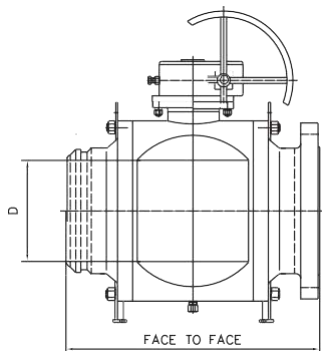


Date dimensiuni
pentru corpuri sudate
și cu șuruburi

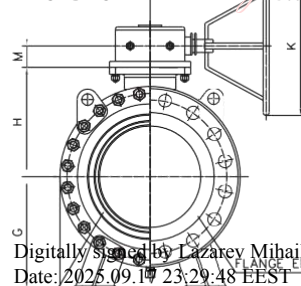
Clasa 150- (PN16,PN25)

mm



CALUGAR HORATIU-
SEBASTIAN

Digitally signed by CALUGAR
HORATIU-SEBASTIAN
Date: 2025.09.17 21:43:07 +03'00'



Digitally signed by Lazarev Mihail
Date: 2025.09.17 23:29:48 EEST

Reason: MoldSign Signature
Location: Moldova

MOLDOVA EUROPEANĂ



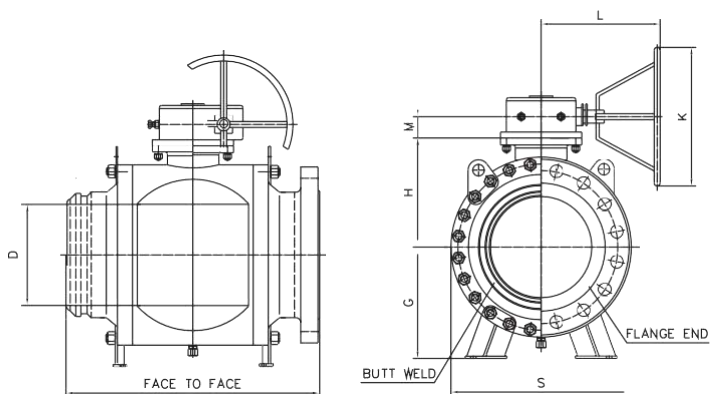
SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	DN	WE	RF	RTJ						
1.5"	38	191	165	178	160.5	103.5	124	28	143	160
2"x 1.5"	38	216	178	191	160.5	103.5	124	28	143	160
2"	49	216	178	191	178	113.5	134	28	143	160
3"x 2"	49	283	203	216	178	113.5	134	28	143	160
3"	74	283	203	216	220	139.5	160	28	143	160
4"x 3"	74	229	305	241	220	139.5	160	28	143	160
4"	100	229	305	241	268	167	178	32	162	240
6"x 4"	100	457	394	406	268	167	178	32	162	240
6"	150	457	394	406	310	215	204.5	45	182	280
8"x 6"	150	521	457	470	310	235	204.5	45	182	280
8"	201	521	457	470	385	255	257	54	336	350
10"x8"	201	559	533	546	385	285	257	54	336	350
10"	252	559	533	546	460	300	294.5	54	336	350
12"x10"	252	635	610	622	460	330	294.5	54	336	350
12"	303	635	610	622	537	340	331	54	500	460
14"x12"	303	762	686	699	537	370	331	54	500	460
14"	334	762	686	699	586	365	356	54	500	460
16"x14"	334	838	762	775	586	395	356	54	500	460
16"	385	838	762	775	658	406	392	54	500	600
18"x16"	385	914	864	876	658	440	392	54	500	600
18"	436	914	864	876	738	465	437	54	500	600
20"x18"	436	991	914	927	738	500	437	54	500	600
20"	487	991	914	927	811	490	474	77	645	600
24"x20"	487	1143	1067	1080	811	550	474	77	645	600
22"	538	♣	991	♣	899	535	517	77	645	600
24"	589	1143	1067	1080	968	565	552	77	645	600
30"x24"	589	1397	1295	♣	968	650	552	77	645	600
26"	633	1245	1143	♣	1050	620	603	77	645	600
28"	684	1346	1245	♣	1134	680	644	77	645	600
30"x28"	684	1524	1372	♣	1134	750	644	77	645	600
30"	735	1397	1295	♣	1217	730	686	77	645	600
36"x30"	735	1727	1524	♣	1217	820	686	77	645	600
32"	779	1524	1372	♣	1288	780	722	87	753	600
34"	830	1626	1473	♣	1372	820	772	87	753	600
36"	874	1727	1524	♣	1444	850	817	87	753	600
38"	925	♣	1600	♣	1523	900	857	87	753	600
40"	976	♣	1670	♣	1604	9300	898	87	753	600
42"	1020	♣	1740	♣	1677	980	940	95	785	600
44"	1070	♣	1810	♣	1752	1015	978	95	785	600
46"	1116	♣	1870	♣	1828	1060	1016.5	95	785	600
48"	1166	♣	1960	♣	1903	1100	1054	95	785	600
56"	1360	♣	2240	♣	2222	1280	1244.5	191	568	600
60"	1458	♣	2400	♣	2377	1360	1322.5	206	590	600



De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 300- (PN40)

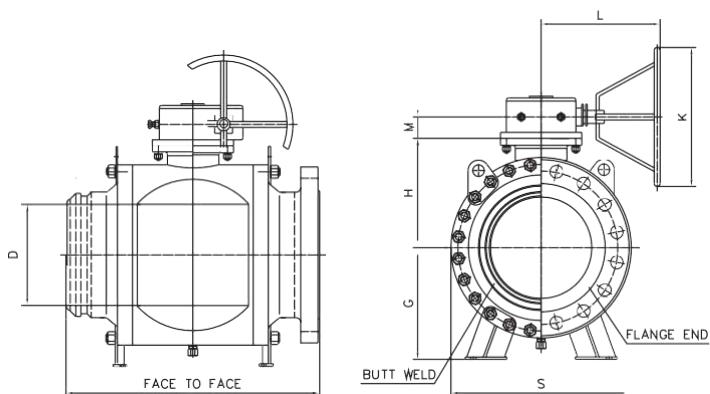
mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	191	191	203	160.5	103.5	124	28	143	160
2"x 1.5"	38	216	216	232	160.5	103.5	124	28	143	160
2"	49	216	216	232	178	113.5	134	28	143	160
3"x 2"	49	283	283	298	178	113.5	134	28	143	160
3"	74	283	283	298	220	139.5	160	28	143	160
4"x 3"	74	305	305	321	220	139.5	160	28	143	160
4"	100	305	305	321	268	167	178	32	162	240
6"x 4"	100	457	403	419	268	167	178	32	162	240
6"	150	457	403	419	310	215	204.5	45	182	280
8"x 6"	150	521	502	518	310	235	204.5	45	182	280
8"	201	521	502	518	385	255	257	54	336	350
10"x8"	201	559	568	584	385	285	257	54	336	350
10"	252	559	568	584	460	300	294.5	54	336	350
12"x10"	252	635	648	664	460	330	294.5	54	336	350
12"	303	635	648	664	537	340	331	54	500	460
14"x12"	303	762	762	778	537	370	331	54	500	460
14"	334	762	762	778	586	365	356	54	500	600
16"x14"	334	838	838	854	586	395	356	54	500	600
16"	385	838	838	854	669	410	402	54	500	600
18"x16"	385	914	914	930	669	435	402	54	500	600
18"	436	914	914	930	750	455	441	77	645	600
20"x18"	436	991	991	1010	750	490	441	77	645	600
20"	487	991	991	1010	824	490	479	77	645	600
24"x20"	487	1143	1143	1165	824	550	479	77	645	600
22"	538	1092	1092	1114	920	555	535	77	645	600
24"	589	1143	1143	1165	990	575	571	77	645	600
30"x24"	589	1397	1397	1422	990	645	571	77	645	600
26"	633	1245	1245	1270	1064	595	608.5	87	753	600
28"	684	1346	1346	1372	1164	660	658	87	753	600
30"x28"	684	1524	1524	1553	1164	720	658	87	753	600
30"	735	1397	1397	1422	1235	730	711	87	753	600
36"x30"	735	1727	1727	1756	1235	820	711	87	753	600
32"	779	1524	1524	1553	1307	770	747.5	95	785	600
34"	830	1626	1626	1654	1386	810	792	95	785	600
36"	874	1727	1727	1756	1464	850	832	95	785	600
38"	925	♣	1680	♣	1540	890	870	95	785	600
40"	976	♣	1760	♣	1627	940	937.5	191	568	600
42"	1020	♣	1840	♣	1697	980	973	191	568	600
44"	1070	♣	1920	♣	1785	1015	1023.5	191	568	600
46"	1116	♣	1980	♣	1855	1050	1058.5	206	590	600
48"	1166	♣	2070	♣	1933	1080	1098	206	590	600
56"	1360	♣	2400	♣	2250	1280	1271	215	674	800
60"	1458	♣	2560	♣	2410	1390	1362.5	170	726	800

♣ De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 400- (PN64)

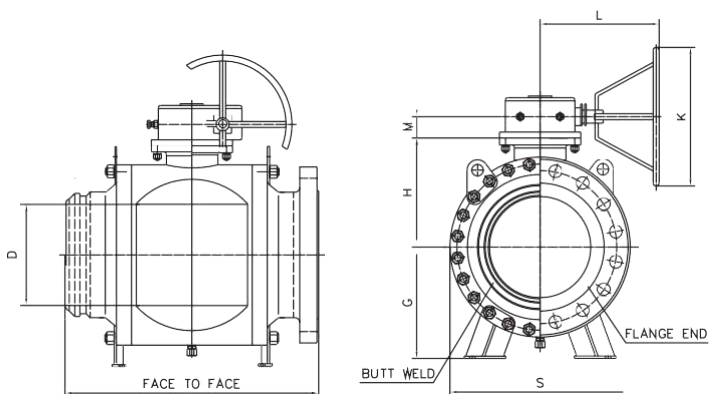
mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	241	241	241	130	75	88	28	143	160
2"x 1.5"	38	292	292	295	130	75	88	28	143	160
2"	49	292	292	295	155	87.5	117	32	162	240
3"x 2"	49	356	356	359	155	87.5	117	32	162	240
3"	74	356	356	359	205	116	150.5	35	182	280
4"x 3"	74	406	406	410	205	116	150.5	35	182	280
4"	100	406	406	410	245	137	171	35	182	280
6"x 4"	100	495	495	498	245	137	171	35	182	280
6"	150	495	495	498	315	220	216	54	336	350
8"x 6"	150	597	597	600	315	240	216	54	336	350
8"	201	597	597	600	388	255	252	54	500	460
10"x 8"	201	673	673	676	388	280	252	54	500	460
10"	252	673	673	676	475	310	304	54	500	600
12"x 10"	252	762	762	765	475	340	304	54	500	600
12"	303	762	762	765	552	345	342	77	645	600
14"x 12"	303	826	826	829	552	380	342	77	645	600
14"	334	826	826	829	598	370	360	77	645	600
16"x 14"	334	902	902	905	598	405	360	77	645	600
16"	385	902	902	905	680	415	413	77	645	600
18"x 16"	385	978	978	981	680	450	413	77	645	600
18"	436	978	978	981	765	460	460	77	645	600
20"x 18"	436	1054	1054	1060	765	495	460	77	645	600
20"	487	1054	1054	1060	848	495	497	87	753	600
24"x 20"	487	1232	1232	1241	848	535	497	87	753	600
22"	538	1143	1143	1153	935	545	555	87	753	600
24"	589	1232	1232	1241	1000	585	590	87	753	600
30"x 24"	589	1524	1524	1537	1000	625	590	87	753	600
26"	633	1308	1308	1321	1090	650	632	87	753	600
28"	684	1397	1397	1410	1165	680	688	95	785	600
30"x 28"	684	1651	1651	1667	1165	720	688	95	785	600
30"	735	1524	1524	1537	1255	725	735	95	785	600
36"x 30"	735	1880	1880	1895	1255	765	735	95	785	600
32"	779	1651	1651	1667	1335	765	780	95	785	600
34"	830	1778	1778	1794	1410	810	835	191	568	600
36"	874	1880	1880	1895	1490	865	880	206	590	600
38"	925	♣	♣	♣	1570	910	925	206	590	600
40"	976	♣	♣	♣	1655	950	970	215	674	800
42"	1020	♣	♣	♣	1725	1005	1020	215	674	800
44"	1070	♣	♣	♣	1820	1045	1060	170	726	800
46"	1116	♣	♣	♣	1900	1085	1110	170	726	800
48"	1166	♣	♣	♣	2000	1150	1152	170	726	800
56"	1360	♣	♣	♣	2310	1320	1336	♣	♣	♣
60"	1458	♣	♣	♣	2500	1400	1435	♣	♣	♣

♣ De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 600- (PN100)

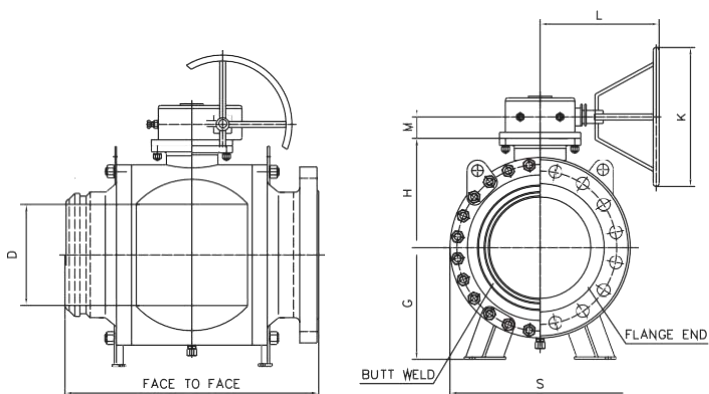
mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	241	241	241	130	75	88	28	143	160
2"x 1.5"	38	292	292	295	130	75	88	28	143	160
2"	49	292	292	295	155	87.5	117	32	162	240
3"x 2"	49	356	356	359	155	87.5	117	32	162	240
3"	74	356	356	359	205	116	150.5	35	182	280
4' x 3"	74	432	432	435	205	116	150.5	35	182	280
4"	100	432	432	435	245	137	171	35	182	280
6"x 4"	100	559	559	562	245	137	171	35	182	280
6"	150	559	559	562	315	220	216	54	336	350
8"x 6"	150	660	660	664	315	240	216	54	336	350
8"	201	660	660	664	388	255	252	54	500	460
10"x8"	201	787	787	791	388	280	252	54	500	460
10"	252	787	787	791	475	310	304	54	500	600
12"x10"	252	838	838	841	475	340	304	54	500	600
12"	303	838	838	841	552	345	342	77	645	600
14"x12"	303	889	889	892	552	380	342	77	645	600
14"	334	889	889	892	605	375	366	77	645	600
16"x14"	334	991	991	994	605	410	366	77	645	600
16"	385	991	991	994	693	420	421.5	77	645	600
18"x16"	385	1092	1092	1095	693	460	421.5	77	645	600
18"	436	1092	1092	1095	776	465	470	77	645	600
20"x18"	436	1194	1194	1200	776	500	470	77	645	600
20"	487	1194	1194	1200	860	505	513.5	87	753	600
24"x20"	487	1397	1397	1407	860	550	513.5	87	753	600
22"	538	1295	1295	1305	945	550	565	87	753	600
24"	589	1397	1397	1407	1024	590	609	87	753	600
30"x24"	589	1651	1651	1664	1024	655	609	87	753	600
26"	633	1448	1448	1461	1105	660	650	87	753	600
28"	684	1549	1549	1562	1185	690	698.5	95	785	600
30"x28"	684	1778	1778	1794	1185	730	698.5	95	785	600
30"	735	1651	1651	1664	1275	735	745	95	785	600
36"x30"	735	2083	2083	2099	1275	770	745	95	785	600
32"	779	1778	1778	1794	1352	775	797	95	785	600
34"	830	1930	1930	1946	1438	825	841	191	568	600
36"	874	2083	2083	2099	1514	870	885	206	590	600
38"	925	♣	1840	♣	1600	920	928.5	206	590	600
40"	976	♣	1920	♣	1680	960	969.5	215	674	800
42"	1020	♣	2000	♣	1761	1010	1023	215	674	800
44"	1070	♣	2080	♣	1845	1050	1065	215	674	800
46"	1116	♣	2160	♣	1925	1100	1116	170	726	800
48"	1166	♣	2260	♣	2010	1155	1159.5	170	726	800
56"	1360	♣	2610	♣	2350	1325	1343	♣	♣	♣
60"	1458	♣	2800	♣	2524	1415	1443	♣	♣	♣

♣ De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



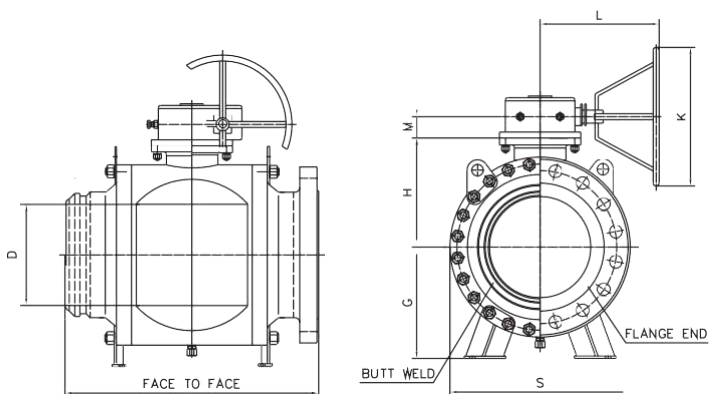
Clasa 900- (PN150) mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	305	305	305	150	83	110	32	162	240
2"x 1.5"	38	369	369	371	150	83	110	32	162	240
2"	49	369	369	371	175	100	134	35	182	280
3"x 2"	49	381	381	384	175	100	134	35	182	280
3"	74	381	381	384	210	118.5	152	35	182	280
4"x 3"	74	457	457	460	210	118.5	152	35	182	280
4"	100	457	457	460	255	140.5	189	54	336	350
6"x 4"	100	610	610	613	255	140.5	189	54	336	350
6"	150	610	610	613	327	220	220	54	500	460
8"x 6"	150	737	737	740	327	240	220	54	500	460
8"	201	737	737	740	414	270	272	54	500	600
10"x8"	201	838	838	841	414	295	272	54	500	600
10"	252	838	838	841	501	320	315	54	645	600
12"x10"	252	965	965	968	501	350	315	54	645	600
12"	303	965	965	968	589	370	368	77	645	600
14"x12"	303	1029	1029	1038	589	400	368	77	645	600
14"	332	1029	1029	1038	630	390	387	77	645	600
16"x14"	332	1130	1130	1140	630	425	387	77	645	600
16"	373	1130	1130	1140	730	440	446	87	753	600
18"x16"	373	1219	1219	1132	730	475	446	87	753	600
18"	423	1219	1219	1132	818	485	500	87	753	600
20"x18"	423	1321	1321	1334	818	520	500	87	753	600
20"	471	1321	1321	1334	910	530	550	87	753	600
24"x20"	471	1549	1549	1568	910	580	550	87	753	600
24"	570	1549	1549	1568	1089	630	649	95	785	600
30"x24"	570	♣	1880	1920	1089	690	649	95	785	600
26"	617	♣	1651	1673	1220	750	710	95	785	600
28"	665	♣	♣	♣	1300	790	755	191	568	600
32"x28"	665	♣	♣	♣	1300	840	755	191	568	600
30"	712	♣	1880	1902	1365	850	815	206	590	600
36"x30"	712	♣	2286	2315	1365	900	815	206	590	600
32"	760	♣	♣	♣	1465	910	850	215	674	800
34"	808	♣	♣	♣	1555	960	885	215	674	800
36"	855	♣	2286	2315	1650	1020	970	215	674	800
40"	956	♣	♣	♣	1815	1120	1060	170	726	800
42"	1006	♣	♣	♣	1915	1200	1110	♣	♣	♣
48"	1149	♣	♣	♣	2160	1330	1250	♣	♣	♣

♣ De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 1500- (PN250)

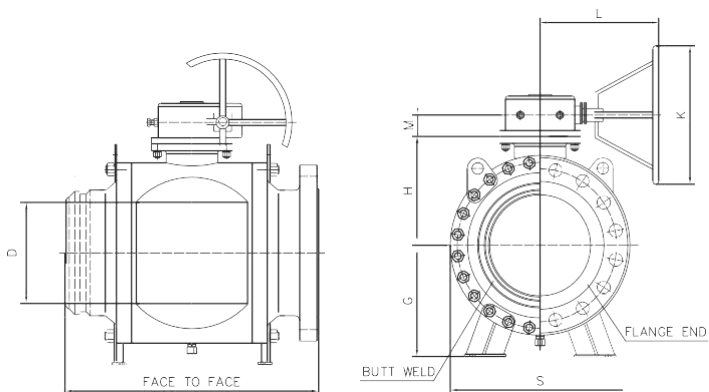
mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	305	305	305	150	83	110	32	162	240
2"x 1.5"	38	369	369	371	150	83	110	32	162	240
2"	49	369	369	371	175	100	134	35	182	280
3"x 2"	49	470	470	473	175	100	134	35	182	280
3"	74	470	470	473	224	126.5	166.5	54	336	350
4"x 3"	74	546	546	549	224	126.5	166.5	54	336	350
4"	100	546	546	549	280	153	199.5	54	336	350
6"x 4"	100	705	705	711	280	153	199.5	54	336	350
6"	144	705	705	711	366	245	246.5	54	500	600
8"x 6"	144	832	832	841	366	270	246.5	54	500	600
8"	192	832	832	841	473	300	300.5	77	645	600
10"x8"	192	991	991	1000	473	330	300.5	77	645	600
10"	239	991	991	1000	580	360	363	77	645	600
12"x10"	239	1130	1130	1146	580	395	363	77	645	600
12"	287	1130	1130	1146	690	420	425.5	87	753	600
14"x12"	287	1257	1257	1276	690	460	425.5	87	753	600
14"	315	1257	1257	1276	750	450	465	87	753	600
16"x14"	315	1384	1384	1407	750	490	465	87	753	600
16"	360	1384	1384	1407	855	510	521.5	87	753	600
18"x16"	360	♣	1537	1559	855	545	521.5	87	753	600
18"	406	♣	1537	1559	1020	635	642	87	753	600
20"x18"	406	♣	1664	1686	1020	695	642	87	753	600
20"	454	♣	1664	1686	1132	690	703	95	785	600
24"x20"	454	♣	♣	1972	1132	740	703	95	785	600
24"	546	♣	♣	1972	1380	820	832	206	590	600
30"x24"	546	♣	♣	♣	1380	860	832	206	590	600
26"	594	1943	♣	♣	1458	860	878	215	674	800
28"	641	♣	♣	♣	1580	920	935	215	674	800
32"x28"	641	♣	♣	♣	1580	980	935	215	674	800
30"	686	♣	♣	♣	1690	980	995	170	726	800
36"x30"	686	♣	♣	♣	1690	1040	995	170	726	800
32"	730	♣	♣	♣	1800	1030	1045	♣	♣	♣
34"	775	♣	♣	♣	1920	1100	1123	♣	♣	♣
36"	819	♣	♣	♣	2030	1145	1165	♣	♣	♣

♣ De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 2500- (PN420)

mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	384	384	384	172	99	134	35	182	280
2"x 1.5"	38	451	451	454	172	99	134	35	182	280
2"	42	451	451	454	190	108.5	162	40	214	320
3"x 2"	42	578	578	584	190	108.5	162	40	214	320
3"	62	578	578	584	260	149	201.5	54	500	460
4"x 3"	62	673	673	683	260	149	201.5	54	500	460
4"	87	673	673	683	330	192.5	246	54	500	460
6"x 4"	87	914	914	927	330	192.5	246	54	500	460
6"	131	914	914	927	475	300	321	77	645	600
8"x 6"	131	1022	1022	1038	475	300	321	77	645	600
8"	179	1022	1022	1038	635	387.5	411	77	645	600
10"x 8"	179	1270	1270	1292	635	387.5	411	77	645	600
10"	223	1270	1270	1292	775	470	475.5	87	753	600
12"x 10"	223	1422	1422	1445	775	470	475.5	87	753	600
12"	265	1422	1422	1445	900	530	560	95	785	600
14"x 12"	265	♣	♣	♣	900	530	560	95	785	600
14"	292	♣	♣	♣	1005	575	615.5	95	785	600
16"x 14"	292	♣	♣	♣	1005	575	615.5	95	785	600
16"	333	♣	♣	♣	1200	675	731	206	590	600
20"x 16"	333	♣	♣	♣	1200	675	731	206	590	600



De confirmat după plasarea comenzii



* Consultați un reprezentant BTL pentru informații specifice

	CLASA 150		CLASA 300		CLASA 600		CLASA 900		CLASA 1500		CLASA 2500	
NPS	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO
2	40	F07	70	F07	120	F10	320	F12	500	F12	500	F14
3	70	F07	130	F07	260	F12	450	F12	700	F12	1300	F25
4	140	F10	250	F10	430	F12	700	F16	1200	F16	2400	F25
6	320	F12	600	F12	950	F16	1600	F16	3000	F16	6000	F25
8	600	F16	1000	F16	1700	F16	3000	F25	5300	F25	12000	F30
10	1000	F16	1800	F16	3000	F25	5300	F25	9000	F25	23000	F35
12	1800	F25	2800	F25	5000	F25	8500	F25	16000	F25	35000	F40
14	2200	F25	3600	F25	6300	F25	10000	F30	20000	F30	*	*
16	3000	F25	5000	F25	9000	F25	15000	F30	28000	F30	*	*
18	4500	F25	6500	F25	13000	F30	20000	F35	*	*	*	*
20	5500	F25	8800	F25	17000	F30	28000	F35	*	*	*	*
24	8800	F25	14000	F30	28000	F35	47000	F40	*	*	*	*
26	10000	F32	17000	F30	33000	F35	*	*	*	*	*	*
28	12000	F32	21000	F35	42000	F40	*	*	*	*	*	*
30	14000	F32	26000	F35	50000	F40	*	*	*	*	*	*
32	17000	F32	31000	F35	60000	F40	*	*	*	*	*	*
34	20000	F35	37000	F40	70000	F40	*	*	*	*	*	*
36	23000	F35	43000	F40	82000	F48	*	*	*	*	*	*
38	26000	F35	49000	F40	95000	F48	*	*	*	*	*	*
40	30000	F35	56000	F40	108000	F48	*	*	*	*	*	*
42	35000	F40	63000	F40	130000	F60	*	*	*	*	*	*
46	43000	F40	82000	F48	170000	F60	*	*	*	*	*	*
48	49000	F40	90000	F48	190000	F60	*	*	*	*	*	*
56	70000	F48	135000	F60	300000	F70	*	*	*	*	*	*
60	90000	F48	170000	F60	370000	F80	*	*	*	*	*	*

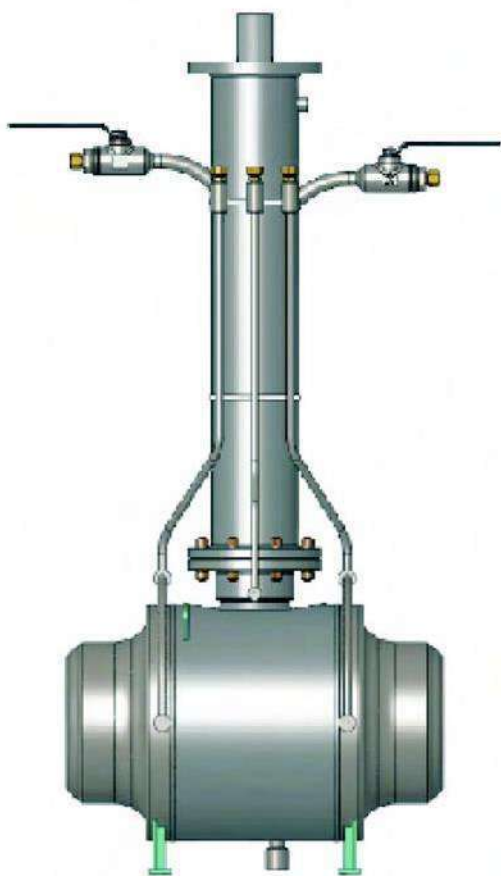
* Consultați BTL pentru moment de torsiune la anumite presiuni

* Torsiunile sunt date pentru robinete cu scaune moi;

* Nu este inclus nici un factor de siguranță.

Sisteme de acoperire externe specifice clienților, extensii ale tije pentru utilizare subterană, fiind disponibile prelungiri ale conductei. La momentul comenzii vă rugăm să specificați lungimea prelungirii conductei precum și lungimea extensiei tije.

EXTENSII pentru SERVICIUL SUBTERAN



Schițe tridimensionale

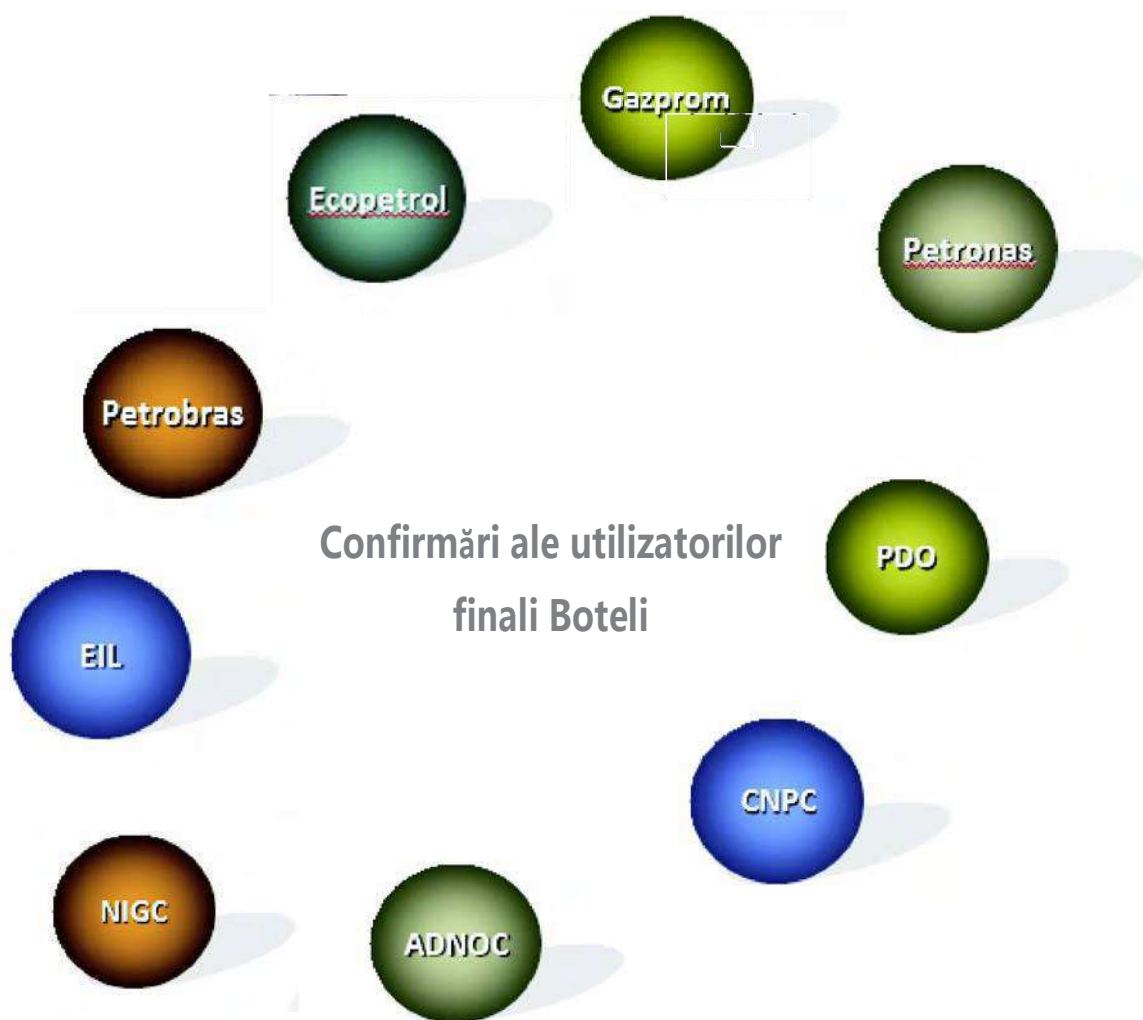


48" 600# robinete cu bilă complet sudate



Texas





Boteli Valve Group Co.,LTD

Tel: 0086 577 6737 6662 _____

Buletin Nr. BTL-B7001 – ediția 1/2017

Type	Operating time for 90° in seconds		Torque range ¹⁾		Run torque ²⁾	Valve attachment		Valve shaft			Handwheel		Weight
	50 Hz	60 Hz	Min. [Nm]	Max. [Nm]	Max. [Nm]	Standard EN ISO 5211	Option EN ISO 5211	Cylindrical max. [mm]	Square max. [mm]	Two-flat max. [mm]	Ø mm	Turns for 90°	approx. [kg]
SQEx 05.2	4	3	50	150	52.5	F05/F07	F10	25.4	22	22	160	11	29 ³⁾ 34 ⁴⁾
	5.6	4.5										16	
	8	6										11	
	11	9										16	
	16	12										11	
	22	17										16	
	32	25										11	
	63	50										11	
SQEx 07.2	4	3	100	300	105	F05/F07	F10	25.4	22	22	160	11	29 ³⁾ 34 ⁴⁾
	5.6	4.5										16	
	8	6										11	
	11	9										16	
	16	12										11	
	22	17										16	
	32	25										11	
	63	50										11	
SQEx 10.2	8	6	200	450	157.5	F10	F12	38	30	27	200	11	34 ³⁾ 38 ⁴⁾
	11	9		600	210							15	
	16	12										11	
	22	17										15	
	32	25										11	
	45	35										15	
	63	50										11	
	SQEx 12.2	11										9	
16		12	1200	420	22								
22		17			30								
32		25			22								
45		35			30								
63		50			22								
90		75			30								
125		108			22								
SQEx 14.2	24	20	800	1800	630	F14	F16	60	46	46	200	70	51 ³⁾ 62 ⁴⁾
	36	30		2400	840							51	
	48	40										70	
	72	60										51	
	100	85										70	

General information

Part-turn actuators AUMA NORM require external controls.

For sizes SQEx 05.2 – SQEx 14.2, AUMA offers AMExC or ACExC actuator controls. These can also easily be mounted to the actuator at a later date.

Notes on table

1) Torque range	The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Run torque	Maximum permissible torque for 15 min. running time.
3) Weight	Indicated weight includes AUMA NORM part-turn actuator with 3-phase AC motor, standard electrical connection, unbored coupling and handwheel
4) Weight with base and lever	Indicated weight includes AUMA NORM part-turn actuator with 3-phase AC motor, standard electrical connection, and handwheel, including base and lever

Features and functions

Explosion protection	Standard:	II2G Ex de IIC T4 or T3 Gb II2G c IIC T4 or T3 II2D Ex tb IIIC T130 °C or T190 °C Db IP6x
	Option:	II2G Ex d IIC T4 or T3 Gb
EC type test certificate	DEKRA 13 ATEX 0016 X	
Type of duty	Short-time duty S2 - 15 min, classes A and B according to EN 15714-2	
	For nominal voltage and +40 °C ambient temperature and at run torque load.	
Motors	3-phase AC asynchronous motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	

Mains voltage, mains frequency	Standard voltages:	
	3-phase AC current Voltages/frequencies	
	Volt	380 400 415 440 460 480 500
	Hz	50 50 50 60 60 60 50
	Special voltages:	
	3-phase AC current - Voltages/frequencies	
	Volt	220 230 240 525 575 600 660 690
	Hz	50 50 50 50 60 60 50 50
	Further voltages on request	
	Permissible variation of mains voltage: $\pm 10\%$	
Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized
Motor protection	Standard:	PTC thermistors (according to DIN 44082) PTC thermistors additionally require a suitable tripping device in the controls.
	Option:	Thermoswitches (NC) According to EN 60079-14, a thermal overcurrent protection device (e.g. motor protection switch) must be installed for explosion-proof actuators in addition to the thermoswitches.
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC or 380 – 480 V AC
	Power:	12.5 W
Swing angle	Standard:	Adjustable between 75° and < 105°
	Options:	15° to < 45°, 45° bis < 75°, 105° to < 135°, 135° to < 165°, 165° to < 195°, 195° to < 225°
Self-locking	Yes, part-turn actuators are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation	
	Options:	Handwheel lockable
		Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Standard:	AUMA Ex plug/socket connector with screw-type terminals (KP), max. 38 control terminals / max. power supply 525 V AC
	Options:	AUMA Ex plug/socket connector with terminal blocks (KES) AUMA Ex plug/socket connector (KT); screw-type motor terminals; push-in type control terminals
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Terminal plan	TPA 00R2AA-101-000 (basic version in combination with PTC thermistors)	
	TPA 00R2AA-101-000 (basic version in combination with thermoswitches)	
Splined coupling for connection to the valve shaft	Standard:	Coupling without bore
	Options:	Machined coupling with bore and keyway, square bore or bore with two-flats according to EN ISO 5211
Valve attachment	Dimensions according to EN ISO 5211 without spigot	

With base and lever (option)

Swing lever	Made of spheroidal cast iron with two or three bores for fixing a lever arrangement. Considering the installation conditions, the lever may be mounted to the output shaft in any desired position.
Ball joints (option)	Two ball joints matching the lever, including lock nuts and two welding nuts, suitable for pipe according to dimension sheet
Fixing	Base with four holes for fastening screws

Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED	
	Standard:	Single switches (1 NC and 1 NO) silver contact (Ag) for each end position, not galvanically isolated
	Options:	Tandem switches (2 NC and 2 NO) for each end position, switches galvanically isolated Triple switches (3 NC and 3 NO) for each end position, switches galvanically isolated Intermediate position switch (DUO limit switching), adjustable for each direction of operation Gold plated contacts (Au), recommended for low voltage actuator controls
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switches (1 NC and 1 NO) silver contact (Ag) for each direction, not galvanically isolated
	Options:	Tandem switches (2 NC and 2 NO) for each direction, switches galvanically isolated Gold plated contacts (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20mA (electronic position transmitter)	
Mechanical position indicator	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication	Blinker transmitter	
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC
	Options:	24 – 48 V AC/DC or 380 – 400 V AC
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with AMExC or ACExC actuator controls.	

