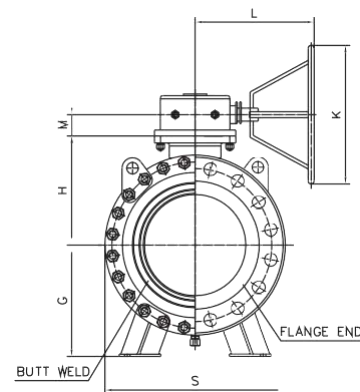
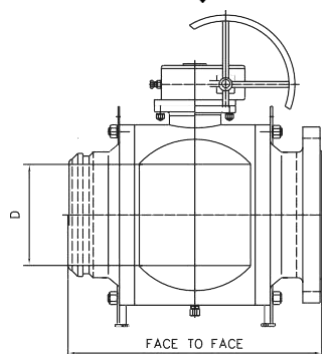




Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 300- (PN40)

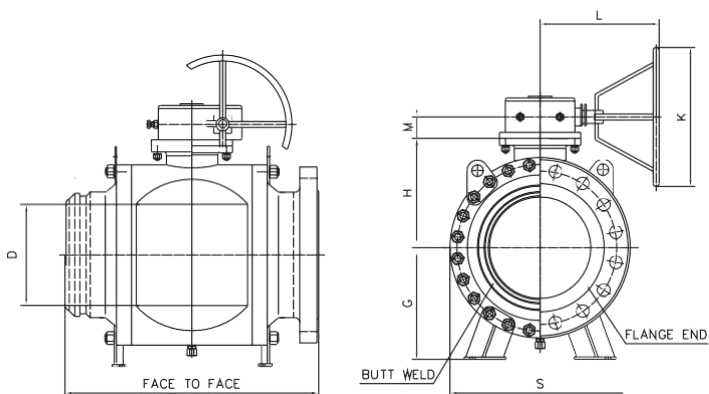
mm

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)

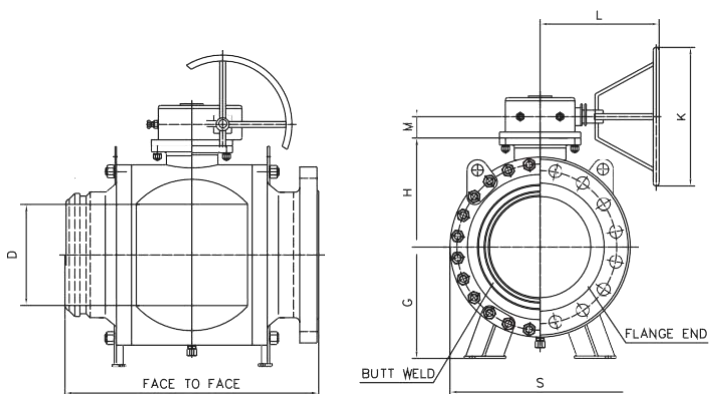
mm

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)

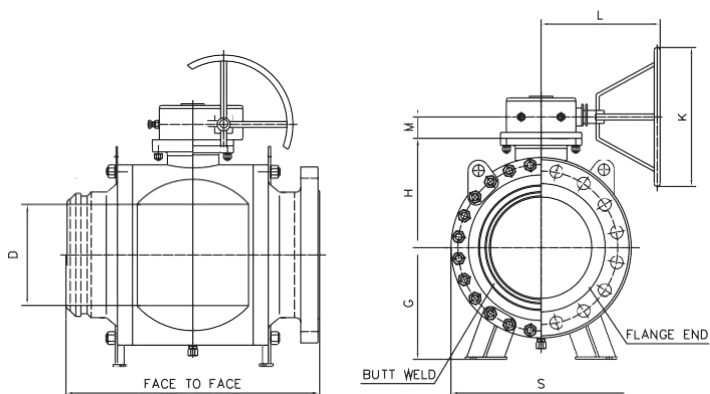
mm

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)

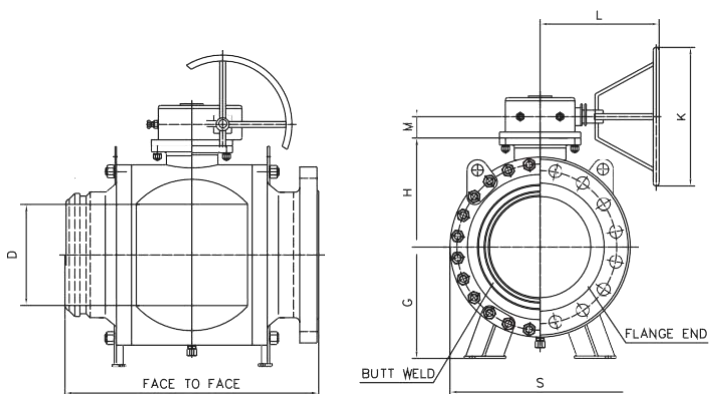
mm

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)

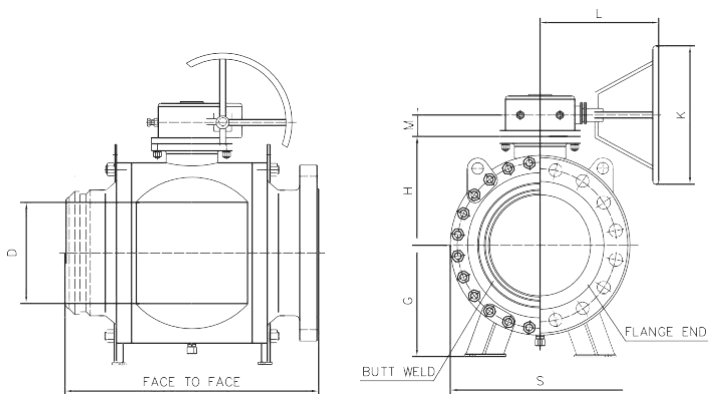
mm

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	*	*	*	*	*	*

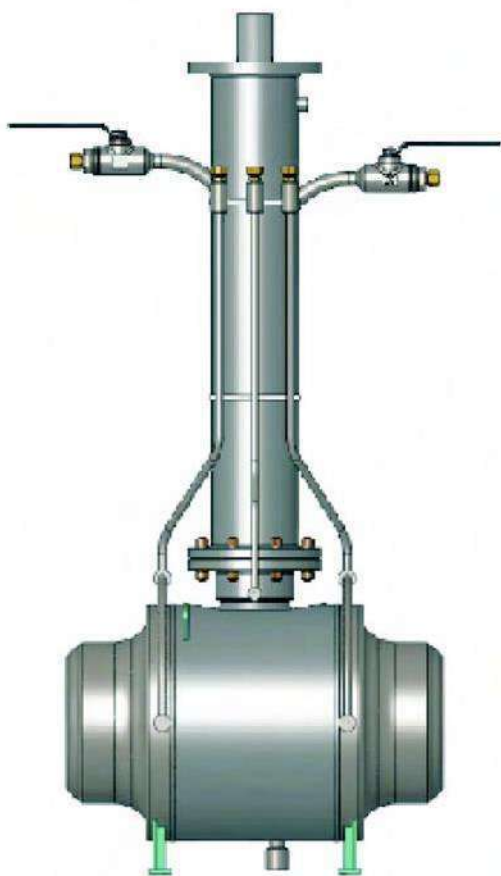
* Consultați BTL pentru moment de torsiune la anumite presiuni

* 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

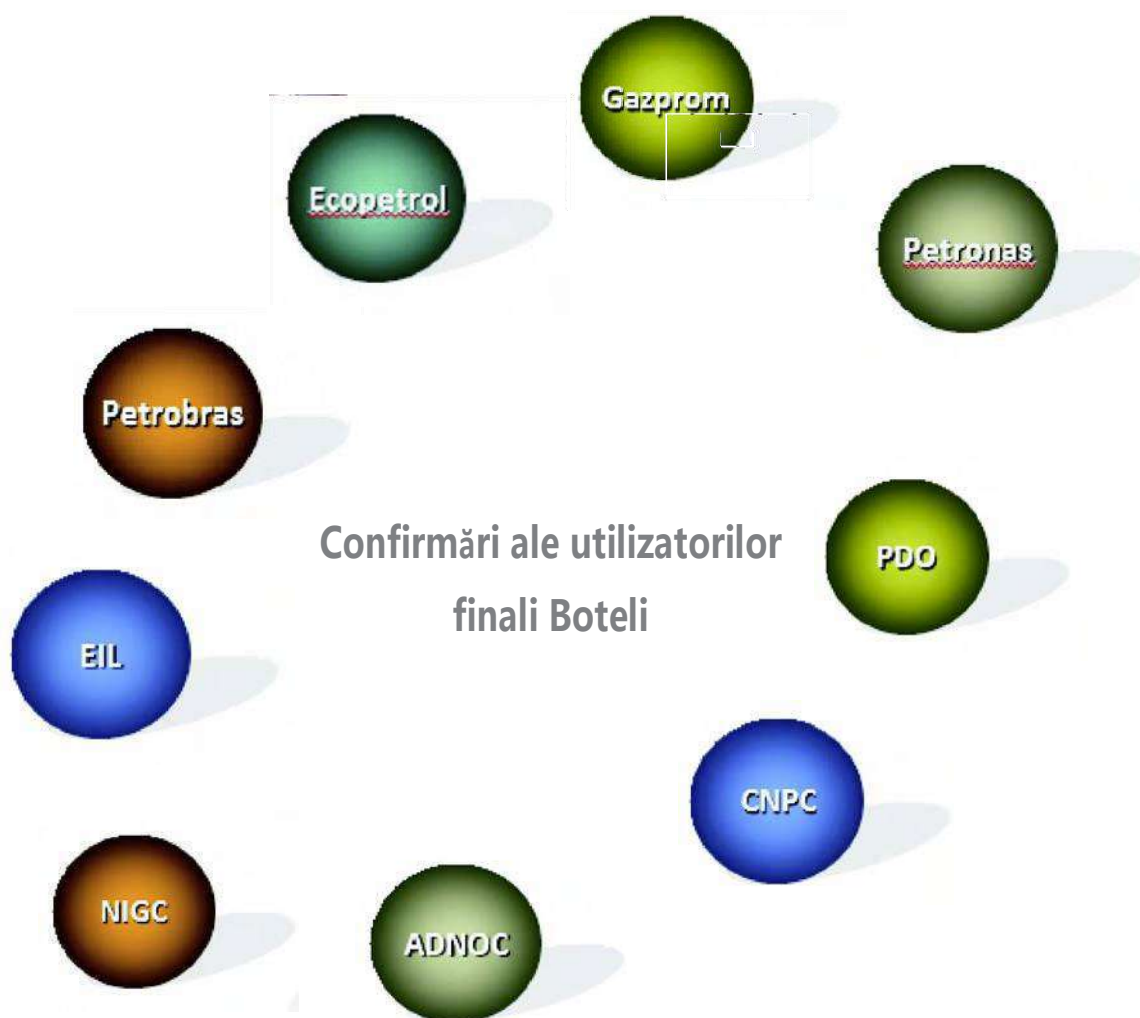


48" 600# robinete cu bilă complet sudate



Texas





Boteli Valve Group Co.,LTD

Tel: 0086 577 6737 6662 _____

Buletin Nr. BTL-B7001 – ediția 1/2017



®

**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

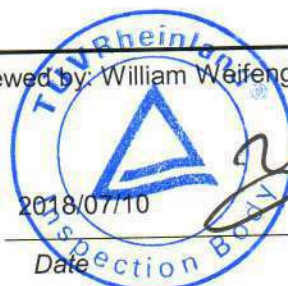
2018/06/29

Date

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

Chen Jizhang

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

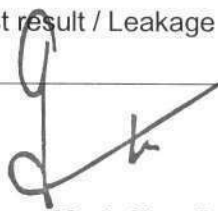
Type designation of tested valve: Ball Valve

Description of valve: 6" 2500LB

Details of test valve:

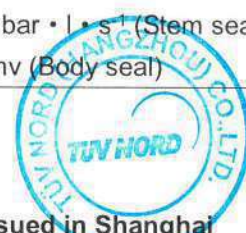
Material & Dimension	
Part Name	6" 2500LB
Body	ASTM A350 LF2
Bonnet	ASTM A350 LF2
Stem	AISI 4140 - ENP
Ball	AISI 4140 - ENP
Packing	Ø65XØ75X5mm Graphite packing 1pcs
O-ring	VITON AED
Sealing ring	VITON AED
Marking	ISO FE BH-CO1-SSA 0-t(-46℃, 200℃)-CL2500-ISO 15848-1
Design standard	API 6D
Drawing No.	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

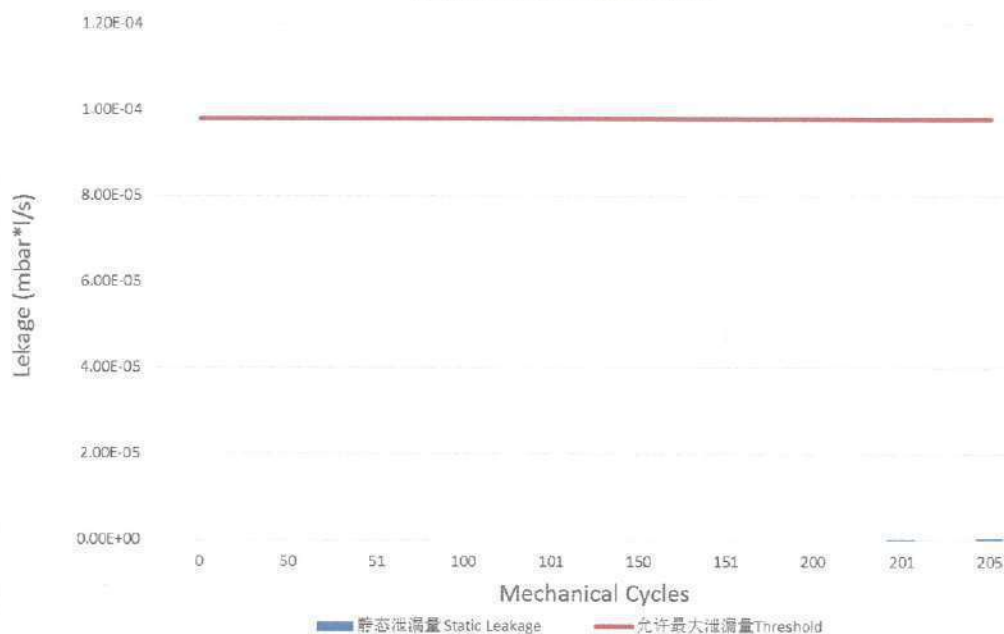
试验结果 Test Results:

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



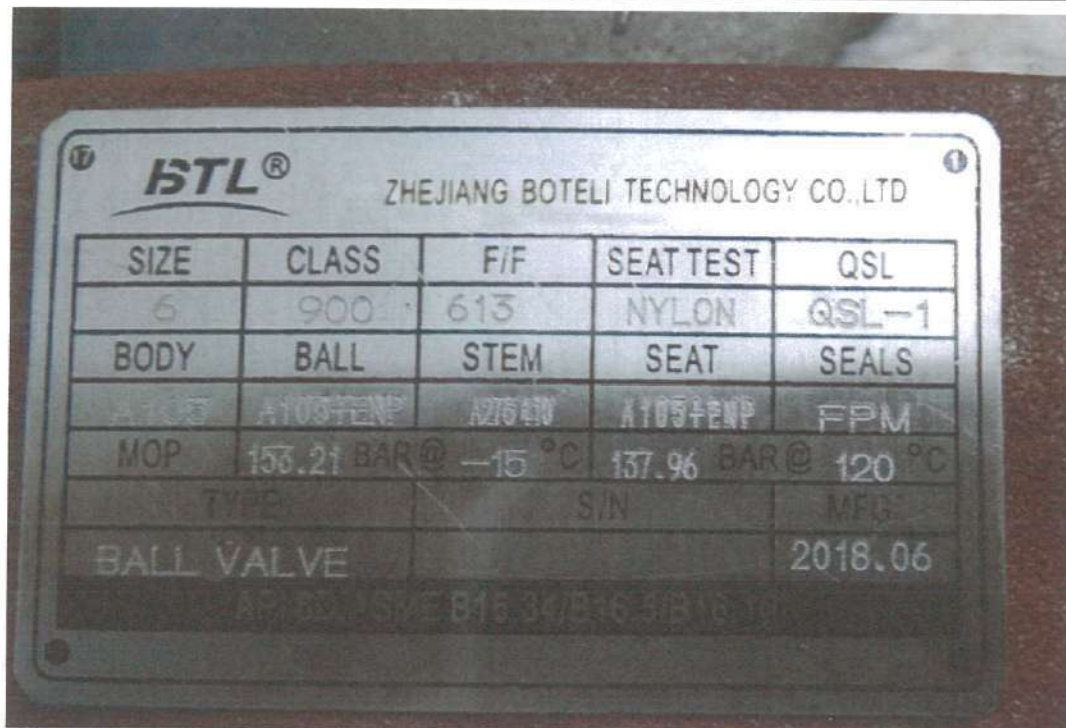
测试产品照片Test product



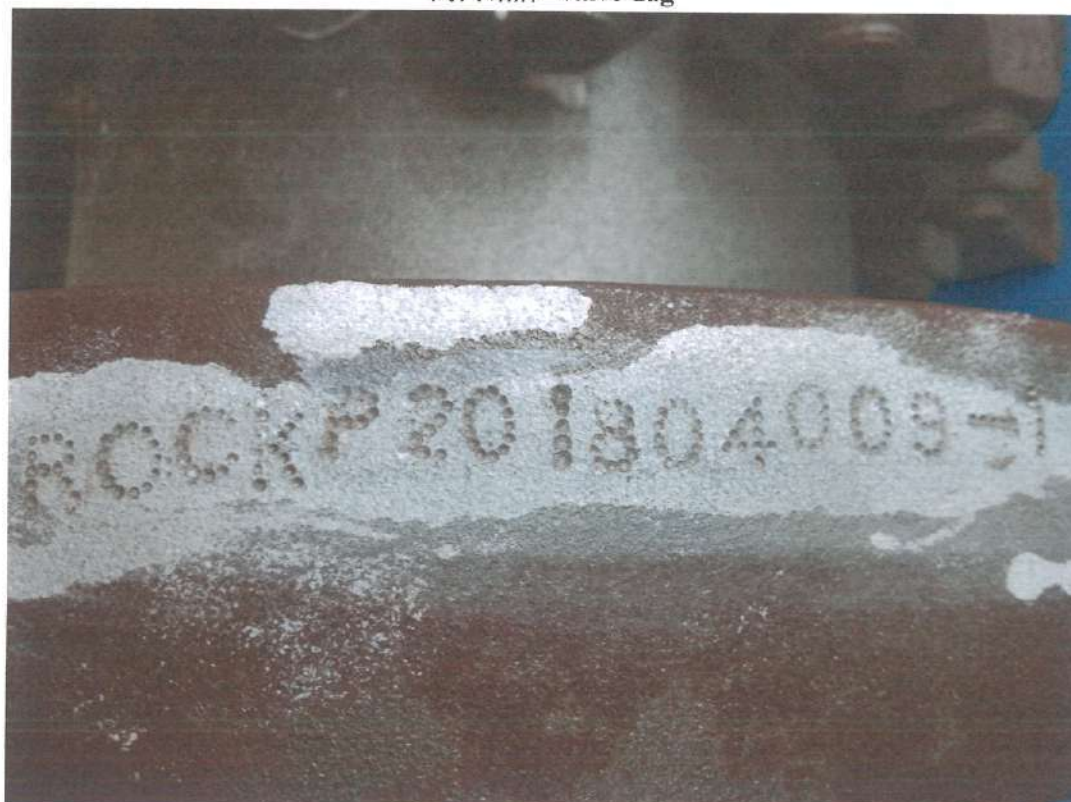
检漏设备 Leak Detector

照片记录 Photographic Record

阀门标识和铭牌 Valve Marking and Tagging



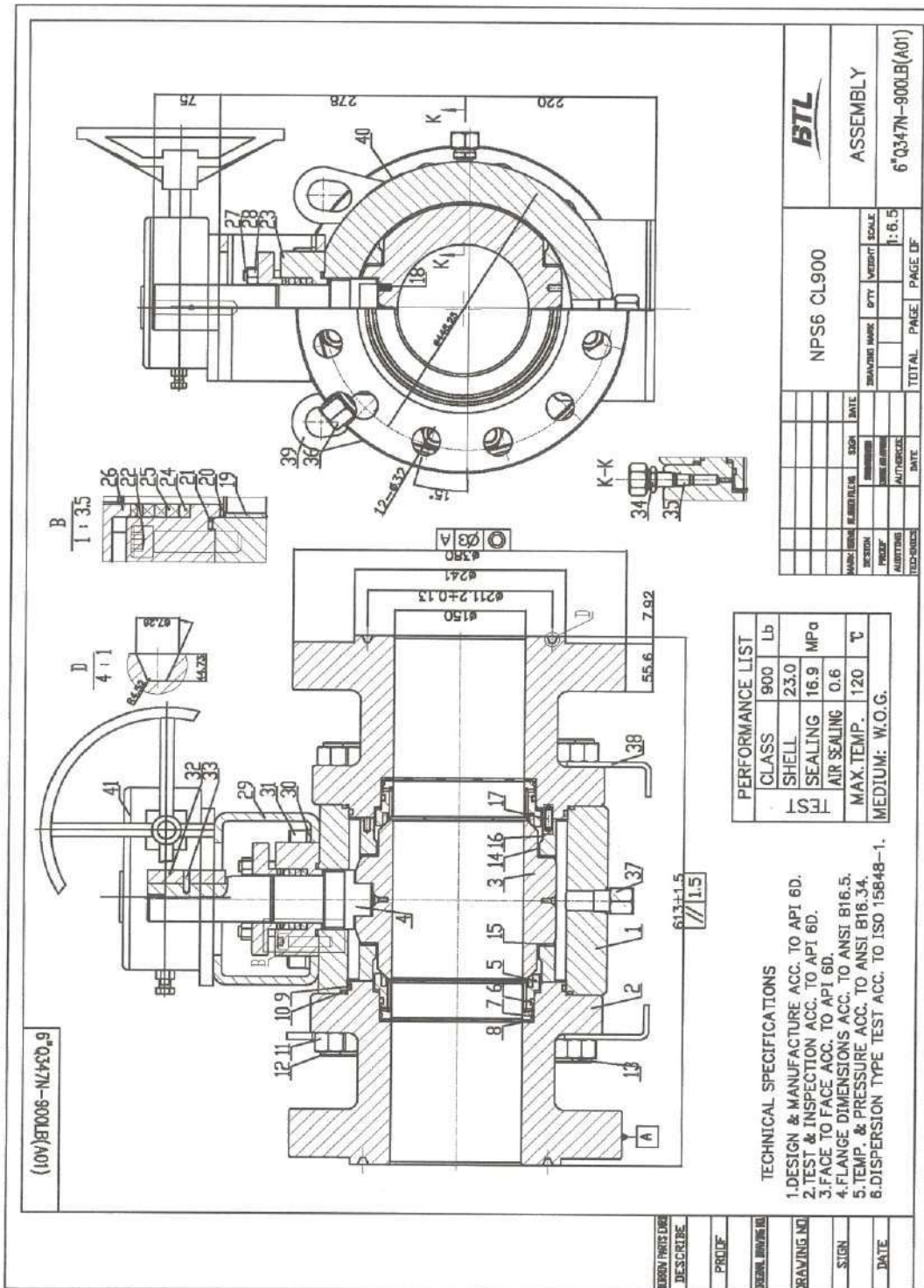
阀门铭牌 Valve Tag



实验室编号 Lab Marking

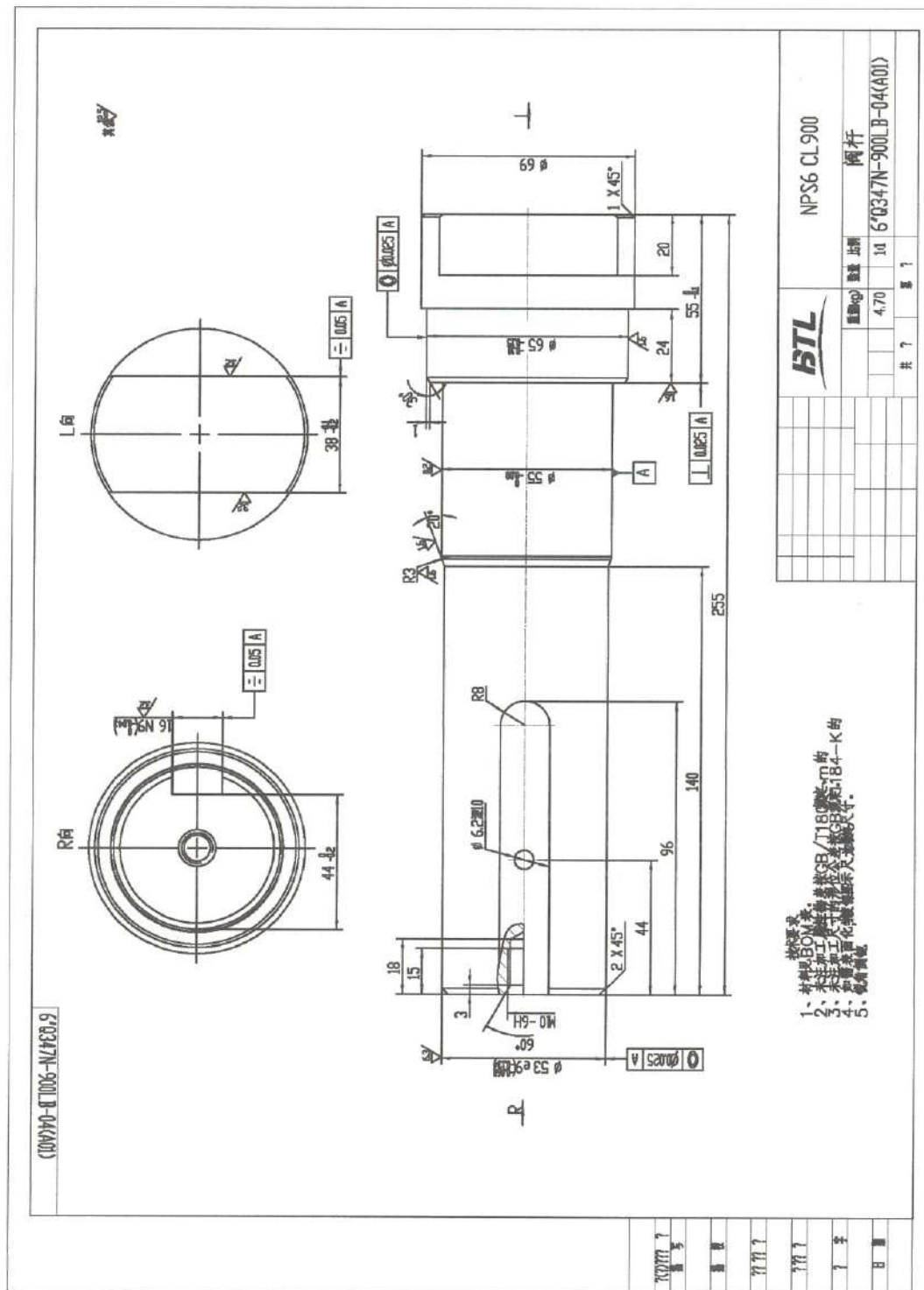
阀门图纸Valve Drawings

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	Φ243XΦ150X187 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	ΦX3 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	Φ10X120X10X170 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	REVISOR FILE NO.	SIGN	DATE	
	EDIT				
	PROOF		DATE		
NPS 6 CL900					BTL
					MATERIAL LIST
DRAWING MARK TOTAL 1 PAGE					6"Q347N-900LB-MX(A01)
S PAGE OF 1					

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.

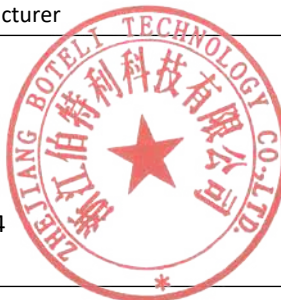
This declaration of conformity is issued under the sole responsibility of the manufacturer

Name: Huang Jinzhu

Department: Quality Department

Place: Wenzhou, China

Date: March 09, 2024





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

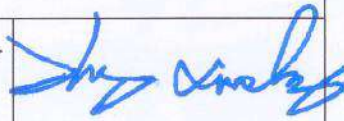
Für Geräte und Komponenten
zur Verwendung in explosionsgefährdeten Bereichen

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) **645**
☎ +39.0516705141 ☎ +39.0516705156 ✉ info@entecerma.it 🌐 www.entecerma.it

Annex I

No. 11170307.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

No:

Rev: Rev.D

Pages: front+ 3+Certificate produse livrate 5 FISIERE + PROCESE VERBALE DE PIF/RECEPTIE
Please reply to: ROMVALVES, Str. INDUSTRIEII 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 ofertat", va rugăm să puneți la dispoziție documentul solicitat exclusiv pentru producătorul robinetelor și al acționarelor utilizate.

1. IT-RAEI-01 - Robinet de incendiu, cu sferă, montaj subteran, acționare electrică
2. IT-RAE - Robinet cu sferă, corp demontabil, montaj supratran, acționare electrică
3. IT-RAM-01 - Robinet cu sferă, corp demontabil, montaj supratran, acționare manuală
4. IT-RAM-02 - Robinet cu sferă, corp monobloc, montaj subteran, acționare manuală
5. IT-RAM-M - Robinet cu sferă, corp demontabil, montaj supratran, acționare manuală cu indicare locală a poziției
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 prezentei 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:

Produsător robineti:

Produsător acționari:

Furnizor:

UFC Cluj

BOTELI COMPANY

Rotork

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 Chisneau-Cris, organizata de Transgaz Media

Beneficiar direct:

FEROTERRA MEDIAS

Produsător robineti:

BOTELI COMPANY

Produsător acționarii electrice:

AUMA

Produsător reductoare manuali:

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	RAM 14	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
 Producator robineti:
 AUMA
 Producator actionari electrice:
 ROTORK
 Producator 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	1	JYZ-L2005022	
3	250	150#	FT 7	TW	PMSS	RF	SE	4	JYZ-L2005023	
4	150	300#	FT 8	TW	PMSS	RF	RM	1	JYZ-L2005024	
5	250	150#	FT 9	TW	PMSS	RF	RM	3	JYZ-L2005025	
6	80	300#						4	JYZ-L2005026	
7	150	300#						1	JYZ-L2005027	
8	250	300#						2	JYZ-L2005028	
9	300	300#						4	JYZ-L2005029	
10	80	150#						4	JYZ-L2005030	
11	150	150#						1	JYZ-L2005031	
12	250	150#						5	JYZ-L2005032	
13	500	150#						3	JYZ-L2005033	

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

Beneficiar direct:
 RADET BUCURESTI
 BOTELI COMPANY
 Producator robineti:
 ROTORK
 Producator actionari electrice:
 Romvalves
 Furnizor:

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 - Director tehnic instalații electrice

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 11/02/2021

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 birourii la PVRTC 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

Țetcu Raul

Pop Mircea Cornel

Reprezentant Primăria orașului Chișineu Criș

Reprezentant IJC Arad

Stroi Anda

Secretar: Stancu Fănel, Diriginte de șantier

ROMÂNIA M.D.R.T.-I.S.C.
STANCU FĂNEL
DIRIGINTE DE ȘANTIER
AUT. NR. 24736
DOMENII/SUBDOMENII
Rețele de gaze

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

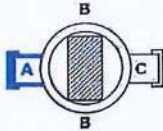
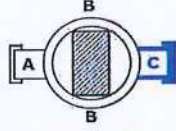
Original mill certificates are available for review in our works

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




 Manag. 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			 ISTL <i>Create A National Brand</i>	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

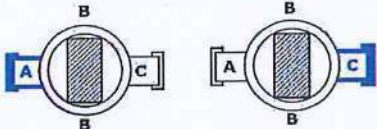
Item	Valve Parts	Heat Number	Material
1.1	Body	HG8008	ASTM A350 LF2
1.2	Bonnet	HG8008	ASTM A350 LF2
1.3	Ball	34121516	A350 LF2+TCC
1.4	Stem	19H242	ASTM A564 17-4PH
1.5	Seat Ring	5XYB	ASTM A182 F316
1.6	Seat Insert		DEVLON/VITON

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


 HE XIONGGUANG
 Manager of QA Department

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 proiect conform PT 1290/2018/2019.

9. Comisia de recepție recomandă luarea următoarelor măsuri:

Completarea în data a instalării, nu executate.

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

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

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

-
- Figure 1 shows a schematic of a multi-layered system with eight layers, labeled 1 through 8. A diagonal line, likely representing a crack or a phase boundary, originates from the bottom left and extends towards the top right, intersecting layers 4, 5, and 6. The layers are depicted as horizontal bands with a textured appearance, suggesting a granular or fibrous material composition.

Semnătura

Tătaru Ion

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4

11.

29



11/10 - 12/10 Mexandrom

Sălăgean Adrian

.....Pop. Nade.....

