



TYPE APPROVAL CERTIFICATE

Certificate no.:
TAP00001GA
Revision No:
1

This is to certify:

that the **Pneumatic Actuator**

with type designation(s)

ELTORQUE Stainless Steel Pneumatic Single & Double Acting Actuator
P40/P50/P65/P85/P100/P125/P140/P160/P210/P240/P270/P300

issued to

Eltorque Automation (Xiamen) Ltd.
Xiamen City, Fujian, China

is found to comply with

DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV-OS-D101 – Marine and machinery systems and equipment, Edition July 2021

Application:

Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV.
Dsgn. press./Torque See certificate

Issued at **Høvik** on **2024-02-14**

This Certificate is valid until **2029-01-10**.

for **DNV**

DNV local unit: **Trondheim**

Approval Engineer: **Mohsen Mohebbi**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2023-09

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Page 1 of 4

Product description

Rack and pinion mechanism pneumatic actuators designed to comply to standard JBT8864-2004.

The actuators with valve position indicator (except sizes P210 to P300) are tested for degrees of protection IP6X (dust protection; duration 8 hours) and IPX8 (water protection in depth down to 30 m; duration 72 hours) according to IEC 60529 Ed.2.2 (2013).

Valve position indicator type: Mechanical type and Proximity type.

The cylinder block finishing is either stainless steel or stainless steel with stoving varnish paint.

Supply medium: Dry or lubricated air/non-corrosive gas

Materials:

Cylinder: SUS316TP/316LTP JIS G 3459, SUS316TB/LTB JIS G 3463

End cap: SUS316TP/316LTP JIS G 3459, SUS316TB/LTB JIS G 3463

Bolting: A2-70 ISO 3506-1

Seals: Viton™ (FKM)

Actuator manufacturing plant:

Eltorque Automation (Xiamen) Ltd.

2/F, 1# building, No.168, Huizuo Rd, XinYang Industrial Area, Haicang District, Xiamen City, Fujian Province, China

Application/Limitation

Maximum supply pressure: 8 bar

Design temperature: -20/+80 °C

Single acting actuators - Output torque table [Nm]:

Air pressure		3 bar		4 bar		5 bar		6 bar		7 bar		8 bar		Spring's output	
Model *)	Spring Qty.	0 °	90°	0 °	90°	0 °	90°	0 °	90°	0 °	90°	0 °	90°	90°	0°
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
P40.002.X	K2	7.8	4.7	9.9	7.4	12.2	10.1	15.3	13.2	18.2	16.3	21	19.3	4.7	2.3
P40.003.X	K3			8.9	4	10.7	6.4	13.3	9.4	16.4	12.4	19.1	16.3	8.8	3.4
P40.004.X	K4					8.5	3.9	11.3	6.6	14.2	9.2	17	12	12.7	4.6
P50.005.X	K5	6.5	4.6											5.6	3.8
P50.006.X	K6	6.1	3.9											6.7	4.6
P50.007.X	K7	5.3	2.7	8.9	6.3									7.7	5.3
P50.008.X	K8	4.5	1.5	8.1	5.1	12	8.8							8.9	6.1
P50.009.X	K9			7.3	4.0	11	7.7	15	11					10	6.8
P50.010.X	K10			6.5	2.8	10	6.5	14	10	17	14	21	17	11	7.7
P50.011.X	K11					9.4	5.3	13	8.9	17	13	20	16	12	8.4
P50.012.X	K12					8.6	4.1	12	7.7	16	11	19	15	13	9.1
P65.005.X	K5	16	11											9.4	6.1
P65.006.X	K6	11	7.3											11	7.4
P65.007.X	K7	10	5.3	16	12									13	8.6
P65.008.X	K8	8.8	3.3	15	10	22	16							15	10
P65.009.X	K9			14	7.7	20	14	27	21					17	11
P65.010.X	K10			13	5.8	19	12	25	19	32	25	38	31	19	12
P65.011.X	K11					18	10	24	17	31	23	37	29	21	14
P65.012.X	K12					16	8.2	23	15	29	21	36	27	23	15
P85.005.X	K5	30	23											21	14
P85.006.X	K6	24	15											25	17
P85.007.X	K7	21	11	34	25									29	20
P85.008.X	K8	18	6.7	32	21	45	34							33	23
P85.009.X	K9			28	16	42	30	56	44					37	26
P85.010.X	K10			25	12	39	26	53	40	67	54	81	67	41	28
P85.011.X	K11					36	21	50	35	64	49	78	63	46	31
P85.012.X	K12					33	17	47	31	61	45	75	59	50	34
P100.005.X	K5	60	45											44	28
P100.006.X	K6	53	33											53	34
P100.007.X	K7	47	24	77	53									62	40
P100.008.X	K8	41	14	70	44	100	73							71	46
P100.009.X	K9			65	35	94	64	124	94					80	51
P100.010.X	K10			59	25	88	55	118	84	147	114	177	144	89	57
P100.011.X	K11					82	45	112	75	141	105	171	134	97	63

