text{mm}$ Figure 20 KGV manual operated

Shearseal Figure 20 Components and Dimensions

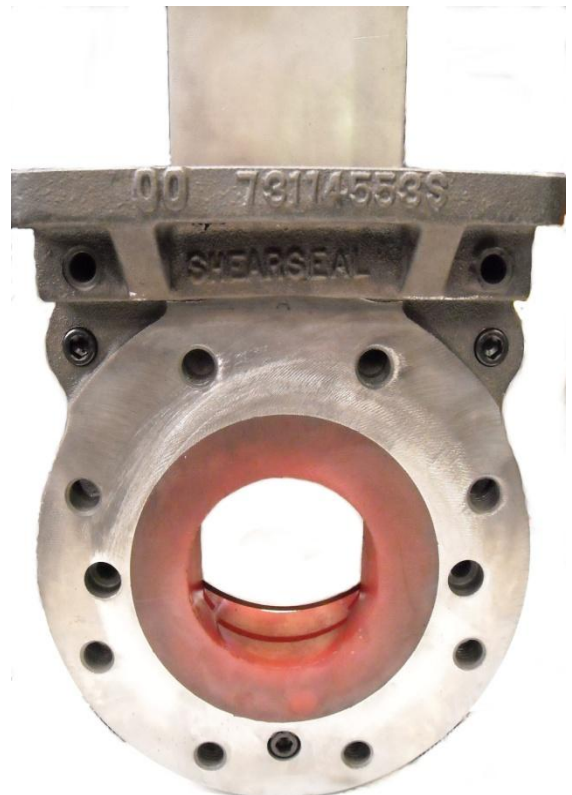


Item	Description	Material
1	Hand wheel	SG Iron or Mild Steel
2	Spindle	316 Stainless Steel(Standard)
3	Pillars	Mild Steel Hex or Steel Channel
4	Gland	SG Iron
5	Packing	Composite
6	Gate	316 Stainless Steel(Standard)
7	Seat	Nitrile, EPDM, Polyurethane, Viton, Neoprene, PTFE
8	Body	SG Iron
9	Drive Nut	LG2 Bronze or Ni Resist
10	Bolting	High Tensile
11	Bore liner	Bonded polyurethane

