

## RACK & PINION FEATURES

## A...DA/SR SERIES

INTEC pneumatic actuators are designed and manufactured to provide the highest cycle-life on the market. We can accessorize them to accomplish virtually any control requirement. They are available with various mounting dimension configurations and span eleven models for appropriate torque compatibility. Our extensive inventory and engineering capabilities allow us to respond to your needs with flexibility. We pride ourselves on exceeding customer expectations. Contact us for application assistance.

- ▶ Double acting and spring return
- ▶ Dual travel stops
- ▶ Torques to 36,000 in.lbs.
- ▶ DA and SR common end caps
- ▶ ISO 5211 mounting dimensions  
NOTE: A2500 & A3500 - Male Output Shaft
- ▶ Wide base for direct mount to many butterfly valves
- ▶ Substantial pinion bearings mean high cycle life
- ▶ Corrosion resistant hard anodized finish
- ▶ Each unit serialized and bar coded
- ▶ Namur accessory mounting configuration
- ▶ Custom accessory mounting



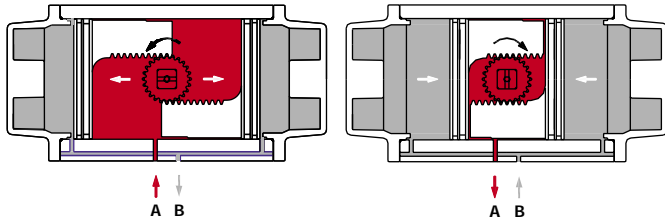
See accessory page for details

# GENERAL TECHNICAL DATA

- Standard working temperature -20°F to 175°F
- Low temperature and high temperature option
- Maximum working pressure 150 psig
- Operating media - clean, dry air, non-corrosive gas or light hydraulic oil

- Air supply 40 psi - 150 psi
- Rotation 100°
- Dual travel stops standard
- Mounting dimensions
  - Accessories to Namur - VDI/VDE
  - Valve mounting to ISO 5211 (A20 - A1750)
  - Custom configurations available in quantity
- Permanently lubricated units

## Operation



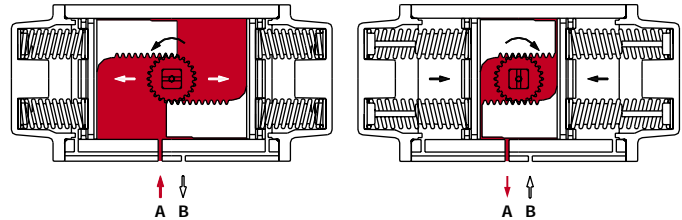
### Double Acting Operation

#### CCW

Air is supplied to Port A forcing the pistons away from each other (toward ends), rotating drive pinion counterclockwise and exhausting air out of Port B.

#### CW

Air is supplied to Port B forcing the pistons toward each other (toward center), rotating drive pinion clockwise and exhausting air out of Port A.



### Spring Return Operation

#### CCW

Air is supplied to Port A forcing the pistons away from each other (toward ends), rotating drive pinion counterclockwise, compressing springs and exhausting air out of Port B.

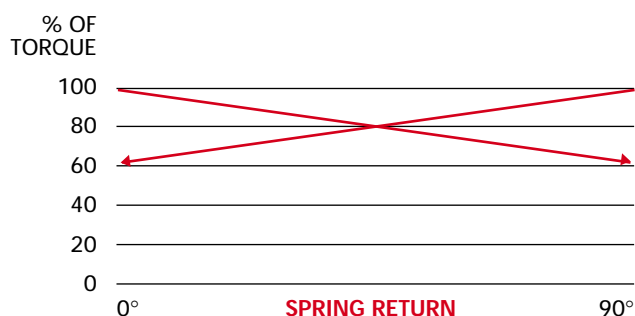
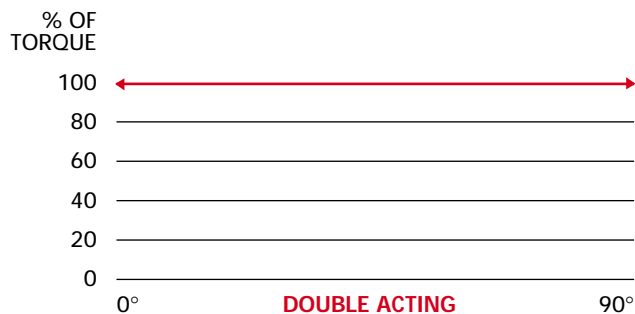
#### FAIL CW

Air failure (loss of pressure) allows compressed springs to force pistons toward each other (toward center), rotating drive pinion clockwise and exhausting air out of Port A.

