



THE TRI-CON SERIES

METAL SEATED TRIPLE OFF-SET



ZWICK
ARMATUREN GMBH

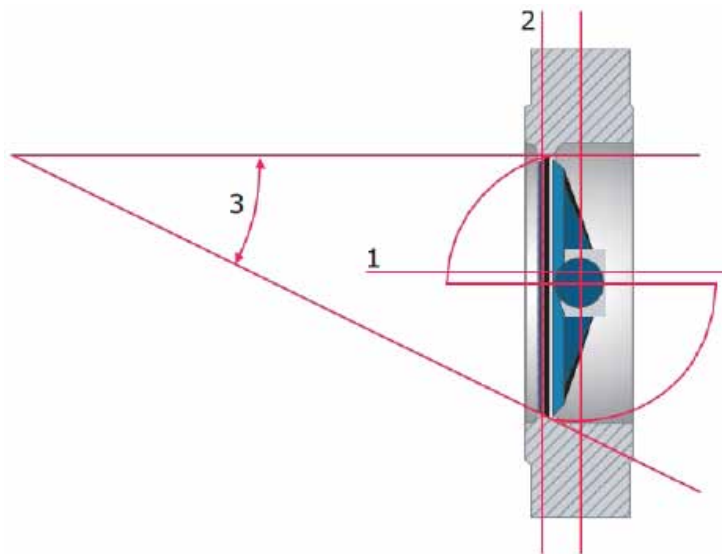
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ZWICK TRI-CON FEATURES

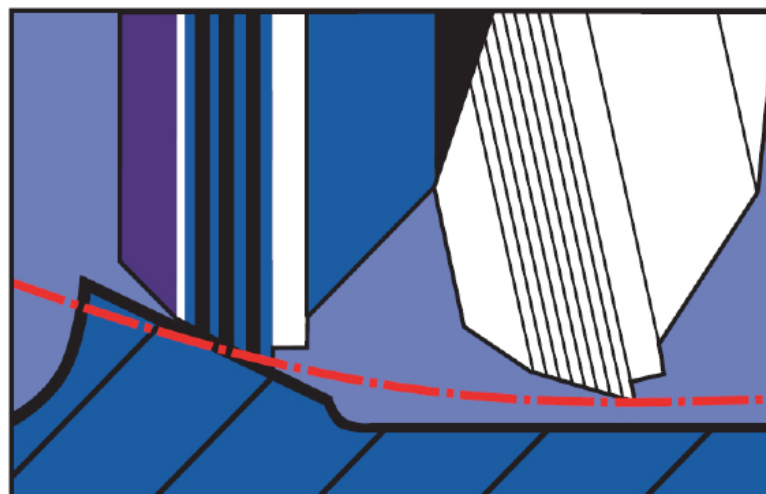
Triple-Offset Conical Seating

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.



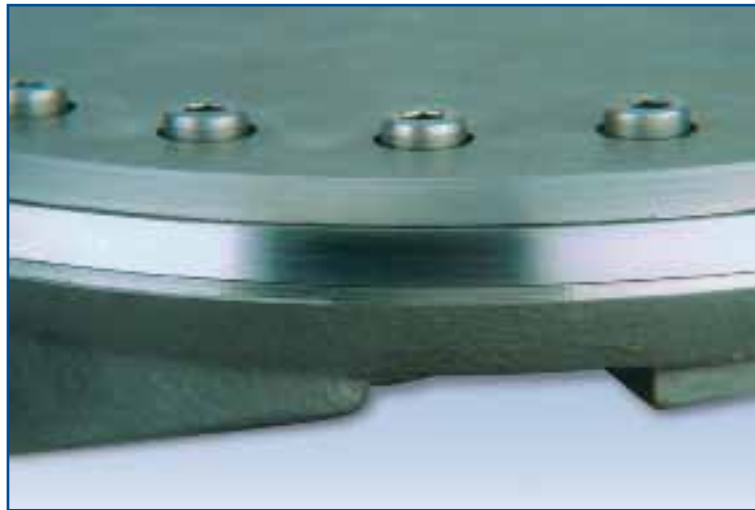
Statically Held Laminated Seal Ring/Flat Gasket

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

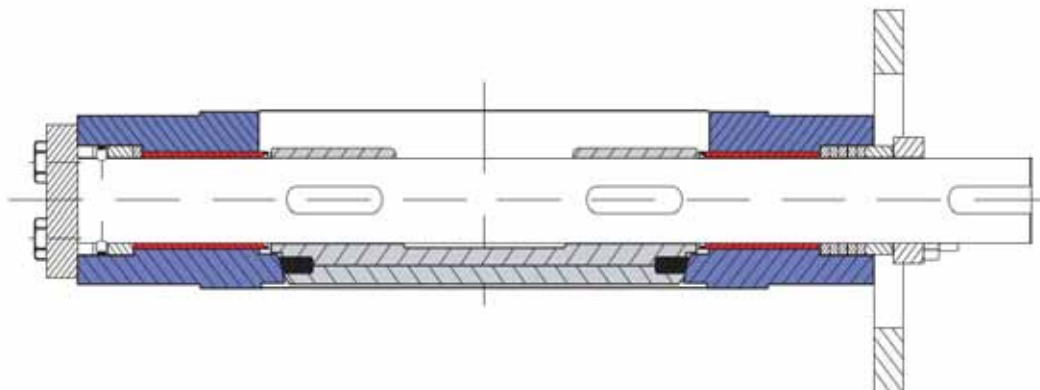
TRI-Con valves offer an all-metal laminated seal ring for aggressive applications. While some competitive laminated seal ring designs have failed due to aggressive line media attacking graphite and binders, the layered lamination of all-metal achieves zero leakage.



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.

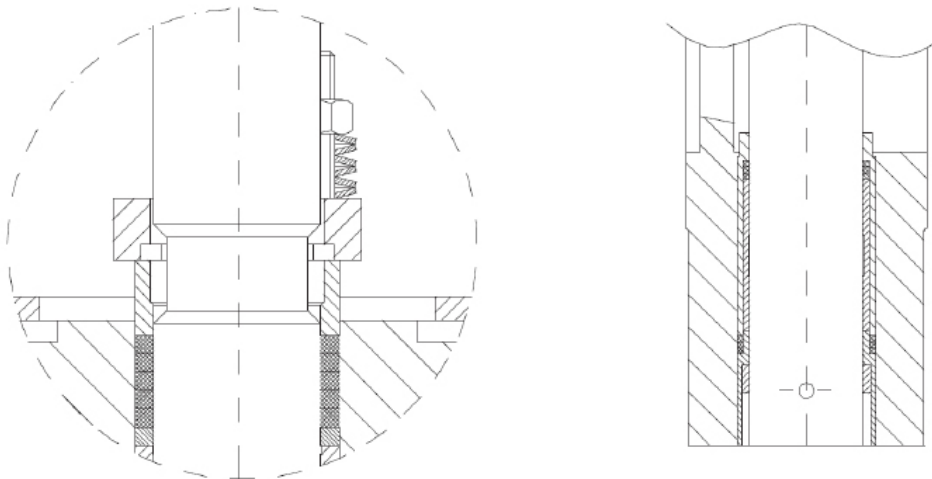
The Zwick self-centering disc design not only assures equal transmission of the torque but will also allow for more than 1,000 times the thermal differential between the shaft and disc. This allows the disc to torque into its ideal position with each closing. The Zwick design also offers substantially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



