

THE TRI-CON SERIES

METAL SEATED TRIPLE OFF-SET



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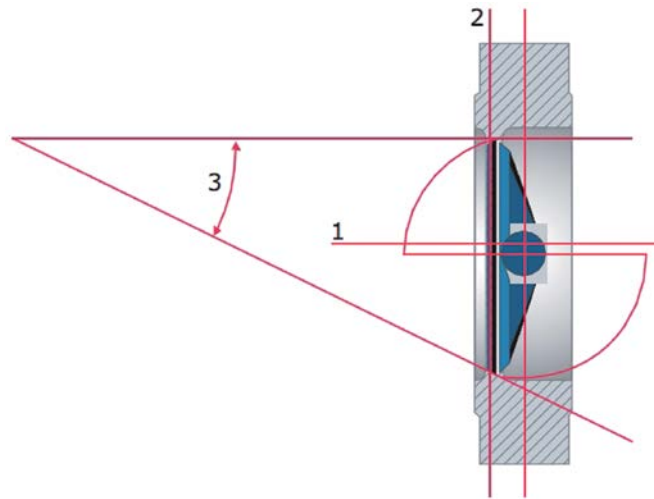
www.duncanco.com
612-331-1776

ZWICK
VALVES NA LLC

ZWICK TRI-CON FEATURES

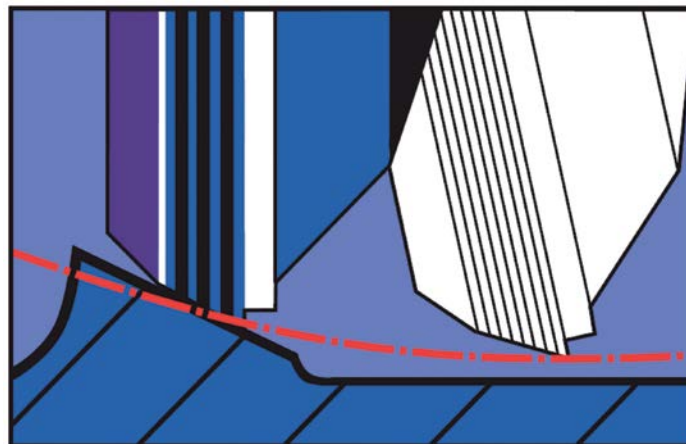
Triple-Offset Conical Seating

Most high-performance butterfly valves are manufactured with a double-offset shaft design. TRI-CON valves incorporate a unique third offset with a 25-degree incline, eliminating the friction between the laminated seal ring and the body seat. The resulting camming action allows the stainless and graphite laminated seal ring, with a corresponding 25-degree inclined surface, to seat into an inclined 25-degree body seat. The result: true cone-in-cone seating and reliable zero-leakage performance.



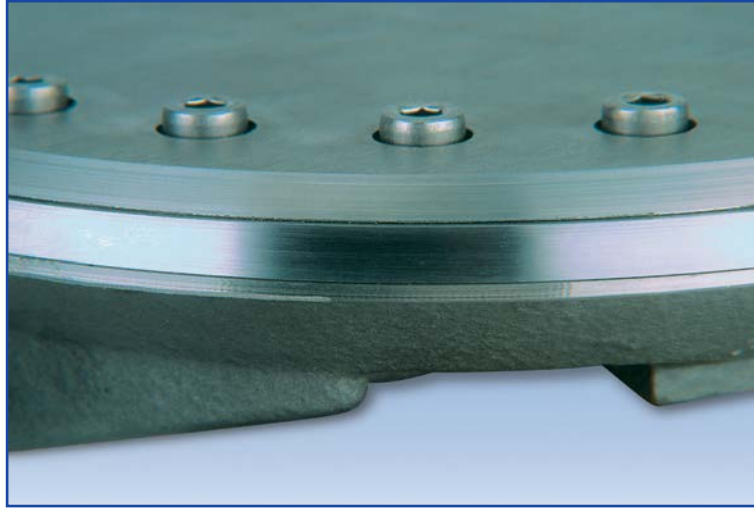
Statically Held Laminated Seal Ring/Flat Gasket

TRI-CON valves offer the widest laminated seal ring in the market today, made possible by true cone-in-cone seating design. This wide lamination of stainless steel and graphite provides a forgiving sealing surface when it is seated against line scale or particulates. Multiple laminations naturally translate into multiple sealing surfaces to achieve zero leakage.



ALL-METAL LAMINATION SEAL RING

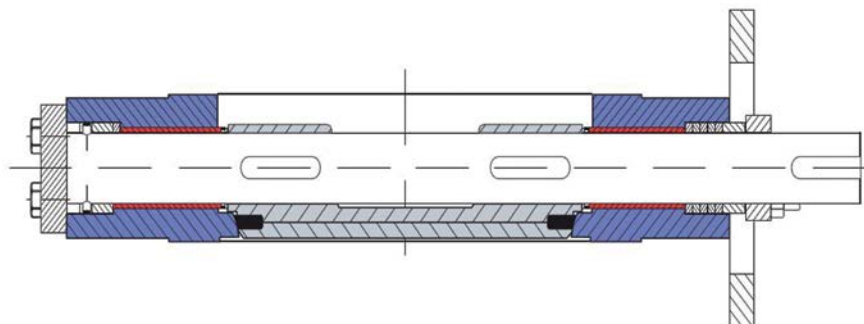
TRI-CON valves offer an all-metal laminated seal ring for aggressive applications. While some competitive laminated seal ring designs have failed due to aggressive line media attacking graphite and binders, the layered lamination of all-metal achieves zero leakage.



Self-Centering Disc Design – No Pinning of shaft to Disc

Zwick's TRI-CON valve employs a self-centering disc that is keyed to the shaft, not pinned. Other triple-offset valve manufacturers permanently pin or affix their discs to the shaft. To accommodate for differential thermal expansion of the shaft and the disc, other manufacturers must rely on a seal ring that compresses radially. This makes their designs subject to jamming due to thermal expansion.

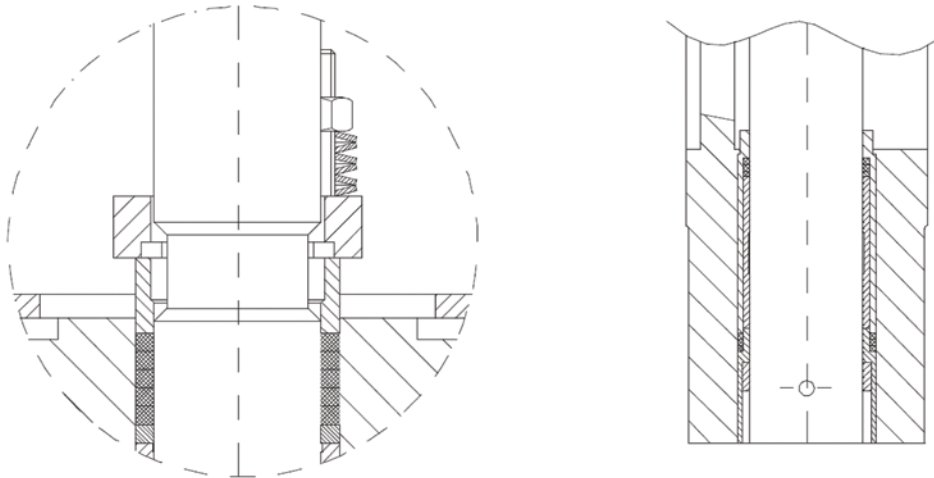
The Zwick self-centering disc design not only assures equal transmission of the torque but will also allow for more than 1,000 times the thermal differential between the shaft and disc. This allows the disc to torque into its ideal position with each closing. The Zwick design also offers substantially lower torque than most of the other metal-seated valves.



ZWICK TRI-CON FEATURES

Emission Control

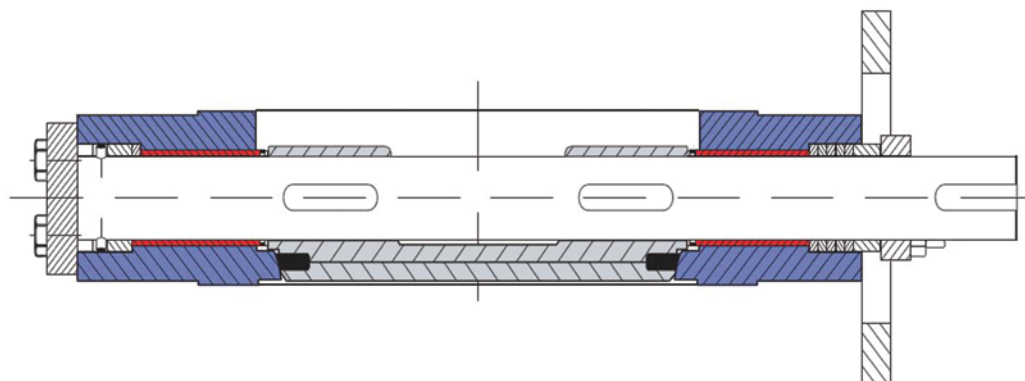
TRI-CON's standard five-ring graphite packing meets all the requirements of TA Luft for fugitive emissions from the shaft and packing arrangements. The inherent quarter-turn action coupled with the superior trunnion mounting of the bearings and shaft arrangement assures that shaft deflection is eliminated.



Superior Bearing Design

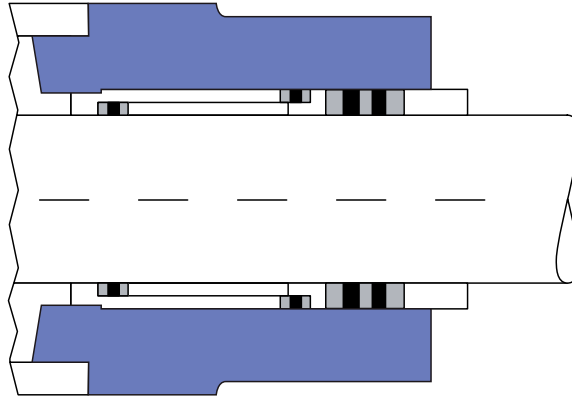
TRI-CON valve bearings are located close to the centerline of the disc, helping to eliminate the shaft bending associated with torque-seated valves. While other manufacturers locate their bearings within the body,

TRI-CON valve bearings protrude into the waterway of the valve in order to offer most effective design. The standard bearings design also offers a graphite bearings protector ring to help combat the migration of particulates into the bearings.



UNIQUE, PATENTED SEALED BEARING

For some applications, the standard bearings protection ring is not effective in preventing fouling of the bearings associated with line media. Zwick's zero-leakage bearings design assures that no line media will migrate into the bearings cavity. While competitive designs have failed due to fouling or galling of the bearings and shaft, the Zwick design has been proven in the most severe applications. Zwick's Patented Sealed Bearings also offer zero to low-ppm performance out of the stem packing.



