

## Capacities and Specifications

### General

All Maxon Flow Control Valves are designed for throttling service only and are not intended for tight shut-off.

Flow direction is not a factor with butterfly-type valve bodies. However, with poppet-type SYNCHRO Valves, fluid flow through the valve must only be in the direction indicated by the arrowhead cast into each valve body.

### Series "A" Manual Control Valves

Size	Maximum Cv Rating	Minimum Controllable Cv Rating	Maximum Inlet Pressure (psig)	Maximum Body Pressure (psig)	Torque Required (in-lbs)	Maximum Fluid Temperature (°F)	
						Iron & Steel	Brass
1"	27	.50	100	100	10	250	400
1.25"	70	.60	100	100	20	250	400
1.5"	105	.70	100	100	30	250	400
2"	190	1.30	100	100	65	250	400
2.5"	260	2.40	90	100	100	250	400
3"	360	3.00	60	100	125	250	400
4"	750	5.00	30	100	140	250	N/A

C<sub>v</sub> factors based on flow through a wide-open valve.

Torque required is shown for maximum rated pressure. At lower pressures, less torque may be required.

### Series "A" SYNCHRO Control Valves

Size	Maximum Cv Rating	Minimum Controllable Cv Rating	Maximum Inlet Pressure (psig)	Maximum Body Pressure (psig)	Torque Required (in-lbs)	Maximum Fluid Temperature (°F)	
						Iron & Steel	Brass
1"	27	.50	100	100	55	250	400
1.25"	70	.60	100	100	60	250	400
1.5"	105	.70	100	100	70	250	400
2"	190	1.30	55	100	75	250	400
2.5"	260	2.40	30	100	75	250	400
3"	360	3.00	16	100	75	250	400
4"	750	5.00	8	100	75	250	N/A

C<sub>v</sub> factors based on flow through a wide-open valve.

Torque required is shown for maximum rated pressure and smooth linear cam strip settings. For applications that require non-linear cam strip settings, double the torque required.

**Torque Requirements** listed in tables above are important and are to be used in selecting your automatic control operators. Torque figures (inch-pounds) are additive for your complete MICRO-RATIO® Valve assembly.

**When pneumatic actuators are applied, oversize to achieve accurate control.**

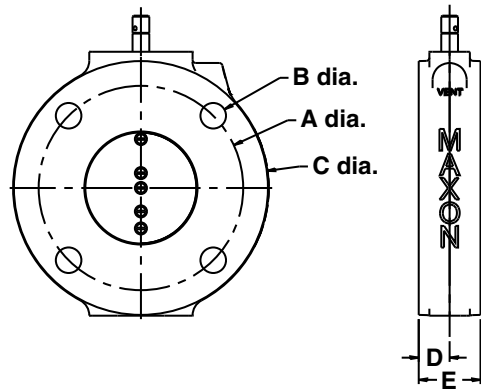
#### Example #1: Linear Cam Strip Setting

A-4" x 1-1/2"-A MICRO-RATIO® Valve  
 A-4" manual requires 140 in-lbs.  
 1-1/2"-A SYNCHRO requires 70 in-lbs.  
 Total torque required: 210 in-lbs.

#### Example #2: Non-Linear Cam Strip Setting

A-4" x 1-1/2"-A MICRO-RATIO® Valve  
 A-4" manual requires 140 in-lbs.  
 1-1/2"-A SYNCHRO requires 140 in-lbs.  
 Total torque required: 280 in-lbs.

### Dimensions *(in inches)* Valve Body



#### Cast Iron Bodies

Size	A	B	C	D	E
1"	3.12	0.63	4.25	0.66	1.31
1.25"	3.50	0.63	5.00	0.66	1.31
1.5"	3.88	0.63	5.00	0.66	1.31
2"	4.75	0.75	6.00	0.84	1.69
2.5"	5.50	0.75	7.50	0.91	1.81
3"	6.00	0.75	7.50	0.91	1.81
4"	7.50	0.75	9.00	1.03	2.06

