

KEYSTONE FIGURE 637

SLURRY CONTROL VALVE

The Figure 637 (F637) is a medium duty slurry control valve, short body style with replaceable body sleeve



FEATURES

- Robust construction.
- High wear resistant materials.
- Bi-directional slurry control valve.
- Swing through disc for minimum leakage.
- Tungsten carbide disc end spacers to protect the shaft from erosion.
- Extensive size range available.
- Multiple viton stem seals.
- Full reparability with replaceable internals for significantly extended valve life.
- Adjustable PTFE gland packing.
- Standardized mounting and drive adaptor connection allowing direct mounting of Keystone actuators and also allows for actuator removal while in-line.
- Manufactured under quality system ISO 9001:2015, Certificate No. 10109459.
- Available with PED approval. Cert No. 0038/PED/MUM/2010002/1.

GENERAL APPLICATION

Especially developed for the mining and mineral processing industries. Ideal valve for the control of aggressive slurries.

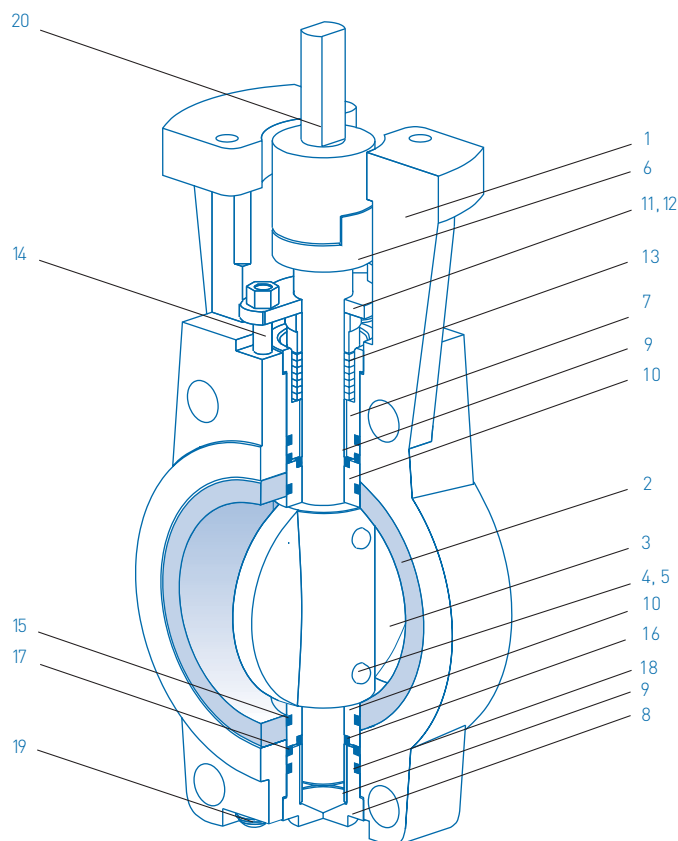
TECHNICAL DATA

Size range:	DN 50 - 600
Temperature rating:	Up to 230°C
Pressure rating:	ASME B16.34
	Class 150
Max ΔP:	1400 kPa
Standard flange drilling:	ASME B16.5,
	Class 150 F.F



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PARTS LIST

No.	Description	Material	Specification
1	Body	S.G Iron Carbon steel*	AS1831 500-7 ASTM A216 WCB
2	Liner	Chrome Iron	AS2027 Cr27
3	Disc	Chrome Iron	AS2027 Cr27
4	Disc pin	Spring alloy steel	Commercial
5	Disc drive screw	431 S/S	ASTM A276 431 Condition A
6	Shaft	431 S/S	ASTM A276 431 Condition A
7	Upper insert	431 S/S	ASTM A276 431 Condition A
8	Lower insert	431 S/S	ASTM A276 431 Condition A
9	Bearings	PTFE/Glacier DU	Commercial
10	Disc end spacers	Tungsten carbide	WCNi
11	Gland plate	Carbon steel	AS3678 Grade 250
12	Gland collar	431 S/S	ASTM A276 431 Condition A
13	Gland packing	PTFE Braid	PTFE
14	Fasteners	Alloy steel	Commercial
15	O-ring	FKM	Commercial
16	O-ring	FKM	Commercial
17	O-ring	FKM	Commercial
18	O-ring	FKM	Commercial
19	Insert screw	Alloy steel	Commercial
20	Drive dog	431 S/S	ASTM A276 431 Condition A

NOTE:

Glacier bearings only in valve 250 - 600 mm.

