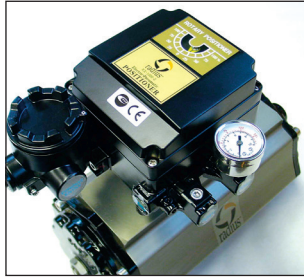
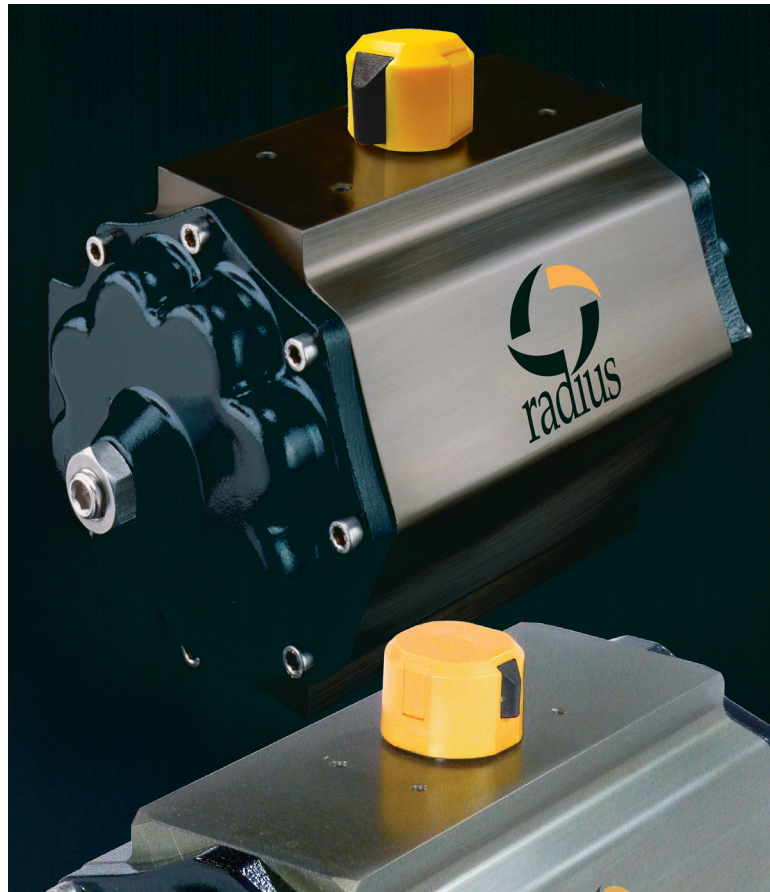


