

# UFR

Unmeasured-Flow Reducer



**A.R.I.**

FLOW CONTROL ACCESSORIES Ltd.

# THE PROBLEM

## **Apparent (commercial) water losses**

A major cause for apparent water losses is the fact that domestic water meters have difficulty in measuring very low flow rates mainly between 1 l/h to 15 l/h.

The minimum flow rate ( $Q_{min}$ ), where an accuracy of  $\pm 5\%$  is required by the appropriate ISO standard, for small domestic water meters ( $Q_n 1.5$ ) is 30 l/h for class B water meters, 15 l/h for class C water meters and 11.25 l/h for class D water meters.

## **Loss of income due to the under-registration of water meters at low flow rates**

Under-registration of low flow rates is the main reason for apparent water losses and it can count for more than 5% of the total water sold to users by the municipality. For old water meters, the measuring starting point is higher and apparent water losses can be more than 10%.

## **Main reasons for leaks and low flow rates that cause under-registration of the water meter**

- Dripping or improperly closed faucet.
- Leaks in toilet tank seals.
- Very low flow rates at the end of the filling cycle of toilet tanks and water storage tanks.
- Pipework leakages downstream of the water meter.

# A.R.I.'S SOLUTION

The A.R.I. UFR is approved by the

# WRAS



Approved by OFI  
complies with hygienic  
properties acco. to  
EN1074.1

## **UFR - Unmeasured-Flow Reducer**

UFR - Is a patented smart and simple solution, installed in the domestic water supply line (In-Line), adjacent to the water meter.

UFR - At low flow rates, changes the flow regime to batches that the water meter can measure.

## **UFR - Operating Principles**

The UFR begins working when there are low flow rates, below 30 l/h.

The UFR regulates the water flow so that there is no water flow at all through the UFR part of the time, while the rest of the time; the flow is high enough to be measured. A change in the flow discipline at low flow rates allows the existing water meter to measure those low flow rates it could not measure before.