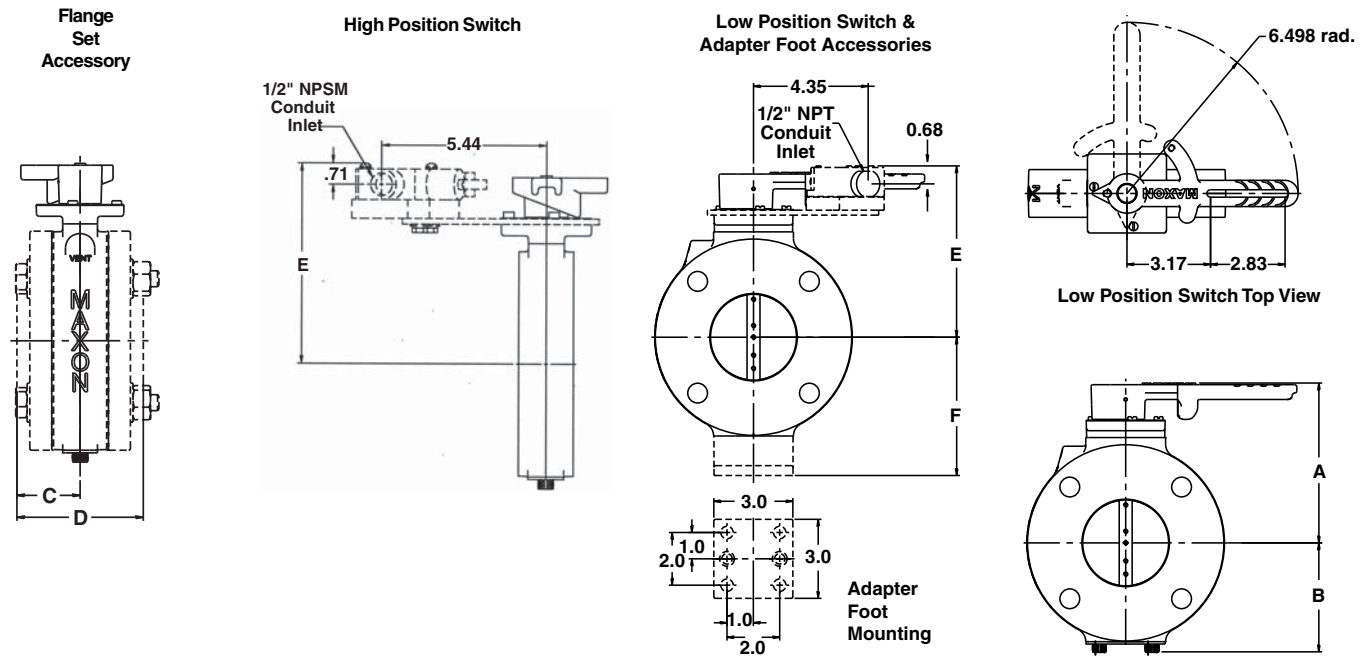
#### Carbon Steel Bodies

Size	A	B	C	D	E
1"	3.12	0.63	4.25	0.66	1.31
1.25"	3.50	0.63	5.00	0.66	1.31
1.5"	3.88	0.63	5.00	0.66	1.31
2"	4.75	0.75	6.00	0.84	1.69
2.5"	5.50	0.75	7.50	0.91	1.81
3"	6.00	0.75	7.50	0.91	1.81
4"	7.50	0.75	9.00	1.03	2.06

#### Brass Bodies

Size	A	B	C	D	E
1"	3.12	0.63	4.25	0.66	1.31
1.25"	3.50	0.63	5.00	0.66	1.31
1.5"	3.88	0.63	5.00	0.66	1.31
2"	4.75	0.75	6.00	0.84	1.69
2.5"	5.50	0.75	7.50	0.91	1.81
3"	6.00	0.75	7.50	0.91	1.81

## Dimensions *(in inches)* Series "A" Manual Control Valves



**Valve bodies - cast iron, carbon steel, stainless steel or brass**

Size	A	B	Thrd. C	Welded C [1]	Thrd. D	Welded D [1]	E	F
1"	5.08	2.91	1.41	1.41	2.82	2.82	5.67	4.00
1.25"	5.51	3.16	1.53	1.53	3.06	3.06	6.17	4.25
1.5"	5.51	3.16	1.60	1.60	3.20	3.20	6.17	4.25
2"	5.51	3.41	1.91	1.91	3.81	3.81	6.17	4.50
2.5"	6.08	4.14	2.09	2.09	4.18	4.18	6.67	5.25
3"	6.08	4.14	2.16	2.16	4.32	4.32	6.67	5.25
4" [2]	6.63	5.28	2.41	2.41	4.81	4.81	7.29	6.38