CONCLUSION

1701 DAN

Lupu Daniel

00024



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.	
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9.	
10.	

Comisia de recepție :

Președinte

Tătaru Ion

Semnătura

Membrii :

Niță Viorel

Rusie Adrian

Chiurtu Iulian

ISC —

N/A —

Sălăgean Adrian

Alți participanți :

Pop Rodica

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

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10.

Comisia de recepție :

Președinte

Tătaru Ion

Semnătura



Membrii :

Niță Viorel

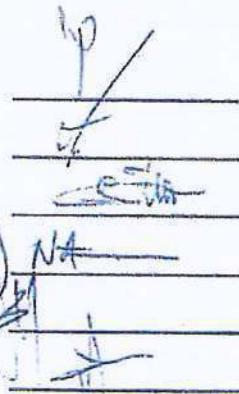
Rusie Adrian

Chiurtu Iulian

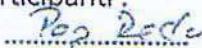




Sălăgean Adrian



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

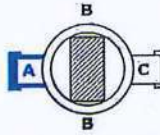
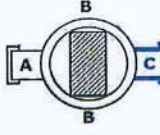
Torque at "A" end under full rated D.P.	Torque at "C" end under full rated D.P.
5700 N.M	6000 N.M

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"


 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# 02	JYZ-L2004041.02	03/Aug/20	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

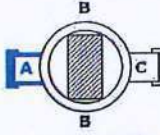
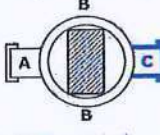
Item	Valve Parts	Heat Number	Material
1.1	Body	HG8008	ASTM A350 LF2
1.2	Bonnet	HG8008	ASTM A350 LF2
1.3	Ball	BD2410	A350 LF2+TCC
1.4	Stem	19H242	ASTM A564 17-4PH
1.5	Seat Ring	BD2410	A350 LF2+TCC

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.	Torque at "C" end under full rated D.P.
620 N.M	600 N.M

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 Bawei Industry Park, Sanjiang Industrial Zone, Oubel Town, Yongjia County, Wenzhou City, Zhejiang Province, Telephone: 0086 577 6737 6562 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# 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 AB1950PR4 Series No. : L2003002 02 Temp.: :
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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	BD2423	A350 LF2+TCC
1.4	Seat ring	217046	A350LF2+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	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

Torque at "A" end under full rated D.P. 4000 N.M	Torque at "C" end under full rated D.P. 3700 N.M
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Test at both ends of "A" and "C"

4. TEST 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

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 6662 Fax: 0086 577 6737 8398   <i>Create A National Brand</i>			INSPECTION CERTIFICATE EN10204 - 3.1		
CLIENT :		PURCHASE ORDER NO	MANUFACTURING BATCH NO..	DESIGN & MANUFACTURING SPECIFICATIONS	
SC ROMVALVES SRL		01.02_20_UFC	L2003002	API 6D- ASME B16.34-API 6FA-PED-ISO15848-1	
ITEM NO. OF TESTED VALVES IN PURCHASE ORDER		REPORT NO.	REPORT DATE	TEST SPECIFICATIONS	
POS# 03		JYZ-L2003002	27/Jun/20	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℃~+180 ℃

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/DEVILON-VITON

2. PRESSURE & PERFORMANCE TEST ACCRODING TO API 6D

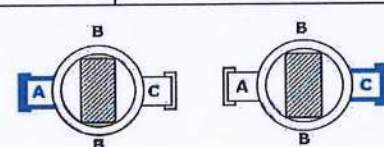
Original mill certificates are available for review in our works

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

Torque at "A" end under full rated D.P.	Torque at "C" end under full rated D.P.
1500 N.M	1500 N.M



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

4. TEST RESULT-ACCEPTED

5.PROTECTION: Intergard® 345,RAL 7044

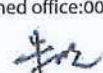
We herewith declare that the valve mentioned in the following fulfill the safety requirements of the Pressure Equipment Directive 2014/68/EU,Modul H.

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-0070

ISO 1272

ISO 9001

ISO 14001

API 6D

API 6FA

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# 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



BOTELI VALVE GROUP CO., LTD.  			INSPECTION CERTIFICATE EN10204 - 3.1
CLIENT: SC ROMVALVES SRL		PURCHASE ORDER NO. 04.03_18_MOLD	MANUFACTURING BATCH NO. L1804007
ITEM NO. OF TESTED VALVES IN PURCHASE ORDER POS# 02		REPORT NO. JYZ-L1804007.02	REPORT DATE 12-Jul-18
DESIGN & MANUFACTURING SPECIFICATIONS API 6D			
TEST SPECIFICATIONS API 6D			

PRODUCTS	Quantity : 4 PCS Type : Ball Valve, Fully welded, Trunnion type. Metal to Metal Size/Pressure Rating : 10" AISI 300# Valve Ends : BW End Operation : Gear AB 1950-Rotork Series No. : L180400704 ~ 07 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	BD2301	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

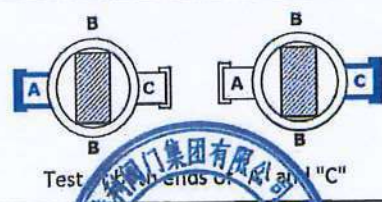
* For valves with bare stem only

Torque at "A" end under full rated D.P.	Torque at "C" end under full rated D.P.
3200 N.M	3000 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 ends of "A" and "C"



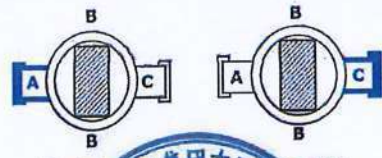
Manager of QA Department

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

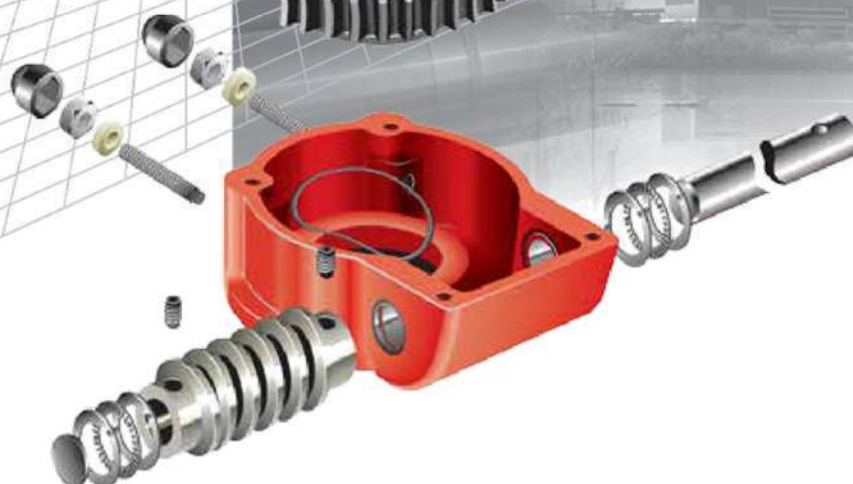
2. PRESSURE & PERFORMANCE TEST ACCORDING TO API 6D				
Original mill certificates are available for review in our works				
Item	Test	Medium	Test Pressure (MPa)	Test Duration (Seconds)
2.1	Hydro Shell Test	Water	7.80	120
2.2	Hydro Seat Test	Water	5.60	120
2.3	Air Seat Test	Air	0.6	120
2.4	Function Test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

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		Manager of QA Department
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		

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. Înălțime (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

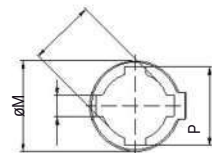
Insertiile tijelor nu sunt retinute in reductor, va rugam sa specificati daca e necesar.

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

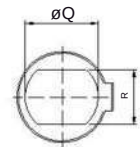
Nr.	Descriere	Material	Note
1	Surub reglaj	Otel carbon	DIN915 / grade 12.9
2	Ansamblu melcat	Otel carbon	C45 / AISI1045
3	Garnitura	Etansare lichida	-
4	Rulment axial	Otel durificat	-
5	Bucse	P10, P14	PAP
6	Garnitura etansare	Nitrile	-
7	Ax	Otel protejat	C45 / AISI1045 (pt. PR materialul este 40Cr otel 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.

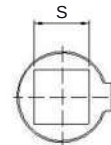
Variante de prelucrare cuplaj tija



Tija cu canal de pana

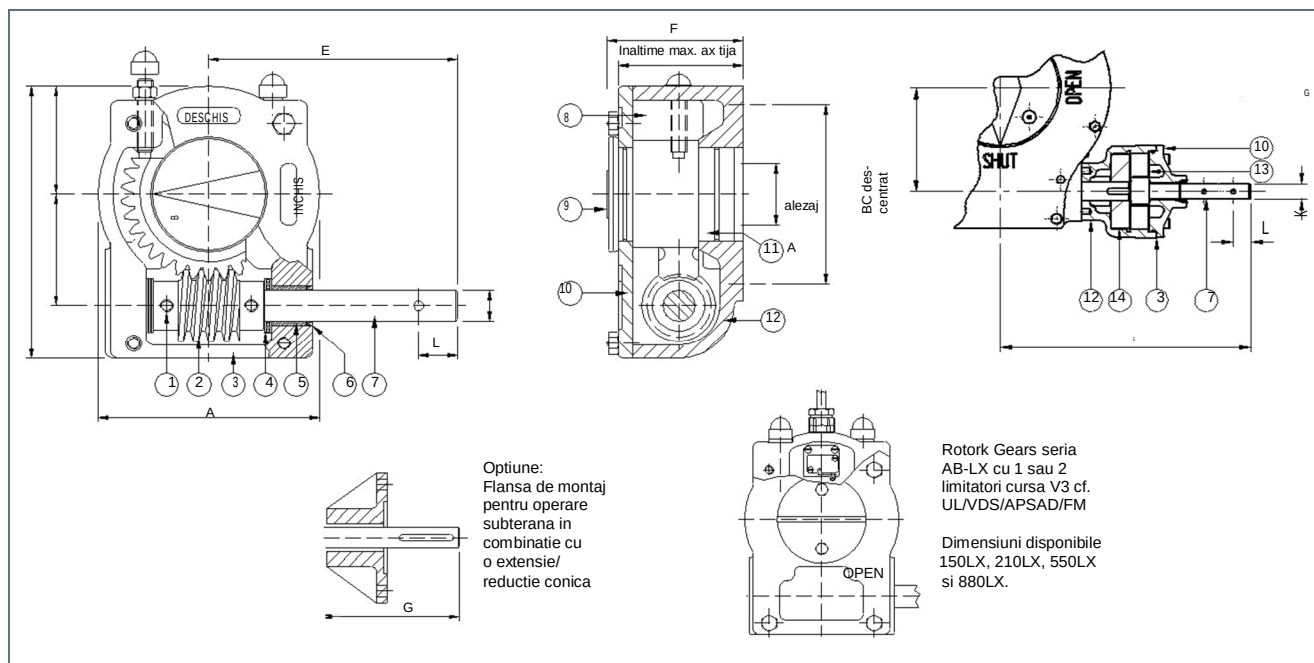


Tija cu cap plat



Tija cu patrat 90°

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)

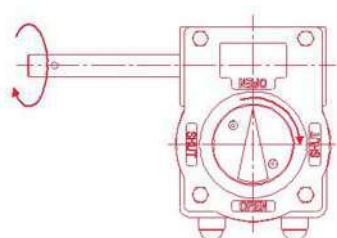
LB – carcasa cu baza mare / NP - nu este compatibil cu carcasa cu baza mare. Cuplaj robinet FA disponibil. Toate dimensiunile sunt in millimetri (inch).

AB-PR Sfert de tura

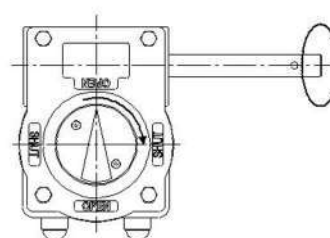
Reductoare cu carcasa din fonta

Optiuni de operare si orientare

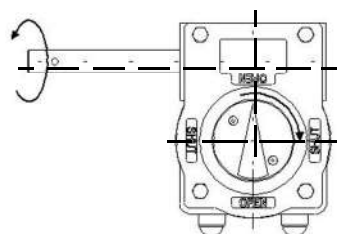
Proiectia tije de intrare Fara reductie de intrare



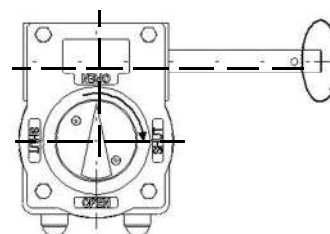
Mana stanga (A2)
Sens orar intrare / iesire
Constr. Standard



Mana dreapta (B1)
Sens orar intrare / iesire

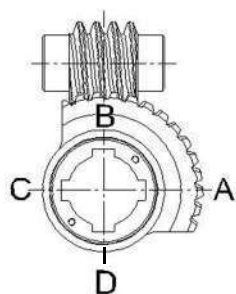


Mana stanga (A1)
Sens invers orar intrare / Sens orar iesire

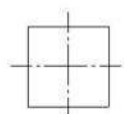


Mana dreapta (B2)
Sens invers orar intrare / Sens orar iesire

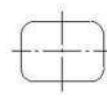
Pozitii canal de pana si ax in pozitia inchis



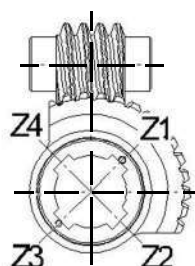
Pana in poz. inchis
(centrat)



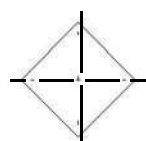
Alezaj patrat
Paralel
(centrat)



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

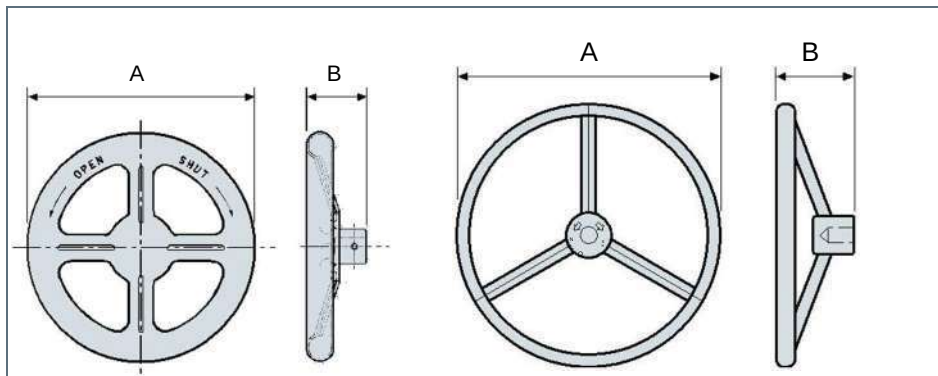
Cuplu de intrare

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

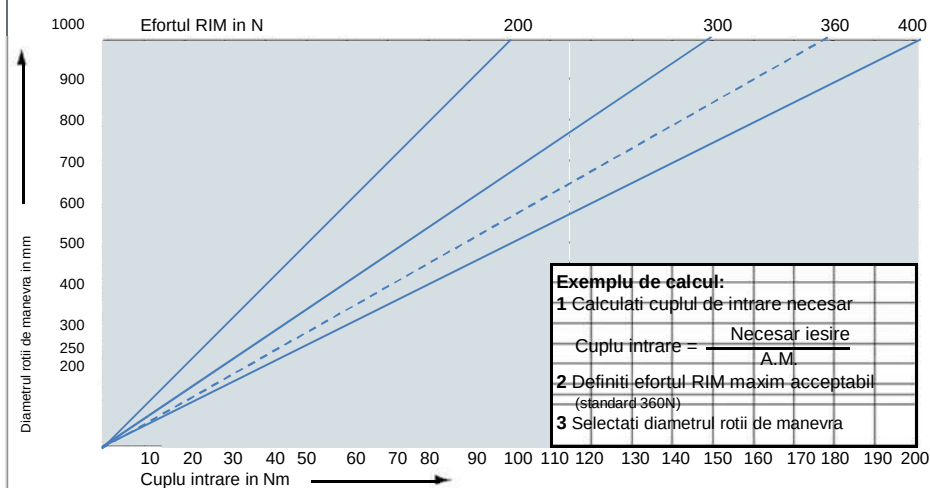
Tip	A	B
PS100-12	Ø100 (4")	35 (1,38)
PS125-12	Ø125 (5")	34 (1,34)
PS125-15		48 (1,89)
PS160-12	Ø160 (6")	48 (1,89)
PS160-15		49 (1,93)
PS200-12	Ø200 (8")	51 (2,00)
PS200-15		52 (2,05)
PS200-20		63 (2,48)
PS250-12	Ø250 (10")	63 (2,48)
PS250-15		63 (2,48)
PS250-20		70 (2,76)

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:

www.rotork.com



Rotork Romania:
Controltech Solutions SRL
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PUB033-006-00 Issue 06/16

Formerly RGM10E. As part of a process of on-going product development, Rotork reserves the right to amend and change specifications without prior notice. Published data may be subject to change. For the very latest version release, visit our website at www.rotork.com. The name Rotork is a registered trademark. Rotork recognizes all registered trademarks. Published and produced in the UK by Rotork Controls Limited. RGSG0616

Declaration of Conformity



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Directive EC 94/9/EG states the directive only applies to equipment which is capable of causing an explosion through its own potential sources of ignition. The gearboxes from type AB, 232, 300, ILG/S and ILG/D don't have their own potential source of ignition, so directive EC 94/9/EG doesn't apply. Therefore we state that:

Operation of gearboxes type series AB, 232, 300, ILG/S and ILG/D with the marking



in areas with explosive gas atmospheres Zone I and II Category 2 (and 3)

and

explosive dust atmospheres Zone 21 and 22 Categories 2 (and 3)

manufactured by Rotork Gears BV, Losser, satisfy the stated requirements and may therefore be used in categories 2 and 3.

The following standards / draft standards have been taken into account :

EN 13463	Non-electrical equipment for potentially explosive atmospheres
EN 13463-1	Basic method and requirements
EN 13463-5	Protection by constructional safety

The instructions in the operations manual must be observed.

Issued in Losser, The Netherlands on June 21th, 2010.

Signed for and on behalf of Rotork Gears BV

A handwritten signature in black ink, appearing to read "H. Hoff".

Henk Hoff
Engineering manager



Losser, 23th March 2010

Subject : IP67 Certificate

To whom it may concern.

We hereby certify that our "N" type from the AB range gearboxes are IP67 .

Rotork Gears hereby certifies that all gearbox types supplied have been inspected and tested in accordance with the conditions and requirements of the relevant specification (s) and drawing (s) and has been subjected to our Quality System conforming to BS ISO 9001:2000.

Yours sincerely

A handwritten signature in black ink, appearing to read "H. Hoff", with a stylized flourish extending from the end.

Henk Hoff

Engineering Manager
Rotork Gears
Losser



Keeping the World Flowing
for Future Generations

DECLARATION OF CONFORMITY

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Rotork Gears India
165/166 Bommasandra Jigani Link Road
Kiadb Industrial Area
Jigani, Bangalore 562106
INDIA

Declares under our sole responsibility that the following ranges of gear operators:

**IB, HOB, IS, HOS, IW, MOW, MTW, HOW, MPR, DSB, NTB
AB, 232, 242, ILG/S, ILG/D, W100, AB-CS PR, ABM, AB-SS, BR, QTW
WG, WGM, WGMR, WGMRE, WGMRR (including IW14-17), M, MF, SD, A, H, SS, WG-SS**

And the following optional gearbox mechanical equipment:

IR, AS, Lever Arm, Travelling Nut, TCU, MABD, ECL, DSIR, Dial Indicators

And their derivatives conform to the relevant provisions of the ATEX products directive 2014/34/EU.

Compliance with the Essential Health & Safety Requirements has been assessed by reference to the following standards: EN 60079-0:2012 | A11:2013, ISO 80079-36:2016, EN ISO 80079-37:2016, and EN 1127-1:2011.

Equipment marking examples:

Standard duty:

- II 2 G Ex h IIC T3 Gb Ta $\leq 120^{\circ}\text{C}$
- II 2 D Ex h IIIC T200°C Db Ta $\leq 120^{\circ}\text{C}$

High temperature duty (+150°C):

- II 2 G Ex h IIC T2 Gb Ta $\leq 150^{\circ}\text{C}$
- II 2 D Ex h IIIC T300°C Db Ta $\leq 150^{\circ}\text{C}$

Low temperature duty (-60°C):

- II 2 G Ex h IIC T4 Gb Ta $\leq 70^{\circ}\text{C}$
- II 2 D Ex h IIIC T135°C Db Ta $\leq 70^{\circ}\text{C}$

Extra high temperature duty (+200°C):

- II 2 G Ex h IIC T2 Gb Ta $\leq 200^{\circ}\text{C}$
- II 2 D Ex h IIIC T300°C Db Ta $\leq 200^{\circ}\text{C}$

Signed for and on behalf of Rotork

David Littlejohns
Divisional Managing Director

AB GEARBOX IP 68-1 CERTIFICATE

PRODUCT RANGE	AB RANGE
GEARBOX TYPE	G and W
INGRESS PROTECTION (IP)	IP 68-1
IP - LEVEL 6 (DUST TIGHT)	No ingress of dust; complete protection against contact.
IP – LEVEL 8 – 1 (IMMERSION)	Gearbox is hermetically sealed, suitable for 72 hours immersion in 1 m head of water.
TESTED AGAINST	IEC standard EN 60529
G-TYPE	The G behind the gearbox description indicates that those executions of the products are sealed to IP 68 and protected accordingly suited for buried applications.
W- TYPE	The W behind the gearbox description indicates that those executions of the products are sealed to IP 68 - 1 and protected accordingly suited for water applications.

CONCLUSION

The assessment on the G and W type was carried out in accordance to IEC standard EN60529 and complied with IP68-1 (immersion in 1m head of water for 72hrs). The IP68-1 enclosure is obtained by adding additional sealing.

Signed



Henk Hoff
Engineering Manager

28 November 2013

DECLARATION OF CONFORMITY

Rotork UK Limited
9 Brown Lane West
Leeds
LS12 6BH
UNITED KINGDOM

Rotork Gears BV
Postbus 98
7580 AB
Lossler
THE NETHERLANDS

Rotork Gears Srl
Viale Europa 17
20090 Cusago (MI) Italy
ITALY

Rotork Gears Shanghai
260 Lian Cao Road
Xin Mei Urban Industrial Park
Minhang District, Shanghai 201108
CHINA

Rotork Gears India
165/166 Bommasandra Jigani Link Road
Kiadb Industrial Area
Jigani, Bangalore 562106
INDIA

Declares under our sole responsibility that the following ranges of gear operators:

**IB, HOB, IS, HOS, IW, MOW, MTW, HOW, MPR, DSB, NTB
AB, 232, 242, ILG/S, ILG/D, W100, AB-CS PR, ABM, AB-SS, BR, QTW
WG, WGM, WGMR, WGMRE, WGMRR (including IW14-17), M, MF, SD, A, H, SS, WG-SS**

And the following optional gearbox mechanical equipment:

IR, AS, Lever Arm, Travelling Nut, TCU, MABD, ECL, DSIR, Dial Indicators

And their derivatives conform to the relevant provisions of the ATEX products directive 2014/34/EU.

Compliance with the Essential Health & Safety Requirements has been assessed by reference to the following standards: EN 60079-0:2012 | A11:2013, ISO 80079-36:2016, EN ISO 80079-37:2016, and EN 1127-1:2011.

Equipment marking examples:

Standard duty:

-  II 2 G Ex h IIC T3 Gb Ta ≤120°C
-  II 2 D Ex h IIC T200°C Db Ta ≤120°C

High temperature duty (+150°C):

-  II 2 G Ex h IIC T2 Gb Ta ≤150°C
-  II 2 D Ex h IIC T300°C Db Ta ≤150°C

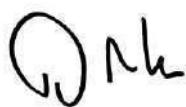
Low temperature duty (-60°C):

-  II 2 G Ex h IIC T4 Gb Ta ≤70°C
-  II 2 D Ex h IIC T135°C Db Ta ≤70°C

Extra high temperature duty (+200°C):

-  II 2 G Ex h IIC T2 Gb Ta ≤200°C
-  II 2 D Ex h IIC T300°C Db Ta ≤200°C

Signed for and on behalf of Rotork

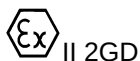


David Littlejohns
Divisional Managing Director



EU Type Examination Certificate CML 19ATEX1191X Issue 0

- 1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU
- 2 Equipment **IQ Range of Electric Valve Actuators**
- 3 Manufacturer **Rotork Controls Limited** **Rotork Actuation (Shanghai) Co., Ltd.** **Rotork Controls, Inc.**
- 4 Address Brassmill Lane,
Bath, BA1 3JQ,
United Kingdom Building G,
No.260 Liancao Rd,
Minhang District,
Shanghai, 201108,
China 675 Mile Crossing Blvd,
Rochester, NY 14624,
USA
- 5 The equipment is specified in the description of this certificate and the documents to which it refers.
- 6 CML B.V., Chamber of Commerce No 6738671, Hoogoorddreef 15, Amsterdam, 1101 BA, The Netherlands, Notified Body Number 2776, 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 equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in the confidential reports listed in Section 12.
- 7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to conditions of safe use (affecting correct installation or safe use). These are specified in Section 14.
- 8 This EU Type Examination certificate relates only to the design and construction of the specified equipment or component. Further requirements of Directive 2014/34/EU Article 13 apply to the manufacture of the equipment or component and are separately certified.
- 9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:
EN 60079-0:2018 EN 60079-1:2014 EN 60079-7:2015/AMD1:2017
EN 60079-31:2014 EN 80079-36:2016
- 10 The equipment shall be marked with the following:



II 2GD

Ex db^① h IIC T4 Gb IP66/IP68

Ex h tb IIIC T120°C Db

(Ta = -^②°C to +^③°C) ^②down to -50°C, ^③up to +70°C

^① 'eb' included if the terminal enclosure utilises increased safety.

The IQH** models are not available as a low temperature version (below -20°C).



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11 Description

The IQ Range of Electric Valve Actuators comprise of an oil-filled worm gearcase with a rotating shaft and drive bush, an external handwheel and de-clutch mechanism. Attached to the gearcase is a motor enclosure, an electrical control enclosure and a terminal enclosure. All electrical enclosures are designed to satisfy the requirements for flameproof equipment. In addition, the terminal enclosure is designed to satisfy the requirements for increased safety, providing an alternative method of protection for the field wiring facilities. The IQ Range of Electric Actuators comprise of a range of electric actuators based upon various gearcase sizes.

The motor enclosure is formed by a cover which connects to the gearcase by means of a spigoted flamepath joint and is secured by four M8 socket cap-head screws. The rotary output from the motor transfers to the gearcase by means of a shaft supported by rolling element bearings and a cylindrical brass bushing forming its flamepath. Electrical services to the motor are supplied from the electrical enclosure via a potted, motor loom transfer bush.

Thermal protection devices are installed within the motor windings. There is a facility to override these devices should the user find it necessary.

NOTE: The overriding of the temperature classification thermal protection devices is not covered by the scope of this certificate.

The electrical enclosure is formed by a cover which connects to the gearcase by means of a spigoted flamepath joint and is secured by four M8 socket cap-head screws. The electrical enclosure contains monitoring and control circuitry, which senses and controls the position of the output shaft; it also contains a back-up battery facility, contained within an internal battery pocket, accessed externally via the battery pocket plug. The permitted battery types are: Ultralife PP3 type U9VL/U9VL-J-P; SAFT to Rotork part no. 95-462; Tadiran/Sonnenschein to Rotork part no. 95-614, in each case the battery is protected by an in-line fuse (permitted fuse types are Quick Blow Bussman S500, 100 mA, Quick Blow Littlefuse 217, 100 mA).

At one end of the electrical enclosure a window is provided to allow the observation of an internal LCD device. The window is manufactured from toughened glass and potted into the electrical cover. An encoder shaft exits the electrical enclosure via a cylindrical brass bushing, flamepaths being between the bushing and the gearcase and between the shaft and the bushing. The encoder shaft has a shoulder that is held against the shroud by a circlip.

The terminal enclosure connects to the electrical enclosure via the gearcase, their volumes being separated by a flameproof terminal bung. The flameproof terminal bung comprises of a moulded plastic main body through which passes a number of terminals which are sealed in place with a potting compound. The terminal bung is secured in position by means of a circlip. The terminal enclosure provides all electrical field wiring terminations at the terminal bung. The above flameproof terminal bung may be replaced with a non-flameproof terminal bung, in which case the electrical and terminal compartments are considered as one flameproof enclosure. This configuration cannot be applied to the variants that incorporate increased safety terminal facilities. Cable entry facilities are provided in the form of three or four threaded entries. The terminal enclosure is closed by means of a lid, which connects to the gearcase by means of a tapered spigot joint and is secured by four M8 socket cap-head screws. The terminal compartment is common to all sizes.

All external fasteners are stainless steel, grade A4-80 or grade 12.9 socket cap head screws.



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Model Codes

IQ Gearcase/Motor Configurations 3 phase, up to 690 V rms

Size 1

Gearcase size 1

One motor enclosure, four pole motors, two stator lengths Designated IQ10, 12 & 18.

Size 2

Gearcase size 2

One motor enclosure, with either two or four pole motors, six stator lengths Designated IQ19, 20 & 25.

Size 3

Gearcase size 3

One motor enclosure, with either two or four pole motors, one stator length Designated IQ35.

Size 5

Gearcase size 5

Motor Options

Three Motor enclosures:

One motor enclosure with two or four pole motor, one stator length

Designated IQ40

One motor enclosure with either two or four pole motors, five stator lengths Designated IQ70, IQ90, or IQ95.

One motor enclosure with a two pole motor, one stator length

Designated IQ91

Design Options

Single phase motor option – Actuator sizes 1, 2 and 3

Actuator	Motor type
IQS12	4 pole 110 Vrms to 240 Vrms $\pm$ 10%
IQS20	4 pole 110 Vrms to 240 Vrms $\pm$ 10%
IQS35	2/4 pole 110 Vrms to 240 Vrms $\pm$ 10%

Different motor options (as can be seen above) as well as the necessary alternative control equipment within the electrical enclosure.

Modulating motor control option for three phase motors – Actuator sizes 1, 2 & 3

The reversing contactor has been replaced with a solid-state starter module, utilising thyristor drives and their associated control electronics, designated:

IQM10, IQM12, IQM20, IQM25, IQM35



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Deep Terminal Cover Option - All Actuator sizes

The deep terminal cover allows the installation of a PCB for various network disconnect applications or a wireless network PCB and associated external aerial enclosure, on Ex db versions. The deep cover is provided with threaded entry points.

Short electrical cover option - Actuator sizes 1, 2 & 3

Used when the internal equipment specified for the IQ Electric Valve Actuator allows a reduced size of electrical enclosure.

Intumescent® coating option to the exterior of the actuators for fire proofing purposes

The application of an outer, Intumescent® fire retardant coating can be applied to all sizes.

Lightning suppression module option - All Actuator sizes

Applies to terminal enclosures that are marked 'Ex db' only; it allows the inclusion of a lightning suppression module secured to the inner face of the existing terminal lid.

IQH variant option – Ambient temperature range -20°C to +70°C

The following high-speed actuator types have been introduced:

IQH20, IQH25, IQH35, IQH40

Design Options

- i. Alternative absolute encoder shaft, manufactured in steel (Sizes 1, 2 and 3).
- ii. Alternative electrical cover manufactured in aluminium alloy to BS1490. Grade: LM25TF (heat treated).
- iii. Alternative design for the handwheel cover seal for all sizes.
- iv. Alternative Size 2 motor cover (Brook Motor).
- v. Alternative electrical cover manufactured in aluminium alloy to ASTM B85, Grade: A360 modified to accept an anti-vandal fixture.

Notes:

- Sira 12ATEX1124X is superseded by this certificate.
- The product covered by Issue 0 of this certificate remains identical to that previously covered by Sira 12ATEX1124X.
- Where Sira 12ATEX1124X is specified in other product certification, or other technical specifications, this certificate reference for the product shall be used in its place; updating of the other product certificate or technical specification is not required.

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	26 Jul 2019	R12481A/00	Issue of Prime Certificate

Note: Drawings that describe the equipment or component are listed in the Annex.



CML 19ATEX1191X
Issue 0

13 Conditions of Manufacture

The following conditions are required of the manufacturing process for compliance with the certification.

- i. Where the product incorporates certified parts or safety critical components the manufacturer shall ensure that any changes to those parts or components do not affect the compliance of the certified product that is the subject of this certificate.
- ii. Each enclosure shall be subjected to a routine overpressure test in accordance with EN 60079-1 clause 16 at the following values.

