

BIFFI MORIN A SERIES ACTUATORS

A series - Carbon steel w/ stainless steel cylinders
 Spring return and double acting actuators
 Quarter-turn output torques to 4700 Nm



FEATURES AND BENEFITS

- Carbon steel housing, piston and end caps provide long life and durable, cost-effective operation.
- High strength alloy steel or 17-4PH stainless output shaft transmits torque without fatigue.
- Sintered bronze or PTFE composite output shaft bushings eliminate side loading of valve stem to maximize stem packing performance.
- Strong, corrosion-resistant chrome-plated steel piston rod for enduring high cycle applications.
- Sintered bronze piston rod bushings provide low-friction support and precise alignment to increase efficiency, reduce maintenance and extend actuator life.
- Heat-treated stainless steel thrust pin and rollers transfer piston force to yoke to reduce friction for longer life and more efficient torque transmission.
- PTFE guide bands ensure low-friction piston guidance, protecting cylinder walls from scoring and extending seal performance with a continuous cylinder wiping action.
- Bi-directional travel stops provide accurate valve rotation adjustment.
- NAMUR drive slot maintains a compact assembly for accessory-driven components with no couplings necessary.
- Tectyl-coated springs need no special tools to be disarmed safely and easily, reducing down time.
- Easily removable housing cover provides easy access for yoke mechanism inspection.

GENERAL APPLICATIONS

For remote control of any quarter-turn application: ball, butterfly, rotary plug or damper style valves, etc. for use in chemical process, food and beverage, iron and steel, pharmaceutical, power, oil and gas, pulp and paper and textile industries.

TECHNICAL DATA

Supply pressure:	3 to 12 barg (see torque chart)
Supply medium:	Air or any gas compatible with materials of construction
Temperature rating	
Standard range:	-29°C to 99°C
Optional range:	-60°C to 149°C
Angular rotation:	90 degrees (adjustable between 82 and 98 degrees)
Mounting pattern:	ISO 5211
Protection:	IP66/67M
Certification:	SIL3 capable



BIFFI MORIN A SERIES ACTUATORS

DESIGNED WITH A RUGGED HEART

Scotch yoke design

The heart of any scotch yoke actuator is the yoke. A series actuators use 17-4PH for this critical area as standard.

The yoke is the mechanism used to convert linear force to torque. The yoke is critical to actuator performance, it must be rugged yet precisely machined to give long life at high efficiency - all our yoke designs meet this test.

Principles of construction

Using high quality materials of construction and modern rugged design concepts, provides the standard for high quality, low cost valve actuation.

The actuator housings are all machined from carbon steel castings. This produces a rugged, low cost product through reduced machining time and by eliminating wasteful excess material.

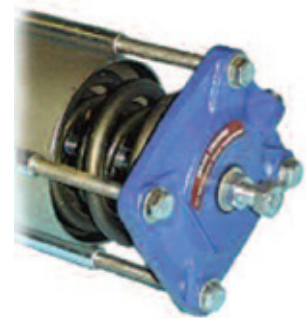
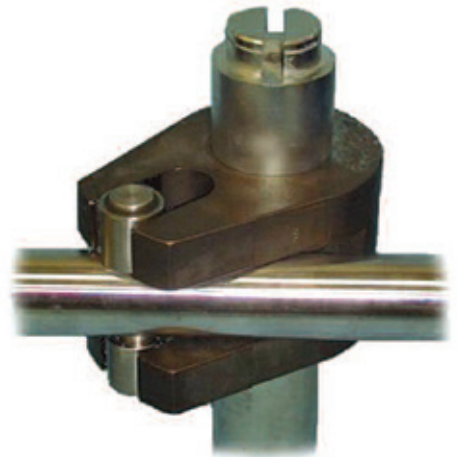
Any components that rotate or slide during operation, such as the high strength output shaft, chrome-plated piston rod, stainless steel thrust pin or the carbon steel piston, are all supported by replaceable friction reducing bearings.

Bi-directional travel stops

Adjustable stops on each end cap provide the flexibility of accurate valve rotation positioning at the end of the 'open' and 'close' stroke. Both stops are located on the cylinder centerline, the optimal position to maximize travel adjustment and eliminate any detrimental side loading on the travel stops. Adjustable from 82° to 98°.

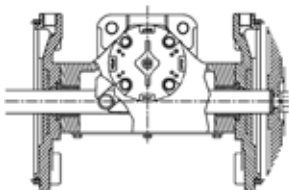
Spring designed for safety

All spring return models incorporate a 'man safe' spring design that allows the actuator to be safely assembled and disassembled in the field without the need for special tools. The integral tie rods are bored and tapped to provide a means of loading and unloading the spring in a safe and convenient manner.

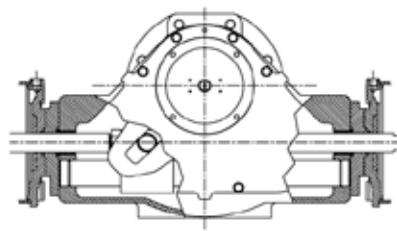


Experts in actuator design

We understand that the most efficient design for one torque range is not the most efficient for another. Our actuators use the standard scotch yoke design for lower torque ranges and a guide bar design for the higher torque ranges. This gives a rugged design with economic cost.



STANDARD DESIGN, SCOTCH YOKE

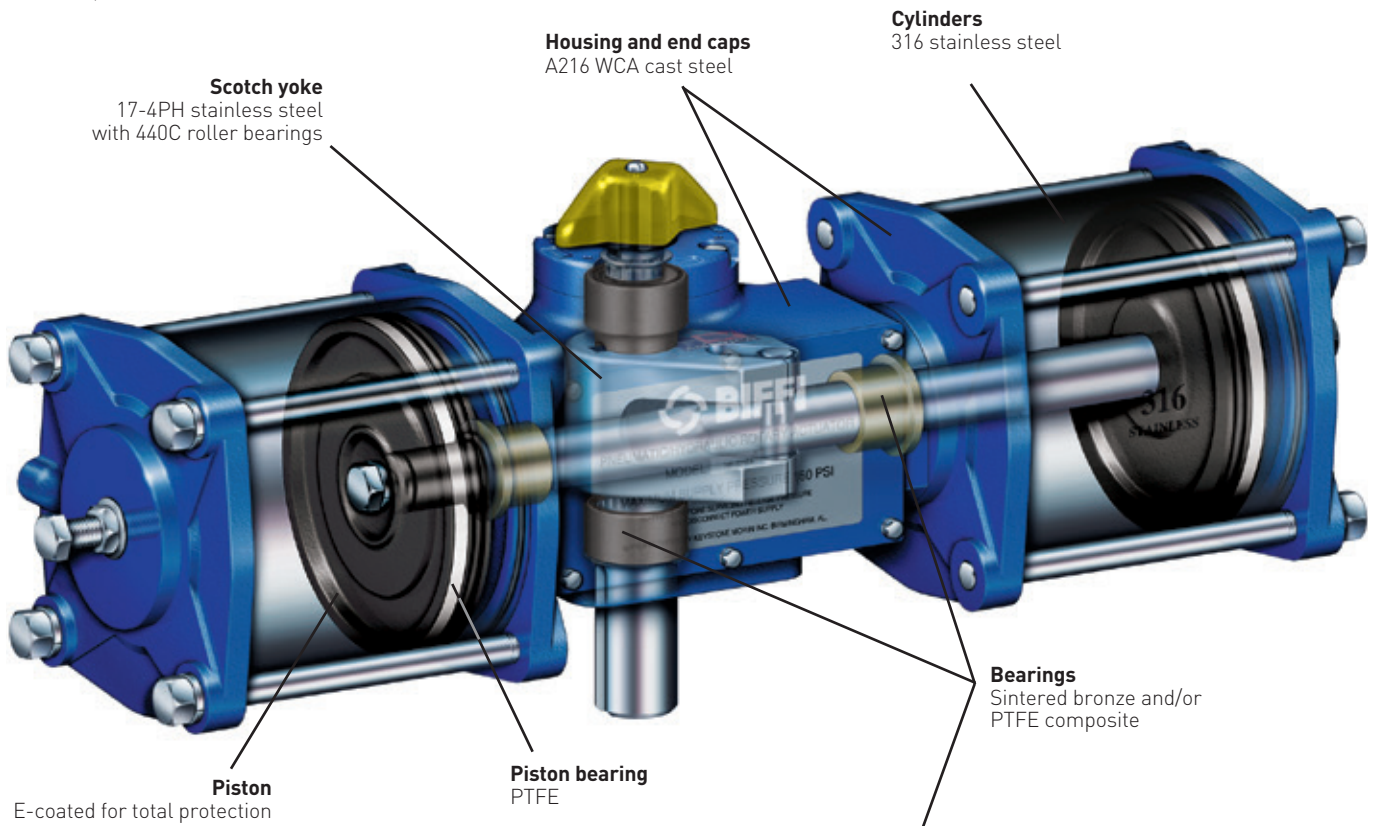


GUIDE BAR DESIGN, SCOTCH YOKE

BIFFI MORIN A SERIES ACTUATORS

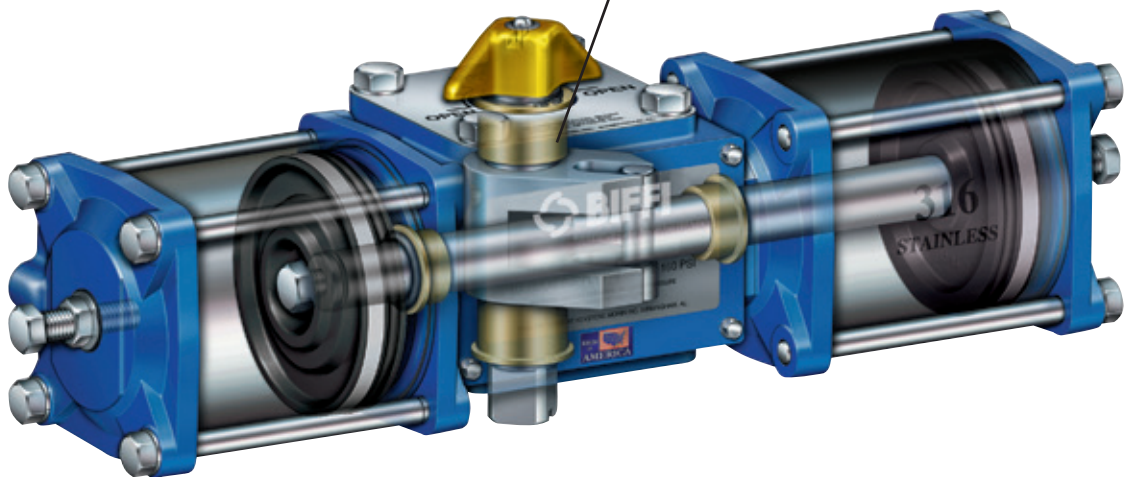
Superior materials of construction offer long life, and mean less downtime

A SERIES, MODELS 135 TO 420



A SERIES MODELS 006 TO 072

Models 006 to 072 use 316 stainless steel cylinders as standard.



NOTE

See A/B/C/S series IOM for a complete bill of materials.

BIFFI MORIN A SERIES ACTUATORS

SYMMETRICAL AND CANTED YOKES

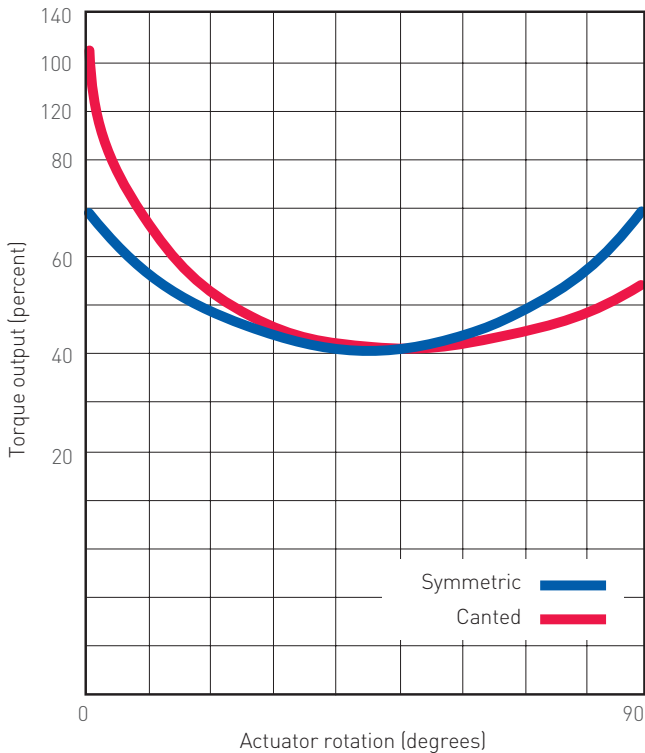
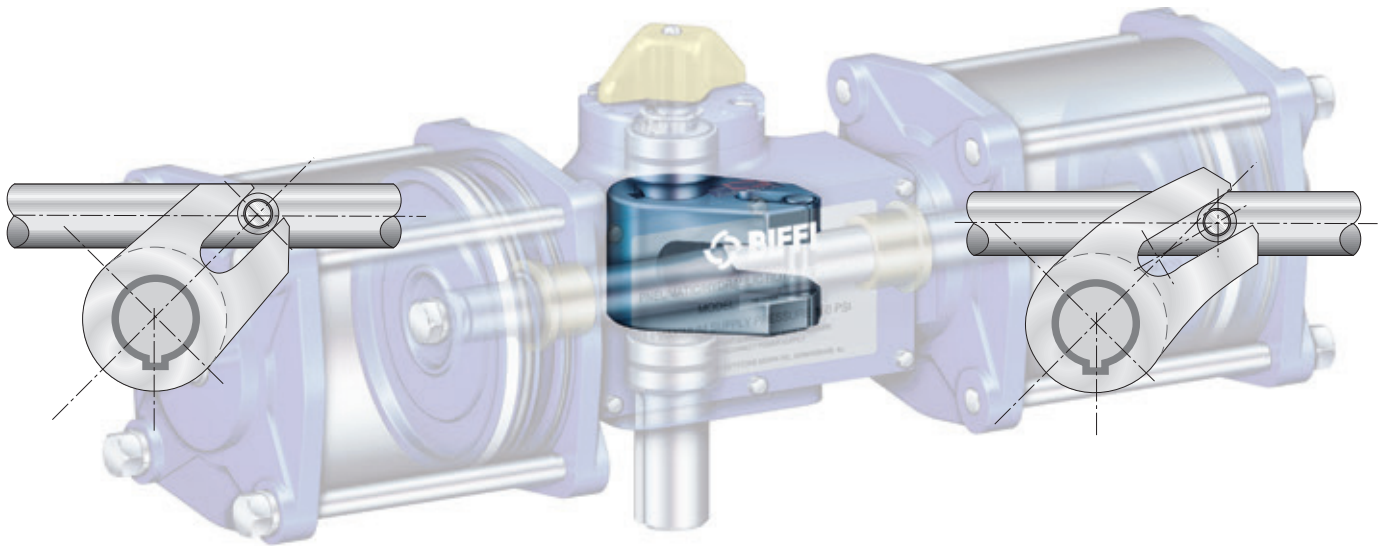
It's about fitting the torque curve of the actuator to the valve . . .
It's about lower cost, lighter weight, smaller actuators . . .
It's about CHOICE . . .

Symmetric

Symmetrical yoke design offers the standard torque curve seen most often in relation to scotch yoke actuators. It offers the increased torque advantage at both ends of the 90° stroke as shown on the blue curve below. This torque curve covers most quarter-turn applications.

