EST. 1856

McDonald®

Unmeasured Flow Reducer UFR

Couplings | Valves | Setters

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THE PROBLEM: NON-REVENUE WATER

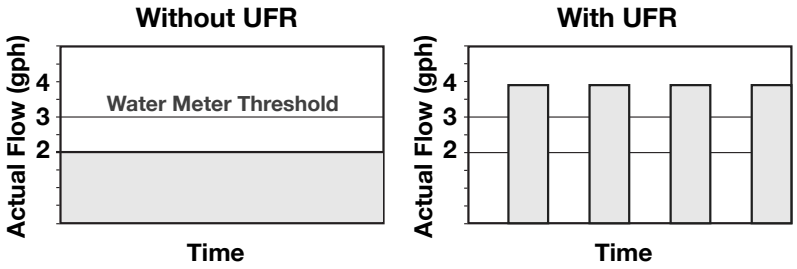
Every water system has to cope with non-revenue water. Main leaks, theft, tank overflows and unmeasured flow through water meters all contribute to a system's non-revenue water problem. According to the American Water Works Association (AWWA), 14% of indoor household usage in North America can be attributed to leaks. As residential water meters aren't designed to register low-flows such as leaks and drips, much of this usage goes un-metered and un-billed. This type of non-revenue water is called "apparent loss" and is valued at the retail water rate. For systems in which waste water is also billed based on water consumption, this apparent loss is valued at the retail rate for water and waste water combined. Apparent losses through residential water meters can add up to millions of dollars annually in non-revenue water and sewer.

THE SOLUTION - THE UNMEASURED-FLOW REDUCER (UFR):

The UFR captures this low-flow water and forces it through the meter in a way that causes nearly every drop to be registered. Apparent losses are reduced and customers are held accountable for their actual usage.

HOW THE UFR WORKS

The UFR works by changing the way water flows through the meter at low flow rates. At low flow rates there is not enough energy in the flow to activate the water meter. With the UFR installed, the low linear flows are divided into batches that are forced through the meter at a higher flow rate (see chart below). These higher flows can now be registered by the water meter, reducing apparent losses and increasing revenue.



At standard household flow rates, the UFR is fully open, allowing water to flow normally with minimal head loss. As flow is reduced, the UFR returns to its operation of batching the water flow.

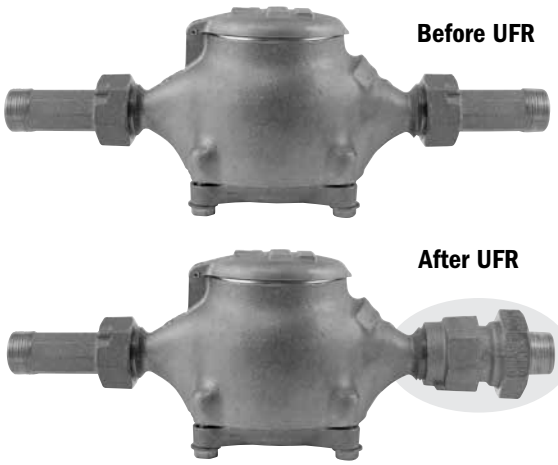
THE RESULTS

UFR installations can increase metered residential water and sewer revenue by as much as five to ten percent. Customers are held accountable for their actual usage and the system's apparent losses are reduced considerably. Customers that are held accountable for their usage are more likely to fix leaks and conserve our most precious resource, clean water.

U.F.R. technology provided by A.R.I. Flow Control Accessories LTD is Patented

THERMAL EXPANSION WARNING - Creating a "closed" condition in a hot water system with the installation of a non-return barrier (such as a Check Valve or Backflow Preventer between the system piping and the public supply) can result in extreme pressure rises caused by thermal expansion and/or water hammer. This thermal expansion can damage piping, valves, and other components in the system. The installation of a pressure relief device or thermal expansion tank can avoid possible damages.