ZWICK TRI-CON FEATURES

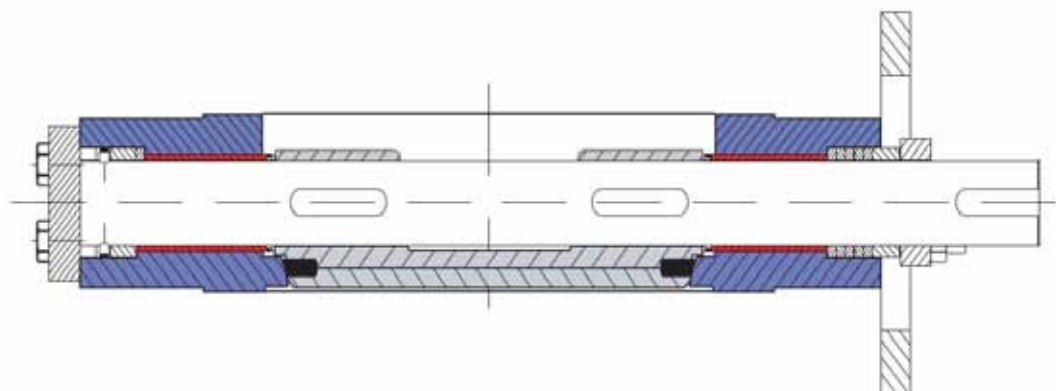
Emission Control

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
Flange Drilling	ASME B16.5 (Sizes 2"-24") ASME B16.47 Series A & B
Fire Test	API 607 4th edition
Design	ASME B16.34
Emission Control	TA Luft
PED CE Mark qualified	

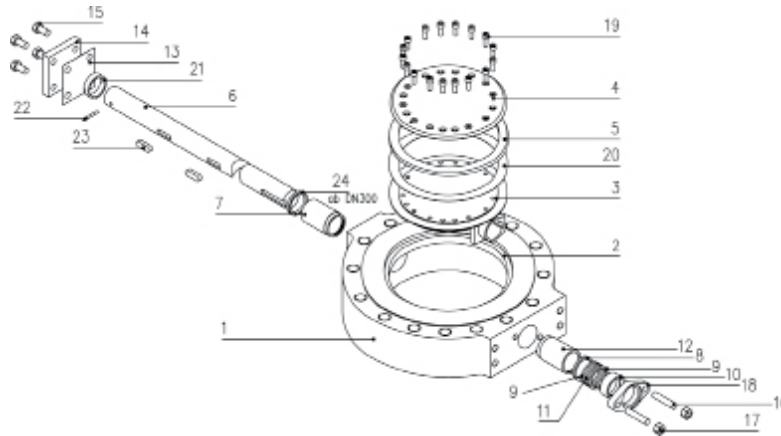


Certification

- 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

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.316 Ti
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.316 Ti / 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	Carbon Fibre	Carbon Fibre
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.

