

Beaver Quarter-Turn Pneumatic Valve Actuator

A rack and pinion pneumatic actuator for quarter-turn valves used for both on/off and throttling applications.

T01, T02



Beaver T01-T02 Quarter-Turn Pneumatic Valve Actuator



Beaver T01 Pneumatic Actuator

The Beaver Quarter-Turn Pneumatic Actuator has a rack and pinion mechanism which transforms linear pressure applied on the rack into a rotational turn of the pinion.

The T01 model is a double-acting actuator which operates in both directions, having two ports for air and two pistons. It provides constant torque output and has a fail-last safety function.

The T02 model is a spring-return actuator with one port through which pneumatic force is supplied and a spring mechanism that provides the opposing force. It's used for fail-open or fail-closed functions.

This compact actuator provides a wide range of rotational outputs for quarter-turn valves. It's suited for use with dry or lubricated air, with maximum particle size not exceeding 30 microns.

KEY FEATURES

- Comes with a position indicator with NAMUR mounting.
- Dual direction travel stops -5° to $+5^{\circ}$ from 0° and 90° .
- Steel alloy pinion is precision ground to minimise friction and wear.
- Epoxy-coated high-tensile springs improve service life and corrosion resistance.
- Ready to be fitted with manual override, limit switch, solenoid valve, exhaust valve, and valve positioner.

Need technical advice? Our friendly specialists are here to help.