Canted

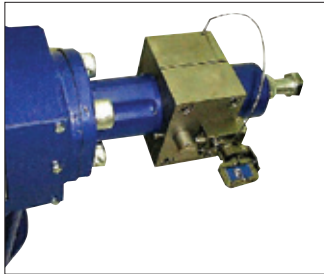
Canted yoke design moves the torque curve to where it's needed most, gaining as much as 35% more break and reset torque for the same size actuator. The canted yoke curve is shown in red below. Canted yoke actuators allow selection of smaller, lighter, and less expensive actuator packages.



BIFFI MORIN A SERIES ACTUATORS

OPTIONS

To provide the actuation package best suited for your application, we offer a full range of manual accessories.



Partial stroke test device (PSTD)
Provides a method of testing ESD packages without shutdown.



Lockout
Integral lockout allows safe shutdowns for maintenance and isolation of systems.



Jackscrew override (JSO)
Manual operation when power is lost. Simple and effective.



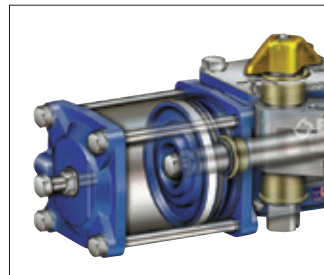
Hydraulic override (MHP)
Manual operation when power is lost. Includes speed controls.



AWWA
Tested per American Waterworks Association C540. Available for pneumatic or water service operation.



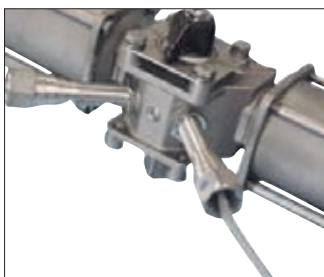
Direct mounting cast adapters
Many valve top works covered, including some ISO mounting. Assures economic but correct mounting alignment.



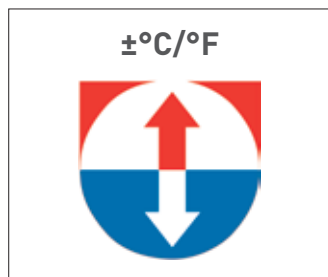
Full stroke adjuster
Provides mechanical control of maximum and/or minimum valve stroke.



Epoxy painting (EX)
Offshore rated, three-part coating system for high level of environmental protection.



Proximity switch preparation
Allows installation of cartridge style proximity switches. Leaves top works open for mounting of other devices.



High or low temperature ratings
Standard rating of -29°C to 99°C [-20°F to 210°F] covers most applications. Optional ratings down to -60°C [-76°F] and up to 149°C [300°F].



Optional certification for CE
Manufactured in accordance with the Pressure Equipment Directive 97/23/EC and ATEX 94/9/EC.

BIFFI MORIN A SERIES ACTUATORS

MECHANICAL DATA

Actuator model	Number of pistons	Cylinder bore (mm)	Stroke (mm)	Volume ^[1] (liters) 90° stroke	Cycle time ^[2] (seconds) 90° stroke	Weight (kg)
Double acting						
006	1	69.9	50.8	0.20	1	5.0
012	1	69.9	50.8	0.38	0.7	5.4
023	1	111.1	76.2	0.74	1	13.5
036	1	138.1	76.2	1.15	2	15.0
050	1	158.8	76.2	1.51	2	17.5
059	2	111.1/138.1	76.2	1.84	2	16.5
072	2	138.1	76.2	2.25	3	18.5
135	1	209.6	127.0	4.38	5	75.0
210	1	260.4	127.0	6.77	5	84.0
270	2	209.6	127.0	8.62	6	95.5
345	2	209.6/260.4	127.0	11.00	7	106.0
370	1	311.2	152.4	11.59	8	177.0
420	2	260.4	127.0	13.37	9	116.5
Spring return						
006	1	69.9	50.8	0.20	0.5	6.0
012	2	69.9	50.8	0.38	0.7	6.4
023	1	111.1	76.2	0.74	1	17.0
036	1	138.1	76.2	1.15	1.5	21.0
046	2	111.1	76.2	1.44	2	21.5
058	2	138.1/111.1	76.2	1.84	2.3	24.5
059	2	111.1/138.1	76.2	1.84	2.4	24.5
072	2	138.1	76.2	2.25	2.5	27.0
135	1	209.6	127.0	4.38	4.5	95.5
210	1	260.4	127.0	6.77	5	106.5
270	2	209.6	127.0	8.62	6	113.5
344	2	260.4/209.6	127.0	11.00	7	143.0
345	2	209.6/260.4	127.0	11.00	7	143.0
370	1	311.2	152.4	11.59	8	245.0
420	2	260.4	127.0	13.37	8.5	172.0

* at 4.8 barg; ** at 4.1 barg; *** at 6.2 barg

NOTES

1. Air consumption:

Liter shown in chart represent actual free air volume in cylinder between piston and end cap when furthest apart. Air consumption will vary depending on supply pressure. To determine standard cubic meter per second use the following formula:

$$SCMS = \left(\frac{\text{Vol. ltr.}}{1000} \right) \left(\frac{\text{Supply air barg} + 1}{1 \text{ barg}} \right) \left(\frac{\text{Strokes/min}}{60} \right)$$

Example: calculate SCMS for model 023 double acting using 5.5 barg air supply and 5 strokes/minute.

$$SCMS = \left(\frac{0.737}{1000} \right) \left(\frac{5.5 + 1}{1} \right) \left(\frac{5}{60} \right) = 0.000401$$

2. Cycle times shown represent average time to stroke 90 degrees using standard pilot valves and should be used as a guide only. Cycle times can be increased or decreased dramatically by using speed controls, oversized pilot valves or quick exhaust valves.

BIFFI MORIN A SERIES ACTUATORS

OUTPUT TORQUES (NM) - DOUBLE ACTING, SYMMETRIC YOKE DESIGN

Model Number	Torque at	Output torques N-m												
		Supply Pressure bar g												
		2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0
006U-D000	Start/End	34	42	51	59	68	76	85	93	102	110	119	127	136
	Minimum	27	33	40	46	52	59	65	72	78	85	92	98	106
012U-D000	Start/End	78	98	117	136	156	175	195	214	234	-	-	-	-
	Minimum	53	66	79	92	106	119	132	144	159	-	-	-	-
023U-D000	Start/End	130	164	195	227	260	292	325	357	390	423	454	486	520
	Minimum	97	121	145	169	193	217	242	266	290	314	339	363	386
036U-D000	Start/End	224	280	336	391	447	503	559	615	671	727	783	839	895
	Minimum	155	193	232	271	310	348	387	426	464	503	542	581	619
050U-D000	Start/End	282	353	424	494	565	636	706	777	847	918	989	1059	1130
	Minimum	208	260	312	364	416	468	520	572	624	676	728	780	834
059U-D000	Start/End	333	417	500	583	667	750	833	917	1000	1083	-	-	-
	Minimum	250	312	375	437	499	562	624	687	749	812	-	-	-
072U-D000	Start/End	447	559	671	783	895	1007	1119	1218	-	-	-	-	-
	Minimum	310	387	464	541	619	696	774	852	-	-	-	-	-
135U-D000	Start/End	801	1001	1201	1402	1602	1802	2003	2202	2402	2603	2803	3003	3203
	Minimum	593	742	890	1038	1186	1334	1483	1632	1780	1928	2076	2225	2373
210U-D000	Start/End	1305	1631	1957	2284	2610	2936	3262	3589	3915	4241	4567	4894	5220
	Minimum	922	1152	1383	1613	1844	2105	2305	2535	2766	2996	3227	3457	3688
270U-D000	Start/End	1602	2002	2402	2803	3203	3604	4004	4404	4805	-	-	-	-
	Minimum	1186	1483	1780	2076	2373	2669	2966	3262	3559	-	-	-	-
345U-D000	Start/End	2046	2558	3070	3581	4093	4605	5116	-	-	-	-	-	-
	Minimum	1516	1895	2274	2652	3031	3410	3789	-	-	-	-	-	-
420U-D000	Start/End	2373	2966	3559	4152	4745	-	-	-	-	-	-	-	-
	Minimum	1844	2305	2766	3227	3688	-	-	-	-	-	-	-	-

OUTPUT TORQUES (NM) - DOUBLE ACTING, CANTED YOKE DESIGN

Model Number	Torque at	Output torques N-m												
		Supply Pressure bar g												
		2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0
023UC-D000	Start (CCW)	175	221	263	307	351	394	438	482	526	570	613	656	702
	End (CCW)	104	131	156	182	208	234	260	292	312	338	363	389	416
	Start (CW)	107	134	160	186	213	240	266	293	320	346	373	398	426
	End (CW)	169	213	253	296	338	380	422	464	507	549	591	632	676
	Minimum	97	121	145	169	193	218	242	266	290	314	339	363	387
036UC-D000	Start (CCW)	302	377	453	529	604	679	755	831	906	981	1057	1133	-
	End (CCW)	179	224	268	313	358	403	447	492	537	582	626	671	-
	Start (CW)	183	229	275	321	367	413	459	504	550	596	642	688	-
	End (CW)	291	364	436	509	582	654	727	800	872	945	1018	1091	-
	Minimum	155	194	232	271	310	348	387	426	464	503	542	581	-
050UC-D000	Start (CCW)	381	477	572	667	763	858	953	1049	1144	-	-	-	-
	End (CCW)	226	282	339	395	452	508	565	621	678	-	-	-	-
	Start (CW)	232	290	347	405	463	521	579	637	695	-	-	-	-
	End (CW)	367	459	551	643	734	826	918	1010	1102	-	-	-	-
	Minimum	208	260	312	364	416	468	520	572	624	-	-	-	-
059UC-D000	Start (CCW)	450	562	675	787	900	1012	1125	-	-	-	-	-	-
	End (CCW)	267	333	400	467	533	600	667	-	-	-	-	-	-
	Start (CW)	273	342	410	478	547	615	683	-	-	-	-	-	-
	End (CW)	433	542	650	758	867	975	1083	-	-	-	-	-	-
	Minimum	250	312	375	437	499	562	624	-	-	-	-	-	-
072UC-D000	Start (CCW)	604	755	906	1057	-	-	-	-	-	-	-	-	-
	End (CCW)	358	447	537	626	-	-	-	-	-	-	-	-	-
	Start (CW)	367	459	550	642	-	-	-	-	-	-	-	-	-
	End (CW)	582	727	872	1018	-	-	-	-	-	-	-	-	-
	Minimum	310	387	464	541	-	-	-	-	-	-	-	-	-

BIFFI MORIN A SERIES ACTUATORS

OUTPUT TORQUES (NM) - DOUBLE ACTING, CANTED YOKE DESIGN (continued)

Model Number	Torque at	Output torques N-m												
		Supply Pressure bar g												
		2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0
135UC-D000	Start (CCW)	1081	1352	1622	1892	2162	2433	2703	2972	3243	3514	3785	4054	4324
	End (CCW)	641	801	961	1121	1281	1442	1602	1761	1922	2082	2243	2402	2562
	Start (CW)	657	821	985	1149	1313	1478	1642	1806	1970	2134	2299	2462	2627
	End (CW)	1041	1302	1561	1822	2082	2343	2603	2862	3123	3384	3644	3903	4164
	Minimum	593	742	890	1038	1186	1334	1483	1632	1780	1928	2076	2225	2373
210UC-D000	Start (CCW)	1762	2202	2643	3083	3523	3964	4404	4845	-	-	-	-	-
	End (CCW)	1044	1305	1566	1827	2088	2349	2610	2871	-	-	-	-	-
	Start (CW)	1070	1338	1605	1873	2140	2408	2675	2943	-	-	-	-	-
	End (CW)	1696	2121	2545	2969	3393	3817	4241	4665	-	-	-	-	-
	Minimum	922	1152	1383	1613	1844	2074	2305	2535	-	-	-	-	-
270UC-D000	Start (CCW)	2162	2703	3243	3784	4324	4865	-	-	-	-	-	-	-
	End (CCW)	1281	1602	1922	2242	2562	2883	-	-	-	-	-	-	-
	Start (CW)	1313	1642	1970	2298	2627	2955	-	-	-	-	-	-	-
	End (CW)	2082	2603	3123	3644	4164	4685	-	-	-	-	-	-	-
	Minimum	1186	1483	1780	2076	2373	2669	-	-	-	-	-	-	-
345UC-D000	Start (CCW)	2763	3453	4144	4835	-	-	-	-	-	-	-	-	-
	End (CCW)	1637	2046	2456	2865	-	-	-	-	-	-	-	-	-
	Start (CW)	1678	2098	2517	2937	-	-	-	-	-	-	-	-	-
	End (CW)	2660	3326	3991	4656	-	-	-	-	-	-	-	-	-
	Minimum	1516	1895	2274	2652	-	-	-	-	-	-	-	-	-
420UC-D000	Start (CCW)	3203	4004	4805	-	-	-	-	-	-	-	-	-	-
	End (CCW)	1898	2373	2847	-	-	-	-	-	-	-	-	-	-
	Start (CW)	1946	2432	2918	-	-	-	-	-	-	-	-	-	-
	End (CW)	3084	3856	4627	-	-	-	-	-	-	-	-	-	-
	Minimum	1844	2305	2766	-	-	-	-	-	-	-	-	-	-

OUTPUT TORQUES (NM) - SPRING RETURN, SYMMETRIC YOKE DESIGN

Model Number	Spring torques N-m	Torque at	Air torques N-m													
			Supply Pressure bar g													
			2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0	
006U-S040	Start	22	Start	22	31	39	47	56	64	73	81	90	98	107	115	124
	Mid	11	Mid	11	20	28	37	45	54	62	71	79	87	96	104	113
	End	12	End	12	21	29	38	46	55	63	72	80	89	97	106	114
006U-S050	Start	28	Start	-	28	36	45	53	62	70	79	87	95	104	112	121
	Mid	14	Mid	-	14	22	31	39	48	56	65	73	82	90	99	107
	End	15	End	-	15	24	32	41	49	58	66	75	83	92	100	109
006U-S060	Start	33	Start	-	-	33	41	50	58	67	75	84	92	101	109	118
	Mid	17	Mid	-	-	17	26	34	42	51	59	68	76	85	93	102
	End	19	End	-	-	19	27	36	44	53	61	70	78	87	95	104
006U-S070	Start	38	Start	-	-	30	38	47	55	64	72	81	89	98	106	115
	Mid	20	Mid	-	-	11	20	28	37	45	54	62	71	79	88	96
	End	22	End	-	-	13	22	30	39	47	56	64	73	81	90	98
006U-S080	Start	44	Start	-	-	-	36	44	53	61	69	78	86	95	103	112
	Mid	19	Mid	-	-	-	11	19	28	36	45	53	61	70	78	87
	End	25	End	-	-	-	16	25	33	42	50	59	67	76	84	93
012U-S040	Start	44	Start	44	64	83	103	122	142	161	180	200	219	-	-	-
	Mid	24	Mid	24	43	62	82	101	121	140	160	179	199	-	-	-
	End	26	End	26	46	65	85	104	124	143	163	182	202	-	-	-
012U-S050	Start	55	Start	-	55	74	94	113	133	152	172	191	211	-	-	-
	Mid	30	Mid	-	30	49	69	88	108	127	147	166	186	-	-	-
	End	33	End	-	33	52	72	91	111	130	150	169	189	-	-	-
012U-S060	Start	66	Start	-	-	66	86	105	125	144	164	183	203	222	-	-
	Mid	35	Mid	-	-	35	55	74	94	113	133	152	172	191	-	-
	End	39	End	-	-	39	59	78	98	117	137	156	176	195	-	-

BIFFI MORIN A SERIES ACTUATORS

OUTPUT TORQUES (NM) - SPRING RETURN, SYMMETRIC YOKE DESIGN (Continued)