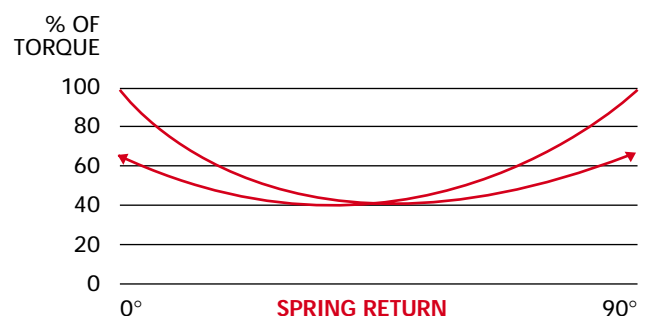
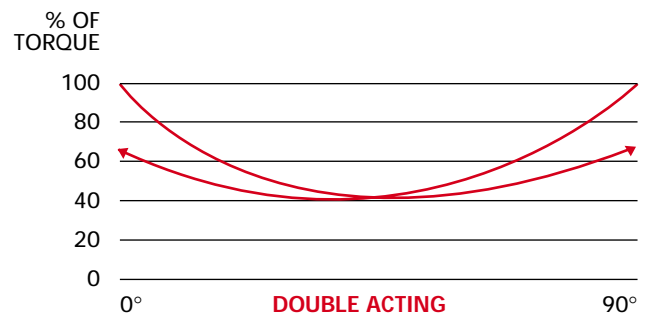
\*(Unit is capable of failure in counterclockwise direction by reversing pistons inside of housing.)

## Torque Curves

### A10-A1750 Rack & Pinion Design



### A2500-A3500 Scotch Yoke Design



# TORQUE OUTPUT & OPERATION INFORMATION

## SPRING RETURN TORQUE (in. lbs.)

		SPRING TORQUE		AIR SUPPLY							
				40 psi		60 psi		80 psi		100 psi	
MODEL	SPRINGS/ SIDE (5 STD.)	END	BREAK	END	BREAK	END	BREAK	END	BREAK	END	BREAK
A20SR	2	19	31	36	48	77	89				
	3	29	49	20	40	60	80	94	115	139	160
	4	39	67			42	70	78	106	113	145
	5	49	84			25	60	61	96	105	135
	6	59	101					43	85	88	121
A40SR	2	33	59	63	89	125	151				
	3	49	87	27	54	98	135	159	196		
	4	65	114			70	119	131	180	194	243
	5	82	142			43	103	103	164	165	226
	6	98	170					75	147	137	209
A80SR	2	86	160	185	259	358	432				
	3	128	245	101	218	273	390	447	564		
	4	170	330			188	348	362	522	536	696
	5	215	410			109	304	282	477	455	651
	6	260	490					202	432	375	605
A130SR	2	120	226	233	339	473	579				
	3	185	343	117	275	356	514	586	744		
	4	250	460			239	449	469	679	720	930
	5	315	573			127	385	357	614	607	864
	6	380	685					244	549	494	799
A200SR	2	168	310	339	481	669	811				
	3	252	460	190	398	519	727	849	1057		
	4	336	610			369	643	699	973	1030	1304
	5	420	760			220	560	549	889	879	1219
	6	504	910					399	805	729	1135
A300SR	2	350	644	745	1039	1445	1739				
	3	525	962	428	865	1127	1564	1827	2264		
	4	700	1280			809	1389	1509	2089	2200	2780
	5	880	1605			485	1210	1184	1909	1874	2599
	6	1060	1930					859	1729	1549	2419
A500SR	2	530	920	1109	1499	2129	2519				
	3	795	1380	650	1235	1669	2254	2679	3264		
	4	1060	1840			1209	1989	2219	2999	3231	4010
	5	1325	2300			750	1725	1759	2734	2769	3744
	6	1590	2760					1299	2469	2309	3479
A850SR	2	740	1230	1499	1989	2929	3419				
	3	1100	1835	1095	1830	2324	3059	3644	4379		
	4	1460	2440			1719	2699	3039	4019	4320	4300
	5	1815	3050			1110	2345	2429	3664	3709	4944
	6	2170	3660					1819	3309	3099	4589
A1200SR	2	1050	1820	2029	2799	4189	4959				
	3	1575	2730	1120	2275	3279	4434	5169	6324		
	4	2100	3640			2369	3909	4259	5799	6140	7680
	5	2625	4550			1460	3385	3349	5274	5169	7094
	6	3150	5460					2439	4749	4259	6569
A1750SR	2	1390	2430	3049	4089	6124	7164				
	3	2085	3645	1835	3395	4909	6469	7664	9224		
	4	2780	4860			3694	5774	6449	8529	9100	11,180
	5	3475	6075			2480	5080	5234	7834	7884	10,484
	6	4170	7290					4019	7139	6669	9789