Double flanged (ISO 5752)
Lug (API 609)
Gate valve (ANSI B16.10) Butt weld



Lug A1 Body per API-609



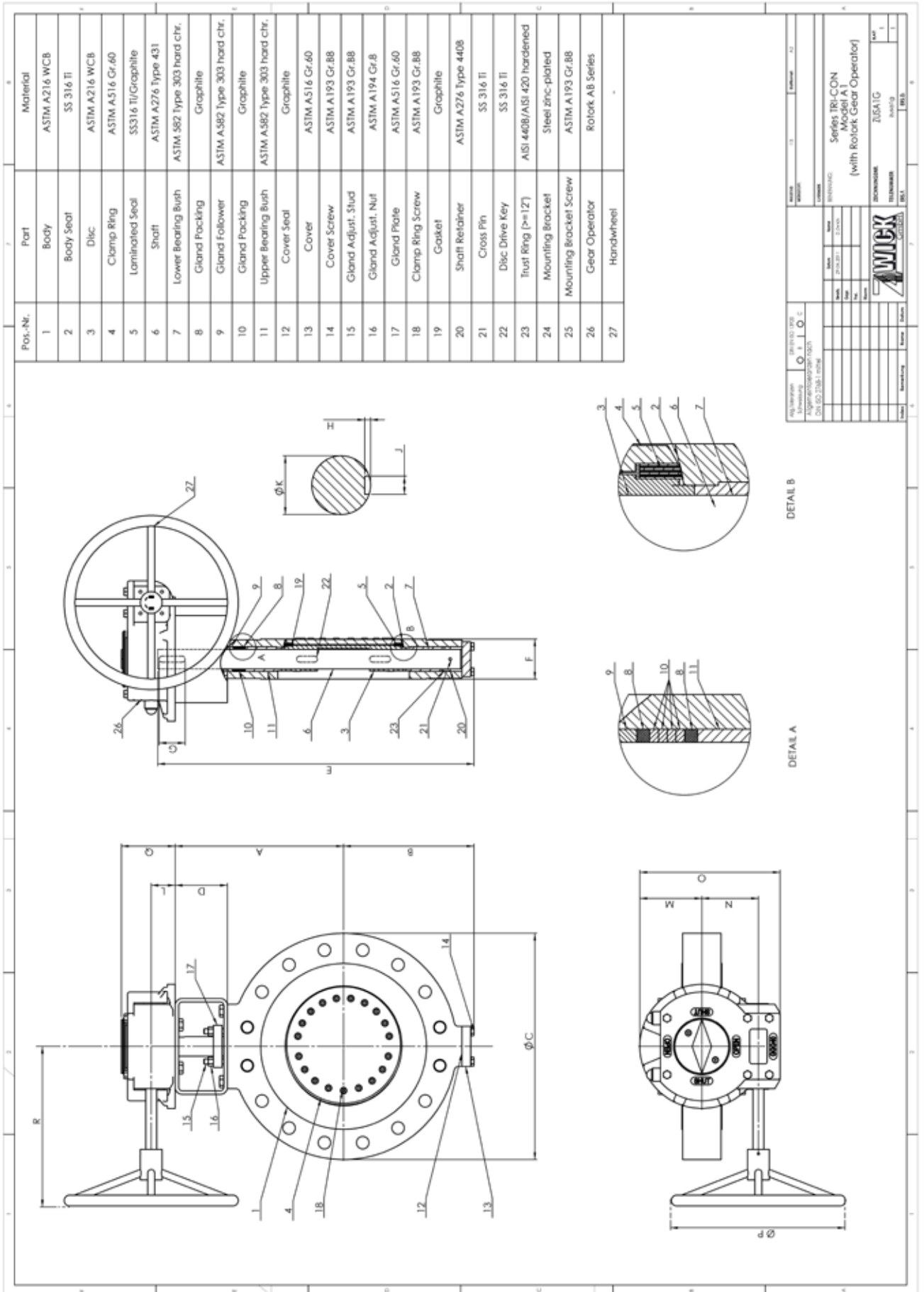
B1 Body Gate Valve ANSI-B16.10



ISO 5752 I1 Body - Double Flanged



S1 Body Butt weld



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

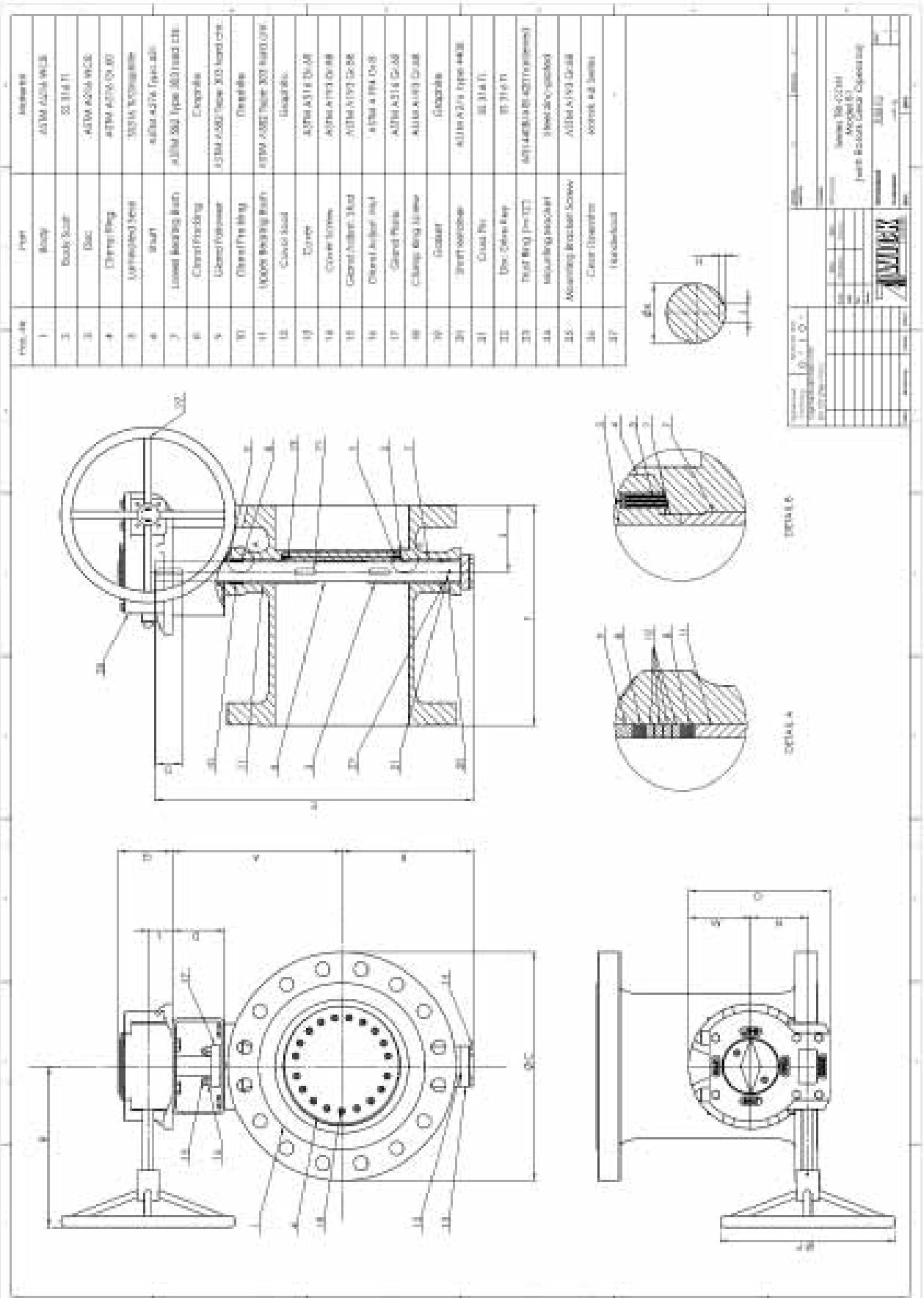
Lugged Body per API-609
Units of Measure in Inches

CLASS 150		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	A	7.87	8.46	9.84	12.91	14.49	15.24	17.60	19.61	21.57	22.83	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.40	13.74	16.26	18.43	19.72	22.87
	C	7.48	9.02	11.61	13.50	15.94	18.98	20.87	23.50	25.00	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	19.13	23.62	26.57	29.57	34.53	39.02	43.15	46.10	52.68
	F	1.89	2.13	2.24	2.52	2.80	3.19	3.62	4.02	4.49	5.00	6.06
	G	1.26	1.22	1.57	1.93	1.93	2.09	3.62	3.62	3.62	4.02	4.09
	H	0.14	0.14	0.16	0.20	0.20	0.22	0.24	0.28	0.30	0.30	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	1.89	1.89	2.72	2.72	3.94	3.94	4.33	5.62	5.62	5.62	6.69
N	2.05	2.05	2.80	2.80	3.39	3.39	4.11	5.12	5.12	8.31	10.35	
O	5.02	5.02	6.85	6.85	8.90	8.90	10.16	12.70	12.70	12.70	16.00	
P	7.87	7.87	11.81	11.81	11.81	15.75	15.75	19.69	19.69	19.69	15.75	
Q	2.48	2.48	3.46	3.46	3.64	3.64	4.02	4.96	4.96	4.96	6.26	
R	8.55	8.55	11.11	11.11	10.64	11.23	12.85	15.25	15.25	17.61	18.90	
Weight	37	51	86	119	174	240	367	519	645	887	1540	

CLASS 300		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	A	7.87	8.46	9.84	12.91	14.49	15.24	17.60	19.61	21.57	22.83	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.40	13.74	16.26	18.43	19.72	22.87
	C	8.27	10.00	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	19.13	23.62	26.57	29.57	34.53	39.02	43.15	46.10	52.68
	F	1.89	2.13	2.32	2.87	3.27	3.62	4.61	5.24	5.87	6.26	7.13
	G	1.26	1.22	1.57	1.93	1.93	2.09	3.62	3.62	3.62	4.02	4.09
	H	0.14	0.14	0.20	0.20	0.20	0.22	0.24	0.28	0.30	0.30	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	1.50	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	7.17	
O	5.02	5.02	8.90	8.90	10.16	12.70	12.70	16.00	16.00	16.00	22.99	
P	7.87	7.87	11.81	15.75	15.75	15.75	19.69	15.75	15.75	15.75	27.56	
Q	2.48	2.48	3.64	3.64	4.02	4.96	4.96	6.26	6.26	6.26	4.75	
R	8.55	8.55	10.64	11.23	12.85	14.46	17.61	18.90	18.90	18.90	22.75	
Weight	44	68	119	156	235	341	530	781	983	1210	1863	

CLASS 600		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	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	8.27	10.75	14.02	16.50	20.00	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	16.89	18.78	22.01	28.15	34.09	35.35	36.97	43.86	47.17	55.87	58.98
	F	2.13	2.52	3.07	4.02	4.61	5.51	6.10	7.01	7.87	8.50	9.13
	G	2.64	2.13	2.13	3.70	3.70	4.09	3.70	4.49	4.49	5.08	6.46
	H	0.14	0.16	0.20	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	1.10	1.42
	K	0.79	0.98	1.50	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	2.72	2.72	4.33	5.62	5.62	6.69	6.69	9.25	*	*	*
N	2.80	2.80	4.11	8.31	8.31	10.35	14.06	16.97	*	*	*	
O	6.85	6.85	10.16	12.70	12.70	16.00	22.99	23	*	*	*	
P	7.87	11.81	23.62	15.75	23.62	15.75	15.75	15.75	*	*	*	
Q	3.46	3.46	4.02	4.96	4.96	6.26	4.75	7.32	*	*	*	
R	9.73	11.11	13.64	16.82	17.61	18.90	21.96	23.28	*	*	*	
Weight	62	86	180	308	473	638	902	1533	1320**	2002**	2376**	