[1] Welded flanges not available for cast iron and brass bodies

[2] Brass bodies not available in 4" size

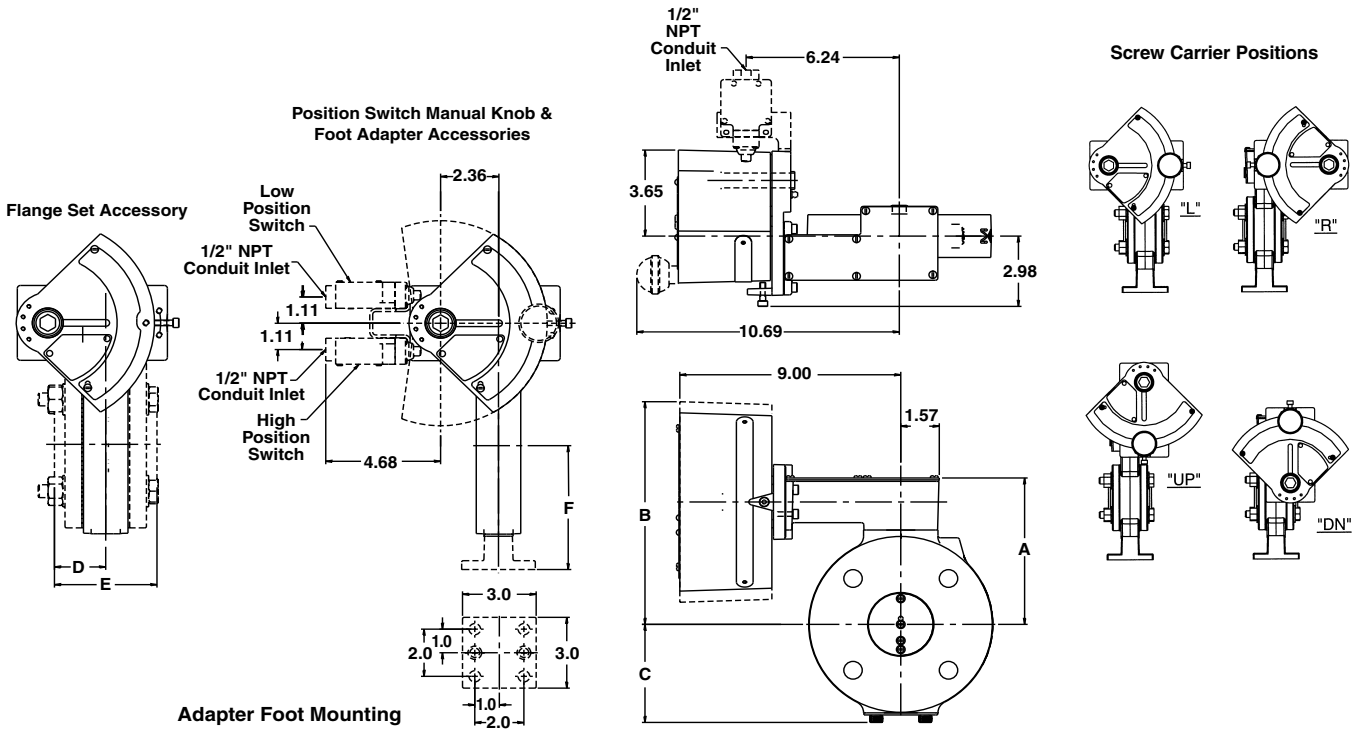
**Valve Weight - Manual Valves (in lbs.)**

Valve Size	Body Material			
	Cast Iron	Carbon Steel	Stainless Steel	Brass
1"	8.1	8.5	8.6	9.3
1.25"	9.6	10.2	10.4	11.2
1.5"	9.4	10.0	10.2	10.9
2"	13.2	14.1	14.4	15.6
2.5"	20.2	21.7	22.1	24.1
3"	19.0	20.4	20.8	22.7
4"	27.6	29.8	30.4	---