Model Number	Spring torques N-m	Torque at	Air torques N-m													
			Supply Pressure bar g													
			2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0	
012U-S070	Start	77	Start	-	-	57	77	96	116	135	155	174	194	213	-	-
	Mid	41	Mid	-	-	22	41	61	80	100	119	139	158	178	-	-
	End	46	End	-	-	26	46	65	85	104	124	143	163	182	-	-
012U-S080	Start	88	Start	-	-	-	69	88	108	127	147	166	186	205	-	-
	Mid	47	Mid	-	-	-	28	47	66	86	105	125	144	164	-	-
	End	52	End	-	-	-	33	52	72	91	111	130	150	169	-	-
023U-S040	Start	85	Start	85	117	150	182	215	247	280	312	345	377	410	442	475
	Mid	41	Mid	41	73	106	138	171	203	236	268	301	333	366	398	430
	End	45	End	45	78	110	143	175	208	240	273	305	338	370	403	435
023U-S050	Start	107	Start	-	107	139	172	204	237	269	302	334	367	399	432	464
	Mid	52	Mid	-	52	84	117	149	182	214	247	279	312	344	377	409
	End	58	End	-	58	90	123	155	188	220	253	285	317	350	382	415
023U-S060	Start	127	Start	-	-	127	160	192	225	257	290	322	354	387	419	452
	Mid	61	Mid	-	-	61	93	126	158	191	223	256	288	321	353	386
	End	68	End	-	-	68	100	133	165	198	230	263	295	328	360	393
023U-S070	Start	147	Start	-	-	115	147	180	212	245	277	310	342	375	407	440
	Mid	72	Mid	-	-	39	72	104	137	169	202	234	267	299	332	364
	End	80	End	-	-	47	80	112	145	177	210	242	275	307	340	372
023U-S080	Start	169	Start	-	-	-	137	169	202	234	267	299	332	364	397	429
	Mid	81	Mid	-	-	-	49	81	114	146	179	211	244	276	309	341
	End	90	End	-	-	-	58	90	123	155	188	220	253	285	318	350
023U-S090	Start	190	Start	-	-	-	-	157	190	222	255	287	320	352	385	417
	Mid	92	Mid	-	-	-	-	60	92	125	157	190	222	254	287	319
	End	102	End	-	-	-	-	70	102	135	167	200	232	265	297	330
023U-S100	Start	211	Start	-	-	-	-	-	179	211	244	276	309	341	374	406
	Mid	102	Mid	-	-	-	-	-	70	102	135	167	200	232	265	297
	End	114	End	-	-	-	-	-	81	114	146	179	211	243	276	308
023U-S120	Start	254	Start	-	-	-	-	-	-	-	222	254	287	319	352	384
	Mid	122	Mid	-	-	-	-	-	-	-	90	122	155	187	219	252
	End	136	End	-	-	-	-	-	-	-	103	136	168	201	233	266
023U-S140	Start	295	Start	-	-	-	-	-	-	-	-	-	263	295	328	360
	Mid	143	Mid	-	-	-	-	-	-	-	-	-	111	143	176	208
	End	159	End	-	-	-	-	-	-	-	-	-	127	159	192	224
023U-S160	Start	339	Start	-	-	-	-	-	-	-	-	-	-	-	306	339
	Mid	163	Mid	-	-	-	-	-	-	-	-	-	-	-	130	163
	End	181	End	-	-	-	-	-	-	-	-	-	-	-	148	181
036U-S040	Start	132	Start	132	188	244	300	356	412	468	524	580	636	691	747	803
	Mid	64	Mid	64	120	176	232	288	344	400	456	511	567	623	679	735
	End	71	End	71	127	183	239	295	351	407	463	519	575	630	686	742
036U-S050	Start	165	Start	-	165	221	277	333	389	445	501	556	612	668	724	780
	Mid	80	Mid	-	80	136	192	248	304	360	416	472	528	584	640	696
	End	89	End	-	89	145	201	257	313	369	425	481	537	593	649	704
036U-S060	Start	198	Start	-	-	198	254	310	366	422	478	534	590	646	702	758
	Mid	97	Mid	-	-	97	153	208	264	320	376	432	488	544	600	656
	End	107	End	-	-	107	163	219	275	331	387	443	499	555	611	667
036U-S070	Start	232	Start	-	-	176	232	288	343	399	455	511	567	623	679	735
	Mid	112	Mid	-	-	56	112	168	224	280	336	391	447	503	559	615
	End	124	End	-	-	68	124	180	236	292	348	404	460	516	572	628
036U-S080	Start	264	Start	-	-	-	208	264	320	376	432	488	544	600	656	712
	Mid	128	Mid	-	-	-	72	128	184	240	296	352	408	464	520	576
	End	142	End	-	-	-	86	142	198	254	310	366	422	478	534	590
036U-S090	Start	297	Start	-	-	-	-	241	297	353	409	465	521	577	633	689
	Mid	144	Mid	-	-	-	-	88	144	200	256	312	368	424	480	535
	End	160	End	-	-	-	-	104	160	216	272	328	384	440	495	551
036U-S100	Start	330	Start	-	-	-	-	-	275	330	386	442	498	554	610	666
	Mid	160	Mid	-	-	-	-	-	104	160	216	272	328	384	440	496
	End	178	End	-	-	-	-	-	122	178	234	290	346	402	458	514
036U-S120	Start	397	Start	-	-	-	-	-	-	-	341	397	453	508	564	620
	Mid	192	Mid	-	-	-	-	-	-	-	136	192	248	304	360	416
	End	214	End	-	-	-	-	-	-	-	158	214	269	325	381	437

BIFFI MORIN A SERIES ACTUATORS

OUTPUT TORQUES (NM) - SPRING RETURN, SYMMETRIC YOKE DESIGN (Continued)

Model Number	Spring torques N-m	Torque at	Air torques N-m															
			Supply Pressure bar g															
			2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0			
036U-S140	Start	463	Start	-	-	-	-	-	-	-	-	-	-	-	407	463	519	575
	Mid	224	Mid	-	-	-	-	-	-	-	-	-	-	-	168	224	280	336
	End	249	End	-	-	-	-	-	-	-	-	-	-	-	193	249	305	361
036U-S160	Start	531	Start	-	-	-	-	-	-	-	-	-	-	-	-	-	475	531
	Mid	254	Mid	-	-	-	-	-	-	-	-	-	-	-	-	-	198	254
	End	282	End	-	-	-	-	-	-	-	-	-	-	-	-	-	227	282
046U-S040	Start	169	Start	169	234	299	364	429	494	559	624	689	-	-	-	-	-	
	Mid	81	Mid	81	146	211	276	341	406	471	536	601	-	-	-	-	-	
	End	90	End	90	155	220	285	350	415	480	545	610	-	-	-	-	-	
046U-S050	Start	211	Start	-	211	276	341	406	471	536	601	666	-	-	-	-	-	
	Mid	102	Mid	-	102	167	232	297	362	427	492	557	-	-	-	-	-	
	End	114	End	-	114	179	243	308	373	438	503	568	-	-	-	-	-	
046U-S060	Start	254	Start	-	-	254	319	384	449	514	579	644	-	-	-	-	-	
	Mid	122	Mid	-	-	122	187	252	317	382	447	512	-	-	-	-	-	
	End	136	End	-	-	136	201	266	330	395	460	525	-	-	-	-	-	
046U-S070	Start	295	Start	-	-	230	295	360	425	490	555	620	-	-	-	-	-	
	Mid	143	Mid	-	-	78	143	208	273	338	403	468	-	-	-	-	-	
	End	159	End	-	-	94	159	224	289	354	419	484	-	-	-	-	-	
046U-S080	Start	339	Start	-	-	-	274	339	404	469	534	599	-	-	-	-	-	
	Mid	163	Mid	-	-	-	98	163	228	293	358	423	-	-	-	-	-	
	End	181	End	-	-	-	116	181	246	311	376	441	-	-	-	-	-	
058U-S040	Start	211	Start	211	295	378	461	-	-	-	-	-	-	-	-	-	-	
	Mid	102	Mid	102	186	269	352	-	-	-	-	-	-	-	-	-	-	
	End	114	End	114	197	280	364	-	-	-	-	-	-	-	-	-	-	
058U-S050	Start	254	Start	-	254	338	421	504	-	-	-	-	-	-	-	-	-	
	Mid	122	Mid	-	122	205	289	372	-	-	-	-	-	-	-	-	-	
	End	136	End	-	136	219	302	386	-	-	-	-	-	-	-	-	-	
058U-S060	Start	295	Start	-	-	295	379	462	545	-	-	-	-	-	-	-	-	
	Mid	143	Mid	-	-	143	227	310	393	-	-	-	-	-	-	-	-	
	End	159	End	-	-	159	243	326	409	-	-	-	-	-	-	-	-	
058U-S070	Start	339	Start	-	-	256	339	422	506	-	-	-	-	-	-	-	-	
	Mid	163	Mid	-	-	79	163	246	329	-	-	-	-	-	-	-	-	
	End	181	End	-	-	97	181	264	347	-	-	-	-	-	-	-	-	
059U-S080	Start	397	Start	-	-	-	-	397	480	563	647	730	-	-	-	-	-	
	Mid	192	Mid	-	-	-	-	192	276	359	442	525	-	-	-	-	-	
	End	214	End	-	-	-	-	214	297	380	464	547	-	-	-	-	-	
059U-S090	Start	463	Start	-	-	-	-	-	463	546	629	713	-	-	-	-	-	
	Mid	224	Mid	-	-	-	-	-	224	308	391	474	-	-	-	-	-	
	End	249	End	-	-	-	-	-	249	332	416	499	-	-	-	-	-	
059U-S100	Start	531	Start	-	-	-	-	-	-	531	614	698	-	-	-	-	-	
	Mid	254	Mid	-	-	-	-	-	-	254	338	421	-	-	-	-	-	
	End	282	End	-	-	-	-	-	-	282	366	449	-	-	-	-	-	
072U-S040	Start	264	Start	264	376	488	600	712	824	936	-	-	-	-	-	-	-	
	Mid	128	Mid	128	240	352	464	576	687	799	-	-	-	-	-	-	-	
	End	142	End	142	254	366	478	590	702	813	-	-	-	-	-	-	-	
072U-S050	Start	330	Start	-	330	442	554	666	778	890	-	-	-	-	-	-	-	
	Mid	160	Mid	-	160	272	384	496	608	719	-	-	-	-	-	-	-	
	End	178	End	-	178	290	402	514	625	737	-	-	-	-	-	-	-	
072U-S060	Start	397	Start	-	-	397	508	620	732	844	-	-	-	-	-	-	-	
	Mid	192	Mid	-	-	192	304	416	528	640	-	-	-	-	-	-	-	
	End	214	End	-	-	214	325	437	549	661	-	-	-	-	-	-	-	
072U-S070	Start	463	Start	-	-	351	463	575	686	798	-	-	-	-	-	-	-	
	Mid	224	Mid	-	-	112	224	336	448	560	-	-	-	-	-	-	-	
	End	249	End	-	-	137	249	361	473	585	-	-	-	-	-	-	-	
072U-S080	Start	531	Start	-	-	-	419	531	643	755	-	-	-	-	-	-	-	
	Mid	254	Mid	-	-	-	142	254	366	478	-	-	-	-	-	-	-	
	End	282	End	-	-	-	171	282	394	506	-	-	-	-	-	-	-	

BIFFI MORIN A SERIES ACTUATORS

OUTPUT TORQUES (NM) - SPRING RETURN, SYMMETRIC YOKE DESIGN (Continued)

Model Number	Spring torques N-m	Torque at	Air torques N-m													
			Supply Pressure bar g													
			2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0	
135U-S040	Start	496	Start	496	696	897	1097	1297	1497	1698	1898	2098	2298	2499	2699	2899
	Mid	289	Mid	289	489	689	889	1090	1290	1490	1690	1891	2091	2291	2491	2692
	End	321	End	321	521	721	921	1122	1322	1522	1722	1923	2123	2323	2523	2724
135U-S050	Start	620	Start	-	620	820	1020	1220	1421	1621	1821	2022	2222	2422	2622	2823
	Mid	360	Mid	-	360	560	760	961	1161	1361	1561	1762	1962	2162	2363	2563
	End	400	End	-	400	600	800	1001	1201	1401	1601	1802	2002	2202	2403	2603
135U-S060	Start	743	Start	-	-	743	944	1144	1344	1544	1745	1945	2145	2345	2546	2746
	Mid	433	Mid	-	-	433	633	833	1033	1234	1434	1634	1834	2035	2235	2435
	End	481	End	-	-	481	681	881	1081	1282	1482	1682	1882	2083	2283	2483
135U-S070	Start	868	Start	-	-	667	868	1068	1268	1468	1669	1869	2069	2270	2470	2670
	Mid	505	Mid	-	-	304	505	705	905	1105	1306	1506	1706	1906	2107	2307
	End	561	End	-	-	360	561	761	961	1161	1362	1562	1762	1962	2163	2363
135U-S080	Start	991	Start	-	-	-	791	991	1192	1392	1592	1792	1993	2193	2393	2593
	Mid	577	Mid	-	-	-	376	577	777	977	1177	1378	1578	1778	1978	2179
	End	641	End	-	-	-	440	641	841	1041	1241	1442	1642	1842	2042	2243
135U-S090	Start	1116	Start	-	-	-	-	915	1116	1316	1516	1716	1917	2117	2317	2518
	Mid	649	Mid	-	-	-	-	448	649	849	1049	1249	1450	1650	1850	2050
	End	721	End	-	-	-	-	520	721	921	1121	1321	1522	1722	1922	2122
135U-S100	Start	1239	Start	-	-	-	-	-	1039	1239	1440	1640	1840	2040	2241	2441
	Mid	721	Mid	-	-	-	-	-	520	721	921	1121	1321	1522	1722	1922
	End	801	End	-	-	-	-	-	600	801	1001	1201	1401	1602	1802	2002
135U-S120	Start	1487	Start	-	-	-	-	-	-	-	1287	1487	1687	1887	2088	2288
	Mid	865	Mid	-	-	-	-	-	-	-	667	867	1067	1268	1468	1668
	End	961	End	-	-	-	-	-	-	-	761	961	1162	1362	1562	1762
135U-S140	Start	1735	Start	-	-	-	-	-	-	-	-	-	1535	1735	1935	2135
	Mid	1009	Mid	-	-	-	-	-	-	-	-	-	809	1009	1209	1410
	End	1121	End	-	-	-	-	-	-	-	-	-	921	1121	1322	1522
135U-S160	Start	1983	Start	-	-	-	-	-	-	-	-	-	-	-	1783	1983
	Mid	1153	Mid	-	-	-	-	-	-	-	-	-	-	-	953	1153
	End	1281	End	-	-	-	-	-	-	-	-	-	-	-	1081	1281
210U-S040	Start	771	Start	771	1097	1424	1750	2076	2402	2729	3055	3381	3707	4034	4360	4686
	Mid	411	Mid	411	737	1064	1390	1716	2042	2369	2695	3021	3347	3674	4000	4326
	End	457	End	457	783	1109	1436	1762	2088	2414	2741	3067	3393	3719	4045	4372
210U-S050	Start	964	Start	-	964	1290	1616	1942	2269	2595	2921	3247	3574	3900	4226	4552
	Mid	513	Mid	-	513	840	1166	1492	1818	2145	2471	2797	3123	3450	3776	4102
	End	570	End	-	570	897	1223	1549	1875	2202	2528	2854	3180	3507	3833	4159
210U-S060	Start	1157	Start	-	-	1157	1483	1809	2136	2462	2788	3114	3441	3767	4093	4419
	Mid	616	Mid	-	-	616	943	1269	1595	1921	2248	2574	2900	3226	3553	3879
	End	685	End	-	-	685	1011	1337	1664	1990	2316	2642	2969	3295	3621	3947
210U-S070	Start	1349	Start	-	-	1023	1349	1675	2002	2328	2654	2980	3307	3633	3959	4285
	Mid	719	Mid	-	-	393	719	1046	1372	1698	2024	2350	2677	3003	3329	3655
	End	799	End	-	-	473	799	1125	1452	1778	2104	2430	2757	3083	3409	3735
210U-S080	Start	1542	Start	-	-	-	1216	1542	1868	2195	2521	2847	3173	3500	3826	4152
	Mid	699	Mid	-	-	-	373	699	1025	1351	1677	2004	2330	2656	2982	3308
	End	913	End	-	-	-	587	913	1240	1566	1892	2218	2545	2871	3197	3523
210U-S090	Start	1734	Start	-	-	-	-	1408	1734	2061	2387	2713	3039	3366	3692	4018
	Mid	925	Mid	-	-	-	-	599	925	1251	1577	1904	2230	2556	2882	3209
	End	1028	End	-	-	-	-	702	1028	1354	1680	2007	2333	2659	2985	3312
210U-S100	Start	1928	Start	-	-	-	-	-	1601	1928	2254	2580	2906	3232	3559	3885
	Mid	1028	Mid	-	-	-	-	-	702	1028	1354	1680	2007	2333	2659	2985
	End	1142	End	-	-	-	-	-	816	1142	1468	1795	2121	2447	2773	3100
210U-S120	Start	2313	Start	-	-	-	-	-	-	-	1987	2313	2640	2966	3292	3618
	Mid	1233	Mid	-	-	-	-	-	-	-	907	1233	1559	1886	2212	2538
	End	1370	End	-	-	-	-	-	-	-	1044	1370	1697	2023	2349	2675
210U-S140	Start	2699	Start	-	-	-	-	-	-	-	-	-	2373	2699	3025	3352
	Mid	1438	Mid	-	-	-	-	-	-	-	-	-	1112	1438	1765	2091
	End	1598	End	-	-	-	-	-	-	-	-	-	1272	1598	1925	2251
210U-S160	Start	3084	Start	-	-	-	-	-	-	-	-	-	-	-	2758	3084
	Mid	1644	Mid	-	-	-	-	-	-	-	-	-	-	-	1318	1644
	End	1827	End	-	-	-	-	-	-	-	-	-	-	-	1501	1827