Routine overpressure tests Tamb -20°C

Equipment	
Gearcase – Flameproof Terminal Bung fitted	Test Pressure (bar)
Size 1	
Gearcase/Electrical Compartment - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	20.63
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK	20.63
Motor Loom Bush - Robnor PX700/BK	20.63
Short Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	20.63
Size 2	
Gearcase/Electrical Compartment - Aluminium Alloy to BS149, Grade: LM25M (or equivalent)	29.99
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK	29.99
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	29.99
Long Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	29.99
Motor Loom Bush - Robnor PX700/BK	29.99
Gearcase – Flameproof Terminal Bung Fitted	29.99
Short Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	29.99
Size 3	
Gearcase/Electrical Compartment - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	20.00
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK	20.00
Motor Loom Bush - Robnor PX700/BK	20.00
Short Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	20.00
Size 5	
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK (tested from either terminal or flameproof side)	16.61
Gearcase - Flameproof Terminal Bung not fitted	
Size 2	
Gearcase/Electrical-Terminal Compartment - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	27.35
cont.	



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Terminal Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	27.35
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	27.35
Long Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25TF (Heat Treated) (or equivalent)	27.35
Motor Loom Bush - Robnor PX700/BK	27.35
Short Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	27.35
Size 3	
Gearcase/Electrical-Terminal Compartment - Aluminium Alloy to BS149, Grade: LM25M (or equivalent)	31.68
Terminal Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	31.68
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	31.68
Long Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25TF (Heat Treated) (or equivalent)	31.68
Motor Loom Bush - Robnor PX700/BK	31.68
Short Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	31.68
Size 5	
Gearcase/Electrical-Terminal Compartment - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	40.07
Terminal Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	40.07
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	40.07
Long Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25TF (Heat Treated) (or equivalent)	40.07
Motor Loom Bush - Robnor PX700/BK (Size 5)	40.07
Motor Enclosure	
Size 5	
Gearcase/Motor Compartment IQ70/90/95 - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	16.29
IQ40 Motor Cover - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	11.24
IQ70/90/95 Motor Cover - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	16.29

Routine overpressure tests Tamb below -20°C

Equipment	
Terminal Enclosure (all sizes)	Test Pressure (bar)
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK (can be tested from either terminal or flameproof side)	18.09
All sizes with Deep Terminal Cover fitted	
Gearcase/Terminal Compartment - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	20.87
Deep Cover - Aluminium Alloy Sandcast (heat treated) to BS 1490, Grade: LM25TF (or equivalent)	20.87
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK	20.87



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Gearcase - Flameproof Terminal Bung fitted	
Size 1	
Gearcase/Electrical Compartment - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	25.10
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK	25.10
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	25.10
Long Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25TF (heat treated) (or equivalent)	25.10
Motor Loom Bush - Robnor PX700/BK	25.10
Short Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	25.10
Size 2	
Gearcase/Electrical Compartment - Aluminium Alloy to BS149, Grade: LM25M (or equivalent)	29.99
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK	29.99
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	29.99
Long Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25TF (heat treated) (or equivalent)	29.99
Motor Loom Bush - Robnor PX700/BK	29.99
Short Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	29.99
Size 3	
Gearcase/Electrical Compartment Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	30.21
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK	30.21
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	30.21
Long Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25TF (heat treated) (or equivalent)	30.21
Motor Loom Bush - Robnor PX700/BK	30.21
Short Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	30.21
Size 5	
Gearcase/Electrical Compartment Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	25.32
Terminal Bung - Crastin ST830FRUV/Robnor PX700/BK	25.32
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	25.32
Long Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25TF (heat treated) (or equivalent)	25.32
Motor Loom Bush - Robnor PX700/BK	25.32
Gearcase – Flameproof Terminal Bung NOT fitted	
Size 1	
Gearcase/Electrical-Terminal Compartment Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	22.95
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	22.95
Motor Loom Bush - Robnor PX700/BK	22.95
Short Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	22.95



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Size 2	
Gearcase/Electrical-Terminal Compartment - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	30.89
Terminal Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	30.89
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	30.89
Long Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25TF (heat treated) (or equivalent)	30.89
Motor Loom Bush - Robnor PX700/BK	30.89
Short Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	30.89
Size 3	
Gearcase/Electrical-Terminal Compartment - Aluminium Alloy to BS149, Grade: LM25M (or equivalent)	31.68
Terminal Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	31.68
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	31.68
Long Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25TF (heat treated) (or equivalent)	31.68
Motor Loom Bush - Robnor PX700/BK	31.68
Short Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	31.68
Size 5	
Gearcase/Electrical-Terminal Compartment - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	36.23
Terminal Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	36.23
Long Electrical Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	36.23
Long Electrical Cover - Aluminium Alloy to BS1490, Grade: LM25TF (Heat Treated) (or equivalent)	36.23
Motor Loom Bush - Robnor PX700/BK (Size 5)	36.23
Gearcase - Flameproof Terminal Bung not fitted	
Motor Enclosures	
Size 2	
Gearcase/Motor Compartment - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	23.51
Motor Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	23.51
Motor Cover - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	23.51
Size 3	
Motor Cover - Aluminium Alloy to ASTM B85, Grade: A360 (or equivalent)	19.05
Size 5	
Gearcase/Motor Compartment IQ40 - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	20.16
Motor Loom Bush (IQ40 motor side) - Robnor PX700/BK (Size 5)	20.16
Gearcase/Motor Compartment IQ70/90/95 - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	20.16
Gearcase/Motor Compartment IQ91 - Aluminium Alloy to BS1490, Grade: LM25M (or equivalent)	13.88
<i>cont.</i>	



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IQ40 Motor Cover - Aluminium Alloy to BS1490, Grade LM25M (or equivalent)	20.16
IQ70/90/95 Motor Cover - Aluminium Alloy to BS1490, Grade LM25M (or equivalent)	20.16

- iii. When the terminal enclosure utilises increased safety explosion protection, the following electrical strength tests shall be applied to the termination facilities for at least 60 s in accordance with EN 60079-7 clause 6.1 at the following values.

Test Voltage Applied Between	Test Voltage
Three phase terminals/case	2,500 Vrms
Three phase terminals/low voltage terminations	2,500 Vrms
Low voltage terminals/case	1,500 Vrms

Alternatively, a test shall be carried out at 1.2 times the test voltage but maintained for at least 100 ms in accordance with EN 60079-7 clause 7.1.

14 Specific Conditions of Use (Special Conditions)

The following conditions relate to safe installation and/or use of the equipment.

- The IQ Range of Electric Valve Actuators shall be installed such that the risk of impact to the window is low.
- In accordance with EN 60079-1 clause 5.1, the critical dimensions of the flamepaths are as follows.

Flamepath	IQ Sizes 1, 2 & 3		IQ Size 5	
	Max. Gap (mm)	Min. L (mm)	Max. Gap (mm)	Min. L (mm)
Gearcase / Motor Cover	0.15	25.0	0.15	25.00
Gearcase / Wormshaft shroud	0.05	35.0	0.00	49.75
Wormshaft shroud / Wormshaft	0.24	26.0	0.25	49.75
Gearcase / Terminal Bung	0.115	27.0	0.115	27.00
Gearcase / Terminal Cover	0.15	27.0	0.15	27.00
Gearcase/Plug and Socket Cover	0.15	27.00	0.15	27.00
Gearcase / Electrical Cover	0.15	26.0	0.15	26.00
Encoder Shaft Bush / Encoder Shaft	0.08	27.0	0.08	27.00
Gearcase / Encoder Shaft Bush	0.07	25.0	0.07	25.00
Gearcase / Motor Loom Bush	0.15	29.0	0.15	33.25
Gearcase / Deep Terminal Cover	0.15	27.0	0.15	27.0
Gearcase / Short Electrical Cover	0.15	26.0	-	-

- iii. **WARNING** – There is a potential electrical charging hazard associated with the non-metallic external parts and outer case depending on the model and coating applied; see user instructions.

Certificate Annex

Certificate Number CML 19ATEX1191X
Equipment IQ Range of Electric Valve Actuators
Manufacturer Rotork Controls Limited
 Rotork Actuation (Shanghai) Co., Ltd.
 Rotork Controls, Inc.



The following documents describe the equipment or component defined in this certificate:

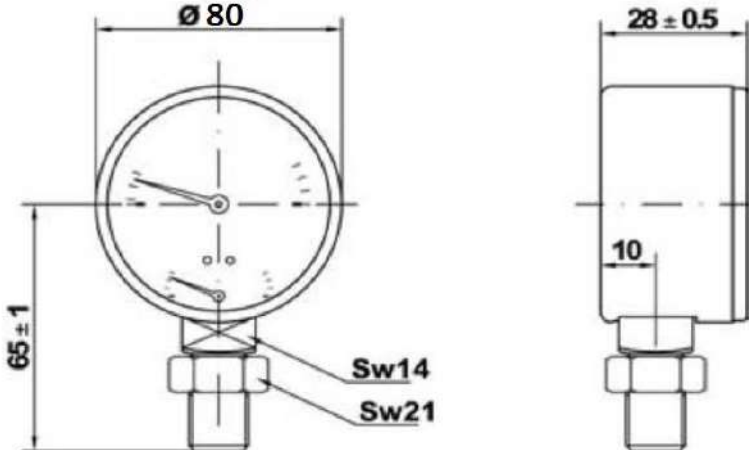
Issue 0

Drawing No	Sheets	Rev	Approved date	Title
95-462	1 to 2	8	26 Jul 2019	Low temperature battery
95-614	1 to 2	2	26 Jul 2019	High temperature battery
44406	1 of 1	1	26 Jul 2019	Label fuse types – CENELEC Battery loom
AD1346	1 to 8	7	26 Jul 2019	IQ19,20 & 25 Actuator ATEX & IECEx Approval Group IIB & IIC
AD1347	1 to 7	4	26 Jul 2019	IQ40,70,90,95 & 91 Actuator ATEX & IECEx Approval GP IIB & IIC
AD1350	1 to 7	6	26 Jul 2019	IQ10, 12 & 18 Actuator ATEX & IECEx Approval GRP IIB & IIC
AD1351	1 to 7	5	26 Jul 2019	IQ35 Actuator ATEX & IECEx Approval Group IIB & IIC
AD1399	1 to 2	3	26 Jul 2019	Terminal Bung & Main labels – IQ ATEX & IECEx IIB & IIC
AD1411	1 to 3	2	26 Jul 2019	Deep Cover Housing, ATEX & IECEx Group IIB & IIC
AD1412	1 to 2	1	26 Jul 2019	IQ10-95 Intumescent Coated Actuators (ATEX, IECEx, FM & CSA)
AD1423	1 to 2	1	26 Jul 2019	Lightning Suppression Module, ATEX& IECEx Approvals
PLAD1346	1 to 8	09	26 Jul 2019	Parts List for IQ19, 20 & 25 Actuators ATEX & IECEx Certification Group IIB & IIC
PLAD1347	1 to 8	06	26 Jul 2019	Parts List for IQ40, 70, 90, 95, & 91 Actuators ATEX & IECEx Certification Group IIB & IIC
PLAD1350	1 to 8	08	26 Jul 2019	Parts List for IQ10, 12 & 18 Actuators ATEX & IECEx Certification Group IIB & IIC
PLAD1351	1 to 8	06	26 Jul 2019	Parts List for IQ35 Actuators ATEX & IECEx Certification Group IIB & IIC
RS448	1 to 2	1	26 Jul 2019	Window Bonding Procedure
RS308	1 to 2	9	26 Jul 2019	Potting Procedure for Cenelec and ATEX Term, Blocks / MTR. Looms / RHS Loom

Fișă tehnică –TM- Termomanometru indicator

Nr. crt.	Specificațiile tehnice oferite	Producător
0	1	2
1.	Parametrii tehnici și funcționali: – Fluidul de lucru: - apa,antigel – Destinație: masurarea temperaturii si a presiunii in instalatiile de incalzire. – Amplasare: conducte instalatii de incalzire – Principiul de lucru:cu element elastic tip Bourdon si bimetal spiralat – Domeniul de masurare: • temperatura (°C): 0+ +120°C • presiune:0-6bar – Temperatura mediului ambiant: -29...+55°C – Clasa de precizie: • temperatura ±2,0% • presiune ±2,5% – Materialul carcasei: ABS – Capacul: plastic – Cadranul: aluminiu vopsit – Racordare la proces:filet exterior G1/2"	Ferro
2.	Specificații de performanță și condiții privind siguranța în exploatare - Grad de protecție mecanică:IP 64	
3.	Condiții privind conformitatea cu standarde relevante: - Conformitate cu conform PED 2014/68/EU, privind stabilirea condițiilor pentru punerea pe piață a echipamentelor sub presiune;	
4.	Mod de ofertare: Documente solicitate la ofertare: -Certificarile de tip ISO 9001 ale producatorului -Declaratie de conformitate producator. -Omologare de catre BRML -Agrement tehnic -Caracteristicile tehnice ale produselor oferite trebuie sa fie identificate si evidentiate, in cataloage sau specificatii tehnice de producator, strict pentru produsul ofertat, aceste vor fi parte integrata din oferta tehnica. Cataloage si specificatii tehnice vor fi asumate de catre ofertantul echipamentului (original sau copie conform cu originalul). -Ofertantul are obligatia de a face dovada conformitatii produsului care urmeaza sa fie furnizat cu prezenta cerinta tehnica.In acest scop, propunerea tehnica va contine corespondenta, pentru fiecare articol al cerintelor prevazute in aceasta fisă tehnica, cu articolul paragraful sau pagina din oferta tehnica care atesta indeplinirea respectivei cerinte. -Se vor oferta si livra numai echipamente noi, de ultima generatie si originale, conform cu specificatiile si documentele specifice ale producatorului. Nu se vor oferta produse demo, reconditionate sau refuzate de alti beneficiari.	

5.	Conditii de livrare:	
	-Fiecare manometru va avea inscriptiata seria de fabricatie. Aceasta va fi consemnata in documentele de calitate si certificatele de testare insotitoare.	
	-Utilajul va fi livrat insotit de certificat de conformitate emis de producator si de carte tehnica in original si limba romana.	
	- Echipamentele livrate vor fi complet echipate cu toate accesoriile necesare pentru punerea în funcțiune si vor respecta cerințele impuse privind proiectarea și execuția instalațiilor tehnologice.	
6.	Conditii de garantie si postgarantie:	
	-Producatorul va garanta calitatea si buna functionare a produsului timp de 24 luni de la punerea in functiune sau de 36 de luni de la data livrarii.	

Model	Cod	Culoare	Continut pachet				
	TM80R	negru-alb	termomanometru, racord				
Tip constructiv	 • carcasă: ABS cu rezistență ridicată • capac: din plastic, rezistent la zgârieturi • cadran: aluminiu alb, vopsit electrostatic • ac indicator: Plastic negru • racord de presiune: Aliaj de cupru, pătrat de 14 mm • element de presiune: Tub Burdon din aliaj de cupru, lipire cu cositor, tip C • element mobil: Aliaj de cupru • element de temperatură: Bimetal spiralat • valvă automată: Combinație alamă - polipropilenă, hexagon de 21 mm • standard de referință: EN 837-1 și EN 13190 • grad de protecție: IP31 conform EN 60 529/ IEC 52 • numai pentru presiune: abatere de ±0,04%/K față de temperatura de referință (20°C)						
Dimensiuni							
Parametri tehnici	Cod	Diametru [mm]	P _{nom} [bari]	Temp. max. agent termic [°C]	Clasa de precizie presiune	Clasa de precizie temperatura	Racord
	TM80R	80	6	120	2,5	2	1/2"
Descriere	Termanometru cu element elastic de tip Bourdon si bimetal spiralat pentru citirea temperaturii, destinat sistemelor de incalzire cu apa, cazane, piscine si unitati SPA. Termomanometrul este folosit pentru medii gazoase si lichide, care nu cristalizeaza si nu sunt agresive pentru aliajele din cupru. Elementul de masurare este un tub in forma de "C", din aliaj de cupru. Carcasa termomanometrului este din ABS de culoare neagra, cadranul este din aluminiu de culoare alba gradat, cu caractere de culoare neagra si rosie, ac indicator din plastic de culoare neagra. Este cuplat cu racord inferior din alama.						
Domeniu de utilizare	Termomanometrele din seria "TM80" sunt destinate a fi utilizati în instalațiile pentru distributie de apă caldă și rece, instalatii de incalzire .						
Avize si agremente	• pentru toate manometrele există Declarație de conformitate						

• Toate datele incluse în aceste broșuri corespund informațiilor disponibile la momentul imprimării și servesc doar ca materiale informative. Ne rezervăm dreptul la modificări în sensul progreselor tehnice. Ilustrațiile sunt imagini simbolice și, de aceea, se pot abate din punct de vedere optic de la imaginea reală a produsului. Sunt posibile diferențe de culoare din cauza tipăririi. Ne rezervăm dreptul de a modifica specificațiile tehnice și de funcționare. Pentru mai multe informații, contactați departamentul nostru tehnic.



Certificat

acordat organizației

NOVASERVIS spol. s r.o.

Sediu: Merhautova 1062/208, 613 00 Brno
Stabilire: Družstevní 5, 669 02 Znojmo
Republica Cehia

BUREAU VERITAS CERTIFICATION CZ, s.r.o. certifică prin aceasta, că sistemul managementului calității a organizației prezentate mai sus a fost apreciat și declarat, că este în conformitate cu cerințele următoarelor norme sistematice a calității:

Norma

ČSN EN ISO 9001:2016

Domeniul de certificare

(Scopul certificării se aplica doar punctului de lucru)

PROIECTARE, FABRICARE ȘI LIVRARE DE BATERII DE APĂ,
DE ACCESORII DE BAIE ȘI DE DISTRIBUITOARE PENTRU
SISTEMELE DE ÎNCĂLZIRE.
PRODUCȚIE METALURGICĂ DE STICLĂ ÎN OALE DE TURNARE
ȘI PRELUCRAREA ACESTEIA PRIN MULARE.
MĂTUIRE CHIMICĂ A STICLEI .
GALVANIZARE CU NICHEL ȘI CROM.

Data acordului inițial: 27. MARTIE 2008

Data de începere a ciclului de recertificare: 27. MARTIE 2020

Data finală a ciclului de recertificare: 26. MARTIE 2023

Acest certificat este valabil – în caz de întreținere ulterioară satisfăcătoare a funcționalității sistemului managementului calității – până la data de: 26. MARTIE 2023

Pentru verificarea valabilității certificatului, sunați la numărul: +420 210 088 215

Schimbarea extensiunii certificării de mai sus poate fi executată doar pe baza unei cereri.

Versiune 1, Data emiterii: 21. MARTIE 2020

Numărului certificatului: CZ008886-1



S 3100

DECLARATIE DE CONFORMITATE SI CALITATE
Nr. 353/11.06.2018

SC NOVASERVIS FERRO GROUP SRL, avand sediul social in CLUJ-NAPOCA, Str.Campina Nr. 47, cod postal 400635, inregistrata la RC cu nr. J12/1575/2009 Cod Fiscal RO25860825, prin reprezentant legal IONUTAS DAN, in calitate de DIRECTOR GENERAL, declaram pe propria raspundere, cunoscand prevederile art.326 Cod Penal cu privire la falsul in declaratii, faptul ca produsele: "TERMOMANOMETRE pentru INSTALATII de APA seriile TMxxx", productie FERRO S.A., ul. PRZEMYSŁOWA 7, 32-050 SKAWINA, POLONIA, care fac obiectul acestei declaratii de conformitate nu pun în pericol viata, sanatatea si securitatea muncii, nu produc impact negativ asupra mediului si sunt in conformitate cu normele europene PN-EN 13190:2004 si PN-EN 837-1:2000.

SC NOVASERVIS FERRO GROUP SRL
Director general
Dan Ionutas



Fișă tehnică: IT-IN - Indicator de nivel.

Nr. crt.	Specificațiile tehnice oferite	Producător
0	1	2
1.	Parametrii tehnici și funcționali	
	- Fluid de lucru: impurități lichide	Nivelco
	- Temperatura fluidului de lucru: -20°C ÷ +55°C	
	- Temperatura mediului ambiant: -29°C ÷ +55°C	
	- Presiunea nominală: ANSI600	
	- Diametru nominal : DN25	
	- Lungimea de indicare: 500 mm	
	- Rezoluția indicării: 10 mm	
	- Gradul de protecție mecanică : minim IP 65	
	- Marcare EX: pentru utilizare în zona 2 cu pericol de explozie	
	- Montare: suprateran, vertical, pe corpul separatoarelor	
	- Tip constructiv: cu scală din plăcuțe sau role metalice colorate diferit care se magnetizează la deplasarea flotorului cu magnet	
	- Material corp, flotor și flanșe: oțel inox	
	- Racordare la proces: cu flanșe conf. flanșe conform ASME B16.5	
	- echipare: 1 contact SPDT pentru nivel maxim montat pe corpul indicatorului de nivel	
2.	- (dacă este furnizat cu protecție de tip "ia" atunci va fi livrată și bariera de potențial aferentă)	
	- curent maxim contacte: 1A/230Vca	
3.	Condiții privind conformitatea cu standarde relevante	
	- EN 60529:1995/A1:2003/A2:2015/AC2017/AC2019 pentru gradul de protecție	
	- Standarde din seria EN 60079-10-1:2016, -2:2015 pentru marcă Ex	
	Mod de ofertare:	
	Documente solicitate la ofertare:	
	- Certificat EN ISO 9001:2015 (sistemul de management al calității) pentru producătorul echipamentului	
	- Certificat EN ISO 14001:2015 (sistemul de management al mediului) pentru producătorul echipamentului	
	- Certificat ISO 45001:2018 (managementul siguranței și sănătății ocupaționale) pentru producătorul echipamentului	
	- Pentru produs: Certificat de tip CE, conform PED 2014/68/EU, privind stabilirea condițiilor pentru punerea pe piață a echipamentelor sub presiune;	
	- Caracteristicile tehnice ale produselor oferite trebuie să fie identificate și evidențiate, în cataloage sau specificații tehnice	

	de producător, strict pentru produsul oferat, aceste vor fi parte integrantă din oferta tehnică. Cataloage și 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. În acest scop, propunerea tehnică va conține corespondența, pentru fiecare articol al cerințelor prevăzute în această fișă tehnică, cu articolul paragraful sau pagina din oferta tehnică care atestă îndeplinirea respectivei cerințe.	
	- 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.	
4.	Documentație care va însoți produsul:	
	Cartea tehnica a produsului (în limba română)	
	- Fișă tehnică	
	- Instrucțiuni/manuale de operare și întreținere, • operare, verificare etanșeități, • ungere, drenare, gresare, • cauze defecte, remedieri, verificări, • lista piese de schimb de mare uzură.	
	- Listă de componente și desene de ansamblu/subansamblu (secțiuni, detalii),	
	- Certificate /Teste materiale componente	
	- Certificate/Teste de presiune/etanșeitate	
5.	Marcare și identificare:	
	- Numele și simbolul producătorului	
	- Tipul/modelul, număr/serie produs	
	- Anul fabricației	
6.	Condiții de livrare:	
	- Utilajul se va livra complet echipat.	
	- Produsele vor fi ambalate pentru a face față transportului, manipulării și depozitării până la destinația finală.	
	- 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	
7.	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.	



TANÚSÍTÓ
NAT-6-0027/2002

Akkreditáció/Accreditation

ROBBANÁSBIZTOS BERENDEZÉSEK
VIZSGÁLÓ ÁLLOMÁSA

Testing Station for Explosion Proof
Equipment

Hungary, 1037 Budapest, Mikoviny S. u. 2-4.
tel/fax: 36 1 250 1720
E-mail: bkiex@bki.hu



(1)

EK-Típus Vizsgálati Tanúsítvány
EC-Type Examination Certificate



- (2) A potenciálisan robbanásveszélyes környezetben történő alkalmazásra szánt berendezések, védelmi rendszerek vizsgálatáról és tanúsításáról – 94/9/EK Direktíva /
On the test and certification of equipment or protective systems intended for use in potentially explosive atmospheres – Directive 94/9/EC.

(3)

BKI® 04 ATEX 113 X

- (4) A berendezés, vagy védelmi rendszer / Equipment or protective system:

**Hőmérséklet távadó/kijelző készülék család /
Temperature transmitter/display family**

Típusa / Type:

THERMOCONT T _ _ - 5 _ _ - Ex

- (5) Gyártó / Manufacturer:

NIVELCO Ipari Elektronika Rt.

- (6) Cím / Address:

**H-1043 Budapest, Dugonics u. 11.
Hungary**

- (7) A berendezés, vagy védelmi rendszer és annak változatai a jelen tanúsítvány vonatkozó pontjában vannak feltüntetve. /
This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

- (8) A **BKI®** ExVÁ Robbanásbiztos Berendezések Vizsgáló Állomása, 1418 sz. kijelölt testület, az 1994. március 23-i 94/9/EK Európa Tanácsi Direktíva 9. Cikkelye szerint tanúsítja, hogy a fent megnevezett berendezés, vagy védelmi rendszer tervezése és gyártása megfelel a Direktíva 2. számú Mellékletében meghatározott alapvető egészségügyi és biztonsági, valamint a berendezés alkalmazási csoportjára és kategóriájára megadott kiegészítő követelményeknek. /

BKI® ExVÁ Testing Station for Explosion Proof Equipment Company Limited, notified body number 1418 in accordance with Article 9 of the European Council Directive 94/9/EC of 23 March 1994, certifies that the design and construction of this equipment or protective system has been found to comply with the essential health and safety requirements set out in Annex 2 of this Directive and the supplementary requirements set out for the relevant group and category.

BKI 04 ATEX 113 X

Lapszám / Page:2/6

EK-TípusVizsgálati Tanúsítvány /
EC-Type Examination Certificate

A vizsgálat eredményeit az alábbi nyilvántartási számú bizalmas vizsgálati dokumentáció tartalmazza /
The examination and test results are recorded in confidential report number:

R-017-04

- (9) Az alapvető egészségügyi és biztonsági követelményeknek való megfelelést a következő harmonizált európai szabványoknak való megfelelés biztosítja / Compliance with the essential health and safety requirements has been assured by compliance with harmonised european standards:

**MSZ EN 50014:2001, MSZ EN 50018:2001, MSZ EN 50020:2003,
MSZ EN 50284:2000**

- (10) A tanúsítvány száma után álló „X” jel azt mutatja, hogy a berendezés, vagy védelmi rendszer speciális feltételek megtartása mellett felel meg a jelen tanúsítvány vonatkozó pontjában feltüntetett biztonságos alkalmazás feltételeinek. /
If the sign „X” is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) Jelen EK-TÍPUS VIZSGÁLATI TANÚSÍTVÁNY csak a megjelölt berendezés vagy védelmi rendszer tervezésére és kivitelezésére vonatkozik. Ha ez alkalmazható, a jelen Rendelet további követelményei érvényesek a berendezés vagy védelmi rendszer gyártására és szállítására. /
This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Decree apply to the manufacture and supply of this equipment or protective system.
- (12) A berendezés, vagy védelmi rendszer jele a következő / The marking of the equipment or protective system shall include the following:



II 1 G EEx ia IIB T6...T1

II 2 G EEx d IIB T6...T1

II 1/2 G EEx d ia IIB T6...T1 T_{körny} / T_{amb} lásd 15.3 pontban / See in point 15.3

Budapest, 2004. május 13.



Hankó János
Hankó János
Igazgató / Director



MADRID



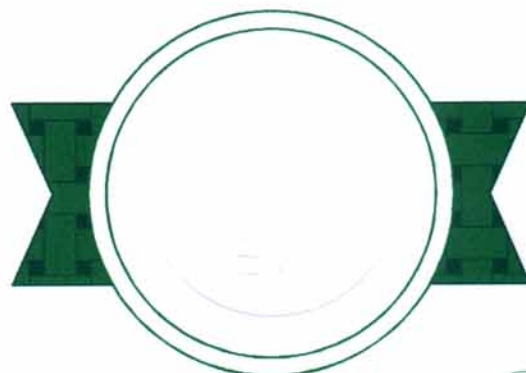
NEW YORK



GENEVA



PARIS



Ez a tanúsítvány csak a maga egészében és változatlan formában használható fel. /
This certificate may be reproduced only in its entirety and without changes.

BKI 04 ATEX 113 X
EK-TípusVizsgálati Tanúsítvány /
EC-Type Examination Certificate

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(14) EK-TÍPUS VIZSGÁLATI TANÚSÍTVÁNY / EC-TYPE EXAMINATION CERTIFICATE N°
BKI 04 ATEX 113 X

(15) A berendezés, vagy védelmi rendszer leírása /
Description of Equipment or protective system

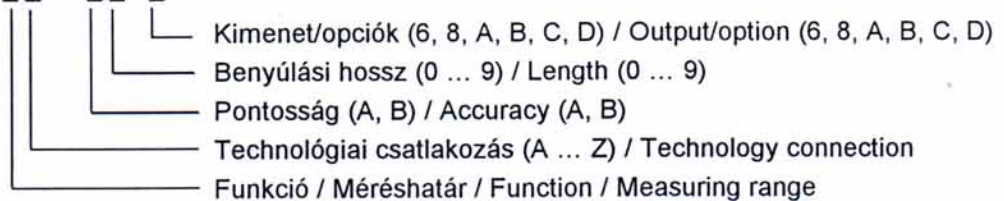
15.1 Leírás / Description

A THERMOCONT T típusú hőmérséklettávadók Pt 100 érzékelővel egybeépítve, nézőablakos és teli fedéllel, normál és nyomásálló tokozásban, gyújtószikramentes áramkörben is alkalmazható kétvezetékes távadók 4 ... 20 mA-es áramkimenettel és/vagy digitális (HART) adatátvitellel, opcióként helyi kijelzéssel. /

The temperature transmitters type THERMOCONT T are mounted with Pt 100 sensor, the cover is full metal or with light-transmitting part, the enclosure is normal and flameproof, the two wire transmitters with 4...20 mA output current and/or digital (HART) communication, option with local display.

15.2 Típusjel / Type mark

THERMOCONT T _ _ - 5 _ _ - _ Ex



15.3 Villamos adatok / Electrical parameters

15.3.1 Táp- és jeláramkör / Signal/supply circuit

Gyújtószikramentes áramköri típus:
(+ és / and - csatlakozók / terminals)

Intrinsically safe circuit type:

Csak tanúsított gyújtószikramentes EEx ia IIB védelmi módú áramkörhöz csatlakoztatható a következő maximális értékekkel: /

Only for connection to a certified intrinsically safe circuit EEx ia IIB with following maximum values:

$$\begin{aligned} U_i &= 30 \text{ V} \\ I_i &= 140 \text{ mA} \\ P_i &= 1 \text{ W} \end{aligned}$$

Saját belső kapacitás / The effective internal capacitance

$$C_i = 20 \text{ nF}$$

Saját belső induktivitás / The effective internal inductance

$$L_i = 0,2 \text{ mH}$$

Adatátvitel / Data communication:

HART protokoll szerint / According HART protocol

Nyomásálló tokozású típus / Type of flameproof enclosure:

(+ és / and - csatlakozók / terminals)

Tápfeszültség / Power supply:

36 V DC

Kimenőjel / Output signal

4 ... 20 mA DC

Adatátvitel / Data communication:

HART protokoll szerint / According HART protocol

BKI® 04 ATEX 113 X
EK-TípusVizsgálati Tanúsítvány /
EC-Type Examination Certificate

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15.3.2 Környezeti hőmérséklet / Ambient temperature

Típus / Type	T__ - 5__ - 6 Ex T__ - 5__ - 8 Ex	T__ - 5__ - A Ex T__ - 5__ - B Ex	T__ - 5__ - C Ex T__ - 5__ - D Ex
Védelmi mód / Ex protection	EEx ia IIB T6...T1	EEx d IIB T6...T1	EEx d ia IIB T6...T1
Környezeti hőmérséklet / Ambient temperature	-40 °C...+(60)70 °C kijelzővel / with display: -25 °C...+(60)70 °C	-40 °C...+(60)70 °C kijelzővel / with display: -20 °C...+(60)70 °C	

15.4 Védettség / Ingress protection:

IP 65 MSZ EN 60529 szerint / by EN 60529

15.5 Érintésvédelem / Electric shock protection:

Nyomásálló tokozással:

with Flameproof enclosure:

Gyújtószikramentes áramkörben:

In intrinsically safe circuit:

III. év. osztály MSZ 171/1-84 szerint, mely megfelel az
IEC 364-4-41 szerinti FELV rendszernek /
III e.s. class to according MSZ 171/1-84, this is equal to
IEC 364-4-41 FELV system
III. év. osztály MSZ 171/1-84 szerint, mely megfelel az
IEC 364-4-41 szerinti SELV rendszernek /
III e.s. class to according MSZ 171/1-84, this is equal to
IEC 364-4-41 SELV system

(16) Vizsgálati dokumentáció / Descriptive documents

BKI® 03 ATEX 003 U EK-TípusVizsgálati Tanúsítvány / EC-Type Examination Certificate	2003. 01. 17.
BKI® 03 ATEX 003 U EK-TípusVizsgálati Tanúsítvány 1. kiegészítés / EC-Type Examination Certificate Amendment 1.	2004. 05. 10.
BKI® R-017-04 Vizsgálati jegyzőkönyv / Test Report	2004. 05. 12.
Gyártói nyilatkozat / Declaration of Manufacturer	2004. 04. 09.
Műszaki leírás / Technical Description	2004. 01. 30.
Használati utasítás / User's Manual TBJ-524-8M-060-XH	2004. 01. 22.
műszaki rajzok / drawings:	rev.
TBJ-524-8M-000-0X	0
SAP-200-0M-100-00	0
PDF-401-8M-112-0X	0
TBJ-524-8M-111-0X	0
SAP-200-0M-090-01	0
SEA-380-6M-090-02	0
TBJ-524-8M-090-01 (1/4...4/4)	0
SAP2XA01.SCH	1
PDF-401-8M-112-0V	0
TBJ-524-8M-111-0V	0
TBJ-524-DM-000-0X	0
TBJ-524-8M-112-0X	0
TBJ-524-8M-X00-01	0
TBJ-524-8M-050-0L	0
Alkatrészlisták / Part lists:	
SAP-200-0M-100-00	0
PDF-401-8M-112-0X	0
TBJ-524-8M-111-0X	0

BKI® 04 ATEX 113 X

Lapszám / Page:5/6

EK-TípusVizsgálati Tanúsítvány /
EC-Type Examination Certificate

Darabvizsgálati utasítások / Instructions of inspection for appliance

TBJ-524-8M-060-0U	0	2004. 01. 19.
TBJ-524-BM-060-0U	0	2004. 01. 19.
TBJ-524-DM-060-0U	0	2004. 01. 19.