Note: All weights are approximate and do not include accessories

Pipe threads on this page conform to NPT (ANSI Standard B2.1)

## Dimensions *(in inches)* Series "A" SYNCHRO Control Valves



### Cast Iron Bodies

Size	A	B	C	D	E	F
1"	5.06	8.44	2.91	1.41	2.82	4.00
1.25"	5.56	8.94	3.16	1.53	3.06	4.25
1.5"	5.56	8.94	3.16	1.60	3.20	4.25
2"	5.56	8.94	3.41	1.91	3.81	4.50
2.5"	6.06	9.44	4.14	2.09	4.18	5.25
3"	6.06	9.44	4.14	2.16	4.32	5.25
4"	6.69	10.06	5.28	2.41	4.81	6.38

### Carbon Steel Bodies

Size	A	B	C	Thrd. D	Welded D	Thrd. E	Welded E	F
1"	5.06	8.44	2.91	1.41	1.41	2.82	2.82	4.00
1.25"	5.56	8.94	3.16	1.53	1.53	3.06	3.06	4.25
1.5"	5.56	8.94	3.16	1.60	1.60	3.20	3.20	4.25
2"	5.56	8.94	3.41	1.91	1.91	3.81	3.81	4.50
2.5"	6.06	9.44	4.14	2.09	2.09	4.18	4.18	5.25
3"	6.06	9.44	4.14	2.16	2.16	4.32	4.32	5.25
4"	6.69	10.06	5.28	2.41	2.41	4.81	4.81	6.38

### Brass Bodies

Size	A	B	C	Thrd. D	Solder D	Thrd. E	Solder E	F
1"	5.06	8.44	2.91	1.41	1.78	2.82	3.81	4.00
1.25"	5.56	8.94	3.16	1.53	1.84	3.06	3.81	4.25
1.5"	5.56	8.94	3.16	1.60	1.92	3.20	3.97	4.25
2"	5.56	8.94	3.41	1.91	2.51	3.81	5.13	4.50
2.5"	6.06	9.44	4.14	2.06	2.79	4.11	5.48	5.25
3"	6.06	9.44	4.14	2.16	2.85	4.32	5.70	5.25