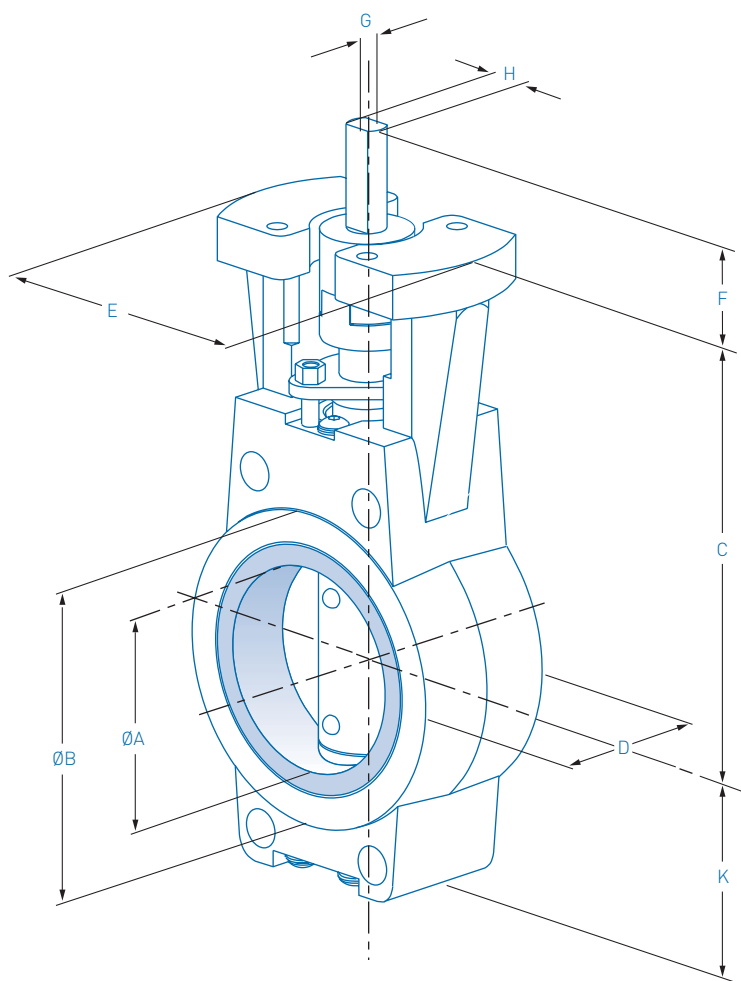
*Carbon steel bodies available as an option.

OPTIONS

- Keystone Figure 89U hard anodized, rack and pinion style aluminum pneumatic actuators, double acting and spring return options available.
- Biffi Morin "S" Series, scotch yoke style, stainless steel pneumatic actuators, double acting and spring return options available.
- Biffi Morin "B" Series, scotch yoke style, ductile iron pneumatic actuators with stainless steel cylinder barrel material as standard, double acting and spring return options available.
- Biffi ICON3000 electric actuators
- Keystone Figure 427 manual gear operators.
- Solenoids, positioners and position monitoring devices are readily available - consult your local Emerson representative

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DIMENSIONS (mm)

Valve size DN	Stem code	Shaft dia inches	ØA	ØB	C	D	E	F	K	Q	Stem conn. H x G / ØH inches	Keyway inches	Top plate			Mass (kg)	K _v at full open
													PCD mm	No. holes	Hole dia mm		
50	BAD	5/16	50	100	162	64	110	31	60	-	3/4 x 1/2	-	83	4	11	5	52
80	BAD	3/4	82	133	196	70	115	31	84	42	3/4 x 1/2	-	83	4	11	9	179
100	BAD	1	100	157	208	76	140	31	102	64	3/4 x 1/2	-	83	4	11	13	290
150	CAF	1	153	216	238	76	152	51	131	132	1 1/8	1/4 x 1/4	127	4	14	18	1052
200	CAF	1 1/4	203	270	295	82	182	51	167	186	1 1/8	1/4 x 1/4	127	4	14	30	1999
250	CAK	1 1/2	253	330	329	102	182	108	230	231	2 1/4	1/2 x 3/8	127	4	14	55	3416
300	CAK	1 1/2	300	380	374	102	182	108	275	282	2 1/4	1/2 x 3/8	127	4	14	75	5510
350	CAK	1 3/4	332	444	390	111	182	108	292	312	2 1/4	1/2 x 3/8	127	4	14	95	6883
400	CAK	1 3/4	382	495	427	111	182	108	330	365	2 1/4	1/2 x 3/8	127	4	14	130	9434
450	DAK	2	432	540	457	127	200	108	359	412	2 1/4	1/2 x 3/8	165	4	21	158	12014
500	DAK	2 1/4	482	595	492	134	220	108	390	465	2 1/4	1/2 x 3/8	165	4	21	195	15101
600	DAK	2 1/2	582	708	569	158	250	108	464	559	2 1/4	1/2 x 3/8	165	4	21	300	22942

NOTE:

Q = The chordal dimension at the face of valve for disc clearance into pipe or flange.