**(17) Biztonságos üzemeltetés feltételei /
Special conditions for safe use**

- 17.1 Az EEx ia IIB vagy EEx d ia IIB védelmi jelű hőmérséklettávadó csak a műszaki adatoknak megfelelő, tanúsított gyújtószikramentes áramkörrel üzemeltethető /
The temperature transmitter - protection mode EEx ia IIB or EEx d ia IIB - must be operated only by the technical data in intrinsically safe circuit.
- 17.2 A „d” védelmi módú hőmérséklettávadók csak tanúsított „d” védelmi módú kábelbevezetővel üzemeltethetők. /
The explosion proof "d" type temperature sensors must be used only with the certified "d" marking cable glands.
- 17.3 A PFA-val bevont benyúlócsővű változat alkalmazása esetén a közeg áramlási sebességét a közeg jellemzők és a geometriai jellemzők figyelembevételével úgy kell megválasztani, hogy sztatikus feltöltődés ne keletkezzen. /
In case the variation with the PFA coated protrusion pipe is applied, the flow rate of the medium shall be determined so – considering the parameters of the medium and the geometrical features – that static charge could be avoided.
- 17.4 A kábel szigetelésének hőállósága feleljen meg az alkalmazás helyén megengedett (70 °C) környezeti hőmérsékleti értéknek. /
Heat-resistance of the cable insulation must meet the highest value (70 °C) of the ambient temperature allowed at the place of application.
- 17.5 Hőmérsékleti osztályt a következő táblázat adja meg: /
Temperature class is given in following table:

Hőmérsékleti osztály / Temperature class	T6	T5	T4	T3	T2	T1
T _{környezet} / T _{ambient}	60 °C	70 °C				
T _{közeg} / T _{medium}	80 °C	95 °C	130 °C	195 °C	295 °C	440 °C

**(18) Alapvető egészségügyi és biztonsági követelmények /
Essential health and safety requirements**

Ez az EK-TípusVizsgálati Tanúsítvány a „27/1997. (IV.10.) BM rendelet a tűzvédelmi megfelelőségi tanúsítvány beszerzésére vonatkozó szabályokról” szerint Tűzvédelmi Megfelelőségi Tanúsítvány is. /
This EC-Type Examination Certificate is Certificate of Conformity on Fire protection according to „Decree 27/1997. (IV.10.) BM covering the rules concerning the obtaining of the certificate of conformity on fire protection”.

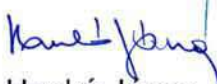
Ha a potenciálisan robbanásveszélyes környezetben alkalmazásra szánt berendezésekre, vagy védelmi rendszerekre több direktíva vonatkozik és a 94/9 EK Direktíva ellentmondásban van bármely másik direktívával, a 94/9 EK Direktíva előírásai az irányadók /

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If more directives apply to the equipment or protective systems intended for use in potentially explosive atmospheres and the 94/9 EC Directive is in contradiction with any of them, the provisions of the 94/9 EC Directive will prevail.




Hankó János
Igazgató / Director


Müllner János
Tanúsító Szervezet vezetője / 
Head of the Certification Body

TI SZ

ROBBANÁSBIZTOS BERENDEZÉSEK
VIZSGÁLÓ ÁLLOMÁSA

Testing Station for Explosion Proof
Equipment

Hungary, 1037 Budapest, Mikoviny S. u. 2-4.
tel/fax: 36 1 250 1720
E-mail: bkiex@bki.hu



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- (2) A potenciálisan robbanásveszélyes környezetben történő alkalmazásra szánt berendezések, védelmi rendszerek vizsgálatáról és tanúsításáról – 94/9/EK Direktíva /
On the test and certification of equipment or protective systems intended for use in potentially explosive atmospheres – Directive 94/9/EC.

- (3) **BKI® 04 ATEX 113 X**
1. kiegészítés / Amendment 1

- (4) A berendezés, vagy védelmi rendszer / Equipment or protective system:

Hőmérséklet távadó/kijelző készülék család /
Temperature transmitter/display family

Típusa / Type:

THERMOCONT T -5 - Ex

- (5) Gyártó / Manufacturer:

NIVELCO Ipari Elektronika Rt.

- (6) Cím / Address:

H-1043 Budapest, Dugonics u. 11.
Hungary

- (7) A berendezés, vagy védelmi rendszer és annak változatai a jelen tanúsítvány vonatkozó pontjában vannak feltüntetve. /
This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

- (8) A **BKI®** ExVÁ Robbanásbiztos Berendezések Vizsgáló Állomása, 1418 sz. kijelölt testület, az 1994. március 23-i 94/9/EK Európa Tanácsi Direktíva 9. Cikkelye szerint tanúsítja, hogy a fent megnevezett berendezés, vagy védelmi rendszer tervezése és gyártása megfelel a Direktíva 2. számú Mellékletében meghatározott alapvető egészségügyi és biztonsági, valamint a berendezés alkalmazási csoportjára és kategóriájára megadott kiegészítő követelményeknek. /

BKI® ExVÁ Testing Station for Explosion Proof Equipment Company Limited, notified body number 1418 in accordance with Article 9 of the European Council Directive 94/9/EC of 23 March 1994, certifies that the design and construction of this equipment or protective system has been found to comply with the essential health and safety requirements set out in Annex 2 of this Directive and the supplementary requirements set out for the relevant group and category.

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A vizsgálat eredményeit az alábbi nyilvántartási számú bizalmas vizsgálati dokumentáció tartalmazza /
The examination and test results are recorded in confidential report number:

R-007-05

- (9) Az alapvető egészségügyi és biztonsági követelményeknek való megfelelést a következő harmonizált európai szabványoknak való megfelelés biztosítja / Compliance with the essential health and safety requirements has been assured by compliance with harmonised european standards:

**MSZ EN 50014:2001, MSZ EN 50018:2001, MSZ EN 50020:2003,
MSZ EN 50284:2000**

- (10) A tanúsítvány száma után álló „X” jel azt mutatja, hogy a berendezés, vagy védelmi rendszer speciális feltételek megtartása mellett felel meg a jelen tanúsítvány vonatkozó pontjában feltüntetett biztonságos alkalmazás feltételeinek. /
If the sign „X” is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) Jelen EK-TÍPUS VIZSGÁLATI TANÚSÍTVÁNY csak a megjelölt berendezés vagy védelmi rendszer tervezésére és kivitelezésére vonatkozik. Ha ez alkalmazható, a jelen Rendelet további követelményei érvényesek a berendezés vagy védelmi rendszer gyártására és szállítására. /
This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Decree apply to the manufacture and supply of this equipment or protective system.
- (12) A berendezés, vagy védelmi rendszer jele a következő / The marking of the equipment or protective system shall include the following:



II 2 G EEx d IIB T6...T1

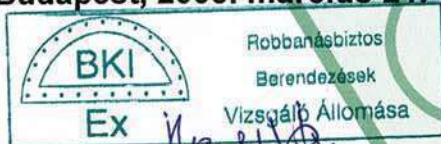
II 2 (1) G EEx d ia IIB T6...T1

II 1/2 G EEx d ia IIB T6...T1

II 2 (1) G EEx ia IIC T6...T1

II 1/2 G EEx ia IIC T6...T1 T_{körny} / T_{amb} lásd 15.4 pontban / See in point 15.4

Budapest, 2005. március 21.



Hankó János
Hankó János
Igazgató / Director



MADRID



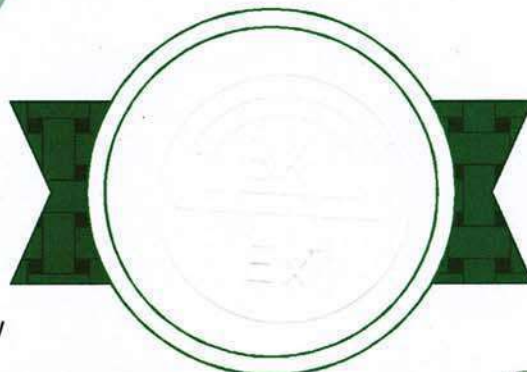
NEW YORK



GENEVA



PARIS



Ez a tanúsítvány csak a maga egészében és változtatlan formában használható fel. /
This certificate may be reproduced only in its entirety and without changes.

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(14) EK-TÍPUS VIZSGÁLATI TANÚSÍTVÁNY / EC-TYPE EXAMINATION CERTIFICATE N°
BKI 04 ATEX 113 X
1. kiegészítés / Amendment 1

(15) A berendezés, vagy védelmi rendszer leírása /
Description of Equipment or protective system

15.1 Leírás / Description

A THERMOCONT T típusú hőmérséklettávadók gyújtószikramentes áramkörben is alkalmazható kétvezetékes 4 ... 20 mA-es áramkimenettel és/vagy digitális (PROFIBUS PA) adatátvitellel rendelkező új elektronikus egységekkel bővült. /

The temperature transmitters type THERMOCONT T operated in intrinsically safe circuit the two wire transmitters with 4...20 mA output current and/or digital (PROFIBUS PA) communication, the transmitters have new electronic devices.

15.2 Típusjel / Type mark

THERMOCONT T - 5 - Ex

Kimenet/opciók (6, 8, A, B, C, D, K, L, M, N, P, R) / Output/option
Benyúlási hossz (0 ... 9) / Length (0 ... 9)
Érzékelő (1, 2, 3) / Sensor (1, 2, 3)
Technológiai csatlakozás (A ... Z) / Technology connection
Funkció/Méréshatár / Function/Measuring range

15.3 Villamos adatok / Electrical parameters

15.3.1 ABB TF12-Ex típusú elektronika / Type ABB TF12-Ex electronic devices

Táp- és jeláramkör / Signal/supply circuit:
Profibus PA áramkör / circuit:
(+ és / and - csatlakozók / terminals)

Csak tanúsított gyújtószikramentes EEx ia IIC/IIB védelmi módú áramkörhöz csatlakoztatható vagy a FISCO-Model-hez (Profibus PA) a következő jellemzőkkel: /
Only for connection to a certified intrinsically safe circuit EEx ia IIC/IIB or FISCO-Model circuit (Profibus PA) with following maximum values:

	EEx ia IIC	EEx ia IIB
U_0	< 17,5 V	< 17,5 V
I_k	< 360 mA	< 380 mA
P_0	< 2,52 W	< 5,32 W

Saját belső kapacitás / The effective internal capacitance
 $C_i = 1 \text{ nF}$

Saját belső induktivitás / The effective internal inductance
 $L_i = 10 \text{ µH}$

Érzékelő áramkör / Sensor circuit:
(1, 2, 3, 4, 5, 6 csatlakozók / terminals)

Gyújtószikramentes EEx ia IIC/IIB védelmi módú áramkör, melynek maximális értékei: /

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Intrinsically safe circuit EEx ia IIC/IIB with following maximum values:

$$\begin{aligned}U_0 &\leq 5,9 \text{ V} \\I_0 &\leq 17 \text{ mA} \\P_0 &\leq 26 \text{ mW}\end{aligned}$$

Jelleggörbe lineáris / Output characteristic linear
Saját belső kapacitás C_i és induktivitás L_i elhanyagolható /
Inside capacity C_i and inductivity L_i negligible.

	IIC	IIB
Maximális külső kapacitás / The maximum external capacitance	43 μF	1000 μF
Maximális külső induktivitás / The maximum external inductance	130 mH	450 mH

Illetve / respectively

Az EN 50020 szabvány 5.4 pontja szerint csatlakoztatható
aktív jelforrások mint egyszerű gyártmányok /
Connecting active sources „Simple apparatus” according
Clause 5.4 of standard EN 50020

$$\begin{aligned}U_0 &\leq 1,5 \text{ V} \\I_0 &\leq 100 \text{ mA} \\P_0 &\leq 25 \text{ mW}\end{aligned}$$

	IIC	IIB
Maximális külső kapacitás / The maximum external capacitance	11,9 μF	195 μF
Maximális külső induktivitás / The maximum external inductance	2,5 mH	10 mH

LCD áramkör / LCD circuit:
(SL1 jelű LCD csatlakozó / terminal SL1)

Gyújtószikramentes EEx ia IIC/IIB védelmi módú áramkör,
melynek maximális értékei: /
Intrinsically safe circuit EEx ia IIC/IIB with following maximum
values:

$$\begin{aligned}U_0 &\leq 5,9 \text{ V} \\I_0 &\leq 53,7 \text{ mA} \\P_0 &\leq 80 \text{ mW}\end{aligned}$$

Jelleggörbe lineáris / Output characteristic linear
Saját belső kapacitás C_i és induktivitás L_i elhanyagolható /
Inside capacity C_i and inductivity L_i negligible.

	IIC	IIB
Maximális külső kapacitás / The maximum external capacitance	43 μF	1000 μF
Maximális külső induktivitás / The maximum external inductance	13 mH	49 mH

A PROFIBUS PA áramkörei minden más áramkörtől és az összegző áramkörtől galvanikusan elválasztottak
60 V feszültségig. /
The circuits of PROFIBUS PA are galvanically separated all of the other circuits and summing circuit to 60 V
potential.

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15.3.2 E+H iTEMP PA TMT 184 típusú elektronikával / With type E+H iTEMP PA TMT 184 electronic devices

Táp- és jeláramkör / Signal/supply circuit:

Profibus PA áramkör / circuit:

(1 és / and 2 csatlakozók / terminals)

Csak tanúsított gyújtószikramentes EEx ia IIC védelmi módú áramkörhöz csatlakoztatható vagy a FISCO-Model-hez (Profibus PA) a következő jellemzőkkel: /

Only for connection to a certified intrinsically safe circuit EEx ia IIC or FISCO-Model circuit (Profibus PA) with following maximum values:

$$U_i = 17,5 \text{ V DC}$$

$$I_i = 500 \text{ mA}$$

$$P_o = 5,5 \text{ W}$$

Saját belső kapacitás C_i és induktivitás L_i elhanyagolható / Inside capacity C_i and inductivity L_i negligible.

Érzékelő áramkör / Sensor circuit:

(3, 4, 5, 6 csatlakozók / terminals)

Gyújtószikramentes EEx ia IIC/IIB védelmi módú áramkör, melynek maximális értékei: /

Intrinsically safe circuit EEx ia IIB/IIC with following maximum values:

$$U_o = 5 \text{ V}$$

$$I_o = 12 \text{ mA}$$

$$P_o = 15 \text{ mW}$$

Jelleggörbe lineáris / Output characteristic linear

Saját belső kapacitás C_i és induktivitás L_i elhanyagolható / Inside capacity C_i and inductivity L_i negligible.

A beköthető külső nem koncentrált kapacitás és induktivitás / Connected non concentrated output capacity and inductivity

$$C_o = 100 \mu\text{F}$$

$$L_o = 240 \text{ mH}$$

A beköthető külső koncentrált kapacitás és induktivitás / Connected concentrated output capacity and inductivity

	IIC	EEx ia IIB	IIA
C_o	1,7 μF	9,4 μF	9,4 μF
L_o	100 mH	100 mH	100 mH

15.4 Környezeti hőmérséklet / Ambient temperature

ABB TF12-Ex típusú elektronikával / With type ABB TF12-Ex electronic devices

Típus / Type		T__ - 5__ - K Ex	T__ - 5__ - L Ex	T__ - 5__ - M Ex
Védelmi mód / Ex protection		Ex II 2 (1) G EEx ia IIC T6... T1	Ex II 2 G EEx d IIB T6... T1	Ex II 2 (1) G EEx d ia IIB T6..T1
Környezeti hőmérséklet és hőmérsékleti osztály / Ambient temperature and temperature class	T6	-40...+60 °C	-40...+60 °C	-40...+60 °C
	T4	-40...+85 °C	-40...+85 °C	-40...+85 °C

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E+H iTEMP PA TMT 184 típusú elektronikával / With type E+H iTEMP PA TMT 184 electronic devices

Típus / Type	T__ - 5__ - N Ex		T__ - 5__ - P Ex		T__ - 5__ - R Ex	
Védelmi mód / Ex protection	Ⓔ II 1/2 G EEx ia IIC T6...T1		Ⓔ II 2 G EEx d IIB T6...T1		Ⓔ II 1/2 G EEx d ia IIB T6...T1	
Kategória / Category	1	2	2	1	2	
Környezeti hőmérséklet és hőmérsékleti osztály / Ambient temperature and temperature class	T6	-20...+40 °C	-40...+50 °C	-40...+50 °C	-20...+40 °C	-40...+50 °C
	T5	-20...+50 °C	-40...+65 °C	-40...+65 °C	-20...+50 °C	-40...+65 °C
	T4	-20...+60 °C	-40...+85 °C	-40...+85 °C	-20...+60 °C	-40...+85 °C

15.5 Védettség / Ingress protection:

IP 65 MSZ EN 60529 szerint / by EN 60529

15.6 Érintésvédelem / Electric shock protection:

Nyomásálló tokozással:

with Flameproof enclosure:

Gyújtószikramentes áramkörben:

In intrinsically safe circuit:

III. év. osztály MSZ 171/1-84 szerint, mely megfelel az IEC 364-4-41 szerinti FELV rendszernek /
 III e.s. class to according MSZ 171/1-84, this is equal to IEC 364-4-41 FELV system
 III. év. osztály MSZ 171/1-84 szerint, mely megfelel az IEC 364-4-41 szerinti SELV rendszernek /
 III e.s. class to according MSZ 171/1-84, this is equal to IEC 364-4-41 SELV system

(16) Vizsgálati dokumentáció / Descriptive documents

BKI 04 ATEX 113 X EK-TípusVizsgálati Tanúsítvány / EC-Type Examination Certificate	2004. 05. 13.
BKI 03 ATEX 003 U EK-TípusVizsgálati Tanúsítvány 2. kiegészítés / EC-Type Examination Certificate Amendment 2.	2005. 01. 11.
ZELM 99 ATEX 0021 EK-TípusVizsgálati Tanúsítvány / EC-Type Examination Certificate	2000. 05. 03.
PTB 01 ATEX 2065 EK-TípusVizsgálati Tanúsítvány / EC-Type Examination Certificate	2001. 07. 11.
BKI R-007-05 Vizsgálati jegyzőkönyv / Test Report	2005. 03. 21.
Kiegészítő műszaki leírás / Amendment Technical Description	2005. 02. 10.
Használati utasítás / User's Manual TBJ-524-8M-060-XH rev. 1.	2005. 02. 09.
ABB nyilatkozat / Declaration of ABB	2005. 02. 17.
Endress+Hauser nyilatkozat / Declaration of Endress+Hauser	2005. 03. 18.
Műszaki rajzok / drawings: rev.	
TBJ-524-DM-000-0X 1	2005. 02. 04.
TBJ-524-8M-050-0L 2	2005. 02. 07.
Adatlapok / Data sheets	
Mintadarab / Sample	

**(17) Biztonságos üzemeltetés feltételei /
Special conditions for safe use**

- 17.1** Az EEx ia IIC vagy EEx d ia IIB védelmi jelű hőmérséklet távadók csak a műszaki adatoknak megfelelő, tanúsított gyújtószikramentes áramkörrel üzemeltethetők. /
 The temperature transmitter - protection mode EEx ia IIC or EEx d ia IIB - must be operated only by the technical data in intrinsically safe circuit.

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- 17.2 A „d” védelmi módú hőmérséklet távadók csak tanúsított „d” védelmi módú kábelbevezetővel üzemeltethetők. / The explosion proof “d” type temperature sensors must be used only with the certified “d” marking cable glands.
- 17.3 A PFA-val bevont benyúlócsöves változat alkalmazása esetén a közeg áramlási sebességét a közeg jellemzők és a geometriai jellemzők figyelembevételével úgy kell megválasztani, hogy sztatikus feltöltődés ne keletkezzen. / In case the variation with the PFA coated protrusion pipe is applied, the flow rate of the medium shall be determined so – considering the parameters of the medium and the geometrical features – that static charge could be avoided.
- 17.4 Hőmérsékleti osztályt a következő táblázat adja meg: / Temperature class is given in following table:

Hőmérsékleti osztály / Temperature class	T6	T5	T4	T3	T2	T1
$T_{\text{környezet}} / T_{\text{ambient}}$	15.4 pont szerint / according point 15.4					
$T_{\text{közeg}} / T_{\text{medium}}$	80 °C	95 °C	130 °C	195 °C	290 °C	440 °C

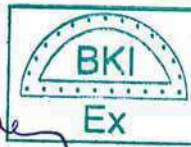
(18) Alapvető egészségügyi és biztonsági követelmények / Essential health and safety requirements

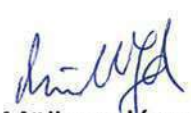
Ez az EK-Típus Vizsgálati Tanúsítvány a „27/1997. (IV.10.) BM rendelet a tűzvédelmi megfelelőségi tanúsítvány beszerzésére vonatkozó szabályokról” szerint Tűzvédelmi Megfelelőségi Tanúsítvány is. / This EC-Type Examination Certificate is Certificate of Conformity on Fire protection according to „Decree 27/1997. (IV.10.) BM covering the rules concerning the obtaining of the certificate of conformity on fire protection”.

Ha a potenciálisan robbanásveszélyes környezetben alkalmazásra szánt berendezésekre, vagy védelmi rendszerekre több direktíva vonatkozik és a 94/9 EK Direktíva ellentmondásban van bármely másik direktívával, a 94/9 EK Direktíva előírásai az irányadók /

If more directives apply to the equipment or protective systems intended for use in potentially explosive atmospheres and the 94/9 EC Directive is in contradiction with any of them, the provisions of the 94/9 EC Directive will prevail.


Hankó János
Igazgató / Director


Robbanásbiztos
Berendezések
Vizsgáló Állomása


Müllner János
Tanúsító Szervezet vezetője /
Head of the Certification Body

TI SZ

RO

DECLARAȚIE
DE CONFORMITATE

Produsele mai sus menționate respectă următoarele directive europene:

Directiva 93/68/EEC (marcajul CE)
Directiva 2004/108/EC (EMC)
Directiva 2002/95/EC (RoHS)
Directiva 2002/96/EC (WEEE)

În continuare în cazul echipamentelor cu tensiune de alimentare mai mică de 48 V:

Directiva 2006/95/EC (LVD)

în cazul echipamentelor de frecvență radio sau unde scurte:

Directiva 1999/5/EC (R&TTE)

Produsul a fost testat conform următoarelor standarde:

MSZ EN 61010-1:2011
MSZ EN 61326-1:2007
MSZ EN 302 372-1:2011

Produsul a fost proiectat, dezvoltat, fabricat și testat conform sistemului de asigurare a calității ISO 9001:2008.

Sistemul de asigurare a calității a fost certificat de:

EMI-TÜV SÜD Ltd.
(DGA-ZM-07-92-00)

Conformitatea produsului a fost testat și documentat de:

NIVELCO Process Control Co.

Budapesta 28.02.2013

Lovas Krisztina
Lovas Krisztina
Manager de asigurare a calității

Nr.:
nivceo0s0000e_17

RU

ЗАВОДСКОЙ
АКТ

Данная продукция соответствует следующим правилам ЕС:

Директива 93/68/EEC (CE знак)
Директива 2004/108/EC (EMC)
Директива 2002/95/EC (RoHS)
Директива 2002/96/EC (WEEE)

Так же, для приборов, у которых напряжение питания меньше чем 48 В:

Директива 2006/95/EC (LVD)

Для радиочастотных приборов (микроволновых):

Директива 1999/5/EC (R&TTE)

Продукция была исследована согласно следующим стандартам:

MSZ EN 61010-1:2011
MSZ EN 61326-1:2007
MSZ EN 302 372-1:2011

Продукция была разработана, произведена и проверена в соответствии системы менеджмента качества по стандарту ISO 9001:2008.

Систему менеджмента качества заверил:

EMI-TÜV SÜD Ltd.
(DGA-ZM-07-92-00)

Соответствие продукции исследовал и задокументировал:

NIVELCO Process Control Co.

Будапешт, 28.02.2013

Lovas Krisztina
Кристина Ловаш
Руководитель управления по качеству

Номер:
nivceo0s0000e_17

ES

DECLARACION
DE CONFORMIDAD

El producto anteriormente mencionado cumple con los siguientes reglamentos de la CE:

Directive 93/68/EEC (CE mark)
Directive 2004/108/EC (EMC)
Directive 2002/95/EC (RoHS)
Directive 2002/96/EC (WEEE)

Además, para equipos con alimentación < 48V:

Directive 2006/95/EC (LVD)

Para equipo de radio frecuencia (microonda):

Directive 1999/5/EC (R&TTE)

El producto ha sido testado según los siguientes estándar:

MSZ EN 61010-1:2011
MSZ EN 61326-1:2007
MSZ EN 302 372-1:2011

El producto fue diseñado, desarrollado, fabricado y testado acorde a sistema de calidad ISO 9001:2008.

El sistema de calida está aprobado y certificado por:

EMI-TÜV SÜD Ltd.
(DGA-ZM-07-92-00)

La conformidad del producto ha sido comprobada y documentada por:

NIVELCO Process Control Co.

Budapest 28.02.2013

Lovas Krisztina
Lovas Krisztina
Quality manager

Número:
nivceo0s0000e_17

CN

符合标准声明

以上所述产品符合EC的相关规定:

Directive 93/68/EEC (CE mark)
Directive 2004/108/EC (EMC)
Directive 2002/95/EC (RoHS)
Directive 2002/96/EC (WEEE)

对于供电电压< 48V的产品, 符合下列之规定:

Directive 2006/95/EC (LVD)

对于无线电(微波)产品符合下列之规定:

Directive 1999/5/EC (R&TTE)

依照下列标准, 该产品已经通过了测试:

MSZ EN 61010-1:2011
MSZ EN 61326-1:2007
MSZ EN 302 372-1:2011

依照ISO 9001:2008 质量管理体系的要求, 我们设计、研发、制造并测试了该产品。

该质量体系证书由下列机构认证并颁发:

EMI-TÜV SÜD Ltd.
(DGA-ZM-07-92-00)

该产品对于相关标准的符合性由下列机构测试并出具相关文件

NIVELCO Process Control Co.

2013年2月28日, 布达佩斯

Lovas Krisztina
Lovas Krisztina
质量管理部经理

Nr.:
nivceo0s0000e_17

HR

IZJAVA O
SUKLADNOSTI

Gore navedeni proizvod usklađen je sa sljedećim regulativama Europske komisije:

Directiva 93/68/EEC (CE mark)
Direktiva 2004/108/EC (EMC)
Direktiva 2002/95/EC (RoHS)
Direktiva 2002/96/EC (WEEE)

Nadalje, za opremu sa naponom napajanja < 48V:

Direktiva 2006/95/EC (LVD)

Za radio frekvencijsku (mikrovalnu) opremu:

Direktiva 1999/5/EC (R&TTE)

Proizvod je testiran u skladu sa sljedećim standardima:

MSZ EN 61010-1:2011
MSZ EN 61326-1:2007
MSZ EN 302 372-1:2011

Proizvod je dizajniran, razvijen, proizveden i testiran u sklopu sustava kvalitete prema normi ISO 9001:2008.

Sustav kvalitete je odobron i ovjeren od strane:

EMI-TÜV SÜD Ltd.
(DGA-ZM-07-92-00)

Sukladnost proizvoda ispitana je i dokumentirana od strane:

NIVELCO Process Control Co.

Budapest, 2013.02.28.

Lovas Krisztina
Lovas Krisztina
Quality manager

Broj / Nr.:
nivceo0s0000e_17

GYÁRTÓI
NYILATKOZAT

DECLARATION
OF CONFORMITY

Típus Type Typ Тип

PiloTREK - MicroTREK - EchoTREK - EasyTREK - NIVOCAP
- NIVOTRACK - NIVOPRESS DIN - NIVOFLOAT -
NIVOCONT K/R - NIVOPOINT - NIVOSWITCH - NIVOROTA
- AnaCONT - THERMOCONT - THERMOPOINT - NIPRESS
- MICROSONAR - NIMET - NIRED - MultiCONT - UNICONT -
NITIME - NICOUNT - NIPOWER - UNICOMM - NIVOSONAR

„Kivéve robbanásbiztos (Ex) kivitelű készülékek /
Except for Ex certified devices“

Budapest,

nivceo0s0000e_17

CE
1418

Gyártó / Manufacturer:
NIVELCO IPARI ELEKTRONIKA ZRT.
NIVELCO PROCESS CONTROL CO.
Cím / Address:
H-1043 Budapest, Dugonics u. 11.

HU

GYÁRTÓI
NYILATKOZAT

A fenti gyártmány megfelel a következő
EU rendeleteknek:

93/68/EEC irányelv (CE jel)
2004/108/EC irányelv (EMC)
2002/95/EC irányelv (RoHS)
2002/96/EC irányelv (WEEE)

Továbbá 48 V-nál kisebb tápfeszültségű
készülékek esetén:

2006/95/EC irányelv (LVD)

Rádiófrekvenciás (mikrohullámú) készülé-
lékek esetén:

Direktíva 1999/5/EC (R&TTE)

A gyártmányt az alábbi szabványoknak
megfelelően vizsgálták:

MSZ EN 61010-1:2011
MSZ EN 61326-1:2007
MSZ EN 302 372-1:2011

A terméket az ISO 9001:2008
szabványnak megfelelő minőségirányítási
rendszer szerint tervezték, gyártották és
ellenőrizték.

A minőségirányítási rendszert tanúsította:
EMI-TÜV SÜD Kft.
(DGA-ZM-07-92-00)

A termék megfelelőségét vizsgálta és
dokumentálta:

NIVELCO Ipari Elektronika zRt.

Budapest, 2013.02.28.

Lovas Krisztina
Lovas Krisztina
Minőségirányítási vezető

Szám:
nivceo0s0000e_17

EN

DECLARATION OF
CONFORMITY

The above mentioned product complies
with the following regulations of the EC:

Directive 93/68/EEC (CE mark)
Directive 2004/108/EC (EMC)
Directive 2002/95/EC (RoHS)
Directive 2002/96/EC (WEEE)

Furthermore, for equipment with supply
voltage < 48V:

Directive 2006/95/EC (LVD)

For radio frequency (microwave) equip-
ment:

Directive 1999/5/EC (R&TTE)

The product has been tested according to
the following standards:

MSZ EN 61010-1:2011
MSZ EN 61326-1:2007
MSZ EN 302 372-1:2011

The product was designed, developed,
manufactured and tested under a quality
system according to ISO 9001:2008.

The quality system was approved and
certified by

EMI-TÜV SÜD Ltd.
(DGA-ZM-07-92-00)

The conformity of the product was tested
and documented by:

NIVELCO Process Control Co.

Budapest 28.02.2013

Lovas Krisztina
Lovas Krisztina
Quality manager

Number:
nivceo0s0000e_17

DE

EG-KONFORMITÄTS-
ERKLÄRUNG

Für nebenstehendes Produkt wird hiermit
erklärt, dass es folgenden Richtlinien der
Europäischen Gemeinschaft entspricht:

Richtlinie 93/68/EEC (CE)
Richtlinie 2004/108/EC (EMC)
Richtlinie 2002/95/EC (RoHS)
Richtlinie 2002/96/EC (WEEE)

Für Geräte mit einer Versorgungsspannung
von max. 48V:

Richtlinie 2006/95/EC (LVD)

Für Funkanlagen (GWR, Radar):

Richtlinie 1999/5/EC (R&TTE)

Das Gerät wurde folgenden Standards
entsprechend getestet:

MSZ EN 61010-1:2011
MSZ EN 61326-1:2007
MSZ EN 302 372-1:2011

Das Gerät wurde gemäß Qualitätssystem
ISO 9001:2008 entworfen, entwickelt und
hergestellt.

