

Table 5-3 Test requirements for new, rebuilt, and repaired cold-water meters*

Displacement Meters (AWWA C700 and C710)													
Size	Maximum Rate (All Meters)				Intermediate Rate (All Meters)				Minimum Rate (New and Rebuilt)				Minimum (Repaired)
	Flow Rate [†]	Test Quantity ^{††}	Accuracy Limits	Flow Rate ^{††}	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Accuracy Limits
<i>in.</i>	<i>gpm</i>	<i>gal</i>	<i>ft³</i>	<i>percent</i>	<i>gpm</i>	<i>gal</i>	<i>ft³</i>	<i>percent</i>	<i>gpm</i>	<i>gal</i>	<i>ft³</i>	<i>percent</i>	<i>percent (min)</i>
½	8	100	10	98.5-101.5	2	10	1	98.5-101.5	¼	10	1	95-101	90
½ × ¾	8	100	10	98.5-101.5	2	10	1	98.5-101.5	¼	10	1	95-101	90
¾	15	100	10	98.5-101.5	2	10	1	98.5-101.5	¼	10	1	95-101	90
¾ × ¾	15	100	10	98.5-101.5	2	10	1	98.5-101.5	¼	10	1	95-101	90
1	25	100	10	98.5-101.5	3	10	1	98.5-101.5	½	10	1	95-101	90
1	40	100	10	98.5-101.5	4	10	1	98.5-101.5	¾	10	1	95-101	90
1½	50	100	10	98.5-101.5	8	100	10	98.5-101.5	1½	100	10	95-101	90
2	100	100	10	98.5-101.5	15	100	10	98.5-101.5	2	100	10	95-101	90
Multijet Meters (AWWA C708)													
Size	Maximum Rate (All Meters)				Intermediate Rate (All Meters)				Minimum Rate (New and Rebuilt)				Minimum (Repaired)
	Flow Rate [†]	Test Quantity [†]	Accuracy Limits	Flow Rate [†]	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Accuracy Limits
<i>in.</i>	<i>gpm</i>	<i>gal</i>	<i>ft³</i>	<i>percent</i>	<i>gpm</i>	<i>gal</i>	<i>ft³</i>	<i>percent</i>	<i>gpm</i>	<i>gal</i>	<i>ft³</i>	<i>percent</i>	<i>percent (min)</i>
¾	15	100	10	98.5-101.5	1	10	1	98.5-101.5	¼	10	1	97-103	90
¾ × ¾	15	100	10	98.5-101.5	1	10	1	98.5-101.5	¼	10	1	97-103	90
1	25	100	10	98.5-101.5	2	10	1	98.5-101.5	½	10	1	97-103	90
1	35	100	10	98.5-101.5	3	10	1	98.5-101.5	¾	10	1	97-103	90
1½	70	100	10	98.5-101.5	5	100	10	98.5-101.5	1½	100	10	97-103	90
2	100	100	10	98.5-101.5	8	100	10	98.5-101.5	2	100	10	97-103	90
Singlejet Meters (AWWA C712)													
Size	Maximum Rate (All Meters)				Intermediate Rate (All Meters)				Minimum Rate (New and Rebuilt)				Minimum (Repaired)
	Flow Rate [†]	Test Quantity ^{††}	Accuracy Limits	Flow Rate ^{††}	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Accuracy Limits
<i>in.</i>	<i>gpm</i>	<i>gal</i>	<i>ft³</i>	<i>percent</i>	<i>gpm</i>	<i>gal</i>	<i>ft³</i>	<i>percent</i>	<i>gpm</i>	<i>gal</i>	<i>ft³</i>	<i>percent</i>	<i>percent (min)</i>
¾	15	100	10	98.5-101.5	2	10	1	98.5-101.5	¼	10	1	95-101.5	90
¾ × ¾	15	100	10	98.5-101.5	2	10	1	98.5-101.5	¼	10	1	95-101.5	90
1	25	100	10	98.5-101.5	3	10	1	98.5-101.5	½	10	1	95-101.5	90
1	40	100	10	98.5-101.5	4	10	1	98.5-101.5	¾	10	1	95-101.5	90
1½	50	100	10	98.5-101.5	8	100	10	98.5-101.5	½	100	10	95-101.5	90
2	100	100	10	98.5-101.5	15	100	10	98.5-101.5	½	100	10	95-101.5	90
3	160	500	50	98.5-101.5	20	100	10	98.5-101.5	½	100	10	95-101.5	90
4	250	500	50	98.5-101.5	40	100	10	98.5-101.5	¾	100	10	95-101.5	90
6	500	1,000	100	98.5-101.5	60	100	10	98.5-101.5	1½	100	10	95-101.5	90
Fluidic-Oscillator Meters (AWWA C713)													
Size	Maximum Rate (All Meters)				Intermediate Rate (All Meters)				Minimum Rate (New and Rebuilt)				Minimum (Repaired)
	Flow Rate [†]	Test Quantity ^{††}	Accuracy Limits	Flow Rate ^{††}	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Accuracy Limits
<i>in.</i>	<i>gpm</i>	<i>gal</i>	<i>ft³</i>	<i>percent</i>	<i>gpm</i>	<i>gal</i>	<i>ft³</i>	<i>percent</i>	<i>gpm</i>	<i>gal</i>	<i>ft³</i>	<i>percent</i>	<i>percent (min)</i>
½	8	100	10	98.5-101.5	2	10	1	98.5-101.5	¼	10	1	95-101	90
½ × ¾	8	100	10	98.5-101.5	2	10	1	98.5-101.5	¼	10	1	95-101	90
¾	15	100	10	98.5-101.5	2	10	1	98.5-101.5	¼	10	1	95-101	90
¾ × ¾	15	100	10	98.5-101.5	2	10	1	98.5-101.5	¼	10	1	95-101	90