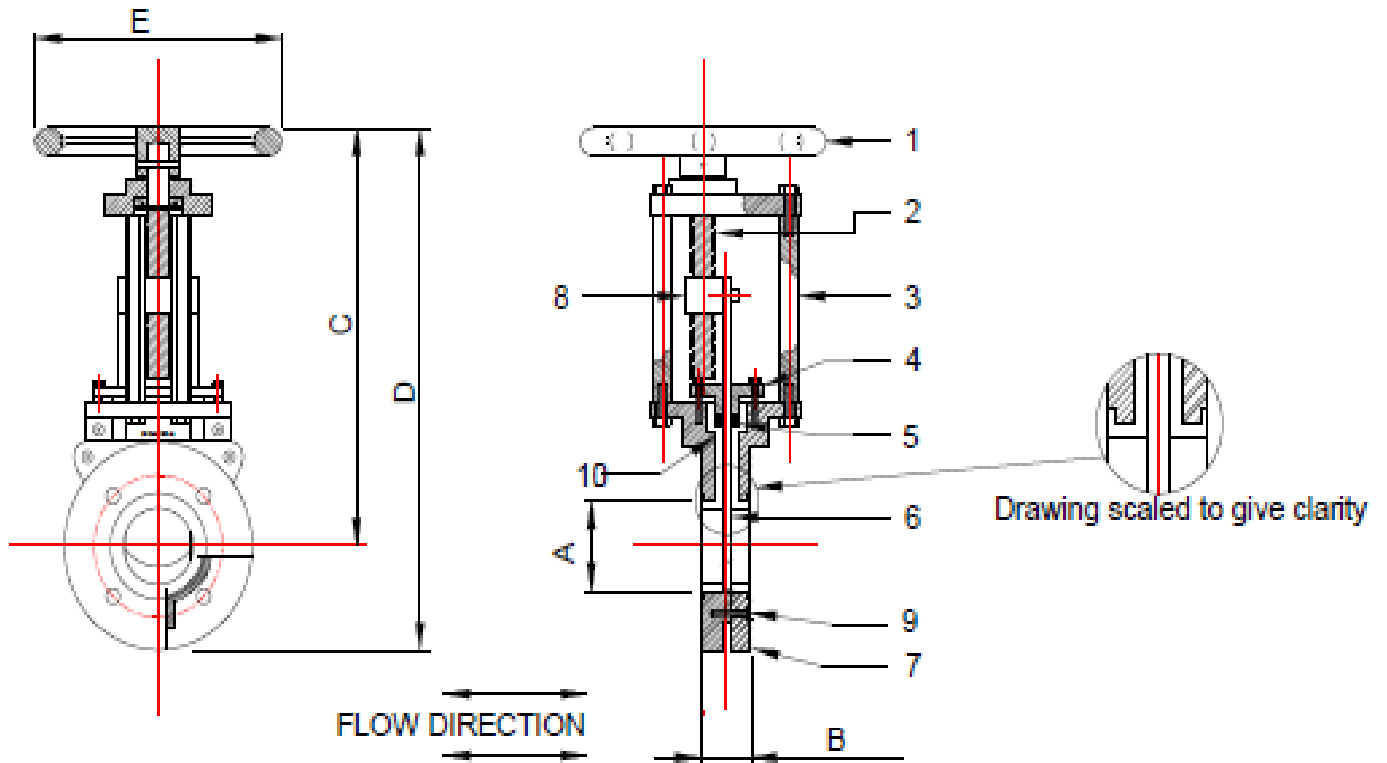
Valve size in mm	A	B	C	D	E
50	50	48	367	450	230
80	75	51	367	450	230
100	100	51	464	570	230
150	150	57	545	675	275
200	200	70	616	770	275
250	250	70	760	980	380
300	300	76	838	1070	380
350	350	76	995	1265	380
400	400	90	1105	1400	380
450	450	90	1400	1750	650
500	500	114	1400	1750	650
600	600	114	1640	2050	650

Shearseal Fig 30 Polyurethane lined valve

- Moulded polyurethane liner that covers the bore, chest and packing gland areas to give maximum protection to give extended service life over standard and Figure 20 knife gate valves especially designed for highly abrasive, highly salty slurry and some chemical areas.
- Bi directional drop tight sealing at 1034 kpa(689 kpa for sizes 200mm and over)
- Minimal pressure drop and flow restrictions – resilient seat is fitted into body recess clear of line of flow for extended seat life.
- Packing gland is a fabricated 316 Stainless Steel design.
- Non rising stem for reduced valve height in open position ideal in confined spaces safer for operators.
- Split body design – can be easily dismantled.
- Ball thrust faces supplied on all sizes. Single start stem thread for minimum rim pull in valve operation
- Hexagonal mounting pillars for sizes $\varnothing 300$ mm and smaller with steel channel for sizes $\varnothing 300$ mm and above provide a solid foundation for all actuators including pneumatic, hydraulic, electric and lever operators.
- Maximum bore clearance. No seat ring projection, gate guides or jams to obstruct flow and cause build up of solids



Shearseal Figure 30 Components and Dimensions



Item	Description	Material
1	Hand wheel	SG Iron or Mild Steel
2	Spindle	316 Stainless Steel(Standard)
3	Pillars	Mild Steel Hex or Steel Channel
4	Gland	316 Stainless Steel
5	Packing	Composite
6	Gate	316 Stainless Steel(Standard)
7	Body	SG Iron
8	Drive Nut	LG2 Bronze or Ni Resist
9	Bolting	High Tensile
10	Bonded Liner	Bonded polyurethane