### Valve Weight - SYNCHRO Valves *(in lbs.)*

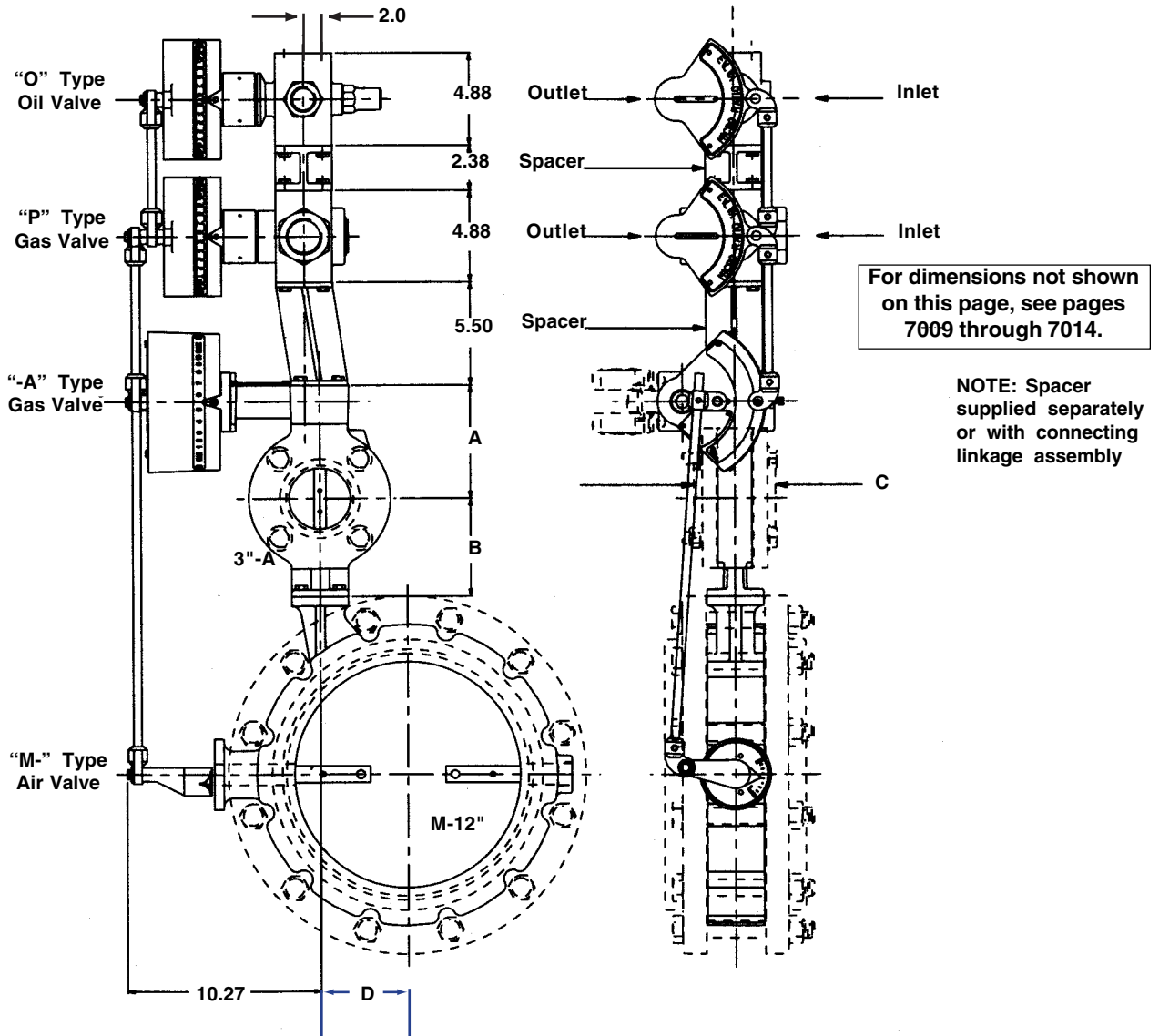
Valve Size	Body Material		
	Cast Iron	Carbon Steel	Brass
1"	17.6	18.0	18.8
1.25"	19.1	19.7	20.7
1.5"	18.9	19.5	20.4
2"	22.7	23.6	25.1
2.5"	29.7	31.2	33.6
3"	28.5	29.9	32.2
4"	37.1	39.3	---

Note: All weights are approximate and do not include accessories

Pipe threads on this page conform to NPT (ANSI Standard B2.1)

## Dimensions *(in inches)*

### MICRO-RATIO® Valve Arrangements (right hand arrangement shown)



**SYNCHRO Gas Valves - Butterfly Type**

Size	A	B	C	C Brass
1"	5.06	4.00	2.82	2.82
1.25"	5.56	4.25	3.06	3.06
1.5"	5.56	4.25	3.20	3.20
2"	5.56	4.50	3.81	3.81
2.5"	6.06	5.25	4.18	4.11
3"	6.06	5.25	4.32	4.32
4"	6.69	6.38	4.81	---

**"M-" Air Valves - Dimension D**

Size	D
M- 1-1/2" thru M-6"	---
M-8"	1.12
M-10"	3.62
M-12"	4.62
M-14"	5.75
M-16"	6.62
M-18"	7.62

Note: Dimension "D" is dependent upon the size of air valve selected.

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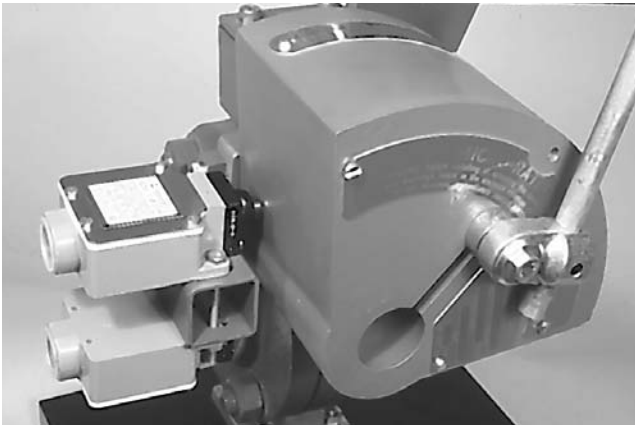
## Accessories

### Position switches

*for electrical indication of valve position*

**Standard Low Fire Start (LFS) switch** opens the circuit when valve leaves minimum position. **Hi/Lo fire position switch set** includes (2) SPDT switches. One switch may be field-set to activate at high position, while the other is set to activate at low position.