BIFFI MORIN A SERIES ACTUATORS

OUTPUT TORQUES (NM) - SPRING RETURN, SYMMETRIC YOKE DESIGN (Continued)

Model Number	Spring torques N-m	Torque at	Air torques N-m															
			Supply Pressure bar g															
			2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0			
270U-S040	Start	992	Start	992	1392	1793	2193	2594	2994	3394	3795	4195						
	Mid	529	Mid	529	930	1330	1730	2131	2531	2931	3332	3732						
	End	588	End	588	988	1389	1789	2189	2590	2990	3391	3791						
270U-S050	Start	1239	Start	-	1239	1640	2040	2441	2841	3241	3642	4042						
	Mid	661	Mid	-	661	1061	1461	1862	2262	2662	3063	3463						
	End	734	End	-	734	1134	1535	1935	2336	2736	3136	3537						
270U-S060	Start	1487	Start	-	-	1487	1887	2288	2688	3088	3489	3889						
	Mid	793	Mid	-	-	793	1193	1594	1994	2395	2795	3195						
	End	881	End	-	-	881	1282	1682	2082	2483	2883	3284						
270U-S070	Start	1735	Start	-	-	1334	1735	2135	2536	2936	3336	3737						
	Mid	925	Mid	-	-	525	925	1325	1726	2126	2527	2927						
	End	1028	End	-	-	627	1028	1428	1829	2229	2629	3030						
270U-S080	Start	1983	Start	-	-	-	1582	1983	2383	2784	3184	3584						
	Mid	1057	Mid	-	-	-	657	1057	1457	1858	2258	2659						
	End	1174	End	-	-	-	774	1174	1575	1975	2376	2776						
270U-S090	Start	2231	Start	-	-	-	-	1831	2231	2631	3032	3432						
	Mid	1189	Mid	-	-	-	-	789	1189	1589	1990	2390						
	End	1321	End	-	-	-	-	921	1321	1722	2122	2522						
270U-S100	Start	2479	Start	-	-	-	-	-	2078	2479	2879	3280						
	Mid	1321	Mid	-	-	-	-	-	921	1321	1722	2122						
	End	1468	End	-	-	-	-	-	1068	1468	1868	2269						
344U-S040	Start	1239	Start	1239	1751	2263	2774	3286	3797	4309	4821	5332						
	Mid	642	Mid	642	1154	1666	2177	2689	3200	3712	4224	4735						
	End	714	End	714	1225	1737	2249	2760	3272	3783	4295	4807						
344U-S050	Start	1487	Start	-	1487	1998	2510	3022	3533	4045	4557	5068						
	Mid	771	Mid	-	771	1283	1795	2306	2818	3329	3841	4353						
	End	857	End	-	857	1369	1880	2392	2904	3415	3927	4438						
344U-S060	Start	1735	Start	-	-	1735	2246	2758	3270	3781	4293	4805						
	Mid	900	Mid	-	-	900	1411	1923	2435	2946	3458	3969						
	End	1000	End	-	-	1000	1511	2023	2535	3046	3558	4069						
344U-S070	Start	2231	Start	-	-	1719	2231	2743	3254	3766	4277	4789						
	Mid	1157	Mid	-	-	645	1157	1668	2180	2691	3203	3715						
	End	1285	End	-	-	773	1285	1797	2308	2820	3331	3843						
344U-S080	Start	2479	Start	-	-	-	1967	2479	2990	3502	4014	4525						
	Mid	1285	Mid	-	-	-	773	1285	1797	2308	2820	3331						
	End	1428	End	-	-	-	916	1428	1939	2451	2963	3474						
345U-S090	Start	2699	Start	-	-	-	-	2188	2699	3211	3722	4234						
	Mid	1399	Mid	-	-	-	-	888	1399	1911	2422	2934						
	End	1555	End	-	-	-	-	1043	1555	2066	2578	3089						
345U-S100	Start	3084	Start	-	-	-	-	-	2573	3084	3596	4108						
	Mid	1599	Mid	-	-	-	-	-	1088	1599	2111	2623						
	End	1777	End	-	-	-	-	-	1266	1777	2289	2800						
345U-S110	Start	3469	Start	-	-	-	-	-	-	2958	3469	3981						
	Mid	1800	Mid	-	-	-	-	-	-	1288	1800	2311						
	End	2000	End	-	-	-	-	-	-	1488	2000	2511						
345U-S120	Start	3469	Start	-	-	-	-	-	-	2958	3469	3981						
	Mid	1800	Mid	-	-	-	-	-	-	1288	1800	2311						
	End	2000	End	-	-	-	-	-	-	1488	2000	2511						
345U-S130	Start	3855	Start	-	-	-	-	-	-	-	-	3343						
	Mid	2000	Mid	-	-	-	-	-	-	-	-	1488						
	End	2222	End	-	-	-	-	-	-	-	-	1710						

BIFFI MORIN A SERIES ACTUATORS

OUTPUT TORQUES (NM) - SPRING RETURN, SYMMETRIC YOKE DESIGN (Continued)

Model Number	Spring torques N-m	Torque at	Air torques N-m													
			Supply Pressure bar g													
			2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0	
420U-S040	Start	1542	Start	1542	2195	2847	3500	4152	4805	-	-	-	-	-	-	-
	Mid	785	Mid	785	1437	2090	2742	3395	4047	-	-	-	-	-	-	-
	End	872	End	872	1525	2177	2829	3482	4134	-	-	-	-	-	-	-
420U-S050	Start	1928	Start	-	1928	2580	3232	3885	4537	-	-	-	-	-	-	-
	Mid	981	Mid	-	981	1634	2286	2939	3591	-	-	-	-	-	-	-
	End	1090	End	-	1090	1743	2395	3048	3700	-	-	-	-	-	-	-
420U-S060	Start	2313	Start	-	-	2313	2966	3618	4271	4923	-	-	-	-	-	-
	Mid	1177	Mid	-	-	1177	1830	2482	3135	3787	-	-	-	-	-	-
	End	1308	End	-	-	1308	1960	2613	3265	3918	-	-	-	-	-	-
420U-S070	Start	2699	Start	-	-	2047	2699	3352	4004	4657	-	-	-	-	-	-
	Mid	1373	Mid	-	-	721	1373	2026	2678	3331	-	-	-	-	-	-
	End	1526	End	-	-	873	1526	2178	2831	3483	-	-	-	-	-	-
420U-S080	Start	3084	Start	-	-	-	2432	3084	3737	4389	-	-	-	-	-	-
	Mid	1570	Mid	-	-	-	917	1570	2222	2875	-	-	-	-	-	-
	End	1744	End	-	-	-	1091	1744	2396	3049	-	-	-	-	-	-
420U-S090	Start	3469	Start	-	-	-	-	2817	3469	4122	4774	-	-	-	-	-
	Mid	1766	Mid	-	-	-	-	1113	1766	2418	3071	-	-	-	-	-
	End	1962	End	-	-	-	-	1310	1962	2615	3267	-	-	-	-	-
420U-S100	Start	3855	Start	-	-	-	-	-	3203	3855	4508	-	-	-	-	-
	Mid	1962	Mid	-	-	-	-	-	1310	1962	2615	-	-	-	-	-
	End	2180	End	-	-	-	-	-	1528	2180	2833	-	-	-	-	-

OUTPUT TORQUES (NM) - SPRING RETURN, CANTED YOKE DESIGN, SPRING TO CLOSE

Model Number	Spring Torques N-m	Torque at	Air torques N-m													
			Supply Pressure bar g													
			2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0	
023UC-S040	Start	78	Start	95	139	183	227	271	314	358	402	446	490	534	577	621
	Mid	31	Mid	31	57	83	109	135	161	187	213	239	265	291	317	343
	End	63	End	31	57	83	109	135	161	187	213	239	265	291	317	343
023UC-S050	Start	98	Start	-	120	164	208	251	295	339	383	427	471	515	558	602
	Mid	40	Mid	-	40	66	92	118	144	170	196	222	248	274	300	326
	End	81	End	-	40	66	92	118	144	170	196	222	248	274	300	326
023UC-S060	Start	116	Start	-	-	143	187	230	274	318	362	406	450	493	537	581
	Mid	47	Mid	-	-	47	73	99	125	151	177	203	229	255	281	307
	End	95	End	-	-	47	73	99	125	151	177	203	229	255	281	307
023UC-S070	Start	135	Start	-	-	-	166	209	253	297	341	385	429	473	516	560
	Mid	55	Mid	-	-	-	55	81	107	133	159	185	211	237	263	289
	End	112	End	-	-	-	55	81	107	133	159	185	211	237	263	289
023UC-S080	Start	155	Start	-	-	-	-	190	234	278	322	366	410	453	497	541
	Mid	62	Mid	-	-	-	-	62	88	114	140	166	192	218	244	270
	End	127	End	-	-	-	-	62	88	114	140	166	192	218	244	270
023UC-S090	Start	174	Start	-	-	-	-	-	213	257	301	345	389	432	476	520
	Mid	71	Mid	-	-	-	-	-	71	96	122	148	174	200	226	252
	End	143	End	-	-	-	-	-	71	96	122	148	174	200	226	252
023UC-S100	Start	194	Start	-	-	-	-	-	-	237	281	325	369	413	457	500
	Mid	78	Mid	-	-	-	-	-	-	78	104	130	156	182	208	234
	End	159	End	-	-	-	-	-	-	78	104	130	156	182	208	234
023UC-S120	Start	233	Start	-	-	-	-	-	-	-	-	286	329	373	417	461
	Mid	94	Mid	-	-	-	-	-	-	-	-	94	120	146	172	197
	End	190	End	-	-	-	-	-	-	-	-	94	120	146	172	197
023UC-S140	Start	271	Start	-	-	-	-	-	-	-	-	-	-	332	376	420
	Mid	110	Mid	-	-	-	-	-	-	-	-	-	-	110	136	162
	End	223	End	-	-	-	-	-	-	-	-	-	-	110	136	162
023UC-S160	Start	310	Start	-	-	-	-	-	-	-	-	-	-	-	-	381
	Mid	125	Mid	-	-	-	-	-	-	-	-	-	-	-	-	125
	End	253	End	-	-	-	-	-	-	-	-	-	-	-	-	125

BIFFI MORIN A SERIES ACTUATORS

OUTPUT TORQUES (NM) - SPRING RETURN, CANTED YOKE DESIGN, SPRING TO CLOSE (Continued)

Model			Air torques N-m														
			Supply Pressure bar g														
Number	Spring Torques N-m	Torque at	2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0		
036UC-S040	Start	121	Start	148	224	299	375	450	526	602	677	753	828	904	979	1055	
	Mid	49	Mid	49	94	139	183	228	273	318	362	407	452	497	541	586	
	End	100	End	49	94	139	183	228	273	318	362	407	452	497	541	586	
036UC-S050	Start	151	Start	-	185	261	336	412	487	563	638	714	789	865	940	1016	
	Mid	62	Mid	-	62	106	151	196	241	285	330	375	420	464	509	554	
	End	125	End	-	62	106	151	196	241	285	330	375	420	464	509	554	
036UC-S060	Start	182	Start	-	-	223	298	374	449	525	600	676	751	827	902	978	
	Mid	74	Mid	-	-	74	119	164	208	253	298	343	387	432	477	522	
	End	150	End	-	-	74	119	164	208	253	298	343	387	432	477	522	
036UC-S070	Start	212	Start	-	-	-	260	336	411	487	562	638	713	789	864	940	
	Mid	86	Mid	-	-	-	86	130	175	220	265	309	354	399	444	488	
	End	174	End	-	-	-	86	130	175	220	265	309	354	399	444	488	
036UC-S080	Start	242	Start	-	-	-	-	297	372	448	523	599	674	750	825	901	
	Mid	98	Mid	-	-	-	-	98	143	188	232	277	322	367	411	456	
	End	199	End	-	-	-	-	98	143	188	232	277	322	367	411	456	
036UC-S090	Start	272	Start	-	-	-	-	-	334	409	485	560	636	711	787	862	
	Mid	110	Mid	-	-	-	-	-	110	155	200	244	289	334	379	423	
	End	224	End	-	-	-	-	-	110	155	200	244	289	334	379	423	
036UC-S100	Start	303	Start	-	-	-	-	-	-	371	447	522	598	673	749	824	
	Mid	123	Mid	-	-	-	-	-	-	-	123	168	212	257	302	347	
	End	249	End	-	-	-	-	-	-	-	123	168	212	257	302	347	
036UC-S120	Start	363	Start	-	-	-	-	-	-	-	-	445	521	596	672	747	
	Mid	147	Mid	-	-	-	-	-	-	-	-	-	147	192	237	282	
	End	299	End	-	-	-	-	-	-	-	-	-	147	192	237	282	
036UC-S140	Start	424	Start	-	-	-	-	-	-	-	-	-	-	-	520	595	671
	Mid	172	Mid	-	-	-	-	-	-	-	-	-	-	-	172	217	261
	End	349	End	-	-	-	-	-	-	-	-	-	-	-	172	217	261
036UC-S160	Start	486	Start	-	-	-	-	-	-	-	-	-	-	-	-	-	596
	Mid	195	Mid	-	-	-	-	-	-	-	-	-	-	-	-	-	195
	End	395	End	-	-	-	-	-	-	-	-	-	-	-	-	-	195
046UC-S040	Start	155	Start	190	278	366	453	541	629	716	804	892	979	1067	1155	-	
	Mid	62	Mid	62	114	166	218	270	322	374	426	478	530	582	634	-	
	End	127	End	62	114	166	218	270	322	374	426	478	530	582	634	-	
046UC-S050	Start	194	Start	-	237	325	413	500	588	676	763	851	939	1026	1114	-	
	Mid	78	Mid	-	78	130	182	234	286	338	390	442	494	546	598	-	
	End	159	End	-	78	130	182	234	286	338	390	442	494	546	598	-	
046UC-S060	Start	233	Start	-	-	286	373	461	549	636	724	812	899	987	1075	1162	
	Mid	94	Mid	-	-	94	146	197	249	301	353	405	457	509	561	613	
	End	190	End	-	-	94	146	197	249	301	353	405	457	509	561	613	
046UC-S070	Start	271	Start	-	-	-	332	420	507	595	683	770	858	946	1033	1121	
	Mid	110	Mid	-	-	-	110	162	214	266	318	370	422	474	526	578	
	End	223	End	-	-	-	110	162	214	266	318	370	422	474	526	578	
046UC-S080	Start	289	Start	-	-	-	-	381	468	556	644	731	819	907	994	1082	
	Mid	125	Mid	-	-	-	-	125	177	229	281	333	385	437	489	541	
	End	235	End	-	-	-	-	125	177	229	281	333	385	437	489	541	