Qualitätssystem wurde geprüft und
bescheinigt von

EMI-TÜV SÜD Ltd.
(DGA-ZM-07-92-00)

Die Konformität des Produktes wurde
getestet und dokumentiert durch:

NIVELCO Industrie-Elektronik AG

Budapest 28.02.2013

Lovas Krisztina
Lovas Krisztina
Qualitätsmanager

Nr.:
nivceo0s0000e_17

FR

DECLARATION
DE CONFORMITE

Le produit mentionné ci-dessus respecte
les règlements de la CE suivants:

Directive 93/68/EEC (Marquage CE)
Directive 2004/108/EC (EMC)
Directive 2002/95/EC (RoHS)
Directive 2002/96/EC (WEEE)

Pour les équipements avec tension
d'alimentation < 48V:

Directive 2006/95/EC (LVD)

Pour le matériel radio fréquence (micro-
onde):

Directive 1999/5/EC (R&TTE)

Le produit a été testé selon les normes
suivantes:

MSZ EN 61010-1:2011
MSZ EN 61326-1:2007
MSZ EN 302 372-1:2011

Le produit a été conçu, développé,
fabriqué et testé sous un système de
qualité selon l'ISO 9001:2008.

Le système qualité a été approuvé et
certifié par:

EMI-TÜV SÜD Ltd.
(DGA-ZM-07-92-00)

La conformité du produit a été testée et
documentée par:

NIVELCO Process Control Co.

Budapest, le 28.02.2013

Lovas Krisztina
Lovas Krisztina
Directeur Qualité

Nr.:
nivceo0s0000e_17

CZ

PROHLÁŠENÍ
O SHODĚ

Výše zmíněný produkt se shoduje s níže
uvedenými nařízeními EC:

Directive 93/68/EEC (CE mark)
Directive 2004/108/EC (EMC)
Directive 2002/95/EC (RoHS)
Directive 2002/96/EC (WEEE)

Dále, pro zařízení s napájecím napětím
< 48V:

Directive 2006/95/EC (LVD)

Pro radiofrekvenční (mikrovlné)

zařízení:

Directive 1999/5/EC (R&TTE)

Produkt byl testován dle následujících
standardů:

MSZ EN 61010-1:2011
MSZ EN 61326-1:2007
MSZ EN 302 372-1:2011

Produkt byl navržen, vyvinut, vyroben
a testován dle systému kvality ISO
9001:2008.

Systém kvality byl schválen a certifikován
od

EMI-TÜV SÜD Ltd.
(DGA-ZM-07-92-00)

Shoda produktu byla testována a je
zdokumentována u:

NIVELCO Process Control Co.

Budapest 28.02.2013

Lovas Krisztina
Lovas Krisztina
Quality manager

Nr.:
nivceo0s0000e_17

PL

DEKLARACJA
ZGODNOŚCI

Niniejszy produkt spełnia następujące
regulacje w zakresie EC:

Dyrektywa 93/68/EEC (oznaczenie CE)
Dyrektywa 2004/108/EC (EMC)
Dyrektywa 2002/95/EC (RoHS)
Dyrektywa 2002/96/EC (WEEE)

Ponadto, dla przyrządów zasilanych
napięciem < 48V:

Dyrektywa 2006/95/EC (LVD)

Dla urządzeń pracujących z częstotli-
wością radiową (mikrofalowych):

Dyrektywa 1999/5/EC (R&TTE)

Badanie tego produktu przeprowadzono
zgodnie z następującymi normami:

MSZ EN 61010-1:2011
MSZ EN 61326-1:2007
MSZ EN 302 372-1:2011

Urządzenie zostało skonstruowane, opra-
cowane, wyprodukowane i sprawdzone
zgodnie z systemem jakości ISO 9001:2008.

System jakości został zatwierdzony i cer-
tyfikowany przez

EMI-TÜV SÜD Ltd.
(DGA-ZM-07-92-00)

Zgodność produktu sprawdzono i zdoku-
mentowano przez:

NIVELCO Process Control Co.

Budapeszt 28.02.2013

Lovas Krisztina
Lovas Krisztina
Quality manager

Nr.:
nivceo0s0000e_17

VISUAL DISPLAY

NIVOFLIP

MAGNETIC LEVEL INDICATORS



3 YEARS WARRANTY @ NIVELCO – WHERE ELSE?

NIVELCO

LEVEL INDICATOR

NIVOFLIP BYPASS LIQUID LEVEL INDICATORS

MAIN FEATURES

- Clearly visible indicator
- Measuring range: 500-5500 mm (1.65 – 18 ft)
- ± 10 mm (0.4 inch) accuracy
- Max. 100 bar g (1440 psi g) process pressure
- High temperature version
- Optional level switches
- Optional magnetostrictive level transmitter
- PED approval

APPLICATIONS

- Oil and gas industries
- Chemical industry
- Power generation
- Boilers
- Pressurized vessels
- Tanks

GENERAL DESCRIPTION

The **NIVOFLIP** is a magnetic level indicator for pressurized vessels with up to 5.5 m (18 ft) flange distance containing liquids. The device has the international PED (Pressure Equipment Directive) approval, so it can be used for level indication of pressurized vessels up to 100 bar g (1440 psi g) process pressure. The high temperature types are applicable up to 250 °C (482 °F) process temperature. The **NIVOFLIP** can be equipped with optional limit switches or with **NIVELCO's NIVOTRACK** high-precision magnetostrictive level transmitter if point-level detection or continuous level transmission is required.

OPERATION

The welded bypass chamber that is the body of the indicator and the tank form one pressurized system. Mounted on suitable connection flanges located on the side of the tank the liquid level in the bypass tube and the tank is equal. A float in the bypass tube incorporating a polarized magnet tracks the level of the liquid. The bi-coloured magnetic flaps mounted on the tube composing a bar are serving as visual indicators by changing their colour as the float passes. The rotated flaps represent the actual level. The lower 100 mm (4 inch) of the bottom section of the indicating bar has different colour providing for an visual error signal in case the liquid level drops below the lower connection point of the instrument.

NIVOFLIP LEVEL INDICATOR SYSTEM

The **NIVOFLIP** bypass liquid level indicator can be equipped with **MAK-100-□** external level switches and this way it can provide limit level indication. In case of using **MAK-100** level switch the minimal medium density should be 0.1 kg/dm³ (100 oz/ft³) more than the specified. When the provided accuracy of the magnetic flaps is not enough, the high-precision **NIVOTRACK M□L-500/600** series magnetostrictive level transmitters are recommended to use. Equipped with the OIML R85 approved **NIVOTRACK** the measurement system is suitable for custody transfer measurements. The magnetostrictive level transmitter has rigid probe in accordance to the length of the center to center distance of the connection flanges. The unit without float and process connection can be mounted externally by clamps to the bypass chamber. All the optional units are operated by the special designed float via magnetic coupling, there is no direct contact with the measured medium.

FLOAT SELECTION

Type	Float material					
	Stainless steel			Titanium		
	1.4301 (304L)	1.4571 (316Ti)		Ti Gr.2		
Maximal process pressure	40 bar g (580 psi g)	63 bar g (930 psi g)	100 bar g (1440 psi g)	40 bar g (580 psi g)	63 bar g (930 psi g)	100 bar g (1440 psi g)
Medium density	0.8 – 1.25 kg/dm ³ (800 – 1200 oz/ft ³)	0.9 – 1.25 kg/dm ³ (900 – 1500 oz/ft ³)		0.6 – 1.1 kg/dm ³ (600 – 1110 oz/ft ³)	0.7 – 1.1 kg/dm ³ (700 – 1110 oz/ft ³)	
Maximal medium temperature	150 °C (302 °F)			250 °C (482 °F)		



PROPERTIES

NIVOFLIP	Normal type	High temperature type
Viscous version	■	—
Stainless steel float	■	■
Titanium float	■	■
PED approval	■	■
Max. 100 bar g (1440 psi g) medium pressure	■	—
Max. 250 °C (482 °F) medium temperature	—	■
Optional level switches	■	—
Optional level transmitter	■	■

TECHNICAL DATA

Type		Normal type		High temperature type
		Standard	Viscous	
Visual display		Bi-coloured magnetic flaps		
Display	scale	centimeter, inch scale is available on request		
	accuracy	± 10 mm (0.4 inch)		
	resolution	5 mm (0.2 inch)		
	error indication	inverse polarized flaps on the lower 100 mm (4 inch)		
Tube diameter		Ø 60.3 mm (2.35 inch)	Ø 73.3 mm (2.85 inch)	Ø 60.3 mm (2.35 inch)
Material		Bypass tube and flange: 1.4571 (316Ti)		
Flange distance (center to center)		500 – 5500 mm (20 inch – 18 feet) (as per order code)		
Process connection		DIN, ANSI flanges (as per order code)		
Aerating connection		M20 x 1.5		
Process pressure		max. 100 bar g (1440 psi g)	max. 40 bar g (580 psi g)	max. 88 bar g (1275 psi g)
Medium temperature		–40 °C ... +130 °C (-40 °F ... +266 °F)		–40°C ... +250°C (–40 °F ... +482 °F)
Ambient temperature		–40 °C ... +60 °C (–40 °F ... +140 °F)		
Medium density ⁽¹⁾		stainless steel float: 0.8-1.25 kg/dm³ (800-1250 oz/ft³), titanium float: 0.6-1.1 kg/dm³ (600-1100 oz/ft³)		
Level switch		optional, freely adjustable MAK-100 magnetic level switch		–
Level transmitter		optional NIVOTRACK M□L-500/600 magnetostrictive level transmitter ⁽²⁾		
Mass		about 25 kg (55 lb) for 1 m (3.3 ft) center to centre distance		

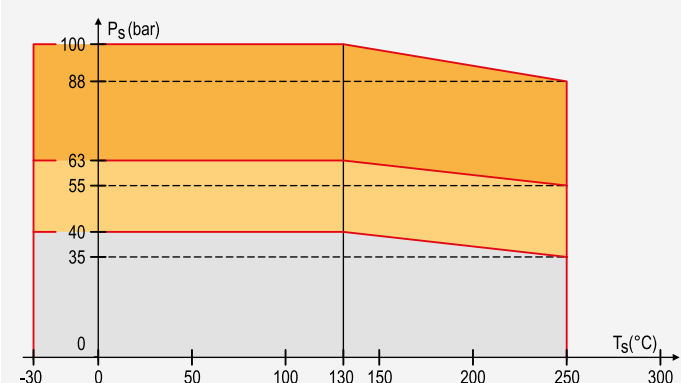
⁽¹⁾ In case of using MAK-100 level switch the minimal medium density should be 0.1 kg/dm³ (100 oz/ft³) more than the above specified

⁽²⁾ In case of using NIVOTRACK level transmitter the maximum temperature values are shown on the diagram below

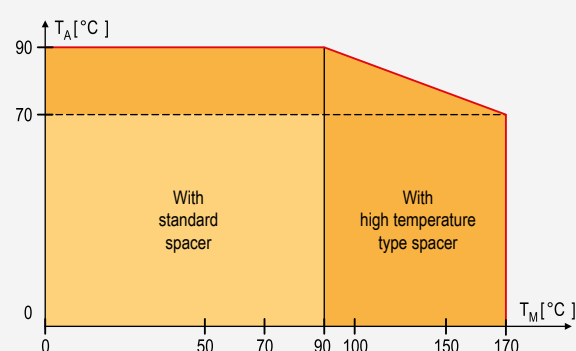
Maximal process pressure		Maximal medium temperature			
Process connection	Bypass tube / Flange rating	T _{MAX} = 130 °C			T _{MAX} = 250 °C
		Standard	Viscous	High temperature type	
		Maximal process pressure			
DIN flanges DN15 – DN50	Ø 60mm / PN40	40 bar	–	40 bar	35 bar
	Ø 73mm / PN40	–	40 bar	–	–
	Ø 60mm / PN63	63 bar	–	63 bar	55 bar
	Ø 60mm / PN100	100 bar	–	100 bar	88 bar
ANSI flanges ½" – 2"	Ø 2.35" / 400 Class	580 psi	–	580 psi	500 psi
	Ø 2.85" / 400 Class	–	580 psi	–	–
	Ø 2.35" / 600 Class	930 psi	–	930 psi	800 psi
	Ø 2.35" / 900 Class	1440 psi	–	1440 psi	1275 psi

TEMPERATURE DIAGRAM

Temperature (T_S) – Pressure (P_S) diagram



Medium temperature (T_M) – Ambient temperature (T_A) diagram when NIVOTRACK level transmitter is mounted on NIVOFLIP



MAK-100 MAGNETIC LEVEL SWITCHES

GENERAL DESCRIPTION

The **MAK-100** type magnetic level switches are optional accessories for **NIVOFLIP** bypass level indicators. In the stainless steel bypass tube the float of **NIVOFLIP** tracks the liquid level. The float (incorporating a permanent magnet) operates the freely positioned **MAK-100** level switch via magnetic coupling and provides non-contact signal transfer to the microswitch. There should be at least 100 mm (4 inch) distance between two switching points.

TEMPERATURE DATA FOR EX CERTIFIED MODELS

TEMPERATURE CLASSES		
Classes	Max. medium temp.	Max. ambient temp.
T6	+80 °C (+176 °F)	-20 ... +60 °C (-4 ... +140 °F)
T5	+95 °C (+203 °F)	-20 ... +70 °C (-4 ... +158 °F)
T4	+130 °C (+266 °F)	-20 ... +80 °C (-4 ... +176 °F)

TECHNICAL DATA

Type	MAK-100-0	MAK-100-6
Medium temperature	max.: 130°C	see: temperature classes table
Ambient temperature	−20°C ... +80°C (−4 °F ... +176 °F)	
Material of the switch-housing	Paint coated aluminium	
Switch	1 microswitch, with NO, NC contacts	
Switching data	250V 2.5 A AC12 220V 0.3 A DC13	only Ex ia certified and approved intrinsically safe isolator power supply should be used
Switching hysteresis	±35 mm (1.37 inch)	
Electrical connection	M20x1.5 cable gland, terminal for max. 2.5 mm ² (AWG14) wire cross section	
Ingress protection	IP65	
Electrical protection	Class I.	
Ex marking	—	Ⓔ II 1G
Mass	1.5 kg (3.3 lb)	

NIVOTRACK MAGNETOSTRICTIVE LEVEL TRANSMITTERS

GENERAL DESCRIPTION

NIVOTRACK magnetostrictive level transmitters are an ideal solution for high accuracy measurement of liquids. Its high precision renders the **NIVOTRACK** suitable even for custody transfer measurement of liquids such as fuels, solvents, alcohol derivatives etc.

When ordered together with **NIVOFLIP** Magnetic Level Indicator the magnetostrictive transmitters are factory calibrated to the bypass tube and the magnetic float. The transmitter is fixed with pipe clamps and aluminium spacers.



TECHNICAL DATA

Type		NIVOTRACK M□L-500/600
Measured process value		liquid level, distance, volume
Probe length		In accordance to the center to center distance of NIVOFLIP +300 / 400 mm (12 / 15.75") in accordance to the float type
Material of the probe		1.4571 (316 Ti) stainless steel
Resolution		0.1 or 1 mm (0.004 or 0.04 inch) – as per selected type
Linearity with dry calibration		±0.25 or ±1 mm (± 0.01 or ±0.04 inch) – as per selected type
Zero span		Anywhere within the active range
Ambient temperature (1)		–40 °C ... +90 °C (–40 °F ... +194 °F), plastic housing: –25 °C ... +90 °C (–13 °F ... +194 °F), with display: –25 °C ... +90 °C (–13 °F ... +194 °F), Ex type: see temperature diagram
Output	Analogue	4–20 mA
	Digital	4–20 mA + HART
	Display	SAP-300 graphic display
Damping time		0 s ... 99 s
Error indication		22 mA or 3.8 mA or holding
Power supply		12.5 V ... 36 V DC
Electrical protection		Class III.
Ingress protection		IP67
Electrical connection		2x M20x1.5 plastic cable glands 6...12 mm (0.25 ... 0.5") cable + 2x NPT ½" internal thread for cable protective pipe terminal block for 0.5...1.5 mm² (AWG 20 ... AWG 15) wire cross section Ex type: see „Special data for Ex certified models” table
Housing		Paint coated aluminium or plastic (PBT)
Mass		1.7 kg (3.75 lb) + m. probe: 0.6 kg/m (0.4 lb/ft)

⁽¹⁾ When mounted on NIVOFLIP bypass chamber

SPECIAL DATA FOR Ex CERTIFIED MODELS

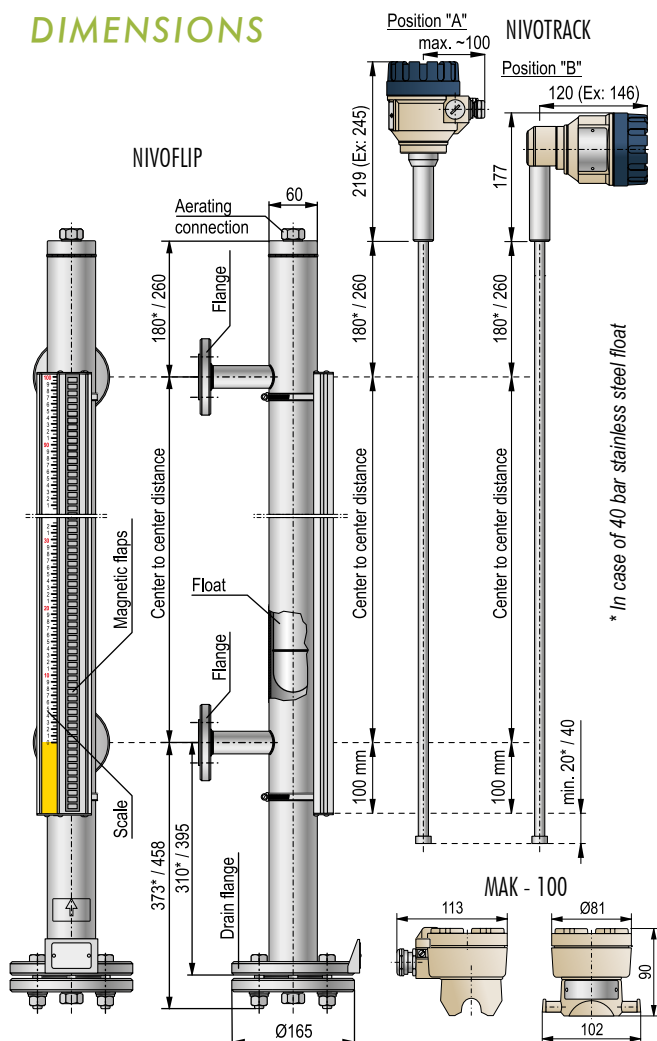
Protection type		ia	d	d ia
Ex marking	ATEX	Ⓔ II 1 G Ex ia IIB T6...T5	Ⓔ II 2 G Ex d IIB T6...T5	Ⓔ II 1/2 G Ex d ia IIB T6...T5
	IEC Ex	Ex ia IIB T6 Ga	Ex d IIB T6 Gb	Ex d ia IIB T6 Ga
Intrinsically safe data		$U_{imax} = 30 \text{ V}$ $I_{imax} = 140 \text{ mA}$	$P_{imax} = 1 \text{ W}$	$C_i < 15 \text{ nF}$ $L_i < 200 \text{ } \mu\text{H}$
Ambient temperature		-40°C ... +70°C (-40 °F ... 158 °F), with display: -25°C ... +70°C (-13 °F ... 158 °F)		
Cable gland		Brass Nickel plated M20x1.5 cable gland	Brass Nickel plated M20x1.5 Ex d approved cable gland	
Cable outer diameter		Ø 7...13 mm (0.275 ... 0.55 in)	Ø 9...11 mm (0.35 ... 0.45 in)	

POSITION OF THE DISPLAY

Vertical and horizontal display position is offered for optimal mounting in your application.



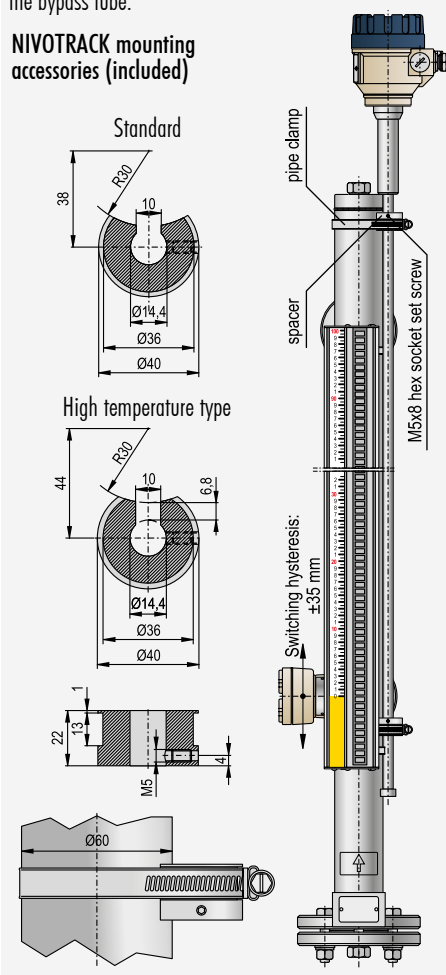
DIMENSIONS



NIVOTRACK MOUNTED ON NIVOFLIP

The probe length of the magnetostrictive level transmitter should be 300 / 400 mm (11.8 / 15.75 inch) longer than the center to center distance of the bypass tube in accordance to the float type. The level transmitter is placed onto the bypass tube that the top of the magnetostrictive probe is in the same height with the top of the bypass tube. The end of the probe should extend the inverse polarized error indication flaps with 20 / 40 mm (0.75 / 1.5 inch). The supplied aluminium spacers are fixed with hex socket set screws and they are mounted to the bypass tube with pipe clamps. In case of the high temperature type there is a ceramic fiber insulation blanket between the magnetostrictive probe and the bypass tube.

NIVOTRACK mounting accessories (included)



ORDER CODES (NOT ALL COMBINATIONS AVAILABLE)

NIVOFLIP bypass liquid level indicator

NIVOFLIP

M ■ ■ ■ ■ ■ ■ ■ ■

Type	Code	Process connection	Code	Code	Measuring range center to center (1)	Code	Float (3)	Code
Normal	L	DN15 / B form	A	0	0 m	0 m	0	0
High temperature	H	DN20 / B form	B	1	1 m	0.1 m	1	1
		DN25 / B form	C	2	2 m	0.2 m	2	2
		DN40 / B form	D	3	3 m	0.3 m	3	3
		DN50 / B form	E	4	4 m	0.4 m	4	4
		ANSI 1/2"	F	5	5 m	0.5 m	5	5
		ANSI 3/4"	G			0.6 m	6	6
		ANSI 1"	H			0.7 m	7	7
		ANSI 1 1/2"	J			0.8 m	8	8
		ANSI 2"	K			0.9 m	9	9

Bypass tube / Pressure rating	Code
Standard / PN40	1
Viscous / PN40 (2)	2
Standard / PN63	3
Standard / PN100	4

Float (3)	Code
Stainless steel (1.4571)	0
Titanium	1

(1) Maximal center to center distance: 5.5 m (18 ft)
 (2) Can be ordered only for normal type
 (3) Special float is available to order for interface level indication

ACCESSORIES

NIVOFLIP magnetic level switches

NIVOFLIP MAK-100-■ (1)

Output / Ex	Code
Normal	0
Ex ia	6



NIVOTRACK magnetostrictive level transmitter

NIVOTRACK M ■ L ■ ■ ■ ■ ■ (1)

Type	Code	Code	Probe length (4)	Code	Output / Resolution / Ex	Code
Transmitter	T	0	0 m	0 m	0	0
Transmitter + display (2)	B	1	1 m	0.1 m	1	1
		2	2 m	0.2 m	2	2
		3	3 m	0.3 m	3	3
		4	4 m	0.4 m	4	4
		5	5 m	0.5 m	5	5
				0.6 m	6	6
				0.7 m	7	7
				0.8 m	8	8
				0.9 m	9	9

Housing	Code
Aluminium	5
Plastic (3)	6

Output / Resolution / Ex	Code
0.1 mm	1
1 mm	2
0.1 mm / Ex ia	5
1 mm / Ex ia	6
0.1 mm / Ex d	A
0.1 mm / Ex d ia	C
0.1 mm	3
1 mm	4
0.1 mm / Ex ia	7
1 mm / Ex ia	8
0.1 mm / Ex d	B
0.1 mm / Ex d ia	D

(1) The order code of an Ex version should end in „Ex“
 (2) The position of the display (A or B) should be specified in the order
 (3) Not available in Ex version
 (4) The probe length of the NIVOTRACK should be: NIVOFLIP center to center distance + 300 mm / 400 mm (12 inch / 15.75 inch) in accordance to the float type

Intrinsically safe isolator power supply modules

4-20 mA, high precision	UNICONT PGK-301-A
4-20 mA, high precision / HART	UNICONT PGK-301-B
4-20 mA, high speed	UNICONT PGK-301-C
4-20 mA, high speed / HART	UNICONT PGK-301-D

Spacer

Normal	MLB-105-MM-600-00
High temperature type	MLC-110-MM-601-00



FIȘA TEHNICĂ CALCULATOR DE DEBIT

Nr. Crt.	Cerințe pentru bunurile achiziționate	Descriere, detalii, cerințe tehnice în conformitate cu documentele de reglementare		Producator
1.	Descrierea directă a bunurilor (caracteristici funcționale)	Calculator pentru volumul și debitul gazului, măsurat prin metoda presiunii diferențiale variabile folosind elemente primare standard (diafragme) care să răspundă la cerințele SM EN ISO 5167. Efectuează conversia volumelor de gaze, determinate de elemente primare standard (diafragme), din condiții de curgere în condiții de referință, pe baza informațiilor de la traductoarele de presiune și temperatură și a informațiilor de compoziție a gazelor. Traductoarele de presiune și temperatură pot fi proprii sau independente de calculatorul de debit. Compoziția gazelor măsurate trebuie să poată fi acceptată prin transmisie de la un gazcromatograf online și să poată fi introdusă prin configurarea calculatorului.		EMERSON
2.	Cantitatea necesară de bunuri	1 buc.		
3.	Destinația bunurilor și scopul utilizării acestora	Utilizare pentru tranzacții comerciale. Folosit pentru calcularea debitului volumetric sau masic al gazelor naturale, trecut prin conducta de măsurare pentru o perioadă dată. Este utilizat ca parte a complexelor de măsurare pentru evidența gazelor naturale.		
4.	Caracteristicile tehnice necesare ale bunurilor	Clasa de precizie	0,02	
		Unități de măsură:	kgf/cm ² (presiune), °C (temperatură gaze), Sm ³ sau Nm ³ (volum), Sm ³ /h sau Nm ³ /h (debit), kWh (energie).	
		La livrare, calculatorul va fi configurat cu condițiile de bază (1,01325 baraA; 20°C) și combinația (25°C, 20°C) pentru puterea calorică. Utilizatorul va avea posibilitatea schimbării condițiilor de bază pentru volum și pentru puterea calorică. Calculatorul trebuie să permită selectarea temperaturii de bază pentru volum și pentru puterea calorică superioară, atât de la tastatură cât și prin software-ul de comunicare, astfel: 20°C sau 0°C pentru temperatura de bază aplicată pentru calculul volumului; pentru puterea calorică temperatura de combustie (25°C) cu temperatură de bază pt. volumul gazului (20°C, 0°C). PCS utilizat pentru calculul energiei de către calculatorul de debit, va fi PCS-ul furnizat de către gazcromatograf.		
5.	Indicație că bunurile trebuie să fie noi, neutilizate anterior, neexploatate sau perioada permisă de exploatare anterioară	Bunul trebuie să fie nou, neutilizat anterior, neexploatat.		
6.	Cerințe pentru dimensiuni, ambalaj, container, transportare și descărcarea bunurilor	Ambalare de fabrică.		
7.	Specificații de performanță și condiții privind siguranța în exploatare	Calculul factorului de compresibilitate în conformitate cu SM SR ISO 12213-2:2014. Adaptat pentru lucrul în comun cu aplicația de achiziție și transmitere date «ASK». Calculatorul realizează primirea datelor de la traductoarele de măsurare, generarea de semnale de impuls ale debitului curent, precum și schimbul de		

		informații prin interfețe standard cu dispozitive de nivel superior. Numărul conectabil de traductoare de măsurare cu semnale de ieșire codificate: 8. Interfață pentru schimbul de informații de nivel superior: RS232 și/sau RS485, USB. Port liber pentru achiziția datelor în sistemul SCADA. Tensiune de alimentare curent continuu, (V) de la 8 până la 15. Cu barieră intrinsec sigură, analogică celei de tip БИ–4 pentru alimentarea cu energie a traductoarelor digitale de măsurare situate în zone cu pericol de explozie (SMART-traductoare) cu semnale digitale de ieșire sau alte dispozitive cu procesare digitală a semnalului și pentru a asigura recepția/transmisia datelor conform standardului Bell202 între dispozitivele specificate și echipamentele secundare de măsurare și control, situate în zone cu pericol de explozie. Calculatorul asigură recepția și procesarea semnalelor electrice cu următorii parametri: - semnalul codat – prin interfața Bell202, prin interfața PLI și/sau prin interfața RS485; - semnal de impuls sau frecvență – semnal de tip "contact uscat" sau "colector deschis" la o frecvență de impuls care nu depășește 5000 Hz; - parametrii semnalului codat – prin interfața Bell202 corespund formatului de protocol digital deschis HART. Limitele erorii relative admisibile ale calculatorului la procesarea semnalelor de intrare și calcularea parametrilor mediului sunt $\pm 0,02\%$. Limitele erorii relative de bază admisibile la calcularea debitului, ținând cont de eroarea de măsurare a presiunii și temperaturii $\pm 0,3\%$. Limitele erorii absolute admisibile ale calculatorului la măsurarea timpului sunt de ± 5 s pe 24 de ore. Calculatorul trebuie să asigure stocarea în memorie a următoarelor arhive: - date instantanee, date operaționale (date pentru un interval de timp configurabil în minute), date de oră (date pentru un interval orar), date zilnice (date pentru un interval zilnic), siguranță, mesaje despre situații de urgență și anormale, intervenții operatorului în operațiune a calculatorului; - arhiva de securitate conține informații despre deschiderea și închiderea panoului frontal al carcasei computerului, despre începutul și sfârșitul accesului la calculator prin portul de comunicare (cu indicarea numelui portului și numelui utilizatorului care a accesat) despre încercarea de a accesa de către un utilizator neînregistrat, despre accesarea traductorului digital prin calculator, despre modificarea configurației traductorului digital. Soft de configurare, soft de comunicare cu părțile componente ale sistemului de măsurare din care face parte, soft de descărcare rapoarte. Soft-ul trebuie să fie protejat prin parolă cu mai multe nivele de acces. Calculatorul de debit trebuie să aibă un display de caractere alfanumerice care să permită afișarea parametrilor de lucru și determinați (presiune,	
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		temperatură, debit, volum, energie, etc.). Stabilire oră de bilanț zilnic, setabilă de către utilizator. Calculatorul de debit trebuie să aibă ceas de timp real cu funcționare independentă de tensiunea de alimentare a calculatoarelor de debit, precizia acestuia să fie mai bună decât ± 10 ppm. Posibilitate de sincronizare a ceasului intern cu ceasul sistemului SCADA. Calculatorul de debit trebuie să comute automat ora de iarnă și ora de vară. Calculatorul de debit trebuie să păstreze parametri de configurare ai sistemului în memorie de tip EEPROM cu durată de conservare a datelor de minim 5 ani, iar jurnalul de evenimente într-o memorie nevolatilă sau alt dispozitiv timp de cel puțin 180 de zile. Mărimea arhivei de securitate este de cel puțin 1200 de înregistrări fără posibilitate de resetare. Registru de evidență parametri de configurare. Alarmer pe nivele. Documentația însoțitoare va explica detaliat fiecare tip de alarmă. Parolare pe nivel de acces (operare, configurare, service). Posibilități de sigilare mecanică a tuturor componentelor calculatoarelor de debit. Posibilitatea de blocare a intervențiilor neautorizate în configurarea sistemului de măsurare. Actualizarea datelor generate de calculator cel puțin o dată pe secundă. Calculatorul trebuie să asigure schimbul de informații cu calculator de nivel superior, utilizând următoarele dispozitive de comunicare externe: prin intermediul canalului telefonic de dial-up, linie dedicată cu două fire și prin canalul radio GSM.	
8.	Cerințe de calitate și siguranță	Din punct de vedere al protecției împotriva influențelor mediului, calculatorul este clasificat ca un produs cu un grad de protecție a carcasei de cel puțin IP55 iar versiunea climatică UHL 2, cu permisiunea de a funcționa la temperaturi ambientale cuprinse între -40 și +60 °C. Se va asigura legalitatea metrologică pentru introducerea pe piață și punere în funcțiune, în conformitate cu legislația metrologică aplicabilă Republicii Moldova, în vigoare. Introducere dispozitivelor în Registrul RM dacă este necesar. Calculatorul trebuie să aibă toate documentele și marcajele necesare pentru asigurarea legalității metrologice. Se va livra Raport de testare. Protecție la perturbații electromagnetice conform SM EN 55011.	
9.	Cerințe pentru termenul de valabilitate, termenul de păstrare, garanția calității	Fiecare produs trebuie să aibă un pașaport (certificate de conformitate pentru material și asamblare). Termen de garanție 2 ani de la data montării, dar nu mai mult de 3 ani de la livrare.	
10.	Tip, marca, ISO, ș.a.m.d.	Calculul debitului, volumului (masei) și energia mediului în conformitate cu formulele, date în SM EN ISO 6976:2017 Gaz natural. Calculul puterii calorifice, densității, densității relative și indicelui Wobbe din compoziție, SM SR EN ISO 12213-2:2014 Gaz natural. Calculul factorului de compresibilitate. Partea 2: Calcul pe baza analizei compoziției molare, SM EN ISO 12213-	

		3:2016 Gaz natural. Calculul factorului de compresibilitate. Partea 3: Calcul pe baza proprietăților fizice, SM EN ISO 5167 Măsurarea debitului de fluide prin metoda micșorării locale a secțiunii de curgere în conducte cu secțiune circulară sub presiune și în alte documente normative în vigoare. La livrare se va prezenta aprobarea de model pentru Republica Moldova prin care acest echipament poate forma un complex de măsurare. Marcaje conform cerințelor metrologice și condițiilor constructive.	
11.	Alte condiții cu caracter tehnic	Nu vor fi luate în considerație decât ofertele însoțite de documentație completă pentru selecție și montaj în limba română (instrucțiuni de montaj, instrucțiuni de exploatare, buletine de încercări, verificări și probe, declarație de conformitate).	