### SYNCHRO Valves



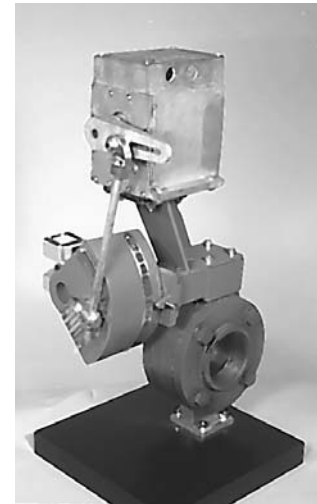
### Manual Handle Valves



### Connecting Base and Linkage Assemblies

Maxon has designed a broad range of Connecting Base and Linkage assemblies (CB & L) to properly position and align the popular operators for control of Maxon flow control valves.

Proper position and alignment are essential for smooth and trouble-free operation of flow control valves.



### Other Accessories

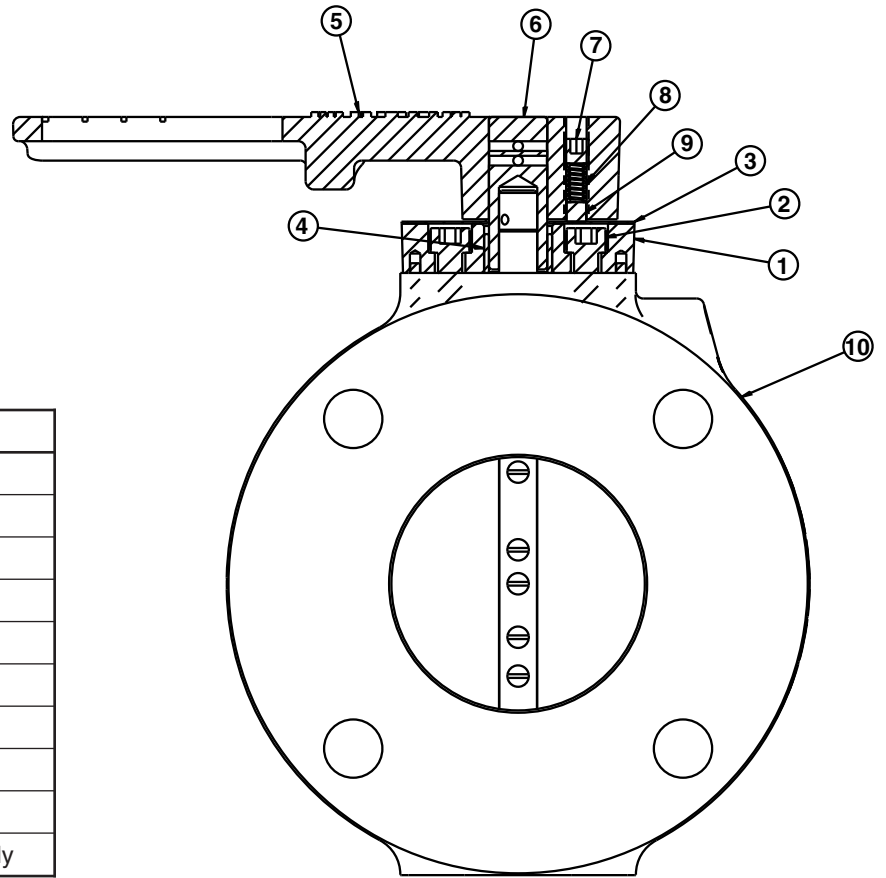
#### Poppet to A- SYNCHRO Spacer Kit



#### Universal Adapter Bracket Kit



## Component Identification Series "A" Manual Control Valves

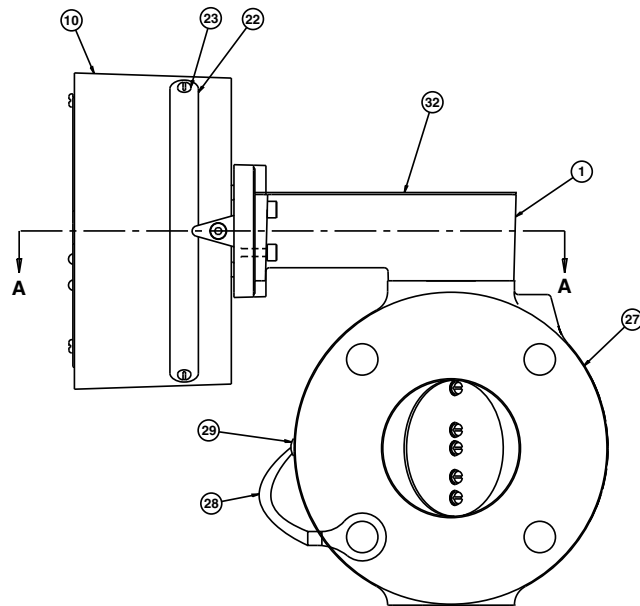
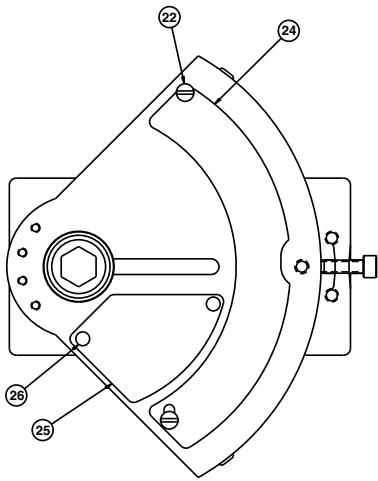


**Legend**

Item	Description
1	Manual Valve Adapter
2	Cap Screws
3	Indicator Plate
4	Manual Shaft Bushing
5	Manual Handle
6	Manual Sleeve
7	Set Screw
8	Brake Spring
9	Brake
10	Valve Body Sub-Assembly

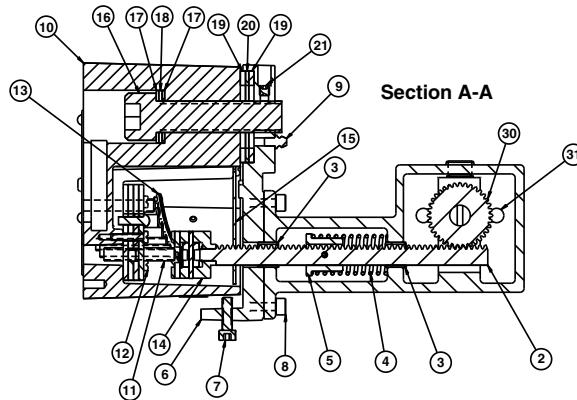
# Component Identification

## Series "A" SYNCHRO Flow Control Valves



**Legend**

Item	Description
1	Housing
2	Operating Rack
3	Operating Rack Bearings
4	Compression Spring
5	Spring Retainer
6	Base
7	Locking Screw
