ROSS 1879 VALVE

ROTARY CONE VALVE

MODEL ROSS RCV

ROTARY CONE VALVE

ROSS 79 VALVE P.O.BOX 595 TROY NY 12181 518.274.0961 WWW.ROSSVALVE.COM

WHY CHOOSE A CONE VALVE...

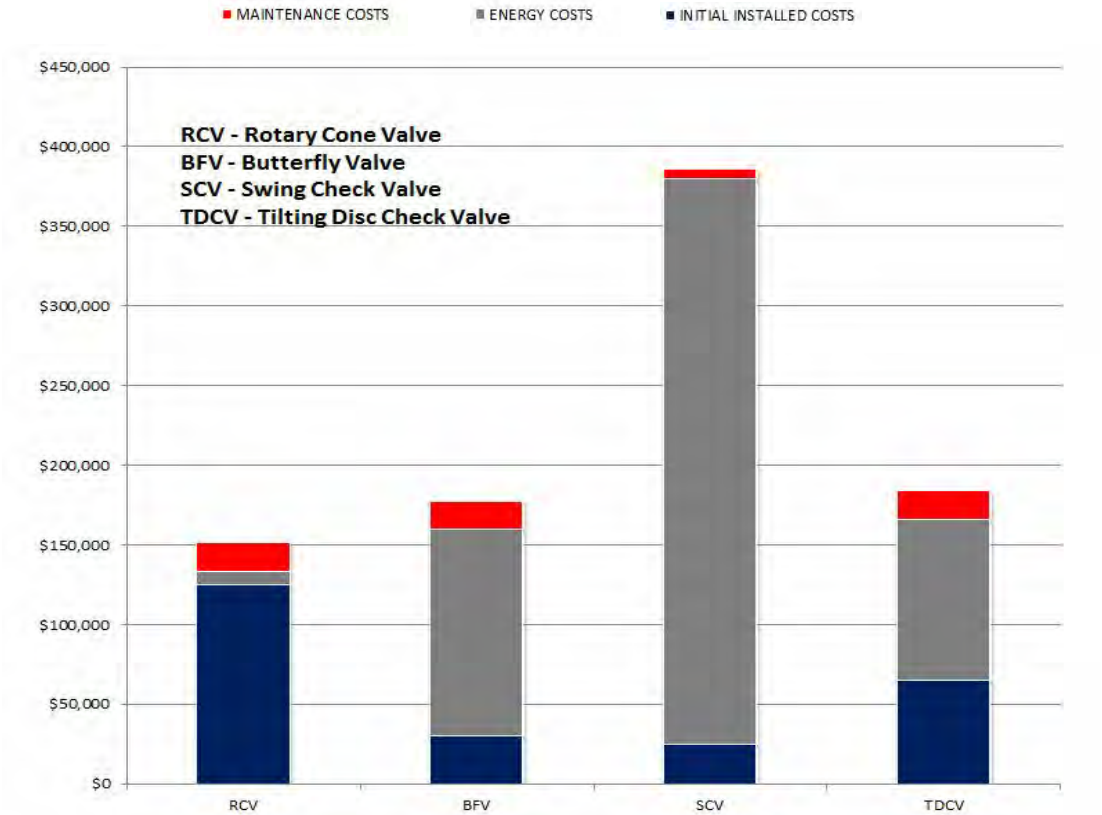
ROSS 1879 VALVE

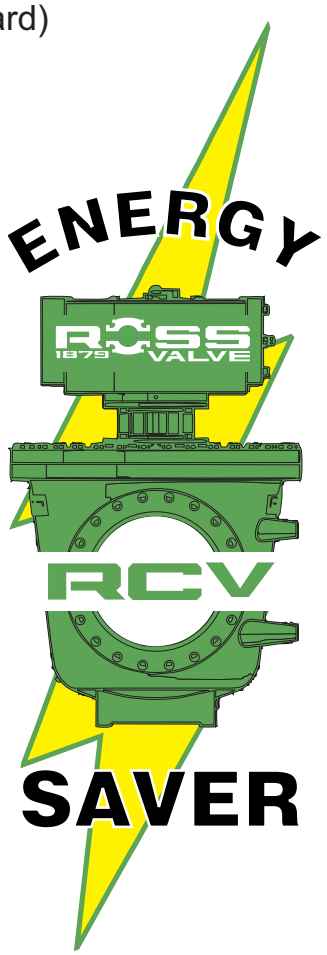
- Practically Zero Maintenance
- Energy Efficient
- High Flow Coefficient
- Lowest Cost of Ownership
- No More Head Loss than an Equivalent Length of Pipe

Applying Today's Engineering Technology to a 90 Year Old Design

- Utilizing Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD)
- Newly designed trunnion bearings with "Figure 8" grease channels (Standard)
- External lubrication ports for both upper and lower bushings (Standard)
- Modified Scotch Yoke design to enhance lift and torque capabilities (Standard)
- Lubrication and inspection port in valve operating mechanism (Standard)
- Plug position indicator pinned directly to operating shaft (Standard)
- Anti-cavitation trim is available, call the factory at 1-855-ROSSVALVE