Electronic control unit (only in combination with ACExC actuator controls)	
Non-intrusive setting (option)	Magnetic limit and torque transmitter (MWG)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Mechanical position indicator	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED
Running indication	Blinking signal via controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

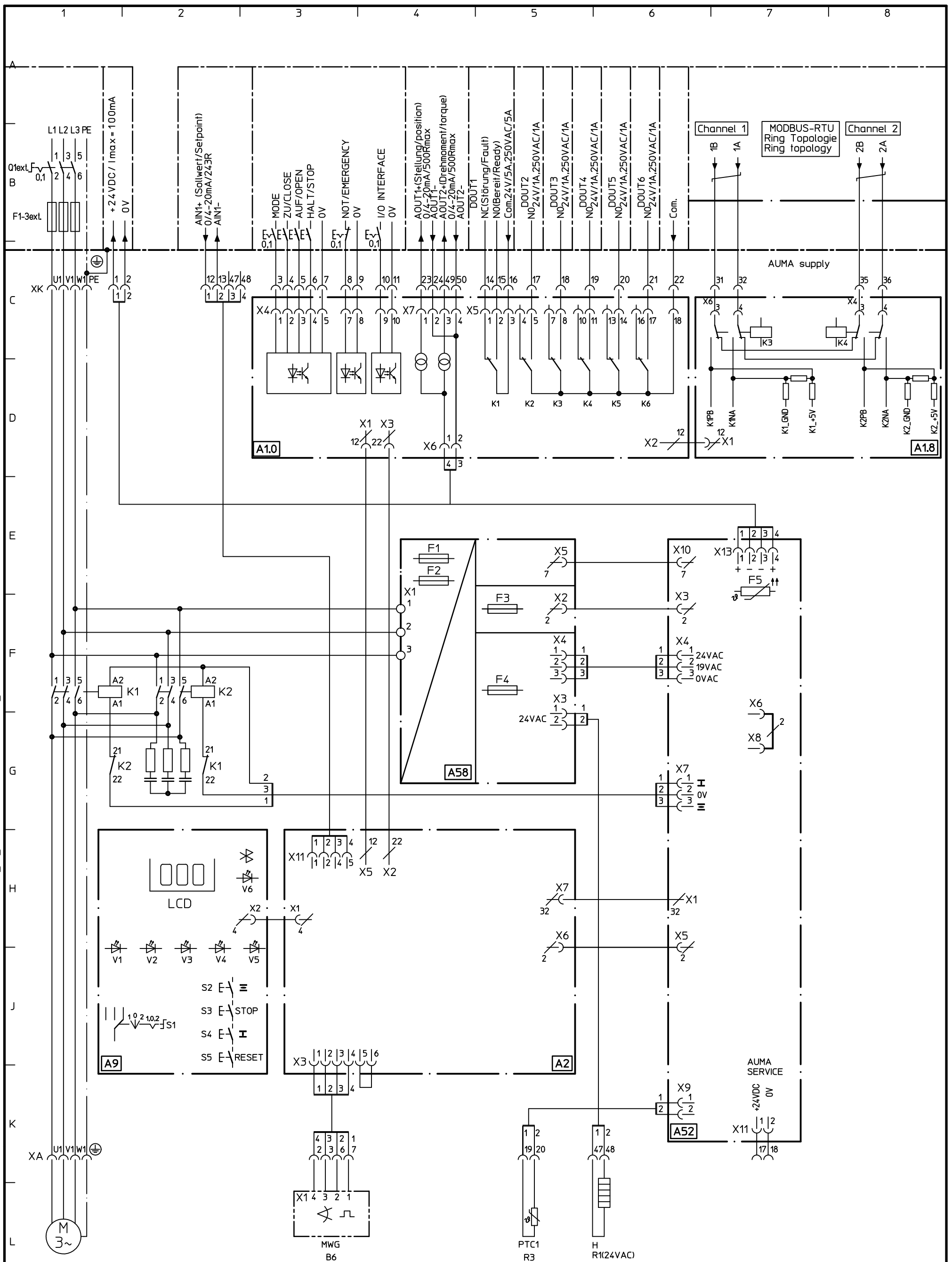
Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level	
	> 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +60 °C
	Options:	–40 °C to +60 °C
		–60 °C to +60 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection according to EN 60529	IP68 with AUMA 3-phase AC motor	
	Terminal compartment additionally sealed against interior of actuator (double sealed)	
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Duration of continuous immersion in water: Max. 96 hours • Up to 10 operations during continuous immersion	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz (AUMA NORM), 1g, 10 to 200 Hz (for actuators with AMExC or ACExC integral controls) Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. Valid for part-turn actuators in version AUMA NORM and in version with integral actuator controls, each with AUMA plug/socket connector. Not valid in combination with gearboxes.	

Technical data Part-turn actuators for open-close duty with 3-phase AC motors

Corrosion protection	Standard:	KS	Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Options:	KX	Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
		KX-G	Same as KX, however aluminium-free version (outer parts)
Coating	Double layer powder coating Two-component iron-mica combination		
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)	
	Option:	Available colours on request	
Lifetime	AUMA part-turn actuators meet or exceed the lifetime requirements of EN 15714-2. Detailed information can be provided on request.		

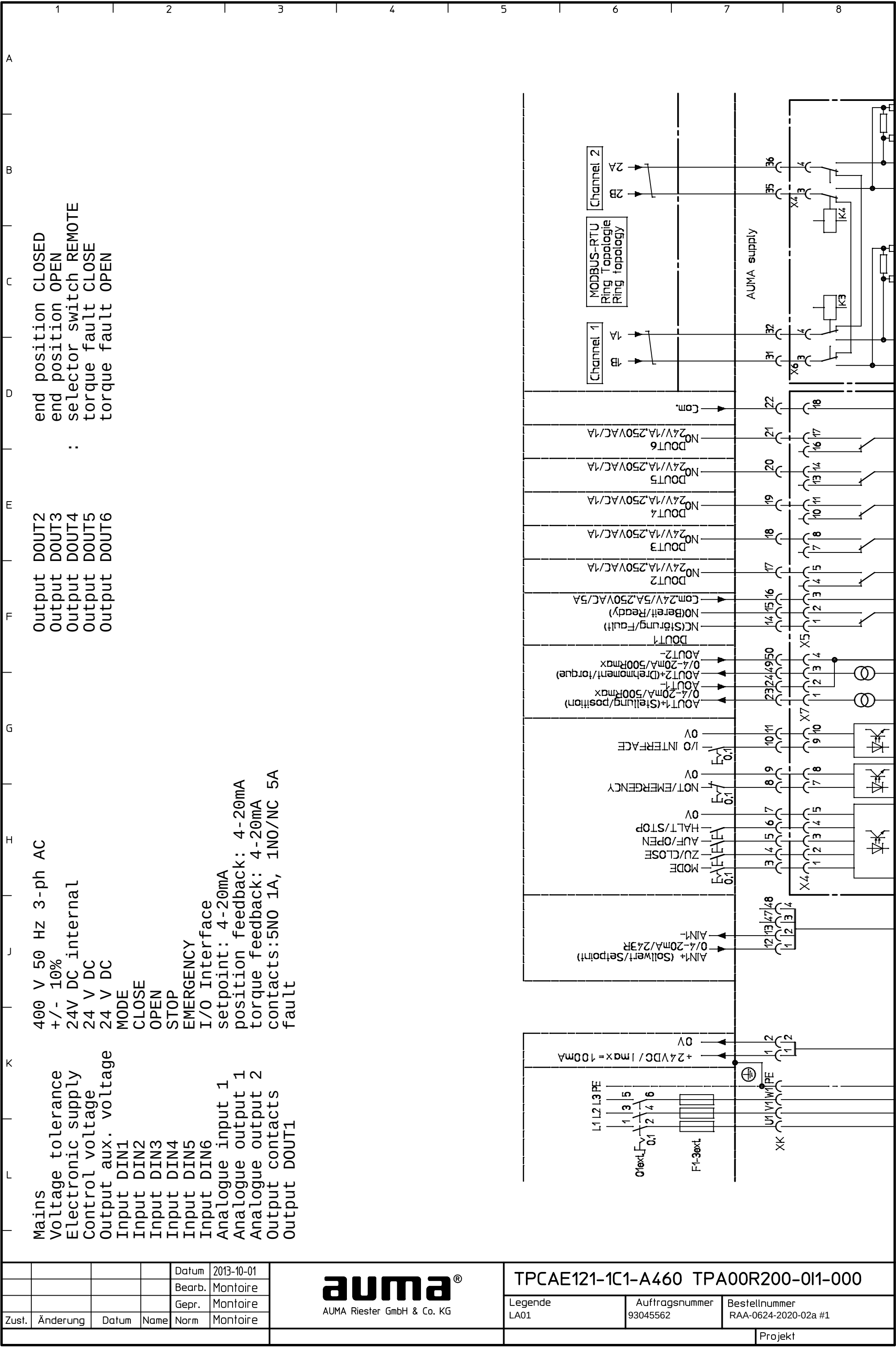
Further information	
EU Directives	ATEX Directive: (2014/34/EU) Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for the automation of valves in the oil and gas industry Electrical data Part-turn actuators SQEx 05.2 – SQEx 14.2 with 3-phase AC motors Dimensions Part-turn actuators SQEx 05.2 – SQEx 14.2 Technical data Electronic position transmitter/potentiometer Technical data for switches

Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.



For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

				Datum	2013-10-01	auma® AUMA Riester GmbH & Co. KG		TPCAE121-1C1-A460 TPA00R200-011-000					
				Bearb.	Montoire			Legende LA01	Auftragsnummer 93045562	Bestellnummer RAA-0624-2020-02a #1			
				Gepr.	Montoire								
Zust.	Änderung	Datum	Name	Norm	Montoire								
						Projekt							

[illegible][illegible]

Technical data Actuator controls

General information

ACExC 01.2 actuator controls for controlling multi-turn actuators of the SAEx/SAREx .2 type range and part-turn actuators of the SQEx/SQREx .2 type range with Modbus RTU interface.

Features and functions

Explosion protection	Standard: II2G Ex de IIC T4 or T3 Gb II2D Ex tb IIIC T130 °C or T190 °C Db IP6x Option: II2G Ex d IIC T4 or T3 Gb																																																																																														
EC type test certificate	In combination with SAEx: DEKRA 11ATEX0008 X In combination with SQEx: DEKRA 13ATEX00016 X																																																																																														
Power supply	Standard voltages AC: <table><tr><th colspan="12">3-phase AC current Voltages/frequencies</th></tr><tr><td>Volt</td><td>220</td><td>230</td><td>380</td><td>380</td><td>400</td><td>400</td><td>415</td><td>440</td><td>460</td><td>480</td><td>500</td></tr><tr><td>Hz</td><td>60</td><td>50</td><td>50</td><td>60</td><td>50</td><td>60</td><td>50</td><td>60</td><td>60</td><td>60</td><td>50</td></tr></table> <table><tr><th colspan="4">1-phase AC current Voltages/frequencies</th></tr><tr><td>Volt</td><td>110 – 120</td><td>110 – 120</td><td>220 – 240</td><td>220 – 240</td></tr><tr><td>Hz</td><td>50</td><td>60</td><td>50</td><td>60</td></tr></table> Special voltages AC: <table><tr><th colspan="8">3-phase AC current Voltages/frequencies</th><th colspan="2">1-phase AC current Voltages/frequencies</th></tr><tr><td>Volt</td><td>220</td><td>440</td><td>525</td><td>575</td><td>600</td><td>660</td><td>690</td><td>Volt</td><td>208</td></tr><tr><td>Hz</td><td>50</td><td>50</td><td>50</td><td>60</td><td>60</td><td>50</td><td>50</td><td>Hz</td><td>60</td></tr></table> Permissible variation of mains voltage: ±10 % Permissible variation of mains voltage: ±30 % (option) Permissible variation of mains frequency: ±5 % Special voltages DC: (on request) <table><tr><th colspan="7">DC current Voltages</th></tr><tr><td>Volt</td><td>24</td><td>48</td><td>60</td><td>110</td><td>125</td><td>220</td></tr></table> Permissible voltage deviation: (on request)	3-phase AC current Voltages/frequencies												Volt	220	230	380	380	400	400	415	440	460	480	500	Hz	60	50	50	60	50	60	50	60	60	60	50	1-phase AC current Voltages/frequencies				Volt	110 – 120	110 – 120	220 – 240	220 – 240	Hz	50	60	50	60	3-phase AC current Voltages/frequencies								1-phase AC current Voltages/frequencies		Volt	220	440	525	575	600	660	690	Volt	208	Hz	50	50	50	60	60	50	50	Hz	60	DC current Voltages							Volt	24	48	60	110	125	220
3-phase AC current Voltages/frequencies																																																																																															
Volt	220	230	380	380	400	400	415	440	460	480	500																																																																																				
Hz	60	50	50	60	50	60	50	60	60	60	50																																																																																				
1-phase AC current Voltages/frequencies																																																																																															
Volt	110 – 120	110 – 120	220 – 240	220 – 240																																																																																											
Hz	50	60	50	60																																																																																											
3-phase AC current Voltages/frequencies								1-phase AC current Voltages/frequencies																																																																																							
Volt	220	440	525	575	600	660	690	Volt	208																																																																																						
Hz	50	50	50	60	60	50	50	Hz	60																																																																																						
DC current Voltages																																																																																															
Volt	24	48	60	110	125	220																																																																																									
External supply of the electronics (option)	24 V DC: +20 %/–15 %, Current consumption: Basic version approx. 250 mA, with options up to 500 mA External power supply must have reinforced insulation against mains voltage in accordance with IEC 61010-1 and may only be supplied by a circuit limited to 150 VA in accordance with IEC 61010-1.																																																																																														
Current consumption	Current consumption of controls depending on mains voltage: For permissible variation of mains voltage of ±10 %: 100 to 120 V AC = max. 740 mA 208 to 240 V AC = max. 400 mA 380 to 500 V AC = max. 250 mA 515 to 690 V AC = max. 200 mA For permissible variation of mains voltage of ±30 %: 100 to 120 V AC = max. 1,200 mA 208 to 240 V AC = max. 750 mA 380 to 500 V AC = max. 400 mA 515 to 690 V AC = max. 400 mA																																																																																														
Overvoltage category	Category III according to IEC 60364-4-443																																																																																														
Rated power	Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator																																																																																														

Technical data Actuator controls

Switchgear	Standard: Reversing contactors (mechanically and electrically interlocked) for AUMA power classes A1/A2 Options: Reversing contactors (mechanically and electrically interlocked) for AUMA power class A3 Thyristor unit for mains voltage up to 500 V AC (recommended for modulating actuators) for AUMA power classes B1, B2 and B3 The reversing contactors are designed for a lifetime of 2 million starts. For applications requiring a high number of starts, we recommend the use of thyristor units. For the assignment of AUMA power classes, please refer to electrical data on actuator.
Control and feedback signals	Via Modbus RTU interface
Fieldbus interface with additional input signals (options)	2 free analogue inputs (0/4 – 20 mA), 4 free digital inputs - Signal transmission is made via fieldbus interface - Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - Control inputs: OPEN, STOP, CLOSE, EMERGENCY - I/O interface: Selection of control type (fieldbus interface or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for position setpoint - Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - Control inputs: OPEN, STOP, CLOSE, EMERGENCY - I/O interface: Selection of control type (fieldbus interface or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for setpoint position and 1 analogue input (0/4 – 20 mA) for actual process value
Control voltage and current consumption of optional, digital additional inputs	Standard: 24 V DC, current consumption: approx. 10 mA per input Options: 48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 115 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input All input signals must be supplied with the same potential.
Status signals	Via Modbus RTU interface
Fieldbus interface with additional output signals (options)	Additional, binary output signals (only available in combination with additional input signals (option)) 6 programmable output contacts: 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) 6 programmable output contacts: 5 potential-free change-over contacts with one common, max. 250 V AC, 1 A (resistive load) 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) 6 programmable output contacts: 6 potential-free change-over contacts without one common, max. 250 V AC, 5 A (resistive load) 6 programmable output contacts: 4 mains failure proof potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free NO contact, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) 6 programmable output contacts: 4 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), All binary output signals must be supplied with the same potential. - Analogue output signal for position feedback - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)
Voltage output	Standard: Auxiliary voltage 24 V DC: max. 100 mA for supply of control inputs, galvanically isolated from internal voltage supply. Option: Auxiliary voltage 115 V AC: max. 30 mA for supply of control inputs, galvanically isolated from internal voltage supply (Not possible in combination with PTC tripping device)

Technical data Actuator controls

Redundancy (option)	Redundant line topology with universal redundancy behaviour according to AUMA redundancy I or II Redundant loop topology in combination with SIMA Master Station • Max. number of actuators with actuator controls per redundant loop: 247 units • Max. possible cable length between the actuators equipped with controls without external repeater: 1,200 m • Max. possible total length per redundant ring: approx. 290 km • Automatic commissioning of the redundant ring by means of the SIMA Master Station
FO cable connection (option)	• Connector types: FSMA connector • FO cables - Multi-mode: 62,5(50)/125 µm, range approx. 2.6 km (max. 3.0 dB/km) • Topologies: Line and star • Baud rate: up to 115.2 kbit/s • Optical budget: - Multi-mode: 8.0 dB for 62.5 µm/4.0 dB for 50 µm • Wave length: 850 nm • FO coupler by Bartec required at DCS, reference addresses: AUMA or www.bartec.de
Local controls	Standard: • Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons: OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • 6 indication lights: - End positions and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated Option: • Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments, supports the SPP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)
Application functions	Standard: • Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times: can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Any 8 intermediate positions between 0 and 100 %, reaction and signal behaviour programmable • Running indication blinking: can be set • Positioner: - Position setpoint via fieldbus interface - Automatic adaptation of dead band (adaptive behaviour selectable) - Change-over between OPEN-CLOSE control and setpoint control via fieldbus Options: • PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs and Modbus for process setpoint and actual process value • Multipoint valve: Up to 16 positions, signals (pulse or edge) • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set

Technical data Actuator controls

Safety functions	Standard:	- EMERGENCY operation (programmable behaviour) - Via additional input (option, low active) or via fieldbus interface - Reaction can be selected: Stop, run to end position CLOSED, run to end position OPEN, run to intermediate position - Torque monitoring can be by-passed during EMERGENCY operation - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	- Release of local controls via fieldbus interface: Thus, actuator operation can be enabled or disabled via push buttons on local controls. - Local STOP: - The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) - Interlock for main/by-pass valve: Enabling the operation commands OPEN or CLOSE via fieldbus interface - PVST (Partial Valve Stroke Test): programmable to check the function of both actuator and actuator controls: Direction, stroke, operation time, reversing time
Monitoring function		- Valve overload protection: adjustable, results in switching off and generates fault signal - Motor temperature monitoring (thermal monitoring): results in switching off and generates fault indication - Monitoring the heater within actuator: generates warning signal - Monitoring of permissible on-time and number of starts: adjustable, generates warning signal - Operation time monitoring: adjustable, generates warning signal - Phase failure monitoring: results in switching off and generates fault signal - Automatic correction of rotation direction upon wrong phase sequence (3-ph AC current)
Diagnostic function		- Electronic device ID with order and product data - Logging of operating data: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings - Time-stamped event report with history for setting, operation and faults - Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" - Torque characteristics (for version with MWG in actuator): 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately. - Torque characteristics stored can be shown on the display.
Motor protection evaluation	Standard:	PTC tripping device in combination with PTC thermistors within actuator motor
	Option:	Thermal overload relay in controls combined with thermoswitches within actuator
Overvoltage protection (option)		Protection of the actuator and control electronics against overvoltages on the fieldbus cables of up to 4 kV
Electrical connection	Standard:	AUMA Ex plug/socket connector with screw-type terminals (KP), max. 38 control terminals / max. supply voltage 525 V AC
	Options:	- AUMA Ex plug/socket connector with terminal blocks (KES), increased safety Ex e - AUMA Ex plug/socket connector with terminal blocks (KES), flameproof enclosure Ex d - AUMA Ex plug/socket connector (KT); screw-type motor terminals; push-in type control terminals
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Wiring diagram (basic version)		TPCAC000-1A1-A410 TPA00R2AA-0A1-000

Further options for version with MWG in actuator

Setting of limit and torque switching via local controls

Torque feedback signal	Via fieldbus interface Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω) Option, only possible in combination with output contacts.
Wiring diagram (basic version)	TPCAC000-1A1-A410 TPA00R200-0I1-000

Setting/programming the Modbus RTU interface

Setting the Modbus RTU interface	Baud rate, parity and Modbus address are set via the display of actuator controls
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Technical data Actuator controls

General data of the Modbus RTU interface		
Communication protocol	Modbus RTU according to IEC 61158 and IEC 61784	
Network topology	- Line (fieldbus) structure. When using repeaters, tree structures can also be implemented. - Coupling and uncoupling of devices during operation without affecting other devices is possible.	
Transmission medium	Twisted, screened copper cable according to IEC 61158	
Modbus RTU interface	EIA-485 (RS-485)	
Transmission rate/cable length	Redundant line topology:	
	Baud rate (kbit/s)	Max. cable length (segment length) without repeater
	9.6 – 115.2	1,200 m
	Possible cable length with repeater (total network cable length)	
	Approx. 10 km	
	Redundant loop topology:	
	Baud rate (kbit/s)	Max. cable length between actuators (without repeater)
	9.6 – 115.2	1,200 m
	Max. possible cable length of redundant loop	
	Approx. 290 km	
Device types	Modbus slave, e.g. devices with digital and/or analogue inputs/outputs such as actuators, sensors	
Number of devices	32 devices without repeater, with repeater expandable to 247	
Fieldbus access	Polling between master and slaves (query response).	
Supported Modbus functions (services)	01	Read Coil Status
	02	Read Input Status
	03	Read Holding Registers
	04	Read Input Registers
	05	Force Single Coil
	15 (0FHex)	Force Multiple Coils
	06	Preset Single Register
	16 (10Hex)	Preset Multiple Registers
	17 (11Hex)	Report Slave ID
	08	Diagnostics:
		00 00 Loopback 00 10 (0AHex) Clear Counters and Diagnostic Register 00 11 (0BHex) Return Bus Message Count 00 12 (0CHex) Return Bus Communication Error Count 00 13 (0DHex) Return Bus Exception Error Count 00 14 (0EHex) Return Slave Message Count 00 15 (0FHex) Return Slave No Response Count 00 16 (10Hex) Return Slave NAK Count 00 17 (11Hex) Return Slave Busy Count 00 18 (12Hex) Return Character Overrun Count

Commands and signals of the Modbus RTU interface	
Process representation output (command signals)	OPEN, STOP, CLOSE, position setpoint, RESET, EMERGENCY operation command, enable local controls, Interlock OPEN/CLOSE
Process representation input (feedback signals)	- End positions OPEN, CLOSED - Actual position value - Actual torque value, requires MWG in actuator - Selector switch in position LOCAL/REMOTE - Running indication (directional) - Torque switches OPEN, CLOSED - Limit switches OPEN, CLOSED - Manual operation by handwheel or via local controls - Analogue (2) and digital (4) customer inputs

Technical data Actuator controls

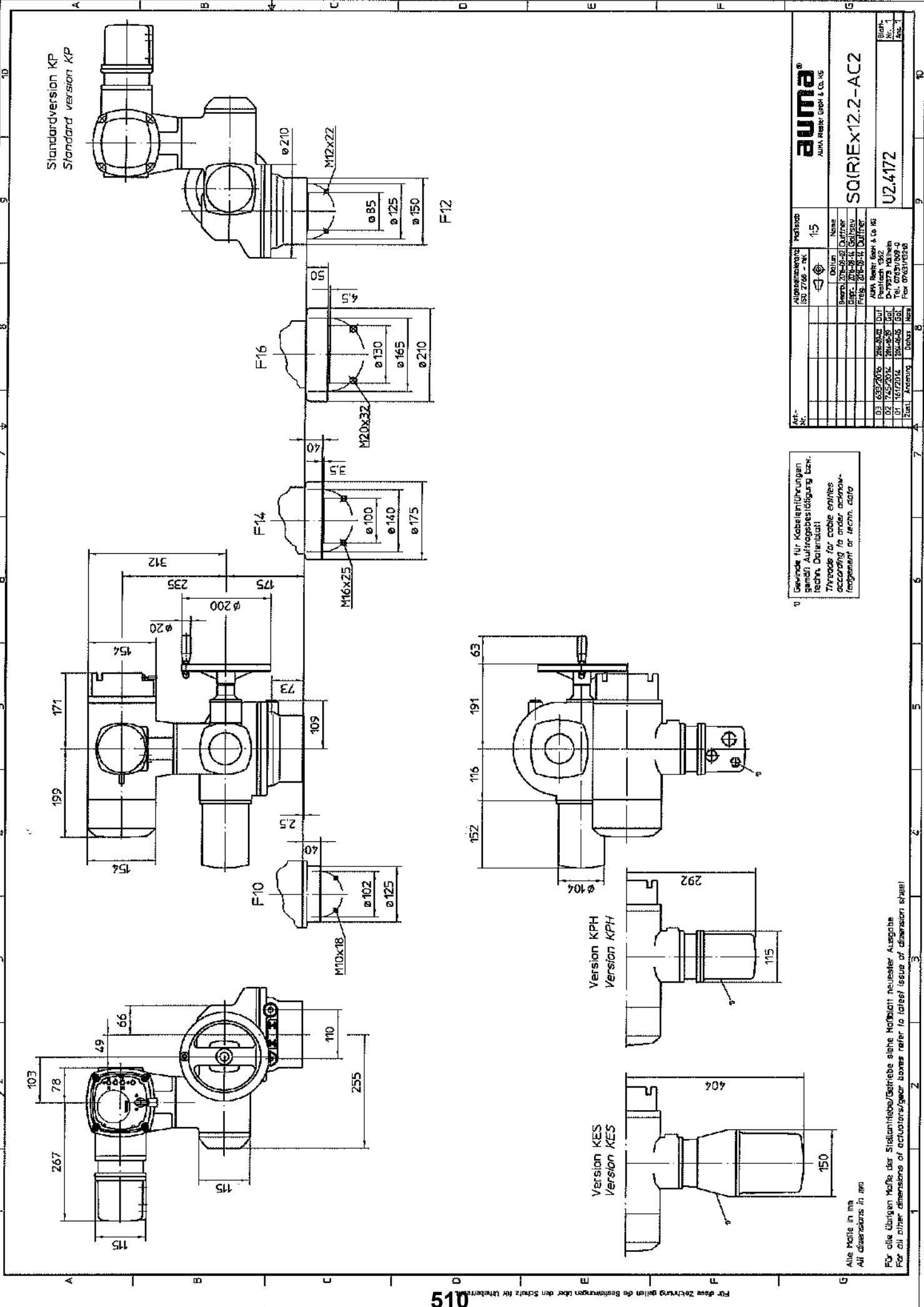
Process representation input (fault signals)	• Motor protection tripped • Torque switch tripped in mid-travel • One phase missing • Failure of analogue customer inputs
Behaviour on loss of communication	The behaviour of the actuator is programmable: • Stop in current position • Travel to end position OPEN or CLOSED • Travel to any intermediate position • Execute last received operation command

Service conditions	
Use	Indoor and outdoor use permissible
Mounting position	Any position
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level on request
Ambient temperature	Standard: -30 °C to +40 °C/+60 °C (with internal FO coupler: -25 °C) Options: -40 °C to +40 °C/+60 °C, extreme low temperature version Low temperature versions incl. heating system for connection to external power supply 230 V AC or 115 V AC or internal version 400 V AC
Humidity	Up to 100 % relative humidity across the entire permissible temperature range
Enclosure protection according to EN 60529	IP68 Terminal compartment additionally sealed against interior of actuator controls (double sealed) According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Duration of continuous immersion in water: Max. 96 hours • Up to 10 operations during continuous immersion • Modulating duty is not possible during continuous immersion.
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. (Not valid in combination with gearboxes)
Corrosion protection	Standard: KS Suitable for use in areas with high salinity, almost permanent condensation, and high pollution. Option: KX Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination
Colour	Standard: AUMA silver-grey (similar to RAL 7037) Option: Available colours on request

Accessories	
Wall bracket	For actuator controls mounting separately from the actuator, including plug/socket connector, connecting cable on request Recommended for high ambient temperatures, difficult access, or heavy vibration during service. Cable length between actuator and actuator controls is max. 100 m (Not suitable for version with potentiometer in the actuator). Instead of the potentiometer, the actuator has to be equipped with an electronic position transmitter. (MWG requires a separate data cable.)
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)

Technical data Actuator controls

Further information	
Weight	Approx. 12 kg (including Ex-plug/socket connector with screw-type terminals)
EU Directives	ATEX Directive: (2014/34/EU) Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for the automation of valves in the oil and gas industry Dimensions Multi-turn actuators with AUMATIC integral controls Dimensions Part-turn actuators with AUMATIC integral controls



10 Gewinde für Kabeldurchführungen
gemäss Auftragsbestätigung techn.
Zeichn. Download
Threads for cable entries
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PANOU DE COMANDA AUMA ACExC 01.2 MODBUS RTU

- Alimentare: Tensiuni standard: curent alternativ trifazat, 3x400V la 50 Hz, Toleranță de tensiune: $\pm 10\%$, Toleranță de frecvență: $\pm 5\%$, Alimentare electronică: Alimentare internă cu 24 V DC
- Comutator: Contactoare de inversare (blocate mecanic și electric), pentru clasa de putere A1
- Protecția motorului: monitorizarea temperaturii motorului prin dispozitivul de declanșare PTC (termistor PTC în motorul actuatorului)
- Comenzi locale: Elemente de funcționare: selector LOCAL - OFF - REMOTE (blocabil în toate cele trei poziții) Apăsăți butoanele OPEN, STOP, CLOSE, RESET, Indicatoare luminoase: 6 lumini indicatoare: Poziție finală ÎNCHIS (galben), defect cuplu ÎNCHIS (roșu), protecția motorului declanșată (roșu), defect de cuplu DESCHIS (roșu), poziția finală DESCHIS (verde), Bluetooth (albastru)
- Afișaj: Afișaj grafic pentru indicarea textului complet al informațiilor actuatorului, setare și solicitare date, Interfață de comunicație: Bluetooth
- Protecție împotriva coroziunii: KS
- Culoare: Culoare specială (culori disponibile la cerere) = RAL 7044
- Protecție carcasă: IP68 conform EN 60529 (în poziție montată)
- Protecție împotriva exploziei: Ex de IIC T4 în combinație cu conexiunea electrică versiunea "Ex e"
- Fieldbus - conform IEC 61158 și IEC 61784
- Control: DESCHIS, STOP, punct de referință poziție ÎNCHIS prin interfață fieldbus, semnale de stare: prin interfață fieldbus, Modbus RTU, redundant, topologie buclă redundantă în combinație cu SIMA Master Station, poziționar: poziționator adaptiv (setpoint de poziție prin fieldbus), fără analog / intrări digitale
- Semnale de intrare / ieșire suplimentare: Semnale de intrare: MOD, ÎNCHIS, DESCHIS, STOP, URGENTĂ, interfață I / O, intrare 0/4 - 20 mA pentru valoarea de referință a poziției Contacte de ieșire (numai în combinație cu semnalul de intrare, cod de comandă R30.02):

- 5 contacte NO fără potențial cu un singur comun (max. 250 V c.a., 1 A), 1 contact de comutare fără potențial (max. 250 V c.a., 5, A) semnal de feedback de poziție 0/4 - 20 mA
- Temperatura ambiantă: -30 ° C până la +60 ° C
- Conexiune electrică: Compartimentul terminalului este închis suplimentar dublu împotriva interiorului în versiunea "Ex e" (siguranță sporită) Conector KT Ex / priză cu suport terminal, de ex.
- Instrucțiuni de utilizare: 1 copie în limba română

7. Date tehnice

Informație În tabelele următoare sunt indicate și opțiunile, pe lângă versiunile standard. Pentru versiunea exactă trebuie consultată fișa tehnică aferentă comenzii. Fișa tehnică aferentă comenzii o găsiți pe pagina de internet <http://www.auma.com>, de unde poate fi descărcată în limbile engleză și germană (este necesară indicarea numărului de comandă).

7.1. Interfața Modbus

Setări/programarea interfeței modbus RTU

Setarea interfeței modbus RTU | Setarea baudrate, parității și adresa Modbus se realizează la display-ul AUMATIC

Comenzi și mesaje ale interfeței Modbus RTU

Imagine de proces - ieșire (comenzi de acționare)	DESCHIS, OPRIT, ÎNCHIS, valoare nominală poziție, RESET comandă de deplasare URGENTĂ, validarea panoului de comandă integrat, interlock DESCHIS/ÎNCHIS
Imagine de proces intrare (notificări)	• Poziție finală DESCHIS, ÎNCHIS • Poziție valoare efectivă • Moment de rotație valoare efectivă¹⁾ • Comutator selectiv în poziția LOCAL/DISTANȚĂ • Indicator de parcurs (depedent de direcție) • Comutator moment de rotație DESCHIS/ÎNCHIS • Limitator de cursă DESCHIS/ÎNCHIS • Acționare manuală prin roata de mână sau panou de comandă integrat • 2 intrări analogice și 4 digitale pentru clienți
Imagine de proces - intrare (mesaje de eroare)	• Protecție motor activată • Comutatorul de moment a fost acționat înaintea atingerii poziției finale • Căderea unei faze • Căderea intrărilor analogice ale clienților
Comportament la întreruperea comunicării	Reacția servomotorului este programabilă: • oprire în poziția actuală • continuarea deplasării spre poziția finală DESCHIS sau ÎNCHIS • executarea deplasării într-o poziție intermediară arbitrară • executarea ultimei comenzi de deplasare primite

1) Este necesar un traductor magnetic de poziție și cuplu (MWG) în acționarea electrică

Date generale Modbus RTU

Protocol de comunicare	Modbus RTU conform IEC 61158 și IEC 61784
Topologia rețelei	• Structură liniară (Bus). Cu repetitoare se pot realiza și structuri arborescente. • Cuplarea și decuplarea altor periferice, fără reacții negative, în timpul funcționării.
Mediu de transmisie	Conectoare de cupru ecranate, răsucite conform IEC 61158
Interfața fieldbus	EIA-485 (RS485)
Rată de transfer/lungime conductor	• Rată Baud: 9,6 – 115,2 kBit/s • Lungime maximă a conductorului (lungimea segmentului, resp. între două acționări electrice) fără repetor: 1 200 m • Posibile lungimi ale conductorului: - la topologie în linie cu repetor: cca. 10 km (întreaga lungime a conectorului în rețea) - la topologie în inel: cca. 290 km (inel redundant)
Tipuri periferice	Modbus-Slave, de ex. dispozitive cu intrări și ieșiri digitale și/sau analogice, precum actuatori, senzori

Date generale Modbus RTU	
Numărul perifericelor	32 periferice în fiecare segment fără repeater, cu repeater extensibil până la 247
Acces la Bus	Tehnologie Polling între master și slaves (query-response)
Funcții Fieldbus suportate	01 Read Coil Status 02 Read Input Status 03 Read Holding Registers 04 Read Input Registers 05 Force Single Coil 15 (0FHex) Force Multiple Coils 06 Preset Single Register 16 (10Hex) Preset Multiple Registers 17 (11Hex) Report Slave ID 08 Diagnostics: • 00 00 Loopback • 00 10 (0AHex) Clear Counters and Diagnostic Register (Ștergere contoare și registru de diagnostic) • 00 11 (0BHex) Return Bus Message Count (Returnare contor mesaje bus) • 00 12 (0CHex) Return Bus Communication Error Count (Returnare contor erori comunicare bus) • 00 13 (0DHex) Return Bus Exception Error Count (Returnare contor erori excepție bus) • 00 14 (0EHex) Return Slave Message Count (Returnare contor mesaje Slave) • 00 15 (0FHex) Return Slave No Response Count (Returnare contor non-răspunsuri Slave) • 00 16 (10Hex) Return Slave NAK Count (Returnare contor Slave NAK) • 00 17 (11Hex) Return Slave Busy Count (Returnare contor Slave Busy) • 00 18 (12Hex) Return Character Overrun Count (Returnare contor depășire caractere)



®

**American
Petroleum
Institute**



2018-151 | Digital

Certificate of Authority to use the Official API Monogram

License Number: 6D-1840

ORIGINAL

The American Petroleum Institute hereby grants to

ZHEJIANG BOTELI TECHNOLOGY CO., LTD
Sanjiang Industrial Zone, Yongjia County
Wenzhou
People's Republic of China

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API-6D** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **6D-1840**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Check Valves, Ball Valves, Plug Valves, Gate Valves

QMS Exclusions: No Exclusions Identified as Applicable

Effective Date: AUGUST 29, 2024

Expiration Date: AUGUST 29, 2027

To verify the authenticity of this license, go to www.api.org/compositelist.

Senior Vice President of Global Industry Services

Certificate

Certificate of Conformity with Fire Testing
Acc. to API 607: Seventh Edition, June 2016

Certificate no.: **01 202 CHN/K-180146**

Name and address of
the applicant / license
holder : **ZHEJIANG BOTELI TECHNOLOGY CO., LTD**
Sanjiang Industrial Zone, Yongjia County
Wenzhou City, Zhejiang Province, P. R. China

We hereby certify that the results of tests carried out under our monitor on the industrial valve(s) below meeting the requirements in the standard mentioned above.

This certificate does not imply assessment of the production of the product, reflects only our monitor findings at the time and the place of test and does not refer to any other matters

Model Identification: **BTL Ball Valve**
Type of Valve : **3 PC Trunnion Mounted Ball Valve**
Description of tested
valve: **NPS 4", Class 400, A105, (with actuator- gear box)**
Refer to Appendix 1 to this certificate
Manufacturing
Drawing No./Rev.: **4"Q347X-400Lb Rev.01**
Test Report No.: **FT154337146-18**
Qualified Range: **NPS 4; 5; 6; 8, Class 400; 600; 800,**
Name, Address of
Manufacturer : **ZHEJIANG BOTELI TECHNOLOGY CO., LTD**
Sanjiang Industrial Zone, Yongjia County
Wenzhou City, Zhejiang Province, P. R. China
Valid until: **July 10, 2028**

TÜV Rheinland (Shanghai) Co., Ltd.
Industrial Services

Shanghai/P.R.China,
July 10, 2018

William Weifeng YU



Appendix

Certificate No.

Test Report No.

1

01 202 CHN/K-180146

FT154337146-18

Constructional Data Form (CDF)

1.1 Licenceholder:
(full name and address)

ZHEJIANG BOTELI TECHNOLOGY CO., LTD
Sanjiang Industrial Zone, Yongjia County
Wenzhou City, Zhejiang Province, P. R. China

1.2 Manufacturer:
(full name and address)

ZHEJIANG BOTELI TECHNOLOGY CO., LTD
Sanjiang Industrial Zone, Yongjia County
Wenzhou City, Zhejiang Province, P. R. China

1.3 Product Identification:

NPS 4, Class 400, A105; S/N: FM201804170-1

1.4 Type Designation:

3 PC Trunnion Mounted Ball Valve

2. Technical data :		Nominal Size	Remark
		NPS 4	---
(a)	Class/ANSI Class	Class 400	Nominal Pressure
(b)	Body	A105	Material
	Bonnet	A105	Material
	Seat insert	FPM	Material
	Seat ring	A105 + ENP	Material
	Ball	A105 + ENP	Material
	Stem	A182 F6a CL.2	Material
	O-ring	FPM	Material
	Packing	Braided - Graphite	Material
	Firesafe ring	304 + Graphite	Material
(c)	Technical Drawing	4"Q347X-400Lb Rev.01	Assembly Dwg.
(d)	Test Report	FM201804170	Attached/Report

3. Additional Qualification of other valves, covered by the valves tested (The range of qualification is according table 2 to 4, API 607 Seventh Edition 2016)

Class Qualified:	400; 600; 800	---
NPS Qualified:	NPS 4; 5; 6; 8	---
Materials (Body) Qualified:	Acc. to API 607: Seventh Edition, June 2016	

Shanghai / P.R. China, 2018/07/10

Stamp and Signature TÜV Rheinland (Shanghai) Co., Ltd.