BIFFI MORIN A SERIES ACTUATORS

OUTPUT TORQUES (NM) - SPRING RETURN, CANTED YOKE DESIGN, SPRING TO CLOSE (Continued)

Model Number	Spring Torques N-m	Torque at	Air torques N-m													
			Supply Pressure bar g													
			2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0	
058UC-S040	Start	194	Start	237	350	462	575	687	800	912	1025	1137				
	Mid	78	Mid	78	145	212	278	345	412	478	545	612				
	End	159	End	78	145	212	278	345	412	478	545	612				
058UC-S050	Start	233	Start	-	286	398	510	623	735	848	960	1073				
	Mid	94	Mid	-	94	160	227	294	360	427	494	560				
	End	190	End	-	94	160	227	294	360	427	494	560				
058UC-S060	Start	271	Start	-	-	332	444	557	669	782	894	1007				
	Mid	110	Mid	-	-	110	177	243	310	377	443	510				
	End	223	End	-	-	973	177	243	310	377	443	510				
058UC-S070	Start	310	Start	-	-	-	381	493	606	718	831	943				
	Mid	125	Mid	-	-	-	125	191	258	325	391	458				
	End	253	End	-	-	-	125	191	258	325	391	458				
059UC-S080	Start	363	Start	-	-	-	-	445	558	670	783	895				
	Mid	147	Mid	-	-	-	-	147	214	281	347	414				
	End	299	End	-	-	-	-	147	214	281	347	414				
059UC-S090	Start	424	Start	-	-	-	-	-	520	632	745	857				
	Mid	172	Mid	-	-	-	-	-	172	239	305	372				
	End	349	End	-	-	-	-	-	172	239	305	372				
059UC-S100	Start	486	Start	-	-	-	-	-	-	596	709	821				
	Mid	195	Mid	-	-	-	-	-	-	195	262	328				
	End	395	End	-	-	-	-	-	-	195	262	328				
072UC-S040	Start	242	Start	297	448	599	750	901	1052	-	-	-				
	Mid	98	Mid	98	188	277	367	456	546	-	-	-				
	End	199	End	98	188	277	367	456	546	-	-	-				
072UC-S050	Start	303	Start	-	371	522	673	824	975	1126	-	-				
	Mid	123	Mid	-	123	212	302	391	481	570	-	-				
	End	249	End	-	123	212	302	391	481	570	-	-				
072UC-S060	Start	363	Start	-	-	445	596	747	898	1049	-	-				
	Mid	147	Mid	-	-	147	237	326	416	505	-	-				
	End	299	End	-	-	147	237	326	416	505	-	-				
072UC-S070	Start	424	Start	-	-	-	520	671	822	973	-	-				
	Mid	172	Mid	-	-	-	172	261	351	440	-	-				
	End	349	End	-	-	-	172	261	351	440	-	-				
072UC-S080	Start	486	Start	-	-	-	-	596	747	898	-	-				
	Mid	195	Mid	-	-	-	-	195	284	374	-	-				
	End	395	End	-	-	-	-	195	284	374	-	-				
135UC-S040	Start	454	Start	557	827	1098	1368	1639	1909	2179	2450	2720	2990	3261	3531	3801
	Mid	221	Mid	221	381	542	702	862	1022	1182	1343	1503	1663	1823	1984	2144
	End	449	End	221	381	542	702	862	1022	1182	1343	1503	1663	1823	1984	2144
135UC-S050	Start	568	Start	-	696	966	1237	1507	1777	2048	2318	2589	2859	3129	3400	3670
	Mid	276	Mid	-	276	436	596	757	917	1077	1237	1398	1558	1718	1878	2038
	End	560	End	-	276	436	596	757	917	1077	1237	1398	1558	1718	1878	2038
135UC-S060	Start	681	Start	-	-	835	1105	1376	1646	1916	2187	2457	2727	2998	3268	3539
	Mid	332	Mid	-	-	332	492	652	812	972	1133	1293	1453	1613	1774	1934
	End	673	End	-	-	332	492	652	812	972	1133	1293	1453	1613	1774	1934
135UC-S070	Start	795	Start	-	-	704	974	1245	1515	1786	2056	2326	2597	2867	3137	3408
	Mid	387	Mid	-	-	227	387	547	707	867	1028	1188	1348	1508	1669	1829
	End	785	End	-	-	227	387	547	707	867	1028	1188	1348	1508	1669	1829
135UC-S080	Start	908	Start	-	-	-	843	1113	1384	1654	1924	2195	2465	2736	3006	3276
	Mid	442	Mid	-	-	-	282	442	602	762	923	1083	1243	1403	1563	1724
	End	897	End	-	-	-	282	442	602	762	923	1083	1243	1403	1563	1724
135UC-S090	Start	1022	Start	-	-	-	-	983	1253	1523	1794	2064	2334	2605	2875	3146
	Mid	497	Mid	-	-	-	-	337	497	657	818	978	1138	1298	1459	1619
	End	1009	End	-	-	-	-	337	497	657	818	978	1138	1298	1459	1619
135UC-S100	Start	1135	Start	-	-	-	-	-	1121	1392	1662	1933	2203	2473	2744	3014
	Mid	552	Mid	-	-	-	-	-	392	552	713	873	1033	1193	1353	1514
	End	1121	End	-	-	-	-	-	392	552	713	873	1033	1193	1353	1514

BIFFI MORIN A SERIES ACTUATORS

OUTPUT TORQUES (NM) - SPRING RETURN, CANTED YOKE DESIGN, SPRING TO CLOSE (Continued)

Model Number	Spring Torques N-m	Torque at	Air torques N-m													
			Supply Pressure bar g													
			2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0	
135UC-S120	Start	1362	Start	-	-	-	-	-	-	-	1399	1670	1940	2211	2481	2751
	Mid	663	Mid	-	-	-	-	-	-	-	503	663	824	984	1144	1304
	End	1346	End	-	-	-	-	-	-	-	503	663	824	984	1144	1304
135UC-S140	Start	1589	Start	-	-	-	-	-	-	-	-	-	1678	1948	2219	2489
	Mid	774	Mid	-	-	-	-	-	-	-	-	-	614	774	934	1094
	End	1570	End	-	-	-	-	-	-	-	-	-	614	774	934	1094
135UC-S160	Start	1816	Start	-	-	-	-	-	-	-	-	-	-	-	1956	2227
	Mid	884	Mid	-	-	-	-	-	-	-	-	-	-	-	724	884
	End	1794	End	-	-	-	-	-	-	-	-	-	-	-	724	884
210UC-S040	Start	706	Start	866	1306	1747	2187	2628	3068	3508	3949	4389	4830	-	-	-
	Mid	315	Mid	315	576	837	1098	1359	1620	1881	2142	2403	2664	-	-	-
	End	639	End	315	576	837	1098	1359	1620	1881	2142	2403	2664	-	-	-
210UC-S050	Start	883	Start	-	1082	1523	1963	2404	2844	3284	3725	4165	4606	-	-	-
	Mid	394	Mid	-	394	655	916	1177	1438	1699	1960	2221	2482	-	-	-
	End	799	End	-	394	655	916	1177	1438	1699	1960	2221	2482	-	-	-
210UC-S060	Start	1060	Start	-	-	1299	1740	2180	2621	3061	3501	3942	4382	4823	-	-
	Mid	473	Mid	-	-	473	733	994	1255	1516	1777	2038	2299	2560	-	-
	End	959	End	-	-	473	733	994	1255	1516	1777	2038	2299	2560	-	-
210UC-S070	Start	1236	Start	-	-	1075	1515	1955	2396	2836	3277	3717	4158	4598	-	-
	Mid	551	Mid	-	-	290	551	812	1073	1334	1595	1856	2117	2378	-	-
	End	1119	End	-	-	290	551	812	1073	1334	1595	1856	2117	2378	-	-
210UC-S080	Start	1413	Start	-	-	-	1292	1732	2172	2613	3053	3494	3934	4374	4815	-
	Mid	630	Mid	-	-	-	369	630	891	1152	1413	1674	1935	2196	2457	-
	End	1279	End	-	-	-	369	630	891	1152	1413	1674	1935	2196	2457	-
210UC-S090	Start	1589	Start	-	-	-	-	1507	1948	2388	2828	3269	3709	4150	4590	-
	Mid	709	Mid	-	-	-	-	448	709	970	1231	1492	1753	2014	2275	-
	End	1439	End	-	-	-	-	448	709	970	1231	1492	1753	2014	2275	-
210UC-S100	Start	1766	Start	-	-	-	-	-	1724	2165	2605	3045	3486	3926	4367	4807
	Mid	788	Mid	-	-	-	-	-	527	788	1049	1310	1571	1832	2093	2354
	End	1599	End	-	-	-	-	-	527	788	1049	1310	1571	1832	2093	2354
210UC-S120	Start	2119	Start	-	-	-	-	-	-	-	2157	2598	3038	3479	3919	4360
	Mid	945	Mid	-	-	-	-	-	-	-	684	945	1206	1467	1728	1989
	End	1918	End	-	-	-	-	-	-	-	684	945	1206	1467	1728	1989
210UC-S140	Start	2472	Start	-	-	-	-	-	-	-	-	-	2591	3031	3472	3912
	Mid	1103	Mid	-	-	-	-	-	-	-	-	-	842	1103	1364	1625
	End	2238	End	-	-	-	-	-	-	-	-	-	842	1103	1364	1625
210UC-S160	Start	2825	Start	-	-	-	-	-	-	-	-	-	-	-	3023	3464
	Mid	1261	Mid	-	-	-	-	-	-	-	-	-	-	-	1000	1261
	End	2558	End	-	-	-	-	-	-	-	-	-	-	-	1000	1261
270UC-S040	Start	909	Start	1114	1655	2195	2736	3276	3817	4357	-	-	-	-	-	-
	Mid	406	Mid	406	726	1046	1367	1687	2007	2327	-	-	-	-	-	-
	End	823	End	406	726	1046	1367	1687	2007	2327	-	-	-	-	-	-
270UC-S050	Start	1135	Start	-	1392	1932	2473	3013	3554	4094	4635	-	-	-	-	-
	Mid	506	Mid	-	506	827	1147	1467	1788	2108	2428	-	-	-	-	-
	End	1027	End	-	506	827	1147	1467	1788	2108	2428	-	-	-	-	-
270UC-S060	Start	1362	Start	-	-	1670	2210	2751	3291	3832	4372	4913	-	-	-	-
	Mid	608	Mid	-	-	608	928	1249	1569	1889	2210	2530	-	-	-	-
	End	1234	End	-	-	608	928	1249	1569	1889	2210	2530	-	-	-	-
270UC-S070	Start	1589	Start	-	-	1408	1948	2489	3029	3570	4110	4651	-	-	-	-
	Mid	709	Mid	-	-	389	709	1030	1350	1670	1990	2311	-	-	-	-
	End	1439	End	-	-	389	709	1030	1350	1670	1990	2311	-	-	-	-
270UC-S080	Start	1816	Start	-	-	-	1686	2227	2767	3308	3848	4389	-	-	-	-
	Mid	810	Mid	-	-	-	490	810	1131	1451	1771	2092	-	-	-	-
	End	1644	End	-	-	-	490	810	1131	1451	1771	2092	-	-	-	-
270UC-S090	Start	2044	Start	-	-	-	-	1965	2505	3046	3586	4127	-	-	-	-
	Mid	912	Mid	-	-	-	-	591	912	1232	1552	1872	-	-	-	-
	End	1850	End	-	-	-	-	591	912	1232	1552	1872	-	-	-	-
270UC-S100	Start	2271	Start	-	-	-	-	-	2243	2784	3324	3865	-	-	-	-
	Mid	1013	Mid	-	-	-	-	-	692	1013	1333	1653	-	-	-	-
	End	2055	End	-	-	-	-	-	692	1013	1333	1653	-	-	-	-

BIFFI MORIN A SERIES ACTUATORS

OUTPUT TORQUES (NM) - SPRING RETURN, CANTED YOKE DESIGN, SPRING TO CLOSE (Continued)