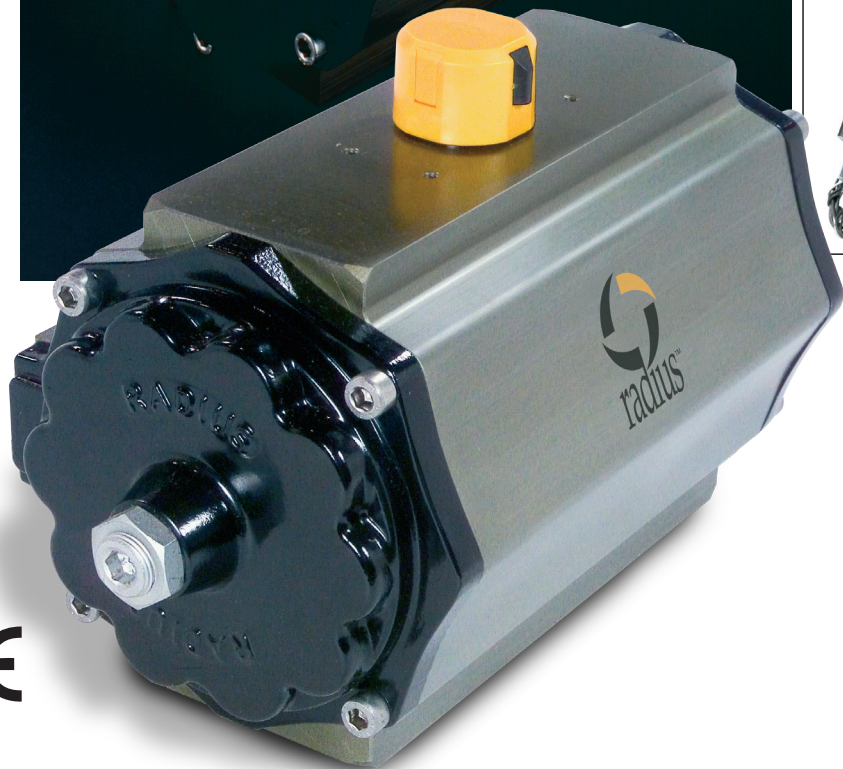
radius



Series A
pneumatic
rack & pinion
actuators



SIL3
Safety Integrity Level





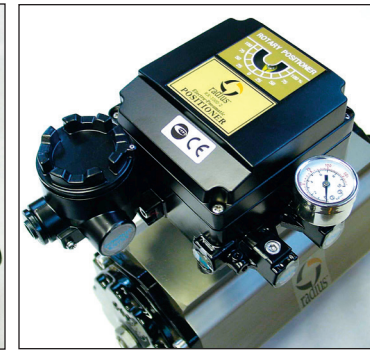
EVOLUTION IN ENGINEERING

The Series A double acting and spring return pneumatic rack and pinion actuators from Radius™ offer uncompromising standards of safety, reliability and value. The Series A rack and pinion actuators are designed to operate “quarter-turn valves”. The wide torque range capabilities* ensure that Radius™ is more than suitable for plug, ball, butterfly

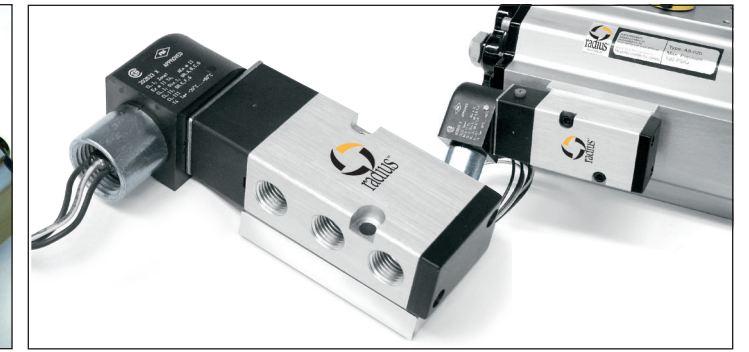
valve and damper applications. Look over the features and benefits that Radius has to offer. Check the specifications. You'll find that dollar for dollar Radius offers one of the finest valve actuators in the industry. Join the evolution in engineering, contact us today for further information or a quote.



Direct mount limit switch



Direct mount positioner



Direct mount pilot solenoid valves

Seals:
Buna-N Nitrile is standard. Optional materials are available.

Output Drive Shaft:
Electroless nickel plated carbon steel.

Position Indicator:
UV resistant polypropylene.

End Caps:
Precision-cast aluminum, corrosion resistant polyurethane coated inside and out.

Travel Stops:
Patented design allows independent open and close adjustment, standard on all models.

Fasteners:
Stainless steel.

Spring Sets:
Springs are carbon steel and coated for corrosion resistance. Spring guides are corrosion resistant nylon.

Center Housing:
Extruded aluminum and hard anodized.

Bearing Pad:
Polymer, corrosion resistant.

Pistons:
Precision-cast and machined aluminum and hard anodized coated.

All Radius actuators are manufactured with silicone free lubricants.

*Torque range capabilities (double acting - up to 48,635 in. lbs. and spring return - up to 16,082 in. lbs.)

FEATURES AND BENEFITS

- Wide torque range available.
- Namur accessory mounting surfaces are standard on all Radius actuators for attachment of ancillary control devices.
- Radius quality standards and support.
- High visibility two-part position indicator may have upper portion removed to expose external Namur drive shaft for simple attachment of Namur accessory devices while retaining position indicating capability.
- Complete O-ring sealing protects against ingress of outside moisture and contaminants.
- Unique travel stops in both open & close direction are standard on all models and independently and externally adjustable using standard tools.
- One piece anti-blow-out bottom entry drive shaft.
- Available in Spring Return (AS) and Double Acting (AD) configurations. Multiple spring design allows for a wider range of torque from a single unit. All springs are self-contained and guided for optimum efficiency. All models are fully convertible between double acting & spring return.
- Corrosion resistant by design. Exacting standards of corrosion protection render Radius suitable for most hostile environments.
- Low-cost, closed circuit breathing system available (Namur fitting) to protect actuator internal parts from extremely corrosive environments.



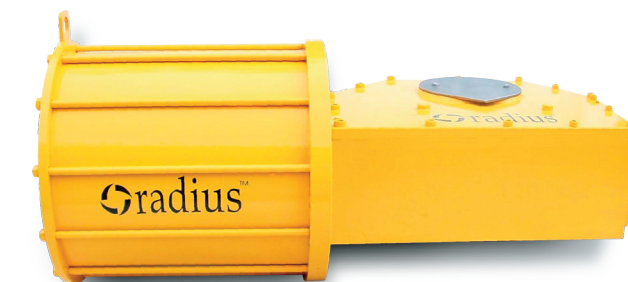
Series NUX CSA and FM approved explosion proof NAMUR mount solenoids.