FloBoss™ S600+ Flow Computer

The FloBoss™ S600+ Flow Computer (S600+) is a panel-mount fiscal flow computer designed specifically for hydrocarbon liquid and gas measurement where versatility and accuracy are high priorities. The FloBoss S600+ builds on the success of its predecessor, the S600, which has been the market-leading panel-mount flow computer from Emerson Process Management.

The standard features of the S600+ make it ideal for the following applications:

- Fiscal flow measurement
- Custody transfer
- Pipeline measurement
- Batch loading
- Meter proving applications
- Single or multi-stream measurement
- Flow control

The S600+ supports multi-stream (up to ten with optional expansion modules), multi-station (up to two) applications that are configured for simultaneous metering of gas, wet gas, crude oil, refined products, LPG, NGLs, etc. The S600+ can accommodate both a liquid and a gas station simultaneously.

Supported flow meters or primary elements include turbine, ultrasonic, Coriolis, positive displacement, orifice, Venturi, Annubar®, V-Cone®, and Rosemount conditioning orifice plate.

The S600+ supports an unprecedented number of global measurement standards including those covered by AGA, ISO, GPA, and GERG for gas applications, and API, ASTM, GPA, and NORSOK for liquid applications.

The S600+ uses distributed processing to achieve maximum performance. The S600+ contains a more powerful main processor than the original S600. The new CPU incorporates a hardware floating point processor and performs faster calculations than before, minimizing uncertainty and maximizing control.

Each additional expansion module utilizes local processors. The local processors convert inputs

from field instrumentation into engineering units and drive output signals for process control. Background checks are performed continuously and locally in each module to assure operational validity.

All metering calculations are performed using 64-bit (double) precision floating point numbers for the highest accuracy and API compliance. Cumulative totals are stored in three separate memory locations (Tri-reg format) for maximum integrity. The LogiCalc user language allows double precision mathematical functions to be performed on database objects.

Data logging and archiving capabilities have been significantly increased, and include an extended historian. A typical archive for a ten-stream application would include 333 days of monthly, weekly, daily and hourly reports; plus 50,000 events and 50,000 alarms. Support for FLOWCAL CFX files has been added for enhanced data integrity.

The S600+ includes an eight-line LCD display and a 29-key keypad. The display and keypad on the S600+ enable you to review or modify system parameters without the need for a PC. The display supports both English and Russian character sets.



FloBoss S600+ Flow Computer

Compatibility

The S600+ is fully backwards-compatible with the previous S600 model. The device utilizes existing configurations and tools that you are familiar with. This saves you time otherwise spent on learning and configuring with new tools, and helps to preserve your previous capital investments. You can easily convert existing S600 units to S600+ units, bringing all the benefits of the new product to your existing installation.

The S600+ has been designed to safeguard the future supply and support of the S600 family for many years to come. Investing in the new S600+ is low risk because the metrological calculations and code utilized in the S600+ has already been field proven in the S600. The S600+ provides increased processing power and memory. This allows Energy and Transportation Solutions to continue to add new features and functionality to the S600+, and ensures that users continue to benefit from their investment.

Communications

The S600+ offers multiple communication options that allow you to interface to a variety of devices (including intelligent primary elements such as USM and Coriolis meters, for which the S600+ has many embedded drivers). The S600+ can be connected to serial and network printers. The increased communication capability of the S600+ enables you to maximize the benefits that are being increasingly realized with these intelligent meters.

Additionally, you can use the same communication ports to access the process data that is calculated and stored by the S600+. Available communication interfaces include the following:

- Two independent Ethernet 10/100baseT ports.
- HART® communication is facilitated using an optional 12-channel HART module, supporting point-to-point and multi-drop architectures (up to 50 transmitters).
- An embedded web server allows remote access to the flow computer. This allows for remote diagnostics, report access, and configuration. Security is provided by way of user name and password protection with a detailed event log for audit purposes. Compatible with Windows® Internet Explorer® version 5 or greater (version

9 or greater must use compatibility mode) and Microsoft® Edge™ browser.

- Two configurable EIA-232 (RS-232) serial ports for connection to a printer or RTU.
- Seven EIA-422/485 (RS-422/RS-485) serial ports (up to 57600 bps baud) for connection to intelligent meters, Modbus SCADA data networks, or a DCS Supervisory System.
- USB 2.0 port for downloading reports and alarm/event logs.
- One dedicated configuration port for connection to the Config600™ configuration software.

Inputs/Outputs

The S600+ is supplied with one I/O (P144) module with one Pulse Mezzanine (P148) module. This provides multiple digital, analog, and pulse inputs and outputs. You can add two additional expansion modules to the S600+. The following expansion modules are available:

- I/O (P144) module – Provides additional analog and digital I/O.
- Prover (P154) module – Provides I/O for applications with a prover.
- HART (P188) module – Provides I/O for applications with HART transmitters.
- Pulse Mezzanine (P148) module – Provides pulse input capability.

Note: The Pulse Mezzanine module is installed as a daughterboard on an P144 or P154 module, and does not use an additional module slot.

Configuration

Configuration of the S600+ is done through the same Windows-based intelligent set-up tool as the S600 (Config600 Lite, Config600 Lite+, or Config600 Pro). You can create or edit configuration files using Config600 Lite+ and Config600 Pro (refer to Specification Sheet Config600). The S600+ provides the following functions through the Config600 configuration tool:

- Stream and station totalization.
- Batch totalization and retro-calculation.
- 3-term PID control with optional secondary control.
- Flow balancing.
- Flow scheduling.

-
- Automatic proving sequence, including control of two provers by a single S600+.
 - Support for Modbus/TCP or Modbus over Ethernet (10/100 Mbit/s full duplex).
 - Sampler control.
 - Station densitometer.
 - Station gas chromatograph.

- Comprehensive maintenance mode.
- Coriolis meter interface.
- Ultrasonic meter interface.

The S600+ can store up to 20 different user configurations which minimizes downtime in the event a replacement is required.

FloBoss S600+ Flow Computer

CPU Module		
Processor	ColdFire® MPC8313 333 MHz with integral floating point processor	
Operating System	Linux	
Memory	Flash	256 MB
	DRAM	128 MB
	SRAM	4 MB
	(battery backed)	Battery Type Lithium, 3 V, 1400 mAh (CR12600SE)
		Battery Life (typical) 5 to 7 years
		Hold-up Time (without power) 18 months
		Battery Backup Hold Time (after battery has failed its load test) 3 months at 20 °C
Data Logging	The S600+ supports up to 333 days of reports from a 10 stream application, where monthly, weekly, daily, and hourly reports are each archived as standard individual reports. Example: 11 months of monthly, weekly, daily, and hourly reports; plus 50,000 events and 50,000 alarms. Note: Should additional data archiving be required, the individual hourly reports can be stored within their respective daily reports.	
FlowCal CFX files	Common exchange file format (CFX) files direct from S600+ via webserver for Gas Ultrasonic, Liquid Ultrasonic, Liquid Coriolis, or Liquid Turbines (gas records type 2, liquid records type 12)	
Form C Watchdog Relay	Contact Form	Change-over contacts
	Max Current	1 A
	Max Voltage	50 Vdc
	Maximum Power	30 VA
	Control	Released on de-power, watchdog restart, or software-controlled
Clock	Type	Battery-backed calendar clock
	Clock Accuracy	0.5 seconds per day

Calculations

Gas	AGA3 (Volume and Mass), AGA5, AGA7, AGA8 (1994), AGA10 Supports AGA8 2017 Part 1 and Part 2 (GERG 2008) Note: AGA8 part 2 / GERG provides support for the following pure gases: Nitrogen, Carbon Dioxide, Hydrogen, Oxygen, Carbon Monoxide, Water Vapor, Hydrogen Sulfide, Helium, Argon Supports AGA6 Gas Master Metering Supports AGA9, using AGA7 to correct to base conditions Supports AGA11, using AGA8 to correct to base conditions ISO 5167, ISO 6976, ISO12213 – 2 & 3 API 21.1 GPA 2172/ASTM D3588 & 2145 Propylene API 11.3.3.2 Ethylene IUPAC. NIST 1045 & API 11.3.2.1 NX 19, NX 19 Mod S-GERG, M-GERG VDI/VDE 2040 PTZ Annubar V-Cone Steam & Water IAPWS-IF97/2007 – regions 1, 2, 4, & 5; IFC-67 – regions 1 & 2
Liquid	API CH 11.1 – 2004 / ASTM D 1250-04 / IP 200/04 and Addendum 1 2007 API CH 11.1 – Addendum 2 2019 ASTM D 1250-1980 and API MPMS Chapter 11.1 – 1980 (Tables 5, 5A, 5B, 5D, 6, 6A, 6B, 6C, 6D, 23, 23A, 23B, 23D, 23E, 24, 24A, 24B, 24C, 24D, 24E, 53, 53A, 53B, 54, 54A, 54B, 54C, 54D, 59A, 59B, 60A, 60B) ASTM/API 1952 (lookup tables for table 5, 6, 23 and 24) ASTM/API 1952 (algorithm support for tables 23, 24, 53, and 54) API 11.1, API 11.2.1, API 11.2.1M, API 11.2.2, API 11.2.2M, API 11.2.4 API 12.2.1, API 12.2.2, API 12.2.3, API 2540 API 21.2 ASTM D1555 & D1555M GPA TP15, GPA TP16, GPA TP25, GPA TP27 GPA 8217 and GPA 8117 Propylene API 11.3.3.2 Ethylene IUPAC, NIST 1045 & API 11.3.2.1 ISO 91/1 (IP2), ISO 91/2 (IP3) STO 5.9 08 B1, B2, B3 NORSOK I-105 Annex D (water in oil) Downer 1979 calculation of CPL ISO 17089-1 Annex E (ultrasonic meters, correction of meter geometry) NPD Densitometer algorithms Solartron/Micro Motion, Sarasota/PEEK

Prover	Compact, uni-directional, bi-directional, master meter, dual chronometry Support for NORSOK statistical evaluation of repeatability Support for 1, 2, or 4 sphere switches Supports AGA6 Gas Master Metering Each S600+ can support up to two provers (not simultaneously) Note: Master meter (MM) proving in Liquid Application support for MM volume vs Stream volume, MM mass vs Stream mass, and MM volume vs Stream mass. Master meter (MM) proving in Gas Application support for MM volume vs Stream volume only.		
Communications			
Configuration Port (located on the bottom of the front panel)	Connector	6-pin RJ12	
	Communication Standard	RS232D	
	Signals Supplied	Tx, Rx, CTS, GND	
	Baud Rate	2400, 4800, 9600, 19200, 38400, 57600	
	Format	Config600 Protocol	
Ethernet (NTWK1, NTWK2)	Speed	10 or 100 Mb/s, full Duplex	
	Media Connectivity	10 or 100baseT, twisted pair utilizing standard RJ45	
	Protocol	Modbus/TCP or Modbus over Ethernet Master, slave, and peer-to-peer Support for gas chromatographs, ultrasonic (Emerson Rosemount, Instromet, Caldon, and Sick), and Coriolis (Micro Motion)	
	Network printers	Can support multiple printers for separate reports, alarms, and events	
RS232 (COM3, COM4)	Connector	FCC-68 RJ45	
	Communication Standard	RS232D	
	Signals Supplied	Tx, Rx, RTS, CTS, DTR, DSR, GND, DCD	
	Baud Rate	2400, 4800, 9600, 19200, 38400, 57600	
	Format	Software configurable	
RS422/RS485 (COM5, COM6, COM7)	Data Protocol	ASCII, MODBUS (ASCII, RTU) Master, slave, and peer-to-peer Support for printers, gas chromatographs, ultrasonic (Emerson Rosemount, Instromet, Caldon, and Sick), and Coriolis (Micro Motion)	
	Connector	Standard screw terminals, 3.5 mm pitch	
	Communication Standard	Point-to-point	RS422
		Multi-drop	RS422 or RS485
	Signals Supplied	Tx+, Tx-, Rx+, Rx-, common shield	
	Termination Resistor	Jumper-selectable	

RS485 (COM9, COM10, COM11, COM12)	Baud Rate	2400, 4800, 9600, 19200, 38400, 57600	
	Format	Software controlled on each channel	
	Data Protocol	ASCII, MODBUS (ASCII, RTU)	
	Connector	Standard screw terminals, 3.5 mm pitch	
	Communication Standard	Multi-master	2-wire RS485
	Signals Supplied	Tx, Rx, common shield	
	Baud Rate	2400, 4800, 9600, 19200, 38400, 57600	
	Format	Software controlled on each channel	
USB	Data Protocol	ASCII, MODBUS (ASCII, RTU)	
	Connector	USB-A	
	Protocol	USB 2.0 Extract reports to USB flash drive (VFAT32 format)	

Inputs and Outputs

Analog Inputs	Type	1 to 5 V, 0 to 5 V, 4 to 20 mA, or 0 to 20 mA, opto-isolated. Two groups of 5 single-ended voltage or current inputs with each group sharing a common return; channels 11 and 12 are current input only.	
	Signal Level	0 to 5 V or 0 to 22 mA	
	Scan Rate	All channels can be acquired in less than 1 second	
	Resolution	24 bits, auto-zero, auto-calibrate	
	Conversion Time	Less than 100 ms per channel	
	Series Mode Rejection	>100 dB at 50 Hz and 60 Hz	
	Voltage Common Mode Range	±50 V as a group relative to computer ground	
	Common Mode Rejection	>100 dB at 50 Hz and 60 Hz	
	Input Impedance	>10 MΩ (voltage mode), approx 250 Ω (current mode)	
	Calibration Period	2 years to 0.005% of voltage 5 years to 0.01% of voltage	
	A/D Converter Inputs - Voltage Mode	Type of Inputs	Single-ended voltage inputs
		Input Range	0 to 5 V
		Accuracy	±0.005% of FSD at 23°C (73°F)
		Ambient Temperature Effect	± 7 ppm/°C (± 4 ppm/°F) from 23°C (73°F) in the range 0 to 45°C (32 to 113°F)
	A/D Converter Inputs - Current Mode	Type of Inputs	Single-ended current inputs
		Input Range	0 to 22 mA
		Accuracy	± 0.02% of FSD at 23°C (73°F)

		Ambient Temperature Effect	± 10 ppm/°C (± 5.5 ppm/°F) from 23 °C in the range 0 to 45 °C (32 to 113 °F)
Frequency/Density Inputs	Type	dc coupled, opto-isolated	
	Signal Level	3 V min pk-pk	
	Maximum Input Voltage	12 V pk-pk	
	Current Limit	Internally limited to 3 mA	
	Frequency Range	0 to 10 kHz	
	Accuracy	20 ppm	
	Resolution	5 nanoseconds	
Pulse Inputs – Flow	Type	Dual pulse or single pulse train, opto-isolated	
	Signal Level	±3.5 V to ±24 V, minimum 5 mA	
	Frequency Range	1Hz to 10 kHz	
	Security Monitoring	IP 252/76 (ISO 6551), level A or B	
Digital Status Inputs	Type	16 opto-isolated inputs, arranged in 4 groups of 4 with common positive connection to allow simple interface to open collector outputs	
	Max Input Voltage	30 V	
	Min Input On Voltage	12 V	
	Max Input Off Voltage	3 V	
	Input Impedance	2 to 2.5 kΩ typical	
	Protection	Reverse voltage protection	
PRT (RTD) Inputs	Type	4-wire only connection using Pt 100 transducers, opto-isolated	
	PRT (RTD) Resistance	100 Ω [Pt 100 to IEC 60751/DIN 43760 (Europe 0.00385), IPTS68 (American 0.00392), Callendar-Van Dusen]	
	Excitation Current	1 mA nominal	
	Measuring Range	60 to 216 Ω (–100°C to +300°C) (–148°F to +572°F)	
	Resolution	0.01°C (0.018°F)	
	Accuracy	–100°C to 200°C (–148°F to 392°F) ± 0.01% 200°C to 300°C (392°F to 572°F) ± 0.02%	
	PRT (RTD) Cables	Core resistance up to 600 Ω	
	Barriers	9 V, 100 Ω are satisfactory	
	Security	Continuous cable/PRT (RTD) integrity tests for earths/ground faults and open circuits	
Analog Outputs	Type	4 to 20 mA outputs, opto-isolated	
	Resolution	12-bit minimum	

	Accuracy	± 0.1% at 23°C (73°F)
	Ambient Temperature Effect	20 ppm/°C (11 ppm/°F) from 23°C (73°F)
	Load Loop Resistance	650 Ω maximum when powered by 15 V local isolated source 470 Ω – 1000 Ω when powered from 24 V external supply
	Maximum External Supply	32 V
	Output Form	Controlled active current sink to ground return of local floating supply
	Number of Field Connections	3 terminals per channel
	Update Time	Less than one second
	Type	3 groups of 4 with common negative, opto-isolated
	Frequency Range	0 to 0.5 Hz
	Max Output Saturation Voltage	1.5 V @ 100 mA
Digital Outputs	Low current Saturation Voltage	600 mV @ 1 mA to suit TTL style input, with 4.7 kΩ pull-up to 5 V
	Max Output Standoff Voltage	42 V (limited by transorb)
	Max Output Current	100 mA
	Reset/Power on State	All digital outputs OFF
	Type	Opto-isolated open-collectors
	Frequency Range	0 to 100 Hz
	Max Output Current	100 mA
Pulse Outputs	Max Output Saturation Voltage	1.5 V @ 100 mA
	Low Current Saturation Voltage	600 mV @ 1 mA to suit TTL style input
	Max Output Standoff Voltage	42 V (limited by transorb)
	Type	Digital ground-referenced open-collector
	Gating	Software controlled
Raw Pulse Outputs	Max Output Saturation	1.5 V

Max Output Standoff Voltage	26 V (limited by transorb)
Max Output Current	100 mA
Frequency Range	0 to 10 kHz
Minimum On Period	100 μ s (microseconds)
Use	To bus together several streams to a common prover computer

Expansion Modules

The FloBoss S600+ is supplied with one I/O (P144) module and one Pulse Mezzanine (P148) module as standard. Two additional module slots are available. Optional modules include the following:

I/O (P144) Module (1 standard, additional modules are optional)	Provides the S600+ with additional analog and digital I/O		
	Analog Inputs	Quantity	12
	Analog Outputs	Quantity	4
	Digital Inputs	Quantity	16
	Digital Outputs	Quantity	12
	Pulse Inputs – Flow (Pulse Mezzanine module)	Quantity	2 dual pulse or 4 single pulse
	Frequency Density Inputs	Quantity	3
	PRT (RTD) Inputs	Quantity	3
	Pulse Outputs	Quantity	5
	Raw Pulse Output	Quantity	1, raw pulse output for proving, 0 to 10 kHz
Pulse Mezzanine (P148) Module (integrated part of P144 or P154)	Provides S600+ with pulse input capability.		
	Quantity	2 dual pulse or 4 single pulse Note: The Pulse Mezzanine module is installed as a daughter board on an I/O (P144) or Prover (P154) module and does not use an additional module slot.	
Prover (P154) Module (optional)	Provides the S600+ with an interface to a prover		
	Prover Types	Compact, uni-directional, bi-directional, master meter, dual chronometry. Up to 4 sphere switch	
	Digital Inputs	Quantity	32
	Digital Outputs	Quantity	12
	Pulse Inputs – Flow (Pulse Mezzanine module)	Quantity	2 dual pulse or 4 single pulse
	Frequency Density Inputs	Quantity	2
	Pulse Outputs	Quantity	4

	Raw Pulse Input	Quantity	3
	Phase Loop Lock Input	Quantity	1
	Switch Detect	Quantity	4
HART (P188) Module (optional)	Provides the S600+ with an interface to HART transmitters		
	Quantity	12 channels. Each channel can be configured for point-point or multi-drop communications. In multi-drop mode, each channel can support up to 8 transmitters.	
	Modes	Supports dual master (primary or secondary), read only (cannot be used to change constants on the HART device). Does not support burst mode.	
	Max. Number of HART Transmitters	50	
	HART Compatibility	Version 4, 5, and 6 devices are fully supported	
		Version 7 devices with wired outputs that comply with version 5 are also supported	
Power			
Supply Voltage	20 to 32 Vdc, 30 Vdc nominal, 48 W maximum		
	Typical	18 W with 1 I/O module	
		24 W with 2 I/O modules	
		36 W with 3 I/O modules	
Protection	2.5 A anti-surge slow blow fuse		
Inrush Current	Thermistor protection providing 6 A at 25°C		
Supply Isolation	Three-way, galvanically isolated from input to computer, supply and ground, 50 V		
Hold-up Period	> 10 ms after power fail flag		
Maximum Input Ripple	2 V pk-pk		
Input Power Fail Flag	17 to19 Vdc		
Power Outputs	24 Vdc, 500 mA		
	15 Vdc, 100 mA		
	50 Vdc isolation		
	The outputs are isolated from the supply voltage and from the computer.		
Physical			
Enclosure	Type	Painted, welded steel outer case with plastic front panel	
	Classification	IP50 from front panel	
Dimensions	Case	84.5 mm W by 270 mm H by 303.8 mm D (3.327 in. W by 10.63 in. H by 11.94 in. D)	
	Display Keypad Molding	85 mm W by 269 mm H by 28 mm D (3.35 in. W by 10.59 in. H by 1.10 in. D)	
	Panel Cutout	66 mm W by 150 mm H (2.6 in. W by 5.9 in. H) with ±1 mm tolerance	

	Pitch Between Cases	110 mm (4.33 in.) giving 25 mm (0.98 in.) air gap
	Max Panel Thickness	10 mm (0.39 in.)
Weight	4.3 kg (9.48 lb) approximate with a single I/O module configuration	
Circuit Boards	Eurocard-compatible, slide in and out from the rear	
Access	Allow 300 mm (11.81 in.) clearance directly behind case for maintenance	
Display-Keypad	Graphics Display	LCD 128 x 64 pixel (8 lines of 20 alpha-characters) with LED backlight, using a Toshiba T6963 LCD controller
	Keyboard	29 self-colored silicon rubber keys with tactile feel
	Alarm/Status	3 color LED (green, amber, red)
	Configuration Port	RJ12 connector for the Config600 package on the bottom of the front panel molding
	Languages	The display supports English and Russian character sets
Environmental		
Operating Temperature	-10 °C to 55 °C (14 °F to 131 °F)	
Storage Temperature	-40 °C to 70 °C (-40 °F to 158 °F)	
Relative Humidity	90% non-condensing	
Conformal Coating	All circuit boards are conformal coated.	
Safety Classification	For use in a classified safe electrical area	
Approvals		
Approval Standards		EMC Directive 2014/30/EU
EMC Standards	IEC 61000-4-2 (Electrostatic Discharge) IEC 61000-4-3 (Radiated Immunity) IEC 61000-4-4 (Fast Transients) IEC 61000-4-5 (Surges) IEC 61000-4-6 (Conducted RF) IEC 61000-4-8 (Power Frequency Magnetic Field) IEC 61000-4-29 (Voltage Dips, Interrupts & Tolerance) IEC 55022 (Radiated Emissions)	
Metrology Standards		MID M1/E2 (Gas) of European Directive 2014/32/EU in accordance with WELMEC 8.8 EN 12405-1:2005+A2:2010 Certified by NMI Certain B.V. per certification number TC8219 MID M1/E2 (Liquid) of European Directive 2014/32/EU in accordance with WELMEC 8.8 OIML R117-1, Ed 2007 Certified by NMI Certain B.V. per certification number TC8218
		INMETRO, Portaria Inmetro/Dimel n.º 188, de 30 de setembro de 2016 INMETRO, Portaria Inmetro/Dimel nº 109, de 14 de junho de 2019

Miscellaneous Approvals

Customs Union



EAC Russia/Kazakhstan: Certificate of Conformity (EMC) TR CU 020 (EMC) Exp: 5-30-2026
EAC Ukraine: Metrology Pattern Approval UA-M-1-116-2013 Exp: 1/1/2100
EAC Kazakhstan: Metrology Pattern Approval 972 Exp: 3/31/2026
EAC Russia: Metrology Pattern Approval 64224-16 Exp: 6/16/2026

RoHS2

RoHS2 EU Directive 2011/65/EU

RoHS (China)



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Rosemount[™] 3144P Temperature Transmitter

with Rosemount X-well[™] Technology



With the Rosemount 3144P Temperature Transmitter, you gain greater visibility into your temperature processes so you can:

- Improve safety
- Comply with regulations
- Make the most of your limited resources
- Reach your production and quality targets

By leveraging Rosemount X-well Technology, advanced diagnostic capabilities, and the unparalleled reliability and accuracy of the transmitter, you can:

- Minimize off-spec product
- Reduce maintenance and downtime
- Improve the usage of your limited resources
- Meet regulatory demands

Features and benefits

Complete Point Solution™ for accurately measuring process temperature in monitoring applications without the requirement of a thermowell or process penetration



- Simplify temperature measurement point specification, installation, and maintenance and eliminate possible leak points.
- Calculate a repeatable and accurate process temperature measurement with an in-transmitter thermal conductivity algorithm.
- Measure pipe surface and ambient temperature and use the thermal conductivity properties of the installation and process piping in order to provide an accurate process measurement.

Access information when you need it with asset tags

Newly shipped devices include a unique QR code asset tag, which enables you to access serialized information directly from the device. With this capability, you can:

- Access device drawings, diagrams, technical documentation, and troubleshooting information in your MyEmerson account.
- Improve mean time to repair and maintenance efficiency.
- Ensure confidence that you have located the correct device.
- Eliminate the time-consuming process of locating and transcribing nameplates to view asset information.

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Deliver unmatched field reliability and innovative process measurement solutions

- Superior accuracy and stability
- Dual and single sensor capability with universal sensor inputs (RTD, thermocouple, mV, ohms)
- Comprehensive sensor and process diagnostics offering
- SIL3 capable: IEC 61508 certified by an accredited third party agency for use in safety instrumented systems up to SIL 3 (minimum requirement of single use [1oo1] for SIL 2 and redundant use [1oo2] for SIL 3)
- Dual-compartment housing
- Large LCD display
- 4–20 mA HART® with selectable revisions (5 and 7)
- FOUNDATION™ Fieldbus, compliant to ITK 6.0 and NE107 standards



Improve efficiency with best-in-class product specifications and capabilities

- Reduce maintenance and improve performance with industry leading accuracy and stability.
- Improve measurement accuracy by 75 percent with transmitter-sensor matching.
- Ensure process health with system alerts and user-friendly device dashboards.
- Easily check device status and values on local LCD display with large percent range graph.
- Achieve high reliability and installation ease with the industry's most rugged dual compartment design.

Optimize measurement reliability with diagnostics designed for any protocol on any host system



- Thermocouple degradation diagnostic monitors the health of a thermocouple loop, enabling preventative maintenance.
- Minimum and maximum temperature tracking tracks and records temperature extremes of the process sensors and the ambient environment.
- Sensor drift alert detects sensor drift and alerts the user.
- The Hot Backup™ feature provides temperature measurement redundancy.

Explore the benefits of a Complete Point Solution from Emerson

- An “Assemble To Sensor” option enables Emerson to provide a complete point temperature solution, delivering an installation-ready transmitter and sensor assembly.
- Emerson offers a selection of RTDs, thermocouples, and thermowells that bring superior durability and Rosemount reliability to temperature sensing, complementing the Rosemount Transmitter portfolio.



Experience global consistency and local support from numerous worldwide Emerson manufacturing sites



- World-class manufacturing provides globally consistent products from every factory and the capacity to fulfill the needs of any project, large or small.
- Experienced instrumentation consultants help select the right product for any temperature application and advise on best installation practices.
- An extensive global network of Emerson service and support personnel can be on-site when and where they are needed.
- Make wireless installation and configuration easy with the Emerson Wireless Gateway.

Looking for a wireless temperature solution? For wireless applications that require superior performance and unmatched reliability, consider the [Rosemount 648 Wireless Temperature Transmitter](#).

Ordering information



The industry-leading Rosemount 3144P Temperature Transmitter delivers unmatched field reliability and innovative process measurement solutions and diagnostics.

Transmitter features include:

- Temperature measurement assembly with Rosemount X-well Technology (option code PT)
- Dual and single sensor input capabilities
- Transmitter-sensor matching (option code C2)
- Integral transient protector (option code T1)
- IEC 61508 Safety Certificate of Compliance (option code QT)
- Advanced sensor and process diagnostics (option codes D01 and DA1)
- Large, easy to read LCD display (option code M5)
- “Assemble to Sensor” option (option code XA)

CONFIGURE >

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Online product configurator

Many products are configurable online using our Product Configurator. Select the **Configure** button or visit [Emerson.com](https://emerson.com) to start. With this tool's built-in logic and continuous validation, you can configure your products more quickly and accurately.

Model codes

Model codes contain the details related to each product. Exact model codes will vary. An example of a typical model code is shown in [Figure 1](#).

Figure 1: Model code example

3144P D1 A 1 NA	M5 DA1 Q4
1	2

1. Required model components (choices available on most)
2. Additional options (variety of features and functions that may be added to products)

Specifications and options

The purchaser of the equipment must specify and select the product materials, options, or components.

Optimizing lead time

The starred offerings (★) represent the most common options and should be selected for the fastest delivery times. The non-starred offerings are subject to additional delivery lead time.

Required model components

Model

Code	Description	
3144P	Temperature transmitter	★

Housing style

Code	Description	Material	Conduit entry size	
D1	Field mount housing, dual-compartment housing	Aluminum	½–14-in. NPT	★
D2	Field mount housing, dual-compartment housing	Aluminum	M20 x 1.5 (CM20)	★
D3	Field mount housing, dual-compartment housing	Aluminum	PG 13.5 (PG11)	★
D4	Field mount housing, dual-compartment housing	Aluminum	JIS G ½	★
D5	Field mount housing, dual-compartment housing	Stainless steel	½–14-in. NPT	★
D6	Field mount housing, dual-compartment housing	Stainless steel	M20 x 1.5 (CM20)	★
D7	Field mount housing, dual-compartment housing	Stainless steel	PG 13.5 (PG11)	★
D8	Field mount housing, dual-compartment housing	Stainless steel	JIS G ½	★
D9	Field mount housing, dual-compartment housing	Aluminum, ultra low copper	½–14-in. NPT	
D0	Field mount housing, dual-compartment housing	Aluminum, ultra low copper	M20 x 1.5 (CM20)	

Transmitter output

Code	Description	
A	4–20 mA with digital signal based on HART Protocol	★
F	FOUNDATION Fieldbus digital signal (includes three analog input function block and backup link active scheduler)	★

Measurement configuration

Code	Description	
1	Single-sensor input	★
2	Dual-sensor input	★

Product certification

Code	Description	
NA	No approval	★
E5	USA explosion-proof, dust ignition-proof, and non-incendive	★
I5 ⁽¹⁾	USA Intrinsically Safe (IS) and non-incendive (includes standard IS and FISCO for Fieldbus units)	★
K5 ⁽¹⁾	USA IS, non-incendive, and explosion-proof combination (includes standard IS and FISCO for Fieldbus units)	★
KB ⁽¹⁾	USA and Canada IS, explosion-proof, and non-incendive combination (includes standard IS and FISCO for Fieldbus units)	★
I6 ⁽¹⁾	Canada IS/FISCO, and Division 2 (includes standard IS and FISCO for Fieldbus units)	★
K6 ⁽¹⁾	Canada IS, FISCO Division 2, and explosion-proof combination (includes standard IS, FISCO for Fieldbus units)	★
E1	ATEX flameproof approval	★
N1	ATEX type n approval	★
I1 ⁽¹⁾	ATEX intrinsic safety approval (includes standard IS and FISCO for Fieldbus units)	★
K1 ⁽¹⁾	ATEX IS, flameproof, dust ignition-proof and type n combination (includes standard IS and FISCO for Fieldbus units)	★
ND	ATEX dust ignition-proof approval	★
KA ⁽¹⁾	ATEX/Canada intrinsic safety, explosion-proof combination (includes standard IS and FISCO for Fieldbus units)	★
E7	IECEx flameproof approval	★
N7	IECEx Type 'n' approval	★
I7 ⁽¹⁾⁽²⁾	IECEx intrinsic safety	★
K7 ⁽¹⁾⁽²⁾	IECEx intrinsic safety, flameproof, dust ignition-proof and type n combination	★
E2 ⁽²⁾	Brazil flameproof	★
I2 ⁽²⁾	Brazil intrinsic safety	★
E4 ⁽²⁾	Japan flameproof approval	★
E3 ⁽²⁾	China flameproof approval	★
I3 ⁽¹⁾⁽²⁾	China intrinsic safety	★
N3	China type n	★
KM	Technical Regulations Customs Union (EAC) flameproof, intrinsic safety	★
IM	Technical Regulations Customs Union (EAC) intrinsic safety	★
EM	Technical Regulations Customs Union (EAC) flameproof	★

(1) When IS approval is ordered on a FOUNDATION™ Fieldbus, both standard IS and FISCO IS approvals apply. The device label is marked appropriately.