Technical Qualifications

Quality Assurance	ISO 9001
Testing	API 598 Zero Leakage API 6 D Zero Leakage (optional)
Flange Drilling	ASME B16.5 (Sizes 2"-24") ASME B16.47 Series A & B
Fire Test	API 607 4th edition
Design	ASME B16.34, API 609
Emission Control	TA Luft
PED CE Mark	Qualified

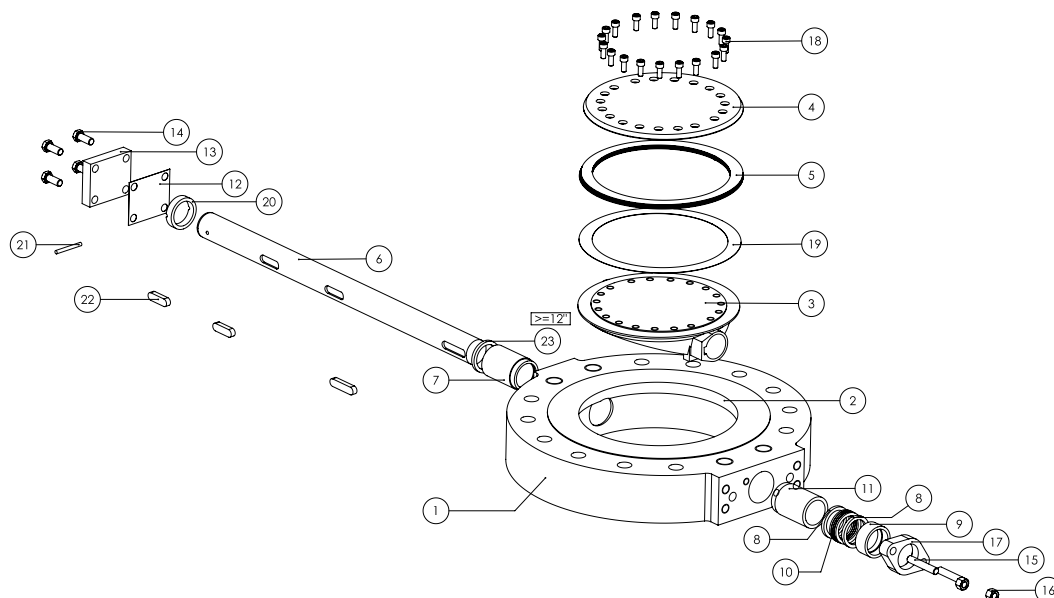
Certification

BAM-Approval for Oxygen
TA-Luft gem./acc. to VDI 2440
DIN EN ISO 9001:2008
Fire-Safe to API 607
Fire-Safe to British Standard 6755
CE- Certificate acc. to 97/23/EG
ISO 15848-1



STANDARD MATERIAL/ANSI DESIGN

Standard Bill of Materials



Pos.	Part	Carbon Steel Design	Stainless Steel Design
1	Body	ASTM A216 WCB / A516 Gr.70 / A516 Gr.60	ASTM A351 CF8M / CF8C / A276 Gr.316Ti
2	Body Seat (Optional)	ASTM A276 Gr.316Ti Stellite	ASTM A351 CF8M / CF8C / A276 Gr.316Ti Stellite
3	Disc	ASTM A216 WCB / A516 Gr.60	ASTM A351 CF8M / CF8C / A276 Gr.316Ti
4	Clamp Ring	ASTM A216 WCB / A516 Gr.60	ASTM A351 CF8M / A276 Gr.316Ti
5	Laminated Seal (Optional)	ASTM A276 Gr.316Ti / Graphite Solid Lamination	ASTM A276 Gr.316Ti / Graphite Solid Lamination
6	Shaft	ASTM A276/479 Type 431	ASTM A276/479 Type 431
7	Lower Bearing Bush	ASTM A582 Type 303 Hard Chromed	ASTM A582 Type 303 Hard Chromed
8	Gland Packing	Graphite	Graphite
9	Gland Follower	ASTM A582 Type 303	ASTM A276 Gr.316Ti
10	Gland Packing	Graphite	Graphite
11	Upper Bearing Bush	ASTM A582 Type 303 Hard Chromed	ASTM A582 Type 303 Hard Chromed
12	Cover Seal	Graphite	Graphite
13	Cover	ASTM A216 WCB / A516 Gr.60	ASTM A351 CF8M / A276 Gr.316Ti
14	Cover Screw	ASTM A193 Gr.B8	ASTM A193 Gr.B8
15	Gland Adjust. Stud	ASTM A193 Gr.B8	ASTM A193 Gr.B8
16	Gland Adjust. Nut	ASTM A193 Gr.B8	ASTM A193 Gr.B8
17	Gland Plate	ASTM A216 WCB / A516 Gr.60 / CF8M	ASTM A351 CF8M
18	Clamp Ring Screw	ASTM A193 Gr.B8	ASTM A193 Gr.B8
19	Gasket	Graphite	Graphite
20	Shaft Retainer	ASTM A582 Type 303 Hard Chromed ASTM A276 Type 440 B Hardened	ASTM A276 Gr.316Ti Hard Chromed ASTM A276 Type 440 B Hardened
21	Cross Pin	ASTM A276 Gr.316Ti	ASTM A276 Gr.316Ti
22	Disc Drive Key	ASTM A276 Gr.316Ti	ASTM A276 Gr.316Ti
23	Thrust Ring	ASTM A276 T440B Hardened	ASTM A276 Gr.316Ti

SIZES AND BODY STYLES

2" – 72"

Class 150 -1500 lb.

DIN program available as an option

Double Flanged (ISO 5752)

Lug (API 609)

Gate Valve (ANSI B16.10)

Buttweld



Lug A1 Body per API-609



B1 Body Gate Valve ANSI-B16.10

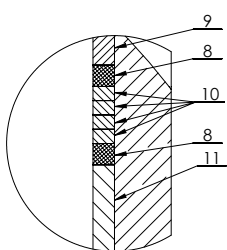
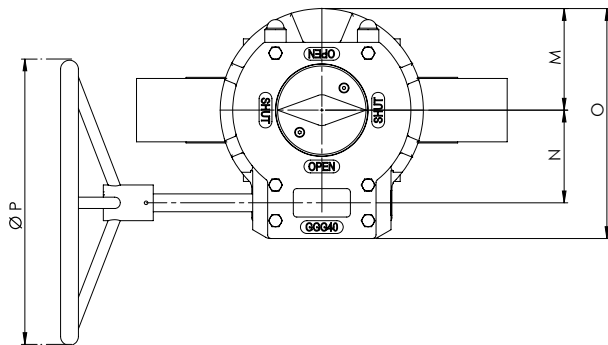
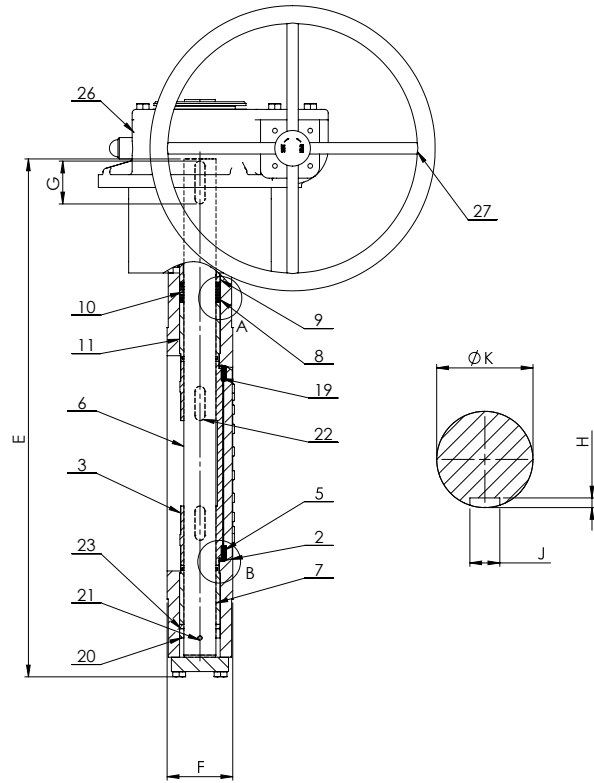
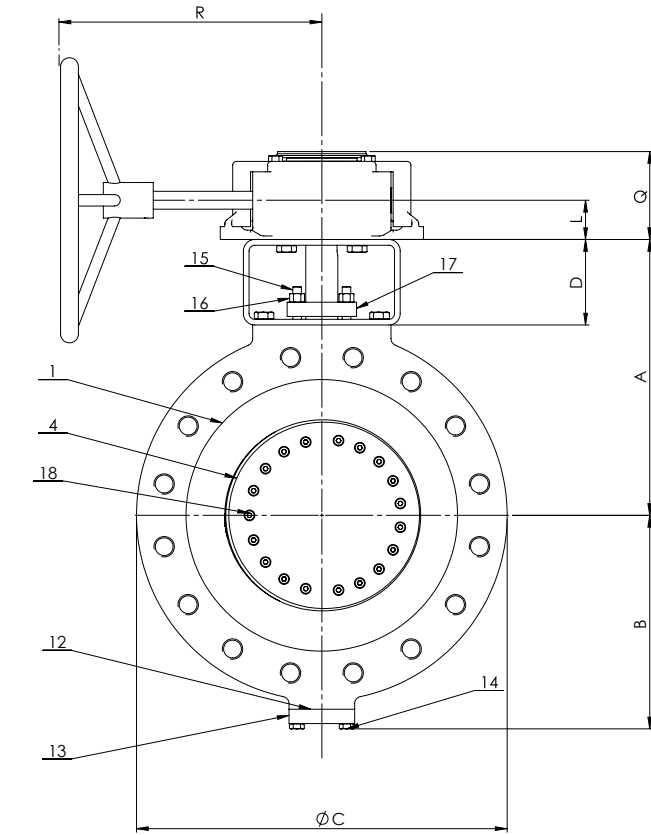


ISO 5752 I1 Body – Double Flanged

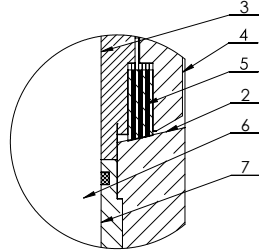


S1, S2 Body Buttweld

MODEL A1



DETAIL A



DETAIL B

Pos.	Part	Material
1	Body	ASTM A216 WCB
2	Body Seat	SS316Ti
3	Disc	ASTM A216 WCB
4	Clamp Ring	ASTM A516 Gr.60
5	Laminated Seal	SS316Ti/Graphite
6	Shaft	ASTM A276 Type 431
7	Lower Bearing Bush	ASTM 582 Type 303 Hard Chr.
8	Gland Packing	Graphite
9	Gland Follower	ASTM A582 Type 303
10	Gland Packing	Graphite
11	Upper Bearing Bush	ASTM A582 Type 303 Hard Chr.
12	Cover Seal	Graphite
13	Cover	ASTM A516 Gr.60
14	Cover Screw	ASTM A193 Gr.B8
15	Gland Adjustment Stud	ASTM A193 Gr.B8
16	Gland Adjustment Nut	ASTM A194 Gr.8
17	Gland Plate	ASTM A516 Gr.60
18	Clamp Ring Screw	ASTM A193 Gr.B8
19	Gasket	Graphite
20	Shaft Retainer	ASTM A276 Type 440B
21	Cross Pin	SS316Ti
22	Disc Drive Key	SS316Ti
23	Trust Ring ($\geq 12"$)	AISI 440B/AISI 420 Hardened
24	Mounting Bracket	Steel Zinc-Plated
25	Mounting Bracket Screw	ASTM A193 Gr.B8
26	Gear Operator	Rotork AB Series
27	Handwheel	—