Model Number	Spring Torques N-m	Torque at	Air torques N-m												
			Supply Pressure bar g												
			2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0
344UC-S040	Start	1135	Start	1392	2083	2773	3464	4155	4845	-	-	-	-	-	-
	Mid	493	Mid	493	902	1311	1721	2130	2539	-	-	-	-	-	-
	End	999	End	493	902	1311	1721	2130	2539	-	-	-	-	-	-
344UC-S050	Start	1362	Start	-	1670	2360	3051	3742	4433	-	-	-	-	-	-
	Mid	591	Mid	-	591	1001	1410	1819	2229	-	-	-	-	-	-
	End	1200	End	-	591	1001	1410	1819	2229	-	-	-	-	-	-
344UC-S060	Start	1589	Start	-	-	1948	2639	3330	4020	4711	-	-	-	-	-
	Mid	690	Mid	-	-	690	1099	1509	1918	2327	-	-	-	-	-
	End	1400	End	-	-	690	1099	1509	1918	2327	-	-	-	-	-
344UC-S070	Start	2044	Start	-	-	1815	2505	3196	3887	4577	-	-	-	-	-
	Mid	887	Mid	-	-	477	887	1296	1705	2115	-	-	-	-	-
	End	1799	End	-	-	477	887	1296	1705	2115	-	-	-	-	-
344UC-S080	Start	2271	Start	-	-	-	2093	2784	3475	4165	4856	-	-	-	-
	Mid	985	Mid	-	-	-	576	985	1395	1804	2213	-	-	-	-
	End	1999	End	-	-	-	576	985	1395	1804	2213	-	-	-	-
345UC-S090	Start	2472	Start	-	-	-	-	2340	3031	3722	4413	-	-	-	-
	Mid	1073	Mid	-	-	-	-	663	1073	1482	1891	-	-	-	-
	End	2177	End	-	-	-	-	663	1073	1482	1891	-	-	-	-
345UC-S100	Start	2825	Start	-	-	-	-	-	2773	3464	4155	4845	-	-	-
	Mid	1226	Mid	-	-	-	-	-	817	1226	1636	2045	-	-	-
	End	2488	End	-	-	-	-	-	817	1226	1636	2045	-	-	-
345UC-S110	Start	3178	Start	-	-	-	-	-	-	3205	3896	4587	-	-	-
	Mid	1380	Mid	-	-	-	-	-	-	970	1380	1789	-	-	-
	End	2799	End	-	-	-	-	-	-	970	1380	1789	-	-	-
345UC-S120	Start	3178	Start	-	-	-	-	-	-	3205	3896	4587	-	-	-
	Mid	1380	Mid	-	-	-	-	-	-	970	1380	1789	-	-	-
	End	2799	End	-	-	-	-	-	-	970	1380	1789	-	-	-
420UC-S040	Start	1413	Start	1732	2533	3334	4134	4935	-	-	-	-	-	-	-
	Mid	602	Mid	602	1076	1551	2025	2500	-	-	-	-	-	-	-
	End	1221	End	602	1076	1551	2025	2500	-	-	-	-	-	-	-
420UC-S050	Start	1766	Start	-	2165	2965	3766	4567	-	-	-	-	-	-	-
	Mid	752	Mid	-	752	1227	1701	2176	-	-	-	-	-	-	-
	End	1526	End	-	752	1227	1701	2176	-	-	-	-	-	-	-
420UC-S060	Start	2119	Start	-	-	2598	3399	4200	5000	-	-	-	-	-	-
	Mid	902	Mid	-	-	902	1377	1851	2326	-	-	-	-	-	-
	End	1831	End	-	-	902	1377	1851	2326	-	-	-	-	-	-
420UC-S070	Start	2472	Start	-	-	2230	3031	3832	4633	-	-	-	-	-	-
	Mid	1053	Mid	-	-	578	1053	1527	2002	-	-	-	-	-	-
	End	2136	End	-	-	578	1053	1527	2002	-	-	-	-	-	-
420UC-S080	Start	2825	Start	-	-	-	2663	3464	4265	-	-	-	-	-	-
	Mid	1203	Mid	-	-	-	729	1203	1678	-	-	-	-	-	-
	End	2441	End	-	-	-	729	1203	1678	-	-	-	-	-	-
420UC-S090	Start	3178	Start	-	-	-	-	3095	3896	4697	-	-	-	-	-
	Mid	1354	Mid	-	-	-	-	879	1354	1828	-	-	-	-	-
	End	2747	End	-	-	-	-	879	1354	1828	-	-	-	-	-
420UC-S100	Start	3531	Start	-	-	-	-	-	3528	4329	5130	-	-	-	-
	Mid	1505	Mid	-	-	-	-	-	1030	1505	1979	-	-	-	-
	End	3053	End	-	-	-	-	-	1030	1505	1979	-	-	-	-

BIFFI MORIN A SERIES ACTUATORS

OUTPUT TORQUES (NM) - SPRING RETURN, CANTED YOKE DESIGN, SPRING TO OPEN

Model Number"	Spring Torques N-m	Torque at	Air torques N-m													
			Supply Pressure bar g													
			2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0	
023UC-S041	Start	95	Start	78	104	131	158	184	211	237	264	291	317	344	371	397
	Mid	31	Mid	31	73	116	158	200	242	285	327	369	411	454	496	538
	End	31	End	63	106	148	190	232	274	317	359	401	443	486	528	570
023UC-S051	Start	120	Start	-	98	124	151	178	204	231	258	284	311	338	364	391
	Mid	40	Mid	-	40	82	124	166	209	251	293	335	378	420	462	504
	End	40	End	-	714	123	165	207	250	292	334	376	419	461	503	545
023UC-S061	Start	143	Start	-	-	116	143	170	196	223	250	276	303	330	356	383
	Mid	47	Mid	-	-	47	89	131	173	216	258	300	342	385	427	469
	End	47	End	-	-	95	137	179	222	264	306	348	391	433	475	517
023UC-S071	Start	166	Start	-	-	-	135	162	188	215	242	268	295	322	348	375
	Mid	55	Mid	-	-	-	55	97	139	182	224	266	308	351	393	435
	End	55	End	-	-	-	112	154	196	238	280	323	365	407	449	492
023UC-S081	Start	190	Start	-	-	-	-	155	182	209	235	262	288	315	342	368
	Mid	62	Mid	-	-	-	-	62	105	147	189	231	274	316	358	400
	End	62	End	-	-	-	-	127	169	211	253	295	338	380	422	464
023UC-S091	Start	213	Start	-	-	-	-	-	174	201	227	254	280	307	334	360
	Mid	71	Mid	-	-	-	-	-	71	113	155	197	239	282	324	366
	End	71	End	-	-	-	-	-	143	185	228	270	312	354	397	439
023UC-S101	Start	237	Start	-	-	-	-	-	-	194	220	247	273	300	327	353
	Mid	78	Mid	-	-	-	-	-	-	78	121	163	205	247	289	332
	End	78	End	-	-	-	-	-	-	159	201	243	286	328	370	412
023UC-S121	Start	286	Start	-	-	-	-	-	-	-	-	233	260	286	313	339
	Mid	94	Mid	-	-	-	-	-	-	-	-	94	136	178	220	262
	End	94	End	-	-	-	-	-	-	-	-	190	232	274	317	359
023UC-S141	Start	332	Start	-	-	-	-	-	-	-	-	-	-	271	297	324
	Mid	110	Mid	-	-	-	-	-	-	-	-	-	-	110	152	194
	End	110	End	-	-	-	-	-	-	-	-	-	-	223	265	307
023UC-S161	Start	381	Start	-	-	-	-	-	-	-	-	-	-	-	-	310
	Mid	125	Mid	-	-	-	-	-	-	-	-	-	-	-	-	125
	End	125	End	-	-	-	-	-	-	-	-	-	-	-	-	253
036UC-S041	Start	148	Start	121	167	213	259	305	350	396	442	488	534	580	626	671
	Mid	49	Mid	49	122	195	267	340	413	485	558	631	703	776	849	922
	End	49	End	100	172	245	318	390	463	536	609	681	754	827	899	972
036UC-S051	Start	185	Start	-	151	197	243	289	335	380	426	472	518	564	610	656
	Mid	62	Mid	-	62	134	207	280	352	425	498	571	643	716	789	861
	End	62	End	-	125	198	270	343	416	488	561	634	707	779	852	925
036UC-S061	Start	223	Start	-	-	182	228	273	319	365	411	457	503	549	594	640
	Mid	74	Mid	-	-	74	147	220	292	365	438	510	583	656	728	801
	End	74	End	-	-	150	223	296	368	441	514	587	659	732	805	877
036UC-S071	Start	260	Start	-	-	-	212	258	304	350	396	441	487	533	579	625
	Mid	86	Mid	-	-	-	86	158	231	304	377	449	522	595	667	740
	End	86	End	-	-	-	174	247	319	392	465	538	610	683	756	828
036UC-S081	Start	297	Start	-	-	-	-	242	288	334	380	426	471	517	563	609
	Mid	98	Mid	-	-	-	-	98	171	244	316	389	462	534	607	680
	End	98	End	-	-	-	-	199	272	345	417	490	563	636	708	781
036UC-S091	Start	334	Start	-	-	-	-	-	272	318	364	410	456	501	547	593
	Mid	110	Mid	-	-	-	-	-	110	183	256	328	401	474	547	619
	End	110	End	-	-	-	-	-	224	297	369	442	515	587	660	733
036UC-S101	Start	371	Start	-	-	-	-	-	-	303	349	394	440	486	532	578
	Mid	123	Mid	-	-	-	-	-	-	123	196	268	341	414	486	559
	End	123	End	-	-	-	-	-	-	249	322	395	467	540	613	685
036UC-S121	Start	445	Start	-	-	-	-	-	-	-	-	363	409	455	501	547
	Mid	147	Mid	-	-	-	-	-	-	-	-	147	220	293	365	438
	End	147	End	-	-	-	-	-	-	-	-	299	372	444	517	590
036UC-S141	Start	520	Start	-	-	-	-	-	-	-	-	-	-	424	470	516
	Mid	172	Mid	-	-	-	-	-	-	-	-	-	-	172	245	317
	End	172	End	-	-	-	-	-	-	-	-	-	-	349	421	494
036UC-S161	Start	596	Start	-	-	-	-	-	-	-	-	-	-	-	-	486
	Mid	195	Mid	-	-	-	-	-	-	-	-	-	-	-	-	195
	End	195	End	-	-	-	-	-	-	-	-	-	-	-	-	395

BIFFI MORIN A SERIES ACTUATORS

OUTPUT TORQUES (NM) - SPRING RETURN, CANTED YOKE DESIGN, SPRING TO OPEN (Continued)

Model Number	Spring Torques N-m	Torque at	Air torques N-m														
			Supply Pressure bar g										8,3	9,0	9,7	10,3	11,0
			2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6							
046UC-S041	Start	190	Start	155	209	262	315	368	422	475	528	582	635	688	741	795	
	Mid	62	Mid	62	147	231	316	400	485	569	654	738	823	907	992	1076	
	End	62	End	127	211	295	380	464	549	633	718	802	887	971	1056	1140	
046UC-S051	Start	237	Start	-	194	247	300	353	407	460	513	567	620	673	726	780	
	Mid	78	Mid	-	78	163	247	332	416	501	585	670	754	839	923	1007	
	End	78	End	-	159	243	328	412	497	581	666	750	835	919	1004	1088	
046UC-S061	Start	286	Start	-	-	233	286	339	393	446	499	553	606	659	712	766	
	Mid	94	Mid	-	-	94	178	262	347	431	516	600	685	769	854	938	
	End	94	End	-	-	190	274	359	443	528	612	697	781	866	950	1034	
046UC-S071	Start	332	Start	-	-	-	271	324	377	430	484	537	590	644	697	750	
	Mid	110	Mid	-	-	-	110	194	279	363	448	532	617	701	786	870	
	End	110	End	-	-	-	223	307	392	476	561	645	730	814	899	983	
046UC-S081	Start	381	Start	-	-	-	-	310	364	417	470	524	577	630	683	737	
	Mid	125	Mid	-	-	-	-	125	209	294	378	463	547	632	716	800	
	End	125	End	-	-	-	-	253	338	422	506	591	675	760	844	929	
058UC-S041	Start	237	Start	194	262	330	399	467	535	604	672	740	Maximum Operating Pressure 8.3 Bar g				
	Mid	78	Mid	78	187	295	403	512	620	728	837	945					
	End	78	End	159	267	376	484	592	701	809	917	1026					
058UC-S051	Start	286	Start	-	233	301	370	438	506	575	643	711	Maximum Operating Pressure 8.3 Bar g				
	Mid	94	Mid	-	94	202	310	419	527	635	744	852					
	End	94	End	-	190	298	406	515	623	731	840	948					
058UC-S061	Start	332	Start	-	-	271	339	407	476	544	612	681	Maximum Operating Pressure 8.3 Bar g				
	Mid	110	Mid	-	-	110	218	327	435	543	652	760					
	End	110	End	-	-	223	331	440	548	656	765	873					
058UC-S071	Start	381	Start	-	-	-	310	379	447	515	584	652	Maximum Operating Pressure 8.3 Bar g				
	Mid	125	Mid	-	-	-	125	233	341	450	558	666					
	End	125	End	-	-	-	253	361	470	578	686	795					
059UC-S081	Start	445	Start	-	-	-	-	363	432	500	568	637	Maximum Operating Pressure 8.3 Bar g				
	Mid	147	Mid	-	-	-	-	147	256	364	472	581					
	End	147	End	-	-	-	-	299	407	516	624	732					
059UC-S091	Start	520	Start	-	-	-	-	-	424	492	560	629	Maximum Operating Pressure 8.3 Bar g				
	Mid	172	Mid	-	-	-	-	-	172	280	389	497					
	End	172	End	-	-	-	-	-	349	457	565	674					
059UC-S101	Start	596	Start	-	-	-	-	-	-	486	555	623	Maximum Operating Pressure 8.3 Bar g				
	Mid	195	Mid	-	-	-	-	-	-	195	303	412					
	End	195	End	-	-	-	-	-	-	395	504	612					
072UC-S041	Start	297	Start	242	334	426	517	609	701	792	Maximum Operating Pressure 6.9 Bar g						
	Mid	98	Mid	98	244	389	534	680	825	971							
	End	98	End	199	345	490	636	781	926	1072							
072UC-S051	Start	371	Start	-	303	394	486	578	670	761	Maximum Operating Pressure 6.9 Bar g						
	Mid	123	Mid	-	123	268	414	559	704	850							
	End	123	End	-	249	395	540	685	831	976							
072UC-S061	Start	445	Start	-	-	363	455	547	638	730	Maximum Operating Pressure 6.9 Bar g						
	Mid	147	Mid	-	-	147	293	438	584	729							
	End	147	End	-	-	299	444	590	735	881							
072UC-S071	Start	520	Start	-	-	-	424	516	607	699	Maximum Operating Pressure 6.9 Bar g						
	Mid	172	Mid	-	-	-	172	317	463	608							
	End	172	End	-	-	-	349	494	640	785							
072UC-S081	Start	596	Start	-	-	-	-	486	578	670	Maximum Operating Pressure 6.9 Bar g						
	Mid	195	Mid	-	-	-	-	195	340	486							
	End	195	End	-	-	-	-	395	541	686							
135UC-S041	Start	557	Start	454	619	783	947	1111	1275	1440	1604	1768	1932	2096	2261	2425	
	Mid	221	Mid	221	370	518	666	814	963	1111	1259	1408	1556	1704	1852	2001	
	End	221	End	449	709	970	1230	1490	1751	2011	2271	2532	2792	3052	3312	3573	
135UC-S051	Start	696	Start	-	568	732	896	1060	1224	1389	1553	1717	1881	2046	2210	2374	
	Mid	276	Mid	-	276	424	573	721	869	1017	1166	1314	1462	1611	1759	1907	
	End	276	End	-	560	820	1081	1341	1601	1862	2122	2382	2643	2903	3163	3424	
135UC-S061	Start	835	Start	-	-	681	845	1009	1174	1338	1502	1666	1830	1995	2159	2323	
	Mid	332	Mid	-	-	332	480	628	776	925	1073	1221	1370	1518	1666	1815	
	End	332	End	-	-	673	933	1194	1454	1714	1975	2235	2495	2756	3016	3276	

BIFFI MORIN A SERIES ACTUATORS

OUTPUT TORQUES (NM) - SPRING RETURN, CANTED YOKE DESIGN, SPRING TO OPEN (Continued)