Torques shown are for A...DA/SR Series (ISO), 2CB-Series (Centerline Direct Mount), and 2K Series (Keystone Direct Mount)

# TORQUE OUTPUT & OPERATION INFORMATION

## A10–A1750

### DOUBLE ACTING TORQUE (in. lbs.)

MODEL	AIR SUPPLY				
	40 psi	60 psi	80 psi	100 psi	120 psi
A10DA	30	45	60	75	90
A20DA	79	118	158	197	237
A40DA	164	245	327	409	491
A80DA	352	528	703	879	1055
A130DA	527	791	1054	1318	1581
A200DA	716	1073	1431	1789	2147
A300DA	1217	1825	2434	3042	3651
A500DA	1749	2624	3498	4373	5247
A850DA	3282	4923	6565	8206	9847
A1200DA	4510	6765	9020	11275	13530
A1750DA	5729	8586	11448	14311	17173

**NOTE:**

Torques shown are for A...DA/SR Series (ISO), 2CB-Series (Centerline Direct Mount, and 2K-Series (Keystone Direct Mount). Torques are actual. Please be sure to include appropriate safety factors and all service conditions variables when sizing. 3-way (master slave) assemblies should use a 35% safety factor. Call for assistance.

## A2500–A3500

### DOUBLE ACTING TORQUE (in. lbs.)

#### A2500DA

	0°	40°	90°
60 psi	13,627	7858	9196
80 psi	18,734	8276	12,456
100 psi	24,411	10,366	15,382

#### A3500DA

	0°	40°	90°
60 psi	26,919	12,791	18,141
80 psi	35,864	17,054	24,160
100 psi	45,060	21,318	30,196