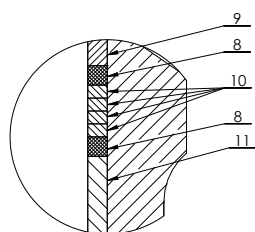
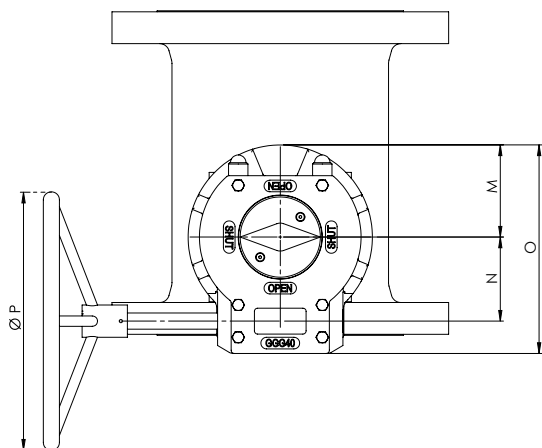
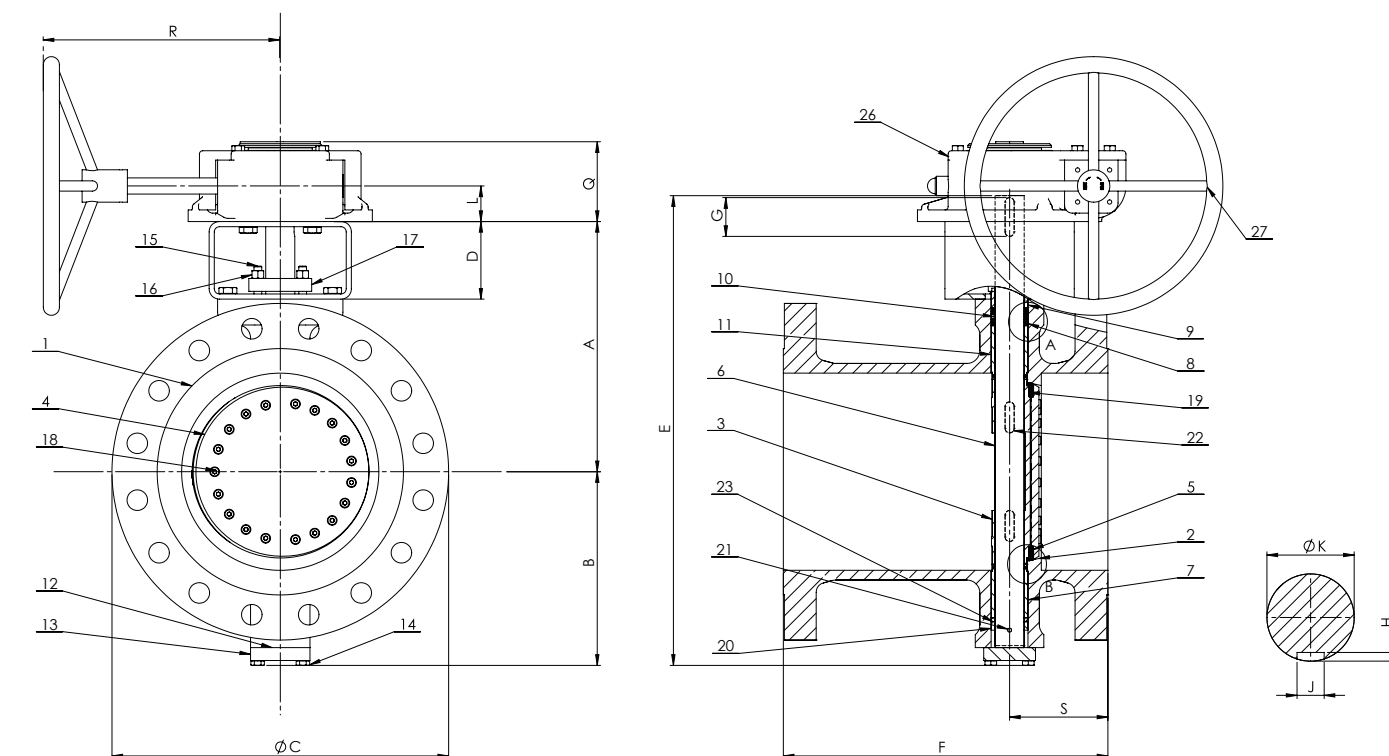
MODEL A1/ SERIES TRI-CON
 (With Gear Operator)

 Lugged Body per API-609
 Units of Measure in Inches

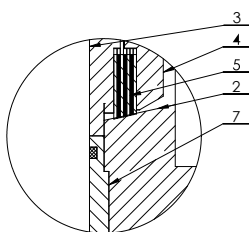
		80	100	150	200	250	300	350	400	450	500	600
		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
CLASS 150	A	7.87	8.46	9.84	12.91	14.49	15.24	17.61	19.61	21.57	22.84	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.4	13.74	16.26	18.43	19.72	22.87
	C (ANSI 150)	7.48	9.02	11.61	13.5	15.94	18.98	20.87	23.5	25	27.56	31.89
	D	3.15	3.15	3.15	4.72	4.72	4.72	5.91	5.91	5.91	5.91	5.91
	E	14.72	15.79	19.14	23.66	26.58	29.57	34.53	39.02	43.15	46.1	52.67
	F (ANSI 150)	1.89	2.13	2.24	2.52	2.8	3.19	3.62	4.02	4.49	5	6.06
	G	1.22	1.18	1.54	1.93	1.93	2.05	3.58	3.58	3.58	3.98	4.06
	H	0.14	0.14	0.16	0.2	0.2	0.22	0.24	0.28	0.3	0.3	0.35
	J	0.24	0.24	0.31	0.39	0.47	0.55	0.63	0.71	0.79	0.79	0.98
	K	0.79	0.87	0.98	1.26	1.57	1.77	2.17	2.56	2.76	2.95	3.54
	L	1.13	1.13	1.59	1.59	1.65	1.65	1.89	2.17	2.17	2.17	2.32
	M	1.87	1.87	3.27	3.27	3.94	3.94	4.33	5.62	5.62	5.62	6.69
	N	2.05	2.05	2.8	2.8	3.39	3.39	4.11	5.12	5.12	8.31	10.36
	O	5.02	5.02	7.4	6.85	8.9	8.9	10.16	12.7	12.7	15.85	18.98
	P	7.87	7.87	11.81	11.81	11.81	15.75	15.75	19.69	19.69	19.69	15.75
	Q	2.46	2.46	3.46	3.46	3.64	3.64	4	4.96	4.96	4.37	4.75
	R	8.55	8.55	11.11	11.11	10.64	11.23	12.85	15.25	15.25	17.61	18.9
	Weight	38	51	86	119	174	240	367	519	644	887	1540
CLASS 300	A	7.87	8.46	9.84	12.91	14.49	15.24	17.61	19.61	21.57	22.84	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.4	13.74	16.26	18.43	19.72	22.87
	C (ANSI 300)	8.27	10	12.52	14.96	17.52	20.47	23.03	25.51	27.95	30.51	36.02
	D	3.15	3.15	3.15	4.72	4.72	4.72	5.91	5.91	5.91	5.91	5.91
	E	14.72	15.79	19.14	23.62	26.58	29.57	34.53	39.02	43.15	46.1	52.67
	F (ANSI 300)	1.89	2.13	2.32	2.87	3.27	3.62	4.61	5.24	5.87	6.26	7.13
	G	1.22	1.18	1.54	1.93	1.93	2.05	3.58	3.58	3.58	3.98	4.06
	H	0.14	0.14	0.2	0.2	0.2	0.22	0.24	0.28	0.3	0.3	0.35
	J	0.24	0.24	0.39	0.39	0.47	0.55	0.63	0.71	0.79	0.79	0.98
	K	0.79	0.87	1.26	1.5	1.57	1.77	2.17	2.56	2.76	2.95	3.54
	L	1.13	1.13	1.65	1.65	1.89	2.17	2.17	2.32	2.32	2.32	2.32
	M	1.89	1.89	3.94	3.94	4.33	5.62	5.62	6.69	6.69	6.69	6.69
	N	2.05	2.05	3.39	3.39	4.11	5.12	8.31	10.35	10.35	10.35	14.06
	O	5.02	5.02	8.9	8.9	10.16	12.7	15.85	18.98	18.98	18.98	22.99
	P	7.87	7.87	11.81	15.75	15.75	15.75	19.69	15.75	15.75	15.75	23.62
	Q	2.46	2.46	3.46	3.46	3.64	3.64	4	4.96	4.96	4.37	4.75
	R	8.55	8.55	10.64	11.23	12.85	14.46	17.61	18.9	18.9	18.9	22.75
	Weight	44	68	119	156	235	341	530	781	983	1210	1863
CLASS 600	A	7.87	9.25	10.35	13.58	17.05	17.72	18.03	21.65	22.91	28.27	28.43
	B	6.42	7.72	9.57	11.02	13.35	13.66	15.31	17.76	19.72	22.56	23.82
	C (ANSI 600)	8.27	10.75	14.02	16.5	20	22.01	23.78	27.01	29.25	32.01	37.01
	D	3.15	3.15	3.15	4.72	5.91	5.91	5.91	5.91	5.91	7.87	7.87
	E	16.34	18.78	22.01	28.15	34.1	35.44	36.96	43.86	47.08	55.87	58.67
	F (ANSI 600)	2.13	2.52	3.07	4.02	4.61	5.51	6.1	7.01	7.87	8.5	9.13
	G	2.09	2.09	2.09	3.66	3.66	4.06	3.66	4.45	4.45	5.04	6.42
	H	0.14	0.16	0.2	0.22	0.24	0.24	0.28	0.35	0.35	0.39	0.47
	J	0.24	0.31	0.39	0.55	0.63	0.63	0.71	0.98	0.98	1.1	1.42
	K	0.79	0.98	1.5	1.77	2.17	2.17	2.56	3.54	3.54	4.33	5.31
	L	1.59	1.59	1.89	2.17	2.17	2.32	2.32	3.35	*	*	*
	M	3.27	3.27	4.33	5.62	5.62	6.69	6.69	9.25	*	*	*
	N	2.8	2.8	4.11	8.31	8.31	10.35	14.06	16.97	*	*	*
	O	7.4	7.4	10.16	15.85	15.85	18.98	22.99	28.54	*	*	*
	P	11.81	11.81	15.74	19.68	19.86	15.75	27.55	27.55	*	*	*
	Q	3.46	3.46	4.02	4.37	4.37	4.75	4.75	6.65	*	*	*
	R	11.11	11.11	12.85	17.61	17.61	18.9	22.75	23.99	*	*	*
	Weight	62	86	180	308	473	638	902	1533	*	*	*

Notes: Other sizes and pressure classes on request, weights in lbs (valve + gear). *Gear sizes depend on shut-off parameters.

MODEL B1



DETAIL A



DETAIL B

Pos.	Part	Material
1	Body	ASTM A216 WCB
2	Body Seat	SS316Ti
3	Disc	ASTM A216 WCB
4	Clamp Ring	ASTM A516 Gr.60
5	Laminated Seal	SS316Ti/Graphite
6	Shaft	ASTM A276 Type 431
7	Lower Bearing Bush	ASTM 582 Type 303 Hard Chr.
8	Gland Packing	Graphite
9	Gland Follower	ASTM A582 Type 303
10	Gland Packing	Graphite
11	Upper Bearing Bush	ASTM A582 Type 303 Hard Chr.
12	Cover Seal	Graphite
13	Cover	ASTM A516 Gr.60
14	Cover Screw	ASTM A193 Gr.B8
15	Gland Adjust. Stud	ASTM A193 Gr.B8
16	Gland Adjust. Nut	ASTM A194 Gr.8
17	Gland Plate	ASTM A516 Gr.60
18	Clamp Ring Screw	ASTM A193 Gr.B8
19	Gasket	Graphite
20	Shaft Retainer	ASTM A276 Type 440B
21	Cross Pin	SS316Ti
22	Disc Drive Key	SS316Ti
23	Trust Ring (>=12")	AISI 440B/AISI 420 Hardened
24	Mounting Bracket	Steel Zinc-Plated
25	Mounting Bracket Screw	ASTM A193 Gr.B8
26	Gear Operator	Rotork AB Series
27	Handwheel	-