Model Number"	Spring Torques N-m	Torque at	Air torques N-m													
			Supply Pressure bar g													
			2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3	11,0	
135UC-S071	Start	974	Start	-	-	631	795	959	1123	1287	1452	1616	1780	1944	2109	2273
	Mid	387	Mid	-	-	239	387	535	683	832	980	1128	1277	1425	1573	1721
	End	387	End	-	-	525	785	1045	1306	1566	1826	2087	2347	2607	2868	3128
135UC-S081	Start	1113	Start	-	-	-	744	908	1072	1237	1401	1565	1729	1893	2058	2222
	Mid	442	Mid	-	-	-	294	442	590	739	887	1035	1183	1332	1480	1628
	End	442	End	-	-	-	637	897	1157	1418	1678	1938	2199	2459	2719	2979
135UC-S091	Start	1253	Start	-	-	-	-	858	1022	1186	1350	1515	1679	1843	2007	2172
	Mid	497	Mid	-	-	-	-	349	497	646	794	942	1090	1239	1387	1535
	End	497	End	-	-	-	-	749	1009	1269	1529	1790	2050	2310	2571	2831
135UC-S101	Start	1392	Start	-	-	-	-	-	971	1135	1300	1464	1628	1792	1956	2121
	Mid	552	Mid	-	-	-	-	-	404	552	701	849	997	1146	1294	1442
	End	552	End	-	-	-	-	-	860	1121	1381	1641	1902	2162	2422	2683
135UC-S121	Start	1670	Start	-	-	-	-	-	-	-	1198	1362	1526	1690	1855	2019
	Mid	663	Mid	-	-	-	-	-	-	-	515	663	812	960	1108	1257
	End	663	End	-	-	-	-	-	-	-	1085	1346	1606	1866	2127	2387
135UC-S141	Start	1948	Start	-	-	-	-	-	-	-	-	-	1425	1589	1753	1918
	Mid	774	Mid	-	-	-	-	-	-	-	-	-	625	774	922	1070
	End	774	End	-	-	-	-	-	-	-	-	-	1309	1570	1830	2090
135UC-S161	Start	2227	Start	-	-	-	-	-	-	-	-	-	-	-	1652	1816
	Mid	884	Mid	-	-	-	-	-	-	-	-	-	-	-	736	884
	End	884	End	-	-	-	-	-	-	-	-	-	-	-	1533	1794
210UC-S041	Start	866	Start	706	974	1241	1509	1776	2044	2312	2579	2847	3114	-	-	-
	Mid	315	Mid	315	546	776	1007	1237	1468	1698	1929	2159	2390	-	-	-
	End	315	End	639	1064	1488	1912	2336	2760	3184	3608	4032	4457	-	-	-
210UC-S051	Start	1082	Start	-	883	1150	1418	1685	1953	2220	2488	2755	3023	-	-	-
	Mid	394	Mid	-	394	624	855	1085	1316	1546	1777	2007	2238	-	-	-
	End	394	End	-	799	1223	1647	2071	2495	2919	3343	3768	4192	-	-	-
210UC-S061	Start	1299	Start	-	-	1060	1327	1595	1862	2130	2397	2665	2932	3200	-	-
	Mid	473	Mid	-	-	473	703	933	1164	1394	1625	1855	2086	2316	-	-
	End	473	End	-	-	959	1383	1807	2231	2655	3079	3503	3928	4352	-	-
210UC-S071	Start	1515	Start	-	-	968	1236	1503	1771	2038	2306	2573	2841	3108	-	-
	Mid	551	Mid	-	-	321	551	782	1012	1243	1473	1704	1934	2165	-	-
	End	551	End	-	-	695	1119	1543	1967	2391	2815	3239	3664	4088	-	-
210UC-S081	Start	1732	Start	-	-	-	1145	1413	1680	1948	2215	2483	2750	3018	3285	-
	Mid	630	Mid	-	-	-	400	630	861	1091	1322	1552	1783	2013	2244	-
	End	630	End	-	-	-	855	1279	1703	2127	2551	2975	3399	3824	4248	-
210UC-S091	Start	1948	Start	-	-	-	-	1321	1589	1856	2124	2391	2659	2926	3194	-
	Mid	709	Mid	-	-	-	-	479	709	940	1170	1401	1631	1862	2092	-
	End	709	End	-	-	-	-	1015	1439	1863	2287	2711	3135	3560	3984	-
210UC-S101	Start	2165	Start	-	-	-	-	-	1498	1766	2033	2301	2568	2836	3103	3371
	Mid	788	Mid	-	-	-	-	-	558	788	1019	1249	1480	1710	1941	2171
	End	788	End	-	-	-	-	-	1175	1599	2023	2447	2871	3296	3720	4144
210UC-S121	Start	2598	Start	-	-	-	-	-	-	-	1852	2119	2387	2654	2922	3189
	Mid	945	Mid	-	-	-	-	-	-	-	715	945	1176	1406	1637	1867
	End	945	End	-	-	-	-	-	-	-	1494	1918	2342	2767	3191	3615
210UC-S141	Start	3031	Start	-	-	-	-	-	-	-	-	-	2205	2472	2740	3007
	Mid	1103	Mid	-	-	-	-	-	-	-	-	-	872	1103	1333	1564
	End	1103	End	-	-	-	-	-	-	-	-	-	1813	2238	2662	3086
210UC-S161	Start	3464	Start	-	-	-	-	-	-	-	-	-	-	-	2558	2825
	Mid	1261	Mid	-	-	-	-	-	-	-	-	-	-	-	1030	1261
	End	1261	End	-	-	-	-	-	-	-	-	-	-	-	2134	2558
270UC-S041	Start	1114	Start	909	1237	1565	1894	2222	2550	2879	-	-	Maximum Operating Pressure 8.3 Bar g			
	Mid	406	Mid	406	702	999	1295	1592	1889	2185	-	-				
	End	406	End	823	1344	1864	2385	2905	3426	3946	-	-				
270UC-S051	Start	1392	Start	-	1135	1464	1792	2120	2449	2777	3105	-	Maximum Operating Pressure 8.3 Bar g			
	Mid	506	Mid	-	506	803	1100	1396	1693	1989	2286	-				
	End	506	End	-	1027	1548	2069	2589	3110	3630	4151	-				
270UC-S061	Start	1670	Start	-	-	1362	1690	2019	2347	2675	3004	3332	Maximum Operating Pressure 8.3 Bar g			
	Mid	608	Mid	-	-	608	905	1201	1498	1794	2091	2387				
	End	608	End	-	-	1234	1754	2275	2795	3316	3836	4357				

BIFFI MORIN A SERIES ACTUATORS

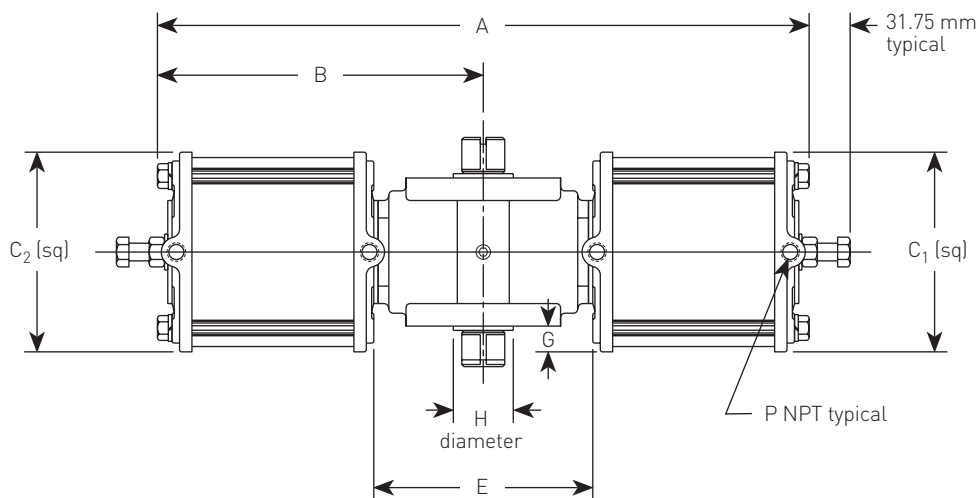
OUTPUT TORQUES (NM) - SPRING RETURN, CANTED YOKE DESIGN, SPRING TO OPEN (Continued)

Model Number"	Spring Torques N-m	Torque at	Air torques N-m											
			Supply Pressure bar g											
			2,8	3,4	4,1	4,8	5,5	6,2	6,9	7,6	8,3	9,0	9,7	10,3
270UC-S071	Start	1948	Start	-	-	1261	1589	1917	2246	2574	2902	3231	Maximum Operating Pressure 8.3 Bar g	
	Mid	709	Mid	-	-	413	709	1006	1302	1599	1896	2192		
	End	709	End	-	-	918	1439	1959	2480	3001	3521	4042		
270UC-S081	Start	2227	Start	-	-	-	1488	1816	2145	2473	2801	3130	Maximum Operating Pressure 8.3 Bar g	
	Mid	810	Mid	-	-	-	514	810	1107	1404	1700	1997		
	End	810	End	-	-	-	1124	1644	2165	2685	3206	3726		
270UC-S091	Start	2505	Start	-	-	-	-	1715	2044	2372	2700	3029	Maximum Operating Pressure 8.3 Bar g	
	Mid	912	Mid	-	-	-	-	615	912	1208	1505	1801		
	End	912	End	-	-	-	-	1329	1850	2370	2891	3411		
270UC-S101	Start	2784	Start	-	-	-	-	-	1942	2271	2599	2927	Maximum Operating Pressure 8.3 Bar g	
	Mid	1013	Mid	-	-	-	-	-	716	1013	1309	1606		
	End	1013	End	-	-	-	-	-	1535	2055	2576	3096		
344UC-S041	Start	1392	Start	1135	1555	1974	2394	2814	3233	-	-	-	Maximum Operating Pressure 8.3 Bar g	
	Mid	493	Mid	493	871	1250	1629	2008	2387	-	-	-		
	End	493	End	999	1664	2330	2995	3660	4325	-	-	-		
344UC-S051	Start	1670	Start	-	1362	1782	2201	2621	3040	-	-	-	Maximum Operating Pressure 8.3 Bar g	
	Mid	591	Mid	-	591	970	1349	1728	2107	-	-	-		
	End	591	End	-	1200	1865	2530	3195	3860	-	-	-		
344UC-S061	Start	1948	Start	-	-	1589	2009	2428	2848	3267	-	-	Maximum Operating Pressure 8.3 Bar g	
	Mid	690	Mid	-	-	690	1069	1448	1827	2206	-	-		
	End	690	End	-	-	1400	2065	2730	3395	4060	-	-		
344UC-S071	Start	2505	Start	-	-	1624	2044	2463	2883	3302	-	-	Maximum Operating Pressure 8.3 Bar g	
	Mid	887	Mid	-	-	508	887	1266	1644	2023	-	-		
	End	887	End	-	-	1134	1799	2464	3129	3794	-	-		
344UC-S081	Start	2784	Start	-	-	-	1851	2271	2690	3110	3529	-	Maximum Operating Pressure 8.3 Bar g	
	Mid	985	Mid	-	-	-	606	985	1364	1743	2122	-		
	End	985	End	-	-	-	1334	1999	2664	3329	3994	-		
345UC-S091	Start	3031	Start	-	-	-	-	2053	2472	2892	3312	-	Maximum Operating Pressure 8.3 Bar g	
	Mid	1073	Mid	-	-	-	-	694	1073	1452	1831	-		
	End	1073	End	-	-	-	-	1511	2177	2842	3507	-		
345UC-S101	Start	3464	Start	-	-	-	-	-	2406	2825	3245	3664	Maximum Operating Pressure 8.3 Bar g	
	Mid	1226	Mid	-	-	-	-	-	847	1226	1605	1984		
	End	1226	End	-	-	-	-	-	1823	2488	3153	3818		
345UC-S111	Start	3896	Start	-	-	-	-	-	-	2758	3178	3597	Maximum Operating Pressure 8.3 Bar g	
	Mid	1380	Mid	-	-	-	-	-	-	1001	1380	1759		
	End	1380	End	-	-	-	-	-	-	2134	2799	3465		
345UC-S121	Start	3896	Start	-	-	-	-	-	-	2758	3178	3597	Maximum Operating Pressure 8.3 Bar g	
	Mid	1380	Mid	-	-	-	-	-	-	1001	1380	1759		
	End	1380	End	-	-	-	-	-	-	2134	2799	3465		
420UC-S041	Start	1732	Start	1413	1899	2385	2872	3358	3845	-	-	-	-	
	Mid	602	Mid	602	1063	1524	1985	2446	2907	-	-	-	-	
	End	602	End	1221	1992	2763	3534	4305	5076	-	-	-	-	
420UC-S051	Start	2165	Start	-	1766	2252	2738	3225	3711	-	-	-	-	
	Mid	752	Mid	-	752	1213	1674	2135	2596	-	-	-	-	
	End	752	End	-	1526	2298	3069	3840	4611	-	-	-	-	
420UC-S061	Start	2598	Start	-	-	2119	2605	3092	3578	-	-	-	-	
	Mid	902	Mid	-	-	902	1363	1824	2285	-	-	-	-	
	End	902	End	-	-	1831	2602	3373	4144	-	-	-	-	
420UC-S071	Start	3031	Start	-	-	1986	2472	2959	3445	-	-	-	-	
	Mid	1053	Mid	-	-	592	1053	1514	1975	-	-	-	-	
	End	1053	End	-	-	1365	2136	2907	3678	-	-	-	-	
420UC-S081	Start	3464	Start	-	-	-	2339	2825	3312	-	-	-	-	
	Mid	1203	Mid	-	-	-	742	1203	1664	-	-	-	-	
	End	1203	End	-	-	-	1670	2441	3213	-	-	-	-	
420UC-S091	Start	3896	Start	-	-	-	-	2691	3178	3664	-	-	-	
	Mid	1354	Mid	-	-	-	-	893	1354	1815	-	-	-	
	End	1354	End	-	-	-	-	1976	2747	3518	-	-	-	
420UC-S101	Start	4329	Start	-	-	-	-	-	3045	3531	4018	-	-	
	Mid	1505	Mid	-	-	-	-	-	1044	1505	1965	-	-	
	End	1505	End	-	-	-	-	-	2282	3053	3824	-	-	

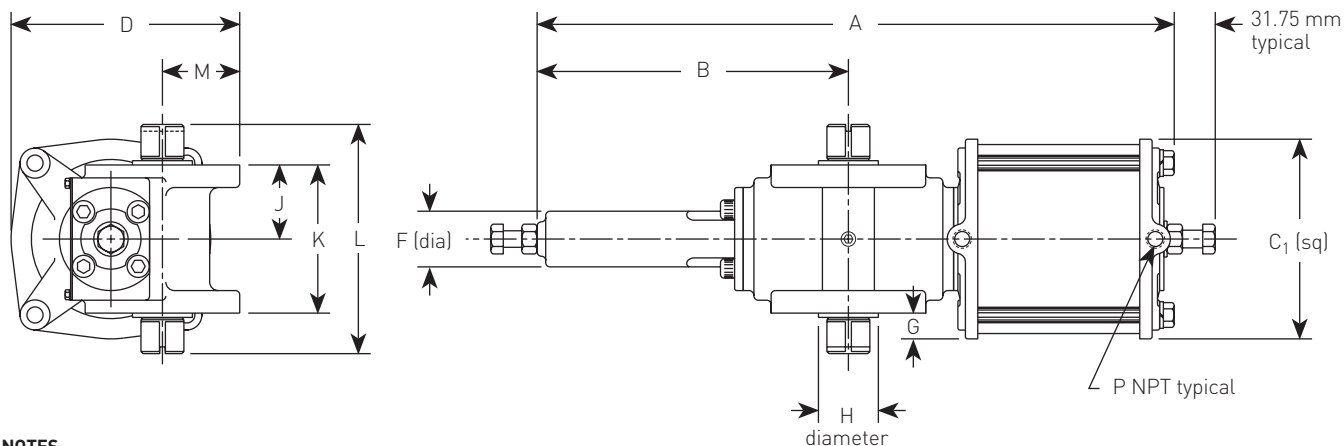
BIFFI MORIN A SERIES ACTUATORS

DIMENSIONS

MODELS 046, 058, 059 AND 072



MODELS 006, 012, 023, 036 AND 050



NOTES

1. Shown without pointer for clarity.
2. For mounting dimensions, refer to page 10.

DIMENSIONS (mm) DOUBLE ACTING

Model	A	B	C ₁	C ₂	D	E	F	G	H	J	K	L	M	P
006DA	326.9	134.1	80.8	-	98.3	-	27.7	4.6	38.1	38.1	76.2	120.7	33.3	1/8
012DA	312.7	134.1	122.2	-	122.2	-	27.7	25.4	38.1	38.1	76.2	120.7	33.3	1/4
023DA	470.9	225.6	122.2	-	156.5	-	44.5	6.4	44.5	54.9	109.5	169.9	57.2	1/4
036DA	472.4	225.6	147.6	-	169.2	-	44.5	19.1	44.5	54.9	109.5	169.9	57.2	1/4
050DA	471.2	225.6	180.8	-	185.7	-	44.5	35.1	44.5	54.9	109.5	169.9	57.2	1/4
059DA	492.8	245.4	122.2	147.6	169.2	161.0	-	19.1	44.5	54.9	109.5	169.9	57.2	1/4
072DA	491.5	245.9	147.6	147.6	169.2	162.1	-	19.1	44.5	54.9	109.5	169.9	57.2	1/4