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

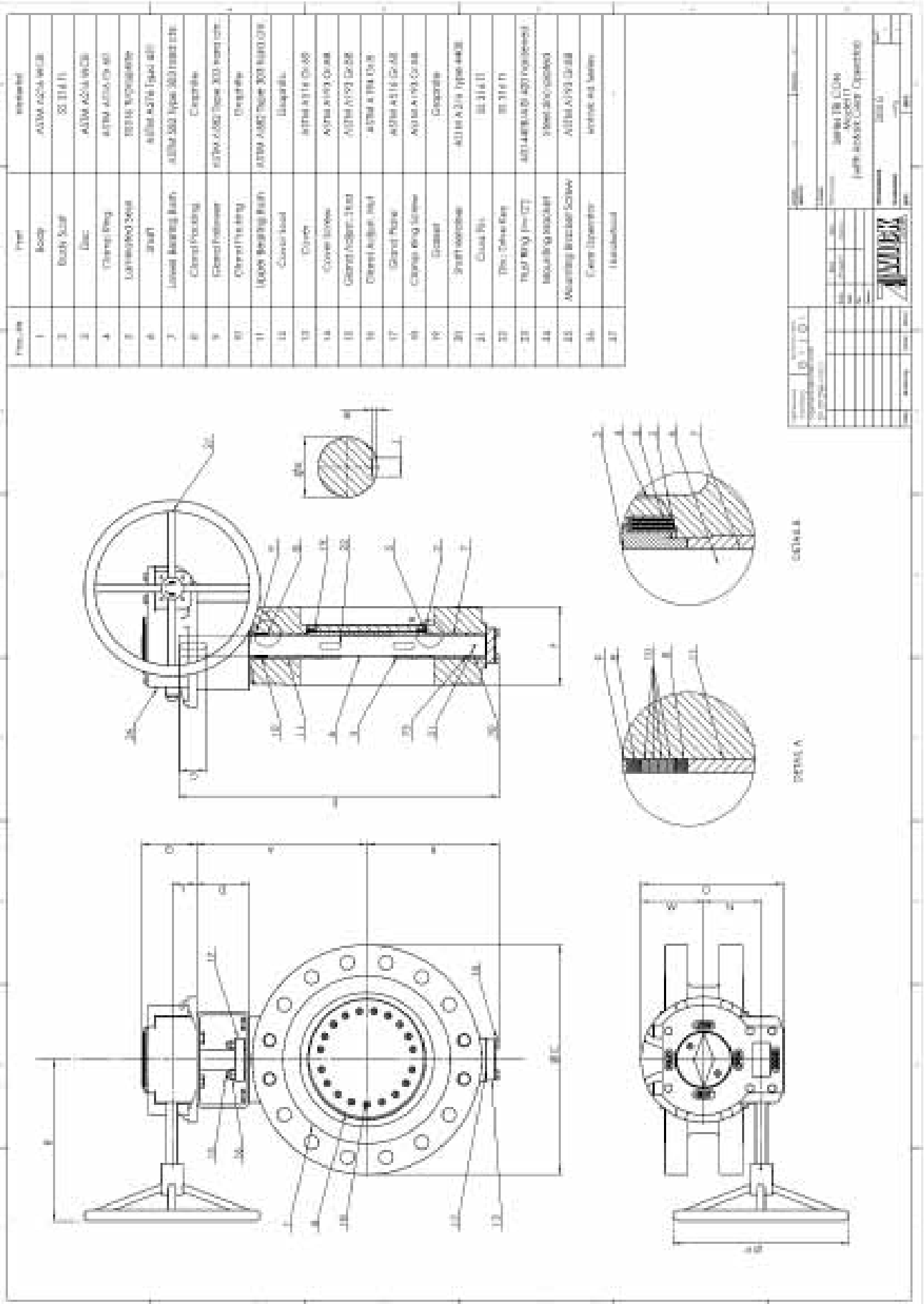


MODEL B1/ SERIES TRI-CON (With Gear Operator)

Double Flanged Gate Valve
Units of Measure in Inches

		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	17.60	19.61	21.57
	B	5.63	6.26	7.72	8.82	10.16	12.40	13.74	16.26	18.43	19.72	22.87
	C	7.48	9.02	11.61	13.50	15.94	18.98	20.87	23.50	25.00	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	19.13	23.62	26.57	29.57	34.53	39.02	43.15	46.10	52.68
	F	7.99	9.02	10.51	11.50	12.99	14.02	15.00	15.98	17.01	17.99	20.00
	G	1.26	1.22	1.57	1.93	1.93	2.09	3.62	3.62	3.62	4.02	4.09
	H	0.14	0.14	0.20	0.20	0.20	0.22	0.24	0.28	0.30	0.30	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	1.50	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	1.89	1.89	2.72	2.72	3.94	3.94	4.33	5.62	5.62	5.62	6.69
	N	2.05	2.05	2.80	2.80	3.39	3.39	4.11	5.12	5.12	8.31	10.35
	O	5.02	5.02	6.85	6.85	8.90	8.90	10.16	12.70	12.70	12.70	16.00
	P	7.87	7.87	11.81	11.81	11.81	15.75	15.75	19.69	19.69	19.69	15.75
	Q	2.48	2.48	3.46	3.46	3.64	3.64	4.02	4.96	4.96	4.96	6.26
	R	8.55	8.55	11.11	11.11	10.64	11.23	12.85	15.25	15.25	17.61	18.90
	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	218	356	510	618	851	1041	1705
CLASS 300	A	7.87	8.46	9.84	12.91	14.49	15.24	17.60	19.61	21.57	22.83	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.40	13.74	16.26	18.43	19.72	22.87
	C	8.27	10.00	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	19.13	23.62	26.57	29.57	34.53	39.02	43.15	46.10	52.68
	F	11.14	12.01	15.87	16.50	17.99	19.76	30.00	32.99	35.98	39.02	45.00
	G	1.26	1.22	1.57	1.93	1.93	2.09	3.62	3.62	3.62	4.02	4.09
	H	0.14	0.14	0.20	0.20	0.20	0.22	0.24	0.28	0.30	0.30	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	1.50	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	7.17
	O	5.02	5.02	8.90	8.90	10.16	12.70	12.70	16.00	16.00	16.00	22.99
	P	7.87	7.87	11.81	15.75	15.75	15.75	19.69	15.75	15.75	15.75	27.56
	Q	2.48	2.48	3.64	3.64	4.02	4.96	4.96	6.26	6.26	6.26	4.75
	R	8.55	8.55	10.64	11.23	12.85	14.46	17.61	18.90	18.90	18.90	22.75
	S	3.54	3.94	4.02	4.13	5.71	5.91	6.69	6.81	6.50	8.74	7.68
	Weight	70	75	189	262	356	422	858	1166	1404	1650	2640
CLASS 600	A	7.87	9.25	10.35	13.58	17.05	17.72	18.03	21.65	22.13	28.39	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	8.27	10.75	14.02	16.50	20.00	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	16.89	18.78	22.01	28.15	34.09	35.35	36.97	43.07	46.38	55.87	58.98
	F	14.02	17.01	22.01	25.98	30.98	32.99	35.00	39.02	42.99	47.01	55.00
	G	2.64	2.13	2.13	3.70	3.70	4.09	3.70	4.49	4.49	5.08	6.46
	H	0.14	0.16	0.20	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	1.10	1.42
	K	0.79	0.98	1.50	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	2.72	2.72	4.33	5.62	5.62	6.69	6.69	9.25	*	*	*
	N	2.80	2.80	4.11	8.31	8.31	10.35	14.06	16.97	*	*	*
	O	6.85	6.85	10.16	12.70	12.70	16.00	22.99	23	*	*	*
	P	7.87	11.81	23.62	15.75	23.62	15.75	15.75	15.75	*	*	*
	Q	3.46	3.46	4.02	4.96	4.96	6.26	4.75	7.32	*	*	*
	R	9.73	11.11	13.64	16.82	17.61	18.90	21.96	23.28	*	*	*
	S	6.97	3.05	3.13	4.55	8.54	15.99	-	19.11	-	23.50	-
	Weight	158	117	367	530	726	981	1155	1690	1492**	1793**	-