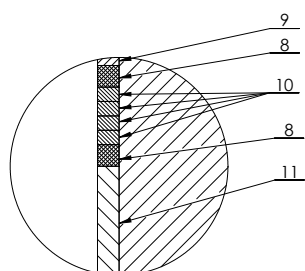
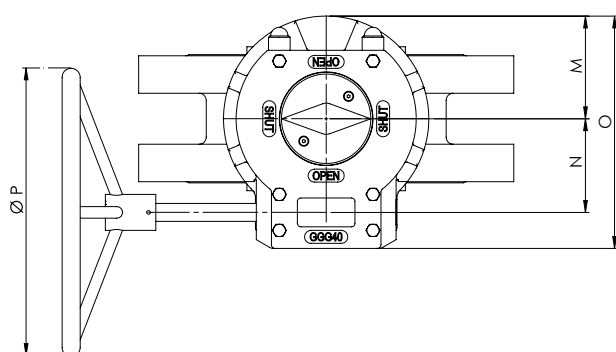
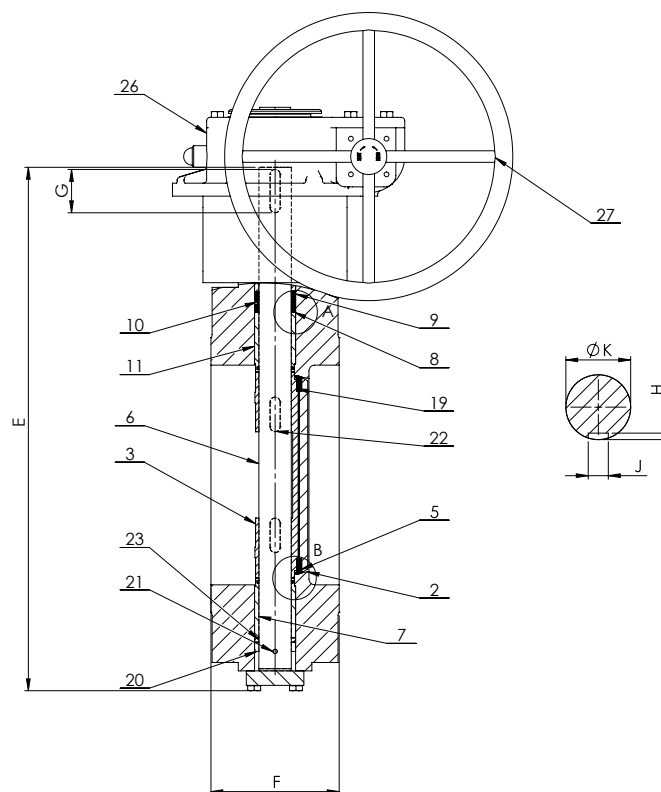
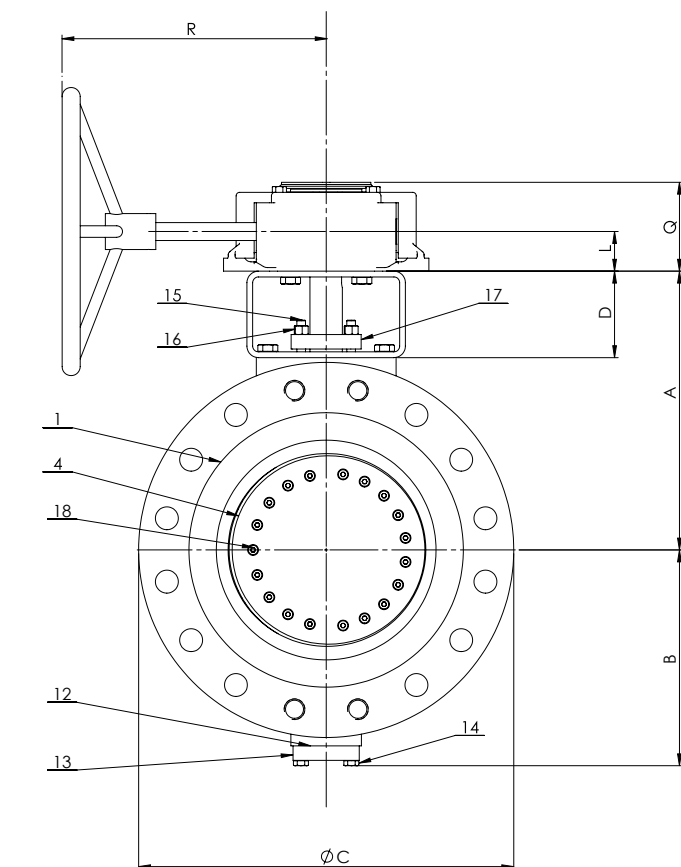
MODEL B1/ SERIES TRI-CON **(With Gear Operator)**

Double Flanged Gate Valve
 Units of Measure in Inches

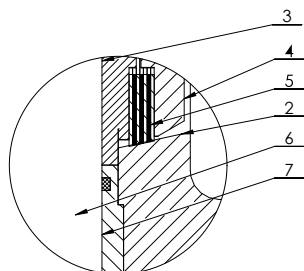
		80	100	150	200	250	300	350	400	450	500	600
		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
CLASS 150	A	7.87	8.47	9.85	12.91	14.49	15.24	17.61	19.61	21.57	22.84	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.4	13.74	16.26	18.43	19.72	22.87
	C (ANSI 150)	7.52	9.02	11.02	13.5	16.02	19.02	21.02	23.5	25.2	27.52	32.01
	D	3.15	3.15	3.15	4.72	4.72	4.72	5.91	5.91	5.91	5.91	5.91
	E	14.72	15.79	19.14	23.66	26.58	29.57	34.53	39.02	43.15	46.1	52.67
	F (ANSI 150)	7.99	9.02	10.51	11.5	12.99	14.02	15	15.98	17.01	17.99	20
	G	1.22	1.18	1.54	1.93	1.93	2.05	3.58	3.58	3.58	3.98	4.06
	H	0.14	0.14	0.2	0.2	0.2	0.22	0.24	0.28	0.3	0.3	0.35
	J	0.24	0.24	0.39	0.39	0.47	0.55	0.63	0.71	0.79	0.79	0.98
	K	0.79	0.87	1.26	1.5	1.57	1.77	2.17	2.56	2.76	2.95	3.54
	L	1.13	1.13	1.59	1.59	1.65	1.65	1.89	2.17	2.17	2.17	2.32
	M	1.87	1.87	3.27	2.72	3.94	3.94	4.33	5.62	5.62	5.62	6.69
	N	2.05	2.05	2.8	2.8	3.39	3.39	4.11	5.12	5.12	8.31	10.36
	O	5.02	5.02	7.4	7.4	8.9	8.9	10.16	12.7	12.7	15.85	18.98
	P	7.87	7.87	11.81	11.81	11.81	15.75	15.75	19.69	19.69	19.69	15.75
	Q	2.46	2.46	3.46	3.46	3.64	3.64	4	4.96	4.96	4.37	4.75
	R	8.55	8.55	11.11	11.11	10.64	11.23	12.85	15.25	15.25	17.61	18.9
	S	3.54	3.94	4.02	4.13	5.71	5.91	5.79	6.10	6.50	6.89	7.68
	Weight	55	62	123	176	264	357	510	704	851	1041	1705
CLASS 300	A	7.87	8.47	9.85	12.91	14.49	15.24	17.61	19.61	21.57	22.84	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.4	13.74	16.26	18.43	19.72	22.87
	C (ANSI 300)	7.52	9.02	11.02	13.5	16.02	19.02	21.02	23.5	25.2	27.52	32.01
	D	3.15	3.15	3.15	4.72	4.72	4.72	5.91	5.91	5.91	5.91	5.91
	E	14.72	15.79	19.14	23.62	26.58	29.57	34.53	39.02	43.15	46.1	52.67
	F (ANSI 300)	11.14	12.01	15.87	16.5	17.99	19.76	30	32.99	35.98	39.02	45
	G	1.22	1.18	1.54	1.93	1.93	2.05	3.58	3.58	3.58	3.98	4.06
	H	0.14	0.14	0.2	0.2	0.2	0.22	0.24	0.28	0.3	0.3	0.35
	J	0.24	0.24	0.39	0.39	0.47	0.55	0.63	0.71	0.79	0.79	0.98
	K	0.79	0.87	1.26	1.5	1.57	1.77	2.17	2.56	2.76	2.95	3.54
	L	1.13	1.13	1.65	1.65	1.89	2.17	2.17	2.32	2.32	2.32	2.32
	M	1.87	1.87	3.27	2.72	3.94	3.94	4.33	5.62	5.62	5.62	6.69
	N	2.05	2.05	3.39	3.39	4.11	5.12	8.31	10.36	10.35	10.35	14.06
	O	5.02	5.02	7.4	8.9	10.16	12.7	15.85	16	16	16	22.99
	P	7.87	7.87	11.81	15.75	15.75	15.75	19.69	15.75	15.75	15.75	23.62
	Q	2.46	2.46	3.46	3.46	3.64	3.64	4	4.96	4.96	4.37	4.75
	R	8.55	8.55	10.64	11.23	12.85	14.46	17.61	18.9	18.9	18.9	22.75
	S	3.54	3.94	4.02	4.72	5.71	5.91	6.69	8.07	8.78	8.74	9.65
	Weight	71	75	189	262	356	530	858	1166	1404	1650	2640
CLASS 600	A	7.87	9.25	10.35	13.58	17.05	17.72	18.03	20.87	22.13	28.27	28.42
	B	6.42	7.72	9.57	11.02	13.35	13.66	15.31	17.76	19.72	22.56	23.82
	C (ANSI 600)	8.27	10.75	14.02	16.5	20	22.01	23.78	27.01	29.25	32.01	37.01
	D	3.15	3.15	3.15	4.72	5.91	5.91	5.91	5.91	5.91	7.87	7.87
	E	16.34	18.78	22.01	28.15	34.1	35.44	36.96	43.07	46.37	55.87	58.98
	F (ANSI 600)	14.02	17.01	22.01	25.98	30.98	32.99	35	39.02	42.99	47.01	55
	G	2.09	2.09	2.09	3.66	3.66	4.06	3.66	4.45	4.45	5.04	6.42
	H	0.14	0.16	0.2	0.22	0.24	0.24	0.28	0.35	0.35	0.39	0.47
	J	0.24	0.31	0.39	0.55	0.63	0.63	0.71	0.98	0.98	1.1	1.42
	K	0.79	0.98	1.5	1.77	2.17	2.17	2.56	3.54	3.54	4.33	5.31
	L	1.59	1.59	1.89	2.17	2.17	2.32	2.32	3.35	*	*	*
	M	3.27	3.27	4.33	5.62	5.62	6.69	6.69	9.25	*	*	*
	N	2.8	2.8	4.11	8.31	8.31	10.35	14.06	16.97	*	*	*
	O	7.4	7.4	10.16	15.85	15.85	18.98	22.99	28.54	*	*	*
	P	11.81	11.81	15.75	19.68	19.68	15.75	27.55	27.55	*	*	*
	Q	3.46	3.46	4.02	4.37	4.37	4.75	4.75	6.65	*	*	*
	R	11.11	11.11	12.85	17.61	17.61	18.9	22.75	23.99	*	*	*
	S	6.97	3.74	4.13	5.71	9.96	15.99		19.51	*	*	*
	Weight	158	187	367	530	814	981	1155	1690	*	*	*

Notes: Other sizes and pressure classes on request, weights in lbs (valve + gear). *Gear sizes depend on shut-off parameters.