Electroless Nickel Plated actuators.



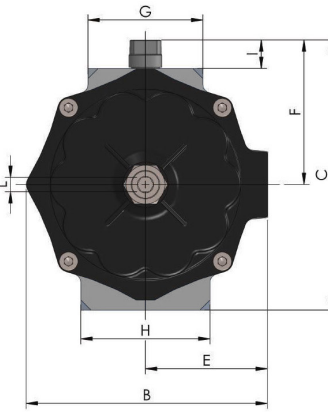
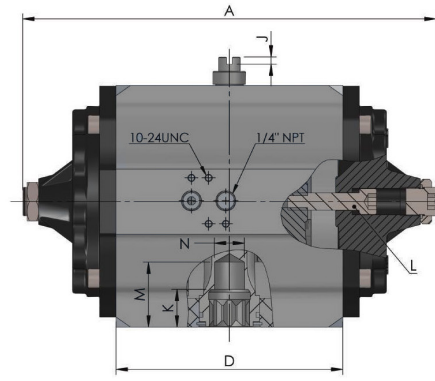
New 180 degree spring-to-center actuator.



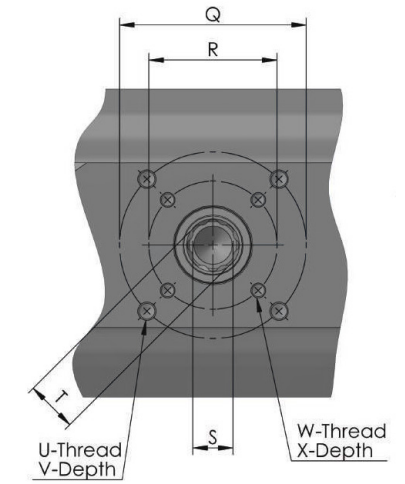
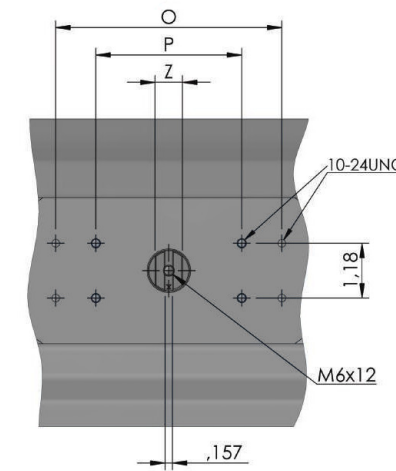
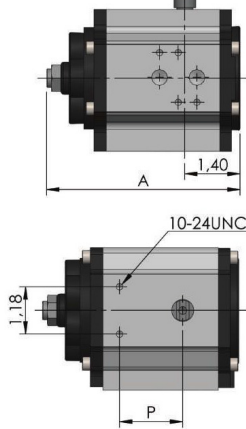
Radius also manufactures Scotch Yoke Actuators.



Models 005 thru 500



Model 003



Dimensions 90° Actuator (in.)