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



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

ISO 5752 Double Flanged
Units of Measure in Inches

CLASS 150		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	A	7.87	8.46	9.84	12.91	14.49	15.24	17.60	19.61	21.57	22.83	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.40	13.74	16.26	18.43	19.72	22.87
	C	7.48	9.02	11.61	13.50	15.94	18.98	20.87	23.50	25.00	27.56	31.89
	D	3.15	3.15	3.15	4.72	4.72	4.72	5.9	5.91	5.91	5.91	5.91
	E	14.72	15.79	19.13	23.62	26.57	29.57	34.53	39.02	43.15	46.10	52.68
	F	4.49	5.00	5.51	5.98	6.50	7.01	7.48	8.50	8.74	9.02	10.51
	G	1.26	1.22	1.57	1.93	1.93	2.09	3.62	3.62	3.62	4.02	4.09
	H	0.14	0.14	0.20	0.20	0.20	0.22	0.24	0.28	0.30	0.30	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	1.50	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	1.89	1.89	2.72	2.72	3.94	3.94	4.33	5.62	5.62	5.62	6.69
N	2.05	2.05	2.80	2.80	3.39	3.39	4.11	5.12	5.12	8.31	10.35	
O	5.02	5.02	6.85	6.85	8.90	8.90	10.16	12.70	12.70	12.70	16.00	
P	7.87	7.87	11.81	11.81	11.81	15.75	15.75	19.69	19.69	19.69	15.75	
Q	2.48	2.48	3.46	3.46	3.64	3.64	4.02	4.96	4.96	4.96	6.26	
R	8.55	8.55	11.11	11.11	10.64	11.23	12.85	15.25	15.25	17.61	18.90	
Weight	51	64	108	154	218	339	422	618	774	924	1342	

CLASS 300		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	A	7.87	8.46	9.84	12.91	14.49	15.24	17.60	19.61	21.57	22.83	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.40	13.74	16.26	18.43	19.72	22.87
	C	8.27	10.00	12.52	15.00	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	19.13	23.62	26.57	29.57	34.53	39.02	43.15	46.10	52.68
	F	4.49	5.00	5.51	5.98	6.50	7.01	7.48	8.50	8.74	9.02	10.51
	G	1.26	1.22	1.57	1.93	1.93	2.09	3.62	3.62	3.62	4.02	4.09
	H	0.14	0.14	0.20	0.20	0.20	0.22	0.24	0.28	0.30	0.30	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	1.50	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	7.17	
O	5.02	5.02	8.90	8.90	10.16	12.70	12.70	16.00	16.00	16.00	22.99	
P	7.87	7.87	11.81	15.75	15.75	15.75	19.69	15.75	15.75	15.75	27.56	
Q	2.48	2.48	3.64	3.64	4.02	4.96	4.96	6.26	6.26	6.26	4.75	
R	8.55	8.55	10.64	11.23	12.85	14.46	17.61	18.90	18.90	18.90	22.75	
Weight	57	84	147	213	297	422	572	836	968	1386	1859	

CLASS 600		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	A	7.87	9.25	10.35	18.58	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	8.27	10.75	14.02	16.50	20.00	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	16.89	18.78	22.01	28.15	34.09	35.35	36.97	43.07	46.38	55.87	58.98
	F	7.09	7.48	8.27	9.06	9.84	10.63	11.42	12.20	12.99	13.78	15.32
	G	2.64	2.13	2.13	3.70	3.70	4.09	3.70	4.49	4.49	5.08	6.46
	H	0.14	0.16	0.20	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	1.10	1.42
	K	0.79	0.98	1.50	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	2.72	2.72	4.33	5.62	5.62	6.69	6.69	9.25	*	*	*
N	2.80	2.80	4.11	8.31	8.31	10.35	14.06	16.97	*	*	*	
O	6.85	6.85	10.16	12.70	12.70	16.00	22.99	23	*	*	*	
P	7.87	11.81	23.62	15.75	23.62	15.75	15.75	15.75	*	*	*	
Q	3.46	3.46	4.02	4.96	4.96	6.26	4.75	7.32	*	*	*	
R	9.73	11.11	13.64	16.82	17.61	18.90	21.96	23.28	*	*	*	
Weight	70	117	253	40	726	902	1188	1738	1320**	1947**	2438**	

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

Pos. Nr.	Part	Material
1	Body	ASTM A204 WCB
2	Body Nut	SS 316 L1
3	Disc	ASTM A204 WCB
4	Chimp Ring	ASTM A204 Gr. 40
5	Laminated Seal	2024H Nipolamite
6	Shaft	ASTM A276 Type 302
7	Lower Bearing Bush	ASTM A276 Type 302 hard c/s
8	Clamp Flange	Carbon
9	Flange Nut	ASTM A276 Type 302 hard c/s
10	Clamp Ring	Carbon
11	Upper Bearing Bush	ASTM A276 Type 302 hard c/s
12	Control Rod	Aluminum
13	Cover	ASTM A276 Gr. 40
14	Cover Nut	ASTM A276 Gr. 40
15	Control Rod Seal	ASTM A276 Gr. 40
16	Control Rod Seal Nut	ASTM A276 Gr. 40
17	Clamp Nut	ASTM A276 Gr. 40
18	Clamp Ring Nut	ASTM A276 Gr. 40
19	Clamp	Carbon
20	Shaft Washer	ASTM A276 Type 302
21	Clamp Nut	SS 316 L1
22	Disc Drive Key	SS 316 L1
23	Flange Nut (m32)	ASTM A276 Gr. 40 (optional)
24	Mounting Bracket	Steel (also coated)
25	Mounting Bracket Screw	ASTM A276 Gr. 40
26	Clamp Washer	ASTM A276 Gr. 40
27	Handwheel	---