MODEL I1



DETAIL A



DETAIL B

Pos.	Part	Material
1	Body	ASTM A216 WCB
2	Body Seat	SS316Ti
3	Disc	ASTM A216 WCB
4	Clamp Ring	ASTM A516 Gr.60
5	Laminated Seal	SS316Ti/Graphite
6	Shaft	ASTM A276 Type 431
7	Lower Bearing Bush	ASTM 582 Type 303 Hard Chr.
8	Gland Packing	Graphite
9	Gland Follower	ASTM A582 Type 303 Hard Chr.
10	Gland Packing	Graphite
11	Upper Bearing Bush	ASTM A582 Type 303 Hard Chr.
12	Cover Seal	Graphite
13	Cover	ASTM A516 Gr.60
14	Cover Screw	ASTM A193 Gr.B8
15	Gland Adjustment Stud	ASTM A193 Gr.B8
16	Gland Adjustment Nut	ASTM A194 Gr.8
17	Gland Plate	ASTM A516 Gr.60
18	Clamp Ring Screw	ASTM A193 Gr.B8
19	Gasket	Graphite
20	Shaft Retainer	ASTM A276 Type 440B
21	Cross Pin	SS316Ti
22	Disc Drive Key	SS316Ti
23	Trust Ring ($\geq 12"$)	AISI 440B/AISI 420 Hardened
24	Mounting Bracket	Steel Zinc-Plated
25	Mounting Bracket Screw	ASTM A193 Gr.B8
26	Gear Operator	Rotork AB Series
27	Handwheel	—

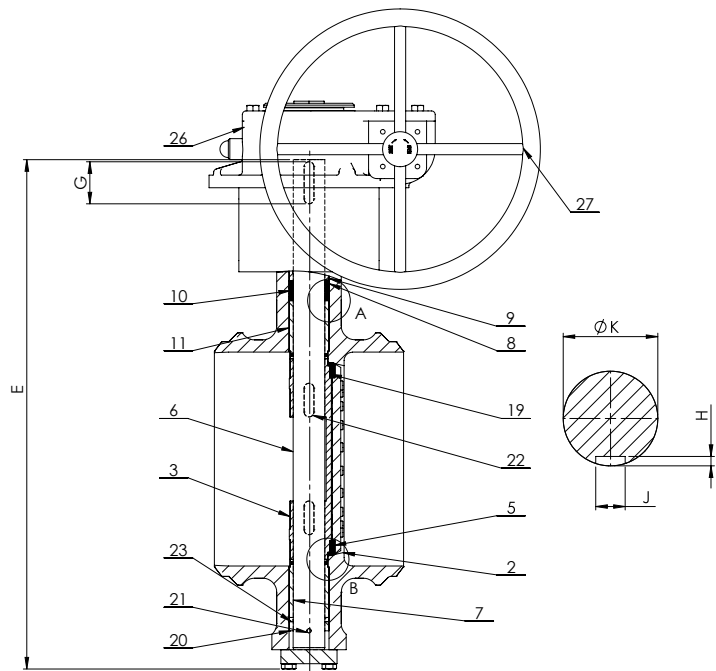
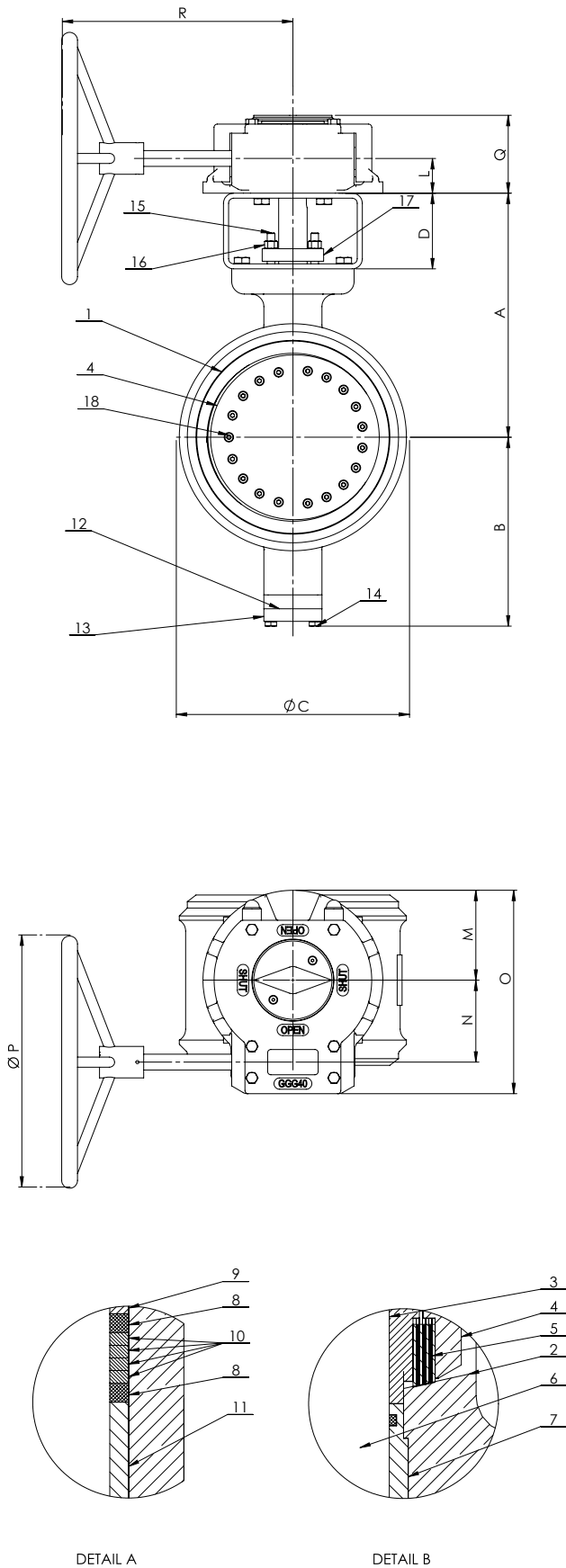
MODEL I1/ SERIES TRI-CON
 (With Gear Operator)

 ISO 5752 Double Flanged
 Units of Measure in Inches

		80	100	150	200	250	300	350	400	450	500	600
		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
CLASS 150	A	7.87	8.47	9.85	12.91	14.49	15.24	17.61	19.61	21.57	22.84	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.4	13.74	16.26	18.43	19.72	22.87
	C (ANSI 150)	7.52	9.02	11.81	13.98	16.54	19.09	21.65	23.43	25.2	27.56	32.09
	D	3.15	3.15	3.15	4.72	4.72	4.72	5.91	5.91	5.91	5.91	5.91
	E	14.72	15.79	19.14	23.62	26.58	29.57	34.53	39.02	43.15	46.1	52.67
	F (ANSI 150)	4.49	5	5.51	5.98	6.5	7.01	7.48	8.5	8.74	9.02	10.51
	G	1.22	1.18	1.54	1.93	1.93	2.05	3.58	3.58	3.58	3.98	4.06
	H	0.14	0.14	0.2	0.2	0.2	0.22	0.24	0.28	0.3	0.3	0.35
	J	0.24	0.24	0.39	0.39	0.47	0.55	0.63	0.71	0.79	0.79	0.98
	K	0.79	0.87	1.26	1.5	1.57	1.77	2.17	2.56	2.76	2.95	3.54
	L	1.13	1.13	1.59	1.59	1.65	1.65	1.89	2.17	2.17	2.17	2.32
	M	1.87	1.87	3.27	3.27	3.94	3.94	4.33	5.62	5.62	5.62	6.69
	N	2.05	2.05	2.8	2.8	3.39	3.39	4.11	5.12	5.12	8.31	10.36
	O	5.02	5.02	7.4	7.4	8.9	8.9	10.16	12.7	12.7	15.85	18.98
	P	7.87	7.87	11.81	11.81	11.81	15.75	15.75	19.69	19.69	19.69	15.75
	Q	2.46	2.46	3.46	3.46	3.64	3.64	4	4.96	4.96	4.37	4.75
	R	8.55	8.55	11.11	11.11	10.64	11.23	12.85	15.25	15.25	17.61	18.9
	Weight	51	64	108	154	218	339	422	618	774	924	1342
CLASS 300	A	7.87	8.47	9.85	12.91	14.49	15.24	17.61	19.61	21.57	22.84	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.4	13.74	16.26	18.43	19.72	22.87
	C (ANSI 300)	8.27	10	12.72	15	17.52	20.51	23.03	25.98	28.03	30.51	36.06
	D	3.15	3.15	3.15	4.72	4.72	4.72	5.91	5.91	5.91	5.91	5.91
	E	14.72	15.79	19.14	23.62	26.58	29.57	34.53	39.02	43.15	46.1	52.67
	F (ANSI 300)	4.49	5	5.51	5.98	6.5	7.01	7.48	8.5	8.74	9.02	10.51
	G	1.22	1.18	1.54	1.89	1.89	2.05	3.58	3.58	3.58	3.98	4.06
	H	0.14	0.14	0.2	0.2	0.2	0.22	0.24	0.28	0.3	0.3	0.35
	J	0.24	0.24	0.39	0.39	0.47	0.55	0.63	0.71	0.79	0.79	0.98
	K	0.79	0.87	1.26	1.5	1.57	1.77	2.17	2.56	2.76	2.95	3.54
	L	1.13	1.13	1.65	1.65	1.89	2.17	2.17	2.32	2.32	2.32	2.32
	M	1.89	1.89	3.94	3.94	4.33	5.62	5.62	6.69	6.69	6.69	6.69
	N	2.05	2.05	3.39	3.39	4.11	5.12	8.31	10.35	10.35	10.35	14.06
	O	5.02	5.02	8.9	8.9	10.16	12.7	15.85	18.98	18.98	18.98	22.99
	P	7.87	7.87	11.81	15.75	15.75	15.75	19.69	15.75	15.75	15.75	23.62
	Q	2.48	2.48	3.64	3.64	4.02	4.96	4.96	6.26	6.26	4.75	4.75
	R	8.55	8.55	10.64	11.23	12.85	14.46	17.61	18.9	18.9	18.9	22.75
	Weight	57	84	148	214	297	422	572	836	968	1386	1859
CLASS 600	A	7.87	9.25	10.35	13.58	17.05	17.72	18.03	20.87	22.13	28.27	28.42
	B	6.42	7.72	9.57	11.02	13.35	13.66	15.31	17.76	19.72	22.56	23.82
	C (ANSI 600)	8.27	10.79	14.02	16.93	20	23.03	23.78	28.15	29.25	32.01	37.01
	D	3.15	3.15	3.15	4.72	5.91	5.91	5.91	5.91	5.91	7.87	7.87
	E	16.34	18.78	22.01	28.15	34.1	35.44	36.96	43.07	46.37	55.87	58.66
	F (ANSI 600)	7.09	7.48	8.27	9.06	9.84	10.63	11.42	12.2	12.99	13.78	15.35
	G	2.09	2.09	2.09	3.66	3.66	4.06	3.66	4.45	4.45	5.04	6.42
	H	0.14	0.16	0.2	0.22	0.24	0.24	0.28	0.35	0.35	0.39	0.47
	J	0.24	0.31	0.39	0.55	0.63	0.63	0.71	0.98	0.98	1.1	1.42
	K	0.79	0.98	1.5	1.77	2.17	2.17	2.56	3.54	3.54	4.33	5.31
	L	1.59	1.59	1.89	2.17	2.17	2.32	2.32	3.35	*	*	*
	M	3.27	3.27	4.33	5.62	5.62	6.69	6.69	9.25	*	*	*
	N	2.8	2.8	4.11	8.31	8.31	10.35	14.06	16.97	*	*	*
	O	7.4	7.4	10.16	15.85	15.85	18.98	22.99	28.54	*	*	*
	P	11.81	11.81	15.74	19.68	19.68	15.75	27.55	27.55	*	*	*
	Q	3.46	3.46	4.02	4.37	4.37	4.75	4.75	6.65	*	*	*
	R	11.11	11.11	12.85	17.61	17.61	18.9	22.75	23.99	*	*	*
	Weight	70	117	253	363	587	726	968	1738	*	*	*

Notes: Other sizes and pressure classes on request, weights in lbs (valve + gear). *Gear sizes depend on shut-off parameters.