ROSS RCV TOTAL COST OF OWNERSHIP



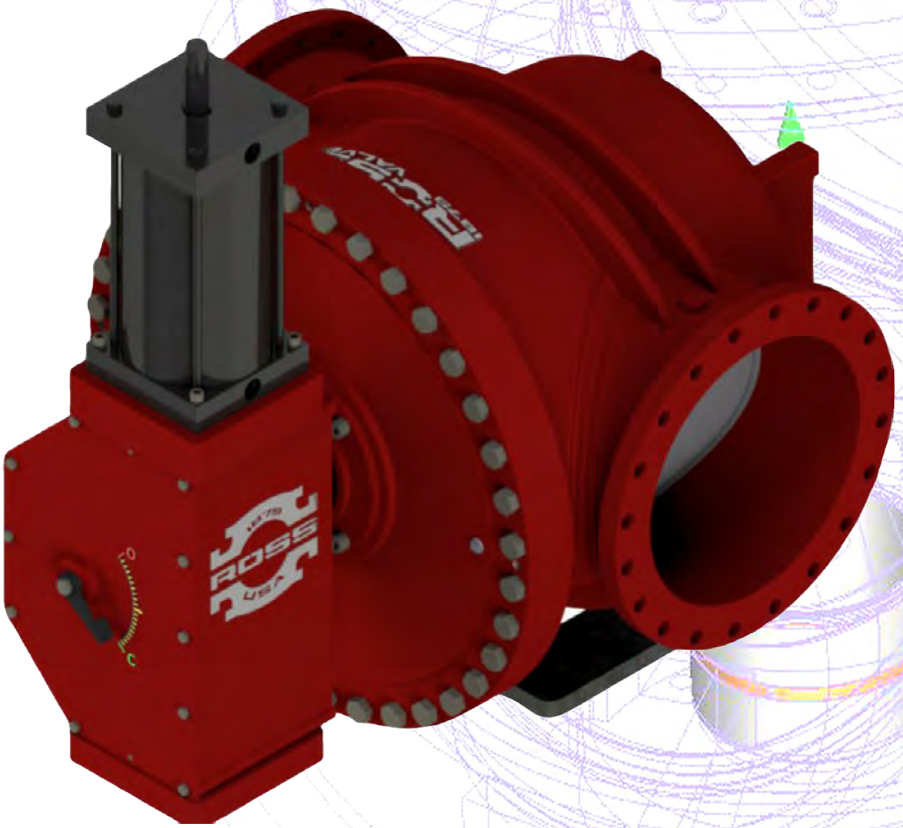


The table depicts estimated annual power costs associated with various types of pump discharge/control valve types. All values are based on $0.12/[kWh], continuous pumping operation (8,760 [hours/year]) at 80% overall pumping efficiency with a discharge velocity of 16 [ft/sec].

QUALITY & INNOVATION

ROSS 1879 VALVE

- Available in sizes 6" to 60"
- Ribbed body design
- Full port valve body
- Fully skirted plug
- Metal to metal seats: Monel
- Ductile iron body, head cover and plug
- No lead bronze
- Hydraulic, Electric, Electro- Hydraulic Actuators



MARKETS

MUNICIPAL WATER
WASTE WATER
FIRE PROTECTION
MARINE
HYDRO
MINING
INDUSTRIAL
SPECIALTY

BENEFITS

- Energy Efficiency
- Long Life
- Minimal Maintenance
- Fully Skirted Plug
- Precision control
- Drop tight shut off
- Anti cavitation Trim
- No Lead Bronze
- Lubricated Trunnion

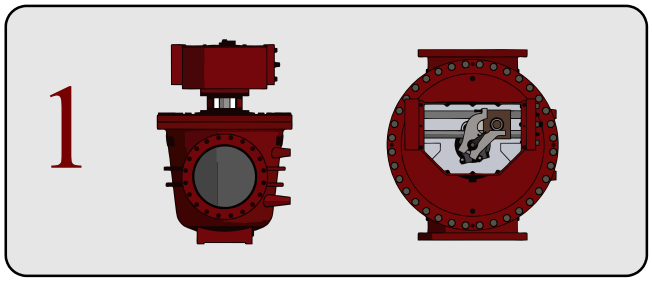
ROSS VALVE 135 YEARS SINCE 1879

PROUDLY MADE IN USA

HOW DOES A ROSS CONE VALVE OPERATE ?

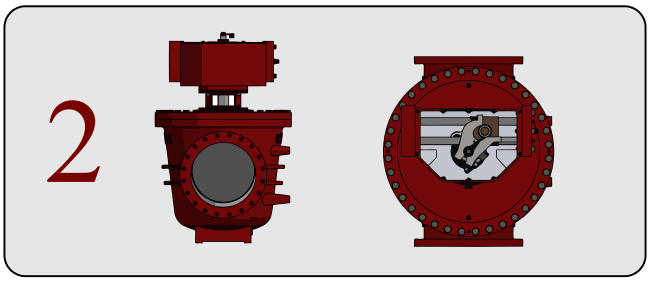
STEP 1.

Fully Closed and Seated:
The Ross Valve Rotary Cone Valve (RCV) seals/seats with four (4) matching Monel seats (two (2) in body & two (2) on plug) machined, ground and precision matched taper to form a drop tight seal.



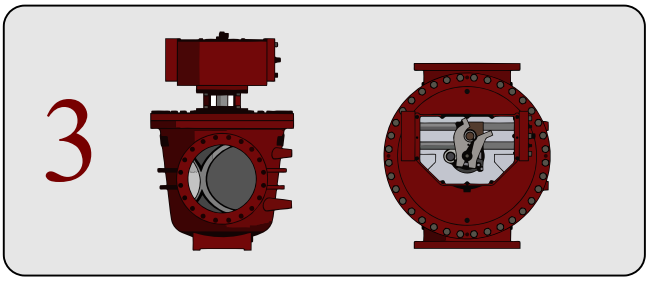
STEP 2.

Lifting Only: The first motion of the valve operating mechanism lifts the plug up from the body sufficiently to separate the seats so there is no contact of the seats during plug rotation, see chart on page 8.



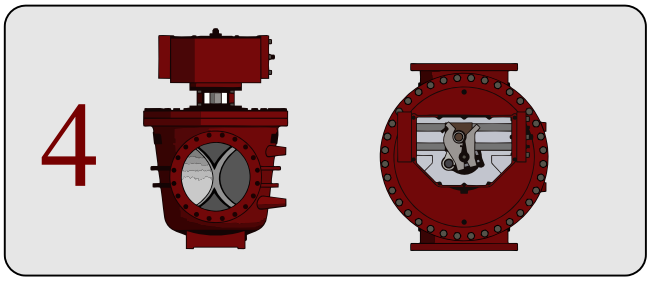
STEP 3.

25% Open Plug: Plug rotation begins when the Traveling Nut (Crosshead) contacts the Rotator Lever. The plug is still being lifted at this stage of stroke.