DETAIL 4
 DETAIL 5

Dimensions: A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, BA, BB, BC, BD, BE, BF, BG, BH, BI, BJ, BK, BL, BM, BN, BO, BP, BQ, BR, BS, BT, BU, BV, BW, BX, BY, BZ, CA, CB, CC, CD, CE, CF, CG, CH, CI, CJ, CK, CL, CM, CN, CO, CP, CQ, CR, CS, CT, CU, CV, CW, CX, CY, CZ, DA, DB, DC, DD, DE, DF, DG, DH, DI, DJ, DK, DL, DM, DN, DO, DP, DQ, DR, DS, DT, DU, DV, DW, DX, DY, DZ, EA, EB, EC, ED, EE, EF, EG, EH, EI, EJ, EK, EL, EM, EN, EO, EP, EQ, ER, ES, ET, EU, EV, EW, EX, EY, EZ, FA, FB, FC, FD, FE, FF, FG, FH, FI, FJ, FK, FL, FM, FN, FO, FP, FQ, FR, FS, FT, FU, FV, FW, FX, FY, FZ, GA, GB, GC, GD, GE, GF, GG, GH, GI, GJ, GK, GL, GM, GN, GO, GP, GQ, GR, GS, GT, GU, GV, GW, GX, GY, GZ, HA, HB, HC, HD, HE, HF, HG, HH, HI, HJ, HK, HL, HM, HN, HO, HP, HQ, HR, HS, HT, HU, HV, HW, HX, HY, HZ, IA, IB, IC, ID, IE, IF, IG, IH, II, IJ, IK, IL, IM, IN, IO, IP, IQ, IR, IS, IT, IU, IV, IW, IX, IY, IZ, JA, JB, JC, JD, JE, JF, JG, JH, JI, JJ, JK, JL, JM, JN, JO, JP, JQ, JR, JS, JT, JU, JV, JW, JX, JY, JZ, KA, KB, KC, KD, KE, KF, KG, KH, KI, KJ, KK, KL, KM, KN, KO, KP, KQ, KR, KS, KT, KU, KV, KW, KX, KY, KZ, LA, LB, LC, LD, LE, LF, LG, LH, LI, LJ, LK, LL, LM, LN, LO, LP, LQ, LR, LS, LT, LU, LV, LW, LX, LY, LZ, MA, MB, MC, MD, ME, MF, MG, MH, MI, MJ, MK, ML, MM, MN, MO, MP, MQ, MR, MS, MT, MU, MV, MW, MX, MY, MZ, NA, NB, NC, ND, NE, NF, NG, NH, NI, NJ, NK, NL, NM, NN, NO, NP, NQ, NR, NS, NT, NU, NV, NW, NX, NY, NZ, OA, OB, OC, OD, OE, OF, OG, OH, OI, OJ, OK, OL, OM, ON, OO, OP, OQ, OR, OS, OT, OU, OV, OW, OX, OY, OZ, PA, PB, PC, PD, PE, PF, PG, PH, PI, PJ, PK, PL, PM, PN, PO, PP, PQ, PR, PS, PT, PU, PV, PW, PX, PY, PZ, QA, QB, QC, QD, QE, QF, QG, QH, QI, QJ, QK, QL, QM, QN, QO, QP, QQ, QR, QS, QT, QU, QV, QW, QX, QY, QZ, RA, RB, RC, RD, RE, RF, RG, RH, RI, RJ, RK, RL, RM, RN, RO, RP, RQ, RR, RS, RT, RU, RV, RW, RX, RY, RZ, SA, SB, SC, SD, SE, SF, SG, SH, SI, SJ, SK, SL, SM, SN, SO, SP, SQ, SR, SS, ST, SU, SV, SW, SX, SY, SZ, TA, TB, TC, TD, TE, TF, TG, TH, TI, TJ, TK, TL, TM, TN, TO, TP, TQ, TR, TS, TT, TU, TV, TW, TX, TY, TZ, UA, UB, UC, UD, UE, UF, UG, UH, UI, UJ, UK, UL, UM, UN, UO, UP, UQ, UR, US, UT, UY, UZ, VA, VB, VC, VD, VE, VF, VG, VH, VI, VJ, VK, VL, VM, VN, VO, VP, VQ, VR, VS, VT, VU, VV, VW, VX, VY, VZ, WA, WB, WC, WD, WE, WF, WG, WH, WI, WJ, WK, WL, WM, WN, WO, WP, WQ, WR, WS, WT, WU, WV, WW, WX, WY, WZ, XA, XB, XC, XD, XE, XF, XG, XH, XI, XJ, XK, XL, XM, XN, XO, XP, XQ, XR, XS, XT, XU, XV, XW, XX, XY, XZ, YA, YB, YC, YD, YE, YF, YG, YH, YI, YJ, YK, YL, YM, YN, YO, YP, YQ, YR, YS, YT, YU, YV, YW, YX, YY, YZ, ZA, ZB, ZC, ZD, ZE, ZF, ZG, ZH, ZI, ZJ, ZK, ZL, ZM, ZN, ZO, ZP, ZQ, ZR, ZS, ZT, ZU, ZV, ZW, ZX, ZY, ZZ.

OPERATOR'S MANUAL
 TRI-CON
 Series 16, 17, 18
 Model 10
 (with lock-out Cable Operation)

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

ISO 5752 Series 14
Units of Measure in Inches

CLASS 150		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	A	7.87	8.46	9.84	12.91	14.49	15.24	17.60	19.61	21.57	22.83	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.40	13.74	16.26	18.43	19.72	22.87
	C	4.72	5.91	7.87	10.04	12.20	14.17	15.75	19.29	21.38	25.12	27.95
	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	19.13	23.62	26.57	29.57	34.53	39.02	43.15	46.10	52.68
	F	7.09	7.48	8.27	9.06	9.84	10.63	11.42	12.20	12.99	13.78	15.35
	G	1.26	1.22	1.57	1.93	1.93	2.09	3.62	3.62	3.62	4.02	4.09
	H	0.14	0.14	0.20	0.20	0.20	0.22	0.24	0.28	0.30	0.30	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	1.50	1.57	1.77	2.17	2.56	2.79	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	1.89	1.89	2.72	2.72	3.94	3.94	4.33	5.62	5.62	5.62	6.69
	N	2.05	2.05	2.80	2.80	3.39	3.39	4.11	5.12	5.12	8.31	10.35
	O	5.02	5.02	6.85	6.85	8.90	8.90	10.16	12.70	12.70	12.70	16.00
	P	7.87	7.87	11.81	11.81	11.81	15.75	15.75	19.69	19.69	19.69	15.75
	Q	2.48	2.48	3.46	3.46	3.64	3.64	4.02	4.96	4.96	4.96	6.26
R	8.55	8.55	11.11	11.11	10.64	11.23	12.85	15.25	15.25	17.61	18.90	
Weight	33	37	75	130	218	273	361	550	653	794	1131	

