

	Functional, resistance and airtightness testing as per API 6D		
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Technical instruction PS07/I1 Annex III		Issued by: D.Grau	Approved by: J.Tejedor

LIST OF REVIEWS

REV.	DATE	DESCRIPTION
06	28/10/10	
07	24/02/14	Update test times according API 6D.
08	09/02/15	Update testing pressure to meet B16.34

FUNCTIONAL, RESISTANCE AND AIRTIGHTNESS TESTING AS PER API 6D.**1.- FUNCTIONAL TESTING: MANOEUVRING TORQUE CONTROL**

Not required by API 6D but included by JC in its process.
Sequence: To be performed according to point 7 of IT 4.10.03.2.
Range: 5% of series.
Acceptance criteria: See point 7 of IT 4.10.03.2.

2.- CASING AIRTIGHTNESS TESTS

Not required by API 6D but included by JC in its process.
Sequence: To be performed according to point 3 of IT 4.10.03.2.
Range: 5% of series.
Test pressure and time: See point 2 of the attached Table.
Acceptance criteria: Zero leaks.

3.- CASING HYDROSTATIC PRESSURE TEST

Sequence: To be performed according to point 5 of IT 4.10.03.2.
Range: 100% of series.
Test pressures and times: As per point 1 of the attached Table.
Acceptance criteria: No leak admitted through the casing walls and permanent seals.

4.- HYDROSTATIC TESTING OF SEATS

To be performed on 100% of series in both directions as per to point 6 for floating ball valves and for trunnion valves as per to poin 8.
Test pressures: As per attached Table 3.a.
Test times: As indicated in attached Table 3.b
Acceptance criteria:

- Soft seats: Zero leakage rate A
- Metal seats: Rate AA, B, C, CC, D according design and/or purchaser order.

5.- PNEUMATIC TESTING OF SEATS

This test is **OPTIONAL**, *per API6D but is performed*.
Range: 100% of series in both directions.
Sequence: To be performed according to point 4 of PS07/I1 for floating ball valves and for trunnion valves as per to poin 8.
Test pressures and times: As per point 4 of the attached Table.
Acceptance criteria:

- Zero leaks for valves with soft seats.
- Metal seats: Rate AA, B, C, CC, D according design and/or purchaser order. According API 6D rate D will be standard leakage rate.



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MINIMUM PRESSURES AND TEST TIMES AS PER STD API 6D

1. MINIMUM CASING HYDROSTATIC RESISTANCE TEST PRESSURE (BARG)

RATING	PRESSURE
CLASS 150	30
CLASS 300	78
CLASS 600	156
CLASS 800	204
CLASS 900	233
CLASS 1500	388
CLASS 2500	647

1. b. MINIMUM HYDROSTATIC RESISTANCE TEST TIME - CASING

SIZE	TIME
DN 1/2" to DN 4"	2 minutes
DN 6" to DN 10"	5 minutes
DN 12" to DN 18"	15 minutes
Over DN 20"	30 minutes

2. a. PNEUMATIC TEST PRESSURE - CASING AIRTIGHTNESS

RANGE	PRESSURE
All ratings and DN < 8"	18 to 22 barg
All ratings and DN ≥ 8"	14 to 18 barg

2. b. CASING PNEUMATIC RESISTANCE AND AIRTIGHTNESS TEST TIME

SIZE	TIME
Up to DN 8"	2 minutes
Over DN 10"	3 minutes

3. a. SEAT HYDROSTATIC TEST PRESSURE (BARG)

RATING	PRESSURE
CLASS 150	22
CLASS 300	56
CLASS 600	114
CLASS 800	152
CLASS 900	171
CLASS 1500	281
CLASS 2500	474

3. b. SEAT HYDROSTATIC TESTING TIME

RANGE	TIME
DN 1/2" to DN 4"	2 minutes
DN 6" to DN 18"	5 minutes
OVER 20"	10 minutes

4. a. SEAT PNEUMATIC TEST PRESSURE

All RATINGS and DN 6 bar

4. b. SEAT PNEUMATIC TESTING TIME



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Same times as in section 3.b.