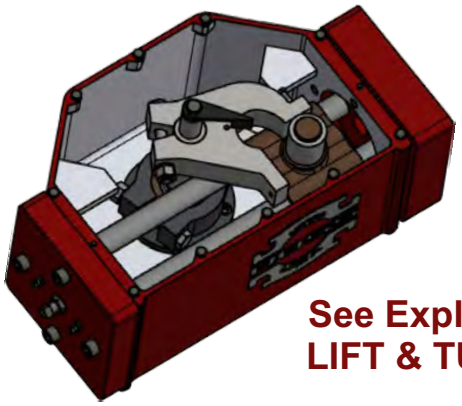
STEP 4.

75% Open Plug: In the last stages of rotating to fully open. Plug continues to lower.



STEP 5.

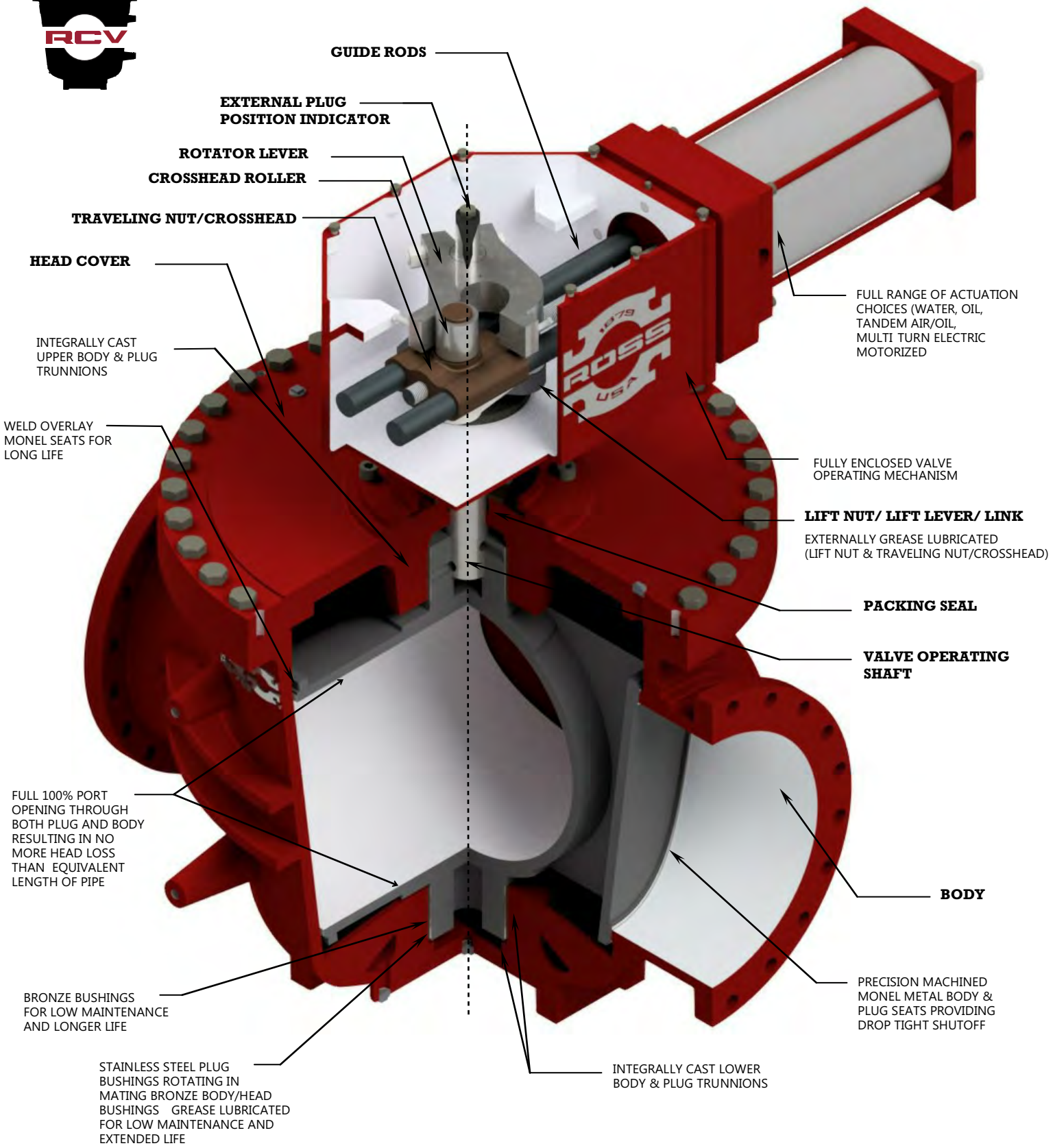
Fully Open and Seated: Plug has stopped rotating and plug has reseated, thus sealing the waterway in the fully open position with a 100% full port opening throughout entire length of valve resulting in no more head loss than an



