



CHAPTER 5

TESTING VOLUMETRIC FAUCET PROTOTYPE

5.1 Flow rate and volume testing model

5.1.1 Testing equipment

- Water pump which generate flow rate up to 10 litre/minute
- Water tank
- Measure tank
- Gate valve size 1/2 inch.
- Stop watch

The equipment is setup to do the experiment and collecting data for further analysis. Model diagram of equipment show in figure 5.1. Volumetric faucet is connected to water pump and has gate valve to adjust flow rate as desired. Measure tank install on outlet of volumetric faucet to store water for measuring volume.

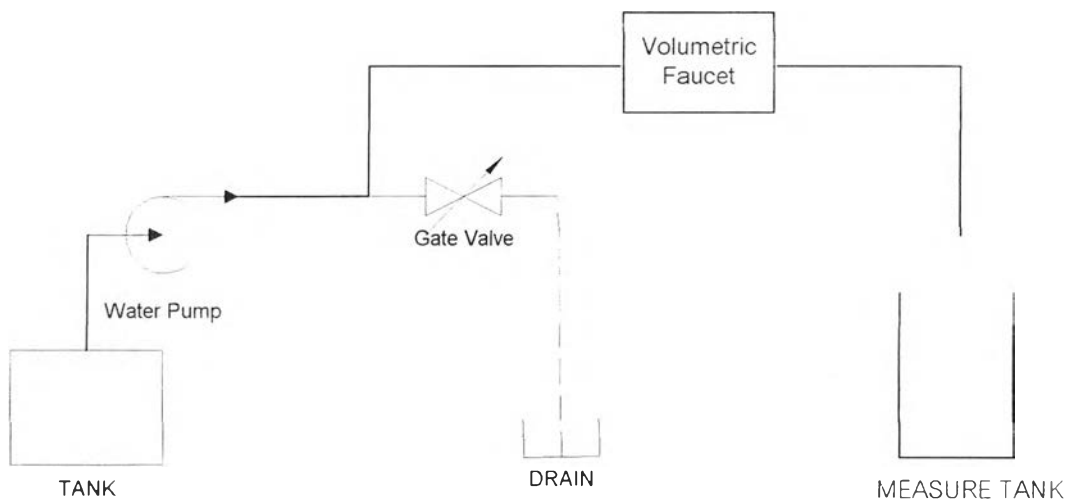


Figure 5.1 Testing relationship of flow rate and volume diagram

5.1.2 Testing procedure

- Setup equipment follow diagram
- Full open gate valve
- Full open volumetric valve
- Start water pump

- Measure water volume which flow through volumetric valve with 1 minute time interval and calculate flow rate
- Adjust gate valve till flow rate reach desire point
- Stop pump
- Initialize volumetric faucet
- Start pump and record time and volume till volumetric automatic close.
- Fill in result in table 5.1

Testing	Flow rate (litre/minute)	Volume (litre)
1		
2		
3		
⋮	⋮	⋮
⋮	⋮	⋮
⋮	⋮	⋮
10		

Table 5.1 Sample data collection table for flow rate and volume testing

5.2 Open faucet's torque testing model

5.2.1 Testing equipment

- Volumetric faucet
- Hinge weight meter
- Ruler

Volumetric faucet is installed with fix clamp. Use thin wire link between tip of volumetric faucet handle and hinge weight meter. Keep the hinge weight meter perpendicular with handle see figure 5.2.