Valve size in mm	A	B	C	D	E
50	50	48	367	450	230
80	75	51	367	450	230
100	100	51	464	570	230
150	150	57	545	675	275
200	200	70	616	770	275
250	250	70	760	980	380
300	300	76	838	1070	380
350	350	76	995	1265	380
400	400	90	1105	1400	380
450	450	90	1400	1750	650
500	500	114	1400	1750	650
600	600	114	1640	2050	650

Operators

Air cylinder operators

Linear actuators are easily fitted by removing the standard stem, Bearing housing and pillars and replacing them with linear actuator, Having extended the mountings. An adjustable clevis and pin Replaces the standard bronze drive nut. The clevis is adjustable To avoid over compression of the rubber seat at the point of closure. Limit switches are normally fitted for remote indication of gate position.

Air cylinder sizes range from Ø4" up to Ø20".

Pneumatic Actuator Specifications

DANC (Double acting non cushioned)

Cylinder Tube	Amalgon
Cylinder ends	Steel AS3678-250
Piston	Steel AS3678-250
Mounting plate	Steel AS3678-250
Piston Ring	Teflon
Piston rod scrapers	Nylon
Tie Rods	Mild steel or 316SS
Bearing Housing	CS1020
Bearing	Sintered bronze bush
Yoke	Mild Steel or 316SS



Valve size in MM	Air Supply KPA	Cylinder sizing at line pressure: Barrel Dia in inches		
		334 KPA	689 KPA	1034 KPA
80	550	4"	4"	4"
100	550	4"	4"	4"
150	550	4"	6"	6"
200	550	6"	8"	8"
250	550	8"	10"	10"

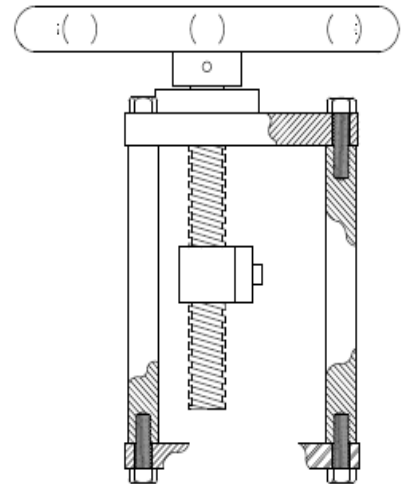
- For valves sizes above Ø300mm and for air supply pressure other than 550 Kpa (80PSI), please refer to distributors for cylinder sizing.
- If line medium is dry use the next largest size air cylinder diameter.

Hand Wheel Operators

Hand wheels are normally fitted. Stems have single start thread form, slower in operation than double start, but require lower hand wheel torque for a given valve size.

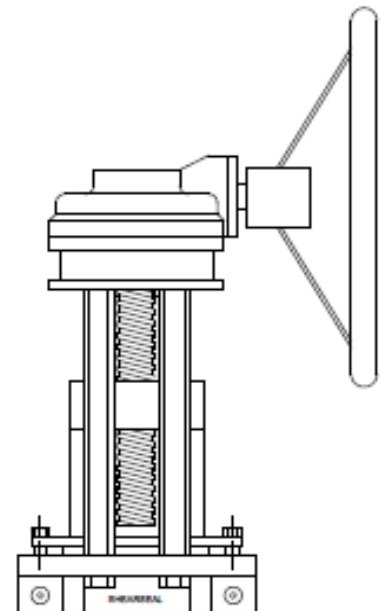
Shearseal valves have heavy duty casting iron or mild steel hand wheel operating non rising spindles, so no stem projection develops when the valve is open. This leaves walkways clear and unobstructed, even when the valve is in the vertical down position.

Gate position is visible from a distance, giving foolproof indication of the valve opening at all times, but separate position indicators can be supplied if required.



Gear operators

Gear operators are normally fitted to valves for high torque requirements and can be fitted to any Shearseal valve. For valves of sizes $\text{\O}400\text{mm}$ and bigger it is highly recommend that gear operators are used to reduce the strain on operators when opening and closing them. The gear operators are non rising spindle and can be fitted with position indicators to if required.