Test Report

Fire Test for Ball Valves

Report No. : FT154337146-18

Manufacturer: ZHEJIANG BOTELI TECHNOLOGY CO., LTD

Address: Sanjiang Industrial Zone, Yongjia County, Wenzhou City
Zhejiang Province, P. R. ChinaValve Type : 3 PC Trunnion Mounted
Ball ValveModel Identification: BTL Ball Valve
(Dwg. No.: 4"Q347X-400Lb Rev.01)

Nominal Size: NPS 4

Nominal Pressure: Class 400

Test Standard: API 607 Seventh Edition
June 2016

Date of Test: April 26, 2018

Test Location: Quality Inspecting Center of Pump and
Valve Products of Zhejiang ProvinceTest Report No.:
FM201804170

Test Method : Low Pressure Test

Test Result : The above mentioned specimen *PASSED*Qualifications: Additional Qualification of other valves, covered by the valves tested
(The range of qualification is according table 2 to 4, API 607 Seventh
Edition, June 2016)

- a) Class Qualified : 400; 600; 800
- b) NPS Qualified : 4; 5; 6; 8
- c) Materials (Body) : A105
- d) Others : --

Test Monitored by: Chen Jizhang

Reviewed by: William Weifeng Yu

2018/06/29

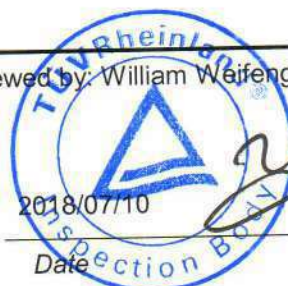
Date

Chen Jizhang

Signature

2018/07/10

Date



Signature

This test report relates to the a. m. test item. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

Certificate

Certificate of Conformity with Fire Testing
Acc. to API 607: Seventh Edition, June 2016

Certificate no.: **01 202 CHN/K-180189**

Name and address of
the applicant / license
holder : **ZHEJIANG BOTELI TECHNOLOGY CO., LTD**
Sanjiang Industrial Zone, Yongjia County
Wenzhou City, Zhejiang Province, P. R. China

We hereby certify that the results of tests carried out under our monitor on the industrial valve(s) below meeting the requirements in the standard mentioned above.

This certificate does not imply assessment of the production of the product, reflects only our monitor findings at the time and the place of test and does not refer to any other matters

Model Identification: **BTL Ball Valve**

Type of Valve : **3 PC Trunnion Mounted Ball Valve**

Description of tested
valve: **NPS 2", Class 150, A105, (with actuator- gear box)**
Refer to Appendix 1 to this certificate

Manufacturing
Drawing No./Rev.: **2"Q347X-150Lb Rev.01**

Test Report No.: **FT154337146-32**

Qualified Range: **NPS 2 and below; 2 1/2; 3; 4, Class 150; 300,**

Name, Address of
Manufacturer : **ZHEJIANG BOTELI TECHNOLOGY CO., LTD**
Sanjiang Industrial Zone, Yongjia County
Wenzhou City, Zhejiang Province, P. R. China

Valid until: **September 7, 2028**

TÜV Rheinland (Shanghai) Co., Ltd.
Industrial Services

Shanghai/P.R.China,
September 7, 2018

William Weifeng YU



Appendix

1

Certificate No.

01 202 CHN/K-180189

Test Report No.

FT154337146-32

Constructional Data Form (CDF)

1.1 Licenceholder:
(full name and address)

ZHEJIANG BOTELI TECHNOLOGY CO., LTD
Sanjiang Industrial Zone, Yongjia County
Wenzhou City, Zhejiang Province, P. R. China

1.2 Manufacturer:
(full name and address)

ZHEJIANG BOTELI TECHNOLOGY CO., LTD
Sanjiang Industrial Zone, Yongjia County
Wenzhou City, Zhejiang Province, P. R. China

1.3 Product Identification:

NPS 2, Class 150, A105; S/N: FM201804167-1

1.4 Type Designation:

3 PC Trunnion Mounted Ball Valve

2. Technical data :		Nominal Size	Remark
		NPS 2	---
(a)	Class/ANSI Class	Class 150	Nominal Pressure
(b)	Body	A105	Material
	Bonnet	A105	Material
	Seat insert	FPM	Material
	Seat ring	A105 + ENP	Material
	Ball	A105 + ENP	Material
	Stem	A182 F6a CL.2	Material
	O-ring	FPM	Material
	Packing	Braided - Graphite	Material
	Firesafe ring	304 + Graphite	Material
(c)	Technical Drawing	2"Q347X-150Lb Rev.01	Assembly Dwg.
(d)	Test Report	FM201804167	Attached/Report

3. Additional Qualification of other valves, covered by the valves tested (The range of qualification is according table 2 to 4, API 607 Seventh Edition 2016)

Class Qualified:	150; 300	---
NPS Qualified:	NPS 2 and below; 2 1/2; 3; 4	---
Materials (Body) Qualified:	Acc. to API 607: Seventh Edition, June 2016	---

Shanghai / P.R. China, 2018/09/07

Stamp and Signature TÜV Rheinland (Shanghai) Co., Ltd.

Test Report

Fire Test for Ball Valves

Report No. : FT154337146-32

Manufacturer: ZHEJIANG BOTELI TECHNOLOGY CO., LTD

Address: Sanjiang Industrial Zone, Yongjia County, Wenzhou City
 Zhejiang Province, P. R. China

Valve Type : 3 PC Trunnion Mounted
 Ball Valve

Model Identification: BTL Ball Valve
 (Dwg. No.: 2"Q347X-150Lb Rev.01)

Nominal Size: NPS 2

Nominal Pressure: Class 150

Test Standard: API 607 Seventh Edition
 June 2016

Date of Test: May 14, 2018

Test Location: Quality Inspecting Center of Pump and
 Valve Products of Zhejiang Province

Test Report No.:
 FM201804167

Test Method : Low Pressure Test

Test Result : The above mentioned specimen *PASSED*
Qualifications: Additional Qualification of other valves, covered by the valves tested
 (The range of qualification is according table 2 to 4, API 607 Seventh
 Edition, June 2016)

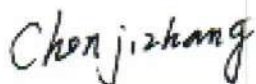
- a) Class Qualified : **150; 300**
- b) NPS Qualified : **2 and below; 2 1/2; 3; 4**
- c) Materials (Body) : **A105**
- d) Others : **--**

Test Monitored by: Chen Jizhang

Reviewed by: William Weifeng Yu

2018/09/03

Date



Signature

2018/09/07

Date



Signature

 This test report relates to the a. m. test item. Without permission of the test center this test report is not permitted to be duplicated
 in extracts. This test report does not entitle to carry any safety mark on this or similar products.

Certificate of Conformity

This is to certify that the following products comply with the requirement of the following standard:

ISO15848-1:2015+A1:2017

We hereby certify that the fugitive emission type test on below valve has been conducted at the laboratory designated by manufacturer and witnessed by TÜV inspector according to requirements of ISO15848-1:2015+A1:2017. The testing results of valve meet the requirements of ISO15848-1:2015+A1:2017.

Certificate No. : CER-IND1101812205002001

Applicant : **Zhejiang Boteli Technology Co., Ltd.**

Address : Sanjiang Industrial Zone, Yongjia County, Wenzhou City, Zhejiang Province, P.R.China

Inspection report No.: IR-IND1101812205002001

Test report No.: ROCKB202204039-3

Date of issue: May 25, 2022

Type designation of tested valve: Ball Valve

Description of valve: 6" 2500LB

Details of test valve:

Nominal Size :	6"
Pressure rating (ANSI Class) :	2500LB
Valve Body Material :	ASTM A350 LF2
Outside diameter of stem (mm) :	65
Stem packing :	Ø65XØ75X5mm Graphite packing 1pcs

Qualified Range of Valve :

The valve Class or PN designation :	Equal Class 2500LB or Lower
Stem diameter(Φ): mm	32.5~130
The temperature class : °C	-46 to 200
The tightness class :	Equal BH or lower
Marking:	ISO FE BH-CO1-SSA 0-t(-46°C, 200°C)-CL2500-ISO 15848-1

Remark: the technical data of test valve see back of this certificate appendix 1.

This certificate is issued according to ISO15848-1: 2015+A1: 2017, based upon the result of inspection report issued by TÜV inspector on above mentioned test valve as well as TNH-Z-IND-CR-001(R01) 'Certification Rules for Fire test and fugitive emissions Test of Valves'.

Mr. Jeffery Fan

Name and Signature

Issued in Shanghai

Place, Stamp



Appendix

1

Technical Data Form

Certificate No. : CER-IND1101812205002001

Applicant : **Zhejiang Boteli Technology Co., Ltd.**

Address : Sanjiang Industrial Zone, Yongjia County, Wenzhou City, Zhejiang Province, P.R.China

Inspection report No.: IR-IND1101812205002001

Test report No.: ROCKB202204039-3

Date of issue: May 25, 2022

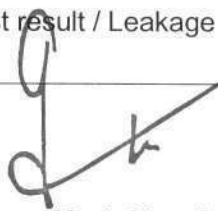
Type designation of tested valve: Ball Valve

Description of valve: 6" 2500LB

Details of test valve:

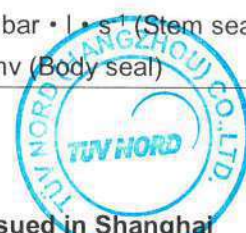
Material & Dimension	
Part Name	6" 2500LB
Body	ASTM A350 LF2
Bonnet	ASTM A350 LF2
Stem	AISI 4140 - ENP
Ball	AISI 4140 - ENP
Packing	Ø65XØ75X5mm Graphite packing 1pcs
O-ring	VITON AED
Sealing ring	VITON AED
Marking	ISO FE BH-CO1-SSA 0-t(-46℃, 200℃)-CL2500-ISO 15848-1
Design standard	API 6D
Drawing No.	6" HQ367X-2500lb (Rev. A/0)
Test medium / Criteria	$\geq 99.999\%$ Helium $\leq 1.16 \times 10^{-4}$ mbar $\cdot$ l $\cdot$ s ⁻¹ (Stem seal) and ≤ 50 ppmv (Body seal)
Test result / Leakage rate	Passed Max. 9.98×10^{-5} mbar $\cdot$ l $\cdot$ s ⁻¹ (Stem seal) 0.66ppmv (Body seal)

Test result / Leakage rate



Mr. Jeffery Fan

Name and Signature



Issued in Shanghai

Place, Stamp

CERTIFICATE

(Certificate of Conformity with Fugitive Emission Type Testing Acc. to:)
ISO15848-1:2015+Amd.1=2017

Certificate No.: IND-PE-C1807003-2

Ref. Test Report No.: ROCKB201804009-1

Name, Address of manufacturer: **Zhejiang Boteli Technology Co., Ltd.**

Sanjiang Industrial Zone, Yongjia County, Wenzhou City,
Zhejiang Province, P.R.China

We hereby certify that the fugitive emission type test on below valves have been conducted at the laboratory designated by manufacturer and witnessed by TÜV inspector according to requirements of ISO15848-1:2015+Amd.1=2017 and the client(see Annex A and B). The testing results of valves meet the requirements of ISO15848-1 and the client.

1. Description of test valve :

Type designation of tested valve (s):	Q347N-CL900 NPS6
Description of valve :	Trunnion Ball Valve
Nominal size(s)	6"
Pressure rating (ANSI Class) :	900
Valve body material :	ASTM A105
Stem size :mm	Φ 55
Stem packing :	Graphite Packing

2. Qualified Range of Valve :

The valve Class or PN designation :	900 or lower
Stem diameter(Φ): mm	27.5 to 110
The temperature class : °C	+5 up to +40
The tightness class	BH or lower
Remark: the technical data of test valve see back of this certificate appendix 1.	

This certificate is issued according to ISO15848-1 :2015+Amd.1=2017 and client requirement, based upon the result of testing report on above mentioned test valve.

Mr. Jeffery Fan

Name and Signature

Issued at Shanghai, 21, 08, 2018

Place, Date, Stamp

TÜV NORD (Hangzhou) Co., Ltd
NO.1 Greenland Central Plaza, Lane 1377 Jiang Chang Road, Jing An District, Shanghai, China
Tel: +86-21-53855353 Fax: +86-21-53855365
www.tuv-nord.com/cn



Appendix

1

Certificate No.

IND-PE-C1807003-2

Reference Report No.

ROCKB201804009-1

Technical Data Form

Name, Address of manufacturer:

Zhejiang Boteli Technology Co., Ltd.

Sanjiang Industrial Zone, Yongjia County,
Wenzhou City, Zhejiang Province, P.R.China

1. Type of Test Valve:

Q347N-CL900 NPS6

2. Description of Test Valve:

Trunnion Ball Valve

Material & Dimension	
Part Name	
Body	ASTM A105
Stem	ASTM A276 410
Diameter of stem (mm)	Φ 55
Sealing system	Packing, Gland and Gland flange
Stem seal Material	Graphite Packing
Body seal Material	SS304+Graphite
3. Details of test class designation:	FE BH-CO1-SSA0-t RT-CL900
Design standard:	API 6D
Drawing No.:	6"Q347N-900Lb(A01)

Mr. Jeffery Fan

Name and Signature



Issued at Shanghai, 21 08, 2018

Place, Date, Stamp



181108342258

报告编号 Report No.:ROCKB201804009-1

检测报告

Test Report

产品名称 Product Name	6" CL900 球阀 6" CL900 Ball Valve
委托单位 Customer	浙江伯特利科技有限公司 Zhejiang Boteli Technology Co.,Ltd. 中国浙江省温州市永嘉县三江工业区 Sanjiang Industrial Zone, Yongjia County, Wenzhou City, Zhejiang Province, P.R.China
委托单位地址 Customer's Address	
试验起始日期 Date Started	2018 年 8 月 10 日 August 10, 2018
试验结束日期 Date Finished	2018 年 8 月 11 日 August 11, 2018

温州岩石阀门检测服务有限公司
Wenzhou Rock Valve Inspection and Testing Co.,Ltd.



概述 Summary:

阀门尺寸/压力/类型 Valve Size/Rating/Type	6" CL900 球阀 6" CL900 Ball Valve	产品系列号 Product SN	/
总装图号 GA Drawing No.	6"Q347N-900LB(A01)	设计标准 Design Standards	API 6D
阀杆运动方式 Stem Motion	四分之一回转 Quarter-turn	执行器类型 Actuator type	齿轮箱 Gear
阀体材料 Body Material	ASTM A105	阀体密封描述 Body Seal Description	ASME B16.20 SWG / 304SS+Graphite
阀杆材料 Stem Material	ASTM A276 410	阀杆直径 Stem Diameter	55mm
阀杆密封描述 Stem Seal Description	柔性石墨填料 Graphite Packing	样品状态 Sample status	完好 Intact
试验标准 Test Basis	ISO 15848-1: 2017-07	试验介质 Test medium	99.9% Helium
试验场地 Test Facility	中国浙江省永嘉县瓯北镇和一工业区岩石阀门检测实验室 ROCK Valve Testing Lab, Heyi Industrial Zone, Oubei, Yongjia, Zhejiang, PRC		
抽样方 Valve Selected by	委托单位 (库存) Customer (stock)	收样日期 Sample Collect Date	2018-08-05
样品编号 Sample No.	ROCKP201804009-1	炉号 Heat No.	T002192
性能等级 Performance Class	ISO FE BH-CO1-SSA0-tRT-CL900-ISO 15848-1		
覆盖范围 Extension of Qualification	覆盖条件 Criteria for Qualification Extension	备注 Remarks	
	阀杆直径 27.5mm 至 110mm 之间 Stem diameter from 27.5mm to 110mm	详细要求见 ISO 15848-1: 2017-07 第 8 节。 Refer to Section 8 of ISO 15848-1: 2017-07 for details.	
	阀门设计压力 CL900 或以下 Rating class is Class 900 or lower		
	温度范围+5℃至+40℃ Temperature range from +5℃ to +40℃		
	耐久等级 CO1 Endurance Class CO1		
	泄漏等级 BH 或 CH Leakage Class BH or CH		
试验结论 Test Conclusion	阀门是否通过试验要求? Did valve pass test requirements?		



编制/日期: 袁冬冬 2018.8.13 审核/日期: 胡利平 2018.8.13 批准/日期: 2018.8.13
PRPD/ DATE: 袁冬冬 2018.8.13 CHKD/ DATE: 胡利平 2018.8.13 APPD/ DATE: 2018.8.13

阀门密封设计信息 Valve Sealing Design Information:

填料描述 Packing Description	柔性石墨 Flexible Graphite	填料内径 Packing Nominal ID	55 mm
填料外径 Packing Nominal OD	70 mm	填料圈数/填料组自由高度 Ring Qty. / Free Height of Packing Set	5 / 37.5 mm
填料压盖螺母拧紧扭矩 Gland Bolt Tightening Torque		40 N • m	
阀体密封描述 Body Seal Description	ASME B16.20 SWG / 304 SS+ Graphite	垫片内径 Gasket Nominal ID	255 mm
垫片外径 Gasket Nominal OD	265 mm	垫片厚度 Gasket Thickness	3.5 mm
体盖螺栓拧紧扭矩 Body-Bonnet Bolt Tightening Torque		350 N • m	

泄漏测量设备 Leakage Detection Equipment

设备名称 Device Name	氦质谱检漏仪 Helium mass spectrometer	品牌/型号/系列号 Brand / Model / SN	Leybold / PHOENIX L300i / 90001197646
设备ID Device ID	J002	灵敏度 Sensitivity	5E-12 mbar•l•s ⁻¹
有效期 Validity	2018-12-19		

试验条件 Test Conditions:

验收标准 Acceptance Criteria	阀杆密封 Stem Seal	9.79E-5 mbar•l•s ⁻¹	试验压力/升温温度 Test Pressure / Elevated Temperature	153.2 barg @ RT
	阀体密封 Body Seal	50 ppmv		
总温度循环数 Total Thermal Cycles		0	总机械循环数 Total Mechanical Cycles	205

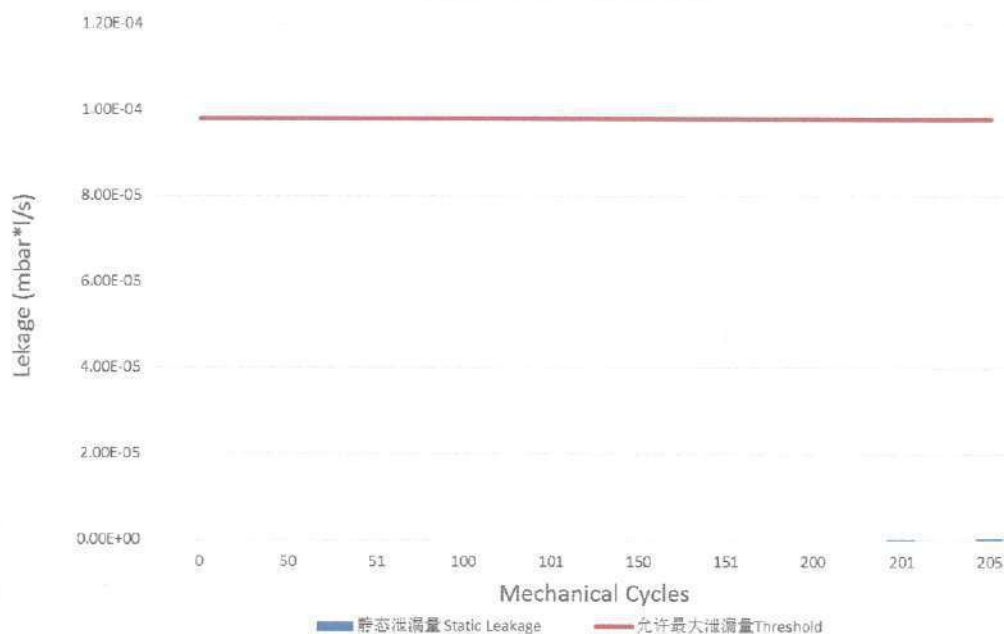
试验结果 Test Results:

完成机械循环数 Number of Mechanical Cycles Completed	205	完成温度循环数 Number of Thermal Cycles Completed	0
阀杆处最大静态泄漏量 Maximum Static Leakage Through Stem	4.70E-7 mbar•l•s ⁻¹	阀体密封最大泄漏量 Max. Body Seal Leakage	2.46 ppmv
阀门泄漏量是否低于允许值? Was Valve Leakage Below Allowable?			是 YES

阀杆密封试验数据 Test Data of Stem Seal:

循环数 Cycle Number	试验温度 Test Temperature			压力 Pressure barg	净静态泄漏量 NET Static Leakage mbar·l·s ⁻¹	本底值 Background mbar·l·s ⁻¹	环境条件 Ambient Condition	
	TC1-°C	TC2-°C	TC3-°C				温度 Temp., °C	湿度 Humidity, %
0	RT	RT	RT	153.5	2.05E-08	2.53E-06	30.6	74
50	RT	RT	RT	153.5	3.54E-08	2.53E-06	30.6	74
51	RT	RT	RT	153.6	4.79E-08	2.69E-06	38.2	48
100	RT	RT	RT	153.6	5.77E-08	2.69E-06	38.2	48
101	RT	RT	RT	153.5	7.94E-08	2.56E-06	30.2	76
150	RT	RT	RT	153.5	1.36E-07	2.56E-06	30.2	76
151	RT	RT	RT	153.6	1.64E-07	2.69E-06	37.8	59
200	RT	RT	RT	153.6	2.40E-07	2.69E-06	37.8	59
201	RT	RT	RT	153.6	3.34E-07	2.69E-06	37.8	59
205	RT	RT	RT	153.6	4.70E-07	2.69E-06	37.8	59

泄漏值图表 Leakage Graph



注: 1. RT 温度为+5℃至 40℃之间。

2. 测量方法参照 ISO 15848-1: 2017-07 附录 A.2.

Note: 1. RT is between +5℃ to 40℃.

2. Measurement method is defined in Annex A.2 of ISO 15848-1:2017-07.

阀体密封试验数据 Test Data of Body Seal:

循环数 Cycle Number	阀体温度 Bonnet Temp. ℃	压力 Pressure barg	净泄漏量 NET Leakage, ppmv	本底值 Background ppmv
0	RT	153.5	1.23	2.73
205	RT	153.6	2.46	2.65

注： 测量方法参照 ISO 15848-1: 2017-07 附录 B.

Note: Measurement method is defined in Annex B of ISO 15848-1:2017-07.

阀门操作扭矩 Valve Operating Torque:

第1次循环开启方向起始扭矩 BTO @ 1 st cycle	482 N•m
第1次循环关闭方向起始扭矩 BTC @ 1 st cycle	501 N•m
第205次循环开启方向起始扭矩 BTO @ 205 th cycle	457 N•m
第205次循环关闭方向起始扭矩 BTC @ 205 th cycle	462 N•m

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照片记录Photographic Record

试验流程Testing Process



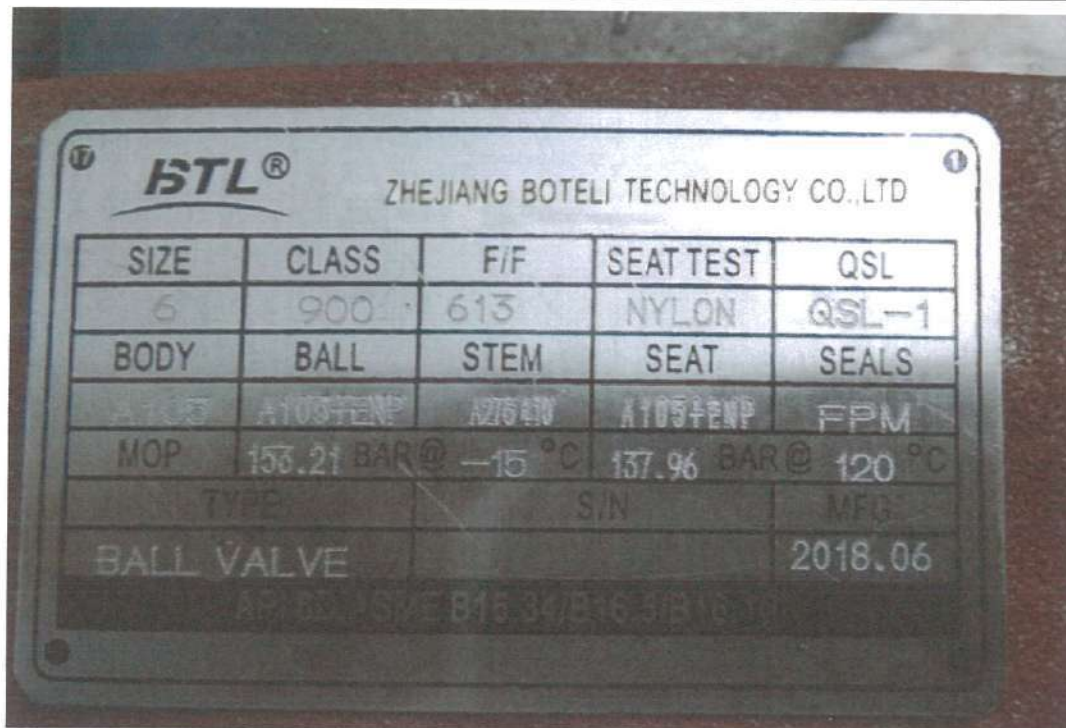
测试产品照片Test product



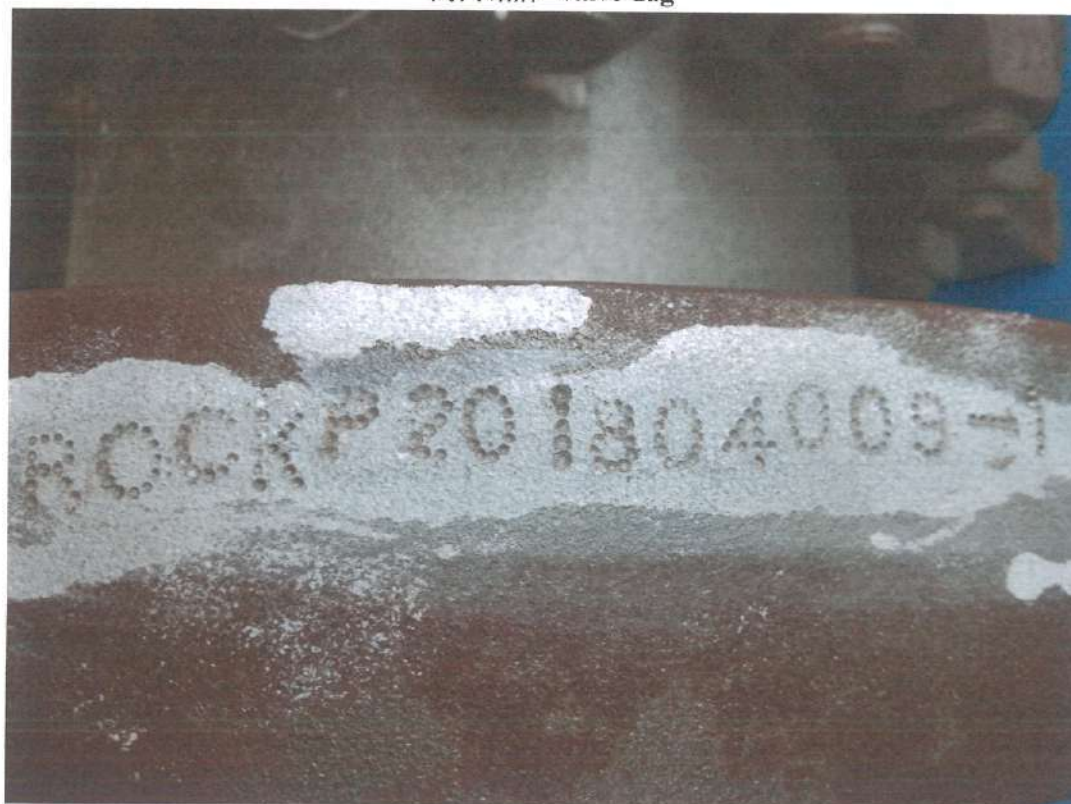
检漏设备 Leak Detector

照片记录 Photographic Record

阀门标识和铭牌 Valve Marking and Tagging



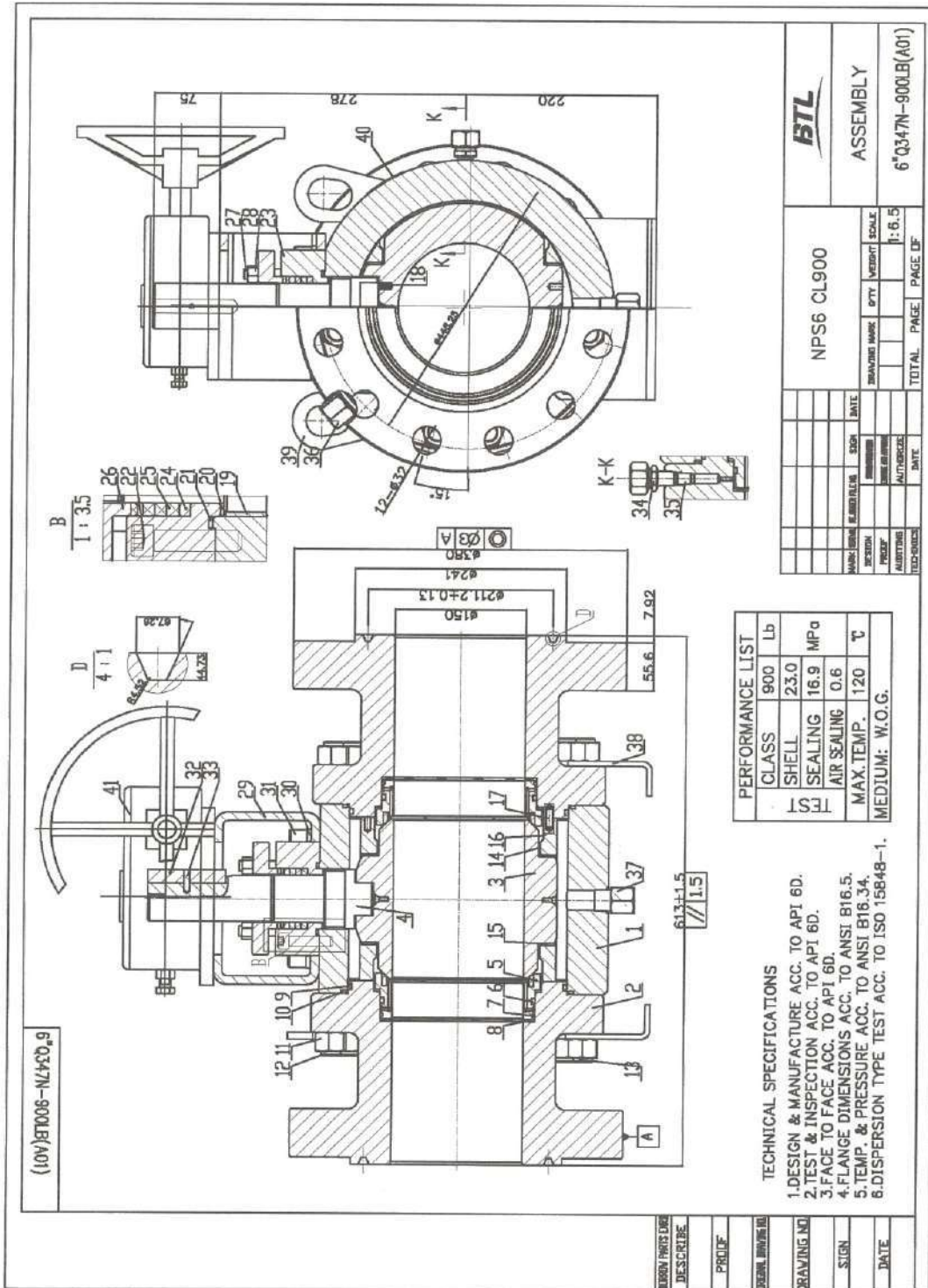
阀门铭牌 Valve Tag



实验室编号 Lab Marking

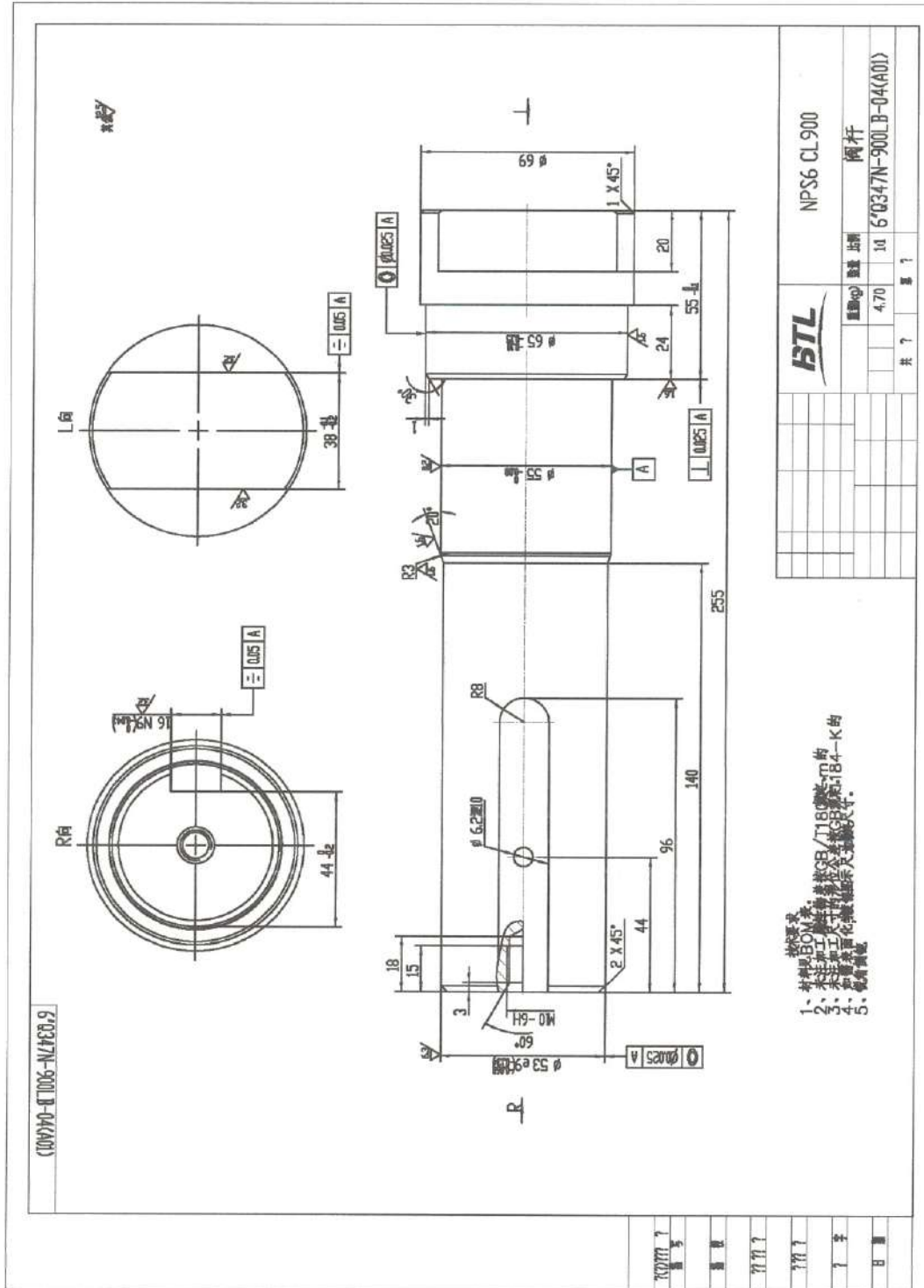
阀门图纸Valve Drawings

总装图 General Assembly



NO.	CODE	PART NAME	MATERIAL	Q'TY	REMARK
1	6"Q347N-900LB-01	Body	φ343Xφ249X220 A105	1	
2	6"Q347N-900LB-02	Bonnet	A105	2	
3	6"Q347N-900LB-03	Ball	Sφ243Xφ150X187 A105+ENP	1	
4	6"Q347N-900LB-04	Stem	φ69X255 A276 410	1	
5	6"Q347N-900LB-05	Seat	Assembly	2	
5.1	6"Q347N-900LB-05-01	Gate ring	φ189Xφ150X53 A105+ENP	1	
5.2	6"Q347N-900LB-05-02	Seat insert	φ173Xφ163X16 NYLON	1	
6	GBT 3452.1	O-ring	165X5.3 FPM SH80~85	2	
7	QB017-037	Firesafe ring	φ173 L=555 Braided-Graphite	2	
8	QB018-002	Spring	φ9.5Xφ1.8X21 17-7PH	24	
9	GBT 3452.1	O-ring	236X5.3 FPM SH80~85	2	
10	QB017-038	Firesafe ring	φ265Xφ255X3.5 Braided-Graphite	2	
11	GBT 6175	Nut	M22-6H A194 2H	32	
12	GBT 901	Bolt	M22X100Q-6g A193 B7	22	
13	GBT 901	Bolt	M22X105Q-6g A193 B7	10	
14	QB021-A026	Bearing	φ130Xφ105X2 304+PTFE	2	
15	QB021-B055	Bearing	φ105Xφ100X16 304+PTFE	2	
16	6"Q347N-900LB-10	Bearing retainer	A216 WCB	2	
17	GBT 119.2	Pin	φ8X24 A576 1025	8	
18	QB018-001	Spring	φ7Xφ1.6X18 17-7PH	1	
19	QB021-B037	Bearing	φ70Xφ65X23 304+PTFE	1	
20	QB021-A019	Bearing	φ70Xφ55X2 304+PTFE	1	
21	QB015-A181	Casker	φ84Xφ70X3.5 304+F.G.	1	
22	GBT 70.1	Bolt	M12X50-6g A193 B7	8	
23	6"Q347N-900LB-08	Gland	φ132Xφ55X53 A105	1	
24	QB010-B52	Packing	φ70Xφ55X7.5 Braided-Graphite	2	
25	QB010-A52	Packing	φ70Xφ55X7.5 F.G.	3	
26	6"Q347N-900LB-09	Packing Gland	φ130Xφ55X32 A105	1	
27	GBT 901	Bolt	M12X60Q-6g A193 B7	4	
28	GBT 6175	Nut	M12-6H A194 2H	4	
29	6"Q347N-900LB-15	Coupling flange	φ210X120X10X170 Q235A	1	
30	GBT 93	Spring washer	20 65Mn	4	
31	GBT 70.1	Bolt	M20X40-6g A193 B7	4	
32	QB020-A05	key	B16X16X88 A576 1045	1	
33	GBT 119.2	Pin	φ6X26 A576 1045	1	
34	QB026-002	Grease plug	3/8"NPT A576 1025+Zn	2	
35	QB025-001	Single plug	1/4"NPT A576 1025+Zn	2	
36	QB024-003	Vent plug	3/4"NPT A576 1025+Zn	1	
37	QB023-003	Drain plug	3/4"NPT A576 1025+Zn	1	
38	6"Q347N-900LB-18	Supporting leg	A576 A	2	
39	6"Q347N-900LB-19	Lifting lug	A576 A	2	
40	QB045-B02	Nameplate	80X50 A240 304	1	
41	DGAB68	Gear	Complete Unit	1	
ORIGINAL DRAWING NO.					
DRAWING NO.					
SIGN					
DATE					
MARK SHEET					
REJIGGER FILE NO.					
SIGN					
DATE					
S					
PAGE OF 1					
NPS 6 CL900					
BTL					
MATERIAL LIST					
6"Q347N-900LB-MX(A01)					

阀杆 Stem



厂家试验记录 Test Record by Manufacturer

压力试验记录 Pressure Test Record

[illegible]

报告结束
End of report

EU DECLARATION OF CONFORMITY
DIRECTIVE 2014/34/EU "ATEX"

We,

Company Name: **Zhejiang Boteli Technology Co., Ltd.**

Address: Sanjiang Industry Zone, Wenzhou, Zhejiang, China

Herewith declare that the following pressure equipment:

In accordance with the analysis of risks carried out by the Quality Department of BOTELI VALVES as stated in point 5 & 6 of standard UNE EN ISO 80079-36, the valves can be classified for use in potentially explosive atmospheres caused by mixture of air, gases, vapours, mists or suspended dusts within:

EQUIPMENT CLASSIFICATION: GROUP II CATEGORY 2

EPL Gb & Db (Equipment Protection Level, not any effective source of ignition during normal operation and foreseeable malfunction)

NON-ELECTRICAL TYPE OF PROTECTION CONSTRUCTIONAL SAFETY "c"

(See EN 1127-1, Ex V and Directive 1999/92/EC for definitions)

EQUIPMENT CONCERNED

Gate Valves, Globe Valves, Check Valves

ASSESSMENT OF CONFORMITY PROCEDURE FOLLOWED

ANNEX VIII OF DIRECTIVE 2014/34/EU

MARKING

ATEX Directive marking:  II 2 G D (Notified body do not required)

IECEx marking (acc. ISO 80079-36):  II 2 G Ex h IIC T6 Gb;  II 2 D Ex h IIIC T85°C Db (not used in Boteli valves)

The object of the declaration described above is in conformity with the relevant Union harmonization legislation: UNE EN ISO 80079-36, UNE EN ISO 80079-37 constructive security – protection c, EN 1127-1, Directive 1999/92/EC, Directive 2014/34/EU

OTHER DIRECTIVES THAT APPLY TO THIS PRODUCT

Pressure Equipment Directive 2014/68/EU

NOTE: The electrical accessories are not covered by this Declaration, anyone of them assembled to the valves must bear its particular CE ATEX mark and declaration.