MODEL S1, S2



Pos.	Part	Material
1	Body	ASTM A216 WCB
2	Body Seat	SS316Ti
3	Disc	ASTM A216 WCB
4	Clamp Ring	ASTM A516 Gr.60
5	Laminated Seal	SS316Ti/Graphite
6	Shaft	ASTM A276 Type 431
7	Lower Bearing Bush	ASTM 582 Type 303 Hard Chr.
8	Gland Packing	Graphite
9	Gland Follower	ASTM A582 Type 303
10	Gland Packing	Graphite
11	Upper Bearing Bush	ASTM A582 Type 303 Hard Chr.
12	Cover Seal	Graphite
13	Cover	ASTM A516 Gr.60
14	Cover Screw	ASTM A193 Gr.B8
15	Gland Adjustment Stud	ASTM A193 Gr.B8
16	Gland Adjustment Nut	ASTM A194 Gr.8
17	Gland Plate	ASTM A516 Gr.60
18	Clamp Ring Screw	ASTM A193 Gr.B8
19	Gasket	Graphite
20	Shaft Retainer	ASTM A276 Type 440B
21	Cross Pin	SS316Ti
22	Disc Drive Key	SS316Ti
23	Trust Ring (>=12")	AISI 440B/AISI 420 Hardened
24	Mounting Bracket	Steel Zinc-Plated
25	Mounting Bracket Screw	ASTM A193 Gr.B8
26	Gear Operator	Rotork AB Series
27	Handwheel	-

MODEL S1, S2 / SERIES TRI-CON
 (With Gear Operator)

 ISO 5752 Series 14
 Units of Measure in Inches

		80	100	150	200	250	300	350	400	450	500	600
		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
CLASS 150	A	7.87	8.47	9.85	12.91	14.49	15.24	17.61	19.61	21.57	22.84	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.4	13.74	16.26	18.43	19.72	22.87
	D	3.15	3.15	3.15	4.72	4.72	4.72	5.91	5.91	5.91	5.91	5.91
	E	14.72	15.79	19.14	23.62	26.58	29.57	34.53	39.02	43.15	46.1	52.67
	F (ANSI 150)	7.09	7.48	8.27	9.06	9.84	10.63	11.42	12.2	12.99	13.78	15.35
	G	1.22	1.18	1.54	1.89	1.89	2.05	3.58	3.58	3.58	3.98	4.06
	H	0.14	0.14	0.2	0.2	0.2	0.22	0.24	0.28	0.3	0.3	0.35
	J	0.24	0.24	0.39	0.39	0.47	0.55	0.63	0.71	0.79	0.79	0.98
	K	0.79	0.87	1.26	1.5	1.57	1.77	2.17	2.56	2.76	2.95	3.54
	L	1.13	1.13	1.59	1.59	1.65	1.65	1.89	2.17	2.17	2.17	2.32
	M	1.87	1.87	3.27	3.27	3.94	3.94	4.33	5.62	5.62	5.62	6.69
	N	2.05	2.05	2.8	2.8	3.39	3.39	4.11	5.12	5.12	8.31	10.36
	O	5.02	5.02	7.4	7.4	8.9	8.9	10.16	12.7	12.7	15.85	18.98
	P	7.87	7.87	11.81	11.81	11.81	15.75	15.75	19.69	19.69	19.69	15.75
	Q	2.46	2.46	3.46	3.46	3.64	3.64	4	4.96	4.96	4.37	4.75
	R	8.55	8.55	11.11	11.11	10.64	11.23	12.85	15.25	15.25	17.61	18.9
	Weight	33	38	75	130	218	273	361	550	653	794	1131

CLASS 300	A	7.87	8.47	9.85	12.91	14.49	15.24	17.61	19.61	21.57	22.84	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.4	13.74	16.26	18.43	19.72	22.87
	D	3.15	3.15	3.15	4.72	4.72	4.72	5.91	5.91	5.91	5.91	5.91
	E	14.72	15.79	19.14	23.62	26.58	29.57	34.53	39.02	43.15	46.1	52.67
	F (ANSI 300)	7.09	7.48	8.27	9.06	9.84	10.63	11.42	12.2	12.99	13.78	15.35
	G	1.22	1.18	1.54	1.89	1.89	2.05	3.58	3.58	3.58	3.98	4.06
	H	0.14	0.14	0.2	0.2	0.2	0.22	0.24	0.28	0.3	0.3	0.35
	J	0.24	0.24	0.39	0.39	0.47	0.55	0.63	0.71	0.79	0.79	0.98
	K	0.79	0.87	1.26	1.5	1.57	1.77	2.17	2.56	2.76	2.95	3.54
	L	1.13	1.13	1.65	1.65	1.89	2.17	2.17	2.32	2.32	2.32	2.32
	M	1.89	1.89	3.94	3.94	4.33	5.62	5.62	6.69	6.69	6.69	6.69
	N	2.05	2.05	3.39	3.39	4.11	5.12	8.31	10.35	10.35	10.35	14.06
	O	5.02	5.02	8.9	8.9	10.16	12.7	15.85	18.98	18.98	18.98	22.99
	P	7.87	7.87	11.81	15.75	15.75	15.75	19.69	15.75	15.75	15.75	23.62
	Q	2.48	2.48	3.64	3.64	4.02	4.96	4.96	6.26	6.26	4.75	4.75
	R	8.55	8.55	10.64	11.23	12.85	14.46	17.61	18.9	18.9	18.9	22.75
	Weight	33	38	86	141	235	312	411	634	737	849	1197

Notes: Other sizes and pressure classes on request, weights in lbs (valve + gear).

BOLTING DIMENSIONS

Model A1 (Lug Type API 609 T.2)

DN SIZE	ANSI	Face to face	Thread per side	Thread in shaft area
80 / 3"	150	1.89	4 x 5/8" - 11UNC / 0.7" deep	-
	300	1.89	6 x 3/4" - 10UNC / 0.7" deep	2 x 3/4" - 10UNC / 0.43" deep
	600	2.13	6 x 3/4" - 10UNC / 0.78" deep	2 x 3/4" - 10UNC / 0.74" deep
100 / 4"	150	2.13	8 x 5/8" - 11UNC / 0.78" deep	-
	300	2.13	8 x 3/4" - 10UNC / 0.86" deep	-
	600	2.52	8 x 7/8" - 9UNC / 0.82" deep	-
150 / 6"	150	2.24	8 x 3/4" - 10UNC / 0.86" deep	-
	300	2.32	10 x 3/4" - 10UNC / 0.86" deep	2 x 3/4" - 10UNC / 0.51" deep
	600	3.07	10 x 1" - 8UNC / 1.25" deep	2 x 1" - 8UNC / 0.55" deep
200 / 8"	150	2.52	8 x 3/4" - 10UNC / 0.98" deep	-
	300	2.87	12 x 7/8" - 9UNC / 1.06" deep	-
	600	4.02	10 x 1 1/8" - 8UN / 1.37" deep	2 x 1 1/8" - 8UN / 1.18" deep
250 / 10"	150	2.8	12 x 7/8" - 9UNC / 1.18" deep	-
	300	3.27	12 x 1" - 8UNC / 1.18" deep	4 x 1" - 8UNC / 1.04" deep
	600	4.61	12 x 1 1/4" - 8UN / 1.85" deep	4 x 1 1/4" - 8UN / 1.04" deep
300 / 12"	150	3.19	12 x 7/8" - 9UNC / 1.33" deep	-
	300	3.62	12 x 1 1/8" - 8UN / 1.57" deep	4 x 1 1/8" - 8UN / 1.29" deep
	600	5.51	16 x 1 1/4" - 8UN / 1.88" deep	4 x 1 1/4" - 8UN / 1.25" deep
350 / 14"	150	3.62	12 x 1" - 8UNC / 1.57" deep	-
	300	4.61	16 x 1 1/8" - 8UN / 1.69" deep	4 x 1 1/8" - 8UN / 1.18" deep
	600	6.1	16 x 1 3/8" - 8UN / 2.36" deep	4 x 1 3/8" - 8UN / 0.94" deep
400 / 16"	150	4.02	12 x 1" - 8UNC / 1.57" deep	4 x 1" - 8UNC / 1.1" deep
	300	5.24	16 x 1 1/4" - 8UN / 1.88" deep	4 x 1 1/4" - 8UN / 1.37" deep
	600	7.01	16 x 1 1/2" - 8UN / 2.28" deep	4 x 1 1/2" - 8UN / 0.86" deep
450 / 18"	150	4.49	12 x 1 1/8" - 8UN / 1.69" deep	4 x 1 1/8" - 8UN / 1.33" deep
	300	5.87	20 x 1 1/4" - 8UN / 1.88" deep	4 x 1 1/4" - 8UN / 1.02" deep
	600	7.87	16 x 1 5/8" - 8UN / 2.55" deep	4 x 1 5/8" - 8UN / 1.14" deep
500 / 20"	150	5	16 x 1 1/8" - 8UN / 1.69" deep	4 x 1 1/8" - 8UN / 1.02" deep
	300	6.26	20 x 1 1/4" - 8UN / 1.88" deep	4 x 1 1/4" - 8UN / 1.18" deep
	600	8.5	20 x 1 5/8" - 8UN / 2.55" deep	4 x 1 5/8" - 8UN / 0.7" deep
600 / 24"	150	6.06	16 x 1 1/4" - 8UN / 2.16" deep	4 x 1 1/4" - 8UN / 0.98" deep
	300	7.13	20 x 1 1/2" - 8UN / 2.28" deep	4 x 1 1/2" - 8UN / 1.33" deep

MODEL I1 (ISO 5752 DOUBLE FLANGE)