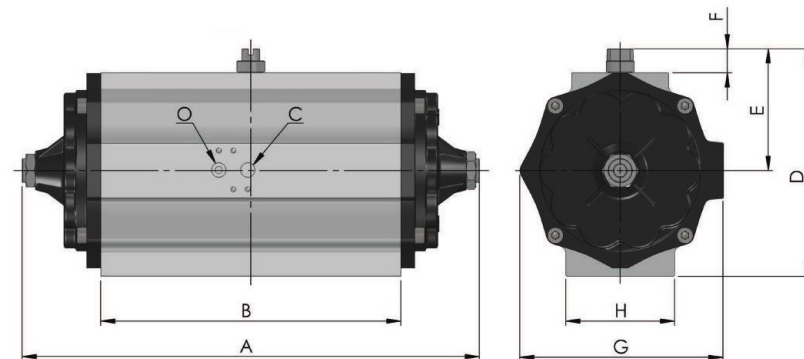
Model	MODEL DESIGNATION (AD = Double Acting, AS = Spring Return)													
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
AD-003 AS-003	4.88	3.50	4.37	2.87	1.93	2.52	1.81	1.89	0.79	0.16	0.63	5	0.63	-
AD-005 AS-005	7.09	3.50	4.37	3.98	1.93	2.52	1.81	1.89	0.79	0.16	0.63	5	0.63	-
AD-008 AS-008	9.17	4.41	5.16	4.96	2.24	2.87	1.81	2.83	0.79	0.16	0.71	6	1.22	0.59
AD-012 AS-012	11.00	4.41	5.16	6.69	2.24	2.87	1.81	2.83	0.79	0.16	0.79	6	1.30	0.63
AD-020 AS-020	11.60	5.24	5.94	7.01	2.76	3.31	1.97	2.83	0.79	0.16	0.98	8	1.77	0.87
AD-030 AS-030	11.30	6.65	7.44	6.22	3.35	3.98	3.15	3.54	0.79	0.16	0.98	10	1.77	0.83
AD-040 AS-040	13.50	6.65	7.83	8.50	3.35	3.98	3.15	3.54	1.18	0.20	1.22	10	1.77	1.18
AD-060 AS-060	14.80	7.68	9.06	9.13	3.94	5.04	2.95	3.54	1.18	0.20	1.22	12	1.85	1.18
AD-100 AS-100	17.30	8.27	9.69	10.70	4.25	5.43	3.15	4.33	1.18	0.20	1.50	12	2.17	1.57
AD-140 AS-140	17.50	9.13	10.70	10.00	4.72	5.91	3.54	5.12	1.18	0.20	1.61	12	2.17	1.57
AD-200 AS-200	21.10	9.13	10.70	13.90	4.72	5.91	3.54	5.12	1.18	0.20	2.09	14	3.15	2.01
AD-250 AS-250	18.10	12.00	13.40	12.50	5.94	7.17	3.94	6.14	1.18	0.20	2.01	14	2.17	1.57
AD-370 AS-370	26.40	12.00	13.40	17.60	5.94	7.17	3.94	6.14	1.18	0.20	2.60	17	2.60	1.97
AD-500 AS-500	31.30	16.00	17.70	19.70	8.15	9.25	5.31	7.09	1.18	0.20	3.11	22	5.00	2.36

(L) Dimension of the ALLEN Key hexagon to untighten the inner travel stop (mm)

180° Actuator Double Acting

Model	A	B	D	E	F	G	H
AD-180-005	8.86	4.53	4.37	2.53	0.79	3.50	1.89
AD-180-012	12.44	8.07	6.26	3.29	0.79	5.24	2.83
AD-180-030	14.84	9.76	7.44	3.98	0.79	6.65	3.54
AD-180-060	19.29	13.35	9.06	5.04	1.18	7.68	3.54
AD-180-140	23.66	16.85	10.71	5.91	1.18	9.13	5.12

Pressure to be put in either the "O" inlet" or in the "C" inlet.



Mounting Dimensions 90° Actuator (in.)

Model	MODEL DESIGNATION (AD = Double Acting, AS = Spring Return)											
	O	P	Q	R	S	T	U	V	W	X	Z	ISO-5211
AD-003 AS-003	-	1.57	1.97	1.42	0.43	0.56	1/4"-20UNC	0.35	10-24UNC	0.31	0.31	F03 / F05*
AD-005 AS-005	-	3.15	1.97	1.42	0.43	0.56	1/4"-20UNC	0.35	10/24UNC	0.31	0.31	F03 / F05*
AD-008 AS-008	-	3.15	2.76	1.97	0.67	0.87	5/16"-18UNC	0.47	1/4"-20UNC	0.35	0.39	F05 / F07**
AD-012 AS-012	-	3.15	2.76	1.97	0.75	0.99	5/16"-18UNC	0.47	1/4"-20UNC	0.35	0.39	F05 / F07
AD-020 AS-020	-	3.15	2.76	-	0.87	1.11	5/16"-18UNC	0.47	-	-	0.59	F07
AD-030 AS-030	-	3.15	4.02	2.76	0.87	1.11	3/8"-16UNC	0.59	5/16"-18UNC	0.47	0.59	F07 / F10
AD-040 AS-040	5.12	3.15	4.02	2.76	1.06	1.43	3/8"-16UNC	0.59	5/16"-18UNC	0.47	0.87	F07 / F10
AD-060 AS-060	5.12	3.15	4.02	2.76	1.06	1.43	3/8"-16UNC	0.59	5/16"-18UNC	0.47	0.87	F07 / F10
AD-100 AS-100	5.12	3.15	4.92	4.02	1.42	1.90	1/2"-13UNC	0.71	3/8"-16UNC	0.59	1.34	F12 / F10
AD-140 AS-140	5.12	3.15	4.92	4.02	1.42	1.90	1/2"-13UNC	0.71	3/8"-16UNC	0.59	1.34	F12 / F10
AD-200 AS-200	5.12	3.15	5.51	-	1.81	2.37	5/8"-11UNC	0.94	-	-	1.34	F14
AD-250 AS-250	5.12	3.15	5.51	-	1.42	1.90	5/8"-11UNC	0.94	-	-	1.34	F14
AD-370 AS-370	5.12	3.15	6.50	-	1.81	2.37	3/4"-10UNC	1.18	-	-	1.34	F16
AD-500 AS-500	5.12	3.15	6.50	-	2.17	2.84	3/4"-10UNC	1.18	-	-	1.34	F16