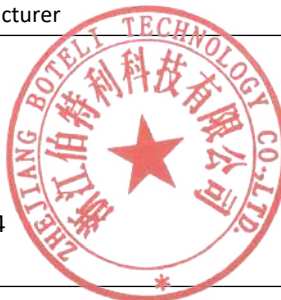
This declaration of conformity is issued under the sole responsibility of the manufacturer

Name: Huang Jinzhu

Department: Quality Department

Place: Wenzhou, China

Date: March 09, 2024





Stellungnahme zur Anwendbarkeit der RL 94/9/EG (ATEX)

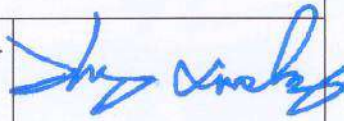
Für Geräte und Komponenten
zur Verwendung in explosionsgefährdeten Bereichen

Statement for application of directive 94/9/EC

For Equipment and Components
Intended for Use in Potentially Explosive Atmospheres

Gegenstand: Gerät/Komponente, Typ Subject: Equipment/Component type	Ball Valve Series 1. Float Ball Valve (NPS:1/2"~8",CLASS:150LB-900LB) 2. Fixed Ball Valve (NPS:1-1/2"~60",CLASS:150LB-2500LB)
Hergestellt und zur Prüfung vorgelegt Manufactured and submitted for examination	Boteli Valve Group Co.,Ltd.
Anschrift Address	Boteli Industrial Park,Sanjiao Industrial Zone,Wenzhou City,Zhejiang Province,P.R.China,325105
Prüfgrundlage Basis for examination	Anhang II der Richtlinie 94/9/EG Annex II of Directive 94/9/EC
Verwendete Normen Standard basis	EN 1127-1: 2011; EN 13463-1:2009
Prüfgrundlage für Sicherheits- und Gesundheitsanforderungen, die nicht von den verwendeten Normen abgedeckt werden Basis for those health and safety requirements not covered by the standard basis	Entfällt Not relevant
Schutzartkennzeichen Code for type of protection	Entfällt Not relevant
Prüfergebnis: Examination result	Die Ventile fallen nicht unter den Anwendungsbereich der Richtlinie94/9/EG. Sie haben keine eigenen Zündquellen. The Valves are not in the scope of the directive 94/9/EC. They have no own ignition sources.
Prüfbericht-Nr: Assessment report number	18000584

TUV Rheinland (China) Ltd.
Unit 707, AVIC Building, No.10B Central Road,
East 3rd Ring Road, Chaoyang District,
Beijing100022,P.R.China

 Wang Yang	 Zhang Xiaolong
Mitarbeiter der Zertifizierstelle für Ex - Produkte	



Prüfbericht
Assessment Report
557 / Ex XXX.00/11
No.: 18000584

**Prüfung der Anwendung der Richtlinie 94/9/EG
für Geräte und Komponenten zur Verwendung in explosionsgefährdeten
Bereichen.**

**Assessment of the application of Directive 94/9/EC
for Equipment and Components intended for use in potentially explosive atmospheres.**

Gegenstand: Gerät/Komponente, Typ
Subject: Equipment/Component type

Ball Valve Series

1. Float Ball Valve
(NPS: 1/2" ~8", CLASS: 150LB~900LB)
2. Fixed Ball Valve
(NPS: 1-1/2" ~60", CLASS: 150LB~2500LB)

Hergestellt und zur Prüfung vorgelegt
Manufactured and submitted for examination

Boteli Valve Group Co.,Ltd.

Anschrift
Address

**Boteli Industrial Park, Sanqiao Industrial
Zone, Wenzhou City, Zhejiang Province, P.
R. China, 325105**

Prüfgrundlage
Basis for examination

**Anhang II der Richtlinie 94/9/EG
Annex II of Directive 94/9/EC**

Verwendete Normen
Standard basis

**EN 1127- 1:2008 EN 13463- 1:2009
EN 13463-5:2003**

Prüfgrundlage für Sicherheits- und
Gesundheitsanforderungen, die nicht von den
verwendeten Normen abgedeckt werden
Basis for those health and safety requirements not covered by
the standard basis

**Entfällt
Not relevant**

Schutzartkennzeichen
Code for type of protection

**Entfällt
Not relevant**

Angebotsnummer
Offer number

ATEX (not listed)

Supplementary assessment report number

N/A

Prüfbericht-Nr.: 557 / Ex XXX.00/11 No.: 18000584
Test and Assessment Report-No.:

Seite 1 von 4
Page 1 of 4

Dieser Prüfbericht darf nur vollständig und unverändert vervielfältigt werden.
This test and assessment report may only be reproduced in its entirety and without change.



1) Gegenstand und Typ / Equipment/Component type:

- 1. Float Ball Valve (NPS: 1/2"~8", CLASS: 150LB~900LB)
- 2. Fixed Ball Valve (NPS: 1-1/2" ~60", CLASS: 150LB~2500LB)

2) Beschreibung / Description

Rückschlagklappen und Ventile wie oben. / Ball valves as above described.

3) Dokumentation / Documentation: (As referred to the technical documentation file stored in Notified Body, such as example of below listed)

Nr.	Bezeichnung / Description	Vom / from	Seiten / Pages	Unterschrieben / signature am / from
	Model Name: Float Ball Valve (NPS: 1/2"~8", CLASS: 150LB~900LB)			
1.	Drawings	Jan. 2013	10	Ms. Xiangying.Li
2.	Design Calculation	Dec. 2012	9	Ms. Xiangying.Li
3.	Name plate	Dec. 2012	1	Ms. Xiangying.Li
4.	User manual	Jan. 2013	16	Ms. Xiangying.Li
5.	Risk Analysis Report	Jan. 2013	7	Ms. Xiangying.Li
	Model Name: Fixed Ball Valve (NPS: 1-1/2" ~60", CLASS: 150LB~2500LB)			
6.	Drawings	Jan. 2013	16	Ms. Xiangying.Li
7.	Design Calculation	Dec. 2012	9	Ms. Xiangying.Li
8.	Name plate	Dec. 2012	1	Ms. Xiangying.Li
9.	User manual	Jan. 2013	16	Ms. Xiangying.Li
10.	Risk Analysis Report	Jan. 2013	7	Ms. Xiangying.Li
	Annex:			
11.	ISO 9001:2008 Certificate	Nov. 2012	1	Ms. Xiangying.Li
12.	PED Certificate (according to directive 97/23/EC)	Nov. 2012	4	Ms. Xiangying.Li
13.	API Spec 6D certificate	Nov. 2012	1	Ms. Xiangying.Li
14.	Material Certificate	Dec. 2012	4	Ms. Xiangying.Li
15.	Antistatic test report	Dec. 2012	2	Ms. Xiangying.Li
16.	EC-Type Examination Report	Nov. 2012	10	Ms. Xiangying.Li
17.	Declaration of conformity (Certified by manufacturer)	Jan. 2013	1	Ms. Xiangying.Li



4) **Kenndaten / Technical Data**

Seal ring/Packing Material	Body / Ball / Stem Material	Material of Spring
PTFE/RPTFE GRAPHITE	Body: WCB/LCB/CF8/CF8M/CF3/CF3M/A105/LF2/ F304/F304L/F316/F316L Ball: A105/LF2/F304/F304L/F316/F316L/F6a Stem: F6a/F304/F304L/F316/F316L/17-4PH	17-7PH Inconel X750

Body material: only metallic, no aluminium ore magnesium.

5) **Kennzeichnung / Marking**

Die Kennzeichnung (gut sichtbar, lesbar und dauerhaft) kann die folgenden Angaben haben:

The marking can be done (visible,) with following information's

- Name und Adresse des Herstellers / Name and address of manufacturer
- Typenbezeichnung / Type
- Herstellungsjahr / Year of manufacturing
- Seriennummer / serial number

6) **Prüfergebnis, Bedingungen für die sichere Verwendung bzw. Verwendungshinweise /
Testresult, Conditions for the save usage or save Application / Application instructions**

Explosionsschutz im Inneren des Rückschlagventile: Einige der Ventile sind mit Rückholfedern ausgerüstet. Unter seltenen Fehlerbedingungen (Federbruch) und in Abhängigkeit der Schlag-Energie und der Mindestzündenergie des Gases in der Rohrleitung, könnte eine Zündung von explosionsfähiger Atmosphäre erfolgen.

Die Außenseite der Rückschlagklappen ist hiervon nicht betroffen. Hier sind keine Zündquellen vorhanden.

Nach Aussage und Festlegung der „European Comidity“ (veröffentlicht in der Guideline zur Richtlinie 94/9/EC 5.2), fallen einfache Produkte / Geräte nicht in den Geltungsbereich der Richtlinie. Durch die Bewegungsgeschwindigkeit und Konstruktion ist es nicht möglich, dass Zündquellen wie heiße Oberflächen oder mechanisch erzeugte Funken bei bestimmungsgemäßer Verwendung zum tragen kommen.

Explosion protection in the interior of the ball valves: Some of the valves are equipped with return springs. Under rare error conditions (Feather break) and in dependence of the stroke-energy and the lower ignition energy of the gas in the pipeline, an ignition of explosion-capable atmosphere could occur.

The outer side of the ball valves are not affected from that. There are no ignition sources.

After statement and determination of the European Commodity (publishes in the guideline to the directive 94/9/EC 5.2), simple products / devices do not fall into the scope of application of the directive. Through the movement speed and construction it is not possible, that sources of ignition carry as hot surfaces or mechanically produced sparks at definition use to the come.



- 7) **Sicherheitstechnisch relevante Informationen / relevant informations- for health and safety**
Die Ventile / Klappen müssen in den Potentialausgleich des Gesamtsystems einbezogen werden.
Die Temperatur des Ventils wird wesentlich von der Temperatur des Mediums bestimmt. Dieses ist dem Verwender mitzuteilen.

The Valves / Flaps have to be connected to the grounding system of the pipe or plant. The temperature of the valves is determined considerably from the temperature of the medium. The user has to be informed of this.

Die Kenntnis der Kenndaten (siehe 4 und der unter 6 aufgeführten Besonderen Bedingungen) sind für die sichere Verwendung erforderlich.

The knowledge of the characteristics and special conditions are essential for the save usage of the valves.

TÜV Rheinland (China) Ltd. Unit 707, AVIC Building, No.10B, Central Road, East 3rd Ring Road, Chaoyang District, Beijing 100022, P.R.China   Zhang Xiaolong Unit Senior Manager	TÜV Rheinland (China) Ltd. Unit 707, AVIC Building, No.10B, Central Road, East 3rd Ring Road, Chaoyang District, Beijing 100022, P.R.China   Wang Yang Project Manager	TÜV Rheinland (China) Ltd. No.177,Lane 777,West Guangzhong Road Zhabei District,Shanghai 200072,P.R.China Mei. He He Mei Project Engineer	Shanghai, 2013-01-14
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SIL



Functional Safety Verification

No. 11170307.BVG0C60

Certificate's Holder:

BOTELI VALVE GROUP CO., LTD.
Sanqiao Industrial Zone, Oubei Town, Yongjia County,
Wenzhou City, Zhejiang Province, P.R.China

**Product:
Model(s):**

Trunnion Ball valve
Q Series

Standard:

Has been assessed per the relevant requirements of:
IEC 61508:2010 Parts 1-7
And meets requirements providing a level of integrity to:
Systematic Capability: SC 3 (SIL 3 Capable)
Random Capability: Type A Element
SIL 2 @ HFT= 0; SIL 3@ HFT=1; Route 2H
PFD AVG and Architecture Constraints must be verified each application
* Safety Function:
The valve will move to the designed safe position when de-energized/ energized within the specified safety time
* Application Restrictions:
The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements
* Is suitable to be safety function according to the description and the configuration defined in Annex I

Verification Mark:



The Verification Mark can be affixed on the product. It is NOT permitted to alter the Verification Mark in any way

Remark: This SIL Verification of Compliance has been issued on a voluntary basis. ECM confirms that a Test Report is existent for the above listed product(s) and found to meet the requirements of above standards for application in safety related system up to Safety Level of SIL 3.
The unit must be properly designed into a Safety Instrument Function as per the requirements in the Safety Manual. The Verification Mark shown above can be affixed on the product. It is NOT permitted to alter the Verification Mark in any way. In addition the Verification's Holder is NOT allowed to transfer the Verification to third parties. This certificate can be checked for validity at www.entecerma.it

Date of issue 07 March 2017

Expiry date 06 March 2022

Chief Manager
Marco Morina

Deputy Manager
Amanda Payne

Ente Certificazione Macchine

Via C. della, 243 - 40053 Valsamoggia Loc. Castello di Serravalle (Bo)
 ☎ +39.0516705141 ☎ +39.0516705156 ✉ info@entecerma.it 🌐 www.entecerma.it

Annex I

No. 1I170307.BVG0C60

1. SC 3(SIL 3 Capability)

The products has met the manufacturer design process requirements of safety integrity level (SIL)3. These are intended to achieve sufficient integrity against systematic errors of design by the manufacturer.

2. A safety instrumented Function (SIF) designed with product must not be used at a SIL level higher than stated.

3. Random capability

The SIL imposed by the architectural constraint for each element

4. IEC 61508 Failure Rates:

Table 1 Failure rates for Floating Ball valve

Failure Category	Failure Rate(FIT)		
	Full Stroke	Tight-shutoff	Open to Trip
Fail Safe Detected	0	0	0
Fail Safe Undetected	0	0	68
Fall Dangerous Detected	0	0	0
Fall Dangerous undetected	280	476	378
Residual	295	99	129

Table 2 Failure Rates for Floating Ball valve with PVST

Failure Category	Failure Rate(FIT)		
	Full Stroke	Tight-shutoff	Open to Trip
Fail Safe Detected	0	0	0
Fail Safe Undetected	0	0	68
Fall Dangerous Detected	98	98	98
Fall Dangerous undetected	182	378	280
Residual	295	99	129

PVST: Partial Valve Stroke test

5. SIL Verification: The safety integrity level (SIL) of an entire safety instrumented Function (SIF) must be effectiveness, any automatic , diagnostics average repair time and the specific failure rates of all products included in the SIF, Each subsystem must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

Certificate

Quality Assurance System acc. to Directive 2014/68/EU

Certificate no.: 01 202 CHN/Q-17 0623.01

Name and address of the
certificate holder:

ZHEJIANG BOTELI TECHNOLOGY CO., LTD.
Sanjiang Industrial Zone, Yongjia County,
Wenzhou City,
Zhejiang
P.R. China

Herewith we certify that the above -mentioned manufacturer operates a quality system according to the European Directive 2014/68/EU. The manufacturer has the permission to affix the following CE marking to pressure equipment described and manufactured in accordance to the scope covered by this Quality-Assurance System:

CE 0035

Test basis:

Directive 2014/68/EU: QA-System (Module H)
(the QS-Modules E1, E, D1, D are covered by Module H)

Audit report no.:

01 202 CHN/Q-17 0623

Scope:

Design and Manufacturing of Industrial Valves,
see annex to certificate: 01 202 CHN/Q-17 0623,
revision 3 from July,3, 2023

Manufacturing plant:

see annex 2

Validity:

This certificate is valid until 2026-11-29.

Cologne, 2023-11-06

Ines Krüger-Führ



TÜV Rheinland Industrie Service GmbH
Notified Body for Pressure Equipment, ID-No. 0035
Am Grauen Stein, D-51105 Cologne

MS-0037317 E-008-Rev01

Date:

To:

For atin:

Fax:

Your ref:

Subject: CLARIFICARI

email

RFQ email

Our ref. no

No:

Rev: Rev.D

Pages: front+ 3+Certificate produse livrate 5 FISIERE + PROCESE VERBALE DE PIF/RECEPTIE
Please reply to: ROMVALVES, Str. INDUSTRIEI, NR.48, 420063, BISTRITA.

Email: chiroban@romvalves.ro sau romvalves@romvalves.ro

Tel: (004) 0263-234.197 Fax:(004) 0263 232.786

Buna Ziua,

Ref la cererea de clarificari privind robinetii oferitati de ROMVALVES, mai jos se afla raspunsul nostru, respectiv:

Având în vedere solicitarea : "Pentru tipul de robinet din ofertă: Rapoarte de comportare în exploatare de la beneficiar în calitate de utilizator final strict pentru tipul de produs oferit", va rugăm să puneți la dispoziție documentul solicitat exclusiv pentru producătorul robinetelor și al acționarelor utilizate.

1. IT-RAE-01 - Robinet de incendiu, cu sferă, corp demontabil, montaj subteran, acționare electrică
2. IT-RAE-01 - Robinet de incendiu, cu sferă, corp demontabil, montaj subteran, acționare electrică
3. IT-RAM-01 - Robinet cu sferă, corp demontabil, montaj supratran, acționare manuală
4. IT-RAM-02 - Robinet cu sferă, corp demontabil, montaj subteran, acționare manuală
5. IT-RAM-01 - Robinet cu sferă, corp demontabil, montaj supratran, acționare manuală
6. IT-CLS - Clapeta de sens pag. 394-396

REFERITOR LA PCT.1-----5-mai jos se afla o parte din proiectele, pentru care societatea noastră a livrat produse executate de compania BOTELI VALVE GROUP, robinetii echipati cu urmatoarele tipuri de acționari:

- Acționari electrice AUMA
- Acționari electrice ROTORK
- Acționari manuale tip AB-Rotork

Pentru a face o legatură între proiect și produsele BOTELI, am atasat prezentele certificate de test la presiune a robinetilor livrați pentru fiecare proiect în parte având ca utilizator final TRANSGAZ și un proiect având ca utilizator final RADEI Bucuresti.

Pentru o identificare facila a certificatelor, acestea sunt salvate cu nume fisier identic cu numarul de ordine a lor din lista de mai jos.

1.Redimensionare racord alimentare cu gaze naturale SRM Ford Craiova"

Beneficiar direct:

UFC Cluj

Producator robineti:

BOTELI COMPANY

Producator acționari:

Rotork

Furnizor:

Romvalves

POZ	DN	CLASA	FISA TEHNICA	TIP ACȚIONARE	CANT (buc)	NR. CERTIFICAT PRODUS TESTE PRESIUNE	DATA LIVRARE	PROCES VERBAL DE RECEPTIE
1.	300	300#	FT 1	REDUCTOR	1	JYZ-L2003002.01	21.07.2020	NR. UEL32/13.10.2020
2.	250				1	JYZ-L2003002.02		
3.	50				1	JYZ-L2003002.06		
4.	80			LEVIER	1	JYZ-L2003002.05		
5.	100	300#	FT 2		1	JYZ-L2003002.04		
6.	250			REDUCTOR	1	JYZ-L2003002.03		

2. Proiect "NOD TEHNOLOGIC RACOVA" beneficiar SNTGN

Beneficiar direct:

MOLDOCOR

Produsător robineti:

BOTELI COMPANY

Produsător acționarii electrice:

ROTORK

Furnizor:

RomValves

POZ	DN	CLASA	COD ROB	TIP CONSTRUCTIV	CANT (buc)	NR. CERTIFICAT PRODUS TESTE PRESIUNE	DATA LIVRARE	PROCES VERBAL DE RECEPTIE
1	100	300#	RAE 01	TB	2	JYZ-L2006035.01	23.10.2020	
2	300		RAE 02		1	JYZ-L2006035.02		

3. SRM Chisnueu-Cris, organizata de Transgaz Media

Beneficiar direct:

FEROTERRA MEDIAS

Produsător robineti:

BOTELI COMPANY

Produsător acționarii electrice:

AUMA

Produsător reductoare manuale:

Rotork

Furnizor:

RomValves

POZ	DN	CLASA	COD ROBINET	TIP CONSTRUCTIV/ ACȚIONARE	CANT (buc)	NR. CERTIFICAT PRODUS TESTE PRESIUNE	DATA LIVRARE	PROCES VERBAL DE RECEPTIE
ROBINETI DE INCHIDERE CU SFERA ACȚIONATI ELECTRIC SI MANUAL								
1	200	Pn40	RAE1	TW-AUMA	1	JYZ-L2004041.01		
2	150	Pn16	RAE14	TW-REDUCTOR	1	JYZ-L2004041.02	02.09.2020	NR. UEL 5/11.02.2021
3	50	Pn40	R2	TB	1	JYZ-L2004041.03		
ROBINET DE RETINERE AXIAL								
4	150	Pn16	IT-CLS	ARC	1	AU10817/205370/1	02.09.2020	NR. UEL 5/11.02.2021

4. Proiect : "Pregătirea conductei Ø20" Sendreni-Albești pentru transformarea în conductă godevilabilă

Beneficiar direct:

MOLDOCOR

Produsător robineti:

BOTELI COMPANY

Produsător acționarii electrice:

ROTORK

Furnizor:

RomValves

POZ	DN	PN	SPEC TEHNICA	TIP CONSTRUCTIV	ACT.	CANT (buc)	NR. CERTIFICAT PRODUS TESTE PRESIUNE	DATA LIVRARE	PROCES VERBAL DE RECEPTIE
1	250		FT 7			4	JYZ-L1804007.02		
2	150	300#	FT 8	TW	REDUCTOR	2	JYZ-L1804007.03		
3	100		FT 9			1	JYZ-L1804007.04	29.08.2018	
4	500	300#	FT 6	TW	HP-TIP GO	3	JYZ-L1804007.01		
5	150	300#	FT 11	TW	REDUCTOR	3	JYZ-L1804007.05		

5. Proiect : "Modernizare , relocare SRM Bistrita si racordare la SNT"

Beneficiar direct:
ARMAX GAZ Medias
BOTELI COMPANY
Produsor robineți:
AUMA
Produsor actiunari electrice:
ROTORK
Produsor reductoare manual:
Romvalves
Furnizor:

POZ	DN	PN/ CLASA	SPEC TEHNICA	TIP CONSTRUCTIV	SISTEM DE ETANSARE	ENDS	ACT.	CANT (buc)	NR. CERTIFICAT PRODUS TESTE PRESIUNE	DATA LIVRARE
1	150	300#	FT 6	TW	MTM	RF	SE	1	JYZ-L2005021	23.10.2020
2	250	150#	FT 7	TW	PMSS	RF	SE	4	JYZ-L2005022	
3	250	300#	FT 8	TW	PMSS	RF	RM	1	JYZ-L2005023	
4	150	300#	FT 9	TW	PMSS	RF	RM	3	JYZ-L2005024	
5	250	150#					L	4	JYZ-L2005025	
6	80	300#					RM	1	JYZ-L2005026	
7	150	300#					RM	2	JYZ-L2005027	
8	250	300#					RM	4	JYZ-L2005028	
9	300	300#					L	4	JYZ-L2005029	
10	80	150#					L	1	JYZ-L2005030	
11	150	150#					RM	5	JYZ-L2005031	
12	250	150#					RM	3	JYZ-L2005032	
13	500	150#					RM		JYZ-L2005033	

6. Proiect : "Robineți cu sfera trunnion de dimensiuni mari pentru RADET Bucuresti"

Beneficiar direct:
RADET BUCURESTI
Produsor robineți:
BOTELI COMPANY
Produsor actiunari electrice:
ROTORK
Furnizor:
Romvalves

POZ	DN	PN	SPEC TEHNICA	SISTEM DE ETANSARE	ACT.	CANT (buc)	NR. CERTIFICAT PRODUS TESTE PRESIUNE	DATA LIVRARE	PROCES VERBAL DE RECEPTIE
1	700	300#	FT 5	PMSS	SERVOMOTOR ELECTRIC	9	JYZ-L1811005.01	2019	67466/19.09.2019
2	800		FT 6			8	JYZ-L1811005.02		

Ing. Ioan Chiroban



/APROB ADMITEREA / RESPINGEREA
SNTGN TRANSGAZ S.A. MEDIAȘ

DIRECTOR GENERAL
STERIAN ION

PROCES - VERBAL DE RECEPȚIE
LA TERMINAREA LUCRĂRILOR

Nr. UEL 5 din 11.02.2021

privind execuția lucrărilor de construcții aferente investiției : „**Modernizare/ adaptare la teren SRM Chișineu Criș**”, lucrări executate în baza Contractului sectorial de lucrări nr. 245/ 22.04.2020 încheiat între S.N.T.G.N. TRANSGAZ S.A. Mediaș și SC Feroterra SRL Mediaș

1. Imobilul care face obiectul investiției se identifică după cum urmează:

- adresa administrativă: str. Gării, nr. 16/ AF.N
- număr cadastal/număr topografic: nr. cad. 304615
- număr carte funciară: C.F. 304615

2. Lucrările au fost executate în baza contractului 245/ 22.04.2020

3. Comisia de recepție și-a desfășurat activitatea de la data: 11.02.2021 până la data 11.02.2021 fiind formată din:

- Președinte

Macaveiu Mihai

Șef Serviciu U.E.L. cu atribuții de Director Departament Dezvoltare

- Membrii

Pașca Florin

Inginer Șef, Exploatare Teritorială Arad

Țetcu Raul

Inginer Serviciul Automatizări, DMEAS Mediaș

Pop Mircea Cornel

Inspector SSM, Exploatare Teritorială Arad

.....

Reprezentant Primăria orașului Chișineu Criș

.....

Reprezentant IJC Arad

Stroi Anda

Inginer Serviciul Urmărire Execuție Lucrări

4. Au mai fost prezenți

COJOCARIU DANIEL

SORIN

- Dep. MENTENANȚĂ - ET ARAD

Bertalan Gabriel

-

Diriginte santier instal. electrice Cris

Țetcu Vlad

-

Inspector protecția mediului - ET ARAD

INDREA SORIN

-

ENERGOSIT SA

5. Secretariatul a fost asigurat de Dl. Stancu Fănel, Diriginte de şantier

6. Constatările comisiei de recepţie la terminarea lucrărilor:

6.1. Capacităţi fizice realizate: **INTEGRAL**

6.2. Nu au fost remediate aspectele consemnate în Procesul-verbal de suspendare a procesului de recepţie la terminarea lucrărilor, inclusiv cele rezultate în urma expertizelor tehnice, ridicărilor topografice, încercărilor suplimentare, probelor, măsurătorilor şi altor teste solicitate, în termenul de remediere, cuprinse în lista din anexa nr. 1 la prezentul proces-verbal.

.....**NU ESTE CAZUL**.....

6.3. Nu au fost realizate măsurile prevăzute în avizul de securitate la incendiu şi în documentaţia de execuţie din punct de vedere al prevenirii şi al stingerii incendiilor, cuprinse în lista din anexa nr. 2 la prezentul proces-verbal.

.....**NU ESTE CAZUL**.....

6.4. Lucrările cuprinse în lista din anexa nr. 3 la prezentul proces-verbal prezintă vicii care nu pot fi înlăturate şi care prin natura lor implică nerealizarea uneia sau a mai multor cerinţe fundamentale, caz în care se impun expertize tehnice, reproiectări, refaceri de lucrări şi altele.

.....**NU ESTE CAZUL**.....

6.5. - Valoarea finală a lucrărilor executate (C+M) este de **413.876,43 lei** (fără TVA)

- Valoarea finală a lucrărilor executate (C+M) este de **492.512,95 lei** (cu TVA)

- Valoarea totală a investiţieilei (fără TVA).

6.6. Perioada de garanţie: 36 luni de la data procesului verbal de recepţie la terminarea lucrărilor.

6.7. Alte constatări, inclusiv ca urmare a solicitărilor suplimentare ale comisiei (nu s-a putut examina nemijlocit construcţia, se constată că lucrările nu respectă autorizaţia de construire, reprezentantul autorităţii administraţiei publice competente care a emis autorizaţia de construire/desfiinţare, al Inspectoratului de Stat în Construcţii – I.S.C., al direcţiilor judeţene pentru cultură/Direcţie pentru Cultură a Municipiului Bucureşti sau al inspectoratelor judeţene pentru situaţii de urgenţă propun respingerea recepţiei etc.):

.....**NU ESTE CAZUL**.....

7. În urma constatărilor făcute, comisia de recepţie decide:

- ☒ admiterea recepţiei la terminarea lucrărilor
- ☐ respingerea recepţiei la terminarea lucrărilor

8. Comisia de recepţie motivează decizia luată prin:

.....*lucrări executate conf. contract*.....

9. Comisia de recepție recomandă luarea următoarelor măsuri:

Urmărituri în 15/02/2021

10. Prezentul proces-verbal, conținând ...2... file și anexe numerotate, cu un total de ...2... file, a fost încheiat astăzi, *11.02.2021*, în ...3... exemplare.

11. Alte mențiuni *conform fișei la PURTC 5/11.02.2021*

COMISIA DE RECEPȚIE

Președinte:

Macaveiu Mihai

S.C. FEROTERRA S.R.L. Mediaș



Membrii:

Pașca Florin

Departamentul de Proiectare și Cercetare

[Signature]

Țetcu Raul

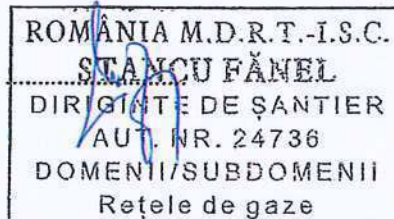
Pop Mircea Cornel

Reprezentant Primăria orașului Chișineu Criș

Reprezentant IJC Arad

Stroi Anda

Secretar: Stancu Fănel, Diriginte de șantier



ZHEJIAN BOTELI TECHNOLOGY CO.,LTD Bowei Industry Park, Sanjiang Industrial Zone, Oubei Town, Yongjia County, Wenzhou City, Zhejiang Province, P. R. China Telephone: 0086 577 6737 6662 Fax: 0086 577 6737 8398			 INSPECTION CERTIFICATE EN10204 - 3.1	
CLIENT:	PURCHASE ORDER NO.	MANUFACTURING BATCH NO.	DESIGN & MANUFACTURING SPECIFICATIONS	
SC ROMVALVES SRL	03.04_20_FERO	L2004041	API 6D-ASME B16.34-API6FA-PED-ISO15848-1	
ITEM NO. OF TESTED VALVES IN PURCHASE ORDER	REPORT NO.	REPORT DATE	TEST SPECIFICATIONS	
POS# 01	JYZ-L2004041.01	03/Aug/20	API6D	

PRODUCTS	Quantity	: 1 PC
	Type	: Ball Valve,Bolted Bonnet,Trunnion Mounted,METAL/METAL
	Size/Pressure Rating	: DN200PN40
	Valve Ends	: Flanged End RF , acc to EN 1092-PN40
	Operation	: SAVEX10.2+ACVEXC 01.2 + REDUCTOR MELCAT GS 100.3
	Series No.	: L2004041 01, Series No. actuator: 2520MD28274
	Temp.:	: -46℃~+180 ℃

1. MATERIAL TRACEABILITY

Original mill certificates are available for review in our works

Item	Valve Parts	Heat Number	Material
1.1	Body	HG8008	ASTM A350 LF2
1.2	Bonnet	HG8008	ASTM A350 LF2
1.3	Ball	BD2410	A350 LF2+TCC
1.4	Stem	19H242	ASTM A564 17-4PH
1.5	Seat Ring	BD2410	A350 LF2+TCC

2. PRESSURE & PERFORMANCE TEST ACCRODING TO API 6D

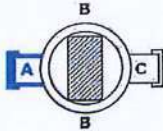
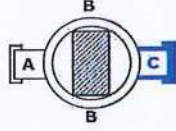
Original mill certificates are available for review in our works

Item	Test	Medium	Test Pressure (MPa)	Test Duration (Seconds)
2.1	Hydro Shell Test	Water	6.00	300
2.2	Hydro Seat Test	Water	4.40	300
2.3	Air Seat Test	Air	0.6	300
2.4	Function Test	Water	4,40	CYCLES=3

3. THRUST/TORQUE FUNCTIONAL TEST

* For valves with bare stem only

Torque at "A" end under full rated D.P.	Torque at "C" end under full rated D.P.
1700 N.M	1700 N.M

Test at both ends of "A" and "C"

4. TEST RESULT-ACCEPTED

5. ANTICOROSIVE PROTECTION: Intergard 345,RAL 7044

We herewith declare that the valve mentioned in the following fulfill the safety requirements of the Pressure Equipment Directive 2014/68/EU,Modul H.

Audit report:CHN/Q-170623,Cert. No.01 202 CHN/Q-17 0623,Number of the named office: 0035

Notify Body: TUV Rheinland Industrie Service GmbH




 Manager of QA Department

ZHEJIANG BOTELI TECHNOLOGY CO.,LTD Bowei Industry Park, Sanjiang Industrial Zone, Oubei Town, Yongjia County, Wenzhou City, Zhejiang Province, P. R. China Telephone: 0086 577 6737 6662 Fax: 0086 577 6737 8398				INSPECTION CERTIFICATE EN10204 - 3.1
CLIENT:	PURCHASE ORDER NO.	MANUFACTURING BATCH NO.	DESIGN & MANUFACTURING SPECIFICATIONS	
SC ROMVALVES SRL	03.04_20_FERO	L2004041	API 6D-ASME B16.34-API6FA-PED-ISO15848-1	
ITEM NO. OF TESTED VALVES IN PURCHASE ORDER	REPORT NO.	REPORT DATE	TEST SPECIFICATIONS	
POS# 03	JYZ-L2004041.03	03/Aug/20	API6D	

PRODUCTS	Quantity	: 1 PC	
	Type	: Ball Valve,Bolted Bonnet,Trunnion Mounted,PMSS,DBB	
	Size/Pressure Rating	: DN50 / PN40	
	Valve Ends	: Flanged end RF acc to EN 1092-Pn40	
	Operation	: Lever	
	Series No.	: L2004041 03	
	Temp.:	: -46°C~+180 °C	

1. MATERIAL TRACEABILITY
 Original mill certificates are available for review in our works

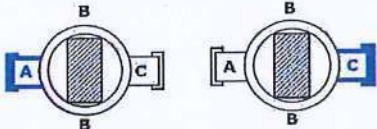
Item	Valve Parts	Heat Number	Material
1.1	Body	HG8008	ASTM A350 LF2
1.2	Bonnet	HG8008	ASTM A350 LF2
1.3	Ball	34121516	A350 LF2+TCC
1.4	Stem	19H242	ASTM A564 17-4PH
1.5	Seat Ring	5XYB	ASTM A182 F316
1.6	Seat Insert		DEVLON/VITON

2. PRESSURE & PERFORMANCE TEST ACCRODING TO API 6D
 Original mill certificates are available for review in our works

Item	Test	Medium	Test Pressure (MPa)	Test Duration (Seconds)
2.1	Hydro Shell Test	Water	6.00	120
2.2	Hydro Seat Test	Water	4.40	120
2.3	Air Seat Test	Air	0.6	120
2.4	Function Test	Water	4,40	CYCLES=3

3. THRUST/TORQUE FUNCTIONAL TEST
 * For valves with bare stem only

Torque at "A" end under full rated D.P.	Torque at "C" end under full rated D.P.
N.A	N.A



Test at both ends of "A" and "C"

4. TEST RESULT-ACCEPTED
5.ANTICOROSIVE PROTECTION: Intergard 345,RAL 7044
 We herewith declare that the valve mentioned in the following fulfill the safety requirements of the Pressure Equipment Directive 2014/68/EU,Modul H.
 Audit report:CHN/Q-170623,Cert. No.01 202 CHN/Q-17 0623,Number of the named office: 0035
 Notify Body: TUV Rheinland Industrie Service GmbH



SNTGN TRANSGAZ S.A. MEDIAȘ

**DIRECTOR GENERAL
STERIAN ION**



**PROCES - VERBAL DE RECEPȚIE
LA TERMINAREA LUCRĂRILOR**

Nr. UEL 32 din 13.10.2020

*Nr. 3760/5
173/13.10.2020*

privind execuția lucrărilor de construcții aferente investiției: **"Redimensionare record alimentare cu gaze naturale SRM Ford Craiova"**, lucrări executate în baza Contractului sectorial de lucrări nr. 998 / 02.12.2019 încheiat între S.N.T.G.N. TRANSGAZ S.A. Mediaș și UTILITAR FLUID CONSTRUCT S.R.L.

1. Imobilul care face obiectul investiției se identifică după cum urmează:

- adresa administrativă: Municipiul Craiova si comuna Cârcea, Str. Silozului
- număr cadastral/număr topografic-31930; 202679
- număr carte funciară-31930;202679

2. Lucrările au fost executate în baza contractului 998 / 02.12.2019.

3. Comisia de recepție și-a desfășurat activitatea de la data: 07.10.2020 până la data 13.10.2020 fiind formată din:

- Președinte

Tătaru Ion Director Departament Dezvoltare

- Membrii

Niță Viorel Director Exploatare Teritorială Craiova

Rusie Adrian Șef sector Craiova

Chiurtu Iulian Inspector SSM ET Craiova

Nița Dan Alexandru Reprezentant emitent autorizatie -C.J. Dolj

Reprezentant IJC Dolj...*09.10.2020*

Sălăgean Adrian Inginer serv. Urmărire Execuție Lucrări

4. Au mai fost prezenți:

Radu Pop Reprezentant SC UTILITAR FLUID CONSTRUCT SRL

Macaveiu Mihai Dirigințe de șantier lucrări civile

Fodor Andrei Proiectant DPC

5. Secretariatul a fost asigurat de Dl. Lupu Daniel

6. Constatările comisiei de recepție la terminarea lucrărilor:

6.1. Capacități fizice realizate: **INTEGRAL**

6.2. Nu au fost remediate aspectele consemnate în Procesul-verbal de suspendare a procesului de recepție la terminarea lucrărilor, inclusiv cele rezultate în urma expertizelor tehnice, ridicărilor topografice, încercărilor suplimentare, probelor, măsurărilor și altor teste solicitate, în termenul de remediere, cuprinse în lista din anexa nr. 1 la prezentul proces-verbal.

.....**NU ESTE CAZUL**.....

6.3. Nu au fost realizate măsurile prevăzute în avizul de securitate la incendiu și în documentația de execuție din punct de vedere al prevenirii și al stingerii incendiilor, cuprinse în lista din anexa nr. 2 la prezentul proces-verbal.