Air pressure		3 bar		4 bar		5 bar		6 bar		7 bar		8 bar		Spring's output	
Model *)	Spring Qty.	0 °	90°	0 °	90°	0 °	90°	0 °	90°	0 °	90°	0 °	90°	90°	0°
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
P100.012.X	K12					76	36	106	66	135	95	165	125	106	68
P125.005.X	K5	103	78											71	47
P125.006.X	K6	79	50											85	57
P125.007.X	K7	69	35	115	81									99	66
P125.008.X	K8	59	20	105	66	151	112							113	75
P125.009.X	K9			95	51	141	97	188	144					127	85
P125.010.X	K10			85	36	131	82	178	129	224	175	270	221	141	94
P125.011.X	K11					121	67	168	114	214	160	260	206	155	104
P125.012.X	K12					111	52	158	99	204	145	250	191	169	113
P140.005.X	K5	177	135											116	77
P140.006.X	K6	139	90											139	93
P140.007.X	K7	123	66	202	145									162	108
P140.008.X	K8	107	41	186	120	265	200							186	124
P140.009.X	K9			170	96	249	175	327	254					209	139
P140.010.X	K10			153	72	233	151	311	229	390	308	469	387	232	154
P140.011.X	K11					216	126	295	205	374	284	453	363	255	170
P140.012.X	K12					200	102	278	180	358	259	437	339	279	185
P160.005.X	K5	268	183											187	126
P160.006.X	K6	202	124											225	151
P160.007.X	K7	176	85	296	205									263	176
P160.008.X	K8	149	45	270	166	390	285							300	201
P160.009.X	K9			243	126	363	246	484	367					338	226
P160.010.X	K10			217	87	337	207	457	327	577	447	698	567	375	251
P160.011.X	K11					310	167	431	288	550	407	671	528	412	276
P160.012.X	K12					284	128	404	248	524	368	645	488	450	302
P210.005.X	K5	544	446											324	234
P210.006.X	K6	398	278											389	282
P210.007.X	K7	346	207	582	444									453	329
P210.008.X	K8	293	135	530	372	768	609							518	375
P210.009.X	K9			478	300	716	537	952	774					582	422
P210.010.X	K10			426	228	663	465	900	702	1137	939	1373	1175	647	469
P210.011.X	K11					611	393	848	630	1085	867	1321	1103	712	516
P210.012.X	K12					559	321	796	558	1032	795	1269	1031	777	563
P240.005.X	K5	766	570	1150	954	1535	1339	1920	1724	2305	2109	2689	2493	389	585
P240.006.X	K6	688	453	1072	837	1457	1222	1842	1607	2227	1992	2611	2376	467	702
P240.007.X	K7	610	336	994	720	1379	1105	1764	1490	2149	1875	2533	2259	545	819
P240.008.X	K8	533	219	917	603	1302	988	1687	1373	2072	1758	2456	2142	622	936
P240.009.X	K9	455	102	839	486	1224	871	1609	1256	1994	1641	2378	2025	700	1053
P240.010.X	K10			761	369	1146	754	1531	1139	1916	1524	2300	1908	778	1170
P240.011.X	K11			683	252	1068	637	1453	1022	1838	1407	2222	1791	856	1287
P240.012.X	K12			605	135	990	520	1375	905	1760	1290	2144	1674	934	1404
P270.005.X	K5	1250	845	1835	1430	2419	2014	3005	2600	3590	3185	4175	3770	505	910
P270.006.X	K6	1149	663	1734	1248	2318	1832	2904	2418	3489	3003	4074	3588	606	1092
P270.007.X	K7	1048	481	1633	1066	2217	1650	2803	2236	3388	2821	3973	3406	707	1274
P270.008.X	K8	947	299	1532	884	2116	1468	2702	2054	3287	2639	3872	3224	808	1456
P270.009.X	K9	846	117	1431	702	2015	1286	2601	1872	3186	2457	3771	3042	909	1638
P270.010.X	K10			1330	520	1914	1104	2500	1690	3085	2275	3670	2860	1010	1820
P270.011.X	K11			1229	338	1813	922	2399	1508	2984	2093	3569	2678	1111	2002
P270.012.X	K12			1128	156	1712	740	2298	1326	2883	1911	3468	2496	1212	2184
P300.005.X	K5	1204	898	1834	1528	2464	2157	3094	2787	3724	3417	4353	4047	928	622
P300.006.X	K6	1080	712	1710	1342	2340	1972	2969	2601	3599	3231	4229	3861	1114	746
P300.007.X	K7	956	526	1585	1156	2215	1786	2845	2416	3475	3046	4105	3675	1300	871
P300.008.X	K8			1461	970	2091	1600	2721	2230	3351	2860	3980	3490	1486	995
P300.009.X	K9			1337	785	1967	1414	2596	2044	3226	2674	3856	3304	1672	1120
P300.010.X	K10					1842	1229	2472	1859	3102	2488	3731	3118	1857	1244
P300.011.X	K11					1718	1043	2347	1673	2977	2303	3607	2932	2043	1368
P300.012.X	K12							2166	1487	2853	2117	3483	2747	2229	1493

*) X: On behalf of cylinder block finishing:
 1: Stainless steel; or
 2: Stainless steel with stoving varnish paint

Double acting actuators - Output torque table [Nm]:

Model *)	Air pressure (bar)					
	3	4	5	6	7	8
P40.000.X	8.2	11	14	16	19	22
P50.000.X	11	14	18	22	25	29
P65.000.X	20	26	32	39	46	52
P85.000.X	39	51	64	77	90	103
P100.000.X	88	117	147	176	205	235
P125.000.X	156	208	260	312	364	416
P140.000.X	235	313	391	469	547	626
P160.000.X	357	477	596	715	834	953
P210.000.X	718	958	1197	1436	1676	1915
P240.000.X	1154	1539	1923	2308	2693	3078
P270.000.X	1755	2340	2924	3510	4095	4680
P300.000.X	2062	2750	3437	4125	4812	5499

*) X: On behalf of cylinder block finishing:

- 1: Stainless steel; or
- 2: Stainless steel with stoving varnish paint

Type Approval documentation

Production testing

Each actuator is to be pneumatically tested at 1.1x the maximum allowable pressure before delivery.

Certification

No product certificate is required.

Marking of product

For traceability to this type approval the actuators are to be marked with:

- Manufacturer's name or trade mark
- Pressure rating and maximum torque
- Type designation

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNV-CP-0338.