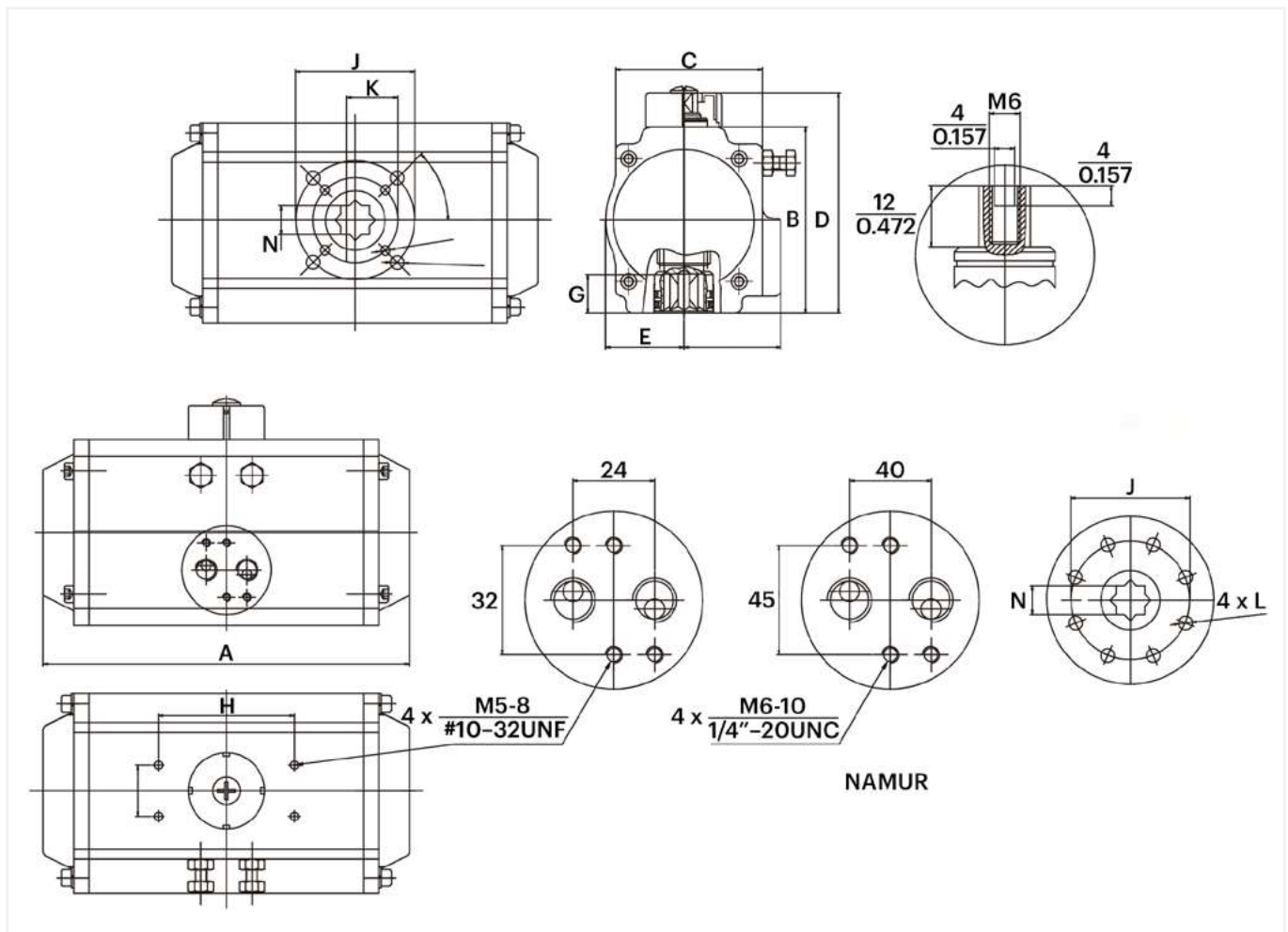
T01-T02

Spring Return Rack and Pinion Quarter-Turn Pneumatic Valve Actuator

Tables 1-2. T01-T02 Specifications

Technical Specifications		Material Specifications	
Brand	Beaver	Actuator body	Hard-anodised aluminium alloy Contact us for other options
Model	T01 (Double acting) T02 (Spring return)	O-ring material and temperature range	NBR (-20°C to +80°C) HNBR (-40°C to +80°C) Viton (-15°C to +150°C)
Output torque	9-3920Nm at 6 bar air supply	Pinion	Hardened steel alloy
Pressure rating	2-8 bar (Double acting) 3-8 bar (Spring return)	Pistons	Hard-anodised die-cast aluminium
ISO 5211 interface sizes	F03-F25		
Connections	ISO 5211 (Valve interface) VDI/VDE-3845, NAMUR standard (Interface for solenoid valve, shaft top end, and top drilling for assembling accessories)		

Diagram. T01-T02 Parts



T01-T02

Spring Return Rack and Pinion Quarter-Turn Pneumatic Valve Actuator

Table 3. T01-T02 Dimensions

Type	Product Dimensions (mm)														Air Connection
	A	B	C	D	E	F	G	H	I	N	J	K	L	M	
T0-032	110	45	45	65	22.5	22.5	11	50	25	9	F03		M5*7.5		1/8"
T0-040	122	60	52	80	28.5	36.5	14	80	30	11	F05	F03	M6*10	M5*7.5	1/4"
T0-052	146	72	60	92	26	41.5	14	80	30	11	F05	F03	M6*10	M5*7.5	1/8" or 1/4"(std)
T0-063	169	88	69.5	108	33.5	47	17	80	30	14	F07	F05	M8*13	M6*10	1/8" or 1/4"(std)
T0-075	186	100	78	120	39	53	17	80	30	14	F07	F05	M8*13	M6*10	1/8" or 1/4"(std)
T0-083	210	109	86	129	40	57	20	80	30	17	F07	F05	M8*13	M6*10	1/8" or 1/4"(std)
T0-092	264	117	90.5	137	44.5	58.5	20	80	30	17	F07	F05	M8*13	M6*10	1/8" or 1/4"(std)
T0-105	272	133	104	153	52	64	26	80	30	22	F10	F07	M10*16	M8*13	1/4"
T0-125	302	155	120	185	60	74.5	25	130	30	22	F10	F07	M10*16	M8*13	1/4"
T0-140	398	172	125	202	65	77	30	130	30	27	F12	F10	M12*20	M10*16	1/4"
T0-160	456	197	142	227	74	87	30	130	30	27	F12	F10	M12*20	M10*16	1/4"
T0-190	534	230	172	260	86	103	40	130	30	36	F14		M16*20		1/4"
T0-210	536	255	194	285	97	113	43	130	30	36	F14		M16*20		1/4"
T0-240	612	290	230	320	115	130	50	130	30	46	F16		M20*25		1/8" or 1/4"(std)
T0-270	718	330	252	360	126	147	50	130	30	46	F16		M20*25		
T0-300	784	354	335	384	162	173	50	130	30	46	F16		M20*25		1/2"
T0-350	845	410	385	440	190	195	50	130	30	46	F16		M20*25		1/2"
T0-400	956	466	520	496	260	260	60	130	30	55	F25		M16*20		1/2"