.....**NU ESTE CAZUL**.....

6.4. Lucrările cuprinse în lista din anexa nr. 3 la prezentul proces-verbal prezintă vicii care nu pot fi înlăturate și care prin natura lor implică nerealizarea uneia sau a mai multor cerințe fundamentale, caz în care se impun expertize tehnice, reproiectări, refaceri de lucrări și altele.

.....**NU ESTE CAZUL**.....

6.5. - Valoarea finală a lucrărilor executate (C+M) este de 598.624,60 lei (fără TVA)

- Valoarea totală a investițieilei (fără TVA).

6.6. Perioada de garanție: 24 luni de la data procesului verbal de recepție la terminarea lucrărilor.

6.7. Alte constatări, inclusiv ca urmare a solicitărilor suplimentare ale comisiei (nu s-a putut examina nemijlocit construcția, se constată că lucrările nu respectă autorizația de construire, reprezentantul autorității administrației publice competente care a emis autorizația de construire/desființare, al Inspectoratului de Stat în Construcții – I.S.C., al direcțiilor județene pentru cultură/Direcție pentru Cultură a Municipiului București sau al inspectoratelor județene pentru situații de urgență propun respingerea recepției etc.):

.....**NU ESTE CAZUL**.....

7. În urma constatărilor făcute, comisia de recepție decide:

☒ admiterea recepției la terminarea lucrărilor

☐ respingerea recepției la terminarea lucrărilor

8. Comisia de recepție motivează decizia luată prin:

Luarea de la membru conform PT 1290/2018/2019.

9. Comisia de recepție recomandă luarea următoarelor măsuri:

Completarea în data a instalării nu este

10. Prezentul proces-verbal, conținând ...3... file și ...3... anexe numerotate, cu un total de ...3... file, a fost încheiat astăzi, ..., în ...5... exemplare.

11. Alte mențiuni

COMISIA DE RECEPȚIE

Președinte:

Tătaru Ion

[Signature]

Membrii:

Niță Viorel

[Signature]

Rusie Adrian

[Signature]

Chiurtu Iulian

[Signature]

ISC

[Signature]

Niță Ion Alexandru

[Signature]

Sălăgean Adrian

[Signature]

Executant:

Reprezentant SC UTILITAR FLUID CONSTRUCT SRL

[Signature]



Alți participanți:

Proiectant:

Fodor Andrei

[Signature]

Diriginte șantier lucrări civile: Macaveiu Mihai

ROMANIA - M.D.R.T. - I.S.C. MACAVEIU MIHAI ION

Diriginte șantier - rețele de gaze: Lupu Daniel

ROMANIA - M.D.R.T. - I.S.C. DIRIGINTE DE ȘANTIER
LUPU DANIEL
DIRIGINTE DE ȘANTIER
AUT. NR. 00024044
DOMENIU SUBDOMENIU:
9.4

INVESTITOR : SNTGN TRANSGAZ S.A. MEDIAȘ

OBIECTIV : "Redimensionare record alimentare cu gaze naturale SRM Ford Craiova"

LISTA ANEXA NR. 1

La Procesul verbal de recepție la terminarea lucrărilor
cu aspectele consemnate în Procesul-verbal de suspendare a procesului de recepție
la terminarea lucrărilor ,inclusiv cele rezultate în urma expertizelor tehnice , ridicărilor
topografice, încercărilor
suplimentare, probelor,măsurărilor și altor teste solicitate, în termenul de remediere

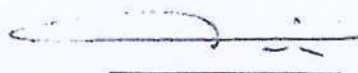
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Comisia de recepție :

Președinte

Tătaru Ion

Semnătura



Membrii :

Niță Viorel

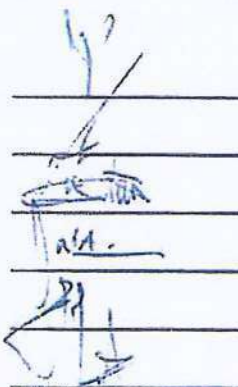
Rusie Adrian

Chiurtu Iulian

ISC —

Niță Ioan Alexandru

Sălăgean Adrian



Alți participanți :

Fodor Andrei

Fodor Andrei

Secretar

Lupu Daniel



ROMÂNIA
UTILITAR FLUID
CONSTRUCT
SRL
GIU-NAPOCA

ROMÂNIA - M. D. R. T. -
LUPU DANIEL
PROIECT DE SÂNTILĂ
00034044
00000125111

INVESTITOR : SNTGN TRANSGAZ S.A. MEDIAȘ
OBIECTIV : "Redimensionare record alimentare cu gaze naturale SRM Ford Craiova"

LISTA ANEXA NR. 2

La Procesul verbal de recepție la terminarea lucrărilor
cu măsurile prevăzute în avizul de securitate la incendiu și în documentația de execuție
din punct de vedere al prevenirii și al stingerii incendiilor

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Comisia de recepție :

Președinte

Tătaru Ion

Semnătura

Membrii :

Niță Viorel

Rusie Adrian

Chiurtu Iulian

ISC —

N/A —

Sălăgean Adrian

Alți participanți :

Pop Roden

Fodor Andrei

Secretar

Lupu Daniel



INVESTITOR : SNTGN TRANSGAZ S.A. MEDIAȘ
OBIECTIV : "Redimensionare record alimentare cu gaze naturale SRM Ford Craiova"

LISTA ANEXA NR. 3

La Procesul verbal de recepție la terminarea lucrărilor
cu lucrările care prezintă vicii care nu pot fi înlăturate și care prin natura lor implică
nerealizarea uneia sau mai multe cerințe fundamentale, caz în care se impun expertize tehnice,
reproiectări, refaceri de lucrări și altele

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Comisia de recepție :

Președinte

Tătaru Ion

Semnătura



Membrii :

Niță Viorel

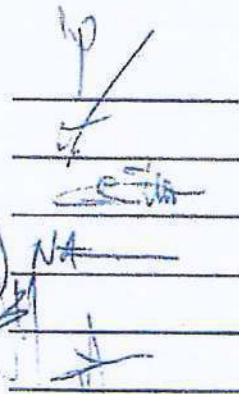
Rusie Adrian

Chiurtu Iulian

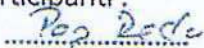




Sălăgean Adrian



Alți participanți :



Fodor Andrei

Secretar

Lupu Daniel



BOTELI TECHNOLOGY CO.,LTD Bowei Industry Park, Sanjiang Industrial Zone, Oubel Town, Yongjia County, Wenzhou City, Zhejiang Province, Telephone: 0086 577 6737 6662 Fax: 0086 577 6737 8398 		 <i>Create A National Brand</i>		INSPECTION CERTIFICATE EN10204 - 3.1	
CLIENT : SC ROMVALVES SRL		PURCHASE ORDER NO. 01.02_20_UFC		MANUFACTURING BATCH NO. L2003002	
ITEM NO. OF TESTED VALVES IN PURCHASE ORDER POS# 01		REPORT NO. JYZ-L2003002		REPORT DATE 27/Jun/20	
				DESIGN & MANUFACTURING SPECIFICATIONS API 6D- ASME B16.34-API 6FA-PED-ISO15848-1	
				TEST SPECIFICATIONS API6D	

PRODUCTS	Quantity	: 1 PC
	Type	: Ball Valve, Fully welded, Trunnion, Full Bore, DPE, Metal To Metal
	Size/Pressure Rating	: 12" ANSI 300#
	Valve Ends	: BW End
	Operation	: Stem extension underground, Gear Rotork AB 3000PR6.
	Series No.	: L2003002 01
	Temp.:	: -46°C~+180 °C

1. MATERIAL TRACEABILITY
 Original mill certificates are available for review in our works

Item	Valve Parts	Heat Number	Material
1.1	Body	HG8706	ASTM A350 LF2
1.2	Bonnet	HG8706	ASTM A350 LF2
1.3	Ball	BD2423	ASTM A350LF2+TCC
1.4	Seat ring	217046	ASTM A350LF2+TCC

2. PRESSURE & PERFORMANCE TEST ACCORDING TO API 6D
 Original mill certificates are available for review in our works

Item	Test	Medium	Test Pressure (MPa)	Test Duration (Seconds)
2.1	Hydro Shell Test	Water	7.80	900
2.2	Hydro Seat Test	Water	5.60	300
2.3	Air Seat Test	Air	0.6	300
2.4	Function Test	Water	5,60	CYCLES=3

3. THRUST/TORQUE FUNCTIONAL TEST
 * For valves with bare stem only

Torque at "A" end under full rated D.P.	Torque at "C" end under full rated D.P.
5700 N.M	6000 N.M

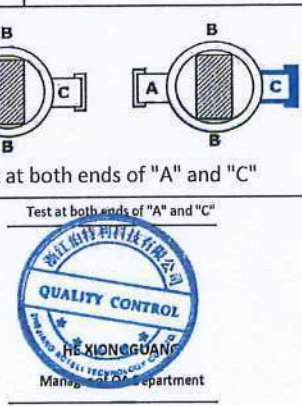
4. TESTS RESULT- ACCEPTED
5.PROTECTION: PROTEGOL UR Coating 32-55+Intergard® 345,RAL 7044

We herewith declare that the valve mentioned in the following fulfill the safety requirements of the Pressure Equipment Directive 2014/68/EU, Modul H.

Audit report: CHN/Q-170623, Cert. No.01 202 CHN/Q-17 0623, Number of the named office: 0035

Notify Body: TUV Rheinland Industrie Service GmbH





Test at both ends of "A" and "C"

Test at both ends of "A" and "C"

Manager of QA Department

ZHEJIANG BOTELI TECHNOLOGY CO.,LTD Bowei Industry Park, Sanjiang Industrial Zone, Oubei Town, Yongjia County, Wenzhou City, Zhejiang Province, P. R. China Telephone: 0086 577 6737 6662 Fax: 0086 577 6737 8398			 <i>Creata A National Brand</i>		INSPECTION CERTIFICATE EN10204 - 3.1		
CLIENT: SC ROMVALVES SRL		PURCHASE ORDER NO. 03.04_20_FERO		MANUFACTURING BATCH NO. L2004041		DESIGN & MANUFACTURING SPECIFICATIONS API 6D-ASME B16.34-API6FA-PED-ISO15848-1	
ITEM NO. OF TESTED VALVES IN PURCHASE ORDER POS# 02		REPORT NO. JYZ-L2004041.02		REPORT DATE 03/Aug/20		TEST SPECIFICATIONS API6D	

PRODUCTS	Quantity	: 1 PC
	Type	: Ball Valve, Fully welded, Trunnion Mounted, METAL/METAL, Extension
	Size/Pressure Rating	: DN150 / PN16
	Valve Ends	: BW end
	Operation	: Gear AB 880 , IP67, ATEX+ Limit switch SK01200-20X21L3, ATEX- SOLD0
	Series No.	: L2004041 02
	Temp.:	: -46°C~+180 °C

1. MATERIAL TRACEABILITY
 Original mill certificates are available for review in our works

Item	Valve Parts	Heat Number	Material
1.1	Body	HG8008	ASTM A350 LF2
1.2	Bonnet	HG8008	ASTM A350 LF2
1.3	Ball	BD2410	A350 LF2+TCC
1.4	Stem	19H242	ASTM A564 17-4PH
1.5	Seat Ring	BD2410	A350 LF2+TCC

2. PRESSURE & PERFORMANCE TEST ACCRODING TO API 6D
 Original mill certificates are available for review in our works

Item	Test	Medium	Test Pressure (MPa)	Test Duration (Seconds)
2.1	Hydro Shell Test	Water	2.40	300
2.2	Hydro Seat Test	Water	1.76	300
2.3	Air Seat Test	Air	0.6	300
2.4	Function Test	Water	1,76	CYCLES=3

3. THRUST/TORQUE FUNCTIONAL TEST
 * For valves with bare stem only

Torque at "A" end under full rated D.P. 620 N.M	Torque at "C" end under full rated D.P. 600 N.M
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Test at both ends of "A" and "C"

4. TEST RESULT-ACCEPTED

5. ANTICORROSIVE PROTECTION: PROTEGOL UR Coating 35/55 + Intergard 345, RAL7044
 We herewith declare that the valve mentioned in the following fulfill the safety requirements of the
 Pressure Equipment Directive 2014/68/EU, Modul H.
 Audit report: CHN/Q-170623, Cert. No.01 202 CHN/Q-17 0623, Number of the named office: 0035
 Notify Body: TUV Rheinland Industrie Service GmbH

Manager of QA Department

BOTELI TECHNOLOGY CO.,LTD Bowei Industry Park, Sanjiang Industrial Zone, Oubel Town, Yongjia County, Wenzhou City, Zhejiang Province,Telephone: 0086 577 6737 6562 Fax: 0086 577 6737 8398 CLIENT : SC ROMVALVES SRL			PURCHASE ORDER NO. 01.02_20_UFC	MANUFACTURING BATCH NO. L2003002	DESIGN & MANUFACTURING SPECIFICATIONS API 6D- ASME B16.34-API 6FA-PED-ISO15848-1
ITEM NO. OF TESTED VALVES IN PURCHASE ORDER POS# 02		REPORT NO. JYZ-L2003002	REPORT DATE 27/Jun/20	TEST SPECIFICATIONS API6D	
PRODUCTS Quantity : 1 PC Type : Ball Valve,Fully welded,Trunnion,Full Bore,DPE,Metal To Metal Size/Pressure Rating : 10" ANSI 300# Valve Ends : BW End Operation : Stem extension underground,Gear Rotork AB19					

BOTELI TECHNOLOGY CO.,LTD Bowel Industry Park, Sanjiang Industrial Zone, Oubel Town, Yongjia County, Wenzhou City, Zhejiang Province, Telephone: 0086 577 6737 6662 Fax: 0086 577 6737 8398 		 <i>Create A National Brand</i>		INSPECTION CERTIFICATE EN10204 - 3.1	
CLIENT: SC ROMVALVES SRL		PURCHASE ORDER NO 01.02_20_UFC	MANUFACTURING BATCH NO.. L2003002	DESIGN & MANUFACTURING SPECIFICATIONS API 6D- ASME B16.34-API 6FA-PED-ISO15848-1	
ITEM NO. OF TESTED VALVES IN PURCHASE ORDER POS# 03		REPORT NO. JYZ-L2003002	REPORT DATE 27/Jun/20	TEST SPECIFICATIONS API6D	

PRODUCTS	Quantity : 1 PC Type : Ball Valve,Bolted Bonnet,Trunnion,Full Bore,PMSS,DIB-1 Size/Pressure Rating : 10" ANSI 300# Valve Ends : Flanged end ,RF Operation : Gear Rotork AB 1250 Series No. : L2003002 03 Temp.: : -46°C~+180 °C	
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1. MATERIAL TRACEABILITY
 Original mill certificates are available for review in our works

Item	Valve Parts	Heat Number	Material
1.1	Body	HG8706	ASTM A350 LF2
1.2	Bonnet	HG8706	ASTM A350 LF2
1.3	Ball	BD2414	A350 LF2+TCC
1.4	Seat ring/Seat insert	217046	A350LF2+TCC/DEVLON-VITON

2. PRESSURE & PERFORMANCE TEST ACCRODING TO API 6D
 Original mill certificates are available for review in our works

Item	Test	Medium	Test Pressure (MPa)	Test Duration (Seconds)
2.1	Hydro Shell Test	Water	7.80	300
2.2	Hydro Seat Test	Water	5.60	300
2.3	Air Seat Test	Air	0.6	300
2.4	Function Test	Water	5,60	CYCLES=3

3. THRUST/TORQUE FUNCTIONAL TEST * For valves with bare stem only		Test at both ends of "A" and "C"
Torque at "A" end under full rated D.P. 1500 N.M	Torque at "C" end under full rated D.P. 1500 N.M	

4. TEST RESULT-ACCEPTED 5.PROTECTION: Intergard® 345,RAL 7044 We herewith declare that the valve mentioned in the following fulfill the safety requirements of the Pressure Equipment Directive 2014/68/EU,Modul H. Audit report:CHN/Q-170623,Cert. No.01 202 CHN/Q-17 0623,Number of the named office:0035 Notify Body: TUV Rheinland Industrie Service GmbH	HE XIONGGUANG Manager of QA Department
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BOTELI TECHNOLOGY CO.,LTD Bovel Industry Park, Sanjiang Industrial Zone, Oubel Town, Yongjia County, Wenzhou City, Zhejiang Province, Telephone: 0086 577 6737 6662 Fax: 0086 577 6737 8398		 <i>Create A National Brand</i>		INSPECTION CERTIFICATE EN10204 - 3.1	
CLIENT: SC ROMVALVES SRL		PURCHASE ORDER NO. 01.02_20_UFC		MANUFACTURING BATCH NO. L2003002	
ITEM NO. OF TESTED VALVES IN PURCHASE ORDER POS# 05		REPORT NO. JYZ-L2003002		REPORT DATE 27/Jun/20	
DESIGN & MANUFACTURING SPECIFICATIONS API 6D-ASME B16.34-API 6FA-PED-ISO15848-1					
TEST SPECIFICATIONS API6D					

PRODUCTS	Quantity : 1 PC Type : Ball Valve, Bolted Bonnet, Trunnion, Full Bore, PMSS, DIB-1 Size/Pressure Rating : 3" ANSI 300# Valve Ends : Flanged end, RF Operation : Lever Operated Series No. : L2003002 05 Temp.: : -46°C~+180 °C
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1. MATERIAL TRACEABILITY
 Original mill certificates are available for review in our works

Item	Valve Parts	Heat Number	Material
1.1	Body	HG8097	ASTM A350 LF2
1.2	Bonnet	HG8097	ASTM A350 LF2
1.3	Ball	341215071	A350 LF2+TCC
1.4	Seat ring/Seat insert	217069	A350LF2+TCC/DEVILON-VITON

2. PRESSURE & PERFORMANCE TEST ACCORDING TO API 6D
 Original mill certificates are available for review in our works

Item	Test	Medium	Test Pressure (MPa)	Test Duration (Seconds)
2.1	Hydro Shell Test	Water	7.80	120
2.2	Hydro Seat Test	Water	5.60	120
2.3	Air Seat Test	Air	0.6	120
2.4	Function Test	Water	5,60	CYCLES=3

3. THRUST/TORQUE FUNCTIONAL TEST
 * For valves with bare stem only

Torque at "A" end under full rated D.P. N.A	Torque at "C" end under full rated D.P. N.A
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Test at both ends of "A" and "C"

4. TEST RESULT-ACCEPTED

5. PROTECTION: Intergard® 345, RAL 7044

We herewith declare that the valve mentioned in the following fulfill the safety requirements of the Pressure Equipment Directive 2014/68/EU, Modul H.

Audit report: CHN/Q-170623, Cert. No.01 202 CHN/Q-17 0623, Number of the named office: 0035

Notify Body: TUV Rheinland Industrie Service GmbH

HE XIONGGUANG
 Manager of QA Department

BOTELI TECHNOLOGY CO.,LTD Bowel Industry Park, Sanjiang Industrial Zone, Oubel Town, Yongjia County, Wenzhou City, Zhejiang Province, Telephone: 0086 577 6737 6562 Fax: 0086 577 6737 8398		 <i>Creates A National Brand</i>		INSPECTION CERTIFICATE EN10204 - 3.1	
CLIENT: SC ROMVALVES SRL		PURCHASE ORDER NO. 01.02_20_UFC		MANUFACTURING BATCH NO. L2003002	
ITEM NO. OF TESTED VALVES IN PURCHASE ORDER POS# 06		REPORT NO. JYZ-L2003002		REPORT DATE 27/Jun/20	
DESIGN & MANUFACTURING SPECIFICATIONS API 6D-ASME B16.34-API 6FA-PED-ISO15848-1					
TEST SPECIFICATIONS API6D					

PRODUCTS	Quantity : 1 PC Type : Ball Valve, Bolted Bonnet, Trunnion, Full Bore, PMSS, DIB-1 Size/Pressure Rating : 2" ANSI 300# Valve Ends : Flanged end, RF Operation : Lever Operated Series No. : L2003002 06 Temp.: : -46°C~+180 °C
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1. MATERIAL TRACEABILITY
 Original mill certificates are available for review in our works

Item	Valve Parts	Heat Number	Material
1.1	Body	HG8097	ASTM A350 LF2
1.2	Bonnet	HG8097	ASTM A350 LF2
1.3	Ball	341215071	A350 LF2+TCC
1.4	Seat ring/Seat insert	217069	A350LF2+TCC/DEVLON-VITON

2. PRESSURE & PERFORMANCE TEST ACCORDING TO API 6D
 Original mill certificates are available for review in our works

Item	Test	Medium	Test Pressure (MPa)	Test Duration (Seconds)
2.1	Hydro Shell Test	Water	7.80	120
2.2	Hydro Seat Test	Water	5.60	120
2.3	Air Seat Test	Air	0.6	120
2.4	Function Test	Water	5,60	CYCLES=3

3. THRUST/TORQUE FUNCTIONAL TEST
 * For valves with bare stem only

Torque at "A" end under full rated D.P. N.A	Torque at "C" end under full rated D.P. N.A
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Test at both ends of "A" and "C"

4. TEST RESULT-ACCEPTED

5.PROTECTION: Intergard® 345,RAL 7044

 We herewith declare that the valve mentioned in the following fulfill the safety requirements of the Pressure Equipment Directive 2014/68/EU, Modul H.

 Audit report: CHN/Q-170623, Cert. No.01 202 CHN/Q-17 0623, Number of the named office: 0035
 Notify Body: TUV Rheinland Industrie Service GmbH

HE XIONGGUANG
 Manager of QA Department

BOTELI VALVE GROUP CO., LTD.CN-0718
EP-0076

HQ 1272

ISO 9001

ISO 14001

API 6D

API 6FA

ISTL
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INSPECTION CERTIFICATE
EN10204 - 3.1

CLIENT : SC ROMVALVES SRL	PURCHASE ORDER NO. 04.03_18_MOLD	MANUFACTURING BATCH NO. L1804007	DESIGN & MANUFACTURING SPECIFICATIONS API 6D
ITEM NO. OF TESTED VALVES IN PURCHASE ORDER POS# 01	REPORT NO. JYZ-L1804007.01	REPORT DATE 12-Jul-18	TEST SPECIFICATIONS API 6D

PRODUCTS	Quantity	: 3 PCS
	Type	: Ball Valve, Fully welded, Trunnion type, PMSS
	Size/Pressure Rating	: 20" AISI 300#
	Valve Ends	: BW End
	Operation	: HPG-130S-180F/DI-ROTORK
	Series No.	: L180400701 ~ 03
	Temp.:	: -29°C ~ +120°C

1. MATERIAL TRACEABILITY

Original mill certificates are available for review in our works

Item	Valve Parts	Heat Number	Material
1.1	Body	HG8332	ASTM A350 LF2
1.2	Bonnet	HG8332	ASTM A350 LF2
1.3	Ball	1831306	ASTM A350LF2+TCC
1.4	Stem	11502036	ASTM A29 4140

2. PRESSURE & PERFORMANCE TEST ACCORDING TO API 6D

Original mill certificates are available for review in our works

Item	Test	Medium	Test Pressure (MPa)	Test Duration (Seconds)
2.1	Hydro Shell Test	Water	7.80	1800
2.2	Hydro Seat Test	Water	5.60	300
2.3	Air Seat Test	Air	0.6	300
2.4	Function Test	\	\	\

3. THRUST/TORQUE FUNCTIONAL TEST

* For valves with bare stem only

Torque at "A" end under full rated D.P.	Torque at "C" end under full rated D.P.
7800 N.M	7900 N.M

**4. TEST RESULT**

Accepted

Standard design API 6D and ASME B16.34
 Face-to-Face acc to ASME B16.10, End connection BW acc to ANSI B16.25
 Pressure-Temperature rating acc to ANSI B16.34
 Fire-Safe construction certifies as per API 6FA
 Tests acc to API 6D/API 598

Test at both ends of "A" and "C"

QUALITY CONTROL

BOTELI VALVE GROUP CO., LTD.

Manager of QA Department

BOTELI VALVE GROUP CO., LTD.
BTL
 Create A National Brand

INSPECTION CERTIFICATE
EN10204 - 3.1

CLIENT: SC ROMVALVES SRL	PURCHASE ORDER NO. 04.03_18_MOLD	MANUFACTURING BATCH NO. L1804007	DESIGN & MANUFACTURING SPECIFICATIONS API 6D
ITEM NO. OF TESTED VALVES IN PURCHASE ORDER POS# 03	REPORT NO. JYZ-L1804007.03	REPORT DATE 12-Jul-18	TEST SPECIFICATIONS API 6D

PRODUCTS	Quantity	: 2 PCS
	Type	: Ball Valve, Fully welded, Trunnion type. Metal to Metal
	Size/Pressure Rating	: 6" AISI 300#
	Valve Ends	: BW End
	Operation	: Gear AB880-Rotork
	Series No.	: L180400708 ~ 09
	Temp.:	: -29°C ~ +120°C

1. MATERIAL TRACEABILITY

Original mill certificates are available for review in our works

Item	Valve Parts	Heat Number	Material
1.1	Body	209493	ASTM A350 LF2
1.2	Bonnet	209493	ASTM A350 LF2
1.3	Ball	BD2300	ASTM A350 LF2+TCC
1.4	Stem	2107	ASTM A29 4140

2. PRESSURE & PERFORMANCE TEST ACCORDING TO API 6D

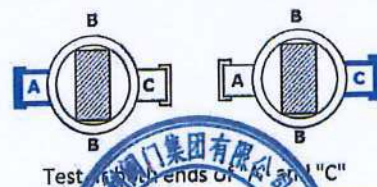
Original mill certificates are available for review in our works

Item	Test	Medium	Test Pressure (MPa)	Test Duration (Seconds)
2.1	Hydro Shell Test	Water	7.80	300
2.2	Hydro Seat Test	Water	5.60	300
2.3	Air Seat Test	Air	0.6	300
2.4	Function Test	\	\	\

3. THRUST/TORQUE FUNCTIONAL TEST

* For valves with bare stem only

Torque at "A" end under full rated D.P.	Torque at "C" end under full rated D.P.
1000 N.M	950 N.M

**4. TEST RESULT**

Accepted

Standard design API 6D and ASME B16.34
 Face-to-Face acc to ASME B16.10, End connection BW acc to ANSI B16.25
 Pressure-Temperature rating acc to ANSI B16.34
 Fire-Safe construction certifies as per API 6FA
 Tests acc to API 6D/API 598



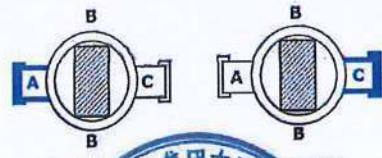
Manager of QA Department

BOTELI VALVE GROUP CO., LTD.       6A-0338 6D-0578 MD 1277 ISO 9001 ISO 14001 OHSAS 18001 API 6FA			 Create A National Brand		INSPECTION CERTIFICATE EN10204 - 3.1	
CLIENT: SC ROMVALVES SRL		PURCHASE ORDER NO. 04.03_18_MOLD	MANUFACTURING BATCH NO. L1804007	DESIGN & MANUFACTURING SPECIFICATIONS API 6D		
ITEM NO. OF TESTED VALVES IN PURCHASE ORDER POS# 04		REPORT NO. JYZ-L1804007.04	REPORT DATE 12-Jul-18	TEST SPECIFICATIONS API 6D		

PRODUCTS	Quantity : 1 PCS Type : Ball Valve, Fully welded, Trunnion type. Metal to Metal Size/Pressure Rating : 4" AISI 300# Valve Ends : BW End Operation : Gear AB880-Rotork Series No. : L180400710 Temp.: : -29°C~+120°C	
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1. MATERIAL TRACEABILITY			
Original mill certificates are available for review in our works			
Item	Valve Parts	Heat Number	Material
1.1	Body	HG2138	ASTM A350 LF2
1.2	Bonnet	HG2138	ASTM A350 LF2
1.3	Ball	15-0622	ASTM A350 LF2+TCC
1.4	Stem	2108	ASTM A29 4140

2. PRESSURE & PERFORMANCE TEST ACCORDING TO API 6D				
Original mill certificates are available for review in our works				
Item	Test	Medium	Test Pressure (MPa)	Test Duration (Seconds)
2.1	Hydro Shell Test	Water	7.80	120
2.2	Hydro Seat Test	Water	5.60	120
2.3	Air Seat Test	Air	0.6	120
2.4	Function Test	\	\	\

3. THRUST/TORQUE FUNCTIONAL TEST		 Test at both "A" and "C"
* For valves with bare stem only		
Torque at "A" end under full rated D.P. 450 N.M	Torque at "C" end under full rated D.P. 470 N.M	

4. TEST RESULT		 Manager of QA Department
Accepted		
Standard design API 6D and ASME B16.34 Face-to-Face acc to ASME B16.10, End connection BW acc to ANSI B16.25 Pressure-Temperature rating acc to ANSI B16.34 Fire-Safe construction certifies as per API 6FA Tests acc to API 6D/API 598		

BOTELI VALVE GROUP CO., LTD. 			 ISTL Create A National Brand	INSPECTION CERTIFICATE EN10204 - 3.1
CLIENT: SC ROMVALVES SRL	PURCHASE ORDER NO. 04.03_18_MOLD	MANUFACTURING BATCH NO. L1804007	DESIGN & MANUFACTURING SPECIFICATIONS API 6D	
ITEM NO. OF TESTED VALVES IN PURCHASE ORDER POS# 05	REPORT NO. JYZ-L1804007.05	REPORT DATE 12-Jul-18	TEST SPECIFICATIONS API 6D	

PRODUCTS	Quantity : 3 PCS Type : Ball Valve, Fully welded, Trunnion type. Metal to Metal Size/Pressure Rating : 6" AISI 300# Valve Ends : Flanged End RF Operation : Gear AB880-Rotork Series No. : L180400711 ~13 Temp.: : -29°C ~ +120°C	
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1. MATERIAL TRACEABILITY			
Original mill certificates are available for review in our works			
Item	Valve Parts	Heat Number	Material
1.1	Body	HG8332	ASTM A350 LF2
1.2	Bonnet	HG8332	ASTM A350 LF2
1.3	Ball	BD2300	ASTM A350 LF2+TCC
1.4	Stem	2107	ASTM A29 4140

2. PRESSURE & PERFORMANCE TEST ACCORDING TO API 6D				
Original mill certificates are available for review in our works				
Item	Test	Medium	Test Pressure (MPa)	Test Duration (Seconds)
2.1	Hydro Shell Test	Water	7.80	120
2.2	Hydro Seat Test	Water	5.60	120
2.3	Air Seat Test	Air	0.6	120
2.4	Function Test	\	\	\

3. THRUST/TORQUE FUNCTIONAL TEST		 Test at both "B" and "C"
* For valves with bare stem only		
Torque at "A" end under full rated D.P. 950 N.M	Torque at "C" end under full rated D.P. 980 N.M	

4. TEST RESULT	
Accepted	
Standard design API 6D and ASME B16.34	
Face-to-Face acc to ASME B16.10, End connection RF acc to ANSI B16.5	
Pressure-Temperature rating acc to ANSI B16.34	
Fire-Safe construction certifies as per API 6FA	
Tests acc to API 6D/API 598	

Declarație de încorporare pentru echipamente tehnice parțial finalizate conform Directivei Mașini 2006/42/CE

pentru acționările electrice cu următoarele serii de aparate:

TIGRON TR-M30X, TR-M60X, TR-M120X, TR-M250X, TR-M500X și TR-M1000X

Producător: AUMA Riester GmbH & Co KG, Aumastr. 1, 79379 Muellheim, Germany

Acționările electrice nominalizate mai sus sunt prevăzute pentru acționarea armăturilor industriale.

Sunt respectate următoarele cerințe fundamentale în materie de siguranță și protecția sănătății, conform Anexei I a Directivei 2006/42/CE:

articolele 1.1.2, 1.1.3, 1.1.5, 1.2.1, 1.2.6, 1.3.1, 1.3.7, 1.5.1, 1.6.3, 1.7.1, 1.7.3, 1.7.4

Compania AUMA se obligă ca, la cerere, să transmită electronic documentația tehnică a mașinii incomplete organismelor naționale din statele individuale. A fost redactată Documentația tehnică specială conform Anexei VII Partea B aferentă echipamentului tehnic parțial finalizat.

Este interzisă darea în exploatare până în momentul în care a fost asigurat faptul că mașina în care vor fi încorporate acționările electrice nominalizate mai sus corespunde dispozițiilor Directivei 2006/42/CE.

De asemenea, sunt îndeplinite obiectivele de protecție ale **Directivei 2014/35/UE (Directiva privind echipamentele de joasă tensiune)**, prin aplicarea următoarelor norme armonizate, în măsura în care acestea sunt relevante pentru produse:

EN 61010-1:2010

Reprezentant autorizat pentru documentație: Michael Noll, Aumastr. 1, 79379 Muellheim, Germany

Declarație de conformitate CE

În calitate de producător, AUMA Riester GmbH & Co. KG declară prin prezenta că aparatele indicate mai sus corespund cerințelor fundamentale ale următoarelor directive. Au fost aplicate următoarele norme armonizate:

Directiva ATEX 2014/34/UE

EN IEC 60079-0:2018
EN 60079-1:2014
EN 60079-7:2015 / A1:2018

EN 60079-31:2014
EN 1127-1:2019
EN 50495:2010

EN ISO 80079-36:2016
EN ISO 80079-37:2016

Certificat de examinare UE de tip:
Organism notificat:
Număr de identificare:

DEKRA 19ATEX0091 X
DEKRA Certification B.V., 6825 MJ Arnhem, Netherlands
0344

Directiva RoHS 2011/65/UE

EN 50581:2012

Directiva RED 2014/53/UE

EN 300 328 V2.2.2
EN 301 489-1 V2.2.1
EN 301 489-17 V3.2.1

De asemenea, au fost aplicate normele mai sus menționate ale **Directivei privind echipamentele de joasă tensiune 2014/35/UE** și următoarele norme ale **Directivei CEM 2014/30/UE**:

EN 61000-6-2:2005/AC:2005

EN 61000-6-3:2007/A1:2011/AC:2012

Muellheim, 2021-06-01


Dr. J. Hoffmann, CEO

CERTIFICATE

(1) EU-Type Examination

(2) Equipment or protective systems intended for use in potentially explosive atmospheres - Directive 2014/34/EU

(3) EU-Type Examination Certificate Number: **DEKRA 13ATEX0016 X** Issue Number: **6**

(4) Product: **Part-turn Actuator, type SQEx*****, SQREx*****, SQVEx*****, SQRVEx***** and Wall Bracket, type WHEx01.1****

(5) Manufacturer: **Auma Riester GmbH & Co. KG**

(6) Address: **Aumastrasse 1, 79379 Müllheim, Germany**

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) DEKRA Certification B.V., Notified Body number 0344 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential test report number NL/DEK/ExTR19.0105/01.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0 : 2018
EN 60079-11 : 2012

EN 60079-1 : 2014
EN 60079-31 : 2014

EN 60079-7 : 2015 + A1 : 2018
EN 50495 : 2010

except in respect of those requirements listed at item 18 of the Schedule.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:



II 2 G
II 2 D

Ex db eb ib IIC T4 Gb
Ex ib tb IIIC T130 °C Db
Ex ic FISCO field device

(optionally integrated)

Note: A typical example is shown, for details see the Annex 1 to this certificate.

Date of certification: 4 August 2021

DEKRA Certification B.V.

R. Schuller
Certification Manager



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(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate DEKRA 13ATEX0016 X**

Issue No. 6

(15) **Description**

Part-turn actuator types SQEx*****, SQREx*****, SQVEx***** and SQRVEx***** are intended to operate industrial valves. The actuators can be provided without or with integral controls. Integral controls can also be provided, separately from the actuator, on the Wall Bracket type WHEX01.1**.

The actuators are available in sizes 05, 07, 10, 12 and 14.

The enclosure provides a degree of protection of IP68 (8 m for 96 h) per EN IEC 60079-0 and EN 60529 when suitable for type of protection Ex tb.

For detailed product information, type designation, marking, thermal and electrical data see the annex to this certificate; Annex 1 to Report No. NL/DEK/ExTR19.0105/01.

Electrical data

For information about the electrical data see Annex 1 to Report No. NL/DEK/ExTR19.0105/01.

Installation instructions

The instructions provided with the product shall be followed in detail to assure safe operation.

(16) **Report Number**

No. NL/DEK/ExTR19.0105/01.

(17) **Specific conditions of use**

- For information regarding the dimensions of the flameproof joints the manufacturer shall be contacted.
- Special fasteners shall have a property class of
 - min. A*-70, for all special fasteners except these used at motor type VKX and
 - min. A*-80, for special fasteners used at motor type VKX.
- After tripping of the thermal motor protection (TMS) an acknowledgement (RESET) of the thermal fault is required.
- For use in dust environments, the risk of external electrostatic discharges shall be minimized.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at item (9).

(19) **Test documentation**

As listed in Report No. NL/DEK/ExTR19.0105/01.

(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate DEKRA 13ATEX0016 X**

Issue No. **6**

(20) **Certificate history**

Issue 1 -	215898600	initial certificate.
Issue 2 -	216330000	Upgrade of edition of EN 60079-15.
Issue 3 -	217400700	Upgrade of edition of EN 60079-7 and EN 60079-31. 1 Phase motor has been added for SQ.Ex series 05.2 to 14.2 FNICO and FISCO deleted for ACExC 01.01
Issue 4 -	221889800	Expanding of ambient temperature range to +80 °C for Group IIB; Minor construction changes; Updating of standard EN 60079-7 to edition 2015.
Issue 5 -	222684600	Whole new set-up with modular approach. Assessed per latest standard editions.`
Issue 6 -	224206700-3	Actuator types SQVEx and SQRVEx with integral controls type ACVExC 01.2 and motor types VDY, VSY, SDY, SSY are added. Wall Bracket with integral controls type ACVExC 01.2 is added.

General product information:

Part-turn actuator types SQEx^{*****}, SQREx^{*****}, SQVEx^{*****} and SQRVEx^{*****} are intended to operate industrial valves.

The actuators can be provided without or with integral controls. Integral controls can also be provided, separately from the actuator, on the Wall Bracket type WHEx01.1**.

The actuators and wall bracket are assemblies of different modules each with their own enclosure and function.

The part-turn actuators in version AUMA NORM comprise a motor, a gear compartment, a switch compartment, and a terminal compartment (terminal connection).

The part-turn actuators in version with integral controls comprise a motor, a gear compartment, a switch compartment, a control compartment (integral controls) and a terminal compartment (terminal connection).

The wall bracket includes a bracket for wall mounting, a control compartment (integral controls) and 2 terminal compartments (terminal connections) one for connections with the actuator and one for the external connections.

Following types of modules with their types of protection can be part of the actuators and wall bracket:

Module Type	Applied types of protection				
	Ex db	Ex eb	Ex ib	Ex ic FISCO field device	Ex tb
Terminal connections					
KP, KPH, KPB, KT-Exe, KL-Exe		X			X
WHEx 01.1-Exe ⁴⁾		X			X
KES-Exe, KM-Exe		X	Optional ¹⁾	Optional ²⁾	X
KES-Exd, KM-Exd,	X		Optional ¹⁾	Optional ²⁾	X
KT-Exd, KL-Exd	X				X
WHEx 01.1-Exd ⁴⁾	X				X
Integral controls ⁵⁾					
ACExC 01.1, ACExC 01.2	X		Optional ¹⁾	Optional ³⁾	X
AMExC 01.1 AMBExC 01.1 SEMExC 01.1	X		Optional ¹⁾		X
ACVExC 01.2 ⁷⁾	X		Optional ¹⁾	Optional ³⁾	
Switch compartment ⁶⁾					
With control unit MWG 05.3	X				X
With control unit MS	X		X		X
Motors ⁶⁾					
VDX 63, SDX 63, VWX 63, SWX 63	X				X
VKX 63, SKX 63	X				
VDY 63, SDY 63, VSY 63, SSY 63 ⁷⁾	X				

Note 1): For the optional routing of Ex ib signals from the switch compartment, through the compartment of integral controls, to terminal connection of an actuator.

