



# Ranhill SAJ

## SPECIFICATION FOR COLD WATER METER (CLASS C)

**SPECIFICATION SAJ WM / CW / 001**

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QUALITY ASSURANCE DEPARTMENT  
RANHILL SAJ SDN. BHD.

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## **SAJ Specification for Cold Water Meter (Class C)**

CONTENT	Page
Contents	2
1.0 General	3
2.0 Features Required	3
3.0 Materials	4
4.0 Test and inspection	4
5.0 Packing	5
6.0 Pre – delivery inspection Certification	5
7.0 Certification	5
8.0 Mandatory Markings	5



## SPECIFICATION FOR COLD WATER METER (CLASS C)

### 1. GENERAL

[a] Features required are as follows or otherwise the Specification of Meters For Cold Potable Meter MS 1417:1997 and ISO 4064-1 for Cold Water Meter design, material and manufacture shall be used.

### 2. FEATURES REQUIRED

(a) The Water Meter to be supplied shall comply with ISO 4064-1 as shown in Table 1.

Item	Class and Meter Size (mm dia.)	Nominal Flow Rate m <sup>3</sup> /h
	<u>Class C</u>	
1	15	1.5
2	20	2.5
3	25	3.5
4	40	10
5	50	15
6	80	40
7	100	60

(b) The maximum permissible error in the lower and upper flow rate zone of true volume flow as follow:

Lower Flow Rate – ( $Q_{min} \leq Q < Q_t$ ) is  $\pm 5\%$

Upper Flow Rate – ( $Q_t \leq Q < Q_{max}$ ) is  $\pm 2\%$

(c) The nominal pressure shall be PN 16

(d) Meters up to 40mm size shall be supplied with threaded end connection complying with BS 2779

(e) Meters of 50mm size and above shall be provided with flanges

(f) Flanges shall be faced and drilled in accordance to BS4504: with rubber gaskets, bolts and nuts completely supplied.

(g) In accordance with Clause 5 of BS 5728: Part 3: 1984, the measurement errors at three flow rates within the flow ranges as shown in table 2.

(h) The pressure lost test shall be carried in accordance to Clause 7 of BS 5728: Part 3: 1984.

(i) The meter shall incorporate tamper proof design as to ensure easy detection if any unauthorized attempt is carried to access the internal components.

- (j) Seal counter are required for the water meter to assures accurate readings at all times and cannot be interfered with magnetically.

				NOMINAL FLOW RATE $Q_n$ (m <sup>3</sup> /h)	15	20	25	40	50	80	100
				CLASS C	METER SIZE (MM)						
NO	FLOW RANGE	MAXIMUM PERMISSIBLE ERROR	LIMITS OF FLOW RANGE	>15	CLASS C						
					TEST FLOW RATES (m <sup>3</sup> /h)						
1	At Nominal Flow Rate	2%	Value of $Q_n$	$Q_n$	1.5	2.5	3.5	10	15	40	60
2	Upper Zone	2%	Value of $Q_{max}$	$2 Q_n$	3	5	7	20	30	80	120
			Value of $Q_t$	$0.015 Q_n$	0.0225	0.0375	0.0525	0.15	0.225	0.6	0.9
3	Lower Zone	5%	Value of $Q_t$	$0.015 Q_n$	0.0225	0.0375	0.0525	0.15	0.225	0.6	0.9
			Value of $Q_{min}$	$0.006 Q_n$	0.015	0.025	0.035	0.1	0.09	0.24	0.36

**Table 2 – Determination Of Measurement Errors Of Water Meter**

### 3. MATERIALS

The body of the water meter size 15mm up to 40mm shall be Copper Alloy and for size 50mm up to 100mm shall be of Ductile Iron and protected with coated fusion bonded externally and internally. All materials of the water meter, which are in contact with the water flowing through the water meter, shall be non-toxic and non-tainting. Water meter must be properly sealed in order to ensure they are not easily dismantled. The seal wire shall be made of copper with sufficient strength to avoid vandalism.

### 4. TESTS AND INSPECTION

All Cold Water Meter shall be capable of complying with the requirements of the specification.

## 5. PACKING

All Water Meter shall be individually packed with proper methods and protected from damage during transit.

## 6. PRE – DELIVERY INSPECTION AND EVALUATION

- a) It is the responsibility of the tenderer to inform SAJ for inspection purposes during manufacturing and before delivery.
- b) SAJ reserve the right to inspect and witness the testing of product offered without any further notice.
- c) At any time, when requested, the supplier shall provide SAJ a sample of the product offered for evaluation purposes. All costs shall be borne by the supplier.
- d) If at any time the supplier fails to deliver the required sample, the product is deemed fail to meet the specifications.

## 7. CERTIFICATION

- a) Manufacturer of supplier are required to provide a copy of the certificate and testing report from SIRIM, IKRAM or other recognized certification body.
- b) Tests report required should be those tests conducted within a year period.
- c) SAJ have the right to refuse offer or reject supply if the documents required are not enclosed.

## 8. MANDATORY MARKING

Each water meter shall be legibly marked in accordance with the following requirements.

- a) Manufacturer's name or trademark;
- b) The metrological class and nominal flow rate  $Q_n$  of the meter in cubic meters per hour ;
- c) Year of manufacture (last two digits) and serial number;
- d) An arrow indicating the direction flow
- e) Maximum operating pressure (PN)
- f) Color as specified