(continued)

Table 5-3 Test requirements for new, rebuilt, and repaired cold-water meters* (continued)

Fluidic-Oscillator Meters (AWWA C713)													
Size	Flow Rate [†]	Test Quantity ^{††}	Accuracy Limits	Flow Rate ^{**}	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Minimum (Repaired) Accuracy Limits
in.	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	percent (min)
¾	25	100	10	98.5-101.5	3	10	1	98.5-101.5	½	10	1	95-101	90
1	40	100	10	98.5-101.5	4	10	1	98.5-101.5	¾	10	1	95-101	90
1½	50	100	10	98.5-101.5	8	100	10	98.5-101.5	1½	100	10	95-101	90
2	100	100	10	98.5-101.5	15	100	10	98.5-101.5	2	100	10	95-101	90

Class I Turbine Meters, Vertical-Shaft Type (AWWA C701)													
Size	Maximum Rate (All Meters)				Intermediate Rate (All Meters)				Minimum Rate (New and Rebuilt)				Minimum (Repaired)
	Flow Rate [†]	Test Quantity ^{††}	Accuracy Limits	Flow Rate ^{**}	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Accuracy Limits
in.	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	percent (min)
¾	30	100	10	98-102	3	10	1	98-102	1½	10	1	98-102	--
1	50	100	10	98-102	5	10	1	98-102	2	10	1	98-102	--
1½	100	500	50	98-102	10	100	10	98-102	3	100	10	98-102	--
2	160	500	50	98-102	16	100	10	98-102	4	100	10	98-102	--
3	350	1,000	100	98-102	35	100	10	98-102	6	100	10	98-102	--
4	600	1,500	200	98-102	60	100	10	98-102	8	100	10	98-102	--
6	1,250	4,000	500	98-102	125	1,000	100	98-102	15	1,000	100	98-102	--

Class II Turbine Meters, In-Line (High-Velocity) Type (AWWA C701)													
Size	Maximum Rate (All Meters)				Intermediate Rate (All Meters)				Minimum Rate (New and Rebuilt)				Minimum (Repaired)
	Flow Rate [†]	Test Quantity ^{††}	Accuracy Limits	Flow Rate ^{**}	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Accuracy Limits
in.	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	percent (min)
1½	100	500	50	98.5-101.5					4	100	10	98.5-101.5	--
2	160	500	50	98.5-101.5					4	100	10	98.5-101.5	--
3	350	1,000	100	98.5-101.5					8	100	10	98.5-101.5	--
4	630	1,500	200	98.5-101.5					15	100	10	98.5-101.5	--
6	1,400	4,000	500	98.5-101.5					30	1,000	100	98.5-101.5	--
8	2,400	7,000	900	98.5-101.5					50	1,000	100	98.5-101.5	--
10	3,800	10,000	1,300	98.5-101.5					75	1,000	100	98.5-101.5	--
12	5,000	15,000	2,000	98.5-101.5					120	1,000	100	98.5-101.5	--
16	10,000	30,000	4,000	98.5-101.5					200	1,000	100	98.5-101.5	--
20	15,000	40,000	5,000	98.5-101.5					300	1,000	100	98.5-101.5	--

Propeller Meters (AWWA C704)													
Size	Maximum Rate (All Meters)				Intermediate Rate (All Meters)				Minimum Rate (New and Rebuilt)				Minimum (Repaired)
	Flow Rate [†]	Test Quantity ^{††}	Accuracy Limits	Flow Rate ^{**}	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Accuracy Limits
in.	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	percent (min)
2	100	300	40	98-102					35	200	25	98-102	90
3	250	800	100	98-102					40	200	25	98-102	90
4	500	1,500	200	98-102					50	250	30	98-102	90
6	1,200	2,500	300	98-102					90	500	60	98-102	90
8	1,500	3,000	400	98-102					100	500	60	98-102	90
10	2,000	4,000	500	98-102					125	500	60	98-102	90
12	2,800	6,000	800	98-102					150	750	100	98-102	90
14	3,750	8,000	1,000	98-102					250	1,000	130	98-102	90
16	4,750	10,000	1,300	98-102					350	1,500	200	98-102	90
18	5,625	12,000	1,600	98-102					450	2,000	250	98-102	90
20	6,875	15,000	2,000	98-102					550	2,500	300	98-102	90
24	10,000	20,000	2,500	98-102					800	4,000	500	98-102	90
30	15,000	30,000	4,000	98-102					1,200	6,000	800	98-102	90
36	20,000	40,000	5,000	98-102					1,500	7,500	1,000	98-102	90