NOTE: A2500 and A3500 are scotch yoke design

### SPRING RETURN TORQUE (in. lbs.)

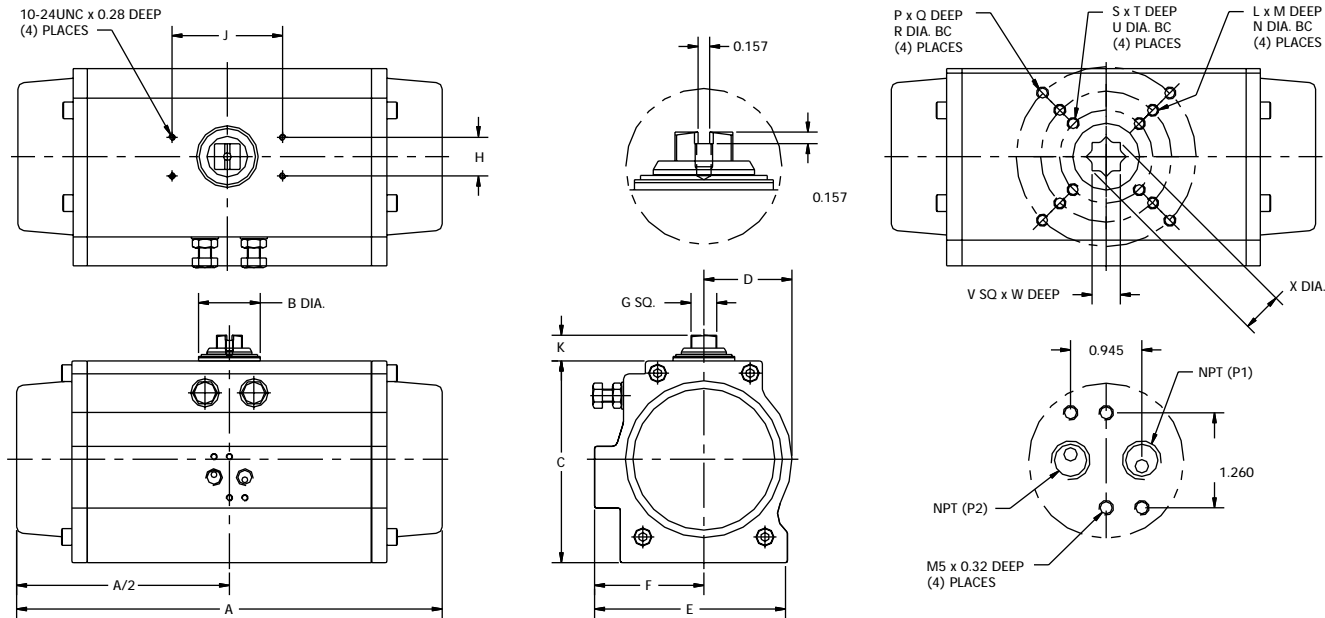
#### A2500SR

	AIR BREAK	RUN	AIR END	SPRING BREAK	RUN	SPRING END
	0°	60°	90°	90°	30°	0°
60 psi	6890	2852	4039	7224	2974	4241
80 psi	9152	3784	5368	9592	3960	5632
100 psi	11,510	4744	6758	12,038	4972	7066

#### A3500SR

	AIR BREAK	RUN	AIR END	SPRING BREAK	RUN	SPRING END
	0°	60°	90°	90°	30°	0°
60 psi	13,780	5702	8078	14,449	5948	8483
80 psi	18,304	7568	10,736	19,184	7920	11,264
100 psi	22,968	9486	13,464	24,076	11,264	14,132

# DIMENSIONS A20-A1750



MODEL	A10	A20	A40	A80	A130	A200	A300	A500	A850	A1200	A1750
A	3.74	8.05	7.52	8.62	10.24	10.98	13.03	14.76	19.57	21.50	23.15
ØB	0.79	1.22	1.22	1.22	1.42	1.61	1.89	2.09	2.40	2.68	2.91
C	1.91	2.76	3.43	4.49	4.88	5.28	6.18	6.93	7.91	9.17	10.12
D	0.83	1.10	1.42	1.69	2.11	2.30	2.70	2.99	3.74	4.13	4.57
E	1.93	2.58	3.29	4.41	4.69	5.06	5.91	6.50	6.89	7.60	8.31
F	1.10	1.40	1.79	2.48	2.72	2.89	3.35	3.70	3.90	4.29	4.72
G sq.	0.354	0.630	0.630	0.630	0.630	0.630	0.787	0.787	0.787	1.260	1.260
H	0.984	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181
J	1.969	3.150	3.150	3.150	3.150	3.150	3.150	5.118	5.118	5.118	5.118
K	0.787	0.787	0.787	0.787	0.787	0.787	0.787	1.181	1.181	1.181	1.181
L	10-24UNC	1/4"-20UNC	1/4"-20UNC	1/4"-20UNC	N/A	N/A	5/16"-18UNC	N/A	N/A	N/A	N/A
M	0.24	0.31	0.39	0.39	N/A	N/A	0.47	N/A	N/A	N/A	N/A
ØN	1.417	1.654	1.969	1.969	N/A	N/A	2.756	N/A	N/A	N/A	N/A
P	N/A	N/A	5/16"-18UNC	5/16"-18UNC	5/16"-18UNC	5/16"-18UNC	3/8"-16UNC	3/8"-16UNC	3/8"-16UNC	N/A	N/A
Q	N/A	N/A	0.47	0.47	0.47	0.47	0.63	0.63	0.63	N/A	N/A
ØR	N/A	N/A	2.756	2.756	2.756	2.756	4.016	4.016	4.016	N/A	N/A
S	N/A	N/A	N/A	3/8"-16UNC	3/8"-16UNC	3/8"-16UNC	1/2"-13UNC	1/2"-13UNC	1/2"-13UNC	5/8"-11UNC	5/8"-11UNC
T	N/A	N/A	N/A	0.63	0.63	0.63	0.79	0.79	0.79	0.87	0.87
ØU	N/A	N/A	N/A	4.016	4.016	4.016	4.921	4.921	4.921	5.512	5.512
V sq.	0.354	0.433	0.551	0.748	0.748	0.748	0.866	1.063	1.063	1.417	1.417
W	0.39	0.63	0.67	0.71	0.71	0.71	1.02	1.18	1.18	1.58	1.58
ØX	0.58	0.58	0.75	1.02	1.02	1.02	1.19	1.47	1.47	1.97	1.97
NPT	1/8"	1/8"	1/8"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
<b>Weight (lbs.)</b>											
DA	2	2.9	4.5	9	12	14.5	23	32	59	78	100
SR	N/A	3.5	6	11	14	17	26	38	68	91	117
<b>Volume (cu. in. per 90°)</b>											
CW	3	8	16.5	34	52	67	116	183	334	505	703
CCW	3	6	14	23	36	49	100	137	259	357	439
<b>Cycle Times (seconds per 90°)</b>											
DA	0.3	0.5	0.6	1	1.2	1.5	2	2.5	3	4	5
SR	N/A	0.5	0.6	1	1.2	1.5	2	2.5	3	4	5