7201 Meter Couplings



A.Y. McDonald Mfg. Series 7201 Style UFR Meter Coupling is an innovative design that allows low volumes of water usage (previously unmeasured by the water meter) to be measured simply by batching the usage. Studies show that 5% to 10% of total water consumption is lost due to low, unmeasured flows. This device is in service worldwide.

FOR 5/8", 5/8" X 3/4", & 3/4" WATER METERS

- Cast brass housing construction conforms to AWWA C-800 (latest revision)
- Self-cleaning internal components
- Lay length equal to a standard meter coupling (2 1/2") for ease in retrofitting
- Meter swivel nut inlet and MNPT outlet
- Available as a non-check valve where thermal expansion is an issue, add x001 to model number
- For use with Volumetric (Positive Displacement) & Multi-Jet meters
- UFR is directional

How to Order

Order Model 7201-3JM 431

7201	-	3	J	M		4	3	1	
Model Number Prevention Required	Standard	Meter Size	Inlet & Outlet Connection		Space	Thread Size	Sizes - Outlet Connection	Meter Type	Backflow

7201 = Inline UFR

3 = 3/4"

Inlet & Outlet Connection -
J = Meter swivel integral
M = MNPT Integral

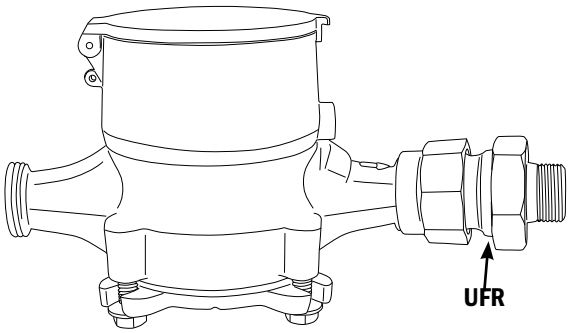
METER SIZE	THREAD SIZED	THREAD DESIGNATION
5/8"	3/4"	3
5/8" x 3/4"	1"	4
3/4"	1"	4

1 = 1/2"
3 = 3/4"

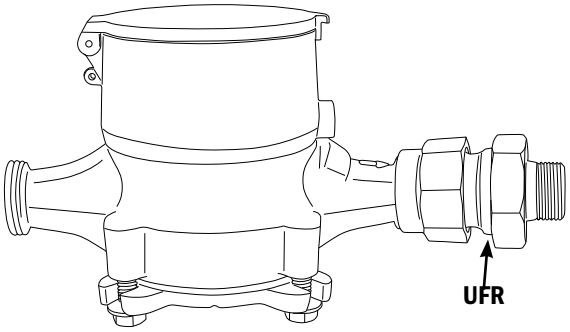
1 - Volumetric Meter (V) Positive Displacement

2 - Multi-Jet Meter (M2) Contact factory with name of meter, manufacturer, and model number for assistance in determining appropriate UFR or see table on the following page.

X001 - Without Backflow Prevention



7201 Meter Couplings



GENERAL INFORMATION

- **WARNING** - Do **NOT** use UFR with improper meter. The type of meter the UFR is to be used with is marked on the product as follows:
  V = Volumetric Meter M2 = Multi-Jet Meter
  If uncertain of meter type being used, contact factory with meter manufacturer and model number. UFR's without backflow prevention will also be marked "NCV" following the "V" or "M2".
- The UFR can be installed in either the horizontal or vertical position.
- The UFR can be installed either before or after the meter as long as the arrow points in the direction of flow.
- The UFR requires a minimum line pressure of 14 1/2 PSI to operate correctly.
- If used in a system with a pressure regulating valve, best results will be obtained by locating the pressure regulating valve before the UFR or at least 25' after the UFR.
- The UFR does not require regular maintenance.
- Do **NOT** attempt to repair or replace internal components.
- Replacing the UFR at the time the meter is changed out is highly recommended.