8	Base Bolts
9	Lube Fitting
10	Screw Carrier
11	Cam Screws
12	Retainer Screws
13	Cam Strips
14	Yoke
15	Dust Cover
16	Screw Carrier Bolt
17	Washer
18	Bearing
19	Washer
20	Bearing
21	Set Screw
22	Indicator Strip
23	Plate Screw
24	Cam Screw Cover Plate
25	Identification Plate
26	Drive Screw
27	Valve Body Sub-Assembly
28	Ground Straps (Brass Only)
29	Drive Screw (Brass Only)
30	Spur Gear
31	Cap Screws
32	Cover Plate





## Suggested Maintenance/Inspection Procedures

### Series "A" SYNCHRO Flow Control Valves

#### Valve Lubrication Suggestions

Some lubrication of moving parts may be required. All moving parts, O-rings and cam strips are lubricated at time of manufacturing. A periodic inspection should be performed to insure all parts continue to move freely and function properly. A periodic re-application of lubricant will extend the service life of your Maxon MICRO-RATIO® Valve.

The following lubricants are suggested:

<u>Manufacturer</u>	<u>Lubricant</u>
Keystone Div., Philadelphia, PA	#84-EP-2, NLGL #2 Lithium base grease
Standard Oil Co. (of Indiana)	Stanolith grease #42
Shell Oil Co.	Alvania grease #1
Stewart Warner Corp.	Alemite lubricant #32

# Notes