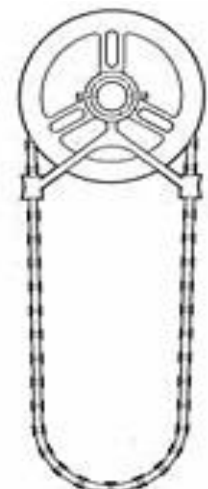


Valve size in MM	Gear operator
50 up to 300	TSE 1
350 up to 450	TSE 2
500 up to 750	TSE 3

Chain Wheel Operators

Chainwheels allow operation of valves in high or hard to reach locations by the means of pulling on the sprocket chain. These operators are used in response for a need to improve plant safety.

All chainwheels are furnished ready to be used the package includes chainwheel, chainwheel guides and chain so that you can attach it to your existing valve or come fitted to your valve order. Chain is provided in whatever drop you require all the customer is to do is to specify the drop.



Electric Motor Operators

Valves offered with electric operators have mounting attachments as described for pneumatic operators and can be rising or non rising stem as specified. Electric motor operators have built in limit switches for remote position indication

Lever Operators

Lever operators are available for quick hand operation in sizes up to $\varnothing 200\text{mm}$

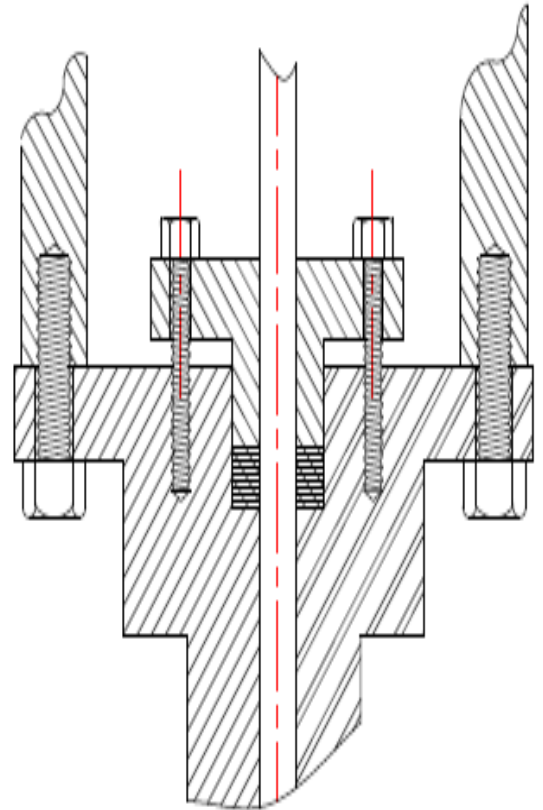
Packing

The Shearseal packing gland has been designed to minimize the incidence of gland leakage, a common problem with most knife gate valves.

The Stuffing box is of a generous proportion and the gland and the stuffing box seating bases are tapered so the packing is directed towards the gate surfaces under gland pressure.

The gland flange is retained and adjusted by four bolts passing through drilled holes. A wide range of gland packing is available but standard valves have PTFE impregnated interwoven braid with a pressure limit of 1500 psi and a temperature limit of -23°C to 232°C .

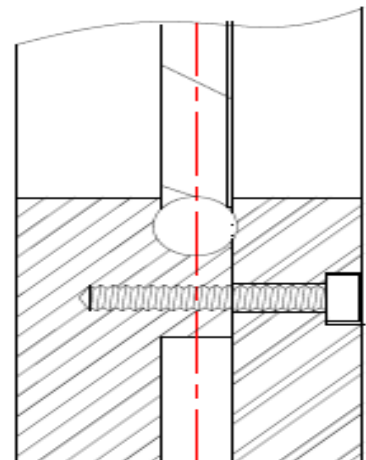
The use of nylon blade scarpers, fitted at as an optional extra in the valve chest just below the gland packing can extend the life of the packing on some services by reducing the ingress of abrasive or viscous substances to the gland area.