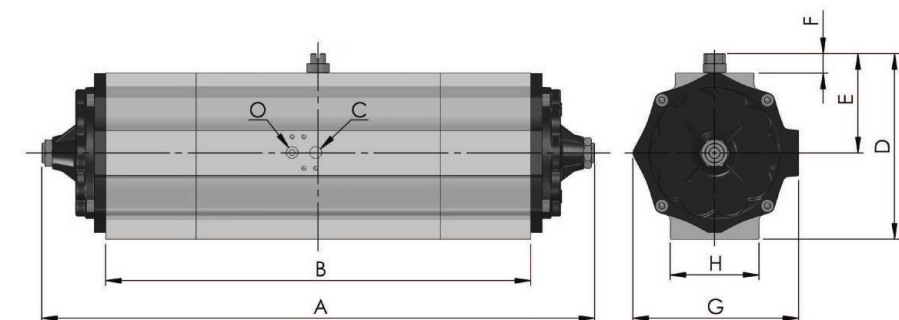
* Also available with a singular F04 drilling.

** Also available with F04 / F07 drilling.

RPC Actuators 3 Positions

Model	A	B	D	E	F	G	H
AS-RPC-005	13.11	10.35	4.37	2.53	0.79	3.5	1.89
AS-RPC-012	17.52	14.21	6.26	3.29	0.79	5.24	2.83
AS-RPC-030	21.06	17.2	7.44	3.98	0.79	6.65	3.54
AS-RPC-060	26.77	22.44	9.06	5.04	1.18	7.68	3.54
AS-RPC-140	34.65	30.24	10.71	5.91	1.18	9.13	5.12

These actuators have 3 positions. The central position is reached by spring force. To move 90° clockwise or counter-clockwise, it is necessary to put pressure in either the "O" inlet or in the "C" inlet. Torques and remaining dimensions are the same as their respective standard models.



Actuator Cycle Times and Specifications

Actuator Cycle Times

Actuator Cycle Times											
ACTUATOR SIZE	AIR VOLUME PER STROKE (in ³)		AIR VOLUME PER STROKE (in ³) 180°		OPERATING TIME at 80 PSI (sec.)				WEIGHT (lbs)		
	Opening	Closing	Opening	Closing	DOUBLE ACTING	180° MODELS	SPRING RETURN		AD	AS	180°
							Opening	Closing			
AD-003 - AS-003	6.5	6.1	-	-	< 1	-	1	< 1	2.76	2.87	-
AD-005 - AS-005	10.1	11.4	20.2	22.8	< 1	< 1	1	< 1	3.42	3.86	5.30
AD-008 - AS-008	21.9	27.5	-	-	< 1	-	1	< 1	5.95	6.83	-
AD-012 - AS-012	32.6	40.3	65.2	80.6	< 1	< 1	1	< 1	7.94	9.37	12.30
AD-020 - AS-020	49.2	55.5	-	-	< 1	-	1	< 1	10.47	12.68	-
AD-030 - AS-030	68.3	83.6	136.6	167.2	1 - 2	1 - 2	1.5	1	15.65	18.08	24.20
AD-040 - AS-040	105	115.9	-	-	1 - 2	-	1.5	1	20.90	25.40	-
AD-060 - AS-060	161.1	194.7	322.2	389.4	1.5 - 2.5	1.5 - 2.5	2	1 - 2	27.60	35.30	35.00
AD-100 - AS-100	239.8	269.1	-	-	2 - 3	-	3.5	< 1*	40.80	45.20	-
AD-140 - AS-140	287.4	251.4	574.8	502.8	3.5 - 4.5	3.5 - 4.5	4	< 1*	51.80	59.50	73.00
AD-200 - AS-200	383.8	491.2	-	-	4 - 5	-	5	< 1*	75.00	88.20	-
AD-250 - AS-250	467.4	533.3	-	-	5 - 6	-	5.5	< 1*	87.10	101.40	-
AD-370 - AS-370	863.5	1067.3	-	-	5.5 - 6.5	-	7	1.5*	132.30	169.80	-
AD-500 - AS-500	1281.5	1586.6	-	-	9 - 10	-	13 - 14	3*	251.30	308.60	-

*NOTE: Special modifications can be done to all actuators to increase the cycle time. Times are approximate (testing was performed with a supply of 80 PSI, an ambient temperature of 68°F, with electric-valve of 180 gal/min., tubing that provides the electric-valve of 0.315 inch of diameter and the actuator without load).