See Exploded View
LIFT & TURN PAGE

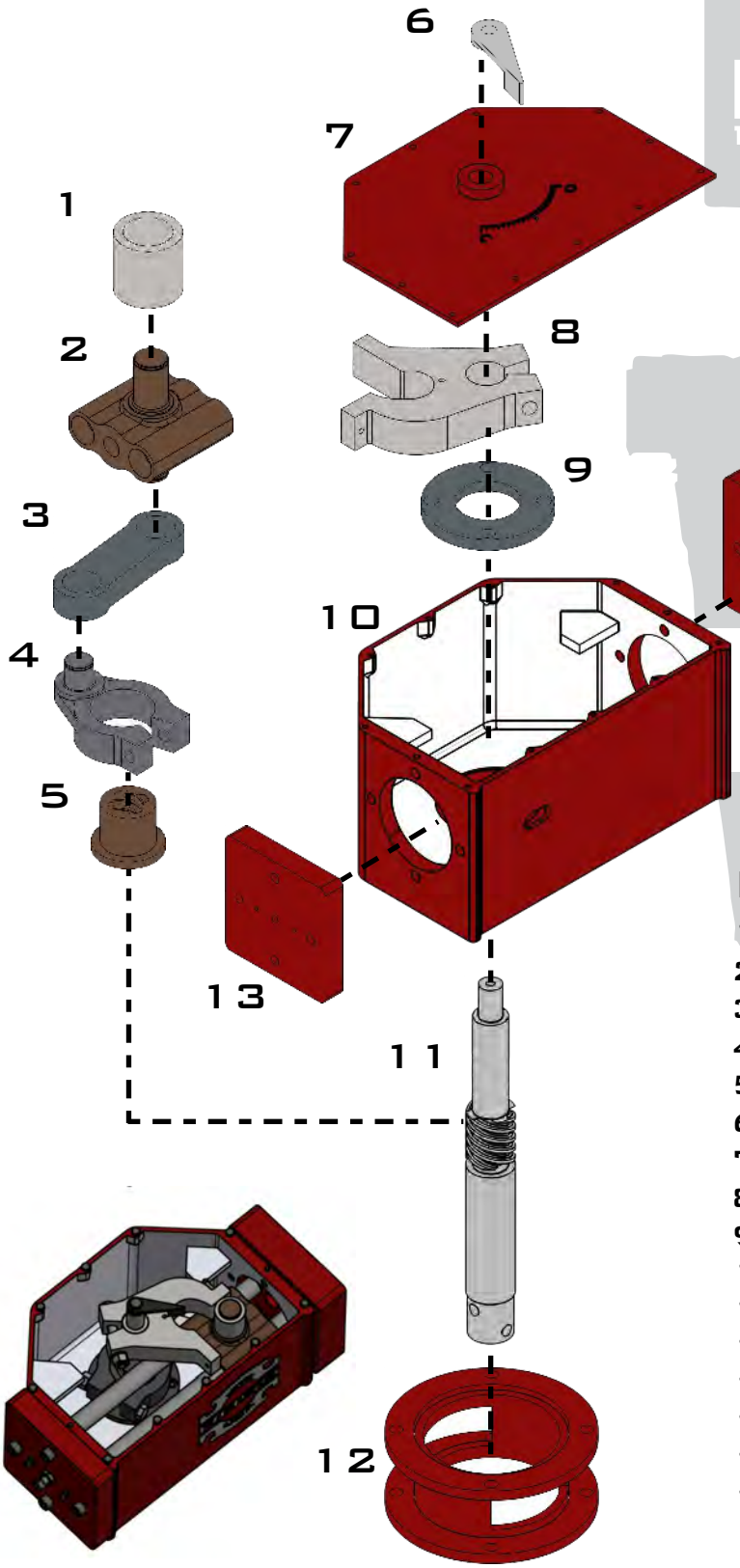
ROSS - ROTARY CONE VALVE

Cutaway View



ROSS - ROTARY CONE VALVE

Exploded View - Operating Mechanism

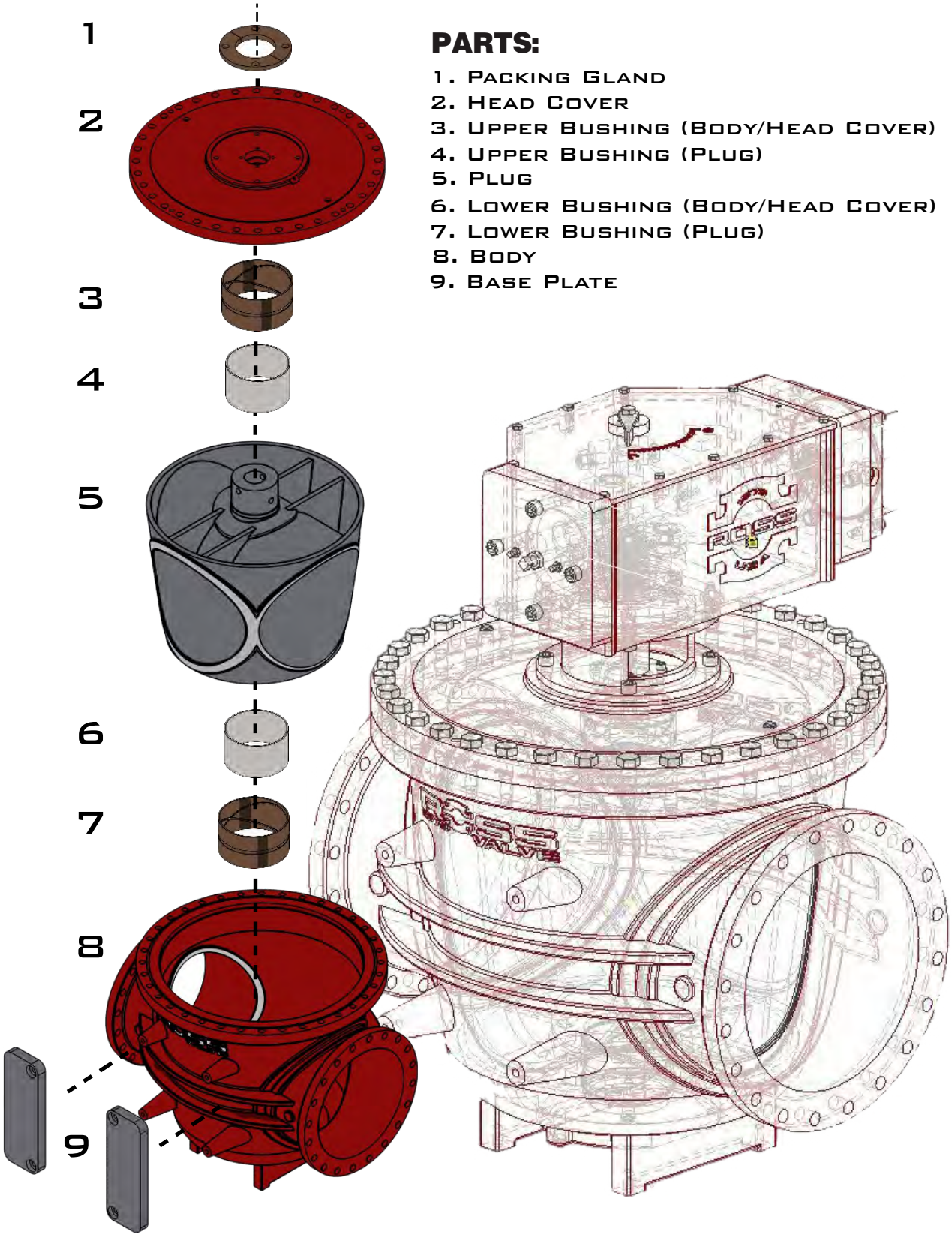


PARTS:

1. Crosshead Roller
2. Traveling Nut/Crosshead
3. Link
4. Lift Nut Lever
5. Lift Nut
6. Indicator
7. Housing Cover
8. Rotator Lever
9. Lift Nut Retainer
10. Mechanism Housing
11. Operating Shaft
12. Mounting Adapter
13. End Cover
14. Actuator Mounting Adapter
15. Guide Rod
16. Actuator Piston Rod/ ACME Threaded Stem

ROSS - ROTARY CONE VALVE

Exploded View - Valve Body



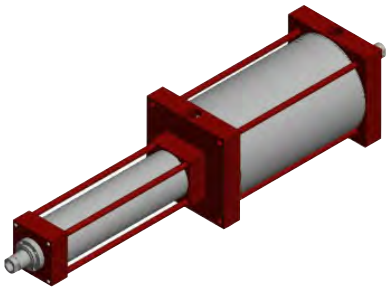
PARTS:

1. Packing Gland
2. Head Cover
3. Upper Bushing (Body/Head Cover)
4. Upper Bushing (Plug)
5. Plug
6. Lower Bushing (Body/Head Cover)
7. Lower Bushing (Plug)
8. Body
9. Base Plate

ROSS CONE VALVE - OPERATORS

IN FULL COMPLIANCE WITH ALL THE LATEST AWWA STANDARDS AND SPECIFICATIONS

Hydraulic Cylinder Water or Oil
Utilizes a linear double acting piston actuator to open/close Rotary Control Valve through the unique Valve Operating Mechanism.

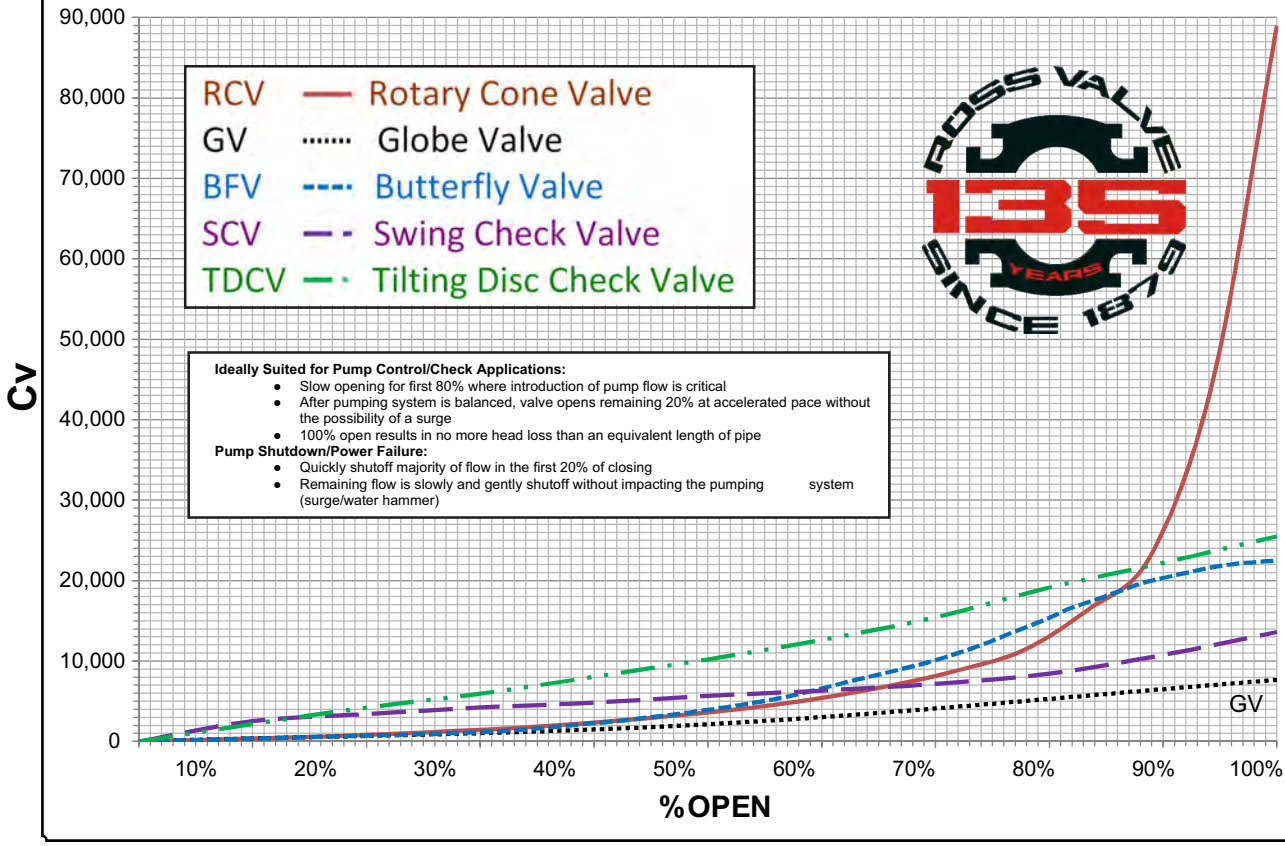


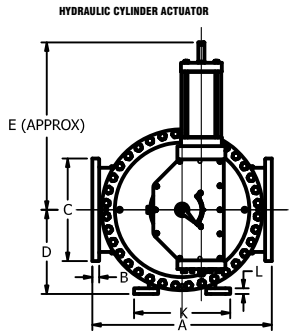
Tandem (Air/Oil) Cylinder Actuator:
Utilizes a linear double acting piston Tandem (Air/Oil) actuator to open/close Rotary Control Valve through the unique Valve Operating Mechanism utilizing a compressed air supply often incorporated in every water/wastewater pumping station.