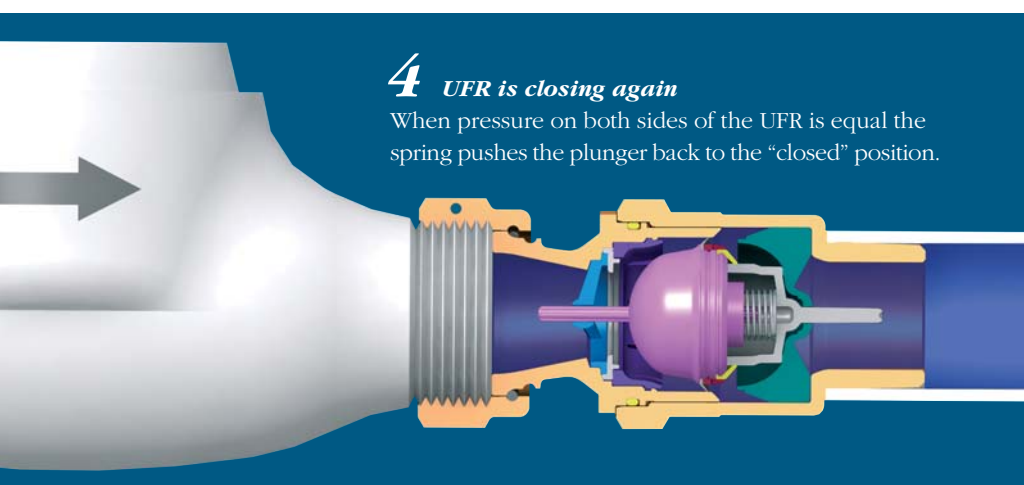
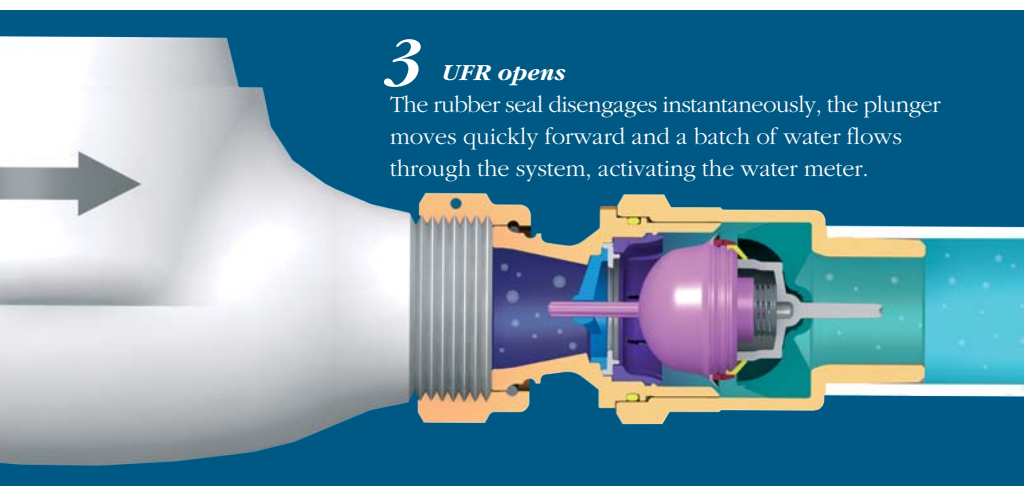
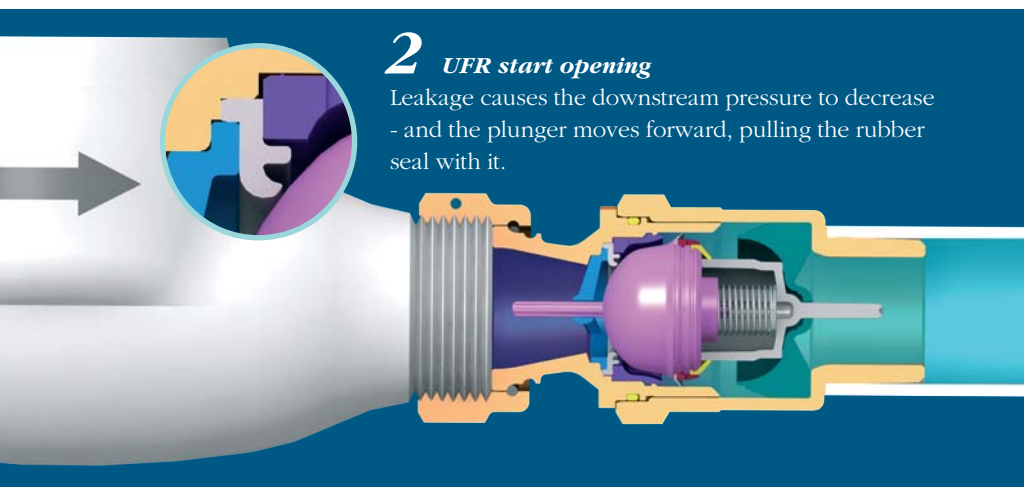
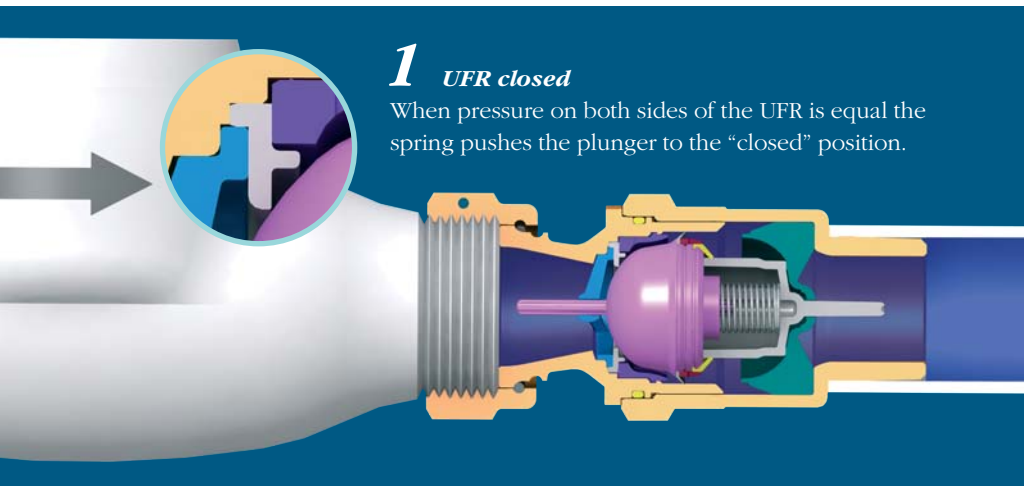
When the flow rate increases above 30 l/h, the UFR remains open, so that it does not interfere with normal measurements.