T01

Double Acting Rack and Pinion Quarter-Turn Pneumatic Valve Actuator

Table 1. T01 Torque

Torque Table								
Model	Air supply pressure (bar)							
	3.0	4.0	4.5	5.0	5.5	6.0	7.0	8.0
Output torque (Nm)								
T01-032	4.6	6.1	6.9	7.6	8.4	9.2	10.7	12.2
T01-040	7.0	10.0	11.0	12.0	13.0	14.0	17.0	19.0
T01-052	12.0	16.0	18.0	20.0	21.9	23.9	27.9	31.9
T01-063	21.9	29.2	32.8	36.5	40.1	43.8	51.1	58.4
T01-075	30.1	40.1	45.1	50.2	55.5	66.0	70.2	80.3
T01-083	47.0	62.7	70.5	78.4	86.2	94.1	109.7	125.4
T01-092	67.7	90.3	101.6	112.9	124.1	135.4	159.0	180.6
T01-105	99	132	149	165	182	198	231	265
T01-125	151	201	226	251	276	301	351	401
T01-140	257	342	385	428	470	513	599	684
T01-160	399	532	599	665	732	798	931	1064
T01-190	638	851	958	1064	1170	1277	1490	1702
T01-210	798	1064	1197	1330	1463	1596	1862	2128
T01-240	1154	1539	1731	1924	2116	2309	2693	3078
T01-270	1755	2339	2632	2924	3217	3509	4094	4679
T01-300	2289	3052	3434	3815	4197	4578	5341	6104
T01-350	3427	4570	5141	5712	6283	6854	7997	9139
T01-400	4884	6512	7326	8140	8954	9768	11396	13024