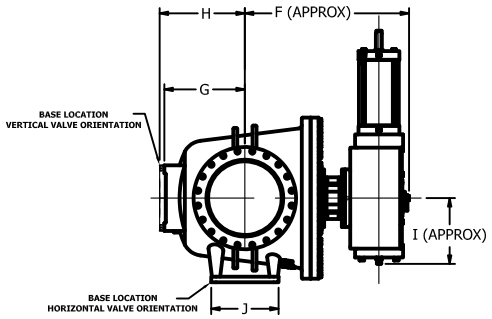
Electric Motor Operated Valve Actuator:
ACME power screw threaded valve operating stem through the unique Valve Operating Mechanism. Fully modulating controls responding to a process analog signal such as flow meter or pressure transmitter.

COMPARISON OF Cv vs. % OPEN

BASED ON 24" VALVE SIZE







DIMENSIONS (INCHES)

ROTARY CONE VALVE (RCV)

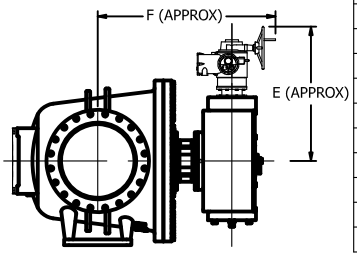
GENERAL DIMENSIONS (INCHES) – CYLINDER ACTUATOR

SIZE	OALL (F TO F) A		FLANGE THICKNESS B		FLANGE OD C		D	E	F	G	H	I	J	K	L	ESTIMATED WEIGHT (LB)
	125 LB	250 LB	125 LB	250 LB	125 LB	250 LB										
6	23 1/8	24	1	1 7/16	11	12 1/2	8 1/2	27	27	8 1/8	9 3/8	9	10	15	1 1/4	800
8	23 1/2	24 1/2	1 1/8	1 5/8	13 1/2	15	10	27	28	9 1/2	10 3/4	9	10	15	1 1/4	900
10	28 1/8	29 1/2	1 3/16	1 7/8	16	17 1/2	12	27	29	11 1/8	12 3/8	9	10	15	1 1/4	1,300
12	31	32 1/2	1 1/4	2	19	20 1/2	14	37	35	14 1/4	15 3/4	15	15	21	1 1/2	2,300
14	35 1/2	37	1 3/8	2 1/8	21	23	15 1/2	37	36	15 1/4	16 3/4	15	15	21	1 1/2	2,600
16	39	40 5/8	1 7/16	2 1/4	23 1/2	25 1/2	17 1/8	37	37	17 1/2	19	15	15	21	1 1/2	3,200
18	41 3/4	43 3/8	1 9/16	2 3/8	25	28	19 1/4	49	47	19 1/8	20 7/8	21	15	21	1 3/4	4,500
20	47	48 5/8	1 11/16	2 1/2	27 1/2	30 1/2	22 1/4	49	48	23	24 3/4	21	21	30	1 3/4	6,000
24	56	57 3/4	1 7/8	2 3/4	32	36	26 1/4	49	51	25 1/8	26 7/8	21	21	30	1 3/4	8,500
30	64	65 3/4	2 1/8	3	38 3/4	43	34 1/2	57	59	32	34	29	30	39	2	14,000
36	78	80	2 3/8	3 3/8	46	50	39	57	62	34	35 5/8	29	30	39	2	20,000
42	83 1/4	90	2 5/8	3 11/16	53	57	45 3/4	67	70	38	40 1/4	40	39	48	2 1/4	35,000
48	93	99 1/2	2 3/4	4.0000	59 1/2	65	48 3/4	67	92	43	45 1/4	40	48	48	2 1/4	44,000
54	101	N/A	3	N/A	66 1/4	N/A	54	N/A	N/A	51 3/4	54	N/A	48	48	2 1/4	64,000
60	119 1/2	N/A	3 1/8	N/A	73	N/A	61	N/A	N/A	56 1/2	58 3/4	N/A	48	48	2 1/4	81,000

ELECTRIC ACTUATOR

SIZE	E	F	ESTIMATED WEIGHT (LB)
6	24	34	750
8	24	35	900
10	24	36	1,200
12	28	41	2,100
14	28	42	2,600
16	28	43	3,000
18	32	48	4,400
20	32	49	5,500
24	32	52	8,000
30	36	70	14,000
36	36	73	19,000
42	48	80	34,000
48	48	96	43,000
54	N/A	N/A	60,000
60	N/A	N/A	75,000

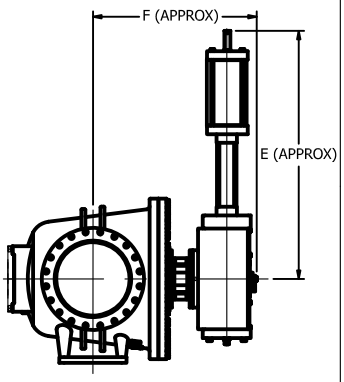
ELECTRIC ACTUATOR



TANDEM ACTUATOR

SIZE	E	F	ESTIMATED WEIGHT (LB)
6	42	27	850
8	42	28	950
10	42	29	1350
12	56	35	2400
14	56	36	2700
16	56	37	3300
18	71	47	4600
20	71	48	6100
24	71	51	8600
30	87	59	14150
36	87	62	20150
42	105	70	35175
48	105	92	44175
54	N/A	N/A	60,000
60	N/A	N/A	75,000