(2) Consult factory for availability when ordering with HART or FOUNDATION Fieldbus models.

Additional options

Plantweb™ control functionality

Code	Description	
A01	FOUNDATION™ Fieldbus advanced control function block suite	★

Plantweb advanced diagnostic functionality

Code	Description	
D01	FOUNDATION Fieldbus sensor and process diagnostic suite: thermocouple diagnostic, minimum/maximum tracking	★
DA1	sensor and process diagnostic suite: thermocouple diagnostic, minimum/maximum tracking	★

Enhanced performance

Code	Description	
PT ⁽¹⁾	Temperature measurement assembly with Rosemount X-well Technology	★
P8 ⁽²⁾	Enhanced transmitter accuracy	★

(1) Not available with FOUNDATION Fieldbus models.

(2) Enhanced accuracy only applies to RTDs; however the option can be ordered with any sensor type.

Mounting bracket

Code	Description	
B4	"U" mounting bracket for 2-in. pipe mounting - all SST	★
B5	"L" mounting bracket for 2-in. pipe or panel mounting - all SST	★
BH	"L" mounting bracket for 2-in. pipe or panel mounting - 316 SST	★

Display

Code	Description	
M5	LCD display	★

External ground

Code	Description	
G1	External ground lug assembly	★

Transient protector

Code	Description	
T1	Integral transient protector	★

Software configuration

Not available with FOUNDATION™ Fieldbus models.

Code	Description	
C1	Custom configuration of date, descriptor, and message (requires Configuration Data Sheet with order)	★

Line filter

Code	Description	
F5	50 Hz line voltage filter	★

Alarm level configuration

Not available with FOUNDATION™ Fieldbus models.

Code	Description	
A1	NAMUR alarm and saturation levels, high alarm	★
CN	NAMUR alarm and saturation levels, low alarm	★

Low alarm

Code	Description	
C8	Low alarm (standard Rosemount alarm and saturation values)	★

Sensor trim

Code	Description	
C2	Transmitter-sensor matching – trim to PT100 RTD calibration schedule (Callendar-Van Dusen constants)	★
C7	Trim to non-standard sensor (special sensor–customer must provide sensor information)	

Five-point calibration

Code	Description	
C4	5-point calibration (requires the Q4 option code to generate a calibration certificate)	★

Calibration certification

Code	Description	
Q4	Calibration certificate (3-point calibration)	★
QG	Calibration certificate and GOST verification certificate	★
QP	Calibration certificate and tamper evident seal	★

Dual-input custom configuration (only with measurement type option code 2)

Code	Description	
U1	Hot Backup™	★
U2 ⁽¹⁾	Average temperature with Hot Backup and sensor drift alert – warning mode	★
U3 ⁽¹⁾	Average temperature with Hot Backup and sensor drift alert – alarm mode	★
U5	Differential temperature	★
U6	Average temperature	★
U7	First good temperature	★
U4	Two independent sensors	

(1) Not available with FOUNDATION™ Fieldbus models.

Custody transfer

Not available with FOUNDATION Fieldbus models.

Code	Description	
D3	Custody transfer approval (Canada)	
D4	MID custody transfer (Europe)	

Quality certification for safety

Code	Description	
QS	Prior-use certificate of FMEDA data (only)	★
QT	Safety-certified to IEC 61508 with certificate of FMEDA data (HART only)	★

Shipboard Certification

Code	Description	
SBS	American Bureau of Shipping (ABS) Type Approval	★
SBV	Bureau Veritas (BV) Type Approval	★
SDN	Det Norske Veritas (DNV) Type Approval	★
SLL	Lloyd's Register (LR) Type Approval	★

Cold temperature

Code	Description	
BR6	-76 °F (-60 °C) cold temperature operation	★

Conduit electrical connector

Available with intrinsically safe approvals only. For FM Intrinsically Safe or non-incendive approval (option code I5), install in accordance with Rosemount drawing 03151-1009 to maintain 4X rating.

Code	Description	
GE	M12, 4-pin, male connector (eurofast®)	★

Code	Description	
GM	A size mini, 4-pin, male connector (minifast®)	★

HART revision configuration

Code	Description	
HR7	Configured for HART Revision 7	★

Assemble to option

Code	Description	
XA	Sensor specified separately and assembled to transmitter	★

Extended product warranty

Code	Description	
WR3	Three-year limited warranty	★
WR5	Five-year limited warranty	★

How to order Rosemount X-well Technology

Rosemount X-well™ Technology is for temperature monitoring applications and is not intended for control or safety applications. It is available in the Rosemount 3144P Temperature Transmitter in a factory assembled direct mount configuration with a Rosemount 0085 Pipe Clamp Sensor. It cannot be used in a remote mount configuration. Rosemount X-well Technology will only work as specified with factory supplied and assembled Rosemount 0085 Sensor silver tipped single element sensor with an 3.15-in. (80 mm) extension length. It will not work as specified if used with other sensors.

Table 1: Rosemount 3144P Temperature Transmitter X-well Technology option code requirements

Code	Description
D1-D4	Aluminum field mount housing
PT	Temperature measurement assembled with Rosemount X-well Technology
A	4–20 mA with digital signal based on HART Protocol
XA	Sensor specified separately and assembled to transmitter
C1	Custom configuration of date, descriptor, message, and wireless parameters (requires Configuration Data Sheet with order)
HR7	Configured for HART Revision 7

Table 2: Rosemount 0085 Pipe Clamp Sensor option code requirements for use with X-well Technology

Code	Description
N	No connection head
3	Sensor connection
P1	Sensor type
J	Extension type
0080	Extension length
XA	Assemble sensor to specific temperature transmitter

Rosemount X-well assemblies are available in most Rosemount 0085 Pipe Clamp Sensor diameter sizes.

Typical model numbers of the assembly:

3144P D 1A 1 NA M5 PT C1 HR7 XA

0085 N 3 P1 J 0080 U 0169 N XA

Specifications

HART[®] and FOUNDATION[™] Fieldbus

Functional specifications

Inputs

User-selectable. See [Table 3](#) for sensor options.

Output

Two-wire device with either 4–20 mA/HART, linear with temperature or input, or completely digital output with FOUNDATION[™] Fieldbus Communication (ITK 6.0.1 compliant).

Isolation

Input/output isolation specified to 500 Vdc (500 Vrms 707 V peak) at 50/60 Hz.

Humidity limits

0–99 percent relative humidity, non-condensing

Update time

Approximately 0.5 seconds for a single sensor (one second for dual sensors).

Physical specifications

Material selection

Emerson provides a variety of Rosemount products with various product options and configurations, including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options, and components for the particular application. Emerson is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration, or materials of construction selected.

Conformance to specification ($\pm 3\sigma$ [Sigma])

Technology leadership, advanced manufacturing techniques, and statistical process control ensure specification conformance to at least $\pm 3\sigma$.

Conduit connections

The standard field mount housing has ½–14-in. NPT conduit entries. Additional conduit entry types are available, including PG13.5 (PG11), M20 3 1.5 (CM20), or JIS G ½. When any of these additional entry types are ordered, adapters are placed in the standard field housing so these alternative conduit types fit correctly.

Materials of construction

Enclosure	Low-copper aluminum or CF-8M (cast version of 316 stainless steel)
Paint	Polyurethane
O-rings	Buna N

Mounting specification

Transmitters may be attached directly to the sensor. Optional mounting brackets (codes B4 and B5) allow for remote mounting. See [Figure 6](#).

Transmitter weight

Aluminum	3.1 lb. (1.4 kg)
Stainless steel	7.8 lb. (3.5 kg)

Enclosure ratings

Type 4X
IP66 and IP68

Stability

RTDs:	±0.1 percent of reading or 0.1 °C (0.18 °F), whichever is greater, for two years for RTDs.
Thermocouples:	±0.1 percent of reading or 0.1 °C (0.18 °F), whichever is greater, for one year for thermocouples.

Five-year stability

RTDs:	±0.25 percent of reading or 0.25 °C, whichever is greater, for five years.
Thermocouples:	±0.5 percent of reading or 0.5 °C, whichever is greater, for five years.

Vibration effect

Tested to the following with no effect on performance per IEC 60770-1, 1999:

Frequency	Vibration
10 to 60 Hz	0.21 mm displacement
60 to 2000 Hz	3 g peak acceleration

Self calibration

The analog-to-digital measurement circuitry automatically self-calibrates for each temperature update by comparing the dynamic measurement to extremely stable and accurate internal reference elements.

Radio frequency interference (RFI) effect

Worst case RFI effect is equivalent to the transmitter’s nominal accuracy specification, when tested in accordance with IEC 61000-4-3, 30 V/m (HART®)/20 V/m (HART thermocouple (T/C)) /10 V/m (FOUNDATION Fieldbus), 80 to 1000 MHz, with unshielded cable.

Electromagnetic compatibility (EMC)

Meets all industrial environment requirements of EN61326 and NAMUR NE-21. Maximum deviation <1 percent span during EMC disturbance.

Note

During surge event, device may exceed maximum EMC deviation limit; however, device will self-recover and return to normal operation within specified start-up time.

External ground screw assembly

The external ground screw assembly can be ordered by specifying [code G1](#). However, some approvals include the ground screw assembly in the transmitter shipment; hence it is not necessary to order code G1. The following table identifies which approval options include the external ground screw assembly.

Approval type	External ground screw assembly included? ⁽¹⁾
E5, I1, I2, I5, I6, I7, K5, K6, KB, NA	No—order option code G1
E1, E2, E3, E4, E7, K1, K7, KA, N1, N7, ND, NF	Yes

(1) The parts contained with the G1 option are included with the Integral Protector option code T1. When ordering T1, the G1 option code does not need to be ordered separately.

Hardware tag

- No charge
- Two lines of 28 characters (56 characters total)
- Tags are stainless steel
- Permanently attached to transmitter
- Character height is 1/16-in. (1.6 mm)
- A wire-on tag is available upon request. Five lines of 12 characters (60 characters total)

Software tag

- HART® transmitter can store up to eight characters in HART 5 mode and 32 characters in HART 7 mode. FOUNDATION Fieldbus transmitters can store up to 32 characters.
- Can be ordered with different software and hardware tags.
- If no software tag characters are specified, the first eight characters of the hardware tag are the default.

Transmitter accuracy

Table 3: Transmitter accuracy

Sensor options	Sensor reference	Input ranges		Minimum span ⁽¹⁾		Digital accuracy ⁽²⁾		Enhanced accuracy ⁽³⁾	D/A accuracy ⁽⁴⁾⁽⁵⁾
2-, 3-, 4-wire RTDs		°C	°F	°C	°F	°C	°F	°C	
Pt 100 ($\alpha = 0.00385$)	IEC 751	–200 to 850	–328 to 1562	10	18	± 0.10	± 0.18	± 0.08	± 0.02% of span
Rosemount X-well Pt 100	($\alpha = 0.00385$)	IEC 751	–58 to 572	10	18	± 0.29	± 0.52	N/A	± 0.02% of span
Pt 200 ($\alpha = 0.00385$)	IEC 751	–200 to 850	–328 to 1562	10	18	± 0.22	± 0.40	± 0.176	± 0.02% of span
Pt 500 ($\alpha = 0.00385$)	IEC 751	–200 to 850	–328 to 1562	10	18	± 0.14	± 0.25	± 0.112	± 0.02% of span
Pt 1000 ($\alpha = 0.00385$)	IEC 751	–200 to 300	–328 to 1193	10	18	± 0.10	± 0.18	± 0.08	± 0.02% of span
Pt 100 ($\alpha = 0.003916$)	JIS 1604	–200 to 645	–328 to 1193	10	18	± 0.10	± 0.18	± 0.08	± 0.02% of span
Pt 200 ($\alpha = 0.003916$)	JIS 1604	–200 to 645	–94 to 572	10	± 0.22	± 0.40	± 0.40	± 0.176	± 0.02% of span
Ni 120	Edison curve no. 7	–70 to 300	–58 to 482	10	18	± 0.08	± 0.14	± 0.064	± 0.02% of span

Table 3: Transmitter accuracy (continued)

Sensor options	Sensor reference	Input ranges		Minimum span ⁽¹⁾		Digital accuracy ⁽²⁾		Enhanced accuracy ⁽³⁾	D/A accuracy ⁽⁴⁾⁽⁵⁾
Cu 10	Edison copper winding no. 15	-50 to 250	-328 to 1022	10	18	± 1.00	± 1.80	± 0.8	± 0.02% of span
Pt 50 (α=0.00391)	GOST 6651-94	-200 to 550	-328 to 1022	10	18	± 0.20	± 0.36	± 0.16	± 0.02% of span
Pt 100 (α=0.00391)	GOST 6651-94	-200 to 550	-328 to 1022	10	18	± 0.10	± 0.18	± 0.08	± 0.02% of span
Cu 50 (α=0.00426)	GOST 6651-94	-50 to 200	-58 to 392	10	18	± 0.34	± 0.61	± 0.272	± 0.02% of span
Cu 50 (α=0.00428)	GOST 6651-94	-185 to 200	-301 to 392	10	18	± 0.34	± 0.61	± 0.272	± 0.02% of span
Cu 100 (α=0.00426)	GOST 6651-94	-50 to 200	-58 to 392	10	18	± 0.17	± 0.31	± 0.136	± 0.02% of span
Cu 100 (α=0.00428)	GOST 6651-94	-185 to 200	-301 to 392	10	18	± 0.17	± 0.31	± 0.136	± 0.02% of span
Thermocouples⁽⁶⁾									
Type B ⁽⁷⁾	NIST monograph 175, IEC 584	100 to 1820	212 to 3308	25	45	± 0.75	± 1.35	N/A	± 0.02% of span
Type E	NIST monograph 175, IEC 584	-200 to 1000	-328 to 1832	25	45	± 0.20	± 0.36	N/A	± 0.02% of span
Type J	NIST monograph 175, IEC 584	-180 to 760	-292 to 1400	25	45	± 0.25	± 0.45	N/A	± 0.02% of span
Type K ⁽⁸⁾	NIST monograph 175, IEC 584	-180 to 1372	-292 to 2501	25	45	± 0.25	± 0.45	N/A	± 0.02% of span
Type N	NIST monograph 175, IEC 584	-200 to 1300	-328 to 2372	25	45	± 0.40	± 0.72	N/A	± 0.02% of span
Type R	NIST monograph 175, IEC 584	0 to 1768	32 to 3214	25	45	± 0.60	± 1.08	N/A	± 0.02% of span
Type S	NIST monograph 175, IEC 584	0 to 1768	32 to 3214	25	45	± 0.50	± 0.90	N/A	± 0.02% of span
Type T	NIST monograph 175, IEC 584	-200 to 400	-328 to 752	25	45	± 0.25	± 0.45	N/A	± 0.02% of span
DIN Type L	DIN 43710	-200 to 900	-328 to 1652	25	45	± 0.35	± 0.63	N/A	± 0.02% of span
DIN Type U	DIN 43710	-200 to 600	-328 to 1112	25	45	± 0.35	± 0.63	N/A	± 0.02% of span
Type W5Re/W26Re	ASTM E 988-96	0 to 2000	32 to 3632	25	45	± 0.70	± 1.26	N/A	± 0.02% of span
GOST Type L	GOST R 8.585-2001	-200 to 800	-392 to 1472	25	45	± 0.25	± 0.45	N/A	± 0.02% of span

Table 3: Transmitter accuracy (continued)

Sensor options	Sensor reference	Input ranges	Minimum span ⁽¹⁾	Digital accuracy ⁽²⁾	Enhanced accuracy ⁽³⁾	D/A accuracy ⁽⁴⁾⁽⁵⁾
Other input types						
Millivolt input		-10 to 100 mV	3 mV	± 0.015 mV	N/A	± 0.02% of span
2-, 3-, 4-wire Ohm Input		0 to 2000 ohms	20 ohm	± 0.35 ohm	N/A	± 0.02% of span

(1) No minimum or maximum span restrictions within the input ranges. Recommended minimum span will hold noise within accuracy specification with damping at zero seconds.

(2) Digital accuracy: digital output can be accessed by the Field Communicator.

(3) Enhanced accuracy can be ordered using the P8 model code.

(4) Total analog accuracy is the sum of digital and D/A accuracies.

(5) Applies to 4–20 mA devices.

(6) Total digital accuracy for thermocouple measurement: sum of digital accuracy +0.25 °C (0.45 °F) (cold junction accuracy)

(7) Digital accuracy for NIST Type B is ±3.0 °C (±5.4 °F) from 100 to 300 °C (212 to 572 °F).

(8) Digital accuracy for NIST Type K is ±0.50 °C (±0.9 °F) from -180 to -90 °C (-292 to -130 °F).

Reference accuracy example (HART Protocol only)

When using a Pt 100 ($\alpha = 0.00385$) sensor input with a 0 to 100 °C span: Digital accuracy would be ±0.10 °C, D/A accuracy would be ±0.02% of 100 °C or ±0.02 °C, Total = ±0.12 °C.

Differential capability exists between any two sensor types (dual-sensor option)

For all differential configurations, the input range is X to Y where:

- X = Sensor 1 minimum – Sensor 2 maximum
- Y = Sensor 1 maximum – Sensor 2 minimum

Digital accuracy for differential configurations (dual-sensor option, HART Protocol only)

- Sensor types are similar (e.g., both RTDs or both thermocouples (T/Cs)): Digital accuracy = 1.5 times worst case accuracy of either sensor type
- Sensor types are dissimilar (e.g., one RTD, one T/C): Digital accuracy = Sensor 1 accuracy + Sensor 2 accuracy

Ambient temperature effect

Transmitters may be installed in locations where the ambient temperature is between -40 and 85 °C (-40 and 185 °F). To maintain excellent accuracy performance, each transmitter is individually characterized over this ambient temperature range at the factory.

Table 4: Ambient temperature effect on digital accuracy

Sensor options	Sensor reference	Effect per 1.0 °C (1.8 °F) change in ambient ⁽¹⁾⁽²⁾	Input temperature (T)	D/A effect ⁽³⁾
2-, 3-, or 4-wire RTDs				
Pt 100 ($\alpha = 0.00385$)	IEC 751	0.0015 °C (0.0027 °F)	Entire sensor input range	0.001% of span
Rosemount X-well Pt 100 ($\alpha = 0.00385$)	IEC 751	0.0058 °C (0.0104 °F)	Entire sensor input range	0.001% of span
Pt 200 ($\alpha = 0.00385$)	IEC 751	0.0023 °C (0.00414 °F)	Entire sensor input range	0.001% of span
Pt 500 ($\alpha = 0.00385$)	IEC 751	0.0015 °C (0.0027 °F)	Entire sensor input range	0.001% of span
Pt 1000 ($\alpha = 0.00385$)	IEC 751	0.0015 °C (0.0027 °F)	Entire sensor input range	0.001% of span

Table 4: Ambient temperature effect on digital accuracy (*continued*)

Sensor options	Sensor reference	Effect per 1.0 °C (1.8 °F) change in ambient ⁽¹⁾⁽²⁾	Input temperature (T)	D/A effect ⁽³⁾
Pt 100 ($\alpha = 0.003916$)	JIS 1604	0.0015 °C (0.0027 °F)	Entire sensor input range	0.001% of span
Pt 200 ($\alpha = 0.003916$)	JIS 1604	0.0023 °C (0.00414 °F)	Entire sensor input range	0.001% of span
Ni 120	Edison curve no. 7	0.0010 °C (0.0018 °F)	Entire sensor input range	0.001% of span
Cu 10	Edison copper winding no. 15	0.015 °C (0.0027 °F)	Entire sensor input range	0.001% of span
Pt 50 ($\alpha = 0.00391$)	GOST 6651-94	0.003 °C (0.0054 °F)	Entire sensor input range	0.001% of span
Pt 100 ($\alpha = 0.00391$)	GOST 6651-94	0.0015 °C (0.0027 °F)	Entire sensor input range	0.001% of span
Cu 50 ($\alpha = 0.00426$)	GOST 6651-94	0.003 °C (0.0054 °F)	Entire sensor input range	0.001% of span
Cu 50 ($\alpha = 0.00428$)	GOST 6651-94	0.003 °C (0.0054 °F)	Entire sensor input range	0.001% of span
Cu 100 ($\alpha = 0.00426$)	GOST 6651-94	0.0015 °C (0.0027 °F)	Entire sensor input range	0.001% of span
Cu 100 ($\alpha = 0.00428$)	GOST 6651-94	0.0015 °C (0.0027 °F)	Entire sensor input range	0.001% of span
Thermocouples				
Type B	NIST monograph 175, IEC 584	0.014 °C 0.029 °C – 0.0021% of (T – 300) 0.046 °C – 0.0086% of (T – 100)	T ≥ 1000 °C 300 °C ≤ T < 1000 °C 100 °C ≤ T < 300 °C	0.001% of span
Type E	NIST monograph 175, IEC 584	0.004 °C + 0.00043% of T	N/A	0.001% of span
Type J	NIST monograph 175, IEC 584	0.004 °C + 0.00029% of T 0.004 °C + 0.0020% of abs. val. T	T ≥ 0 °C T < 0 °C	0.001% of span
Type K	NIST monograph 175, IEC 584	0.005 °C + 0.00054% of T 0.005 °C + 0.0020% of abs. val. T	T ≥ 0 °C T < 0 °C	0.001% of span
Type N	NIST monograph 175, IEC 584	0.005 °C + 0.00036% of T	All	0.001% of span
Type R	NIST monograph 175, IEC 584	0.015 °C 0.021 °C – 0.0032% of T	T ≥ 200 °C T < 200 °C	0.001% of span
Type S	NIST monograph 175, IEC 584	0.015 °C 0.021 °C – 0.0032% of T	T ≥ 200 °C T < 200 °C	0.001% of span
Type T	NIST monograph 175, IEC 584	0.005 °C 0.005 °C + 0.0036% of abs. val. T	T ≥ 0 °C T < 0 °C	0.001% of span
DIN Type L	DIN 43710	0.0054 °C + 0.00029% of R 0.0054 °C + 0.0025% of abs. val. T	T ≥ 0 °C T < 0 °C	0.001% of span

Table 4: Ambient temperature effect on digital accuracy (continued)

Sensor options	Sensor reference	Effect per 1.0 °C (1.8 °F) change in ambient ⁽¹⁾⁽²⁾	Input temperature (T)	D/A effect ⁽³⁾
DIN Type U	DIN 43710	0.0064 °C 0.0064 °C + 0.0043% of abs. val. T	T ≥ 0 °C T < 0 °C	0.001% of span
Type W5Re/W26Re	ASTM E 988-96	0.016 °C 0.023 °C + 0.0036% of T	T ≥ 200 °C T < 200 °C	0.001% of span
GOST Type L	GOST R 8.585-2001	0.005 > 0 °C 0.005 - 0.003% < 0 °C	N/A	0.001% of span
Other input types				
Millivolt Input		0.00025 mV	Entire sensor input range	0.001% of span
2-, 3-, 4-wire Ohm Input		0.007 Ω	Entire sensor input range	0.001% of span

(1) Change in ambient is in reference to the calibration temperature of the transmitter (20 °C [68 °F]).

(2) Ambient temperature effect specification valid over minimum temperature span of 28 °C (50 °F).

(3) Applies to /4-20 mA devices.

Process temperature effects

Table 5: Ambient and process temperature difference effect on digital accuracy

Sensor option	Sensor reference	Effects per 1.0 °C (1.8 °F) difference in ambient and process temperature ⁽¹⁾	Input temperature (T)
Rosemount X-well Pt 100 (α = 0.00385)	IEC 751	± 0.01 °C (0.018 °F)	Entire sensor input range

(1) Valid under steady state process and ambient conditions.

Temperature effects example

When using a Pt 100 (α = 0.00385) sensor input with a 0 to 100 °C span at 30 °C ambient temperature, the following statements would be true:

Digital temp effects

$$0.0015 \text{ }^{\circ}\text{C}/^{\circ}\text{C} \times (30 - 20 \text{ }^{\circ}\text{C}) = 0.015 \text{ }^{\circ}\text{C}$$

D/A effects (HART/4-20 mA only)

- $[0.001\%/^{\circ}\text{C of span}] \times 100 \text{ }^{\circ}\text{C} \times |(30 - 20 \text{ }^{\circ}\text{C})| = \text{ }^{\circ}\text{C DA effect}$
- $[0.001\%/^{\circ}\text{C} \times 100] \times |(30 - 20)| = 0.01 \text{ }^{\circ}\text{C}$

Worst case error

$$\text{Digital} + \text{D/A} + \text{Digital temp effects} + \text{D/A effects} = 0.10 \text{ }^{\circ}\text{C} + 0.02 \text{ }^{\circ}\text{C} + 0.015 \text{ }^{\circ}\text{C} + 0.01 \text{ }^{\circ}\text{C} = 0.145 \text{ }^{\circ}\text{C}$$

Total probable error

$$\sqrt{0.10^2 + 0.02^2 + 0.015^2 + 0.01^2} = 0.10 \text{ }^{\circ}\text{C}$$

Rosemount X-well temperature effects example

When using Rosemount X-well Technology at 30 °C ambient temperature and 100 °C process temperature:

Digital ambient temperature effects:

- $0.0058 \text{ }^{\circ}\text{C} \times (30 - 20) = 0.058 \text{ }^{\circ}\text{C}$

Process temperature effects:

- $0.01\text{ }^{\circ}\text{C} \times (100 - 30) = 0.70\text{ }^{\circ}\text{C}$

Worst case error:

- Digital accuracy + Digital ambient temperature effects + Process temperature effects =
 $0.29\text{ }^{\circ}\text{C} + 0.058\text{ }^{\circ}\text{C} + 0.70\text{ }^{\circ}\text{C} = 1.05\text{ }^{\circ}\text{C}$

Total probable error:

- $\sqrt{0.29^2 + 0.058^2 + 0.70^2} = 0.76\text{ }^{\circ}\text{C}$

HART/4-20 mA specifications

Power supply

External power supply required. Transmitters operate on 12.0 to 42.4 Vdc transmitter terminal voltage (with 250 ohm load, 18.1 Vdc power supply voltage is required). Transmitter power terminals rated to 42.4 Vdc.

Wiring diagram

See [Figure 8](#).

Alarms

Custom factory configurations of alarm and saturation levels are available for valid values with option code C1. These values can also be configured in the field using a Field Communicator.

Transient protection (option code T1)

The transient protector helps to prevent damage to the transmitter from transients induced on the loop wiring by lightning, welding, heavy electrical equipment, or switch gears. The transient protection electronics are contained in an add-on assembly that attaches to the standard transmitter terminal block. The external ground lug assembly (code G1) is included with the transient protector. The transient protector has been tested per the following standard:

- IEEE C62.41-1991 (IEEE 587)/location categories B3. 6 kV/3 kA peak (1.2 x 50 μ S Wave 8 x 20 μ S combination wave) 6 kV/0.5 kA peak (100 kHz ring wave) EFT, 4 kV peak, 2.5 kHz, 5 x 50 nS
- Loop resistance added by protector: 22 ohmsmax.
- Nominal clamping voltages: 90 V (common mode), 77 V (normal mode)

Local display

Optional five-digit LCD display includes 0–100% bar graph. Digits are 0.4-in. (8 mm) high. Display options include engineering units ($^{\circ}\text{F}$, $^{\circ}\text{C}$, $^{\circ}\text{R}$, K, ohms, and millivolts), percent, and milliamperes. The display can also be set to alternate between engineering units/milliamperes, Sensor 1/Sensor 2, Sensor 1/Sensor 2/Differential Temperature, and Sensor 1/Sensor 2/Average Temperature. All display options, including the decimal point, may be reconfigured in the field using a Field Communicator or AMS Device Manager.

Turn-on time

Performance within specifications is achieved less than six seconds after power is applied to the transmitter when the damping value is set to zero seconds.

Power supply effect

Less than ± 0.005 percent of span per volt.

SIS safety transmitter failure values

IEC 61508 Safety Certified SIL 2 and SIL 3 Claim Limit

- Safety accuracy: Span ≥ 100 °C: $\pm 2\%$ of process variable span
- Span < 100 °C: ± 2 °C
- Safety response time: five seconds
- Safety specifications and FMEDA report available at [Emerson.com/Rosemount/Support](https://emerson.com/Rosemount/Support)
- Software suitable for SIL3 applications

Temperature limits

Table 6: Temperature limits

Description	Operating limit	Storage limit
Without LCD display	-40 to 185 °F -40 to 85 °C	-76 to 250 °F -60 to 120 °C
With LCD display ⁽¹⁾	-40 to 185 °F -40 to 85 °C	-76 to 185 °F -60 to 85 °C

⁽¹⁾ LCD display may not be readable, and LCD display updates will be slower at temperatures below -4 °F (-20 °C).

Field Communicator connections

Field Communicator connections are permanently fixed to power/signal block.

Failure mode

The Rosemount 3144P Temperature Transmitter features software and hardware failure mode detection. An independent circuit is designed to provide backup alarm output if the microprocessor hardware or software fails.

The alarm level is user-selectable using the failure mode switch. If failure occurs, the position of the hardware switch determines the direction in which the output is driven (HIGH or LOW). The switch feeds into the digital-to-analog (D/A) converter, which drives the proper alarm output even if the microprocessor fails. The values at which the transmitter drives its output in failure mode depends on whether it is configured to standard, or NAMUR-compliant (NAMUR recommendation NE 43) operation. The values for standard and NAMUR-compliant operation are as follows:

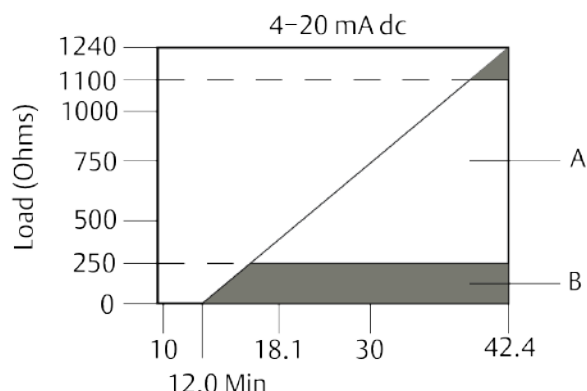
Table 7: Operation parameters

	Standard ⁽¹⁾	NAMUR-compliant ⁽¹⁾
Linear output	$3.9 \leq I \leq 20.5$	$3.8 \leq I \leq 20.5$
Fail high	$21 \leq I \leq 23$ (default)	$21.5 \leq I \leq 23$ (default)
Fail low	$I \leq 3.75$	$I \leq 3.6$

⁽¹⁾ Measured in milliamperes.

Load limitations

Maximum load = $40.8 \times (\text{Supply voltage} - 12.0)$ without transient protection (optional).



A. and analog operating range

B. Analog only operating range

Note

HART communication requires a loop resistance between 250 and 1100 ohms. Do not communicate with the transmitter when power is below 12 Vdc at the transmitter terminals.

FOUNDATION™ Fieldbus specifications

Power supply

Powered over FOUNDATION™ Fieldbus with standard Fieldbus power supplies. Transmitters operate on 9.0 to 32.0 Vdc, 12 mA maximum. Transmitter power terminals are rated to 42.4 Vdc.

Wiring diagram

See [Figure 9](#).

Alarm

The AI function block allows the user to configure the alarms to HIGH-HIGH, HIGH, LOW, or LOW-LOW with a variety of priority levels and hysteresis settings.