ASSEMBLY INSTRUCTIONS

- Service lines should be thoroughly flushed before installing device. Excessive pipe sealant or Teflon tape may prevent the UFR from working properly. A suitable strainer should be installed upstream of the device.
- The UFR **MUST** be installed so that the arrow on the UFR points in the direction of water flow.
- A pressure relief valve or an expansion tank is recommended downstream of the UFR if thermal expansion conditions are possible. Not required for non-check valve (NCV) UFR's (X001).
- Use only on cold water service lines under 110°F. Protect from freezing.
- The UFR is not recommended for pressures exceeding 235 PSI.

Meter Manufacturer	Model(s)	Measurement Element	Meter Type	→	UFR Type	UFR Marking	No Check UFR Marking
Neptune	T10	Nutating Disc	Volumetric Displacement Positive Displacement (PD)	→	Volumetric	UFR - V	UFR - V - NCV
Badger	25 - 35						
Hersey	400 Series - II's						
Sensus / Rockwell	SR - SRII	Oscillating Piston					
Elster / Kent Amco	C700						
Master Meter	MMPD						
Master Meter	BLMJ - MMMJ	Multi-Jet	Velocity	→	Multi-Jet	UFR - M2	UFR - M2 - NCV
Sensus	PMM						
Elster Amco	M140 (MO-C)						
Hays	MR - MT						
Precision	PM - PMM						
Sensus	iPERL	Magnetic	Solid State	→	N/A	N/A	N/A
Badger	E-Series	Ultrasonic					
Elster	SM-700	Fluidic Oscilation					
Actaris		Single Jet	Velocity		Contact Factory	Contact Factory	Contact Factory
	MC15 - MC20	Multi-Jet	Velocity		Contact Factory	Contact Factory	Contact Factory
	MSD - TNII	(not sold in US)	Velocity		Contact Factory	Contact Factory	Contact Factory

Meter shall comply with the AWWA C700-90 accuracy requirements as specified in section 3.8 of the standard.

UFR-V for Volumetric (Positive Displacement) Meters

Model No.	Meter	Inlet	Outlet
7201-3JM 331	5/8"	5/8" Female meter swivel nut	3/4" Male iron pipe thread
* 7201-3JM 331x001	5/8"	5/8" Female meter swivel nut	3/4" Male iron pipe thread
7201-3JM 431	5/8" x 3/4" or 3/4"	3/4" Female meter swivel nut	3/4" Male iron pipe thread
* 7201-3JM 431x001	5/8" x 3/4" or 3/4"	3/4" Female meter swivel nut	3/4" Male iron pipe thread

UFR-M2 for Multi-Jet Meters

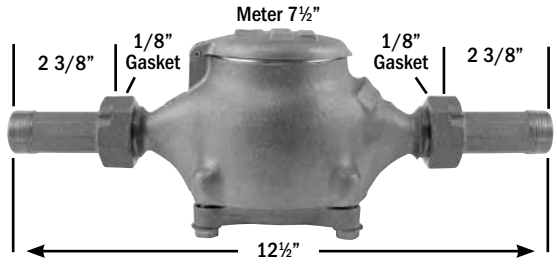
Model No.	Meter	Inlet	Outlet
7201-3JM 332	5/8"	5/8" Female meter swivel nut	3/4" Male iron pipe thread
* 7201-3JM 332x001	5/8"	5/8" Female meter swivel nut	3/4" Male iron pipe thread
7201-3JM 432	5/8" x 3/4" or 3/4"	3/4" Female meter swivel nut	3/4" Male iron pipe thread
* 7201-3JM 432x001	5/8" x 3/4" or 3/4"	3/4" Female meter swivel nut	3/4" Male iron pipe thread

* Non-Check Valve

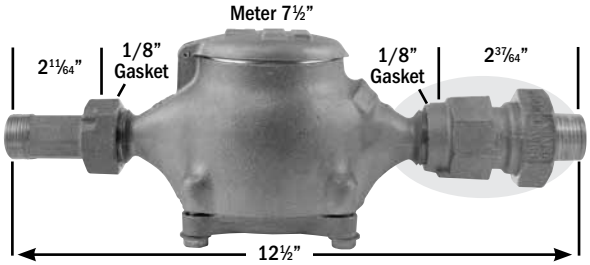
7201 5/8” Meter - Change-Out Kit

A.Y. McDonald Mfg. Series 7201 Style UFR Meter Coupling is an innovative design that allows low volumes of water usage (previously unmeasured by the water meter) to be measured simply by batching the usage. Studies show that 5% to 10% of total water consumption is lost due to low, unmeasured flows. This device is in service worldwide.