H = The dimension of the stem connection.

ØH = Drive dog connection changes to a round shaft on valve sizes 150 - 600 mm.

G = The dimension across the stem flats.

K_v = The flow rate of water in m³/hr that will pass through a valve with a different pressure drop of 1 bar (100 kPa) at 20°C.

C_v = 1.155 K_v

Dimensions are nominal to ±1 mm.

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ANTICIPATED SEATING & UNSEATING TORQUE VALUES - Nm

Valve size DN	Shut-off pressure kPa									
	Normal service					Severe service				
	0	350	700	1000	1400	0	350	700	1000	1400
50	25	26	27	28	29	37	38	40	41	42
65	30	32	33	34	35	45	46	47	49	50
80	36	38	41	43	45	54	56	59	61	63
100	54	58	61	64	68	81	85	88	92	95
150	102	113	124	136	147	152	164	175	186	198
200	169	192	215	237	260	254	277	299	322	345
250	260	294	328	362	395	390	424	458	492	525
300	350	407	463	520	576	525	582	638	695	751
350	486	576	667	757	847	729	819	910	1000	1090
400	621	757	893	1028	1164	932	1068	1203	1339	1475
450	780	983	1186	1390	1593	1170	1373	1576	1780	1977
500	960	1243	1525	1808	2090	1441	1723	2006	2288	2570
600	1152	1429	1754	2079	2466	1701	2033	2387	2746	3085

GUIDELINES

Operating torques for these valves are generated from bearing/packing friction, component weight, hydro-dynamic and contaminant forces etc.

There are no hard and fast rules which can accurately and practically determine the sum total of all these forces. (Refer to Emerson valve manual for further information).

The following guidelines are considered to be conservative and can confidently be used for routine duties. If you have any doubts consult an Emerson sales representative.

DUTY DEFINITIONS

NORMAL

- Liquid service to 3 m/s
- Gases - Non-abrasive, Natural gas, Hot air Exhausts-flues, Coke ovens gas, Oxygen-nitrogen, etc.
- Light to medium abrasion, Pneumatic conveying 3-4000 fpm - 20 m/s, Crystallising liquors, low velocity, 5-10% fine solids low velocity

SEVERE

- Medium abrasion, Pneumatic conveying dense phase, average velocities, Magnetite slurries, Cement slurries, Bauxite slurries Ore slurries

K_v VALUES/FLOW RATE CO-EFFICIENTS

Size DN	Angle of disc opening									
	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
50	4.3	5.3	6.3	8.3	16	22	35	45	51	52
80	7.1	9.1	18	33	55	77	114	156	178	179
100	8.7	12	26	52	86	121	185	252	283	290
150	12.3	28	64	127	229	371	611	905	1045	1052
200	16.4	46	115	233	416	699	1159	1719	1978	1999
250	20.4	62	150	316	599	934	1721	2295	3208	3416
300	26.2	108	301	632	1128	1928	3195	4738	5455	5510
350	38.0	141	382	788	1414	2409	3992	5919	6814	6883
400	43.7	185	515	1072	1931	3302	5471	8113	9339	9434
450	49.4	230	650	1360	2453	4205	6968	10332	11894	12014
500	64.9	291	820	1711	3085	5285	8758	12987	14950	15101
600	70.5	415	1217	2571	4658	8029	13306	19729	22712	22942

NOTE:

This data is based on calculated theoretical figures.
K_v = The volume of water in m³/hr that will pass through a given valve opening at a pressure drop of 1 bar (100 kPa) at 20°C.
C_v = 1.155 K_v

TYPICAL SPECIFYING SEQUENCE

HYDRO SPEC FINS SEQUENCE					
100	F637		033	ASME 150	
Valve size	Figure number		Trim code	End connections	
Trim code	Body	Disc	Shaft	Seat	Disc End Spacers
033	S.G iron / Carbon steel*	Chrome iron	431 S/S	Chrome iron	Tungsten carbide

* Carbon steel bodies available as an option.

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