CLASS 300		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	A	7.87	8.46	9.84	12.91	14.49	15.24	17.60	19.61	21.57	22.83	25.67
	B	5.63	6.26	7.72	8.82	10.16	12.40	13.74	16.26	18.43	19.72	22.87
	C	4.72	5.91	7.87	10.04	12.20	14.17	15.75	19.29	21.38	25.12	27.95
	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	19.13	23.62	23.57	29.57	34.53	39.02	43.15	46.10	52.68
	F	7.09	7.48	8.27	9.06	9.84	10.63	11.42	12.20	12.99	13.78	15.35
	G	1.26	1.22	1.57	1.93	1.93	2.09	3.62	3.62	3.62	4.02	4.09
	H	0.14	0.14	0.20	0.20	0.20	0.22	0.24	0.28	0.30	0.30	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	1.50	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	7.17
	O	5.02	5.02	8.90	8.90	10.16	12.70	12.70	16.00	16.00	16.00	22.99
	P	7.87	7.87	11.81	15.75	15.75	15.75	19.69	15.75	15.75	15.75	27.56
	Q	2.48	2.48	3.64	3.64	4.02	4.96	4.96	6.26	6.26	6.26	4.75
R	8.55	8.55	10.64	11.23	12.85	14.46	17.61	18.90	18.90	18.90	22.75	
Weight	33	37	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 (Lugtype 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	2 x 1 1/8"-8UN / 1.18" 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 / 0.94" 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 1.25"
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" – 8wwUN / 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	0050 = 2"	X = ANSI 150	X = A 352 LCB	A = A 276/479 T.431	1 = Graphite	1 = Stainless Steel / Graphite	A = Standard	A = Bare Shaft
B1 = B16.10 Gate Valve Double Flange	0080 = 3"	Y = ANSI 300	Y = A 351 CF8M	B = A 276 /479 Gr.316Ti	2 = PTFE	2 = Stainless Steel All-Metal Lamination	B = Inconel Seat	E = Electric Actuator
I1 = ISO 5752 Double Flange	0100 = 4"	Z = ANSI 600	Z = A 216 WCB	C = AISI T.660	3 = Kalrez	3 = Stainless Steel / PTFE	C = Ring Type Joint acc. to ASME B16.5	G = Gear
S1 = Butt weld	0150 = 6"	W = ANSI 900	D = A 276 Gr.316Ti	D = Duplex	4 = Special	4 = Hastelloy / Graphite	D = High Cycle Bearing	H = Hydraulic Actuator
W1 = Wafer	0200 = 8"	V = ANSI 1500	E = A 276 T.304	E = A 276/479 T.304		5 = Special	E = Sealed Bearing Design	I = Gear with Position Indicator
	0250 = 10"		F = A 276 T.303	F = A 276/479 T.303		6 = Duplex / Graphite	F = Stellite Seat	M = Mounting Bracket
	0300 = 12"		G = A 217 WCB	G = Alloy 904 L		7 = Inconel / Graphite	H = Combiantion E +F	P = Pneumatic Actuator
	0350 = 14"		H = Hastelloy C	H = Hastelloy C		8 = Hastelloy	I = Hastelloy Seat	
	0400 = 16"		I = Inconel	I = Inconel		9 = Duplex	J = Monel Seat	
	0450 = 18"		J = Duplex	J = A 276/479 T.316		0 = Inconel	N = Duplex Seat	
	0500 = 20"		K = A 276 T.316L	K = A 479 T.321			V = Extension	
	0600 = 24"		L = A 182 F12	S = Special			S = Special	
	etc.w		M = A 351 CF8					
			N = A 351 CF8C					
			S = Special					

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.



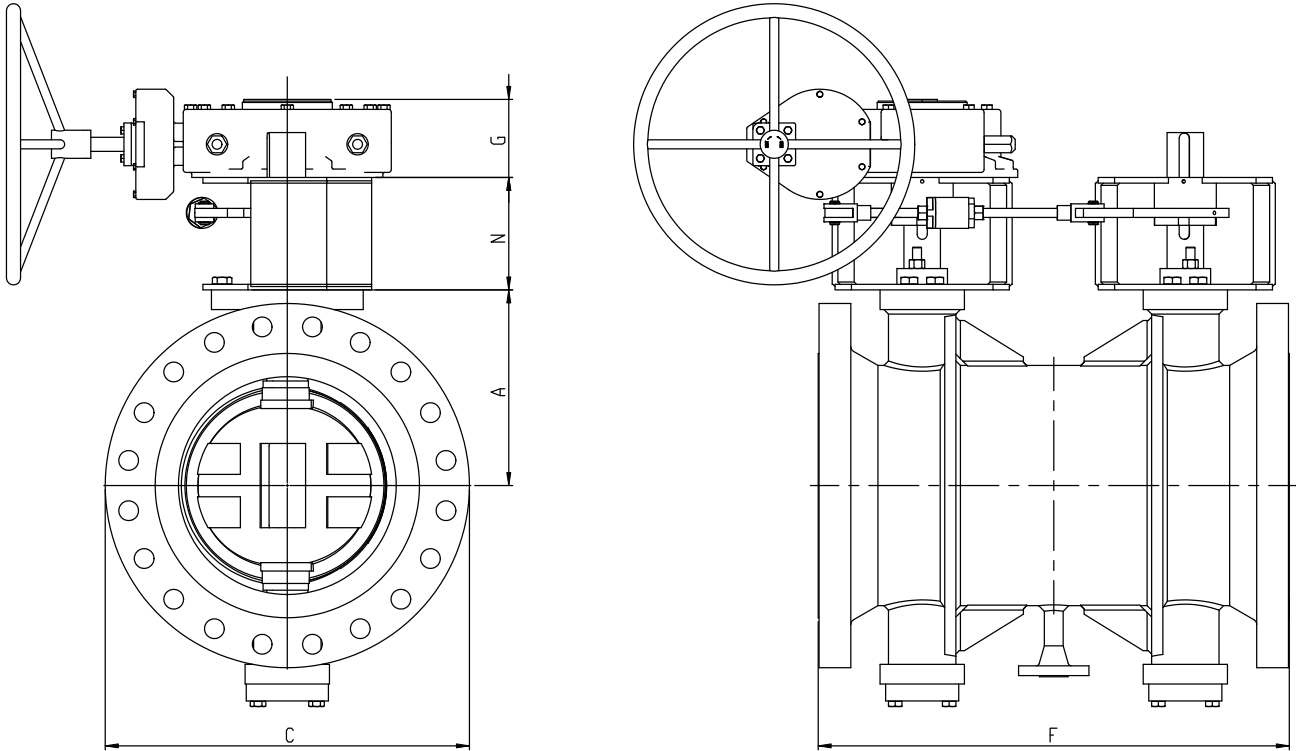
10" Class 300 Double Block and Bleed design.