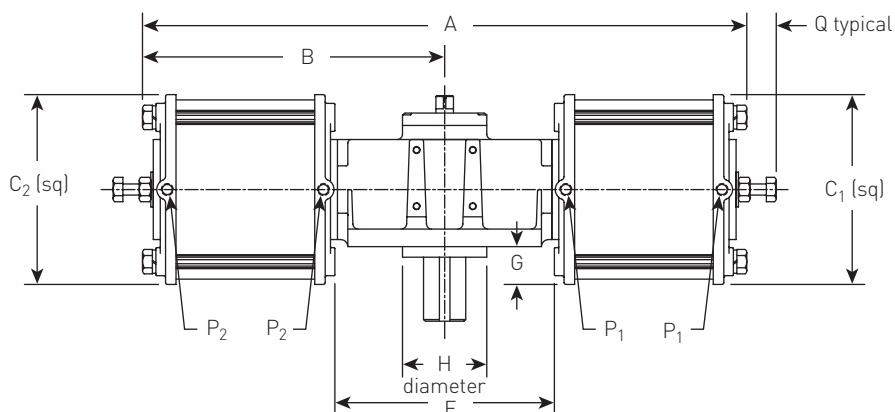
DIMENSIONS (mm) SPRING RETURN

Model	A	B	C ₁	C ₂	D	E	F	G	H	J	K	L	M	P
006SR	326.9	134.1	80.8	-	98.3	-	27.7	4.6	38.1	38.1	76.2	120.7	33.3	1/8
012SR	368.3	134.1	122.2	-	122.2	-	27.7	25.4	38.1	38.1	76.2	120.7	33.3	1/4
023SR	557.5	225.6	122.2	-	156.6	-	44.5	6.4	44.5	54.9	109.5	169.9	57.2	1/4
036SR	600.7	225.6	147.6	-	169.2	-	44.5	19.1	44.5	54.9	109.5	169.9	57.2	1/4
046SR	577.3	245.4	122.2	122.2	156.5	141.7	-	6.4	44.5	54.9	109.5	169.9	57.2	1/4
058SR	578.9	247.1	147.6	122.2	169.2	141.7	-	19.1	44.5	54.9	109.5	169.9	57.2	1/4
059SR	620.8	245.4	122.2	147.6	169.2	138.2	-	19.1	44.5	54.9	109.5	169.9	57.2	1/4
072SR	621.0	245.9	147.6	147.6	169.2	138.2	-	19.1	44.5	54.9	109.5	169.9	57.2	1/4

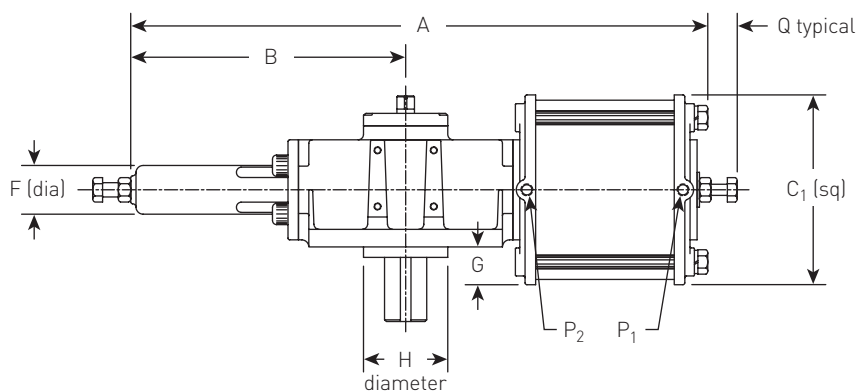
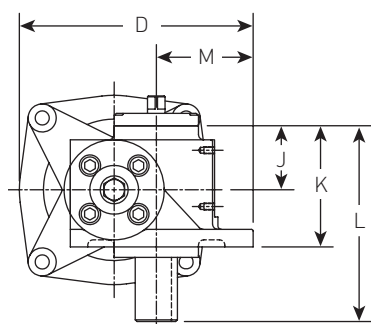
BIFFI MORIN A SERIES ACTUATORS

DIMENSIONS

MODELS 270, 344, 345 AND 420



MODELS 135 AND 210



NOTES

1. Shown without pointer for clarity.
2. For mounting dimensions, refer to pages 10-11.

DIMENSIONS (mm) DOUBLE ACTING

Model	A	B	C ₁	C ₂	D	E	F	G	H	J	K	L	M	P ₁	P ₂	Q
135DA	831.6	403.4	241.3	-	265.2	-	69.9	25.4	-	111.3	206.5	300.2	81.0	3/8	3/8	44.5
210DA	844.8	403.4	292.1	-	290.6	-	69.9	50.8	-	111.3	206.5	300.2	81.0	1/2	1/2	53.8
270DA	857.8	429.0	241.3	241.3	265.2	297.7	-	25.4	-	111.3	206.5	300.2	81.0	3/8	3/8	44.5
345DA	870.2	429.0	241.3	292.1	290.6	291.3	-	50.8	-	111.3	206.5	300.2	81.0	3/8	1/2	53.8
420DA	882.7	441.5	292.1	292.1	290.6	285.0	-	50.8	-	111.3	206.5	300.2	81.0	1/2	1/2	53.8

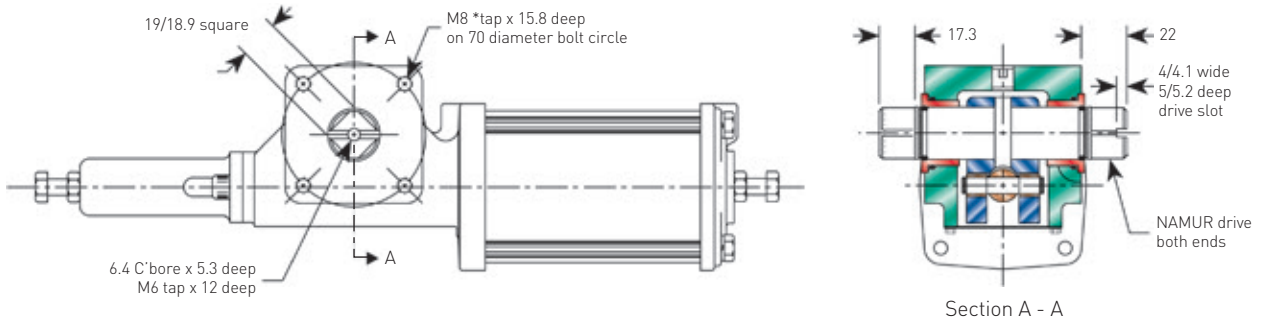
DIMENSIONS (mm) SPRING RETURN

Model	A	B	C ₁	C ₂	D	E	F	G	H	J	K	L	M	P ₁	P ₂	Q
135SR	1002.3	403.4	241.3	-	265.2	-	69.9	25.4	-	111.3	206.5	300.2	81.0	3/8	3/8	44.5
210SR	1083.8	403.4	292.1	-	290.6	-	69.9	50.8	-	111.3	206.5	300.2	81.0	1/2	1/2	53.8
270SR	1030.5	431.5	241.3	241.3	265.2	278.1	-	25.4	-	111.3	206.5	300.2	81.0	3/8	3/8	44.5
344SR	1040.1	441.5	292.1	241.3	290.6	271.8	-	50.8	-	111.3	206.5	300.2	81.0	1/2	3/8	53.8
345SR	1112.3	431.5	241.3	292.1	290.6	269.5	-	50.8	-	111.3	206.5	300.2	81.0	3/8	1/2	53.8
420SR	1121.9	441.5	292.1	292.1	290.6	263.1	-	50.8	-	111.3	206.5	300.2	81.0	1/2	1/2	53.8

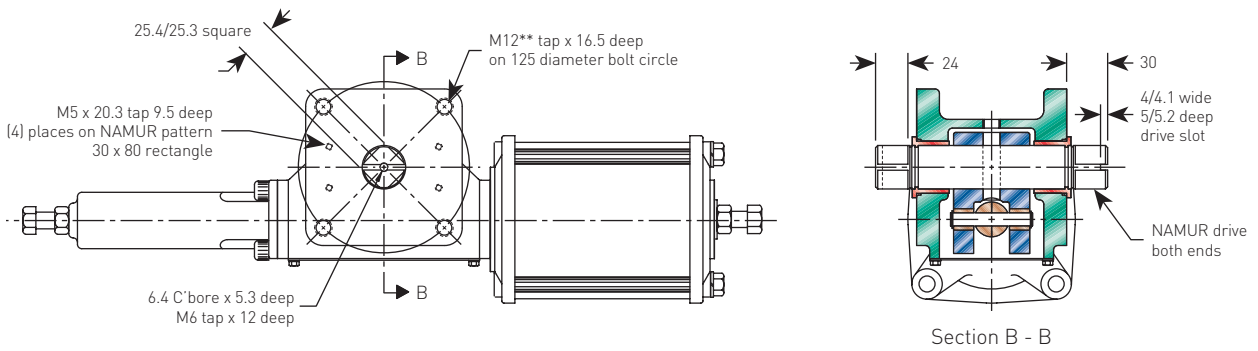
BIFFI MORIN A SERIES ACTUATORS

MOUNTING DETAILS

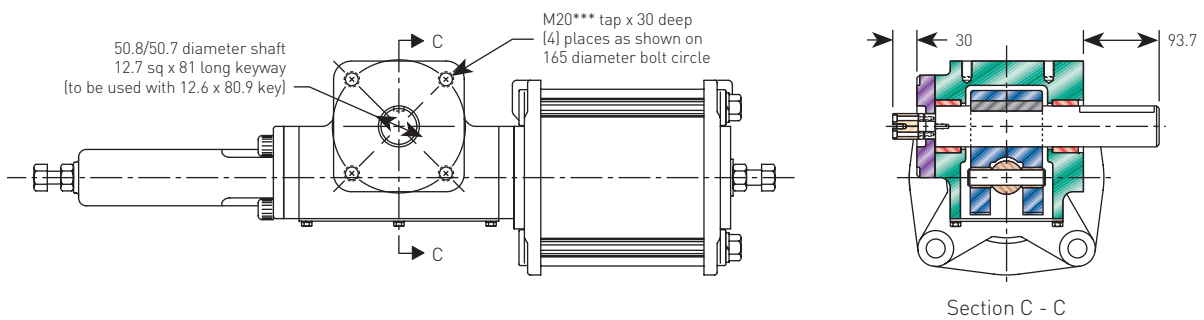
MODELS 006 AND 012 - TOP AND BOTTOM OF HOUSING (SYMMETRICAL) ISO 5211-F07



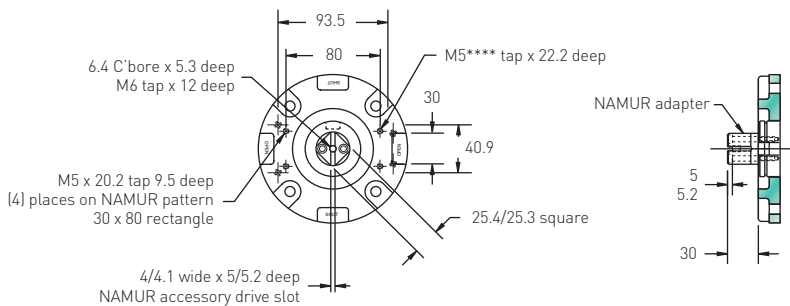
MODELS 023 THROUGH 100 - TOP AND BOTTOM OF HOUSING (SYMMETRICAL) ISO 5211-F12



MODELS 135, 210, 270, 344, 345 AND 420 - BOTTOM OF HOUSING ISO 5211-F16



MODELS 135, 210, 270, 344, 345 AND 420 - TOP OF HOUSING - MOUNTING DETAILS



IMPERIAL THREAD OPTION

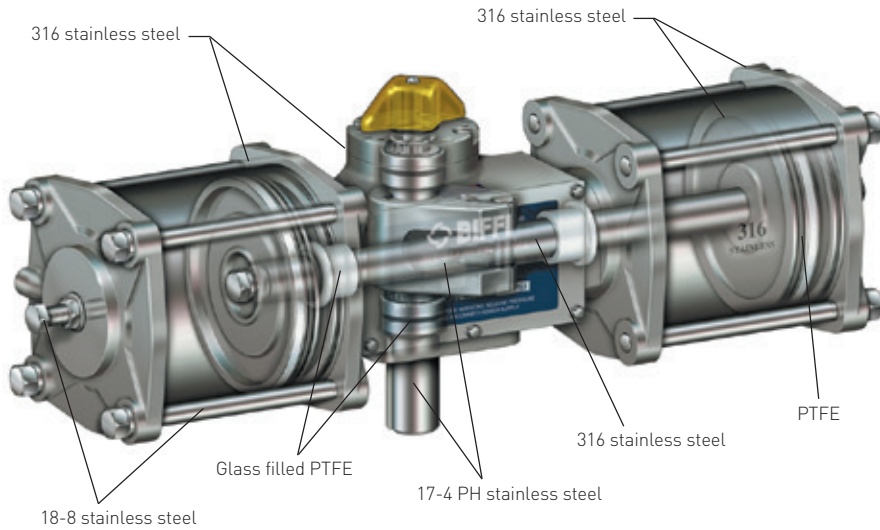
Standard tap	Model number
* 5/16 - 18 UNC	006 and 015
** 1/2 - 13 UNC	023 to 100
*** 3/4 - 10 UNC	135 to 1150
**** 10 - 32 UNC	135 to 1150

Replace 'M' with 'U' in order number designation (refer to page 6).

BIFFI MORIN A SERIES ACTUATORS

ALSO AVAILABLE

THE S SERIES ACTUATOR (ALL STAINLESS)



Setting an unrivaled standard in actuation at a price unexpectedly low for stainless steel.

- Up to 11 barg max operating pressure [see torque chart].
- Double acting break torques to 27120 Nm.
- Spring end torques to 11766 Nm.

For additional information, refer to S series data sheet.

THE HP SERIES ACTUATOR



High pressure actuation with carbon steel cylinders for superior corrosion resistance.

- Up to 155 bar max operating pressure [see torque chart].
- Double acting torques to 90400 Nm.
- Spring end torques to 45200 Nm.

For additional information, refer to HP series data sheet.

HOW TO ORDER

- Double acting (symmetrical yoke) example:
Air supply: 5.5 barg
Break/end torque: 2610 Nm
A-210M-D000
A Series
210 Model number
M Metric mounting threads
D Double acting
000 No spring
- Spring return (symmetrical yoke) example:
Air supply: 5.5 barg
End torque: 914 Nm
A-210M-S080
A Series
210 Model number
M Metric mounting threads
S Spring return
080 Spring set code
- Double acting (canted yoke) example:
Air supply: 5.5 barg
Break (CCW) torque: 3524 Nm
End (CW) torque: 3393 Nm
A-210MC-D000
A Series
210 Model number
M Metric mounting threads
C Canted yoke
D Double acting
000 No spring
- For all spring return models:
 - Use required torque to determine spring set code [see torque chart].
 - All spring sets ending with '0' fail clockwise (40, 50, 60, etc.).
 - All spring sets ending with '1' fail counterclockwise (41, 51, 61, etc.).
 - All symmetrical yoke models between 006 and 72 may be mounted to fail clockwise or counterclockwise by 'flipping' along the longitudinal axis.



Biffi reserve the the right to change product designs and specifications without notice.

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