Technical Specifications

According to: ISO 9001:2008, IEC 61508:2010 (SIL3), LOM 05ATEX6032 X, GOST (CU TR 012) and European Pressure Equipment Directive 97/23/EC point 3.10.

Working Pressure: From 14.5 PSI to 116 PSI for double acting actuators. From 40 PSI to 116 PSI for spring return actuators.

Air Supply: Air or non corrosive gas.

Working Temperatures: From -4°F to 176°F.

Lubrication: All actuators are supplied lubricated for their normal working life.

Rotation: Counter-clockwise in opening. To reverse actuator rotation, invert pistons.

Movement: Rotation of 0° + 2.5° and 0 -2.5° / Rotation of 90° + 2.5° and 90° -2.5°

Double Acting Models

Model No.	Output Torques (in. lbs.)			
	Supply Air Pressure			
	40 psig	60 psig	80 psig	100 psig
AD-003	66	100	133	168
AD-005	133	200	266	336
AD-008	283	423	566	708
AD-012	425	635	850	1053
AD-020	637	968	1292	1611
AD-030	876	1325	1779	2213
AD-040	1319	1990	2673	3328
AD-060	2009	3080	4151	5204
AD-100	3054	4590	6160	7665
AD-140	3850	5867	7868	9860
AD-200	5337	8044	10789	13418
AD-250	6789	10187	13719	17064
AD-370	11887	17825	24012	29862
AD-500	19029	28897	38766	48635
	180° Actuators			
AD-005	133	200	266	336
AD-012	425	635	850	1053
AD-030	876	1325	1779	2213
AD-060	2009	3080	4151	5204
AD-140	3850	5867	7868	9860

25% Safety factor is recommended.