(continued)

Table 5-3 Test requirements for new, rebuilt, and repaired cold-water meters* (continued)

Propeller Meters (AWWA C704)													
Size	Flow Rate [†]	Test Quantity ^{††}	Accuracy Limits	Class	Change Over Point (All Meters)	Flow Rate ^{**}	Test Quantity ^{††}	Accuracy Limits	Minimum Rate (New and Rebuilt)	Test Quantity ^{††}	Accuracy Limits	Minimum (Repaired)	Accuracy Limits
in.	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	(min)
42	28,000	40,000	5,000	98-102					2,000	10,000	1,300	98-102	90
48	35,000	50,000	6,000	98-102					2,500	12,500	1,500	98-102	90
54	45,000	60,000	8,000	98-102					3,200	16,000	2,000	98-102	90
60	60,000	70,000	9,000	98-102					4,000	20,000	2,500	98-102	90
66	75,000	80,000	11,000	98-102					4,750	25,000	3,000	98-102	90
72	90,000	90,000	12,000	98-102					5,500	28,000	3,500	98-102	90

Compound Meters (AWWA C702)§													
Size	Maximum Rate (All Meters)				Change Over Point (All Meters)				Minimum Rate (New and Rebuilt)				Minimum (Repaired)
	Flow Rate [†]	Test Quantity ^{††}	Accuracy Limits	Class	Flow Rate ^{**}	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Accuracy	Accuracy	Accuracy
in.	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	(min)
				Class I									
				Class II									
2	160	400	50	97-103	97-103	98.5-101.5		90-103				95-101	90
3	320	1,000	100	97-103	97-103	98.5-101.5		90-103				95-101	90
4	500	1,500	200	97-103	97-103	98.5-101.5		90-103				95-101	90
6	1,000	3,000	400	97-103	97-103	98.5-101.5		90-103				95-101	90
8	1,600	4,000	500	97-103	97-103	98.5-101.5		90-103				95-101	90
10	2,300	4,000	500	97-103	97-103	98.5-101.5		90-103				95-101	90

Fire-Service Type, Type I and Type II (AWWA C703) (Test at intermediate rate not necessary.)§													
Size	Maximum Rate (All Meters)				Change Over Point (All Meters)				Minimum Rate (New and Rebuilt)				Minimum (Repaired)
	Flow Rate [†]	Test Quantity ^{††}	Accuracy Limits	Class	Flow Rate ^{**}	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Accuracy	Accuracy	Accuracy
in.	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	(min)
				Type I									
				Type II									
3	350	700	100	97-103	97-103	98.5-101.5							90
4	700	1,500	200	97-103	97-103	98.5-101.5		Not less than 85%				Not less than 95%	90
6	1,600	3,000	400	97-103	97-103	98.5-101.5							90
8	2,800	5,000	700	97-103	97-103	98.5-101.5							90
10	4,400	9,000	1,200	97-103	97-103	98.5-101.5							90

Fire Service Type, Type III (AWWA C703)													
Size	Maximum Rate (All Meters)				Intermediate Rate (All Meters)				Minimum Rate (New and Rebuilt)				Minimum (Repaired)
	Flow Rate [†]	Test Quantity ^{††}	Accuracy Limits	Class	Flow Rate ^{**}	Test Quantity ^{††}	Accuracy Limits	Flow Rate	Test Quantity ^{††}	Accuracy Limits	Accuracy	Accuracy	Accuracy
in.	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	gpm	gal	ft ³	percent	(min)
3	350	700	100	98.5-101.5	10	100	10	98.5-101.5	4	100	10	95-101.5	--
4	700	1,500	200	98.5-101.5	30	500	50	98.5-101.5	10	100	10	95-101.5	--
6	1,600	3,000	400	98.5-101.5	60	1000	100	98.5-101.5	20	1000	100	95-101.5	--
8	2,800	5,000	700	98.5-101.5	70	1000	100	98.5-101.5	30	1000	100	95-101.5	--
10	4,400	9,000	1,200	98.5-101.5	110	1000	100	98.5-101.5	35	1000	100	95-101.5	--

* A rebuilt meter is one that has had the measuring element replaced with a factory-made new unit. A repaired meter is one that has had the old measuring element cleaned and refurbished in a utility repair shop.

† These are suggested test flows and test quantities. Testing for high rates of flow can be achieved by testing the meter at 25% of the meters rating if the manufacturer's original test certificate indicates a linear curve between 25% and 100% of the rated flow range.

†† Quantity should be one or more full revolutions of the test hand but not less than 3 min running. When limited test capabilities force the use of smaller test quantities, the resultant increase in total test uncertainties and errors need to be recognized when establishing acceptance criteria tolerance.

§ The bypass meter should be tested in accordance with the appropriate test requirements for the type of meter used.

** As this rate varies according to manufacturer, it should be determined for each type of meter tested.

Metric Conversions: in. × 25.4 = mm, gal × 0.003785 = m³, gpm × 0.2268 = m³/h, ft³ × 0.02831 = m³.