Before UFR Kit

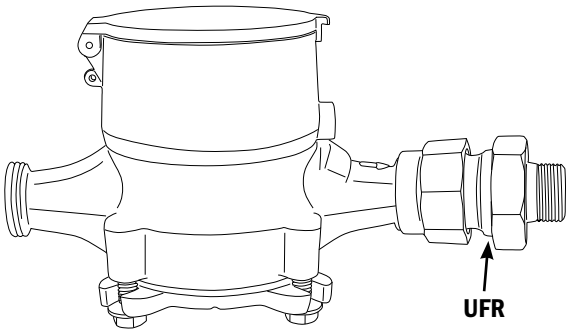


After UFR Kit



KIT FOR 5/8” METER CHANGE-OUT

- Kit consists of one special length 5/8” x 1/2” meter coupling for inlet side of meter, one 5/8” x 1/2” special length UFR device for outlet side of meter, and two meter gaskets.
- Male threads are protected with plastic thread protectors.



UFR-V Kits for Volumetric (Positive Displacement) Meters

Model NO.	Meter	Inlet	Outlet
7201-3JMKIT 311	5/8”	1/2” Male iron pipe thread x 3/4” Female meter swivel nut	3/4” Female meter swivel nut x 1/2” Male iron pipe thread
* 7201-3JMKIT 311x001	5/8”	1/2” Male iron pipe thread x 3/4” Female meter swivel nut	3/4” Female meter swivel nut x 1/2” Male iron pipe thread

UFR-M2 Kits for Multi-Jet Meters

Model No.	Meter	Inlet	Outlet
7201-3JMKIT 312	5/8”	1/2” Male iron pipe thread x 3/4” Female meter swivel nut	3/4” Female meter swivel nut x 1/2” Male iron pipe thread
* 7201-3JMKIT 312x001	5/8”	1/2” Male iron pipe thread x 3/4” Female meter swivel nut	3/4” Female meter swivel nut x 1/2” Male iron pipe thread

* Non-Check Valve

7201C Straight Couplings

A.Y. McDonald Mfg. Series 7201C Style UFR Meter Coupling is an innovative design that allows low volumes of water usage (previously unmeasured by the water meter) to be measured simply by batching the usage. Studies show that 5% to 10% of total water consumption is lost due to low, unmeasured flows. This device is in service worldwide.

FOR 5/8", 5/8" X 3/4" & 3/4" WATER METERS

- Cast brass housing construction conforms to AWWA C-800 latest revision)
- Self-cleaning internal components
- Available with a wide variety of meter, threaded, or compression connections
- Available as a non-check valve where thermal expansion is an issue, add x001 to model number
- For use with Volumetric (Positive Displacement) & Multi-Jet meters
- UFR is directional

How to Order

Order Model 7201C3PE 331

7201	C	3	P	E		3	3	1	
Model Number Required	**C** = Cartridge Version	**Meter Size**	**Inlet & Outlet Connection**		**Space**	**Thread Size**	**Sizes - Outlet Connection**	**Meter Type**	**Backflow Prevention**

7201C = Inline UFR

3 = 3/4"

Inlet & Outlet Connection -
A = Male meter thread integral
E = FNPT Integral
G = British Standard Pipe Thread (BSPT) Female threads - Integral
H = Meter swivel integral with saddle nut
J = Meter swivel integral
K = K-Style male thread integral
L = K-Style female thread integral
P = MNPT Integral
R = Copper flare
S = H CTS Handyloc compression integral
T = T CTS compression integral
U = G CTS compression integral
V = Q CTS compression integral
Y = Yoke style thread male integral
2 = -22 CTS compression integral

1 = 1/2"
2 = 5/8"
3 = 3/4"