Available Options

Low temperature versions down to -85°F

High temperature versions up to 356°F

Manual Overrides

Spring Return Actuators

RKS-45: AS-008, AS-012, AS-020, AS-030, AS-040 & AS-060

RKS-75: AS-100, AS-140 & AS-200

RKS-125: AS-250 & AS-370

RKS-400: AS-500

Double Acting Actuators

RKE-45: AD-008, AD-012, AD-020, AD-030 & AD-040

RKE-75: AD-060, AD-100 & AD-140

RKE-125: AD-200 & AD-370



Spring Return Output Torque

Spring Return Models

Model No.	Spring Set	Output Torques (in. lbs.) and Pressure Ratings									
		Spring Torque		Supply Air Pressure							
		Spring Start	Spring End	40 psig		60 psig		80 psig		100 psig	
				Air Start	Air End	Air Start	Air End	Air Start	Air End	Air Start	Air End
AS-003	2	36	21	45	30	79	64	-	-	-	-
	3	54	31	35	12	69	46	-	-	-	-
	4	73	42	-	-	58	27	90	59	127	96
	5	91	52	-	-	-	-	80	42	115	77
	*6	110	63	-	-	-	-	69	23	104	58
AS-005	4	73	42	91	60	158	127	-	-	-	-
	6	109	63	70	24	137	91	-	-	-	-
	8	146	84	-	-	116	54	181	119	-	-
	10	182	105	-	-	-	-	160	83	231	154
	*12	219	127	-	-	-	-	139	46	210	117
AS-008	4	156	96	188	127	327	267	471	411	-	-
	6	234	143	140	50	280	189	423	333	565	474
	8	312	191	-	-	232	112	375	255	517	397
	*10	389	239	-	-	-	-	327	177	469	319
	12	469	283	-	-	-	-	283	106	425	239
AS-012	4	255	145	280	170	490	381	705	595	-	-
	6	382	218	207	42	418	253	632	467	-	-
	8	510	290	-	-	345	126	559	340	763	543
	10	637	363	-	-	-	-	487	212	690	416
	*12	765	435	-	-	-	-	-	-	637	310
AS-020	8	482	270	367	155	698	485	-	-	-	-
	10	603	337	300	35	630	365	955	689	-	-
	12	723	404	-	-	563	245	888	569	-	-
	14	843	472	-	-	496	124	820	449	1139	767
	*16	965	540	-	-	-	-	752	327	1071	646
AS-030	10	628	398	478	248	926	696	-	-	-	-
	12	754	478	398	122	847	570	1301	1025	-	-
	14	880	558	-	-	767	445	1221	899	-	-
	16	1005	637	-	-	687	319	1142	774	1575	1207
	18	1131	717	-	-	608	193	1062	648	1496	1082
*20	1257	797	-	-	-	-	982	522	1416	956	
AS-040	10	969	544	774	350	1445	1021	-	-	-	-
	12	1163	653	666	156	1337	827	2020	1510	-	-
	14	1357	762	-	-	1228	633	1911	1316	-	-
	16	1551	871	-	-	1119	439	1802	1122	2457	1777
	18	1744	980	-	-	1010	245	1693	928	2348	1583
*20	1938	1089	-	-	-	-	1584	735	2239	1390	
AS-060	10	1350	819	1190	659	2261	1730	-	-	-	-
	12	1620	982	1027	389	2098	1460	3169	2531	-	-
	14	1890	1146	-	-	1934	1190	3005	2261	-	-
	16	2160	1310	-	-	1770	920	2841	1991	3894	3045
	18	2430	1474	-	-	1606	651	2677	1721	3731	2775
*20	2699	1637	-	-	-	-	2514	1452	3567	2505	
AS-100	10	2124	1195	1859	929	3396	2466	-	-	-	-
	12	2549	1434	1620	504	3157	2041	4726	3611	6231	5116
	14	2974	1673	-	-	2918	1617	4487	3186	5992	4691
	16	3399	1912	-	-	2679	1192	4248	2761	5753	4266
	18	3824	2151	-	-	2440	767	4009	2337	5514	3841
*20	4248	2390	-	-	-	-	3770	1912	5275	3416	
AS-140	14	2912	1667	1979	735	4199	2955	-	-	-	-
	16	3328	1906	1741	319	3961	2539	5963	4540	-	-
	18	3744	2145	-	-	3722	2123	5724	4124	-	-
	20	4160	2383	-	-	3484	1707	5486	3708	7477	5700
	*24	4992	2859	-	-	-	-	5010	2876	7001	4868
AS-200	10	3332	1952	3385	2005	6092	4712	-	-	-	-
	12	3999	2342	2995	1338	5702	4045	8447	6790	-	-
	14	4665	2732	-	-	5312	3379	8057	6124	-	-
	16	5332	3123	-	-	4921	2712	7667	5457	10295	8086
	18	5998	3513	-	-	4531	2046	7276	4791	9905	7420
*20	6665	3903	-	-	-	-	6886	4124	9515	6753	
AS-250	20	4114	2368	4385	2639	7853	6107	-	-	-	-
	24	4936	2842	3911	1817	7379	5285	10877	8783	-	-
	28	5759	3315	-	-	6906	4462	10403	7959	-	-
	32	6581	3790	-	-	6431	3640	9929	7137	13274	10483
	*40	7405	4263	-	-	6080	2817	9455	6314	12801	9660
AS-370	10	7859	4138	7749	4027	13764	10043	-	-	-	-
	12	9431	4965	6921	2455	12937	8471	19047	14581	24897	20431
	14	11003	5793	6094	883	12109	6899	18219	13009	24070	18859
	16	12575	6620	-	-	11282	5327	17392	11437	23242	17287
	18	14147	7448	-	-	10454	3755	16564	9865	22415	15715
*20	15719	8275	-	-	-	-	15737	8293	21587	14143	
AS-500	16	12134	6434	12595	6895	22463	16763	-	-	-	-
	20	15170	8036	10993	3859	20861	13727	30730	23596	-	-
	24	18206	9647	9382	823	19250	10691	29119	20560	-	-
	28	21242	11258	-	-	17639	7656	27508	17524	37377	27393
	32	24278	12860	-	-	16037	4620	25906	14489	35775	24357
*40	27313	14471	-	-	-	-	24295	11453	34164	21321	
*40	30349	16082	-	-	-	-	22684	8417	32553	18286	

*Standard spring sets

25% Safety factor is recommended.