Seat

The replaceable 'O' section resilient seat is a central feature of the Shearseal series 1 and Figure 20 KGV. The time proven method of sealing knife gate valves offers a very real performance advantage over metal seated designs, because it provides drop tight closure against relatively high differential pressures and can be easily and inexpensively replaced at site.

A round section retaining groove is machined to precise dimensions in the complex body half and the seal cut from continuous 'O' section cord, available from mechanical seal suppliers in all major cities. Inexpensive seal replacement is thus assured without spare parts inventory.



Bi directionality of the Shearseal valve is effected by compression of the 'O' ring seal against the edges of the gate.

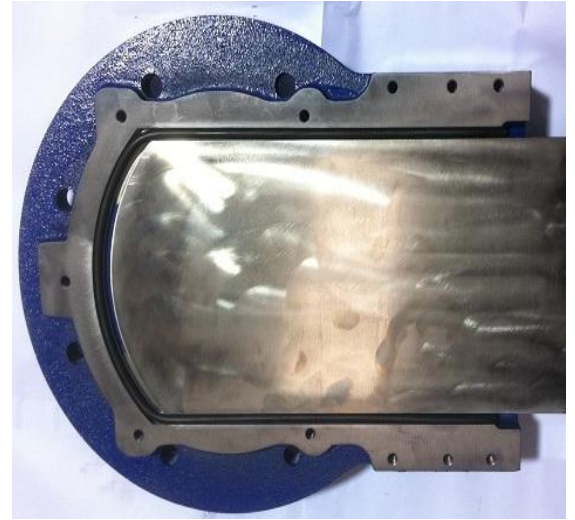
Metal to metal contact between gate and body occurs before the 'O' ring seal can be damaged by over tightening of the hand wheel. Pneumatic and electric operators have travel stops which can be set for optimum rubber compression.

Blade

All Shearseal Knife gate valves come standard with a 316 Stainless steel gate of generous thickness ensuring freedom from flexing under high pressure differentials and vacuum service. As an option special blade material such as Alloy 31, Bisalloy, Duplex and Super Duplex can be used to meet customer's requirements.

With other high pressure applications extra thick gates are used when the line pressure exceeds standard Shearseal KGV applications.

The Shearseal knife gate has a machined bevel on the leading edge, with a small area at its base. When closed, the chamfered knife edge compresses the rubber 'O' ring seal, giving drop tight shut off.



Gate edges are polished to ensure smooth, drop tight sealing at the 'O' ring/gate interface.

A heavy duty drive nut transmits stem rotation to the gate which is fully supported on both sides and centre throughout the stroke. At the point of closing into the resilient seat, the gate is then supported around its entire circumference, ensuring a rigid bubble tight closure in the most arduous service.

A clevis pin hole is provided in the gate for easy conversion or retro fit to cylinder actuators.

Deflection Cones

Deflection cones are manufactured from abrasion resistant Ni-hard or polyurethane and are available for use on abrasive slurries or dry products.

Deflection cones protect the valve seat and reduce the attrition of the body behind the seat area.

Ni Hard deflection cones range in size from $\varnothing 50\text{mm}$ to $\varnothing 300\text{mm}$
Polyurethane deflection cones range in size from $\varnothing 50\text{mm}$ to $\varnothing 750\text{mm}$



Installation, Maintenance & Repair Hints

- Dry materials – always install horizontally mounted valves with gate chamfer pointing downwards for optimum closing performance.
- Gland tightening – ensure even adjustment of gland bolts to avoid binding of gland against gate.
- For abrasive services specify deflection cones either poly urethane or Ni hard
- Operating instructions – Shearseal valves provide virtual hermetic sealing by gate edge compression of the resilient seat. Moderate hand wheel force gives effective sealing. Excessive force may damage seating areas.

Spare Parts

All components in Shearseal valves are kept as spares so if you require packing, gates or air cylinder repair kits they are off the shelf items so that you can perform your scheduled maintenance to your valves.