DN SIZE	ANSI	Face to Face	Thread in shaft area per side	Bolt holes per side
80 / 3"	150	4.49	-	4 x Ø 0.75"
	300	4.49	4 x ¾" – 10UNC / 1.1" deep	4 x Ø 0.88"
	600	7.09	4 x ¾" – 10UNC / 1.14" deep	4 x Ø 0.88"
100 / 4"	150	5	4 x 5/8" – 11UNC / 0.78" deep	4 x Ø 0.75"
	300	5	4 x ¾" – 10UNC / 0.98" deep	4 x Ø 0.88"
	600	7.48	4 x 7/8" – 9UNC / 1.33" deep	4 x Ø 1"
150 / 6"	150	5.51	4 x ¾" – 10UNC / 0.94" deep	4 x Ø 0.88"
	300	5.51	4 x ¾" – 10UNC / 1.04" deep	8 x Ø 0.88"
	600	8.27	4 x 1" – 8UNC / 1.57" deep	8 x Ø 1.13"
200 / 8"	150	5.98	4 x ¾" – 10UNC / 0.94" deep	4 x Ø 0.88"
	300	5.98	4 x 7/8" – 9UNC / 1.18" deep	8 x Ø 1"
	600	9.06	4 x 1 1/8" – 8UN / 1.77" deep	8 x Ø 1.25"
250 / 10"	150	6.5	4 x 7/8" – 9UNC / 1.33" deep	8 x Ø 1"
	300	6.5	4 x 1" – 8UNC / 1.57" deep	12 x Ø 1.12"
	600	9.84	4 x 1 1/4" – 8UN / 1.88" deep	12 x Ø 1.38"
300 / 12"	150	7.01	4 x 7/8" – 9UNC / 1.02" deep	8 x Ø 1"
	300	7.01	4 x 1 1/8" – 8UN / 1.18" deep	12 x Ø 1.38"
	600	10.63	4 x 1 1/4" – 8UN / 1.85" deep	16 x Ø 1.38"
350 / 14"	150	7.48	4 x 1" – 8UNC / 1.49" deep	8 x Ø 1.12"
	300	7.48	4 x 1 1/8" – 8UN / 1.57" deep	16 x Ø 1.25"
	600	11.42	4 x 1 3/8" – 8UN / 2.04" deep	16 x Ø 1.5"
400 / 16"	150	8.5	4 x 1" – 8UNC / 1.49" deep	12 x Ø 1.12"
	300	8.5	4 x 1 1/4" – 8UN / 1.37" deep	16 x Ø 1.38"
	600	12.2	4 x 1 1/2" – 8UN / 2.24" deep	16 x Ø 1.62"
450 / 18"	150	8.74	4 x 1 1/8" – 8UN / 1.69" deep	12 x Ø 1.25"
	300	8.74	4 x 1 1/4" – 8UN / 1.85" deep	20 x Ø 1.38"
	600	12.99	4 x 1 5/8" – 8UN / 2.44" deep	16 x Ø 1.75"
500 / 20"	150	9.02	4 x 1 1/8" – 8UN / 1.69" deep	16 x Ø 1.26"
	300	9.02	4 x 1 1/4" – 8UN / 1.88" deep	20 x Ø 1.38"
	600	13.78	4 x 1 5/8" – 8UN / 2.44" deep	20 x Ø 1.75"
600 / 24"	150	10.51	4 x 1 1/4" – 8UN / 1.96" deep	16 x Ø 1.38"
	300	10.51	4 x 1 1/2" – 8UN / 2.24" deep	20 x Ø 1.62"
	600	15.35	4 x 1 7/8" – 8UN / 2.79" deep	20 x Ø 2"
700 / 28"	150	11.5	4 x 1 1/4" – 8UN / 1.85" deep	24 x Ø 1.38"
	300	11.5	4 x 1 5/8" – 8UN / 2.16" deep	24 x Ø 1.75"
	600	16.93	8 x 2" – 8UN / 2.95" deep	20 x Ø 2.12"
750 / 30"	150	12.52	4 x 1 1/4" – 8UN / 1.85" deep	24 x Ø 1.38"
	300	12.52	4 x 1 3/4" – 8UN / 1.85" deep	24 x Ø 1.88"
	600	18.5	4 x 2" – 8UN / 2.95" deep	24 x Ø 2.12"
800 / 32"	150	12.52	4 x 1 1/2" – 8UN / 1.69" deep	24 x Ø 1.62"
	300	12.52	4 x 1 7/8" – 8UN / 2.75" deep	24 x Ø 2"
900 / 36"	150	12.99	4 x 1 1/2" – 8UN / 2.24" deep	28 x Ø 1.62"
	300	12.99	4 x 2" – 8UN / 3.14" deep	28 x Ø 2.12"
	600	20.08	8 x 2 1/2" – 8UN / 3.77" deep	20 x Ø 2.62"
1000 / 40"	150	16.14	4 x 1 1/2" – 8UN / 2.24" deep	32 x Ø 1.62"
	300	16.14	4 x 1 5/8" – 8UN / 2.44" deep	28 x Ø 1.75"

HOW TO ORDER MODEL NUMBER/ANSI

Designation	Size	Pressure Class	Body & Disc Material	Shaft Material	Packing	Lamination Material	Execution	Operation
A1 = API 609 Lug Type Table 2	0050 = DN 50 = 2"	A = PN 10	A = GP240GH / P265GH	A = 1.4057 (SS431)	1 = Graphite	1 = Stainless Steel / Graphite	A = Standard	A = Bare Shaft
B1 = B16.10 Gate Valve Double Flange	0065 = DN 65 = 2.5"	B = PN 16	B = 1.4552 (CF8C)	B = 1.4571 (SS316Ti)	2 = PTFE	2 = Stainless Steel / Solid Laminate	B = Inconel Seat	E = Electrical Actuator
I1 = ISO 5752 Double Flange	0080 = DN 80 = 3"	C = PN 25	C = 1.4571 (SS316Ti)	C = 1.4980 (AISI660)	3 = Kalrez	3 = Stainless Steel / PTFE	C = Flange with Groove	G = Gear
W1 = Wafer type API 609	0100 = DN 100 = 4"	D = PN 40	D = 1.4408	D = Duplex	4 = Special	4 = Hastelloy / Graphite	D = High Cycle Bearing	H = Hydraulic Actuator
D1 = EN 558 R13/R14 (DIN 3202 / F16 / F4) Double Flange	0125 = DN 125 = 5"	E = PN 63	E = 1.4301 (SS304)	E = 1.4301 (SS304)	5 = Graphite / Live-Loading	5 = Special	E = Sealed Bearing	I = Gear with Switch Box
F1 = EN 558 R14 (DIN 3202 / F4) Double Flange	0150 = DN 150 = 6"	F = PN 100	F = 1.4307 (SS304L)	F = 1.4307 (SS304L)	6 = PTFE / Live-Loading	6 = Duplex / Graphite	F = Stellite Seat	M = Mounting Bracket
L1 = EN 558 R16 (DIN 3202 / K3) Lug type	0200 = DN 200 = 8"	G = PN 160	G = 1.7357 (WC6)	G = 1.4923	7 = O2-Graphite	7 = Inconel / O2-Graphite	G = Blow out proof shaft acc. API 609 for DIN Valves	P = Pneumatic Actuator
S1 = EN 558 R14 (DIN 3202 / F4) Butt weld / Fabricated	0250 = DN 250 = 10"	H = PN 250	H = Hastelloy	H = Hastelloy	8 = O2-Graphite / Live-Loading	8 = Hastelloy	H = Combination E + F	Q = Electrohydraulic Actuator
S2 = EN 558 R14 (DIN 3202 / F4) Butt weld / Casting	0300 = DN 300 = 12"	I = PN 6	I = Inconel	I = Inconel	9 = EPAGRAPH	9 = Duplex	I = Combination D + F	S = Special
WD = EN 558 R16 (DIN 320 / K3) Water Type	0350 = DN 350 = 14"	J = J/JS Standard	J = Duplex	J = 1.4401 / 1.4404 (SS316 / 316L)		0 = Inconel	J = Combination D + F & HT - Bolting	L = Low Temperature Gear
WS = EN 558 R20 / R25 (DIN 3202 / K1/K2) Water Type	0375 = DN 375 = 15"	X = ANSI 150	K = 1.4401 / 1.4404 (SS316 / 316L)	K = 1.4541 (SS321)		A = Monel / O2-Graphite	K = Combination D + F + HT - Bolting + Extension	T = High Temperature Gear
LS = EN 558 R20/R25 (DIN 3202 / K1 / K2) Lug Type	0400 = DN 400 = 16"	Y = ANSI 300	L = 1.6220 / P355NL	M = Monel K500		B = Bronze / Graphite	L = Body Extension	O = O2-Gear
DB = Double Block and Bleed	0450 = DN 450 = 18"	Z = ANSI 600	M = Monel	N = Nitronics 50		C = Monel	M = Sealed bearing + NACE	N = Offshore Gear
CF = EN 558 R14 (DIN 3202 / F34) Flanged Check Valve	0500 = DN 500 = 20"	W ANSI 900	N = CS Body & SS Disc	P = 17-4 PH / 1.4542 (SS316 / 316L)		D = Superduplex / Graphite	N = NACE	R = Gear with Padlock Flange
CS = EN 558 R14 (DIN 3202 / F4) Butt weld Check Valve	0600 = DN 600 = 24"	V = ANSI 1500	O = O2 Brass	Q = Superduplex			O = Steam Jacket	
FA = EN 558 R14 Double Flange with ANSI Connection	0650 = DN 650 = 26"	S = Special	P = C95800 / C95500	U = 1.4536-39 (904 / 904L)			P = Sealed bearing + Steam Jacket	
AT = API 609 Lug Type & Sharktooth	0700 = DN 700 = 28"		Q = Superduplex	S = Special			Q = Sealed bearing + Steam Jacket + NACE	
BT = B16.10 Gate Valve Double Flange & Sharktooth	0750 = DN 750 = 30"		R = 16Mo3 / 1.5415 / G20Mo5 / 1.5419				R = Ring-Joint Facing	
IT = ISO 5752 Double Flange & Sharktooth	0800 = DN 800 = 32"		S = Special				S = Special	
ST = Butt weld & Sharktooth	0900 = DN 900 = 36"		T = 1.4827				T = HT-Bolting	
	1000 = DN 1000 = 40"		U = 1.4859				U = Combination L & T	
	1050 = DN 1050 = 42"		V = SS/O2 Brass				V = Shaft Extension	
			W = WC9				W = Combination T + V	
			X = LCB				X = Combination L + N + T	
			Y = CF8M					
			Z = WCB / A516Gr.70					
			1 = 1.4536-39 (904 / 904L)					
			3 = CF3					
			4 = CF3M					
			5 = C5					
			6 = C12					
	2200 = DN 2200 = 88"		8 = CF8					

DOUBLE BLOCK AND BLEED DESIGN

The Double Block and Bleed design features every technical advantage which the series TRI-CON has plus there is a true double block and bleed feature which delivers zero leakage. By using this design, the former two valve system with a spool piece becomes obsolete. This fact is not only important for installation since you have to install only one valve body in the pipeline, but also only one actuator or gearbox is required.

With Zwick's unique design of the linkage between the two shafts, the user is able to actuate both shafts with only one actuator and reach zero leakage with the two available sealing surfaces. The design of the linkage forgives any dimensional changes due to thermal differences in the valve.

The redundant zero leakage performance of this valve is the ideal valve solutions for several critical processes where absolute zero leakage and pipe inspection via the bleed port are required.



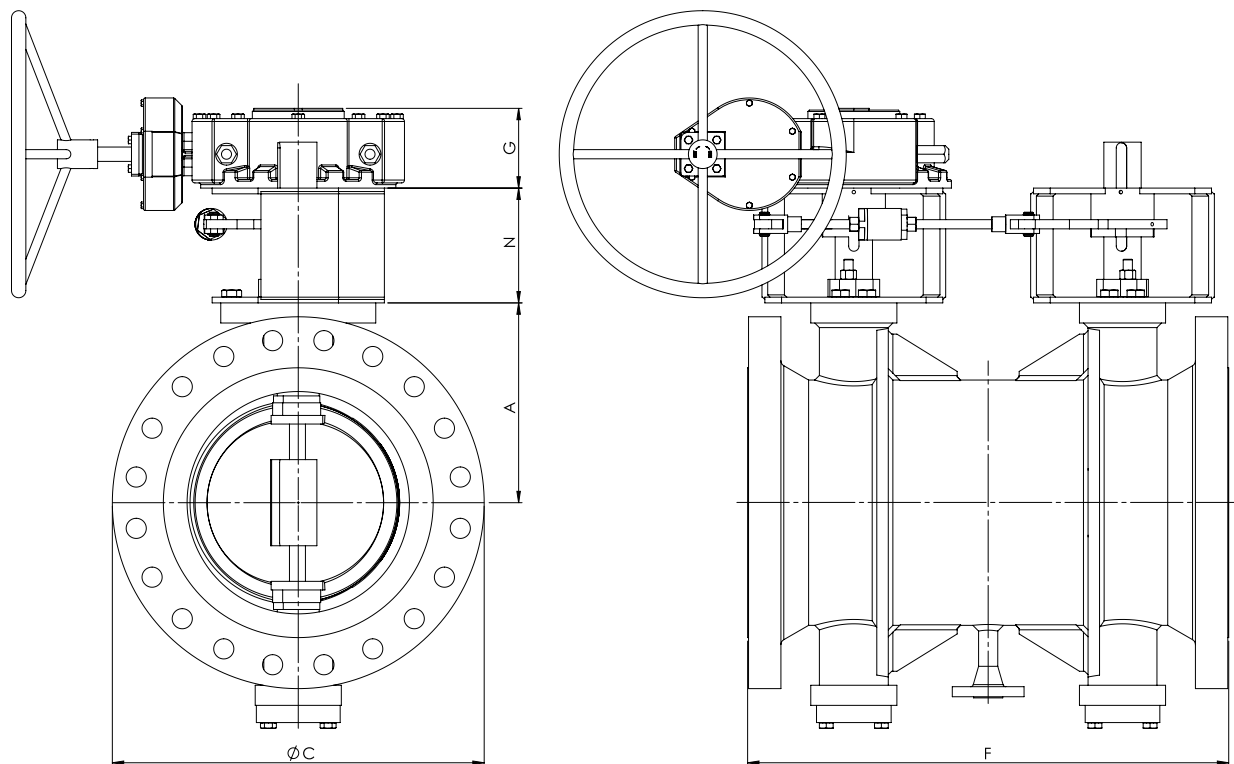
30" Class 300 DBB with electric actuator as master device and declutchable gear box.