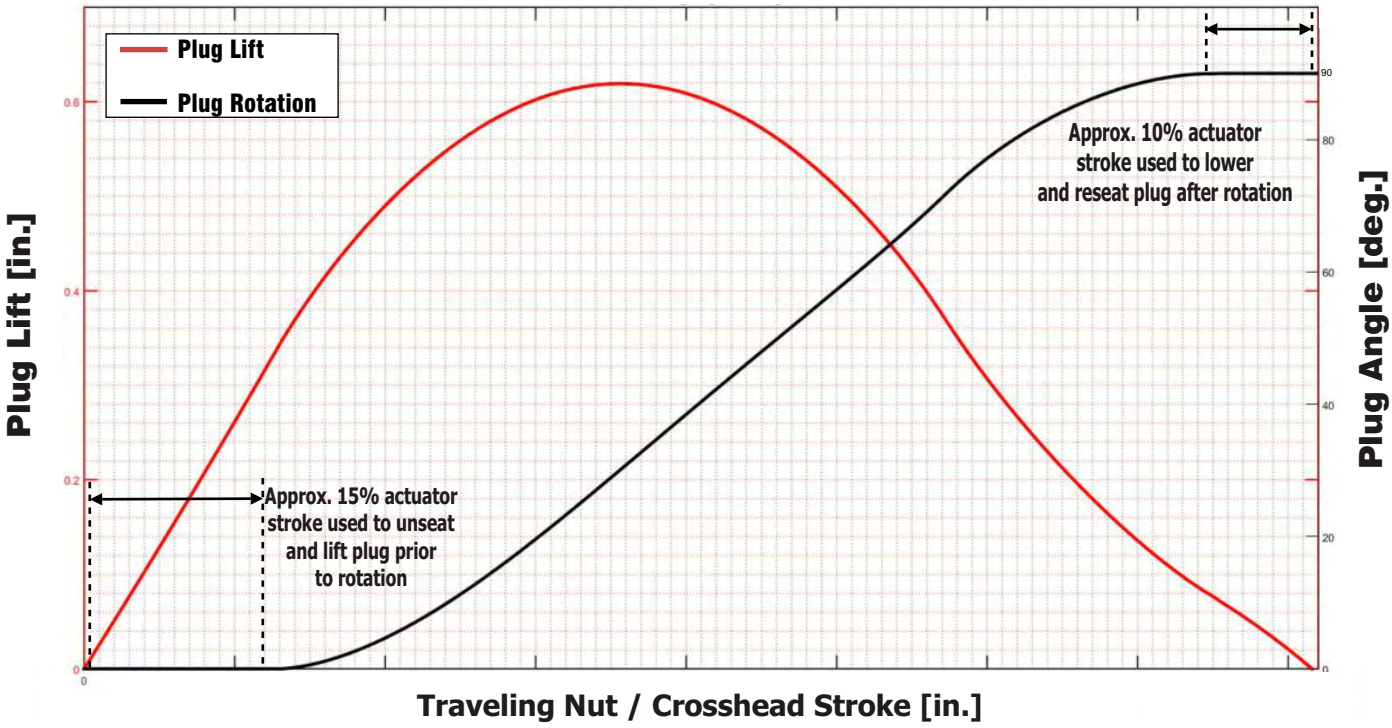
TANDEM AIR/OIL ACTUATOR

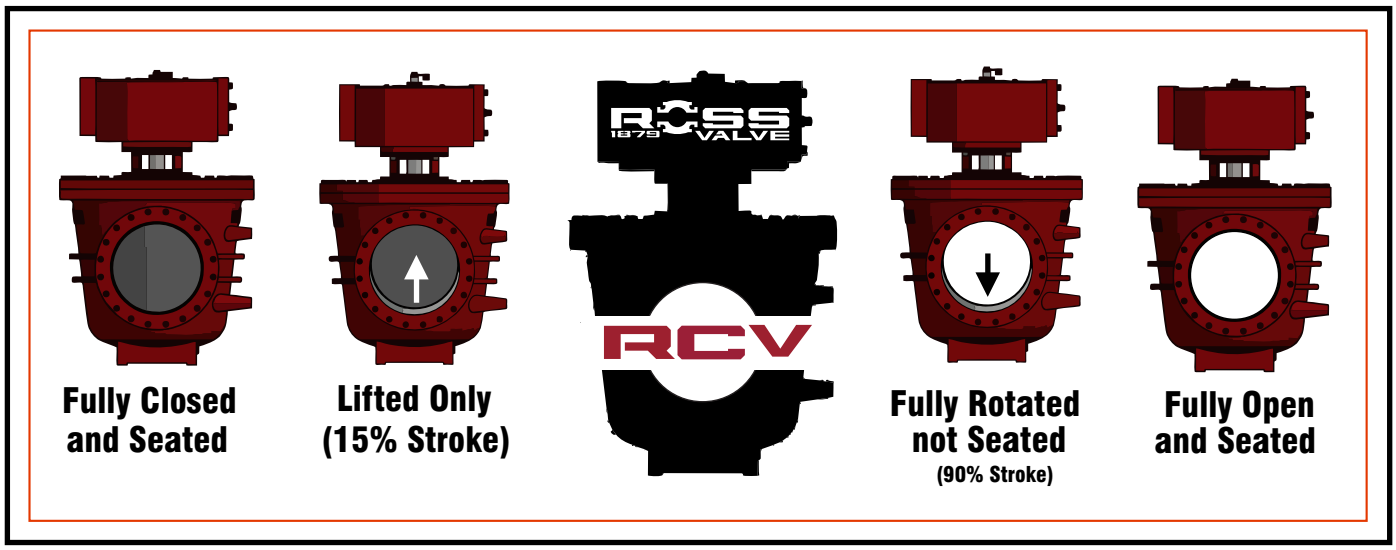


ROSS VALVE MFG. CO., INC.
6 OAKWOOD AVENUE - P.O. BOX 595 - TROY, NEW YORK, 12181 - TEL. (518) 274 - 0961

ROTARY CONE VALVE (RCV)
GENERAL ARRANGEMENT DIMENSIONS

Stroke vs. Plug Angle and Plug Lift





This Unique Valve Operating Mechanism employs a linear Traveling Nut/Crosshead powered by an actuator to impart a 90° rotation of the Valve Plug. A Modified Scotch Yoke Rotator Lever along with a Link/Lever Offset Slider-Crank Mechanism provide the required lifting and lowering of plug prior to, during, and following plug rotation as depicted in the Unique Valve Operating Mechanism Rotation vs. Lift Figure shown above.