Transient protection (option code T1)

The transient protector helps to prevent damage to the transmitter from transients induced on the loop wiring by lightning, welding, heavy electrical equipment, or switch gears. The transient protection electronics are contained in an add-on assembly that attaches to the standard transmitter terminal block. The transient terminal block is not polarity insensitive. The transient protector has been tested to the following standard:

- IEEE C62.41-1991 (IEEE 587)/location categories B3. 6 kV/3 kA peak (1.2 x 50 μ S wave 8 x 20 μ S combination wave) 6 kV/0.5 kA peak (100 kHz ring wave) EFT, 4 kV peak, 2.5 kHz, 5*50 nS
- Loop resistance added by protector: 22 ohms, maximum
- Nominal clamping voltages: 90 V (common mode), 77 V (normal mode)

Diagnostics suite for FOUNDATION Fieldbus (option code D01)

The Rosemount 3144P Temperature Transmitter Diagnostics Suite for FOUNDATION Fieldbus provides advanced functionality in the form of Statistical Process Monitoring (SPM), a thermocouple diagnostic, and sensor drift alert. SPM technology calculates the mean and standard deviation of the process variable and makes them available to the user. This may be used to detect abnormal process situations.

The thermocouple diagnostic enables the transmitter to measure and monitor the resistance of thermocouple loops in order to detect drift or changing wiring connections.

Sensor drift alert allows the user to monitor the difference in measurement between two sensors installed in one process point. A change in this differential value may indicate drifting sensors.

Local display

Displays all DS_65 measurements in the transducer and function blocks including Sensor 1, Sensor 2, differential, and terminal temperatures. The display alternates up to four selected items. The meter can display up to five digits in engineering units (°F, °C, °R, K, Ω, and millivolts). Display settings are configured at the factory according to the transmitter configuration (standard or custom). These settings can be reconfigured in the field using a Field Communicator or DeltaV. In addition, the LCD display provides the ability to display DS_65 parameters from other devices.

In addition to the configuration of the meter, sensor diagnostic data is displayed. If the measurement status is **Good**, the measured value is shown. If the measurement status is **Uncertain**, the status indicating uncertain is shown in addition to the measured value. If the measurement status is **Bad**, the reason for the bad measurement is shown.

Note
When ordering a spare electronics module assembly, the LCD display transducer block will display the default parameter.

Turn-on time

Performance within specifications is achieved less than 20 seconds after power is applied to the transmitter when the damping value is set to zero seconds.

Status

The device is compliant to NAMUR NE 107, ensuring consistent, reliable, and standardized device diagnostic information.

The new standard is designed to improve the way device status and diagnostic information is communicated to operators and maintenance personnel in order to increase productivity and reduce costs.

If self-diagnostics detect a sensor burnout or a transmitter failure, the status of the measurement will be updated accordingly. The status may also send the PID output to a safe value.

FOUNDATION Fieldbus parameters

Schedule entries	25 (max)
Links	30 (max)
Virtual Communications Relationships (VCR)	20 (max)

Function blocks

- All blocks will ship with unique block names, e.g. AI_1400_XXXX.
- All blocks shall be instantiated to avoid invalid defaults.
- All Rosemount 3144P FOUNDATION Fieldbus have parameter COMPATIBILITY_REV for backward compatibility.

- Parameters will be initialized to common values for easier bench configuration.
- All default block tags are less than or equal to 16 characters in length to avoid inconvenience of apparently identical tags.
- Default block tags include underscores, “_”, instead of whitespaces for easier configuration.

Resource block

- Contains physical transmitter information including available memory, manufacture identification, device type, software tag, and unique identification.
- Plantweb™ Alerts enable the full power of the Plantweb™ Insight digital architecture by diagnosing instrumentation issues, communicating the details, and recommending a solution.

Transducer block

- Contains the actual temperature measurement data, including sensor 1, sensor 2, and terminal temperature.
- Includes information about sensor type and configuration, engineering units, linearization, range, damping, and diagnostics.
- Device Revision 3 and above includes Hot Backup functionality in the transducer block.

LCD display block (when an LCD display is used)

- Configures the local display.

Analog input (AI)

- Processes the measurement and makes it available on the Fieldbus segment.
- Allows filtering, engineering unit, and alarm changes.
- All devices ship with the AI blocks scheduled, meaning no configuration is needed if the factory default channels are used.

PID block (provides control functionality)

- Performs single loop, cascade, or feedforward control in the field.

Block	Execution time
Resource	N/A
Transducer	N/A
LCD display block	N/A
Advanced diagnostics	N/A
Analog input 1, 2, 3, 4	60 milliseconds
PID 1 and 2 with autotune	90 milliseconds
Input selector	65 milliseconds
Signal characterizer	60 milliseconds
Arithmetic	60 milliseconds
Output splitter	60 milliseconds

Product certifications

Rev 2.21

For Rosemount 3144P temperature transmitter with HART protocol product certifications, see [Rosemount 3144P Temperature Transmitter With HART Protocol and Rosemount X-well Technology](#).

European Directive information

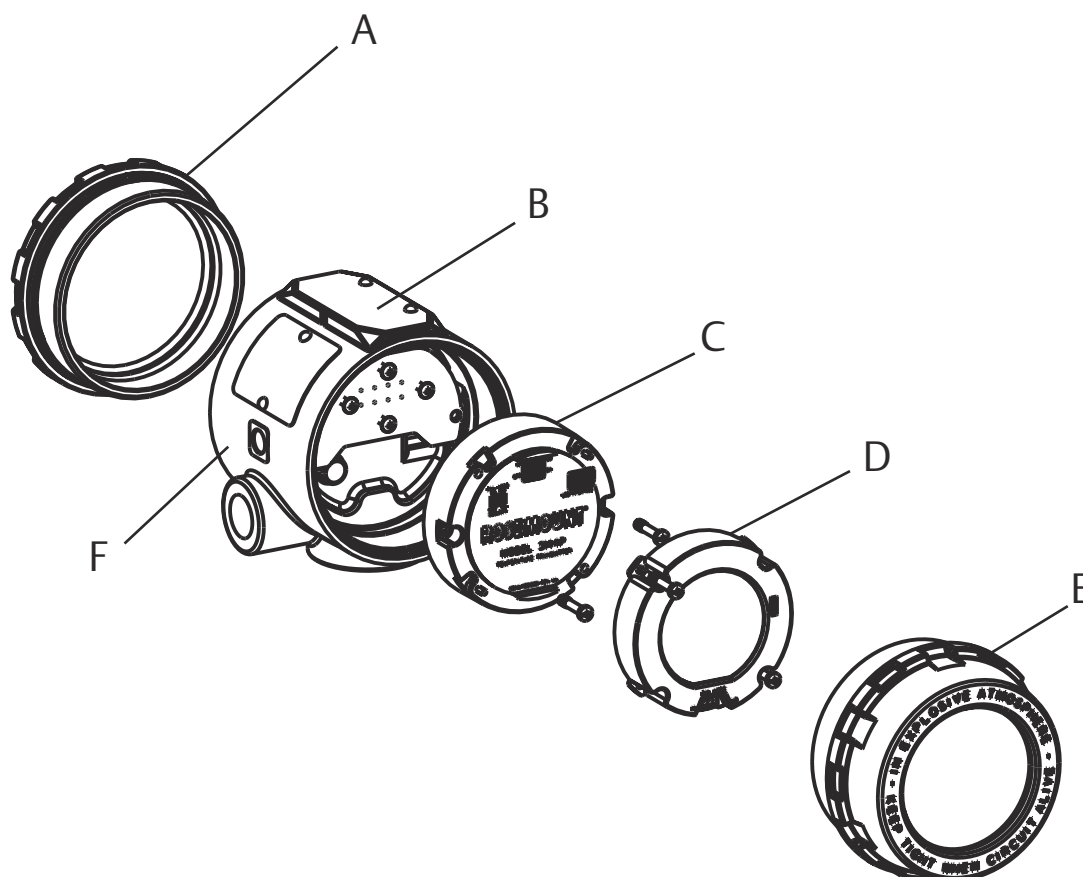
A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at [Emerson.com/Rosemount](https://emerson.com/Rosemount).

Ordinary location certification

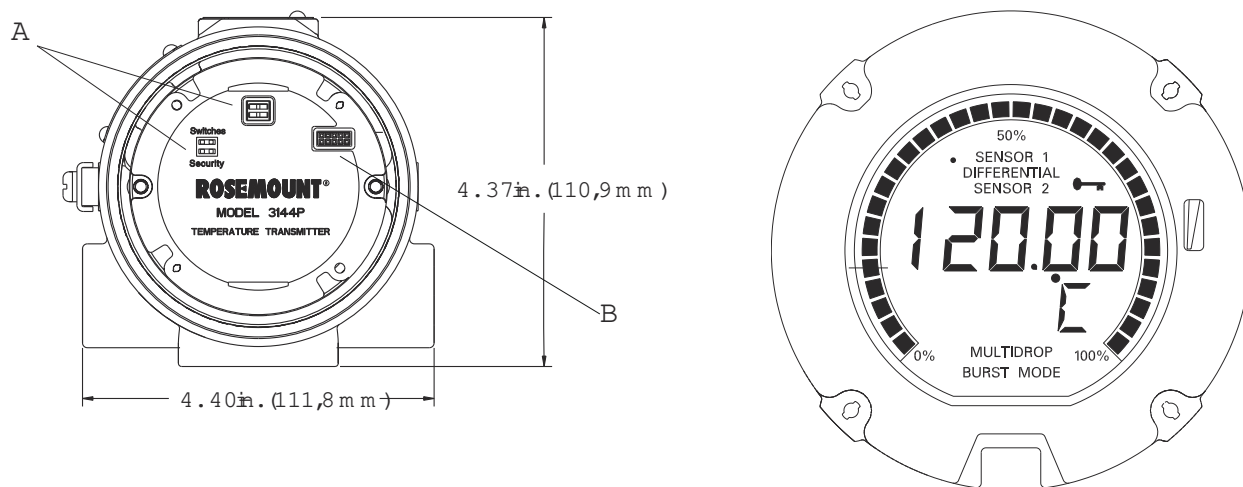
As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a Nationally Recognized Test Laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Dimensional drawings

Figure 2: Transmitter exploded view



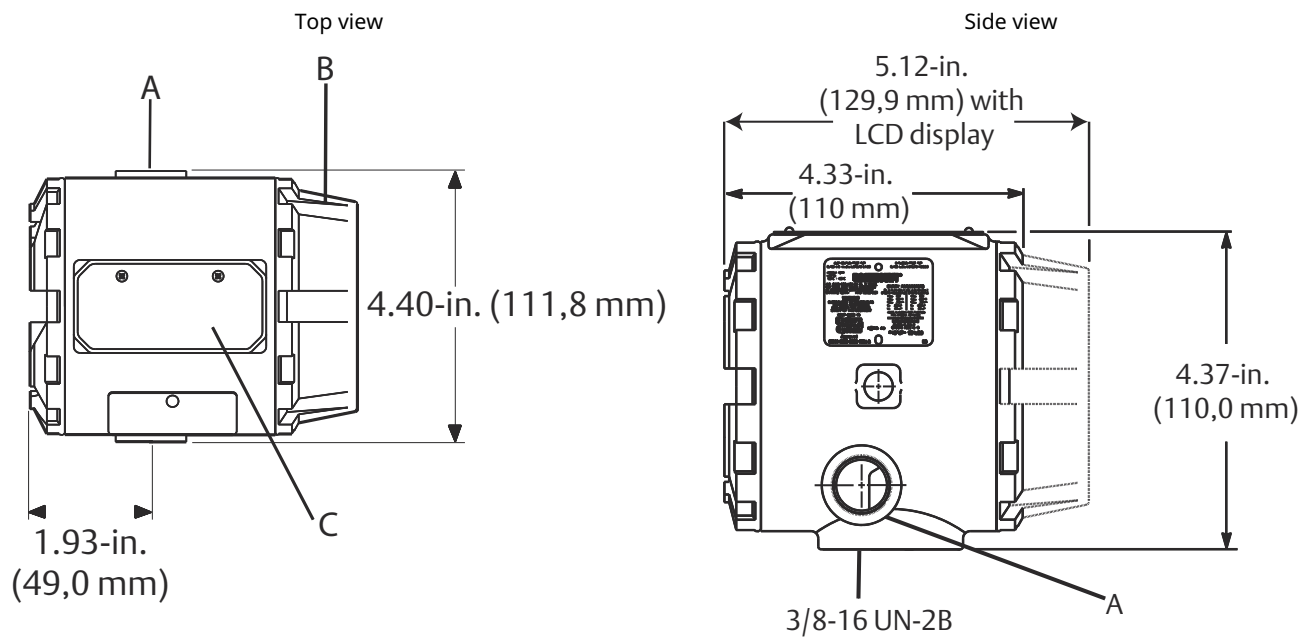
- A. Cover with wiring diagram
- B. Name plate
- C. Electronic module
- D. LCD display
- E. Display cover
- F. Housing with permanent terminal block

Figure 3: Switch location and LCD display face plateA. Switches⁽¹⁾

B. LCD display connector

Note

Dimensions are in inches (millimeters).

Figure 4: Transmitter view

A. Conduit entry

B. Display cover

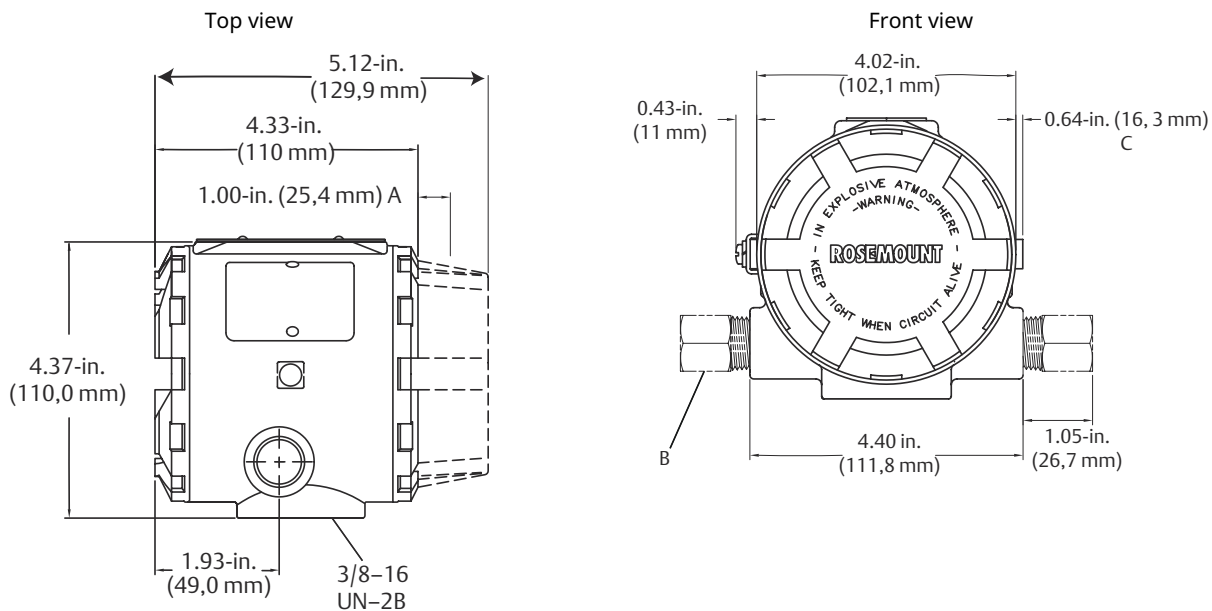
C. Name plate

(1) Alarm and write protect (HART®), simulate and write protect (FOUNDATION™ Fieldbus).

Note

Dimensions are in inches (millimeters).

Figure 5: Transmitter for conduits with M20 3 1.5, PG 13.5 entries



A. Clearance required to remove cover

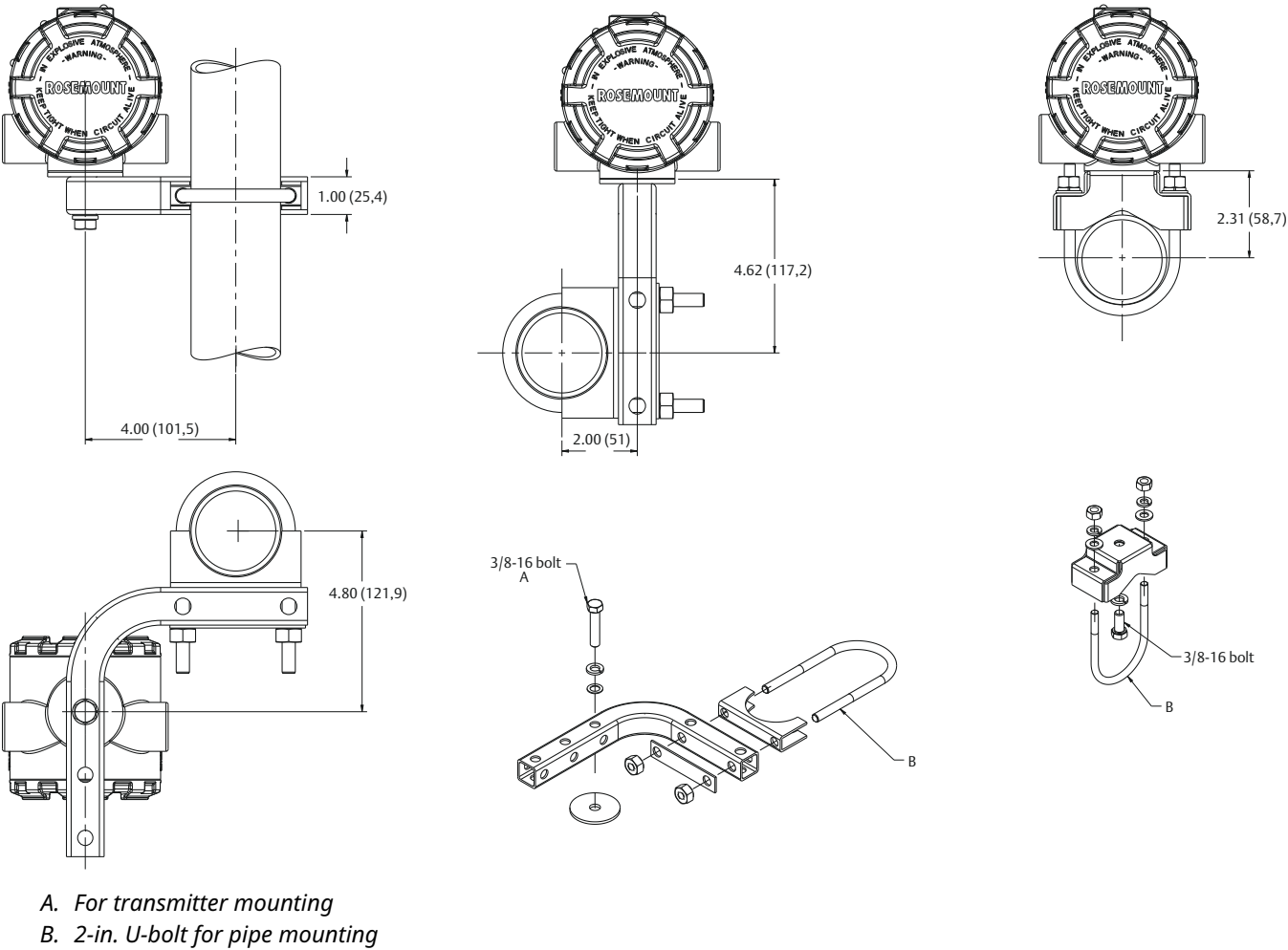
B. Adapters for M20 x 1.5, PG 13.5

C. Explosion/flameproof clamp (option code dependent)

Note

Dimensions are in inches (millimeters).

Figure 6: Pipe mounting configurations with optional mounting bracket



Note
Dimensions are in inches (millimeters).

Figure 7: Rosemount X-well Assembly with Universal Pipe Mount

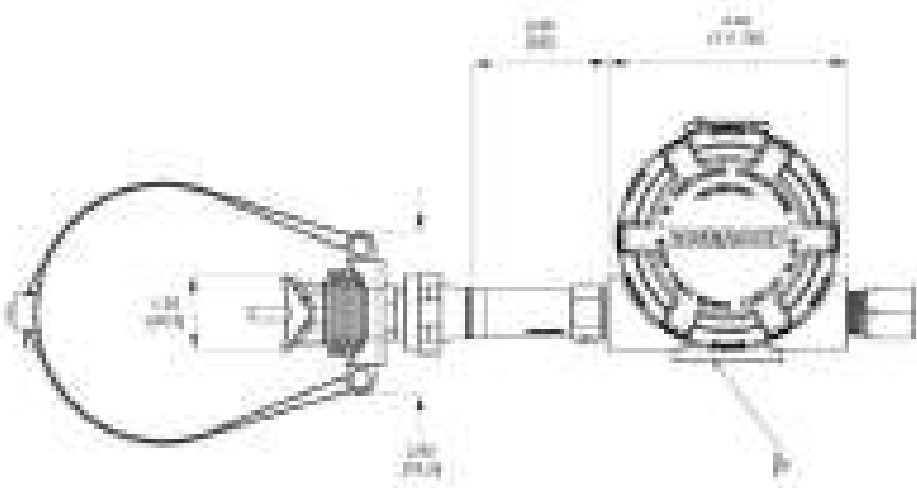
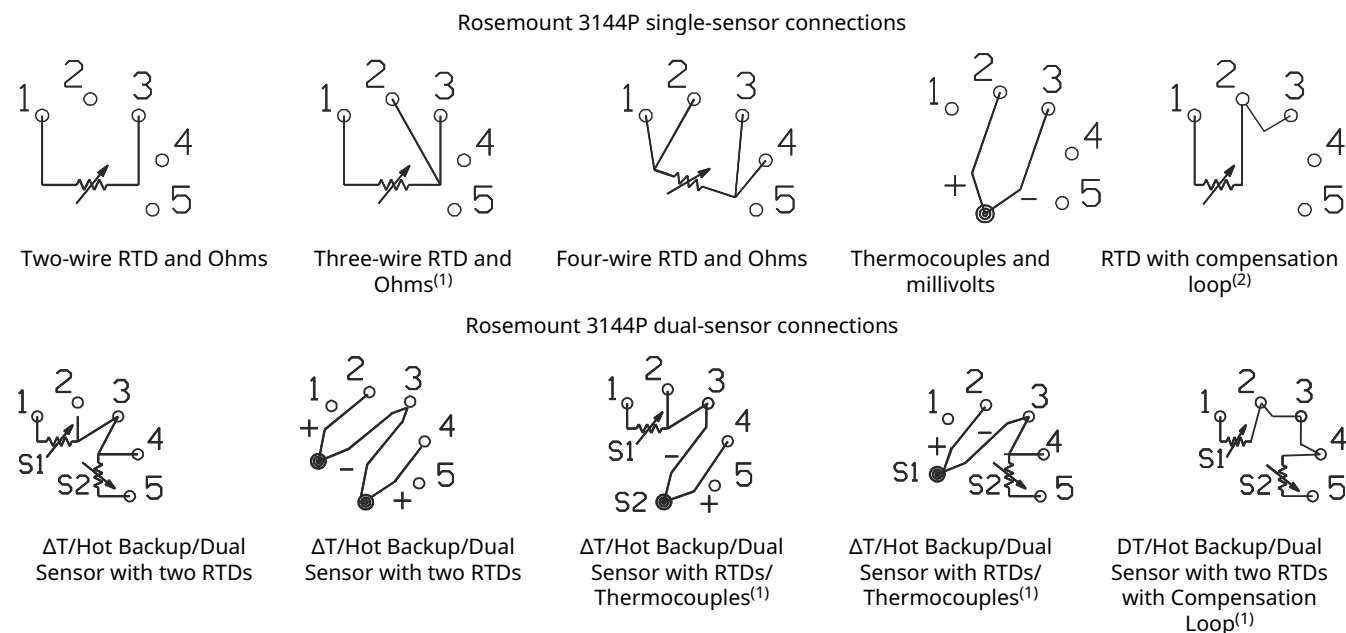


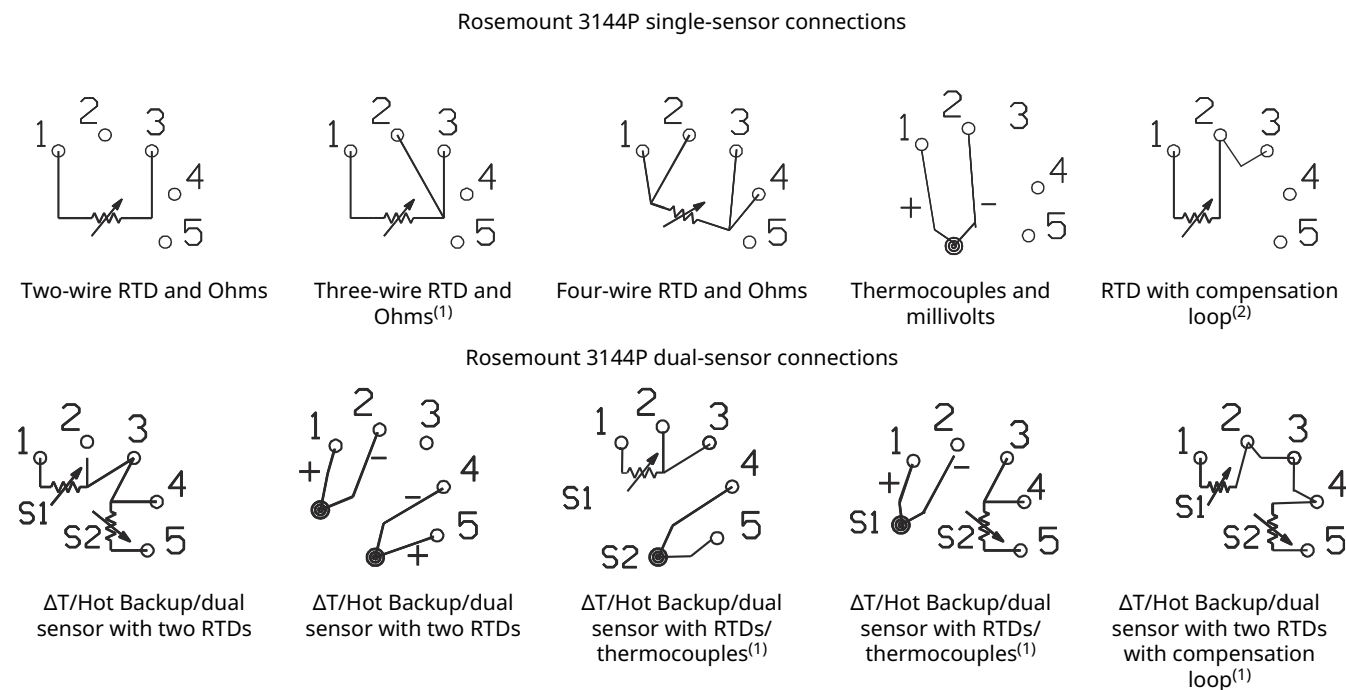
Figure 8: HART/4-20 mA



(1) Emerson provides four-wire sensors for all single-element RTDs. Use these RTDs in two-wire or three-wire configurations by leaving the unneeded leads disconnected and insulated with electrical tape.

(2) Transmitter must be configured for a three-wire RTD in order to recognize an RTD with a compensation loop.

Figure 9: FOUNDATION™ Fieldbus



(1) Emerson provides four-wire sensors for all single-element RTDs. Use these RTDs in two-wire or three-wire configurations by leaving the unneeded leads disconnected and insulated with electrical tape.

(2) Transmitter must be configured for a three-wire RTD in order to recognize an RTD with a compensation loop.

Transmitter standard configuration

Both standard and custom configuration settings may be changed. Unless specified, the transmitter will be shipped as follows:

Standard configuration	
4 mA value/lower range (HART®/4–20 mA) measurement point LO (FOUNDATION™ Fieldbus)	0 °C
20 mA value/upper range (HART/4–20 mA) measurement point HI (FOUNDATION Fieldbus)	100 °C
Damping	5 seconds
Output	Linear with temperature
Failure mode (HART/4–20 mA)	High
Line voltage filter	60 Hz
Software tag	See Software tag
Optional integral display	Units and mA/sensor 1 units
Single-sensor option	
Sensor type	4-wire, Pt 100 a = 0.00385 RTD
Primary variable (HART/4–20 mA) analog input (AI) 1400 (FOUNDATION Fieldbus)	Sensor 1
Secondary variable AI 1600 (FOUNDATION Fieldbus)	Terminal temperature
Tertiary variable	Not used
Quaternary variable	Not used
Dual-sensor option	
Sensor type	Two 3-wire, Pt 100 a = 0.00385 RTD
Primary variable (HART/4–20 mA) AI 1400 (FOUNDATION Fieldbus)	Sensor 1
Secondary variable AI 1500 (FOUNDATION Fieldbus)	Sensor 2
Tertiary variable AI 1600 (FOUNDATION Fieldbus)	Terminal temperature
Quaternary variable	Not used

Transmitter custom configuration

The Rosemount 3144P Temperature Transmitter can be ordered with custom configuration. The table below lists the requirements necessary to specify a custom configuration.

Option code	Requirements/specification
C1: Factory data ⁽¹⁾	Date: day/month/year Descriptor: 16 alphanumeric character Message: 32 alphanumeric character Custom alarm levels can be specified for configuration at the factory. Rosemount X-well specific information: pipe material, pipe schedule, line size
C2: Transmitter-sensor matching	The Rosemount 3144P Temperature Transmitter is designed to accept Callendar-van Dusen constants from a calibrated RTD schedule and generate a custom curve to match any specific sensor curve. Specify a Rosemount RTD sensor model on the order with a special characterization curve (V or X8Q4 option). These constants will be programmed into the transmitter when this option is selected.
C4: Five point calibration	Will include five-point calibration at 0, 25, 50, 75, and 100 percent analog and digital output points. Use with option code Q4 to obtain a Calibration Certificate.
C7: Special sensor	Used for non-standard sensor, adding a special sensor or expanding input. Customer must supply the non-standard sensor information. Additional special curve will be added to sensor curve input choices.
A1: NAMUR-compliant, high alarm	Analog output levels compliant with NAMUR. Alarm is set to fail high.
CN: NAMUR-compliant, low alarm	Analog output levels compliant with NAMUR. Alarm is set to fail low.
C8: Low alarm	Analog output levels compliant with Rosemount standard. Alarm is set to fail low.
F5: 50 Hz Line voltage filter	Calibrated to 50 Hz line voltage filter.

(1) [Configuration Data Sheet](#) required.

To custom configure the Rosemount 3144P Temperature Transmitter with the dual-sensor option transmitter for one of the applications described below, indicate the appropriate option code in the model number. If a sensor type is not specified, the transmitter will be configured for two 3-wire Pt 100 ($\alpha = 0.00385$) RTDs if any of the following option codes are selected.

Option code U1: Hot Backup	
Primary usage	Primary usage sets the transmitter to automatically use sensor 2 as the primary input if sensor 1 fails. Switching from sensor 1 to sensor 2 is accomplished without any effect on the analog signal. A digital alert will be sent in the event of a failed sensor.
Primary variable	1st good
Secondary variable	Sensor 1
Tertiary variable	Sensor 2
Quaternary variable	Terminal temperature

Option code U2: average temperature with Hot Backup and sensor drift alert—warning mode	
Primary usage	Critical applications, such as safety interlocks and control loops. Outputs the average of two measurements and sends a digital alert if temperature difference exceeds the set maximum differential (Sensor Drift Alert – warning mode). If a sensor fails, an alert will be sent digitally, and the primary variable will be reported as the remaining good sensor value.
Primary variable	Sensor average
Secondary variable	Sensor 1
Tertiary variable	Sensor 2
Quaternary variable	Terminal temperature

Option code U3: average temperature with Hot Backup and sensor drift alert—alarm mode	
Primary usage	Critical applications, such as safety interlocks and control loops. Outputs the average of two measurements and sets the analog output into alarm if temperature difference exceeds the set maximum differential (sensor drift alert – alarm mode). If a sensor fails, an alert will be sent digitally, and the primary variable will be reported as the remaining good sensor value.
Primary variable	Sensor average
Secondary variable	Sensor 1
Tertiary variable	Sensor 2
Quaternary variable	Terminal temperature

Option code U4: two independent sensors	
Primary usage	Used in non-critical applications where the digital output is used to measure two separate process temperatures.
Primary variable	Sensor 1
Secondary variable	Sensor 2
Tertiary variable	Terminal temperature
Quaternary variable	Not used

Option code U5: differential temperature	
Primary usage	The differential temperature of two process temperatures is configured as the primary variable. If the temperature difference exceeds the maximum differential, the analog output will go into alarm. Primary Variable will be reported as a bad sensor value.
Primary variable	Differential temperature
Secondary variable	Sensor 1
Tertiary variable	Sensor 2
Quaternary variable	Terminal temperature

Option code U6: average temperature	
Primary usage	When average measurement of two different process temperatures is required. If a sensor fails, the analog output will go into alarm, and the primary variable will report the measurement of the remaining good sensor.
Primary variable	Sensor average
Secondary variable	Sensor 1
Tertiary variable	Sensor 2
Quaternary variable	Terminal temperature