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)

Units of Measure in Inches



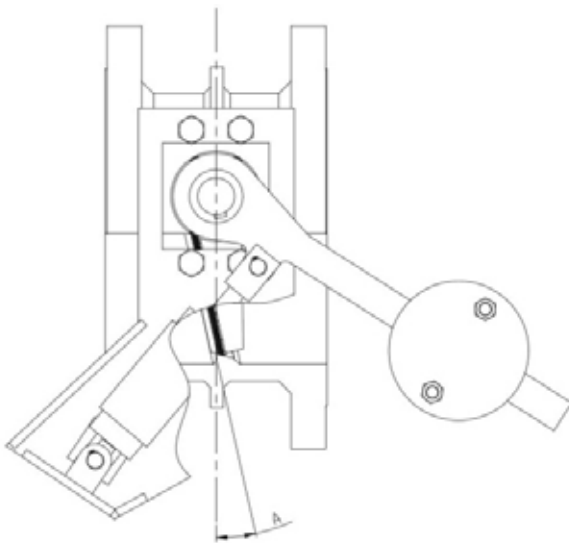
CLASS 150		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	A	4.72	5.31	6.69	8.19	9.76	10.51	11.69	13.7	15.67	16.93	19.76
	C	8.27	10	11.02	13.5	16.02	19.02	21.02	23.5	25	27.52	32.01
	F	11.14	12.01	10.59	11.5	12.99	14.02	15	15.98	17.01	17.99	20
	N	9.84	9.84	9.84	9.84	9.84	9.84	9.84	9.84	9.84	9.84	9.84
	Bracket	F14	F14	F16	F16	F16	F16	F25	F25	F25	F35	F35
	Gear	AB550 HR 200	AB550 HR 200	AB880 HR 400	AB1250 HR 600	AB1250 HR 600	AB1950 SP4 HR 400	AB1950 SP4 HR 50	AB6800 SP4 HR 500	AB6800 SP4 HR 600	AB6800 SP9 HR 500	AB6800 SP9 HR 500
	Gear Height	3.43	3.43	3.54	3.94	3.94	4.92	4.92	6.3	6.3	6.3	6.3

CLASS 300		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	8.27	10	12.52	15	17.52	20.51	23.03	25.51	28.03	30.51	36.02
	F	11.14	12.01	15.87	16.5	17.99	19.76	30	32.99	35.98	39.02	45
	N	9.84	9.84	9.84	9.84	9.84	9.84	9.84	9.84	9.84	9.84	9.84
	Bracket	F14	F14	F16	F16	F25	F25	F30	F30	F30	F35	F35
	Gear	AB550 HR 200	AB550 HR 315	AB1250 HR 500	AB1950 HR 600	AB1950 SP4 HR 600	AB1950 SP4 HR600	AB6800 SP4 HR600	AB6800 SP9 HR 500	AB6800 SP9 HR 500	A250 SP9 HR 700	A250 SP9 HR 700
	Gear Height	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, weights in lbs (valve+gear)

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 waterhammer 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 proved 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.

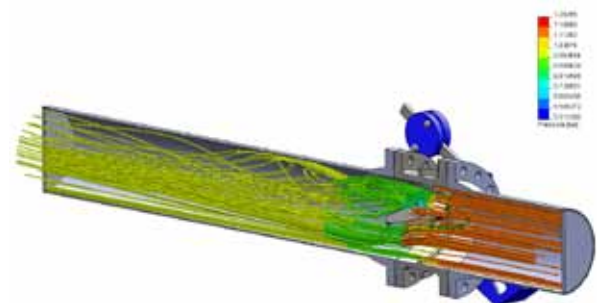
Beside the non-return function the valve can be used as a combined check and isolating valve or as a check valve with power assisted closing and opening.



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 fluidic 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.

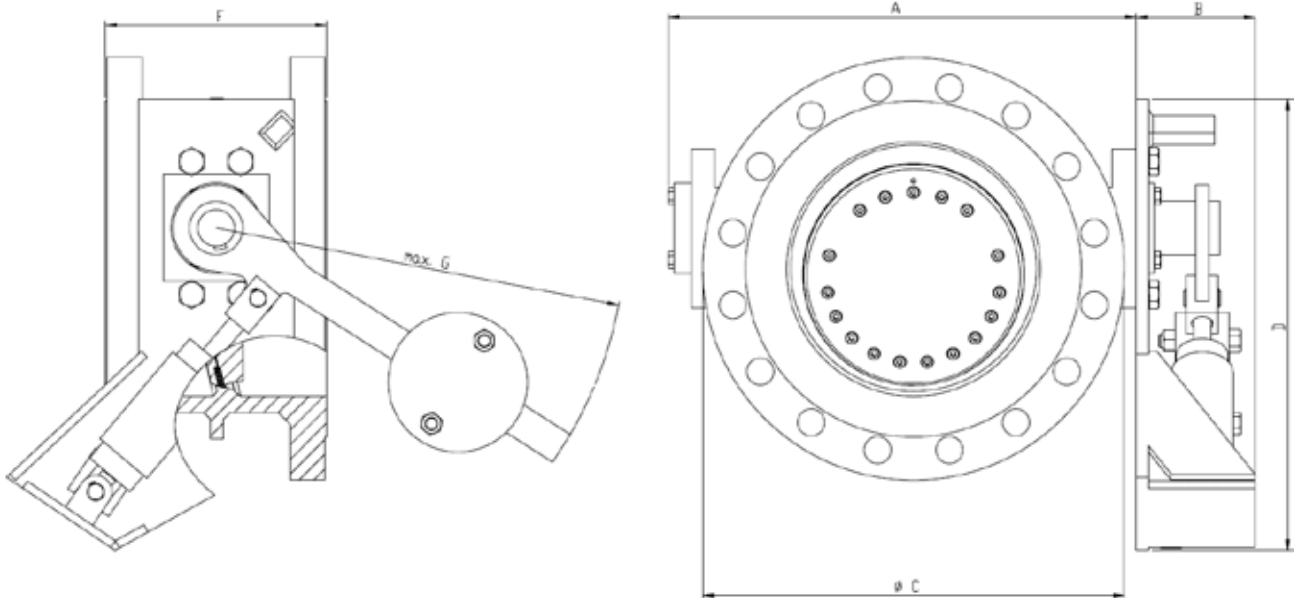
Zwick also uses the latest EFD Simulation technology to optimize the design of the series TRI-CHECK and to achieve the best possible hydrodynamical characteristics.



EFD Flow Simulation of Series TRI-CHECK.

MODEL CF / SERIES TRI-CHECK

ISO 5752 Series 14
Units of Measure in Inches



CLASS 150		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	A	10.75	13.07	18.66	19.72	20.31	23.62	26.26	30.83	34.96	37.72	43.78
	B	3.15	3.15	4.72	4.72	4.72	5.91	5.91	6.69	8.66	9.45	9.84
	C	7.52	9.02	11.81	13.98	16.54	19.09	21.65	24.21	25.2	28.54	33.07
	D	15.75	15.75	15.75	15.75	15.75	21.26	21.26	27.56	27.56	33.07	35.43
	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
Weight	11	14	24	37	58	75	100	178	191	204	284	

CLASS 300		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	A	10.75	13.07	18.66	19.72	20.31	23.62	26.26	30.83	34.96	37.72	43.78
	B	3.15	3.15	4.72	4.72	4.72	5.91	5.91	6.69	8.66	9.45	9.84
	C	8.27	10	12.72	15	17.52	20.51	23.03	25.98	27.99	30.51	36.02
	D	15.75	15.75	15.75	15.75	15.75	21.26	21.26	27.56	27.56	33.07	35.43
	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
Weight	11	14	24	41	68	91	119	257	273	229	318	

Notes: Other sizes and pressure classes on request, weights in lbs (valve + gear) Butt weld ends also available.

ZWICK TRI-CON / TRI-CHECK APPLICATIONS



Tank isolation



Manifolds



ESD turbine trip



Pump protection



District heating



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	CO2 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	CO2					
	Butadiene & Styrene Plants					

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Warehouse and offices in Deer Park, Texas



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