X001 - Without Backflow Prevention

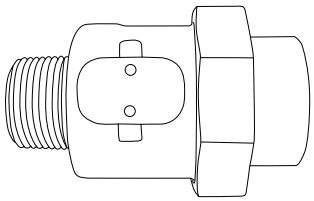
METER SIZE	THREAD SIZED	THREAD DESIGNATION
5/8"	3/4"	3
5/8" x 3/4"	1"	4
3/4"	1"	4
1"	1 1/4"	5

For Iron Yokes use the following designation

METER SIZE	THREAD SIZE	THREAD DESIGNATION
5/8"	-	2
5/8" x 3/4"	-	3
3/4"	-	3
1"	-	4

1 - Volumetric Meter (V) Positive Displacement

2 - Multi-Jet Meter (M2) Contact factory with name of meter, manufacturer, and model number for assistance in determining appropriate UFR or see table on the following page.



7201C Straight Couplings

Meter Manufacturer	Model(s)	Measurement Element	Meter Type	→	UFR Type	UFR Marking	No Check UFR Marking
Neptune	T10	Nutating Disc	Volumetric Displacement Positive Displacement (PD)	→	Volumetric	White Tag	White Tag - NCV
Badger	25 - 35						
Hersey	400 Series - II's						
Sensus / Rockwell	SR - SRII	Oscillating Piston					
Elster / Kent Amco	C700						
Master Meter	MMPD						
Master Meter	BLMJ - MMMJ	Multi-Jet	Velocity	→	Multi-Jet	Blue Tag	Blue Tag - NCV
Sensus	PMM						
Elster Amco	M140 (MO-C)						
Hays	MR - MT						
Precision	PM - PMM						
Sensus	iPERL	Magnetic	Solid State	→	N/A	N/A	N/A
Badger	E-Series	Ultrasonic					
Elster	SM-700	Fluidic Oscilation					
Actaris		Single Jet	Velocity		Contact Factory	Contact Factory	Contact Factory
	MC15 - MC20	Multi-Jet	Velocity		Contact Factory	Contact Factory	Contact Factory
	MSD - TNII	(not sold in US)	Velocity		Contact Factory	Contact Factory	Contact Factory

Meter shall comply with the AWWA C700-90 accuracy requirements as specified in section 3.8 of the standard.

UFR-V for Volumetric (Positive Displacement) Meters

Model No.	Meter Size	Inlet	Outlet
7201C322 331		3/4" "-22" CTS compression	3/4" -22 CTS compression
7201C32E 331		3/4" "-22" CTS compression	3/4" FNPT integral
7201C3E2 331		3/4" FNPT integral	3/4" -22 CTS compression
7201C3EE 331		3/4" FNPT integral	3/4" FNPT integral
7201C3EP 331		3/4" FNPT integral	3/4" MNPT integral
7201C3JA 441	5/8" x 3/4" or 3/4"	5/8" x 3/4" or 3/4" Meter swivel integral	3/4" Male meter thread integral
7201C3JE 431	5/8" x 3/4" or 3/4"	5/8" x 3/4" or 3/4" Meter swivel integral	3/4" FNPT integral
7201C3KL 331		3/4" Male "K" thread	3/4" Female "K" thread
7201C3LK 331		3/4" Female "K" thread	3/4" Male "K" thread
7201C3PE 331		3/4" MNPT integral	3/4" FNPT integral
7201C3PP 331		3/4" MNPT integral	3/4" MNPT integral
7201C3VV 331		3/4" "Q" CTS compression*	3/4" "Q" CTS compression*
7201C3Y2 331	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" -22 CTS compression
7201C3YE 331	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" FNPT integral