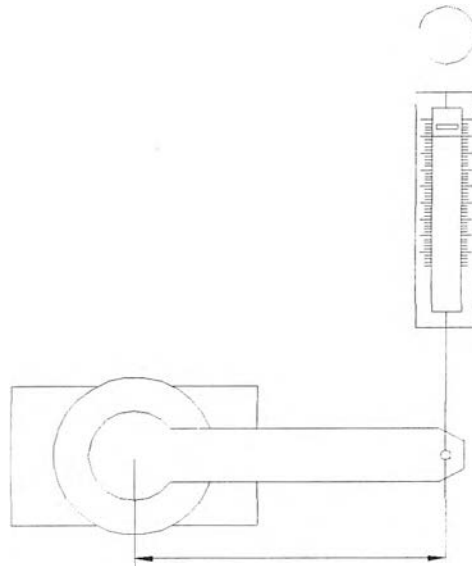


Figure 5.2 Testing open faucet's torque diagram

5.2.1 Testing procedure

- Install equipment according to the diagram
- Measure the length from volumetric faucet center to hinge point
- Start slowly pull hinge weight meter till the volumetric faucet handle move
- Read scale on hinge weight meter and record in table 5.2.

Testing	Force (gram)	Length (mm)
1		
2		
3		
.	.	.
.	.	.
.	.	.
10		

Table 5.2 Sample data collection table for open faucet testing.

5.3 Release ratchet lock testing model

5.3.1 Testing equipment

- Volumetric faucet
- Hinge weight meter

Volumetric faucet is installed with fix clamp. Use thin wire link between tip of ratchet gear and hinge weight meter. Keep the hinge weight meter perpendicular with ratchet gear see figure 5.3.

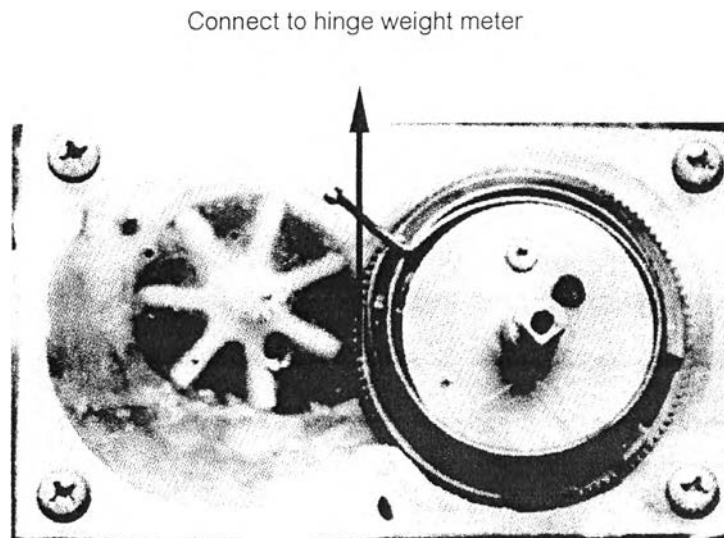


Figure 5.3 Testing moment for release ratchet lock diagram

5.3.2 Testing procedure

- Measure the length from volumetric faucet center to hinge point.
- Turn volumetric handle clockwise till lock on full open position.
- Rotate ratchet gear till release's tip contact release's pin.
- Start slowly pull hinge weight meter till the release's pin operate.
- Read scale on hinge weight meter and record in table 5.3.

Testing	Force (gram)
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Table 5.3 Sample data collection table for release lock testing

5.4 Testing result

5.4.1 Water flow rate and volume relationship

Testing	Flow rate (litre/minute)	Volume (litre)
1	1	-
2	2	-
3	3	-
4	4	244
5	5	240
6	6	240
7	7	245
8	8	240
9	9	234
10	10	230

Table 5.4 Result of testing flow rate and volume

5.4.2 Open volumetric faucet's torque

Distance from volumetric faucet center to hinge handle = 77 mm.

Testing	Force (gram)
1	920
2	930
3	930
4	930
5	925
6	925
7	925
8	930
9	935
10	935

Table 5.5 Open faucet's torque testing result

5.4.3 Open ratchet lock force

Distance from volumetric faucet center to ratchet gear tip = 27.5 mm.

Testing	Force (gram)
1	345
2	320
3	325
4	310
5	330
6	350
7	365
8	320
9	325
10	325

Table 5.6 Release lock ratchet testing result