RADIUS LLC

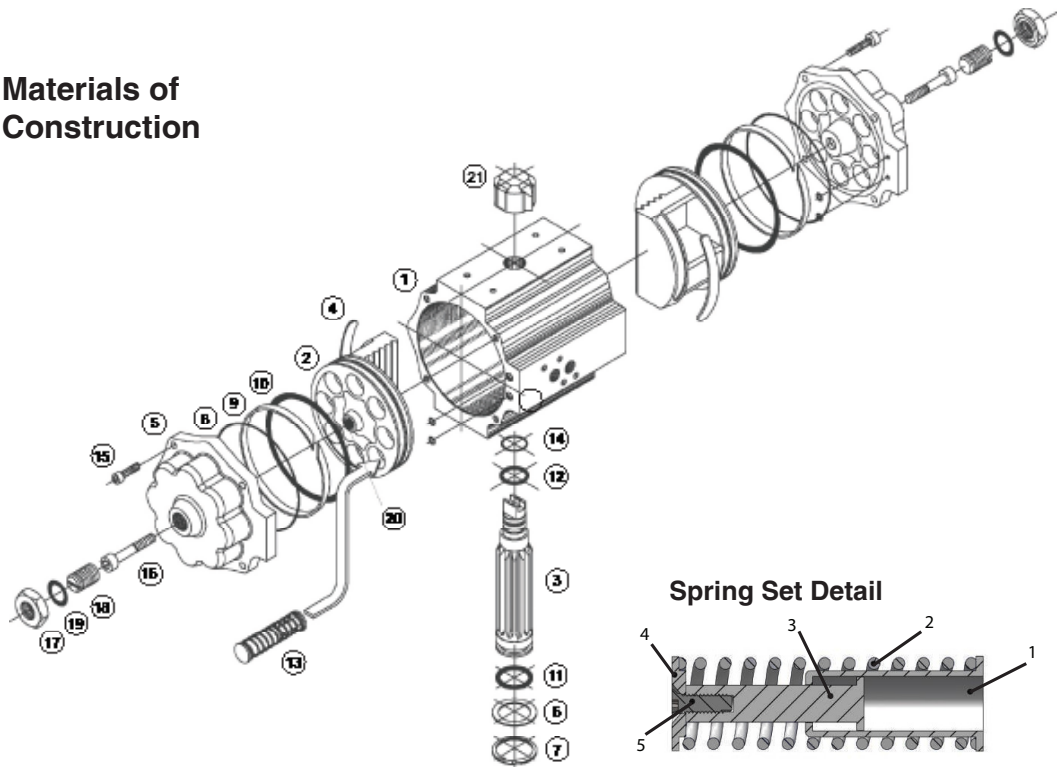
4922 TECHNICAL DRIVE
MILFORD, MI 48381

PHONE: 248.685.0773
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www.radius-eng.com

Radius LLC is
ISO 9001:2008 certified

Materials of Construction



Item	Description	Quantity	Material	Surface Finish	
1	Body	1	AW-6063-T6 Al. Alloy	Hard Anodized	
2	Piston	2	L-2653 T6 Al.	Hard Anodized	
3	Drive Shaft	1	C-45E (F-1140)	Nickel Plated	
*	4	Bearing Pad	2 to 4	DELTRIN (Polyoxymethylene)	-
5	End Cap	2	L-2653-60 T6 Al. Alloy	Polyurethane Paint	
*	6	Thrust Washer	1	DELTRIN (Polyoxymethylene)	-
*	7	Retaining Ring	1	Stainless Steel AISI302	-
*	8	End Cap O-Ring	2	NBR 70Sh	-
*	9	Piston Bearing	2 to 4	PTFE	-
*	10	Piston O-Ring	2	NBR 70Sh	-
*	11	Bottom Drive Shaft O-Ring	1	NBR 70Sh	-
*	12	Top Drive Shaft O-Ring	1	NBR 70Sh	-
13	Spring Set	12 to 44	See spring set detail	See spring set detail	
*	14	Double Sealing O-Ring	1	NBR 70Sh	-
15	End Cap Bolts	8 to 36	DIN-912 A2	-	
16	Inner Travel Stop	2	DIN-912 12.9	DACROMET 320	
17	Travel Stop Nut	2	Stainless Steel AISI302	-	
18	Outer Travel Stop	2	Stainless Steel AISI302	-	
*	19	Travel Stop O-Ring	2	NBR 70Sh	-
20	Helicoil	2	Stainless Steel 18.10	-	
21	Indicator	1	Polypropylene	-	

• Comprises repair kit sold separately

Spring Set Detail

Item	Description	Quantity	Material	Surface Finish
1	Preloader Body	1	NYLON + 30% fiberglass	
2	Spring	1	CrSi Steel Alloy	DACROMET 320
3	Preloader Shaft	1	NYLON + 30% fiberglass	
4	Preloader Washer	1	NYLON + 30% fiberglass	
5	Preloader Bolt	1	Carbon Steel	Zinc Plated