T02

Spring Return Rack and Pinion Quarter-Turn Pneumatic Valve Actuator

Table 1. T02 Torque

Torque Table																	
Model	Spring Set	Spring Torque (Nm)		Air Supply Pressure (bar)													
				2.5		3.0		4.0		5.0		6.0		7.0		8.0	
				0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
T02-052	5	4.3	6.2	5.7	3.8	7.6	5.7										
	6	5.0	7.4	4.9	2.5	6.9	4.5	10.9	8.5								
	7	5.9	8.6	4.0	1.3	6.0	3.3	9.8	7.3	14.0	10.4						
	8	6.7	9.9			5.2	2.0	9.2	6.0	13.2	9.1	17.2	14.1				
	9	7.6	11.1			4.3	0.8	8.3	4.8	12.3	7.9	16.3	12.8	20.3	16.8		
	10	8.5	12.4					7.4	3.6	11.5	6.7	15.5	11.6	19.5	15.6		
	11	9.3	13.6					6.6	2.3	10.6	5.4	14.6	10.4	18.6	14.3	22.6	18.3
	12	10.2	14.8							9.7	4.2	13.8	9.1	17.8	12.2	21.8	17.1
T02-063	5	6.8	10.4	14.1	7.7	15.0	11.4	22.3	14.9								
	6	8.2	12.5	10.1	5.7	13.6	9.3	20.9	16.6	28.3	23.9						
	7	9.6	14.6	8.6	3.6	12.5	7.2	19.5	14.5	26.8	21.9						
	8	10.9	16.7			10.9	5.1	18.2	12.4	25.5	19.8	32.8	27.0	40.1	34.3		
	9	12.3	18.8					16.8	10.4	24.1	17.7	31.4	24.9	38.7	32.2		
	10	13.7	20.9					11.4	8.2	22.8	15.6	30.0	22.8	37.3	30.1	44.7	37.4
	11	15.0	22.9							21.5	13.5	28.7	20.7	36.0	28.0	43.3	35.3
	12	16.4	25.0							20.0	11.4	27.3	18.6	34.6	25.9	41.9	33.3
T02-075	5	10.5	14.5	14.5	10.6	19.4	15.5	29.5	25.7								
	6	12.7	17.4	12.4	7.6	17.3	12.6	27.4	22.7	37.5	32.8						
	7	14.8	20.3	10.4	4.8	15.2	9.7	25.3	19.9	35.4	29.9						
	8	16.9	23.2			13.1	6.8	23.1	16.9	33.3	27.0	43.2	37.0	53.3	47.0		
	9	19.0	26.1					21.0	14.1	31.2	24.1	41.1	34.1	51.1	44.2		
	10	21.1	29.0					19.0	11.1	28.8	21.2	39.0	31.2	49.1	41.2	59.1	51.2
	11	23.2	31.9							27.0	18.3	37.0	28.3	47.0	38.4	57.0	48.4
	12	25.3	34.7							24.9	15.4	34.9	25.4	44.9	35.4	54.9	45.4
T02-083	5	15.8	23.0	23.7	16.1	31.1	24.0	46.8	37.9								
	6	19.0	27.6	20.1	11.5	28.0	19.3	43.7	35.1	59.4	50.7						
	7	22.1	32.2	17.0	6.9	24.8	14.8	40.5	30.5	56.2	46.2						
	8	25.3	36.8			21.7	10.1	37.4	25.8	53.1	41.5	68.8	57.2	84.5	72.9		
	9	28.5	41.4					34.2	21.3	49.9	37.0	65.6	52.6	81.2	68.3		
	10	31.6	46.0					31.0	16.6	46.7	32.3	62.4	48.0	78.1	63.7	93.8	79.3
	11	34.8	50.6							43.6	27.7	59.3	43.4	75.0	59.1	90.6	74.8
	12	38.0	55.2							40.4	23.2	56.1	38.9	71.7	54.5	87.4	70.2
T02-092	5	23.3	34.4	33.1	22.0	44.2	33.2	66.8	55.9								
	6	28.0	41.2	28.4	15.2	39.6	26.4	62.2	49.0	84.8	71.6						
	7	32.7	48.1	23.8	8.2	34.9	19.4	57.5	42.1	80.2	64.7						
	8	37.3	55.0			31.3	12.6	52.9	35.2	75.5	57.9	98.1	80.5	120.7	103.0		
	9	42.0	61.9					48.2	28.4	70.9	51.0	93.5	73.6	116.0	96.1		
	10	46.7	68.7					43.6	21.5	66.2	44.1	88.8	66.7	111.3	89.2	134.0	111.8
	11	51.4	75.6							61.5	37.2	84.1	59.9	106.6	82.4	129.2	105.0
	12	56.0	82.5							56.8	30.4	79.4	53.0	101.9	75.5	124.5	98.1
T02-105	5	31.6	49.2	51.0	33.4	67.5	49.9	100.6	83.0								
	6	38.0	59.1	44.7	23.5	61.1	40.0	94.2	73.2	127.3	106.2						
	7	44.3	68.9	38.4	13.7	54.9	30.3	87.9	63.4	121.0	96.4						
	8	50.6	78.7			48.5	20.4	81.6	53.5	114.7	86.5	147.7	119.6	180.8	152.7		
	9	56.9	88.6					75.3	43.7	108.4	76.8	141.5	109.8	174.5	142.9		
	10	63.3	98.4					68.9	33.4	102.0	66.5	135.1	99.6	168.2	132.6	201.2	165.7
	11	69.6	108.3							95.7	57.0	128.7	90.1	161.8	123.1	194.8	156.2
	12	75.9	118.1							89.4	47.5	122.5	80.6	155.5	113.6	188.6	146.7