Note 2): For the optional routing of the Ex ic FISCO fieldbus signal from the integral controls to the terminal connection.

Note 3): When provided with the FISCO Fieldbus interface the integral controls are suitable for connection to a FISCO Fieldbus as an Ex ic FISCO field device. The interface itself is protected by the Ex db and Ex tb enclosure of the integral controls for EPL Gb and Db.

Note 1 to 3): All combinations of the two options; FISCO interface and position transmitter are permitted.

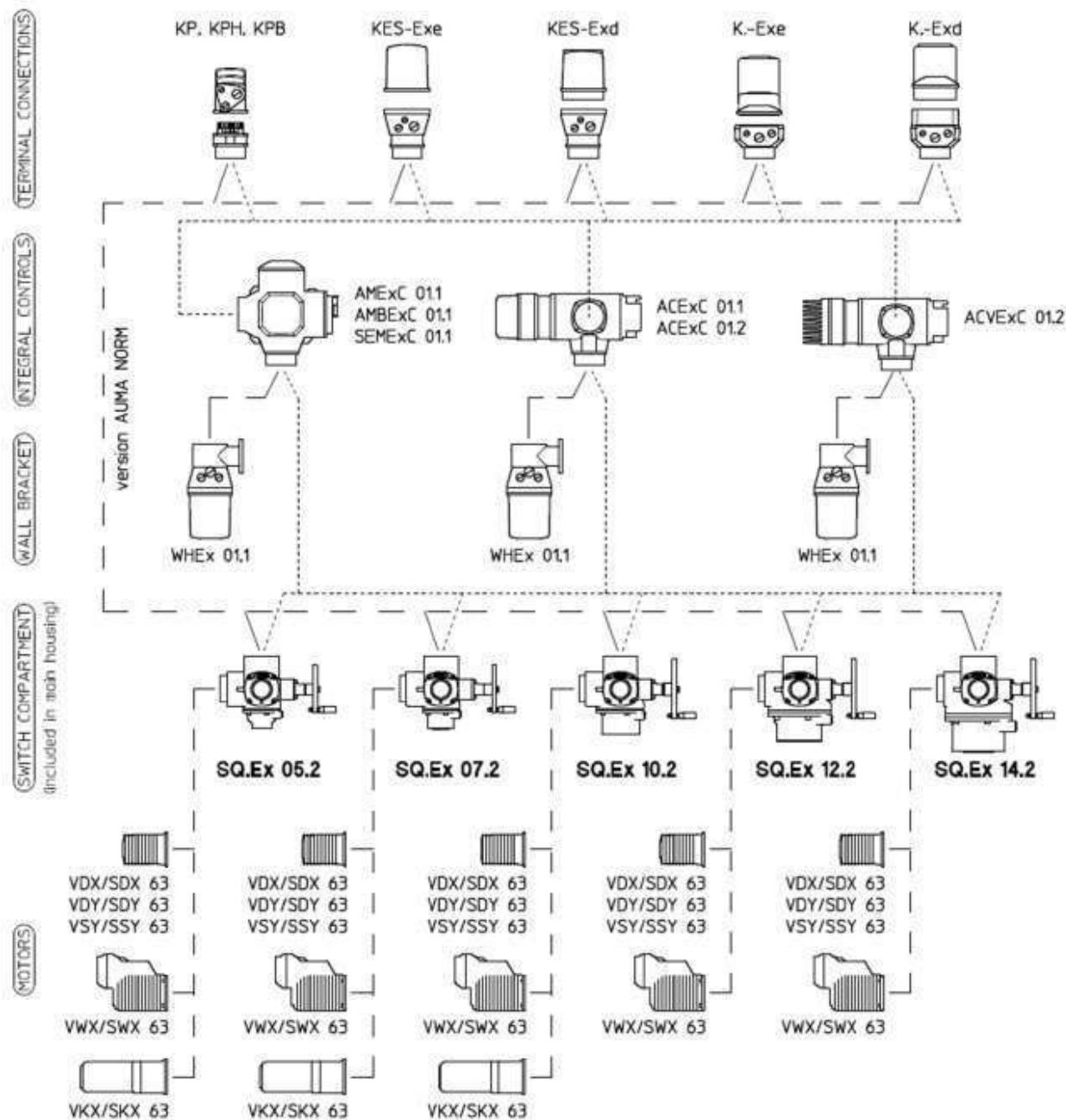
Note 4): not used in the actuator.

Note 5): not used in actuators in version AUMA NORM

Note 6): not used in the wall bracket.

Note 7): For variable speed operation, actuators with motor types VDY, SDY, VSY and SSY shall operate with integral controls type ACVExC 01.2.

For a graphic overview see below.



Description of the modules

Terminal connection

The terminal connections provide the signal and power connections to AUMA actuators and wall bracket. For the signal and power connections terminals are available within the terminal connection enclosure. The terminal connection type KL-Exd may optionally be equipped with an interface board for Ethernet based communication technologies e.g. Profinet, Ethernet/IP or Modbus TCP/IP.

Integral controls

The integral controls include the electronics to control the actuator motions. The enclosure of integral controls is on one side connected to the switch compartment or to the wall bracket and on the other side to the terminal connections. Optionally integral controls types ACExC01.1, ACExC01.2 and ACVExC 01.2 are provided with a FISCO interface.

The variable speed actuators types SQVEx and SQRVEx are operated by the integral controls type ACVExC 01.2. The variable speed is achieved by the frequency converter which is installed within the Ex db compartment of the integral controls.

The motor of variable speed actuators and the frequency converter within the ACVExC 01.2 are thermally protected by the TMS 02.1 or TMS 02.2 module mounted in these integral controls with a degree of reliability of the system classified as Safety Integrity Level 1 (SIL 1).

An optional heater can be installed to avoid condensation.

Switch compartment

The switch compartment contains the signaling parts of the actuator, like for torque and valve position and can be provided with control unit MS or MWG 05.3.

The switch compartment with control unit type MS is optionally provided with position transmitter type RWG5020.2Ex, in type of protection Ex ib.

An optional heater can be installed to avoid condensation.

Motor

The motors are providing the power to drive the actuator. The motor shaft is connected with the gear module. The signal and power connections of the motors are provided through one or two bushings into the switch compartment.

An optional heater can be installed to avoid condensation.

In order to guarantee the temperature class and maximum surface temperature, the AC motors are equipped either with thermo switches or PTC's, three for 3-ph (connected in series) and one for 1-ph motors. The DC motors are equipped with thermo switches only. Motors are available with these elements with either a low or a high tripping temperature.

As an option, all motors may be equipped with sensors (e.g. a thermo-sensor to monitor the housing temperature close to the gear compartment, a position switch for detection of hand wheel mode).

Gear unit

The gear compartment is a non-electrical part. The gears inside transfer power from the motor to the valve.

The actuator consists of both electrical and non-electrical parts. This report covers the electrical parts, taken into account the effects of the heat dissipation from the non-electrical parts.

Installation instructions

For actuators without control by the integral control or wall bracket: The PTC's or thermo switches of the motor shall be connected to a suitable control unit, switching off the motor at high winding temperatures as shown in the customer wiring diagram.

For all actuators: After the motor is switched off at high winding temperatures only a manual reset/restart after the PTC's or thermo switches have cooled down is permitted.

The customer wiring diagram, in addition to the general instructions provided with the equipment, shows customer specific details.

Type designation

Actuator:

Type code:	SQ	.	Ex	07	.2	-F07	/	-	a	3	a	1
ID:	I	II	III	IV	V	VI		VII	VIII	IX	X	XI

ID	Explanation	Value	Explanation
I	General	SQ	Part-turn actuator
II	Duty	none R V RV	Short-time duty S2 Intermittent duty S4 short-time duty S2/S9 with variable speed intermittent duty S4/S5/S9 with variable speed
III	Explosion proof version	Ex	For use in environments containing flammable gas / vapour combustible dust substances
IV	Actuator size	05 07 10 12 14	Indicator for standardized actuator sizes
V	Design generation	.2	Indicator for generation series
VI	Flange size	-F**	Indicator for standardized flange sizes. The contents of ** is not relevant for explosion safety.
VII	Blank	-	not used yet
VIII	Motor	a c	Type VDX, SDX, VDY, VSY, SDY, SSY (3 ph) Type VWX, SWX (1 ph) Type VKX, SKX (DC)
IX	Terminal connection	3 4	Ex e: Type KP, KPH, KPB, KES-Exe, K.-Exe Ex d: Type KES-Exd, K.-Exd
X	Position transmitter	a b	without RWG5020.2Ex with RWG5020.2Ex (Ex ib)
XI	Ex-Fieldbus	1 3	without Ex-Fieldbus with FISCO interface

Wall bracket

WH	Ex	01	.1	/	-	-	3	a	1
I	II	III	IV		V	VI	VII	VIII	IX

ID	Explanation	Value	Explanation
I	General	WH	Wall bracket
II	Explosion proof version	Ex	For use in environments containing flammable gas / vapour combustible dust substances
III	Size	01	Indicator for standardized size
IV	Design generation	.1	Indicator for generation series
V	Blank	-	not used yet
VI	Blank	-	not used yet
VII	Terminal connections	1 2 3 4	Connections to actuator ¹⁾ Ex d Ex e Ex e Ex d External connections ¹⁾ Ex e Ex d Ex e Ex d
VIII	Blank	-	not used yet
IX	Ex-Fieldbus	1 3	without Ex-Fieldbus with FISCO Interface

Note 1: For the combination with other types of protection see page 1.

Ex marking

The marking consists of 1, 2 or 3 lines. A line for explosive gas atmospheres applies generally

Explosive gas atmospheres

Actuator	II 2 G	Ex	db	eb	ib	IIC	T4	Gb
Additions for ATEX II 2 G applies generally								
Ex symbol Ex applies generally								
Type of protection Ex db db applies generally								
Type of protection Ex eb eb applies with terminal connection types: - KP, KPH, KPB, KES-Exe - KL-Exe, KM-Exe, KT-Exe,								
Type of protection Ex ib ib applies when provided with position transmitter type RWG5020.2Ex.								
Group - IIC: motor types: VDX, SDX, VWX, SWX, VDY, VSY, SDY, SSY with T_{amb} up to +60 °C - IIB: motor types: VDX, SDX, VWX, SWX, VDY, VSY, SDY, SSY with T_{amb} up to +80 °C - IIB: motor types: VKX, SKX with T_{amb} up to +60 °C								
Temperature class - T4: motor types VDX, SDX, VKX, SKX, VDY, VSY, SDY, SSY with low tripping temp., T_{amb} up to +60 °C - T3: motor types VDX, SDX, VKX, SKX, VDY, VSY, SDY, SSY with high tripping temp., T_{amb} up to +60 °C - T3: motor types VDX, SDX, VDY, VSY, SDY, SSY with low tripping temp., T_{amb} up to +80 °C - T4: motor types VWX, SWX with low tripping temp., T_{amb} up to +40 °C - T3: motor types VWX, SWX with high tripping temp., T_{amb} up to +60 °C - T3: motor types VWX, SWX with low tripping temp., T_{amb} up to +80 °C								
Equipment protection level Gb applies generally								

Wall Bracket	II 2 G	Ex	db	eb	IIC	T4	Gb
Additions for ATEX							
II 2 G applies generally							
Ex symbol							
Ex applies generally							
Type of protection Ex db							
db applies generally							
Type of protection Ex eb							
eb applies with terminal connection types:							
- KP, KPH, KPB, KES-Exe							
- KL-Exe, KM-Exe, KT-Exe,							
- WHEX 01.1-Exe							
Group							
- IIC applies for T _{amb} up to +60 °C							
- IIB applies for T _{amb} up to +80 °C							
Temperature class							
- T4 applies for T _{amb} up to +60 °C							
- T3 applies for T _{amb} up to +80 °C							
Equipment protection level							
Gb applies generally							

Explosive dust atmospheres

A line for explosive dust atmospheres applies to:

- actuators with motor types VDX, SDX, VWX, SWX and T_{amb} up to +60 °C
- wall brackets with T_{amb} up to +60 °C and provided with integral controls type ACExC 01.1, ACEXC 01.2, AMExC 01.1 AMBExC 01.1 or SEMExC 01.1.

Actuator	II 2 D	Ex	ib	tb	IIIC	T130 °C	Db
Additions for ATEX II 2 D applies generally							
Ex Symbol Ex applies generally							
Type of protection Ex ib ib applies when provided with position transmitter type RWG5020.2Ex.							
Type of protection Ex tb tb applies generally							
Group IIIC applies generally							
Maximum surface temperature - T130 °C: motor types VDX, SDX with low trip. temp., T_{amb} up to +60 °C - T190 °C: motor types VDX, SDX with high trip. temp., T_{amb} up to +60 °C - T130 °C: motor types VWX, SWX with low trip. temp., T_{amb} up to +40 °C - T190 °C: motor types VWX, SWX with low trip. temp., T_{amb} up to +60 °C - T190 °C: motor types VWX, SWX with high trip. temp., T_{amb} up to +60 °C							
Equipment protection level Db applies generally							

Wall Bracket	II 2 D	Ex	tb	IIIC	T130 °C	Db
Additions for ATEX II 2 D applies generally						
Ex Symbol Ex applies generally						
Type of protection Ex tb tb applies generally						
Group IIIC applies generally						
Maximum surface temperature T130 °C applies generally						
Equipment protection level Db applies generally						

FISCO

A line for FISCO applies when provided with integral controls with the optional FISCO interface

Actuator Wall Bracket	Ex ic FISCO field device
Applies generally	

Thermal data

The limits are based on the surface temperatures and the permissible service temperatures of non-metallic parts. The most critical value is leading.

Equipment	Motor type	Group			Temperature class	Type of duty	Ambient temperature ¹⁾
		IIB	IIC	IIIC			
Actuator in version AUMA NORM	VDX SDX	-	x	x	T4 / T130 °C ²⁾ T3 / T190 °C ³⁾	S2 - 15 min S4 - 25 % S4 - 50 %	-60 °C to +60 °C
		x	-	-	T3	S2 - 15 min	-60 °C to +75 °C
	VWX SWX	-	x	x	T4 / T130 °C ²⁾ T3 / T190 °C ³⁾	S2 - 10 min S4 - 20 %	-60 °C to +40 °C
		-	x	x	T3 / T190 °C	S2 - 10 min S4 - 20 %	-60 °C to +60 °C
		x	-	-	T3	S2 - 10 min	-60 °C to +80 °C
		x	-	-	T3	S4 - 20 %	-60 °C to +70 °C
	VKX SKX	x	-	-	T4 ²⁾ T3 ³⁾	S2 - 15 min	-20 °C to +60 °C
	VDY SDY VSY SSY	-	x	-	T4 ²⁾ T3 ³⁾	S2 - 15 min ⁴⁾ S4/S5 - 25 % ⁴⁾ S4/S5 - 50 % ⁴⁾	-60 °C to +60 °C
		x	-	-	T3	S2 - 15 min ⁴⁾ S4/S5 - 25 % ⁴⁾	-60 °C to +70 °C
Actuator in version with integral controls - ACExC 01.1 - ACExC 01.2 - AMExC 01.1 - AMBExC 01.1 - SEMExC 01.1	VDX SDX	-	x	x	T4 / T130 °C ²⁾ T3 / T190 °C ³⁾	S2 - 15 min S4 - 25 % S4 - 50 %	-60 °C to +60 °C
		x	-	-	T3	S2 - 15 min	-60 °C to +75 °C
		x	-	-	T3	S4 - 25 %	-60 °C to +65 °C
	VWX SWX	-	x	x	T4 / T130 °C ²⁾ T3 / T190 °C ³⁾	S2 - 10 min S4 - 20 %	-60 °C to +40 °C
		-	x	x	T3 / T190 °C	S2 - 10 min S4 - 20 %	-60 °C to +60 °C
		x	-	-	T3	S2 - 10 min	-60 °C to +80 °C
		x	-	-	T3	S4 - 20 %	-60 °C to +70 °C
	VKX SKX	x	-	-	T4 ²⁾ T3 ³⁾	S2 - 15 min	-20 °C to +60 °C
	VDY SDY VSY SSY	-	x	-	T4 ²⁾ T3 ³⁾	S2 - 15 min ⁴⁾ S4/S5 - 25 % ⁴⁾ S4/S5 - 50 % ⁴⁾	-60 °C to +60 °C
		x	-	-	T3	S2 - 15 min ⁴⁾ S4/S5 - 25 % ⁴⁾	-60 °C to +70 °C
Wall bracket with integral controls - ACExC 01.1 - ACExC 01.2 - AMExC 01.1 - AMBExC 01.1 - SEMExC 01.1	-	-	x	x	T4 / T130 °C	-	-60 °C to +60 °C
	-	x	-	-	T3	-	-60 °C to +80 °C
Wall bracket with integral controls - ACVExC 01.2	-	-	x	-	T4	-	-60 °C to +60 °C
		x	-	-	T3	-	-60 °C to +70 °C

Note 1: the following limitations apply:

- T_{amb} limited to +60 °C in combination with the FISCO interface
- T_{amb} limited to +60 °C in combination with position transmitter RWG5020.2Ex.
- T_{amb} limited to +55 °C in combination with terminal connection KM-Ex. and type of duty S4 - 50 %
- T_{amb} limited to +65 °C in combination with terminal connection KM-Ex. and types of duty S4 - 20 % and S4 - 25 %

Note 2: applies to motors with a low tripping temperature

Note 3: applies to motors with a high tripping temperature

Note 4: Type of duty S9 included as long as it is within the limits of S2 or S4

Electrical data

Equipment	Total power consumption		Power lines ¹⁾	Control lines
Actuator in version AUMA NORM	max. 55 W	including heaters, excluding motor	max. 690 V max. 25 A	max. 250 V max. 10 A
Actuator with integral controls	max. 180 W	including heaters, excluding motor		
Wall bracket with integral controls	max. 140 W	including heaters		

Note 1): for actuators and wall brackets with integral controls type ACVExC 01.2, see below.

Actuators and Wall brackets with integral controls type ACVExC 01.2:

Max. nominal power PN ¹⁾	Input voltage range	Input frequency range
0.35 kW	110 V – 120 V AC 1ph	50 Hz – 60 Hz
0.30 kW	220 V – 240 V AC 1ph	
0.30 kW	220 V – 240 V AC 3ph	
0.40 kW	380 V – 480 V AC 3ph	

Note 1): Power at permissible average torque of a specific type of duty.

Motors:

Motor	VDX, SDX	VDY,SDY, VSY, SSY	VWX, SWX	VKX, SKX
Type	3 ph AC squirrel cage	3 ph AC squirrel cage	1 ph AC asynchronous	DC
Rated voltage max. [V]	690	690	240	240
Rated current max. [A]	25	25	25	25
Frequency [Hz]	50 or 60	up to 60	50 or 60	N/A
Insulation class	F or H	F or H	F or H	F or H
Type of connection	star or delta connection	star or delta connection	single phase	DC
Type of duty	S2, S4	S2, S4, S5, S9	S2, S4	S2

Maximum nominal power¹⁾:

Motor Actuator	VDX, SDX (3ph motor)	VDY,SDY, VSY, SSY	VWX, SWX (1ph motor)	VKX, SKX (DC)
SQ.Ex 05.2	0.06 kW	0.06 kW	0.06 kW	0.06 kW
SQ.Ex 07.2	0.12 kW	0.12 kW	0.12 kW	0.06 kW
SQ.Ex 10.2	0.19 kW	0.12 kW	0.19 kW	0.06 kW
SQ.Ex 12.2	0.19 kW	0.12 kW	0.19 kW	-
SQ.Ex 14.2	0.19 kW	0.12 kW	0.19 kW	-

Note 1: Power output on motor shaft at permissible average torque of a specific type of duty.

Position transmitter RWGEx5020.2Ex:

The electronic position transmitter RWGEx5020.2Ex in type of protection intrinsic safety Ex ib IIC is intended for connection to a certified intrinsically safe circuit with following maximum values:

$U_i = 28.5 \text{ V}$; $I_i = 200 \text{ mA}$; $P_i = 0.9 \text{ W}$; C_i and L_i negligibly small.

The electronic position transmitter is considered as being earthed in terms of safety.



Management Service

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH

certifies that



AUMA Riester GmbH & Co. KG
Aumastr. 1, 79379 Müllheim, Germany

has established and applies
an Quality, Environmental, Energy,
Occupational Health and Safety Management System
for the following scope of application:

**Design and development, manufacture, sales and service
of electric actuators, integral controls and gearboxes for
valve automation as well as components for general actuation technology
including the sites and scope of application
see enclosure**

Performance of audits (Order No. 70009378)
has furnished proof that the requirements under:

**ISO 9001:2015
ISO 14001:2015
ISO 50001:2018
ISO 45001:2018**

are fulfilled.

The certificate is valid from **2021-06-09** until **2024-06-08**.
Certificate Registration No.: **12 100/104/340/117 4269 TMS**.

Head of Certification Body
Munich, 2021-05-26





Management Service

Enclosure of Certificate Registration No.: 12 340/100/104/117 TMS

Sites	Scope of application	Standard
AUMA Riester GmbH & Co. KG Aumastr. 1 79379 Müllheim Germany	Central function	ISO 9001:2015 ISO 14001:2015 ISO 50001:2018 ISO 45001:2018
AUMA Riester GmbH & Co. KG (Produktion) Aumastr. 1 79379 Müllheim, Germany	Design and development, manufacture, sales and service of electric actuators, integral controls and gearboxes for valve automation as well as components for general actuation technology	
SIPOS AKTORIK GmbH Im Erlet 2 90518 Altdorf, Germany	Design and development, manufacture, sales and service of electric actuators, integral controls and gearboxes for valve automation as well as components for general actuation technology	
AUMA Drives GmbH Grenzstr. 5 01640 Coswig, Germany	Design and development, manufacture, sales and service of electric actuators, integral controls and gearboxes for valve automation as well as components for general actuation technology	
DREHMO GmbH Zum Eichstruck 10 57482 Wenden, Germany	Development, sales, and service of electric actuators, actuator controls and gearboxes for valve automation as well as components for the general actuation technology	
AUMA Riester GmbH & Co. KG (OSF) Daimlerstr. 9 73760 Ostfildern, Germany	Manufacture, sales and service of electric actuators, integral controls and gearboxes for valve automation as well as components for general actuation technology	
AUMA Riester GmbH & Co. KG (Service-Center Köln) Toyota-Allee 44 50858 Köln, Germany	Service of electric actuators, integral controls and gearboxes for valve automation as well as components for general actuation technology	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018
AUMA Produktions- und Service Wenden GmbH Zum Eichstruck 10 57482 Wenden, Germany	Manufacture of electric actuators and actuator controls for valve automation as well as components for the general actuation technology	

Head of Certification Body
Munich, 2021-05-26



Certificate

No. 1435.IM.155027/19 V1.0

TÜV NORD Systems GmbH & Co. KG hereby certifies

AUMA Riester GmbH & Co. KG

Aumastraße 1
79379 Müllheim, Germany

that the

electric actuator system with the actuators SA(R)07.1 – SA(R)16.1/
SA(R)ExC 07.1 – SA(R)ExC16.1, SA(R)07.2 – SA(R)16.2/ SA(R)Ex07.2
– SA(R)Ex16.2 and SQ(R)05.2- SQ(R)14.2/ SQ(R)Ex05.2-
SQ(R)Ex14.2 with the actuator controls AC01.2/ACExC01.2 in SIL
version

with the safety functions „Safe Emergency Shut Down (ESD)“ and „Safe Stop“
meets the requirements listed in the following standard.

- DIN EN 61508-1/-2: 2011, capable up to SIL 2 (HFT = 0) and SIL 3 (HFT $\geq$ 1)
- IEC 61508-1/-2: 2010, capable up to SIL 2 (HFT = 0) and SIL 3 (HFT $\geq$ 1)

Certification program Leittechnik (SEB-ZE-SEECERT-VA-320-20, Rev. 5.1 / 04.19)

Base of certification is the report
1435.IM.155027/19TB in the valid
version.

This certificate entitles the holder to
use the pictured safety approved mark.

Valid until: 2024-12-17

File reference: 8117657310

Hamburg, 2019-12-17



Bianca Pfuff





IECEX Quality Assessment Report Summary

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

QAR Ref. No.:	NL/DEK/QAR12.0073/09	Page 1 of 2
QAR Free Ref. No.:	228509900 and 228510100	Status: Issued
Details of change:	Reassessment audits performed with positive results.	Date of issue: 2024-05-31
Location(s) audited:	AUMA Riester GmbH & Co. KG Daimlerstrasse 9 Ostfildern 73760 Germany AUMA Riester GmbH & Co. KG Aumastrasse 1 Müllheim 79379 Germany	Valid until: 2027-05-31 Audit date: 2024-05-31
Issuing ExCB:	DEK - DEKRA Certification B.V.	
Manufacturer:	AUMA Riester GmbH & Co. KG Aumastrasse 1 Müllheim 79379	
Location of Manufacturer:	Germany	
Product information:	Actuators, gearboxes, controls and related components.	
Type of protection:	Ex d, Ex e, Ex i and Ex t Ex h for Non-electrical type of protection: - constructional safety "c"	
Related QARs:	NL/DEK/QAR12.0073/00 NL/DEK/QAR12.0073/03 NL/DEK/QAR12.0073/06 NL/DEK/QAR12.0073/01 NL/DEK/QAR12.0073/04 NL/DEK/QAR12.0073/07 NL/DEK/QAR12.0073/02 NL/DEK/QAR12.0073/05 NL/DEK/QAR12.0073/08	
Related Certificates (manual insertion)::	For other related IECEx certificates (IECEX KEM 09.0037X, IECEx KEM 09.0038X) see NL/KEM/QAR09.0013	
Related Certificates (automatic linking)::		
Related Certificates for previous versions:	IECEX BVS 20.0019U issue: 0 IECEX DEK 12.0022X issue: 3 IECEX DEK 12.0022X issue: 6 IECEX DEK 12.0022X issue: 9 IECEX DEK 12.0080X issue: 2 IECEX DEK 12.0080X issue: 5 IECEX DEK 13.0067X issue: 0 IECEX DEK 16.0039X issue: 2 IECEX DEK 17.0012U issue: 0 IECEX DEK 19.0055X issue: 1 IECEX DEK 19.0055X issue: 4 IECEX DEK 21.0058X issue: 1 IECEX TUR 12.0004X issue: 2 IECEX DEK 12.0022X issue: 1 IECEX DEK 12.0022X issue: 4 IECEX DEK 12.0022X issue: 7 IECEX DEK 12.0080X issue: 0 IECEX DEK 12.0080X issue: 3 IECEX DEK 12.0080X issue: 6 IECEX DEK 16.0039 issue: 0 IECEX DEK 16.0039X issue: 3 IECEX DEK 18.0065X issue: 0 IECEX DEK 19.0055X issue: 2 IECEX DEK 21.0054 issue: 0 IECEX TUR 12.0004X issue: 0 IECEX TUR 14.0016X issue: 0 IECEX DEK 12.0022X issue: 2 IECEX DEK 12.0022X issue: 5 IECEX DEK 12.0022X issue: 8 IECEX DEK 12.0080X issue: 1 IECEX DEK 12.0080X issue: 4 IECEX DEK 12.0080X issue: 7 IECEX DEK 16.0039X issue: 1 IECEX DEK 16.0039X issue: 4 IECEX DEK 19.0055X issue: 0 IECEX DEK 19.0055X issue: 3 IECEX DEK 21.0058X issue: 0 IECEX TUR 12.0004X issue: 1	



IECEx Quality Assessment Report Summary

QAR Ref. No.: **NL/DEK/QAR12.0073/09**

Page 2 of 2

Comments: The listed ATEX certificates are related to DEKRA Notification No. 12ATEXQ0217
For previous QAR's, see NL/KEM/QAR09.0013.

Annex:

[228509900-QAR12.0073.09-Attachment to QAR.pdf](#)

ATTACHMENT

to NL/DEK/QAR12.0073/09

Equipment / Components Group	Types of protection	EC- or EU-Type Examination Certificates
Multi-turn actuator	Ex d, e, i	BVS 06ATEXE106
Multi-turn actuator	Ex d, e, i, t	DEKRA 11ATEX0008 X
Multi-turn actuator		DEKRA 12ATEX0143 X
Part-Turn actuator		DEKRA 13ATEX0016 X
Fail safe unit	Ex d, e	DEKRA 16ATEX0080
Multi-turn actuator	Ex d, e, t	KEMA 08ATEX0107
Part-turn actuator	Ex d, e, i, t	KEMA 08ATEX0108 X
Multi-turn actuator		PTB 01ATEX1087
Part-turn actuator		PTB 01ATEX1119
Multi-turn actuator		PTB 03ATEX1122
Multi-turn actuator		PTB 03ATEX1123
Electronic position transducer	Ex i	PTB 03ATEX2176
Hydraulic Control	Ex d, e	TÜV 11ATEX7040 X
Limit switching device	Ex e, i, t	TÜV 12ATEX7187 X
Electrical actuator	Ex d, e, i, t	TÜV 14ATEX7542 X
TMS-Modul	Ex d, e, t	BVS16ATEXF001U
Parking Frame PAFEx	Ex d, e, i, t	DEKRA 18ATEX0093X
Multi-turn actuator	Ex d, e, t Ex h (protection method "c"),	DEKRA 19ATEX0091X
Multi-turn actuator	Ex db, tb, h (protection method "c")	DEKRA 21ATEX0092 X
Remote Setting Tool type RSTX100	Ex i	DEKRA 22ATEX0039

Fișă tehnică: IT-RAMM - Robinet cu sferă, corp demontabil, montaj suprateran, acționare manuală cu indicare locală a poziției

Nr. Crt.	Specificațiile tehnice oferite	Producător
1.	Parametri tehnici și funcționali: - Fluidul de lucru: - gaz natural conform SR 3317:2015 densitatea (ρ) - 0,717 Kg / Nm³ - Amestec de gaze naturale cu Hidrogen în proporție de 10%. - Clasa de presiune/Presiunea nominală: ANSI 150 - Diametru nominal: DN250 - Temperatura mediului ambiant: -29 ÷ +55°C - Temperatura gazului: -20 ÷ +55°C - Presiunea maximă gaz în conductă: ANSI 150 - Amplasare instalații tehnologice: exterioare - Montaj: suprateran, orizontal sau vertical - Se vor respecta prevederile: SR EN 12186:2015 Infrastructura pentru gaze. Stații de reglare a presiunii gazelor pentru transport și distribuție. Cerințe funcționale	BOTELI VALVE GROUP
2.	Parametrii constructivi robinet: - Conectare la instalația tehnologică: flanșe cu gât conform EN 1092-1 / flanșe cu gât conform ASME B 16.5 respectiv ASME 16.47 Seria B funcție de diametrul robinetului (robinetul se va livra cu contraflanșe, organe de ansamblare, garnituri). - Materialul conductei pe care se montează: L360NE conf. EN ISO 3183/2020 - Tratament specific organe de ansamblare: zincare la cald - Tip garnituri pentru flanșe: spirometalice cu umplutură de carbon conform ASME B 16.20 respectiv ASME 16.47 Seria B. - Dimensiuni constructive: conform SR ISO 14313 (API 6D) - Tip robinet: cu sferă “full bore” montaj trunnion conform SR EN 1983 - Tip DIB-1 conform API6D (SR ISO 14313) (la robinetele Dn≥150) - Tip etanșare: PMSS - Material etanșare soft: PTFE / VITON. - Tip scaun de etanșare: DPE (Duble Piston Efect / Scaune bidirecționale la robinetele Dn≥150) - Corpul robinetului: oțel carbon sau oțel aliat, construcție demontabilă în trei părți conform SR EN 1983 - Materialul tijei: oțel aliat - Material scaune de etanșare: oțel carbon cu acoperire metalică de înaltă rezistență cu carbură de tungsten (WC) - Materialul sferei: oțel carbon cu acoperire metalică de înaltă rezistență cu carbură de tungsten (WC) - Tip sferă conform SR EN 1983: bilă masivă (solid ball) dintr-o singură bucată	

	- Clasa B de etansare conform ISO 15848-1 (emisii în atmosferă) - Protecție anticorozivă: vopsire, culoare: RAL 7044. - Deschidere la Δp maxim	
3.	Dotări minime: - Dispozitiv de blocare a desprinderii tijei (Blow out proof stem) - Dispozitiv antifoc și antistatic - Etanșare ax acționare schimbabilă sub presiune - Dispozitiv pentru purjare (la robinetele $Dn \geq 150$ mm) - Sistem de injecție pastă de etanșare la obturator și ax de acționare (la robinetele $Dn \geq 150$ mm) - Talpă de sprijin pentru montaj (la robinetele $Dn \geq 150$ mm)	
4.	Acționare:	
4.1	Caracteristici tehnice - Tip acționare: manuală, - Montaj pe robinet tip: Sfert de tură - Monitorizare capete de cursă prin contacte electrice montate în cutie Ex zonă 2, grad de protecție IP 67: Da - Indicarea locală a poziției (indicator mecanic al poziției Închis/Deschis): Da - Sistem unități de măsură: Metric - Montaj: Suprateran, - Dispozitiv de blocare: Da (conform SR ISO 14313), - Grad de protecție mecanică a acționării: IP 67, - Protecție anticorozivă: vopsea de înaltă rezistență culoare RAL 7044	
4.2	Norme și aprobări solicitate pentru acționare. - Protecție mecanică (ANSI/IEC 60529): IP67M – documente doveditoare anexate la oferta tehnică, marcaj corespunzător la predarea produsului.	
5.	Teste și certificări puse la dispoziția beneficiarului - Pentru robinet: Condiții generale conform SR ISO 14313. - Pentru robinet: Încercări suplimentare conform SR ISO 14313 Anexa B: • încercarea de etanșeitate cu gaze la presiune joasă (B3), • încercarea de etanșeitate cu gaze la presiune înaltă (B4), • încercarea cavității la suprapresiune pentru tipul de robinet din comandă – DIB-1 (B11) – funcție de tipul robinetului din comandă. - Suduri conform API 1104, analiza îmbinărilor sudate cu radiații penetrante 100%. - Test de capăt de cursă (0% închis, 100% deschis), - Se vor avea în vedere cerințe prevăzute la punctul 4.2. "Norme și aprobări solicitate pentru acționare"	
6.	Mod de ofertare: Documentația care va fi prezentată la ofertare: - Pentru producătorul robinetului: Certificatul de conformitate cu ISO 14313 (API 6D) - Pentru tipul de robinet din ofertă: Certificat și rapoart de încercare la foc ("fire safe") conform ISO 10497 (API 607, API 6FA)	

	- Pentru produs: Certificat de tip CE, conform HG nr. 123/2015 (PED 2014/68/EU), privind stabilirea condițiilor pentru punerea pe piață a echipamentelor sub presiune; - Rapoarte de comportare în exploatare de la beneficiar în calitate de utilizator final strict pentru tipul de produsul oferat, cu diametrul similar. - Caracteristicile tehnice ale produselor oferite trebuie sa fie identificate și evidențiate, în cataloage sau specificații tehnice de producător, strict pentru produsul oferat, aceste vor fi parte integrantă din oferta tehnică. Cataloage si specificații tehnice vor fi asumate de către ofertantul echipamentului (original sau copie conform cu originalul). - Ofertantul are obligația de a face dovada conformității produsului care urmează să fie furnizat cu prezenta cerință tehnică. - Se vor oferta și livra numai echipamente noi, de ultimă generație și originale, conform cu specificațiile și documentele specifice ale producătorului. Nu se vor oferta produse demo, recondiționate sau refuzate de alți beneficiari.	
7.	Documentație care va însoți produsul Cartea tehnica a produsului (în limba română) - Fișa Tehnică (robinet/acționare), • coeficient de debit Cv sau Kv, • forța sau momentul maxim de acționare pentru robinetul în stare nouă, • forța sau momentul maxim admisibil la tija robinetului, • momentul maxim admisibil de intrare la reductor (unde este cazul), - Instrucțiuni de montaj în instalație (robinet/acționare), - Instrucțiuni de punere în funcțiune și exploatare (robinet/acționare), - Instrucțiuni de scoatere din funcțiune (robinet/acționare), - Instrucțiuni/manuale de operare si întreținere (robinet/acționare), • operare, verificare etanșeități, • ungere, drenare, gresare, • cauze defecte, remedieri, verificări, • lista piese de schimb de mare uzură, - Listă de componente si desene de ansamblu/subansamblu (secțiuni, detalii,) (robinet/acționare), - Schemele de interconectare a acționarii (functie de tipul robinetului din comandă), - Raport de Trasabilitate (robinet/ acționare) - Certificate /Teste Materiale componente, - Certificate/Raport pentru Teste de presiune/etanșitate, - Certificate/ Teste protecții anticorozive. - Buletine de analiză suduri.	
8.	Marcare si identificare - Confom SR ISO 14313. Funcție de tipul robinetului din comandă, marcaje corespunzătoare punctului 4.3. "Norme și aprobări solicitate pentru acționare".	

9.	Condiții de livrare: - Furnizorul robinetului va dimensiona și va livra inclusiv acționarea. - Robinetul se va livra complet echipat, cu acționarea montată. - Produsele vor fi ambalate pentru a face față transportului, manipulării și depozitării până la destinația finală. - Toate materialele de ambalare a produselor, precum și toate materialele necesare protecției coletelor (paleți de lemn, folii de protecție, etc.) vor rămâne în proprietatea achizitorului. - Ofertantul va asigura integritatea produselor livrate, până la sediul achizitorului. - Echipamentele livrate vor fi complet echipate cu toate accesoriile necesare pentru punerea în funcțiune și vor respecta cerințele impuse privind proiectarea și execuția instalațiilor tehnologice	
10.	Condiții de garanție și postgaranție - Producătorul va garanta calitatea și buna funcționare a produsului timp de 24 luni de la punerea în funcțiune sau de 36 luni de la data livrării.	
11.	Alte condiții: Furnizorul va acorda asistență tehnică și instruirea personalului de exploatare după un program convenit de părți. - Beneficiarul va participa la probele de presiune după un program convenit de părți.	

BOTELI VALVE GROUP CO.,LTD



Seria BTL AK4 & AK7

Robinet cu sfera montata trunnion Construcție forjată

2" - 56"/Dn50-Dn1450

Clasa ASME 150-2500 /Pn16-Pn450

Corp sudat & demontabil

Capete sudate & cu flanse

API 6D/EN1983

Protecție la foc

NACE
Marcaj CE



Boteli Valve Group

www.boteli.com

Create A National Brand

Seriile BTL AK4 & AK7, robinete cu bila din trei piese forjate montate pe tronsoane

Toate robinetele cu bilă BTL din trei piese, cu corp sudat și cu bolțuri, destinate montării pe tronsoanele de conducte sunt proiectate astfel încât să satisfacă cerințele proceselor de petrol și gaze, depozitarea și transportul acestora, distribuția, GLN, din industria petrochimică și alte ramuri conexe.