\* A10 & A20 have travel stops located in the End Caps for travel adjustment in one direction.

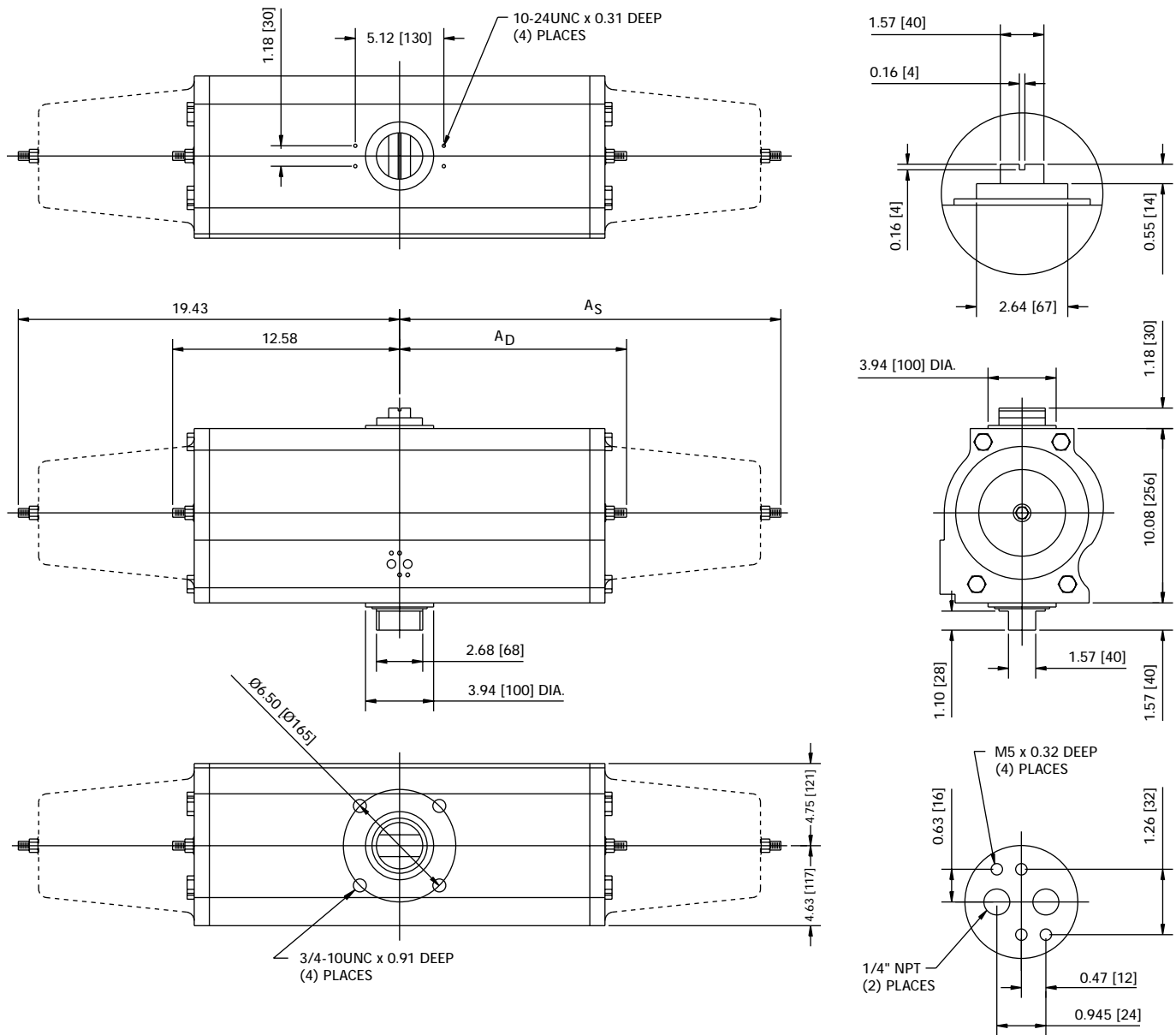
### Direct Acting:

Pressure at port P1 will result in a clockwise rotation.  
Pressure at port P2 will result in a counter clockwise rotation.

### Reverse Acting:

Pressure at port P1 will result in a counter clockwise rotation.  
Pressure at port P2 will result in a clockwise rotation.

# DIMENSIONS A2500 - A3500



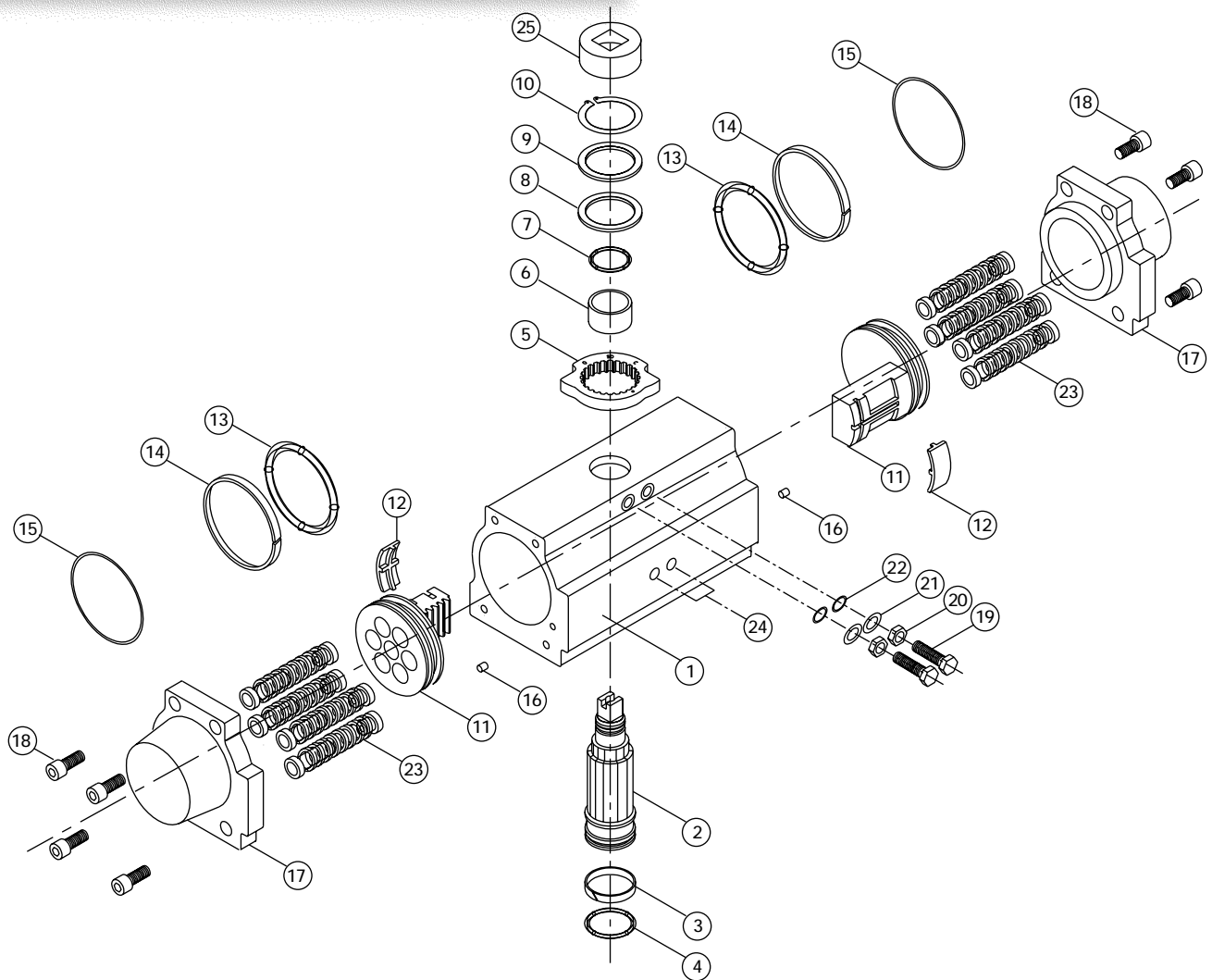
WEIGHT (POUNDS)      VOLUME (CU. IN. PER 90 DEG)      CYCLE TIMES (SEC. PER 90 DEG)