TABLE 1 ADMISSIBLE LEAKS SEAT TEST

RATE AA								RATE C							
Nominal		Hydro seat test			Pneumatic seat test			Nominal		Hydro seat test			Pneumatic seat test		
Size	DN	mm ³ /s	ml/min	drops/min	mm ³ /s	ml/min	bubbles/min	Size	DN	mm ³ /s	ml/min	drops/min	mm ³ /s	ml/min	bubbles/min
1/2"	15	0,09	0,01	0	2,7	0,162	3	1/2"	15	0,45	0,03	0	45	2,7	41
3/4"	20	0,12	0,01	0	3,6	0,216	4	3/4"	20	0,6	0,04	1	60	3,6	55
1"	25	0,15	0,01	0	4,5	0,27	5	1"	25	0,75	0,05	1	75	4,5	69
1-1/2"	40	0,24	0,01	0	7,2	0,432	7	1-1/2"	40	1,2	0,07	1	120	7,2	110
2"	50	0,3	0,02	0	9	0,54	9	2"	50	1,5	0,09	2	150	9	137
2-1/2"	65	0,39	0,02	1	11,7	0,702	12	2-1/2"	65	1,95	0,12	2	195	11,7	179
3"	80	0,48	0,03	1	14,4	0,864	14	3"	80	2,4	0,14	2	240	14,4	220
4"	100	0,6	0,04	1	18	1,08	18	4"	100	3	0,18	3	300	18	275
6"	150	0,9	0,05	1	27	1,62	27	6"	150	4,5	0,27	5	450	27	412
8"	200	1,2	0,07	2	36	2,16	36	8"	200	6	0,36	6	600	36	550
10"	250	1,5	0,09	2	45	2,7	45	10"	250	7,5	0,45	8	750	45	687
12"	300	1,8	0,11	3	54	3,24	54	12"	300	9	0,54	9	900	54	824
14"	350	2,1	0,13	3	63	3,78	63	14"	350	10,5	0,63	11	1050	63	962
16"	400	2,4	0,14	4	72	4,32	72	16"	400	12	0,72	12	1200	72	1099
18"	450	2,7	0,16	4	81	4,86	81	18"	450	13,5	0,81	14	1350	81	1237
20"	500	3	0,18	5	90	5,4	90	20"	500	15	0,90	15	1500	90	1374
22"	550	3,3	0,20	5	99	5,94	99	22"	550	16,5	0,99	17	1650	99	1511
24"	600	3,6	0,22	6	108	6,48	108	24"	600	18	1,08	18	1800	108	1649

RATE B								RATE CC							
Nominal		Hydro seat test			Pneumatic seat test			Nominal		Hydro seat test			Pneumatic seat test		
Size	DN	mm ³ /s	ml/min	drops/min	mm ³ /s	ml/min	bubbles/min	Size	DN	mm ³ /s	ml/min	drops/min	mm ³ /s	ml/min	bubbles/min
1/2"	15	0,15	0,01	0	4,5	0,27	4	1/2"	15	1,2	0,07	1	334,5	20,07	307
3/4"	20	0,2	0,01	0	6	0,36	6	3/4"	20	1,6	0,10	2	446	26,76	409
1"	25	0,25	0,02	0	7,5	0,45	7	1"	25	2	0,12	2	557,5	33,45	511
1-1/2"	40	0,4	0,02	0	12	0,72	11	1-1/2"	40	3,2	0,19	3	892	53,52	818
2"	50	0,5	0,03	0	15	0,9	14	2"	50	4	0,24	4	1115	66,9	1022
2-1/2"	65	0,65	0,04	1	19,5	1,17	18	2-1/2"	65	5,2	0,31	5	1449,5	86,97	1329
3"	80	0,8	0,05	1	24	1,44	22	3"	80	6,4	0,38	6	1784	107,04	1635
4"	100	1	0,06	1	30	1,8	28	4"	100	8	0,48	8	2230	133,8	2044
6"	150	1,5	0,09	1	45	2,7	41	6"	150	12	0,72	12	3345	200,7	3066
8"	200	2	0,12	2	60	3,6	55	8"	200	16	0,96	16	4460	267,6	4088
10"	250	2,5	0,15	2	75	4,5	69	10"	250	20	1,20	20	5575	334,5	5111
12"	300	3	0,18	3	90	5,4	83	12"	300	24	1,44	23	6690	401,4	6133
14"	350	3,5	0,21	3	105	6,3	97	14"	350	28	1,68	27	7805	468,3	7155
16"	400	4	0,24	4	120	7,2	110	16"	400	32	1,92	31	8920	535,2	8177
18"	450	4,5	0,27	4	135	8,1	124	18"	450	36	2,16	35	10035	602,1	9199
20"	500	5	0,30	5	150	9	138	20"	500	40	2,40	39	11150	669	10221
22"	550	5,5	0,33	5	165	9,9	152	22"	550	44	2,64	43	12265	735,9	11243
24"	600	6	0,36	6	180	10,8	166	24"	600	48	2,88	47	13380	802,8	12265



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RATE D

Nominal		Hydro seat test			Pneumatic seat test		
Size	DN	mm ³ /s	ml/min	drops/min	mm ³ /s	ml/min	bubbles/min
1/2"	15	1,5	0,1	1	450	27	413
3/4"	20	2	0,1	2	600	36	550
1"	25	2,5	0,2	2	750	45	688
1-1/2"	40	4	0,2	4	1200	72	1100
2"	50	5	0,3	5	1500	90	1375
2-1/2"	65	6,5	0,4	6	1950	117	1788
3"	80	8	0,5	8	2400	144	2200
4"	100	10	0,6	10	3000	180	2750
6"	150	15	0,9	14	4500	270	4126
8"	200	20	1,2	19	6000	360	5501
10"	250	25	1,5	24	7500	450	6876
12"	300	30	1,8	29	9000	540	8251
14"	350	35	2,1	34	10500	630	9626
16"	400	40	2,4	38	12000	720	11002
18"	450	45	2,7	43	13500	810	12377
20"	500	50	3,0	48	15000	900	13752
22"	550	55	3,3	53	16500	990	15127
24"	600	60	3,6	58	18000	1080	16502