Toate robinetele cu bilă BTL cu montaj pe tronson sunt proiectate și fabricate în strictă conformitate cu standardele industriale și cu specificații de proiectare ale produselor BTL.

Robinetele cu bilă BTL sunt utilizate în toate aplicațiile on-shore, off-shore, supra și subteran.

Baza de producție în Sanqiao Industry Zone ,suprafata:26600M²,suprafata cladiri:31700M²



Baza de producție în Ludong Industry Zone, suprafata:58400 M², suprafata cladiri: 56600M²



Sisteme de calitate și asigurarea calității



Fiabilitate ridicată la cost competitiv al proprietății la nivel global

Sistemele de management al calității al seriilor BTL la unitățile de producție AK4, AK7 sunt menținute la toate nivelurile de producție în conformitate cu ISO 9001 și API Q1.

Inspecțiile critice sunt efectuate la fabrica Sanqiao.

Fiecare robinet este serializat în mod unic, asigurând trasabilitatea principalelor etape de producție.

Rapoartele de testare a materialelor, inclusiv caracteristicile chimice, mecanice ale materialelor și rezultatele testelor de presiune, sunt disponibile pentru fiecare robinet conform EN.10204 de tip 3.1.

Se efectuează ingineria BTL, precum și serviciile de vânzare, service al produsului, service în teren și servicii legate de garanție pentru toate produsele BTL.



Seriile BTL AK4 & AK7, robinete cu bila din trei piese forjate montate pe conducte

Robinetele cu bilă BTL pentru conducte sunt fabricate în strictă conformitate cu standardele de calitate API 6D, API Q1 și ISO 9001, cu criterii de proiectare pentru API 6D, ASME B16.34 și standardele industriale aplicabile.

Toate robinetele cu bilă AK4, AK7 din seria BTL sunt monogramate API 6D.

Proiectarea, standarde si specificatii ale produselor in acest buletin :

API 6D— Specificații pentru robinete de conducte	ASME B16.34—Robinete oțel-cu flanșe și sudate cap-cap
API 607/ISO 10497— Testul de incendiu pt robinete	EN ISO 5211 —Robinete partial industriale, atașamente de acționare rotative
API 6FA— Specificații pt testul de incendiu pt robinete	EN 558-1,2 – Dimensiuni față-față pentru robinete
API Q1— Specificații pentru programe de calitate.	EN 1092-1 – Flanșe pt conducte, robinete, fittinguri și accesorii. ISO 5208— Testarea presiunii pt robinete.
API 608— Robinete cu bilă metalică	NACE MR- 01-75 /ISO 15156
ASME B16. 5— Flanșe conducte de oțel și fittinguri	ASME B16.25— Capete sudate cap la cap
ASME B16. 10 – Dim. față-n față & capăt la capăt.	MSS SP-44— Flanșe conducte de oțel
ASME B16. 47— Flanșe de oțel cu diametru mare : NPS- 26 60	

Specificând robinete cu bilă BTL de trei piese montate pe conducte

Exemplu figura BTL număr : AK4-F-030-1-09-1-RF-2

Describe un robinet cu bilă montat pe tronson de clasa ASME 300, proiectat cu 3 piese cu bolțuri, trecere completă, capete cu flanșe laterale ridicate, materialul corpului fiind A105, bilă și tijă de oțel carbon, placate cu nichel, inserții scaun RPTFE, operat de un angrenaj.

A	K	4	F	0	3	0	1	0	9	1	R	F	2	XXX
1	2	3	4	5	6	7	8	9	10					

1. Tipul de robinet		2. Design corp		3. Bore		4. Evaluare presiune		5. Material corp		6. Trim Material	
Cod	Tip	Cod	stilul corpului	Cod	Trecere	Cod	Clasă	Cod	Material	Cod	Material
AK	Robinet cu bilă montat pe conductă	4	corp forjat, corp cu bolt secționat	R	Trecere redusă	015	Class 150	1	A105	09	A105+ENP
		7	corp forjat, corp complet sudat	F	Trecere completă	030	Class 150	2	LF2	10	LF2+ENP
				S	Trecere Standard	040	Class 400	3	304SS	11	304SS
						060	Class 600	4	316SS	12	316SS
						900	Class 900	5	F51 DSS	13	F51 DSS
						150	Class 1500	6	Inconel	14	Inconel
						250	Class 2500	7	410 SS	15	410 SS
								8	altele	16	altele

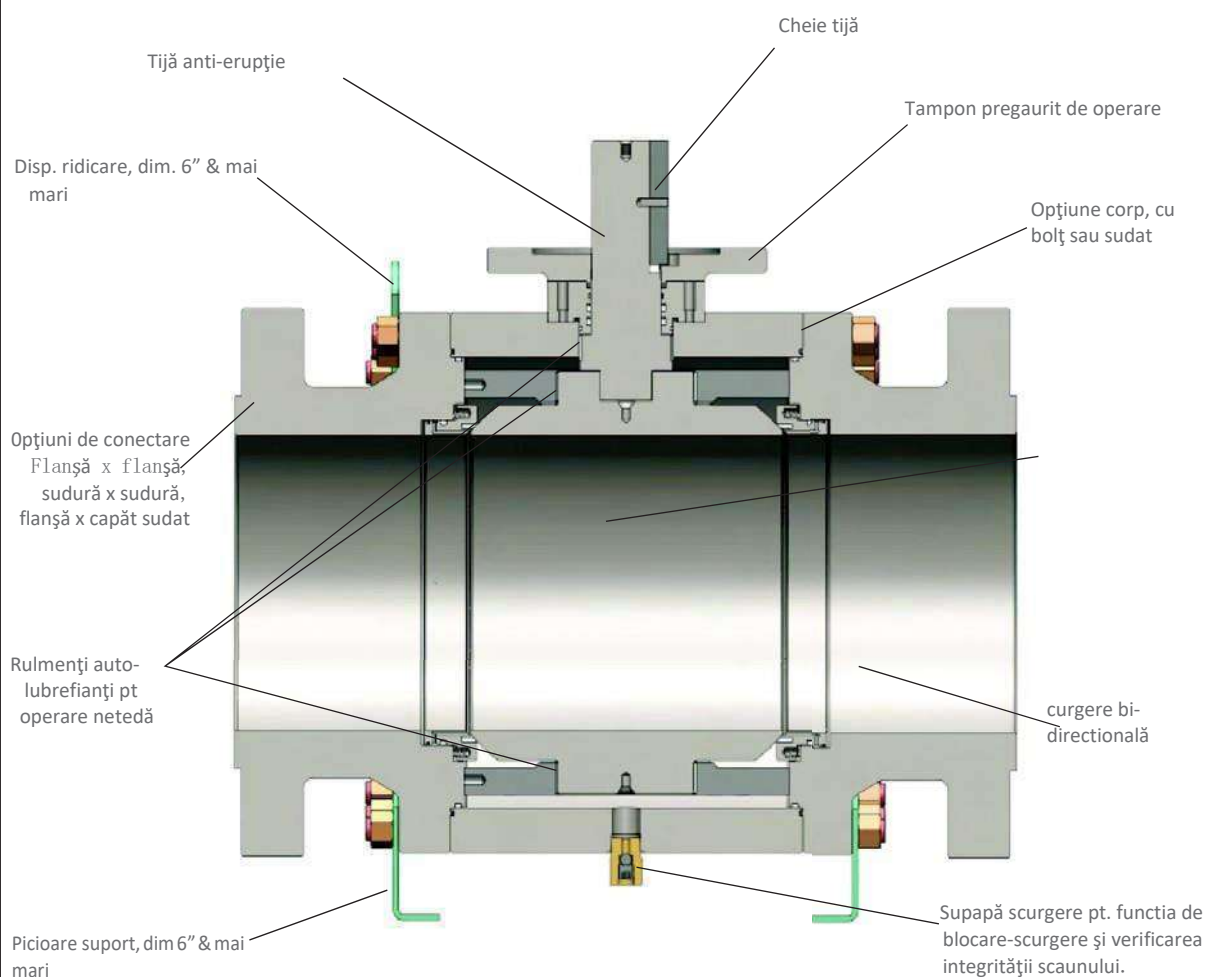
7. Material etanșare scaun		8. Conexiune capăt		9. Operator		10. Modificator cod	
Cod	Material scaun	Cod	Capete	Cod	Material	Cod	Descriere
1	R-PTFE (PMSS)	RF	Flg-RF	1	Pârghie	xxx	configurare specială cum ar fi material exotic, scaun specific sau compuși de etanșare, consultați reprezentantul BTL pentru modificări identificare cod
2	NYLON (PMSS)	RJ	Flg-RTJ	2	Angrenaj		
3	DEVLON (PMSS)	FF	Flg-FF	3	Acționare electrică		
4	VITON (PMSS)	WW	WE x WE	4	Acționare pneumatică		
5	HNBR (PMSS)	WF	WE x RF	6	Tijă goală		
6	Tung.Carbide (scaun metalic)	WJ	WE x RTJ	7	altele		
7	Ni55/Ni60 bazat pe Ni (scaun metalic)						
8	Stellite (scaun metalic)						

Standarde de proiectare aplicabile	
Proiectare de bază	API 6D, API 608
	ASME B16. 34
Test presiune	API 6D
Capăt la capăt	ASTM B16.10, EN558-1
	API 6D
Capete flanșate	B16. 5, B16. 47, EN1092-1
Capete sudate	ASME B16. 25



Certificare produs
API 6D
API 607 / API6FA
PED 2014/68/UE, ISO15848-1

CARACTERISTICI PROIECTARE :



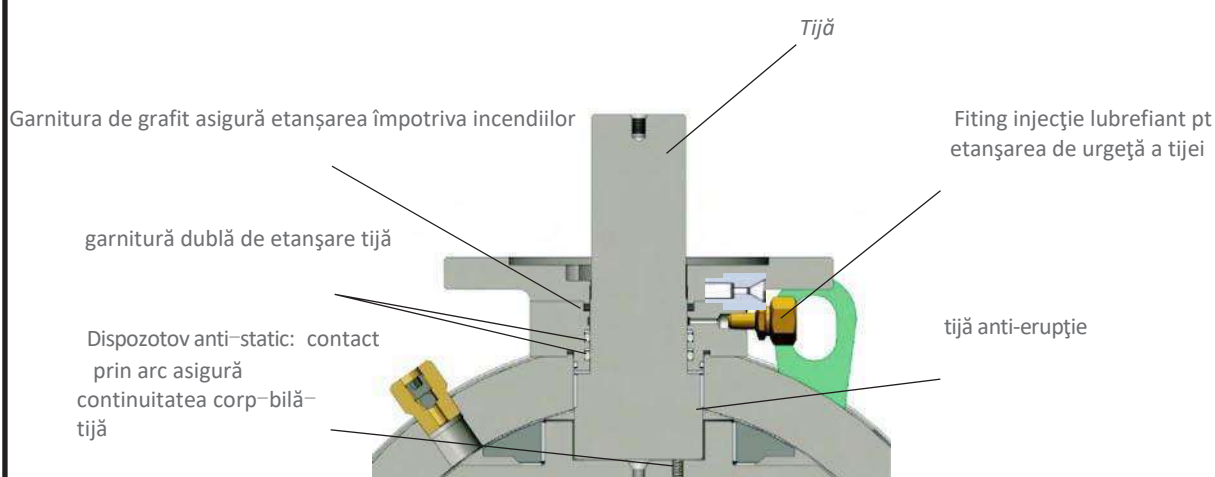
Configurație tipică

Dim. 6" - 12" trecere completă, se arată corp cu bolțuri. Designul corpului sudat este similar

Gama de producție dimensiune corp (inci)																									
Class	2	3	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	42	46	46	48	56
150	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
300	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
600	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
900	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
1500	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
2500	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-

CARACTERISTICI DESIGN-DETALII

Detaliu tijă & system de injecție de etanșare de urgență tijă

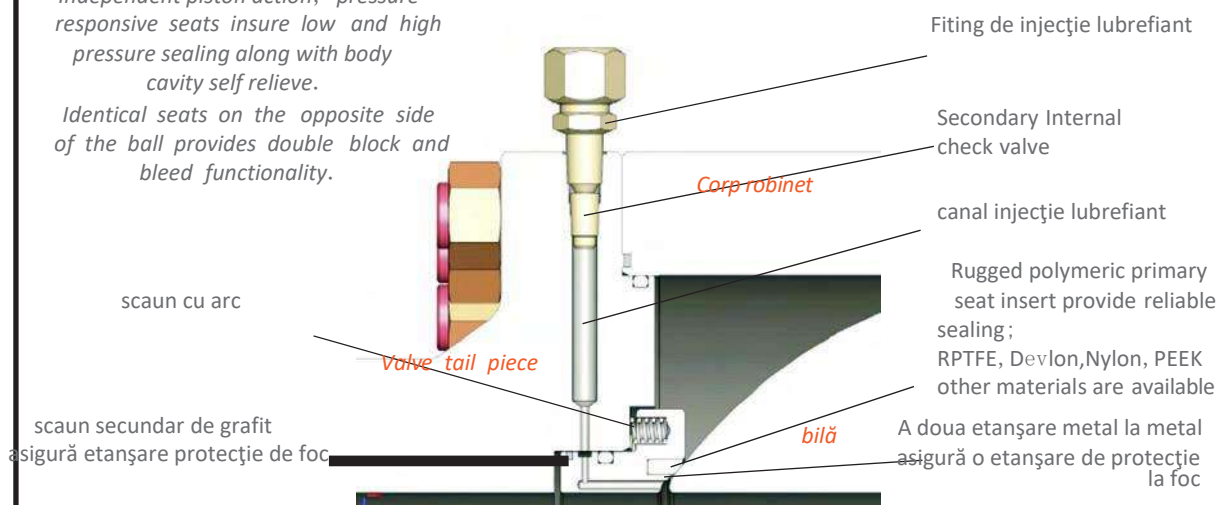


Detaliu scaun & sistem de injecție pentru etanșarea de urgență a scaunului

Double Block & Bleed Seats:

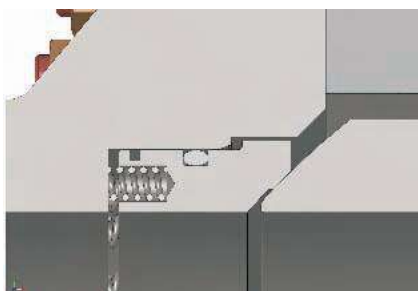
Independent piston action, pressure responsive seats insure low and high pressure sealing along with body cavity self relieve.

Identical seats on the opposite side of the ball provides double block and bleed functionality.

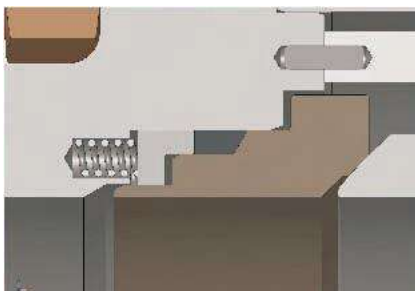


SERIILE AK4,AK7 CARACTERISTICI STANDARD DE PROIECTARE

- * Construcția corpului – corpul este făcut din trei piese forjate unde piesele individuale sunt înșurubate sau sudate laolaltă
- * Construcția bilei, montată pe tronson și făcută dintr-o singură piesă forjată, suprafața bilei poate fi acoperită cu un strat de ENP, suprastrat de metal dur sau TCC sau acoperire bazată pe Ni
- * Tijă anti-erupție, proiectare anti-statică la AK4,AK7
- * Fire safe, Standard BTL Serii AK4,AK7 Ball valves are fire safe to API 6FA and API607, Contact BTL for Specific information
- * PMSS- (primul metal al doilea moale)-Prima etanșare scaun bilă de metal și a doua etanșare moale la AK4,AK7
- * Etanșare scaun metal-la-metal



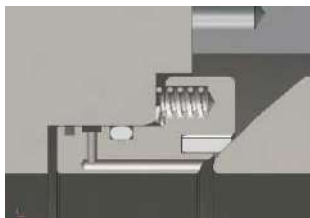
* Scaun de metal pentru o temperatură normală. Service



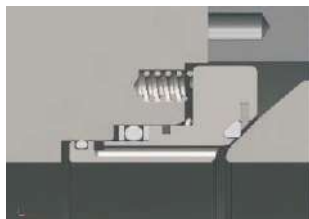
* Scaun de metal pentru o temperatură ridicată. Service

- * Dublă blocare și scurgere (DBB) - asigura integritatea robinetului și protejează munca în aval, un singur robinet cu două scaune care asigură etanșarea din ambele capete ale robinetului cu funcția de aerisire/scurgere a cavității dintre suprafețele scaunelor (API6D) Caracteristica DBB este standard la robinetele AK4, și Ak7)

- * Efect de piston singular (SPE)- Asigură etanșare din direcția conductei. Vezi mai jos proiectarea tipică BTL pt scaun SPE



- * Efect de piston dublu (DPE) – Barieră dublă de etanșare în ambele direcții. Vezi mai jos proiectarea tipică BTL pt scaun DPE



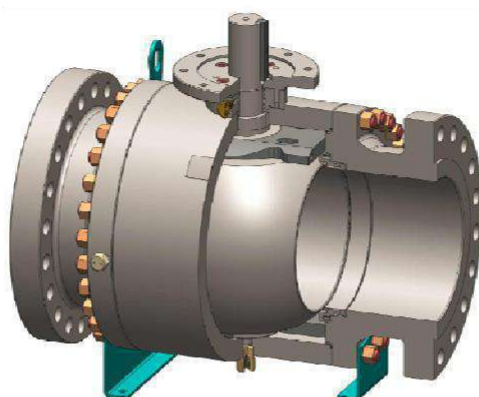
- * Dublă etanșare și scurgere- Un singur robinet cu două scaune, fiecare dintre ele, în poziția închisă, asigură etanșarea împotriva presiunii dintr-o singură sursă, cu funcția de aerisire/scurgere a cavității dintre scaune (API6D), DIB-ul este standard la seriile Ak4,AK7 cu scaune cu efect de dublu piston.

- * Notă: sunt două tipuri de proiectare pentru DIB, unul este DIB-1 (ambele scaune bidirecționale), celălalt DIB-2 (un scaun uni-direcțional, un scaun bi-direcțional)

Typical Configurations – Series AK 4 & Ak7

Se arată trecerea completă. Caracteristicile și configurarea robinetelor cu trecere redusă sunt similare, când sunt aplicabile.

Seria AK4 , corp cu bolțuri, montat pe tronson



Seria AK7 , corp complet sudat, montat pe tronson



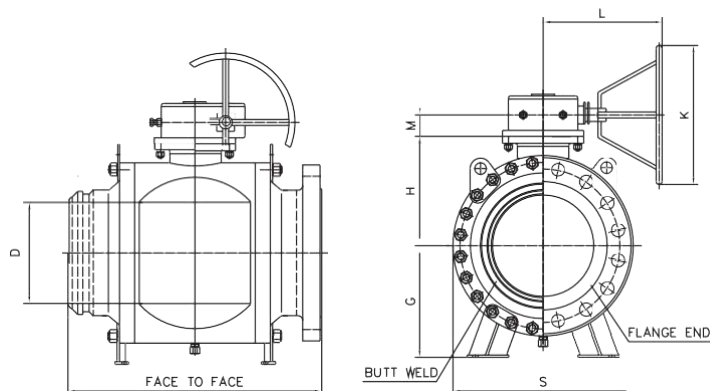
Nr.	Descrierea piesei	Materiale standard			
		Util. la petrol & gaz la temp. normală	Temp. joasă	ajustare corozivă	S. S. corp & ajustare
1	Corp	A105N	A350 LF2	A105N	F316SS
2	Capac	A105N	A350 LF2	A105N	F316SS
3	Bilă	A105N+ENP	A350 LF2+ENP	F316SS	F316SS
4	Tijă	AISI 4140+ENP	A350 LF2+ENP	F316SS	F316SS
5	Inel scaun	A105N+ENP	A350 LF2+ENP	F316SS	F316SS
7	Insertie scaun	RPTFE ,NYLON,DEVLON,VITON,HNBR, or PEEK			
8	Etanșări	VITON	HNBR	HNBR	HNBR
9	Bolț	A193 B7	A320 L7	A193 B7M	A193 B8M
10	Piuliță	A194 2H	A194 7	A194 2HM	A194 8M
11	Fiting de aerisire	C. S. + zinc	S.S.	C. S. + zinc	316SS
12	Fiting de scurgere	C. S. + zinc	S.S.	C. S. + zinc	316SS
13	Fiting de injecție scaun	C. S. + zinc	S.S.	C. S. + zinc	316SS
14	Fiting de injecție tijă	C. S. + zinc	S.S.	C. S. + zinc	316SS

Notă: 1. Alte materiale disponibile la cerere

2. Pentru tipul metal cu metal, material de etanșare scaun și bilă : TCC, bazat pe Ni, Stellite...etc)

3 . În vederea îmbunătățirii produsului, designul și materialele pot fi modificate fără notificări

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 150- (PN16,PN25)

mm

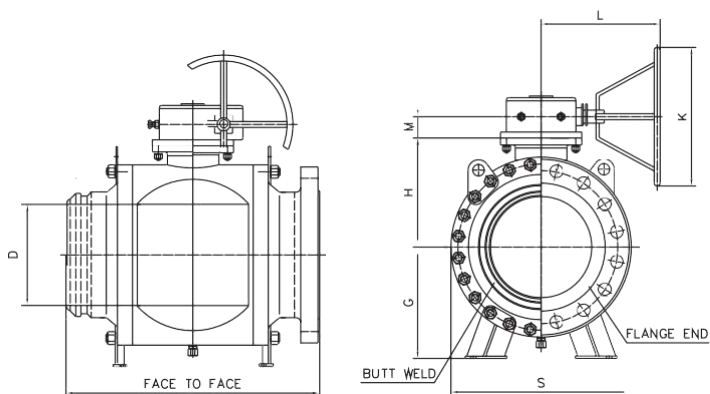
SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	DN	WE	RF	RTJ						
1.5"	38	191	165	178	160.5	103.5	124	28	143	160
2"x 1.5"	38	216	178	191	160.5	103.5	124	28	143	160
2"	49	216	178	191	178	113.5	134	28	143	160
3"x 2"	49	283	203	216	178	113.5	134	28	143	160
3"	74	283	203	216	220	139.5	160	28	143	160
4"x 3"	74	229	305	241	220	139.5	160	28	143	160
4"	100	229	305	241	268	167	178	32	162	240
6"x 4"	100	457	394	406	268	167	178	32	162	240
6"	150	457	394	406	310	215	204.5	45	182	280
8"x 6"	150	521	457	470	310	235	204.5	45	182	280
8"	201	521	457	470	385	255	257	54	336	350
10"x8"	201	559	533	546	385	285	257	54	336	350
10"	252	559	533	546	460	300	294.5	54	336	350
12"x10"	252	635	610	622	460	330	294.5	54	336	350
12"	303	635	610	622	537	340	331	54	500	460
14"x12"	303	762	686	699	537	370	331	54	500	460
14"	334	762	686	699	586	365	356	54	500	460
16"x14"	334	838	762	775	586	395	356	54	500	460
16"	385	838	762	775	658	406	392	54	500	600
18"x16"	385	914	864	876	658	440	392	54	500	600
18"	436	914	864	876	738	465	437	54	500	600
20"x18"	436	991	914	927	738	500	437	54	500	600
20"	487	991	914	927	811	490	474	77	645	600
24"x20"	487	1143	1067	1080	811	550	474	77	645	600
22"	538	♣	991	♣	899	535	517	77	645	600
24"	589	1143	1067	1080	968	565	552	77	645	600
30"x24"	589	1397	1295	♣	968	650	552	77	645	600
26"	633	1245	1143	♣	1050	620	603	77	645	600
28"	684	1346	1245	♣	1134	680	644	77	645	600
30"x28"	684	1524	1372	♣	1134	750	644	77	645	600
30"	735	1397	1295	♣	1217	730	686	77	645	600
36"x30"	735	1727	1524	♣	1217	820	686	77	645	600
32"	779	1524	1372	♣	1288	780	722	87	753	600
34"	830	1626	1473	♣	1372	820	772	87	753	600
36"	874	1727	1524	♣	1444	850	817	87	753	600
38"	925	♣	1600	♣	1523	900	857	87	753	600
40"	976	♣	1670	♣	1604	9300	898	87	753	600
42"	1020	♣	1740	♣	1677	980	940	95	785	600
44"	1070	♣	1810	♣	1752	1015	978	95	785	600
46"	1116	♣	1870	♣	1828	1060	1016.5	95	785	600
48"	1166	♣	1960	♣	1903	1100	1054	95	785	600
56"	1360	♣	2240	♣	2222	1280	1244.5	191	568	600
60"	1458	♣	2400	♣	2377	1360	1322.5	206	590	600



De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 300- (PN40)

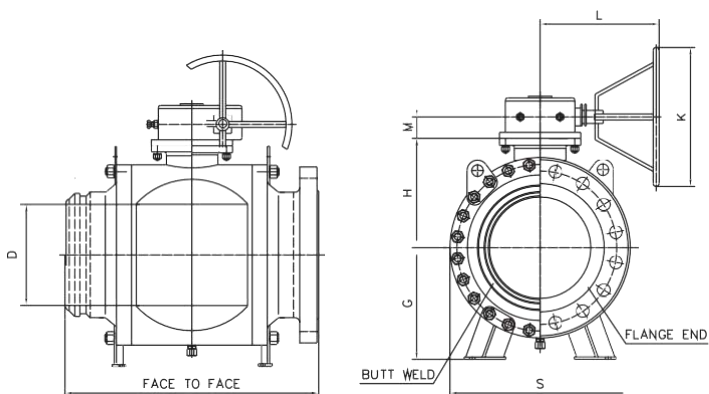
mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	191	191	203	160.5	103.5	124	28	143	160
2"x 1.5"	38	216	216	232	160.5	103.5	124	28	143	160
2"	49	216	216	232	178	113.5	134	28	143	160
3"x 2"	49	283	283	298	178	113.5	134	28	143	160
3"	74	283	283	298	220	139.5	160	28	143	160
4"x 3"	74	305	305	321	220	139.5	160	28	143	160
4"	100	305	305	321	268	167	178	32	162	240
6"x 4"	100	457	403	419	268	167	178	32	162	240
6"	150	457	403	419	310	215	204.5	45	182	280
8"x 6"	150	521	502	518	310	235	204.5	45	182	280
8"	201	521	502	518	385	255	257	54	336	350
10"x8"	201	559	568	584	385	285	257	54	336	350
10"	252	559	568	584	460	300	294.5	54	336	350
12"x10"	252	635	648	664	460	330	294.5	54	336	350
12"	303	635	648	664	537	340	331	54	500	460
14"x12"	303	762	762	778	537	370	331	54	500	460
14"	334	762	762	778	586	365	356	54	500	600
16"x14"	334	838	838	854	586	395	356	54	500	600
16"	385	838	838	854	669	410	402	54	500	600
18"x16"	385	914	914	930	669	435	402	54	500	600
18"	436	914	914	930	750	455	441	77	645	600
20"x18"	436	991	991	1010	750	490	441	77	645	600
20"	487	991	991	1010	824	490	479	77	645	600
24"x20"	487	1143	1143	1165	824	550	479	77	645	600
22"	538	1092	1092	1114	920	555	535	77	645	600
24"	589	1143	1143	1165	990	575	571	77	645	600
30"x24"	589	1397	1397	1422	990	645	571	77	645	600
26"	633	1245	1245	1270	1064	595	608.5	87	753	600
28"	684	1346	1346	1372	1164	660	658	87	753	600
30"x28"	684	1524	1524	1553	1164	720	658	87	753	600
30"	735	1397	1397	1422	1235	730	711	87	753	600
36"x30"	735	1727	1727	1756	1235	820	711	87	753	600
32"	779	1524	1524	1553	1307	770	747.5	95	785	600
34"	830	1626	1626	1654	1386	810	792	95	785	600
36"	874	1727	1727	1756	1464	850	832	95	785	600
38"	925	♣	1680	♣	1540	890	870	95	785	600
40"	976	♣	1760	♣	1627	940	937.5	191	568	600
42"	1020	♣	1840	♣	1697	980	973	191	568	600
44"	1070	♣	1920	♣	1785	1015	1023.5	191	568	600
46"	1116	♣	1980	♣	1855	1050	1058.5	206	590	600
48"	1166	♣	2070	♣	1933	1080	1098	206	590	600
56"	1360	♣	2400	♣	2250	1280	1271	215	674	800
60"	1458	♣	2560	♣	2410	1390	1362.5	170	726	800

♣ De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 400- (PN64)

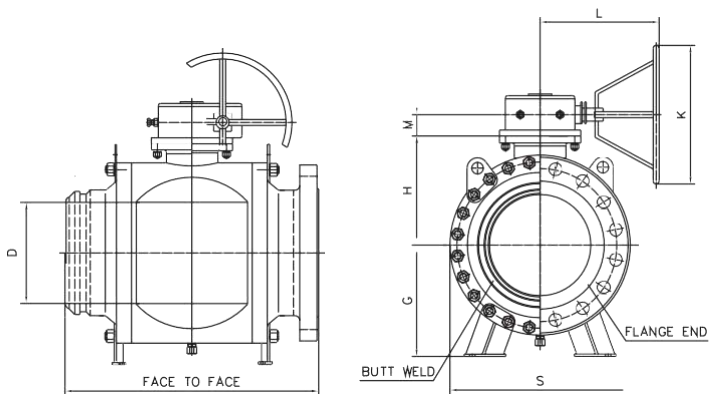
mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	241	241	241	130	75	88	28	143	160
2"x 1.5"	38	292	292	295	130	75	88	28	143	160
2"	49	292	292	295	155	87.5	117	32	162	240
3"x 2"	49	356	356	359	155	87.5	117	32	162	240
3"	74	356	356	359	205	116	150.5	35	182	280
4"x 3"	74	406	406	410	205	116	150.5	35	182	280
4"	100	406	406	410	245	137	171	35	182	280
6"x 4"	100	495	495	498	245	137	171	35	182	280
6"	150	495	495	498	315	220	216	54	336	350
8"x 6"	150	597	597	600	315	240	216	54	336	350
8"	201	597	597	600	388	255	252	54	500	460
10"x 8"	201	673	673	676	388	280	252	54	500	460
10"	252	673	673	676	475	310	304	54	500	600
12"x 10"	252	762	762	765	475	340	304	54	500	600
12"	303	762	762	765	552	345	342	77	645	600
14"x 12"	303	826	826	829	552	380	342	77	645	600
14"	334	826	826	829	598	370	360	77	645	600
16"x 14"	334	902	902	905	598	405	360	77	645	600
16"	385	902	902	905	680	415	413	77	645	600
18"x 16"	385	978	978	981	680	450	413	77	645	600
18"	436	978	978	981	765	460	460	77	645	600
20"x 18"	436	1054	1054	1060	765	495	460	77	645	600
20"	487	1054	1054	1060	848	495	497	87	753	600
24"x 20"	487	1232	1232	1241	848	535	497	87	753	600
22"	538	1143	1143	1153	935	545	555	87	753	600
24"	589	1232	1232	1241	1000	585	590	87	753	600
30"x 24"	589	1524	1524	1537	1000	625	590	87	753	600
26"	633	1308	1308	1321	1090	650	632	87	753	600
28"	684	1397	1397	1410	1165	680	688	95	785	600
30"x 28"	684	1651	1651	1667	1165	720	688	95	785	600
30"	735	1524	1524	1537	1255	725	735	95	785	600
36"x 30"	735	1880	1880	1895	1255	765	735	95	785	600
32"	779	1651	1651	1667	1335	765	780	95	785	600
34"	830	1778	1778	1794	1410	810	835	191	568	600
36"	874	1880	1880	1895	1490	865	880	206	590	600
38"	925	♣	♣	♣	1570	910	925	206	590	600
40"	976	♣	♣	♣	1655	950	970	215	674	800
42"	1020	♣	♣	♣	1725	1005	1020	215	674	800
44"	1070	♣	♣	♣	1820	1045	1060	170	726	800
46"	1116	♣	♣	♣	1900	1085	1110	170	726	800
48"	1166	♣	♣	♣	2000	1150	1152	170	726	800
56"	1360	♣	♣	♣	2310	1320	1336	♣	♣	♣
60"	1458	♣	♣	♣	2500	1400	1435	♣	♣	♣

♣ De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 600- (PN100)

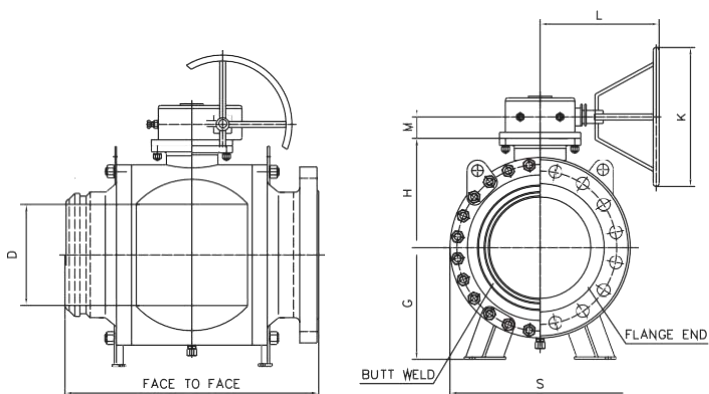
mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	241	241	241	130	75	88	28	143	160
2"x 1.5"	38	292	292	295	130	75	88	28	143	160
2"	49	292	292	295	155	87.5	117	32	162	240
3"x 2"	49	356	356	359	155	87.5	117	32	162	240
3"	74	356	356	359	205	116	150.5	35	182	280
4' x 3"	74	432	432	435	205	116	150.5	35	182	280
4"	100	432	432	435	245	137	171	35	182	280
6"x 4"	100	559	559	562	245	137	171	35	182	280
6"	150	559	559	562	315	220	216	54	336	350
8"x 6"	150	660	660	664	315	240	216	54	336	350
8"	201	660	660	664	388	255	252	54	500	460
10"x8"	201	787	787	791	388	280	252	54	500	460
10"	252	787	787	791	475	310	304	54	500	600
12"x10"	252	838	838	841	475	340	304	54	500	600
12"	303	838	838	841	552	345	342	77	645	600
14"x12"	303	889	889	892	552	380	342	77	645	600
14"	334	889	889	892	605	375	366	77	645	600
16"x14"	334	991	991	994	605	410	366	77	645	600
16"	385	991	991	994	693	420	421.5	77	645	600
18"x16"	385	1092	1092	1095	693	460	421.5	77	645	600
18"	436	1092	1092	1095	776	465	470	77	645	600
20"x18"	436	1194	1194	1200	776	500	470	77	645	600
20"	487	1194	1194	1200	860	505	513.5	87	753	600
24"x20"	487	1397	1397	1407	860	550	513.5	87	753	600
22"	538	1295	1295	1305	945	550	565	87	753	600
24"	589	1397	1397	1407	1024	590	609	87	753	600
30"x24"	589	1651	1651	1664	1024	655	609	87	753	600
26"	633	1448	1448	1461	1105	660	650	87	753	600
28"	684	1549	1549	1562	1185	690	698.5	95	785	600
30"x28"	684	1778	1778	1794	1185	730	698.5	95	785	600
30"	735	1651	1651	1664	1275	735	745	95	785	600
36"x30"	735	2083	2083	2099	1275	770	745	95	785	600
32"	779	1778	1778	1794	1352	775	797	95	785	600
34"	830	1930	1930	1946	1438	825	841	191	568	600
36"	874	2083	2083	2099	1514	870	885	206	590	600
38"	925	♣	1840	♣	1600	920	928.5	206	590	600
40"	976	♣	1920	♣	1680	960	969.5	215	674	800
42"	1020	♣	2000	♣	1761	1010	1023	215	674	800
44"	1070	♣	2080	♣	1845	1050	1065	215	674	800
46"	1116	♣	2160	♣	1925	1100	1116	170	726	800
48"	1166	♣	2260	♣	2010	1155	1159.5	170	726	800
56"	1360	♣	2610	♣	2350	1325	1343	♣	♣	♣
60"	1458	♣	2800	♣	2524	1415	1443	♣	♣	♣

♣ De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 900- (PN150)

mm

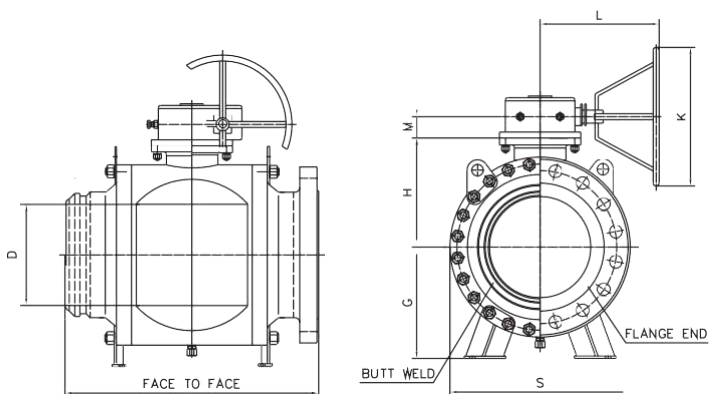
SIZE		FACE TO FACE								
NPS	D	WE	RF	RTJ	S	G	H	M	L	K
1.5"	38	305	305	305	150	83	110	32	162	240
2"x 1.5"	38	369	369	371	150	83	110	32	162	240
2"	49	369	369	371	175	100	134	35	182	280
3"x 2"	49	381	381	384	175	100	134	35	182	280
3"	74	381	381	384	210	118.5	152	35	182	280
4"x 3"	74	457	457	460	210	118.5	152	35	182	280
4"	100	457	457	460	255	140.5	189	54	336	350
6"x 4"	100	610	610	613	255	140.5	189	54	336	350
6"	150	610	610	613	327	220	220	54	500	460
8"x 6"	150	737	737	740	327	240	220	54	500	460
8"	201	737	737	740	414	270	272	54	500	600
10"x8"	201	838	838	841	414	295	272	54	500	600
10"	252	838	838	841	501	320	315	54	645	600
12"x10"	252	965	965	968	501	350	315	54	645	600
12"	303	965	965	968	589	370	368	77	645	600
14"x12"	303	1029	1029	1038	589	400	368	77	645	600
14"	332	1029	1029	1038	630	390	387	77	645	600
16"x14"	332	1130	1130	1140	630	425	387	77	645	600
16"	373	1130	1130	1140	730	440	446	87	753	600
18"x16"	373	1219	1219	1132	730	475	446	87	753	600
18"	423	1219	1219	1132	818	485	500	87	753	600
20"x18"	423	1321	1321	1334	818	520	500	87	753	600
20"	471	1321	1321	1334	910	530	550	87	753	600
24"x20"	471	1549	1549	1568	910	580	550	87	753	600
24"	570	1549	1549	1568	1089	630	649	95	785	600
30"x24"	570	♣	1880	1920	1089	690	649	95	785	600
26"	617	♣	1651	1673	1220	750	710	95	785	600
28"	665	♣	♣	♣	1300	790	755	191	568	600
32"x28"	665	♣	♣	♣	1300	840	755	191	568	600
30"	712	♣	1880	1902	1365	850	815	206	590	600
36"x30"	712	♣	2286	2315	1365	900	815	206	590	600
32"	760	♣	♣	♣	1465	910	850	215	674	800
34"	808	♣	♣	♣	1555	960	885	215	674	800
36"	855	♣	2286	2315	1650	1020	970	215	674	800
40"	956	♣	♣	♣	1815	1120	1060	170	726	800
42"	1006	♣	♣	♣	1915	1200	1110	♣	♣	♣
48"	1149	♣	♣	♣	2160	1330	1250	♣	♣	♣