MODEL	AS	AD	DA	SR	CW	CCW	CW	CCW
A2500	7.25	7.25	98	137	525	310	5	5
A3500	19.43	12.58	125	195	650	585	9	9

$$\text{Air Consumption (scf per 90 Deg)} = \frac{\text{Volume}}{1,728} \times \frac{\text{Supply Pressure} + 14.7}{14.7}$$

**NOTES:** Accessory mounting holes are not intended for Manual Gear Overrides or Stop Blocks. Cycle times are under no load conditions. Air line size, air capacity, and valve torque characteristics affect these cycle times. Faster or slower cycle times can be accomplished using special control components.

# EXPLODED VIEW AND BILL OF MATERIAL



No.	Description	Qty.	Material	Remarks
1	Cylinder Body	1	Aluminum	Hard Anodized
2	Pinion	1	Steel	Electroless Nickel Plated
3	Bottom Pinion Bushing ①②	1	Nylon	
4	Bottom Pinion O-ring ①②	1	Nitrile Buna	
5	Travel Stop Cam	1	SCM21	Phosphate Coated
6	Top Pinion Bushing ①②	1	Nylon	
7	Top Pinion O-ring ①②③	1	Nitrile Buna	
8	Pinion Teflon Washer ①②	1	RTFE	
9	Pinion SST Washer ①②	1	304 Stainless Steel	
10	Snap Ring ①②	1	Steel	Electroless Nickel Plated
11	Piston	2	Die Cast Aluminum	Dichromate Dipped
12	Guide Plate ①②	2	Nylon	
13	Piston O-ring ①②③	2	Nitrile Buna	
14	Piston Guide Band ①②	2	PTFE	
15	End Cap O-ring ①②③	2	Nitrile Buna	
16	Hole Sealant	2	Nitrile Buna	
17	End Cap	2	Die Cast Aluminum	Epoxy Coated
18	End Cap Bolt	2	304 Stainless Steel	
19	Travel Stop Bolt	2	304 Stainless Steel	
20	Travel Stop Nut	2	304 Stainless Steel	
21	Travel Stop Washer	2	304 Stainless Steel	
22	Travel Stop O-ring ①②③	2	Nitrile Buna	
23	Spring Cartridge	12	Spring Steel	Epoxy Coated
24	Dust Plug	2	Polyethylene	
25	Position Indicator	1	Polyethylene	

- ① Recommended spare parts
- ② Parts included in a repair kit
- ③ Parts included in a seal kit

Repair Kit		
Nitrile Buna	AKB(Actuator Size)	-20°F ~ +175°F
Viton	AKV(Actuator Size)	0°F ~ +300°F
Low Temp Buna	AKLT(Actuator Size)	-45°F ~ +175°F

Example: AKB0130 = Nitrile Buna Repair Kit for A130

Seal Kit		
Nitrile Buna	2BOK(Actuator Size)	-20°F ~ +175°F
Viton	2VOK(Actuator Size)	0°F ~ +300°F
Low Temp Buna	2LTOK(Actuator Size)	-45°F ~ +175°F

Example: 2VOK0080 = Viton Seal Kit for A80