T02

Spring Return Rack and Pinion Quarter-Turn Pneumatic Valve Actuator

Torque Table

Model	Spring Set	Spring Torque (Nm)		Air Supply Pressure (bar)													
				2.5		3.0		4.0		5.0		6.0		7.0		8.0	
				Air Torque Output (Nm)													
0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		
T02-125	5	52	79	73	47	98	72	148	122								
	6	63	94	63	31	88	56	138	107	188	157						
	7	73	110	52	15	77	40	127	90	178	141						
	8	84	125			67	25	117	75	167	125	217	176	268	226		
	9	94	141					107	59	157	109	207	159	257	210		
	10	105	157					96	44	146	94	196	144	247	194	297	245
	11	115	173							136	78	186	128	236	178	286	228
	12	125	188						125	63	176	113	226	163	276	213	
T02-140	5	86	129	128	85	171	127	256	213								
	6	103	155	111	59	154	102	239	187	325	273						
	7	120	181	94	33	137	76	222	162	308	247						
	8	137	206			120	50	205	136	291	221	276	307	462	392		
	9	155	232					187	110	273	196	358	281	444	367		
	10	172	258					170	84	256	169	341	255	427	340	512	426
	11	189	284							238	143	324	229	409	314	495	400
	12	206	310						221	118	307	203	392	289	478	374	
T02-160	5	140	208	193	124	259	191	392	324								
	6	168	250	165	83	232	149	365	282	498	415						
	7	196	292	137	41	203	107	336	240	469	373						
	8	223	333			176	66	309	199	442	332	575	465	708	598		
	9	251	375					280	157	413	290	546	423	679	556		
	10	279	417					253	115	386	248	519	381	652	514	785	647
	11	307	458							358	207	491	340	624	473	757	606
	12	335	500						330	165	463	298	596	431	729	564	
T02-190	5	200	309	332	222	438	329	651	542								
	6	240	371	292	161	398	267	611	480	824	693						
	7	280	433	252	99	358	205	571	418	784	631						
	8	320	495			318	143	531	356	744	569	957	782	1169	995		
	9	360	557					491	295	704	507	917	720	1130	933		
	10	400	618					451	233	664	446	877	658	1090	871	1302	1084
	11	440	680							624	384	837	597	1050	809	1263	1022
	12	480	742						584	322	797	535	1010	748	1223	960	
T02-210	5	275	380	390	285	523	418	789	684								
	6	330	456	335	209	468	342	734	608	1000	874						
	7	385	532	280	133	413	266	679	532	945	798						
	8	440	608			358	190	624	456	890	722	1156	988	1422	1254		
	9	495	684					569	380	835	646	1101	912	1367	1178		
	10	550	760					514	304	780	570	1046	836	1312	1102	1578	1368
	11	605	836							725	494	991	760	1257	1026	1523	1292
	12	660	912						670	418	936	684	1202	950	1468	1216	
T02-240	5	410	554	552	409	744	600	1129	985								
	6	490	665	470	297	662	489	1047	874	1432	1259						
	7	575	775	388	187	580	379	964	764	1349	1149						
	8	656	886			498	268	883	653	1267	1037	1652	1422	2037	1807		
	9	739	998					800	542	1185	926	1569	1311	1954	1696		
	10	821	1108					718	431	1103	816	1488	1201	1872	1586	2257	1970
	11	903	1219							1021	705	1406	1090	1791	1471	2176	1859
	12	985	1330						939	594	1323	979	1708	1363	2093	1748	

T02

Spring Return Rack and Pinion Quarter-Turn Pneumatic Valve Actuator

Torque Table

Model	Spring Set	Spring Torque (Nm)		Air Supply Pressure (bar)														
				2.5		3.0		4.0		5.0		6.0		7.0		8.0		
				Air Torque Output (Nm)														
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
T02-270	5	560	787	903	675	1195	968	1779	1552									
	6	672	943	790	519	1083	811	1667	1396	2252	1981							
	7	783	1101	679	361	972	654	1556	1238	2141	1823							
	8	895	1258			860	479	1444	1081	2029	1666	2614	2252	3199	2836			
	9	1007	1416					1332	923	1917	1509	2502	2094	3087	2678			
	10	1119	1572					1220	767	1805	1352	2390	1937	2974	2521	3560	3107	
	11	1231	1730							1693	1197	2278	1779	2862	2364	3448	2949	
	12	1342	1887						1582	1037	2167	1623	2751	2207	3336	2792		
T02-300	5	730	1061	1097	729													
	6	876	1273	935	494	1316	875											
	7	1022	1485	772	258	1153	639	1916	1402									
	8	1168	1697			991	403	1754	1166	2517	1929							
	9	1314	1909					1592	930	2355	1693	3118	2456					
	10	1460	2122					1430	695	2193	1458	2956	2221	3719	2984	4482	3747	
	11	1606	2334							2030	1222	2793	1985	3556	2748	4319	3511	
	12	1752	2546						1868	986	2631	1749	3394	2512	4157	3275		
T02-350	5	1173	1702	1553	964													
	6	1408	2043	1292	586	1863	1157											
	7	1642	2383	1031	208	1602	779	2745	1922									
	8	1877	2724			1341	401	2484	1544	3626	2686							
	9	2112	3064					2224	1165	3336	2307	4508	3449					
	10	2346	3405					1963	787	3105	1929	4247	3071	5390	4214	6352	5356	
	11	2581	3745							2844	1551	3986	2693	5129	3836	6271	4978	
	12	2816	4086						2584	1172	3726	2314	4869	3457	6011	4599		
T02-400	5																	
	6																	
	7	1837	2880	2028	869													
	8	2100	3292	1736	411	2550	1225											
	9	2362	3703			2259	768	3887	2396									
	10	2624	4115			1967	311	3595	1939	5223	3567							
	11	2887	4526					3303	1482	4931	3110	6559	4738					
	12	3149	4938					3012	1025	4640	2653	6268	4281	7859	5908	9523	7536	



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