De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 1500- (PN250)

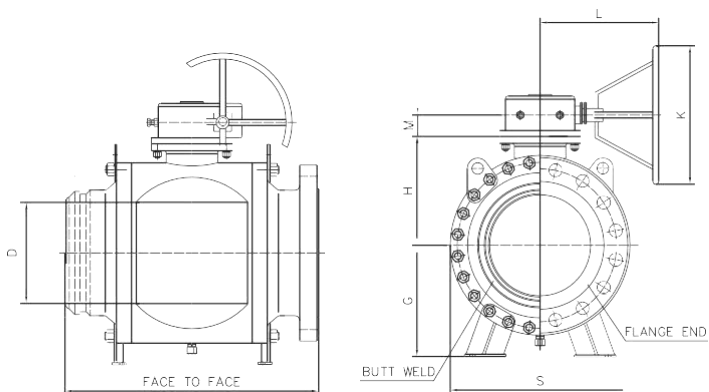
mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	305	305	305	150	83	110	32	162	240
2"x 1.5"	38	369	369	371	150	83	110	32	162	240
2"	49	369	369	371	175	100	134	35	182	280
3"x 2"	49	470	470	473	175	100	134	35	182	280
3"	74	470	470	473	224	126.5	166.5	54	336	350
4"x 3"	74	546	546	549	224	126.5	166.5	54	336	350
4"	100	546	546	549	280	153	199.5	54	336	350
6"x 4"	100	705	705	711	280	153	199.5	54	336	350
6"	144	705	705	711	366	245	246.5	54	500	600
8"x 6"	144	832	832	841	366	270	246.5	54	500	600
8"	192	832	832	841	473	300	300.5	77	645	600
10"x 8"	192	991	991	1000	473	330	300.5	77	645	600
10"	239	991	991	1000	580	360	363	77	645	600
12"x 10"	239	1130	1130	1146	580	395	363	77	645	600
12"	287	1130	1130	1146	690	420	425.5	87	753	600
14"x 12"	287	1257	1257	1276	690	460	425.5	87	753	600
14"	315	1257	1257	1276	750	450	465	87	753	600
16"x 14"	315	1384	1384	1407	750	490	465	87	753	600
16"	360	1384	1384	1407	855	510	521.5	87	753	600
18"x 16"	360	♣	1537	1559	855	545	521.5	87	753	600
18"	406	♣	1537	1559	1020	635	642	87	753	600
20"x 18"	406	♣	1664	1686	1020	695	642	87	753	600
20"	454	♣	1664	1686	1132	690	703	95	785	600
24"x 20"	454	♣	♣	1972	1132	740	703	95	785	600
24"	546	♣	♣	1972	1380	820	832	206	590	600
30"x 24"	546	♣	♣	♣	1380	860	832	206	590	600
26"	594	1943	♣	♣	1458	860	878	215	674	800
28"	641	♣	♣	♣	1580	920	935	215	674	800
32"x 28"	641	♣	♣	♣	1580	980	935	215	674	800
30"	686	♣	♣	♣	1690	980	995	170	726	800
36"x 30"	686	♣	♣	♣	1690	1040	995	170	726	800
32"	730	♣	♣	♣	1800	1030	1045	♣	♣	♣
34"	775	♣	♣	♣	1920	1100	1123	♣	♣	♣
36"	819	♣	♣	♣	2030	1145	1165	♣	♣	♣

♣ De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 2500- (PN420)

mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	384	384	384	172	99	134	35	182	280
2"x 1.5"	38	451	451	454	172	99	134	35	182	280
2"	42	451	451	454	190	108.5	162	40	214	320
3"x 2"	42	578	578	584	190	108.5	162	40	214	320
3"	62	578	578	584	260	149	201.5	54	500	460
4"x 3"	62	673	673	683	260	149	201.5	54	500	460
4"	87	673	673	683	330	192.5	246	54	500	460
6"x 4"	87	914	914	927	330	192.5	246	54	500	460
6"	131	914	914	927	475	300	321	77	645	600
8"x 6"	131	1022	1022	1038	475	300	321	77	645	600
8"	179	1022	1022	1038	635	387.5	411	77	645	600
10"x 8"	179	1270	1270	1292	635	387.5	411	77	645	600
10"	223	1270	1270	1292	775	470	475.5	87	753	600
12"x 10"	223	1422	1422	1445	775	470	475.5	87	753	600
12"	265	1422	1422	1445	900	530	560	95	785	600
14"x 12"	265	♣	♣	♣	900	530	560	95	785	600
14"	292	♣	♣	♣	1005	575	615.5	95	785	600
16"x 14"	292	♣	♣	♣	1005	575	615.5	95	785	600
16"	333	♣	♣	♣	1200	675	731	206	590	600
20"x 16"	333	♣	♣	♣	1200	675	731	206	590	600



De confirmat după plasarea comenzii



* Consultați un reprezentant BTL pentru informații specifice

	CLASA 150		CLASA 300		CLASA 600		CLASA 900		CLASA 1500		CLASA 2500	
NPS	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO
2	40	F07	70	F07	120	F10	320	F12	500	F12	500	F14
3	70	F07	130	F07	260	F12	450	F12	700	F12	1300	F25
4	140	F10	250	F10	430	F12	700	F16	1200	F16	2400	F25
6	320	F12	600	F12	950	F16	1600	F16	3000	F16	6000	F25
8	600	F16	1000	F16	1700	F16	3000	F25	5300	F25	12000	F30
10	1000	F16	1800	F16	3000	F25	5300	F25	9000	F25	23000	F35
12	1800	F25	2800	F25	5000	F25	8500	F25	16000	F25	35000	F40
14	2200	F25	3600	F25	6300	F25	10000	F30	20000	F30	*	*
16	3000	F25	5000	F25	9000	F25	15000	F30	28000	F30	*	*
18	4500	F25	6500	F25	13000	F30	20000	F35	*	*	*	*
20	5500	F25	8800	F25	17000	F30	28000	F35	*	*	*	*
24	8800	F25	14000	F30	28000	F35	47000	F40	*	*	*	*
26	10000	F32	17000	F30	33000	F35	*	*	*	*	*	*
28	12000	F32	21000	F35	42000	F40	*	*	*	*	*	*
30	14000	F32	26000	F35	50000	F40	*	*	*	*	*	*
32	17000	F32	31000	F35	60000	F40	*	*	*	*	*	*
34	20000	F35	37000	F40	70000	F40	*	*	*	*	*	*
36	23000	F35	43000	F40	82000	F48	*	*	*	*	*	*
38	26000	F35	49000	F40	95000	F48	*	*	*	*	*	*
40	30000	F35	56000	F40	108000	F48	*	*	*	*	*	*
42	35000	F40	63000	F40	130000	F60	*	*	*	*	*	*
46	43000	F40	82000	F48	170000	F60	*	*	*	*	*	*
48	49000	F40	90000	F48	190000	F60	*	*	*	*	*	*
56	70000	F48	135000	F60	300000	F70	*	*	*	*	*	*
60	90000	F48	170000	F60	370000	F80	*	*	*	*	*	*

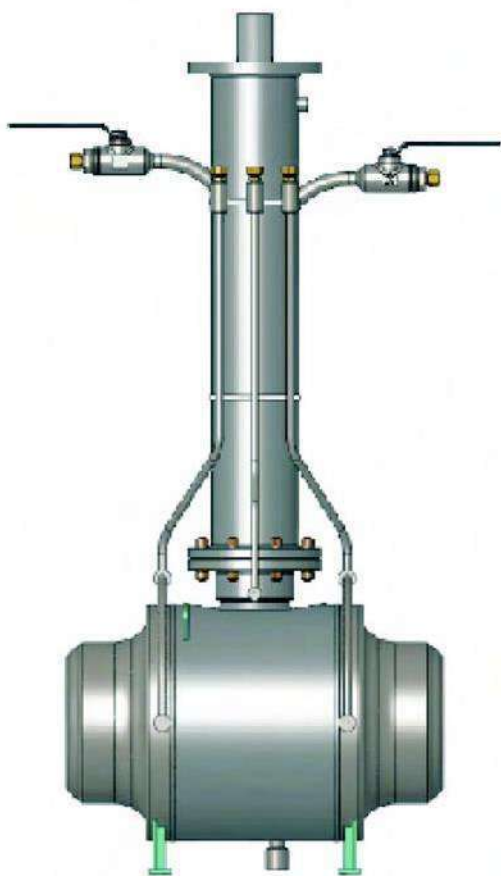
* Consultați BTL pentru moment de torsiune la anumite presiuni

* Torsiunile sunt date pentru robinete cu scaune moi;

* Nu este inclus nici un factor de siguranță.

Sisteme de acoperire externe specifice clienților, extensii ale tije pentru utilizare subterană, fiind disponibile prelungiri ale conductei. La momentul comenzii vă rugăm să specificați lungimea prelungirii conductei precum și lungimea extensiei tije.

EXTENSII pentru SERVICIUL SUBTERAN



Schițe tridimensionale

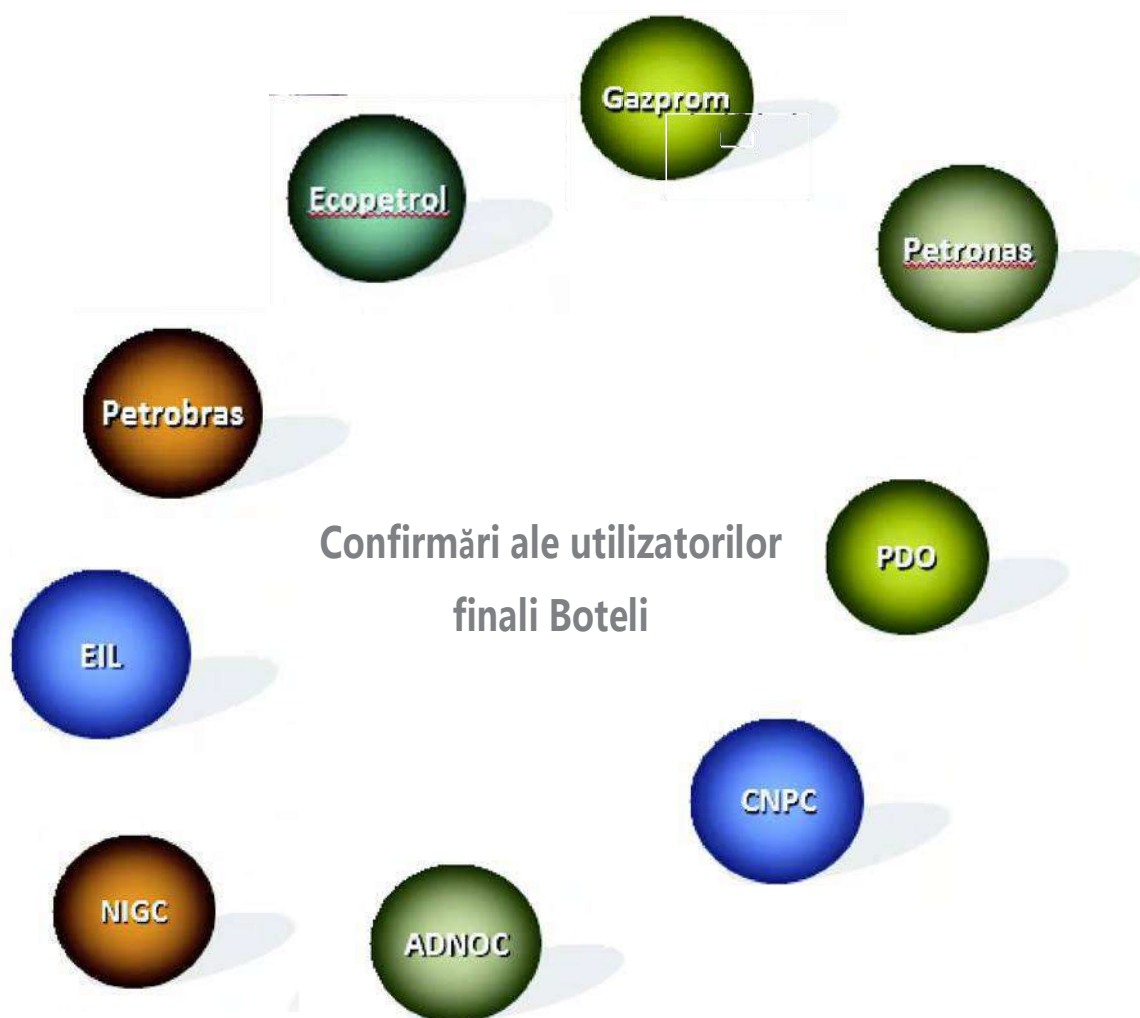


48" 600# robinete cu bilă complet sudate



Texas





Boteli Valve Group Co.,LTD

Tel: 0086 577 6737 6662 _____

Buletin Nr. BTL-B7001 – ediția 1/2017

AB Sfert de tura

Reductoare cu carcasa din fonta



Gama de reductoare AB pentru aplicatii sfert de tura

Seria de reductoare AB-PR pentru sfert de tura sunt echipamente robuste, de inalta calitate industriala, fabricate din fonta pentru componentele carcasei.

Toate modelele din aceasta serie prezinta protectie cu vopsea poliuretana si rulmenti axiali de inalta performanta. Aceste reductoare sunt potrivite pentru industria chimica, energetica, apa si ape uzate, HVAC si aplicatii industriale generale.

Aplicatii

Reductoarele Rotork Gears gama AB sunt echipamente sfert de tura proiectate pentru operarea robinetelor cu sfera, cep sau tip fluture, precum si pentru clapete de aer.

Rotile de manevra sunt disponibile intr-o mare varietate de dimensiuni pentru operarea facila si sigura a reductoarelor.

Caracteristici

- Carcasa din fonta (optional ductila)
- Ax intrare din otel protejat (optional otel inoxidabil)
- 15 modele care dezvoltă un cuplu de pana la 32.000 Nm (283.224 lbf.in)
- Constructie robusta
- Rulmenti axiali
- Cursa: 0 - 90° (± 5° ajustabila).

Optiuni

- Flansa securizabila
- Limitatoare de cursa
- Temperatura maxima +200 °C
- Temperatura minima -60 °C
- Roata cu lant
- Extensii flexibile
- Protectie foc ISO 10497
- Sistem interblocare de siguranta

Specificatii mediu ambient

- Carcasa standard:
Etansare tip N pentru standard IP67
- Carcasa optionala:
Etansare tip W pentru standard IP68, aplicatii submerse pana la adancimea de 1 metru timp de 72 ore conform EN60529:1991/14.2.8
Tip CS adecvat pentru operare submersa continua pana la o adancime maxima de 15 metri
Etansare tip G pentru IP68 pentru operare subterana
- Gama de temperatura:
-20 ... +120 °C
(-4 ... +250 °F)

Tip	Raport	Cuplu Nm (lbf.in)		A.M. ±15%	Tija max. Inaltime (mm)	Greutate kg (lbs)
		Iesire	Intrare			
AB150	40 : 1	150 (1328)	16 (138)	9.6	48.5 / *50.5	2 (5) / *3 (7)
AB210	37 : 1	330 (2921)	28 (252)	11.6	54	4 (8) / *6 (12)
AB215	37 : 1	500 (4425)	43 (381)	11.6	54	4 (8) / *6 (12)
AB550	34 : 1	1000 (8851)	83 (738)	12	79	9 (19) / *12 (25)
AB880	38 : 1	2000 (17702)	152 (1341)	13.2	82	14 (31) / *17 (38)
AB1250	55 : 1	3250 (28765)	171 (1514)	19	91	22 (49) / *28 (61)
AB1950	52 : 1	5500 (48679)	289 (2562)	19	111 / *114	32 (71) / *45 (99)
AB2000	109 : 1	4500 (39828)	136 (1207)	33	111	24 (53) / *27 (60)
AB1950/PR4	217 : 1	7000 (61955)	106 (939)	66	111 / *114	39 (85) / *52 (115)
AB3000/PR4	243 : 1	9000 (79657)	111 (983)	81	121 / *123	49 (108) / *55.7 (123)
AB3000/PR6	348 : 1	11000 (97358)	104 (918)	106	121 / *123	51 (112) / *57 (126)
AB6800/PR4	326 : 1	12500 (110634)	130 (1152)	96	121 / *142	62.5 (138) / *92.5 (204)
AB6800/PR6	468 : 1	17000 (150463)	121 (1075)	140	121 / *142	64.2 (142) / *94.2 (208)
A200/PR10	729 : 1	26000 (230120)	124 (1096)	210	165	134.4 (296)
A250/PR10	729 : 1	32000 (283224)	142 (1259)	225	169	219.4 (484)

*Dimensiuni pentru carcasa cu baza mare.

Factorul de siguranta static 1.5.

Avantajul mecanic se atinge dupa cateva cicluri.

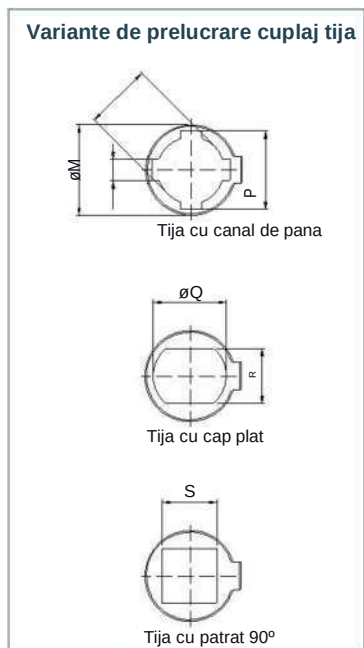
Tip	Dimensiuni maxime pentru tije						
	ØM	ØN	O	P	ØQ	R	S
AB150	25 (0.98)	15 (0.59)	19.6 (0.77)	5 (0.2)	18.1 (0.71)	14 (0.55)	14 (0.55)
AB210	32.15 (1.27)	20 (0.79)	25.6 (1.01)	6 (0.24)	22.2 (0.87)	17 (0.67)	17 (0.67)
AB215	32.15 (1.27)	20 (0.79)	25.6 (1.01)	6 (0.24)	22.2 (0.87)	17 (0.67)	17 (0.67)
AB550	45.3 (1.78)	30 (1.18)	36.6 (1.44)	8 (0.31)	36.2 (1.43)	27 (1.06)	27 (1.06)
AB880	60 (2.36)	44 (1.73)	50.6 (1.99)	12 (0.47)	48.2 (1.90)	36 (1.42)	36 (1.42)
AB1250	60 (2.36)	44 (1.73)	50.6 (1.99)	12 (0.47)	48.2 (1.90)	36 (1.42)	36 (1.42)
AB1950	TBC	TBC	TBC	TBC	TBC	TBC	TBC

Insertiile tijelor nu sunt retinute in reductor, va rugam sa specificati daca e necesar.

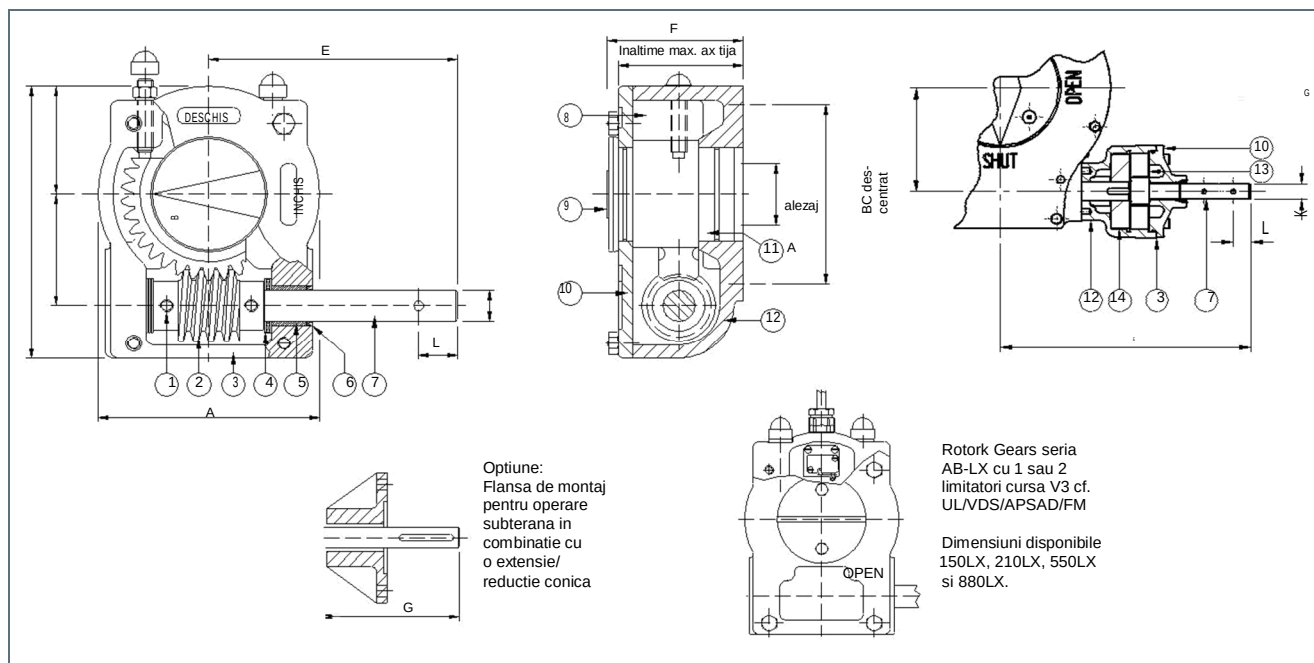
Specificatii de material pentru gama de reductoare Rotork AB-PR pentru aplicatii sfert de tura

Nr.	Descriere	Material	Note
1	Surub reglaj	Otel carbon	DIN915 / grade 12.9
2	Ansamblu melcat	Otel carbon	C45 / AISI1045
3	Garnitura	Etansare lichida	-
4	Rulment axial	Otel durificat	-
5	Bucse	P10, P14	PAP
6	Garnitura etansare	Nitrile	-
7	Ax	Otel protejat	C45 / AISI1045 (pt. PR materialul este 40Cr otel slab aliat)
8	Vaselina	Renolit CLX2	-
9	Indicator de pozitie	Scanblend FS7 PC/ASA	-
10	Capac	Fonta	GG25 / ASTM A48-40
11	Cadran	Fonta ductila	GGG40 / ASTM D60-40-18
11A	Cadran AB215	Fonta ductila	GGG50 / ASTM D70-50-05
12	Corp	Fonta	GG25 / ASTM A48-40
13	Reductor	Otel carbon	C45 / AISI1045
14	Operator	Otel	EN8 / GB/T 699 GRADE 45

Nota: Datorita politicii companiei pentru imbunatatirea continua, Rotork Gears isi rezerva dreptul de a schimba oricand detaliile specificatiilor. Sunt disponibile si versiuni din otel protejat si otel inoxidabil. Carcasa din fonta ductila este disponibila ca optiune.



Gama de reductoare AB-PR



Tip	A	B	C	D	E	F	G	ØK	L	Cuplaj robinet BC cf. ISO 5211	Alezaj Max.	Patrat Max. Alezaj AF
AB150	80 (3,15)	124 (4,88)	58 (2,28)	42,5 (1,67)	99,5 (3,92)	54,5 (2,15)	.	12 (0,47)	14 (0,55)	F04-F05-F07	20 (0,78)	17 (0,67)
AB150 LB	94 (3,70)	124 (4,88)	58 (2,28)	42,5 (1,67)	99,5 (3,92)	56,5 (2,22)	.	12 (0,47)	14 (0,55)	F10	20 (0,78)	17 (0,67)
AB210	102 (4,02)	127,5 (5,02)	48 (1,89)	52 (2,05)	159 (6,26)	63 (2,48)	146 (5,75)	15 (0,59)	14 (0,55)	F05-F07-F10	30 (1,18)	24 (0,94)
AB210 LB	150 (5,91)	155 (6,10)	75 (2,95)	52 (2,05)	159 (6,26)	63 (2,48)	NP	15 (0,59)	14 (0,55)	F12	30 (1,18)	24 (0,94)
AB215	102 (4,02)	127,5 (5,02)	48 (1,89)	52 (2,05)	159 (6,26)	63 (2,48)	146 (5,75)	15 (0,59)	14 (0,55)	F05-F07-F10	30 (1,18)	24 (0,94)
AB215 LB	150 (5,91)	155 (6,10)	75 (2,95)	52 (2,05)	159 (6,26)	63 (2,48)	NP	15 (0,59)	14 (0,55)	F12	30 (1,18)	24 (0,94)
AB550	138 (5,43)	174 (6,85)	69 (2,72)	71 (2,80)	201 (7,91)	88 (3,46)	170 (6,69)	20 (0,79)	24 (0,95)	F07-F10-F12-F14	45 (1,77)	38 (1,50)
AB550 LB	210 (8,27)	174 (6,85)	69 (2,72)	71 (2,80)	201 (7,91)	88 (3,46)	NP	20 (0,79)	24 (0,95)	F16	45 (1,77)	38 (1,50)
AB880	200 (7,87)	226 (8,90)	100 (3,94)	86 (3,39)	189 (7,44)	92,5 (3,64)	182 (7,17)	20 (0,79)	24 (0,95)	F10-F12-F14-F16	60 (2,36)	46 (1,81)
AB880 LB	260 (10,24)	256 (10,07)	130 (5,11)	86 (3,39)	189 (7,44)	92,5 (3,64)	NP	20 (0,79)	24 (0,95)	PCD 220 8 x M16	60 (2,36)	46 (1,81)
AB1250	220 (8,66)	258 (10,16)	110 (4,33)	104,5 (4,11)	230 (9,06)	102 (4,02)	200 (7,87)	20 (0,79)	24 (0,95)	F10-F12-F14-F16	65 (2,56)	50 (1,97)
AB1250 LB	285 (11,22)	291 (11,44)	143 (5,61)	104,5 (4,11)	230 (9,06)	102 (4,02)	NP	20 (0,79)	24 (0,95)	F25	65 (2,56)	50 (1,97)
AB1950	285 (11,22)	322,5 (12,70)	142,5 (5,61)	130 (5,12)	275 (10,83)	126 (4,96)	204 (8,03)	25 (0,98)	28 (1,10)	F12-F14-F16-F25	80 (3,15)	60 (2,36)
AB1950 LB	350 (13,8)	355 (14)	175 (6,9)	130 (5,12)	275 (10,83)	129 (5,07)	232 (9,13)	25 (0,98)	28 (1,10)	F30	80 (3,15)	60 (2,36)
AB2000	214 (8,44)	255 (10,04)	106 (4,17)	53 (2,09)	232 (9,13)	121 (4,76)	.	20 (0,79)	24 (0,95)	F12-F14-F16	80 (3,15)	60 (2,36)
AB2000 LB	285 (11,22)	293 (11,54)	142 (5,59)	53 (2,09)	232 (9,13)	121 (4,76)	232 (9,13)	20 (0,79)	24 (0,95)	F16-F25	80 (3,15)	60 (2,36)
AB1950/PR4	285 (11,22)	322,5 (12,70)	142,5 (5,61)	130 (5,12)	301 (11,85)	126 (4,96)	301 (11,85)	20 (0,79)	24 (0,95)	F12-F14-F16-F25	80 (3,15)	60 (2,36)
AB1950LB/PR4	350 (13,8)	355 (14)	175 (6,9)	130 (5,12)	329 (12,95)	129 (5,07)	329 (12,95)	20 (0,79)	24 (0,95)	F30	80 (3,15)	60 (2,36)
AB3000/PR4	293 (11,52)	337 (13,25)	142 (5,58)	140 (5,51)	314 (12,36)	153 (6,02)	314 (12,36)	20 (0,79)	24 (0,95)	F16-F25	100 (3,94)	75 (2,95)
AB3000LB/PR4	351 (13,81)	372 (14,66)	175 (6,89)	140 (5,51)	314 (12,38)	155 (6,10)	314 (12,38)	20 (0,79)	24 (0,95)	F30	100 (3,94)	75 (2,95)
AB3000/PR6	293 (11,52)	337 (13,25)	142 (5,58)	140 (5,51)	314 (12,36)	153 (6,02)	314 (12,36)	20 (0,79)	24 (0,95)	F16-F25	100 (3,94)	75 (2,95)
AB3000LB/PR6	351 (13,81)	372 (14,66)	175 (6,89)	140 (5,51)	314 (12,38)	155 (6,10)	314 (12,38)	20 (0,79)	24 (0,95)	F30	100 (3,94)	75 (2,95)
AB6800/PR4	370 (14,57)	407 (16)	170 (6,69)	182 (7,17)	354 (13,94)	159 (6,26)	354 (13,94)	20 (0,79)	24 (0,95)	F16-F25-F30	100 (3,94)	75 (2,95)
AB6800BB/PR4	370 (14,57)	407 (16)	170 (6,69)	182 (7,17)	354 (13,94)	159 (6,26)	354 (13,94)	20 (0,79)	24 (0,95)	F25-F30	120 (4,56)	90 (3,56)
AB6800LB/PR4	415 (16,34)	445 (17,52)	207,5 (8,17)	182 (7,17)	354 (13,94)	193 (7,60)	354 (13,94)	20 (0,79)	24 (0,95)	F35	100 (3,94)	75 (2,95)
AB6800BBLB/PR4	415 (16,34)	445 (17,52)	207,5 (8,17)	182 (7,17)	354 (13,94)	193 (7,60)	354 (13,94)	20 (0,79)	24 (0,95)	F35	120 (4,56)	90 (3,56)
AB6800/PR6	370 (14,57)	407 (16)	170 (6,69)	182 (7,17)	354 (13,94)	159 (6,26)	354 (13,94)	20 (0,79)	24 (0,95)	F16-F25-F30	100 (3,94)	75 (2,95)
AB6800BB/PR6	370 (14,57)	407 (16)	170 (6,69)	182 (7,17)	354 (13,94)	159 (6,26)	354 (13,94)	20 (0,79)	24 (0,95)	F25-F30	120 (4,56)	90 (3,56)
AB6800LB/PR6	415 (16,34)	445 (17,52)	207,5 (8,17)	182 (7,17)	354 (13,94)	193 (7,60)	354 (13,94)	20 (0,79)	24 (0,95)	F35	100 (3,94)	75 (2,95)
AB6800BBLB/PR6	415 (16,34)	445 (17,52)	207,5 (8,17)	182 (7,17)	354 (13,94)	193 (7,60)	354 (13,94)	20 (0,79)	24 (0,95)	F35	120 (4,56)	90 (3,56)
A200/PR10	440 (17,32)	492 (19,35)	207,5 (8,17)	209 (8,22)	374,5 (14,74)	215 (8,46)	374,5 (14,74)	20 (0,79)	24 (0,95)	F25-F30-F35	160 (6,29)	115 (4,52)
A250/PR10	510 (20,08)	585 (23)	235 (9,25)	256 (10,08)	414,5 (16,32)	224 (8,80)	414,5 (16,32)	20 (0,79)	24 (0,95)	F25-F30-F35-F40	160 (6,29)	115 (4,52)

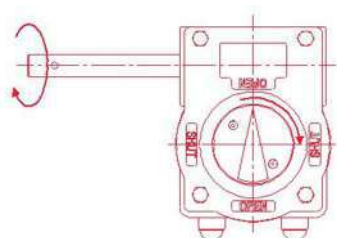
LB – carcasa cu baza mare / NP - nu este compatibil cu carcasa cu baza mare. Cuplaj robinet FA disponibil. Toate dimensiunile sunt in millimetri (inch).

AB-PR Sfert de tura

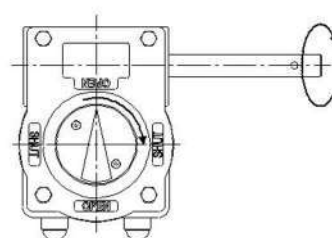
Reductoare cu carcasa din fonta

Optiuni de operare si orientare

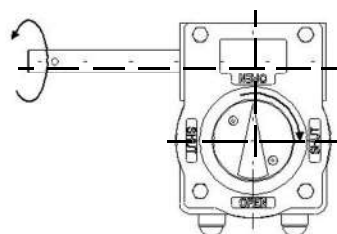
Proiectia tije de intrare Fara reductie de intrare



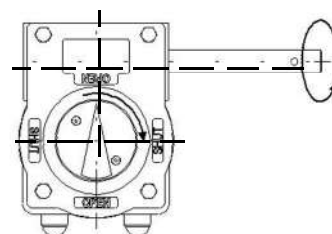
Mana stanga (A2)
Sens orar intrare / iesire
Constr. Standard



Mana dreapta (B1)
Sens orar intrare / iesire

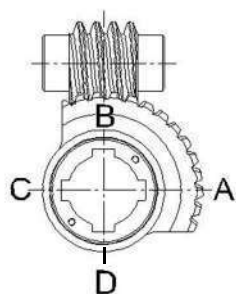


Mana stanga (A1)
Sens invers orar intrare / Sens orar iesire

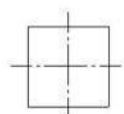


Mana dreapta (B2)
Sens invers orar intrare / Sens orar iesire

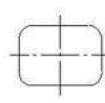
Pozitii canal de pana si ax in pozitia inchis



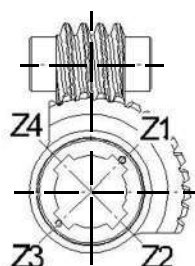
Pana in poz. inchis
(centrat)



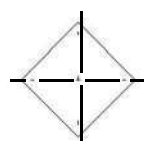
Alezaj patrat
Paralel
(centrat)



Alezaj canelat
Perpendicular
pe debit



Pana in poz. inchis
(descentrat)



Alezaj patrat
Diagonal
(descentrat)



Alezaj canelat
Paralel cu
sens curgere



AB880 + indicator de pozitie inchis/deschis Soldo
+ Roata cu lant montata direct pe axul reductorului



AB880 + angrenaj conic W100 la 90°
+ extensie + ECL + roata de manevra HW



A200N PR10

SPECIFICATII IP PENTRU GAMA DE REDUCTOARE AB-PR				
Aplicatie:	Standard	Marina	Subteran	Operare submersa continua
Tip aplicatie	N	W	G	CS
Clasificare IP	IP67	IP68	IP68	IP68
Durata & adancime	30 min la adancimea de 1 metru	72 ore la adancimea de 1 metru in apa curata	Operare subterana (ingropat)	Scufundare continua la adancimea de 15 metri
Tija intrare	C45 Otel carbon sau 40Cr Otel slab aliat, protectie prin electroforeza	Otel inoxidabil 303 sau otel inoxidabil 431	Otel inoxidabil 303 sau otel inoxidabil 431	Otel inoxidabil 316 sau F53 Super Duplex
Organe de asamblare	Otel	Otel inoxidabil A4	Otel inoxidabil A4	Otel inoxidabil A4
Indicator de pozitie	FS7 (plastic) pana la AB3000 si metal de la A6800 in sus	Metal vopsit cu pulbere si O-Ring	Placa de metal ne-rotativa	Placa ne-rotativa. La cerere Indicatorul de pozitie va fi SS316

Tabel dimensionare roata de manevra

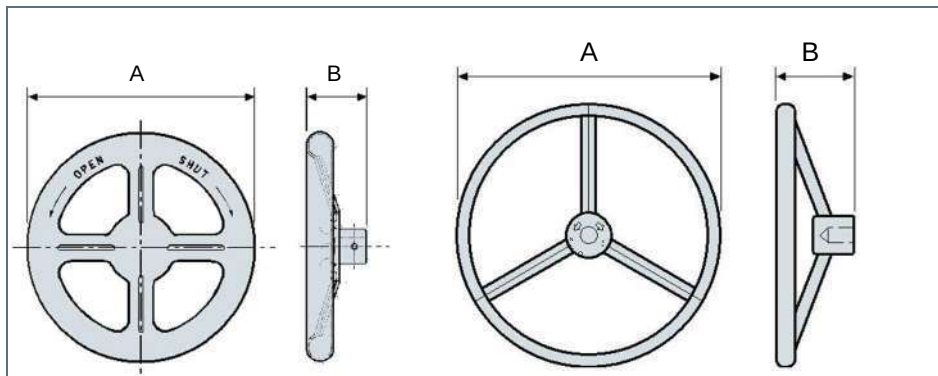
Cuplu de intrare

Tip	A.M. ± 15%
AB150	9.6
AB210	11.6
AB215	11.6
AB550	12
AB880	13.2
AB1250	19
AB1950	19
AB2000	33
AB1950/PR4	66
AB3000/PR4	81
AB3000/PR6	106
AB6800/PR4	96
AB6800/PR6	140
A200/PR10	210
A250/PR10	225

Dimensiuni

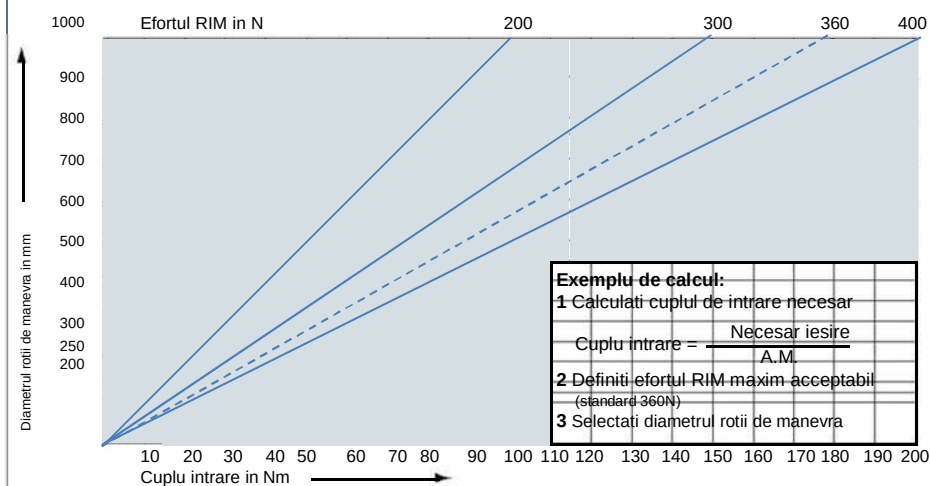
Tip	A	B
PS100-12	Ø100 (4")	35 (1,38)
PS125-12	Ø125 (5")	34 (1,34)
PS125-15		48 (1,89)
PS160-12	Ø160 (6")	48 (1,89)
PS160-15		49 (1,93)
PS200-12	Ø200 (8")	51 (2,00)
PS200-15		52 (2,05)
PS200-20		63 (2,48)
PS250-12	Ø250 (10")	63 (2,48)
PS250-15		63 (2,48)
PS250-20		70 (2,76)

Tip	A	B
SG200	Ø200 (8")	80 (3,15")
SG250	Ø250 (10")	110 (4,33")
SG300	Ø300 (12")	115 (4,53")
SG350	Ø350 (14")	120 (4,72")
SG400	Ø400 (16")	130 (5,12")
SG450	Ø450 (18")	150 (5,91")
SG500	Ø500 (20")	150 (5,91")
SG600	Ø600 (24")	150 (5,91")
SG700	Ø700 (28")	150 (5,91")
SG800	Ø800 (32")	150 (5,91")
SG900	Ø900 (36")	160 (6,30")
SG1000	Ø1000 (40")	160 (6,30")



Roata de manevra seria PS

Roata de manevra seria SG



Documentatie completa si informatii suplimentare pentru toata gama de produse Rotork:

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