HEAD LOSS AND FLOW COEFFICIENTS

RCV Cv VALUES FOR CLOSED LOOP SYSTEMS

VALVE SIZE	PLUG ANGLE IN DEGREES FROM CLOSED									
	5	15	25	35	45	55	65	75	85	90
6	11	41	80	140	224	354	558	1019	2830	3568
8	19	72	143	248	398	629	993	1812	5031	7547
10	30	113	224	388	622	983	1551	2831	7861	12708
12	43	162	322	559	896	1415	2233	4077	11320	19485
14	59	221	438	761	1219	1927	3040	5550	15408	27202
16	77	288	572	993	1592	2516	3970	7248	20125	36785
18	98	365	724	1257	2015	3185	5025	9174	25470	48693
20	121	450	894	1552	2488	3932	6203	11326	31445	60268
24	174	648	1288	2235	3583	5662	8933	16309	45280	88968
30	271	1013	2012	3492	5598	8847	13958	25483	70750	148696
36	391	1458	2898	5029	8061	12739	20099	36695	101880	216459
42	532	1985	3944	6845	10972	17339	27357	49946	138671	312804
48	694	2592	5152	8940	14331	22647	35731	65236	181121	420624
54	879	3281	6520	11315	18138	28663	45222	82564	229231	549057
60	1085	4050	8049	13969	22393	35387	55830	101931	283001	669889
HEADLOSS COEFFICIENT (K_v)	9800	703	178	59.1	23	9.21	3.7	1.11	0.144	0.037*

* See chart below for fully open C_v values

Flow Coefficient Equation:

$$C_v = 29.83094\sqrt{\frac{1}{k_v}(D_v^2)}$$

Example Solution: (24 inch, 85° from closed)

$$C_v = 29.83094\sqrt{\frac{1}{0.144}(24\ in^2)} = 45280$$

Head Loss Equation:

$$\Delta H = k_v\frac{V^2}{2g}$$

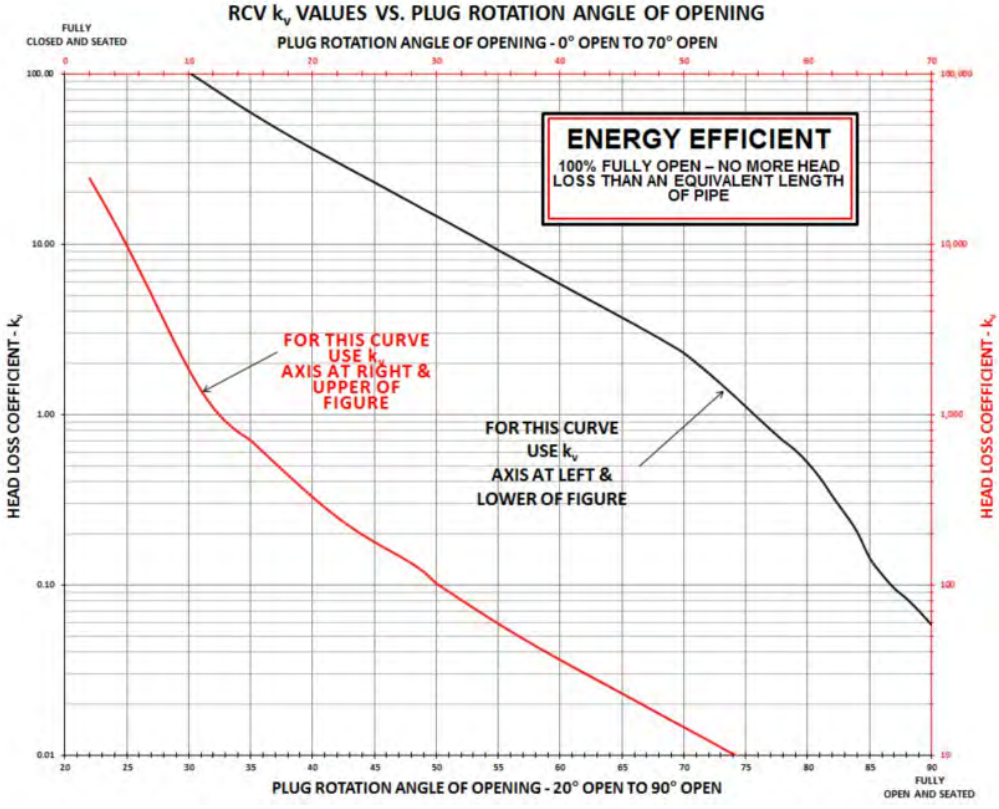
Example Solution: (24 inch, 25° from closed)

$$\Delta H = 178\frac{\left(16\frac{ft}{sec}\right)^2}{2\left(32.174\frac{ft}{sec^2}\right)} = 708.2\ ft$$

Where,

C_v – Flow coefficient
ΔH – Head loss
D_v – Valve size
K_v – Head loss coefficient
V – Full line velocity through valve

RCV k_v VALUES VS. PLUG ROTATION ANGLE OF OPENING



RCV HEADLOSS COEFFICIENT k_v (FULLY OPEN VALVE)	
VALVE SIZE	k_v
6	0.091
8	0.064
10	0.055
12	0.049
14	0.046
16	0.043
18	0.039
20	0.039
24	0.037
30	0.033
36	0.032
42	0.028
48	0.027
54	0.025
60	0.026

Contact Our Local Representative:

PROUDLY MADE IN USA

Technical Resources: 1-855-ROSS-VALVE

At Ross Valve, we pride ourselves in providing a truly engineered product. With nearly 130 years of industry experience, Ross Valve offers a variety of in-house resources to ensure all your product requests are met:

- Computational Fluid Dynamic Modeling
- Finite Element Analysis
- Pattern Shop & Two (2) Foundries
- Machine Shop, WaterJet & CNC Centers
- Hydrostatic Test Facilities
- Pre-Packaged Vault Design/Build Center

Design Engineering Installation Recommendations:

- Metal to metal seated Rotary Cone Valves and adjoining piping must be independently supported by appropriately designed support and concrete support pad.
- Rotary Cone Valve concrete valve supports (pads) are not intended to be utilized as anchors.
- Horizontal and vertical alignment of Rotary Cone Valve and adjoining pipe must be stress free. Therefore, it is strongly recommended that a flexible connection, such as a sleeve coupling, be incorporated in the adjoining piping in close proximity to the Rotary Cone Valve.

RCV

RCV 9-15 1M

NOTE: Ross Valve Mfg. Co., Inc. reserves the right to modify valve construction which will result in equal or superior performance to existing designs. These modifications may be made at any time and at the sole discretion of the manufacturer.