## **Advantages of the UFR**

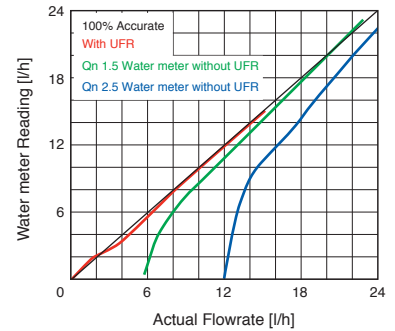
- Reduces unmeasured flow, cuts down apparent losses.
- Substantially increases the income of the Water Authority, up to 10%.
- The UFR is a high quality check valve preventing backflow and main pipe contamination.
- When water is billed in a block of flats according to the domestic water meter plus the mean difference between the domestic water meters and the main water meter, the UFR can make the billing fairer.
- Turns apparent water losses into revenue water.
- Reduces measurement differences between the main water meter and domestic water meters.



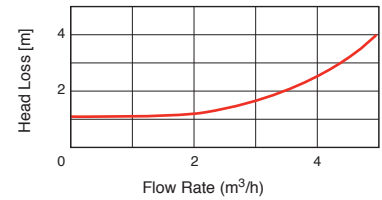
# HOW DOES THE UFR WORK:

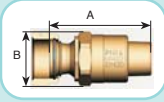
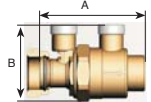
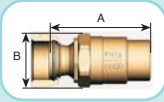
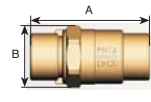
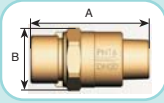
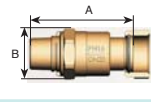
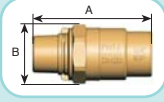
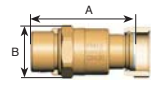
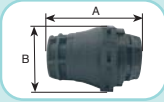


**WATER METER ACCURACY WITH & WITHOUT UFR**



**HEAD LOSS VS. FLOW RATE**



MODELS	INLET	OUTLET	PRODUCT CODE	A mm	B mm	WEIGHT (g)
	1" BSP-U	3/4" BSPT MALE	0567-01BPU-34BTM-1/2/4	79	42	333
	3/4" BSP-U	1/2" BSPT MALE	0567-34BPU-50BTM-1/2/4	75	42	287
	3/4" BSP-U	3/4" BSPT MALE	0567-34BPU-34BTM-1/2/4	77	42	300
	1" BSP-U	1" BSPT MALE	0567-01BPU-01BTM-1/2/4	81	42	322
	3/4" BSP-U	3/4" BSP MALE	0567-34BPU-34BPM-EP1/2/4	79	57	337
	1" BSP-U	3/4" BSP FEMALE	0567-01BPU-34BPF-1/2/4	79	42	350
	3/4" BSP-U	1" BSP FEMALE	0567-34BPU-01BPF-1/2/4	80	42	328
	3/4" BSP-U	3/4" BSP FEMALE	0567-34BPU-34BPF-1/2/4	77	42	311
	1" BSP FEMALE	1" BSP FEMALE	0567-01BPF-01BPF-1/2/4	86	42	338
	3/4" BSP FEMALE	1" BSP FEMALE	0567-34BPF-01BPF-1/2/4	83	42	307
	3/4" BSP FEMALE	3/4" BSP FEMALE	0567-34BPF-34BPF-1/2/4	81	42	289
	3/4" BSP FEMALE	3/4" BSPT MALE	0567-34BPF-34BTM-1/2/4	81	42	272
	3/4" BSP FEMALE	1/2" BSPT MALE	0567-34BPF-50BTM-1/2/4	79	42	265
	3/4" BSPT MALE	1" BSP-U	0567-34BTM-01BPU-1/2/4	86	42	359
	3/4" BSPT MALE	3/4" BSP FEMALE	0567-34BTM-34BPF-1/2/4	84	42	286
	1" BSP FEMALE	1" BSP-U	0567-01BPF-01BPU-1/2/4	85	42	393
	3/4" BSP FEMALE	1" BSP-U	0567-34BPF-01BPU-1/2/4	82	42	361
	1/2" BSP FEMALE	1/2" BSP FEMALE	0577-50BPF-50BPF-1/2/4	80	64	123
	3/4" BSP FEMALE	3/4" BSP FEMALE	0577-34BPF-34BPF-1/2/4	81	64	136
	1/2" BSP FEMALE	3/4" BSP FEMALE	0577-50BPF-34BPF-1/2/4	81	64	130
	3/4" BSP FEMALE	1/2" BSP FEMALE	0577-34BPF-50BPF-1/2/4	81	64	130

...1/2/4=Legend 1=Qn 1.5 2=Qn 2.5 4=Volumetric