10" Class 300 Double Block and Bleed design.

Applications like multi-product manifolds, meter stations, tank storage isolation or hydrant isolation are very sensitive to leakage and the Double Block and Bleed design would be an ideal fit.

MODEL DBB/ SERIES TRI-CON **(With Gear Operator)**

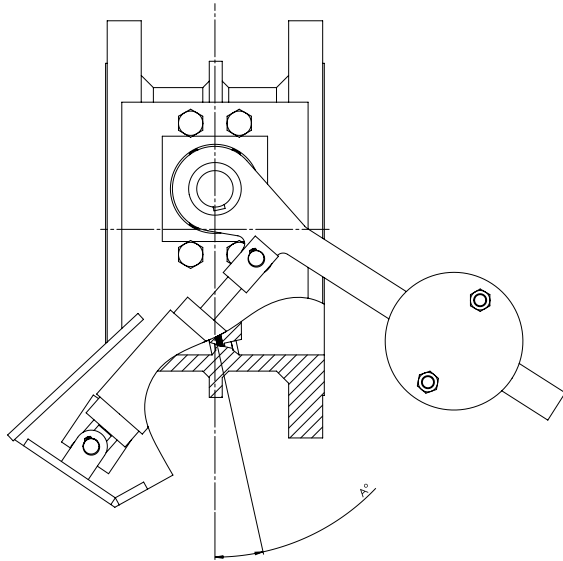


DN	80	100	150	200	250	300	350	400	450	500	600
SIZE	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
A	4.72	5.31	6.69	8.19	9.76	10.51	11.69	13.7	15.67	16.93	19.76
C (ANSI 150)	7.52	9.06	11.02	13.58	16.02	19.09	21.02	23.5	25	27.52	32.01
C (ANSI 300)	8.27	10.04	12.52	15	17.52	20.51	23.03	25.51	28.03	30.51	36.02
F (ANSI 150)	7.99	9.02	10.51	11.5	12.99	14.02	15	15.98	17.01	17.99	20
F (ANSI 300)	11.14	12.01	15.87	16.5	17.99	19.76	30	32.99	35.98	39.02	45
N max.	9.84	9.84	9.84	9.84	9.84	9.84	9.84	9.84	9.84	9.84	9.84
BRACKET 150 lbs	F14	F14	F16	F16	F16	F16	F25	F25	F25	F35	F35
GEAR 150 lbs/ Handwheel size	AB550 HR 200	AB550 HR 200	AB880 HR 400	AB1250 HR 600	AB1250 HR 600	AB1950 SP4 HR 400	AB1950 SP4 HR 500	AB6800 SP4 HR 500	AB6800 SP4 HR 600	AB6800 SP9 HR 500	AB6800 SP9 HR 500
G Gear Height 150 lbs	3.43	3.43	3.54	3.94	3.94	4.92	4.92	6.3	6.3	6.3	6.3
BRACKET 300 lbs	F14	F14	F16	F16	F25	F25	F30	F30	F30	F35	F35
GEAR 300 lbs	AB550 HR 200	AB550 HR 315	AB1250 HR 500	AB1950 HR 600	AB1950 SP4 HR 600	AB1950 SP4 HR 600	AB6800 SP4 HR 600	AB6800 SP9 HR 500	AB6800 SP9 HR 500	A250 SP9 HR 700	A250 SP9 HR 700
G Gear Height 300 lbs	3.43	3.43	3.94	4.92	4.92	4.92	6.3	6.3	6.3	7.36	7.36

Notes: Other sizes and pressure classes on request.

TILTED DISC CHECK VALVE TRI-CHECK

The check valve TRI-CHECK combines all the benefits of the Series TRI-CON in a non-return valve. Triple-offset design with a wide seat angle and a true cone in cone, no rubbing while moving and absolute zero leakage performance. Also the statically held gasket and the no pinned disc design are used in the Series TRI-CHECK.



Slanted seat position in the valve body.

The TRI-CHECK is equipped with a hydraulic damper and a counter weight. The damper can be adjusted to the actual installation conditions in which the valve will be used. The damping system not only reduces the risk of pressure surges due to water hammer because of its closing characteristic, it also prevents the disc to slam in the seat.

Instead the disc closes in a smooth movement which can be adjusted, so that the valve closes slowly in the last degrees of movement to protect the sealing parts.

The Check Valve Series TRI-CHECK has proven to be the ideal non-return valve for single or multiple pump protection application for the last two decades. Another benefit of the valve is the variety of features.

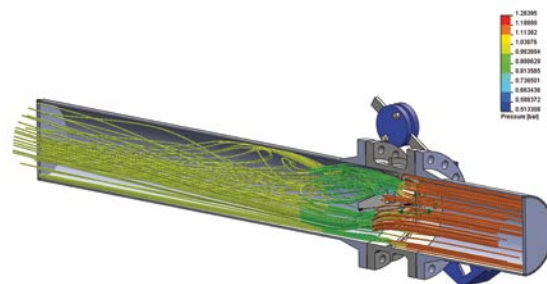
Beside the non-return function the valve can be used as a combined check and isolating valve or as a check valve with power assisted closing and opening.



Combined Check and Isolating Valve.

The Series TRI-CHECK uses a seat design in which the seat is not parallel to the flange facing in the body. Instead there is a certain angle between centerline and seat in the body as can be seen in the left drawing. As a consequence the general free area will be increased, so that the fluid resistance of the valve will be decreased. Another advantage is that the valve travel will be reduced, so that the valve reaches its ideal position in the flow much faster.

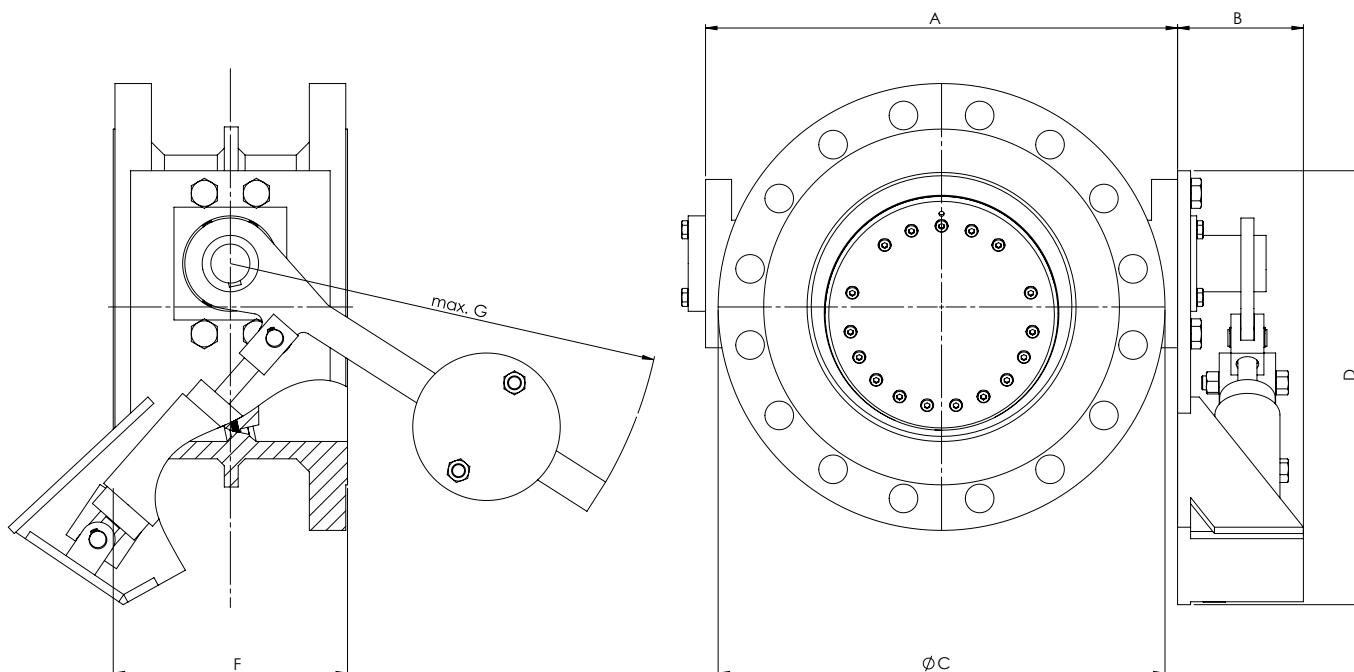
Zwick also uses the latest EFD simulation technology to optimize the design of the series TRI-CHECK and to achieve the best possible hydrodynamical characteristics.



EFD Flow Simulation of Series TRI-CHECK.

MODEL CF / SERIES TRI-CHECK

ISO 5752 Series 14
Units of Measure in Inches



DN	80	100	150	200	250	300	350	400	450	500	600
SIZE	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
A	9.45	11.65	16.93	17.95	18.5	21.42	23.94	27.8	31.73	34.25	39.92
B	3.15	3.15	4.72	4.72	5.91	5.91	5.91	9.45	9.45	9.45	9.84
C (ANSI 150)	7.52	9.02	11.02	13.5	16.02	19.09	21.02	23.62	25	27.56	32.01
C (ANSI 300)	8.27	10	12.72	15	17.52	20.51	23.03	25.51	27.95	30.51	36.02
D	15.75	15.75	15.75	16.14	19.69	19.69	19.69	27.56	27.56	27.56	31.5
F	7.09	7.48	8.27	9.06	9.84	10.63	11.42	12.2	12.99	13.78	15.35
G	15.75	15.75	19.69	19.69	19.69	19.69	19.69	19.69	23.62	23.62	27.56

Notes: Other sizes and pressure classes on request. Butt weld ends also available.

ZWICK TRI-CON / TRI-CHECK APPLICATIONS



Tank isolation



Manifolds



ESD turbine trip



District heating



Pump protection



TRI-CON and TRI-CHECK
in district heating

MORE TRI-CON APPLICATIONS

Refining	Petrochemical plants	Oil and Gas	Offshore	Power	Pulp & Paper	Commercial Buildings & Energy Centers
Desulphurization Systems & Tail Gas Treaters	Propylene Plant Equipment Isolation	Dehydrators	Fixed Equipment Isolation	Steam Isolation	Boiler Feedwater	Hot Water Isolation
Steam	Oxygen & Hydrogen Services	AMINE	Fire Water Systems	Condenser Cooking	Steam Isolation	Steam Isolation
Oil & Refined Product Storage	Ethylene Cracking Plants	Natural Gas Isolation	CO ₂ Switching Valves	Pump Isolation	Oxygen Isolation	Fuel Gas Isolation
Hot Cracking Gases	PSA & Molecular Sieves Switching Valves	Mole Sieve Switching	Crude Oil Isolation	Fuel Gas Isolation		
Flare Gas	Flare Isolation	Turbo Expanders		Hot Air		
Light End Isolation	CO ₂					
	Butadiene & Styrene Plants					

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Warehouse and offices in Deer Park, Texas



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FACILITY 4

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