UFR-M2 for Multi-Jet Meters

Model No.	Meter Size	Inlet	Outlet
7201C322 332		3/4" "-22" CTS compression	3/4" -22 CTS compression
7201C32E 332		3/4" "-22" CTS compression	3/4" FNPT integral
7201C3E2 332		3/4" FNPT integral	3/4" -22 CTS compression
7201C3EE 332		3/4" FNPT integral	3/4" FNPT integral
7201C3EP 332		3/4" FNPT integral	3/4" MNPT integral
7201C3JA 442	5/8" x 3/4" or 3/4"	5/8" x 3/4" or 3/4" Meter swivel integral	3/4" Male meter thread integral
7201C3JE 432	5/8" x 3/4" or 3/4"	5/8" x 3/4" or 3/4" Meter swivel integral	3/4" FNPT integral
7201C3KL 332		3/4" Male "K" thread	3/4" Female "K" thread
7201C3LK 332		3/4" Female "K" thread	3/4" Male "K" thread
7201C3PE 332		3/4" MNPT integral	3/4" FNPT integral
7201C3PP 332		3/4" MNPT integral	3/4" MNPT integral
7201C3VV 332		3/4" "Q" CTS compression*	3/4" "Q" CTS compression*
7201C3Y2 332	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" -22 CTS compression
7201C3YE 332	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" FNPT integral

*Insert Stiffeners Required on ALL Flexible Plastic Connections

7202 Angle Single Check & Non-Check Valve

A.Y. McDonald Mfg. 7202 Series UFR Angle Single Check Valve is an innovative design that allows low volumes of water usage (previously unmeasured by the water meter) to be measured simply by batching the usage. Studies show that 5% to 10% of total water consumption is lost due to low, unmeasured flows. This device is in service worldwide.

FOR 5/8", 5/8" X 3/4" & 3/4" WATER METERS

- Cast brass housing construction conforms to AWWA C-800 (latest revision)
- Self-cleaning cartridge assembly
- Available as a non-check valve where thermal expansion is an issue, add x001 to model number
- Meter swivel nut inlet with optional FNPT, CTS (G, Q, T, -22 series), and flare outlets
- For use with Volumetric (Positive Displacement) & Multi-jet meters
- Designed to be installed after the meter
- UFR is directional
- Equal to A.Y. McDonald 712 series dual check lay lengths for ease of retrofitting

How to Order

Order Model 7202-3HE 431

7202	-	3	H	E		4	3	1	
Model Number Required	Standard	Meter Size	Inlet & Outlet Connection		Space	Thread Size	Sizes - Outlet Connection	Meter Type	Backflow Prevention

7202 = Angle Single UFR

Meter Size
3 = 3/4"

Inlet & Outlet Connection -
A = Male meter thread integral
B = -3G PEP Compression integral
E = FNPT Integral
G = British Standard Pipe Thread (BSPT) Female threads - integral
H = Meter swivel integral with saddle nut
I = -3H PEP Handyloc compression integral
J = Meter swivel integral
K = K-Style male thread integral
L = K-Style female thread integral
P = MNPT integral
R = Copper flare
S = H CTS Handyloc compression integral
T = T CTS compression integral
U = G CTS compression integral
V = Q CTS compression integral
Y = Yoke style thread male integral
Z = -3Q PEP compression integral
2 = -22 CTS compression integral
3 = -33 PEP compression integral
4 = -44 PVC compression integral
5 = -55 IP compression integral

Thread Size

METER SIZE	THREAD SIZED	THREAD DESIGNATION
5/8"	3/4"	3
5/8" x 3/4"	1"	4
3/4"	1"	4

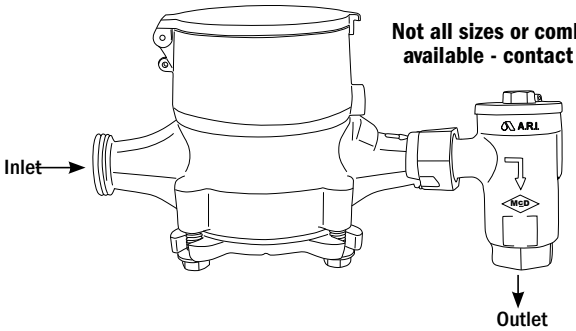
For Iron Yokes use the following designation

METER SIZE	THREAD SIZE	THREAD DESIGNATION
5/8"	-	2
5/8" x 3/4"	-	3
3/4"	-	3

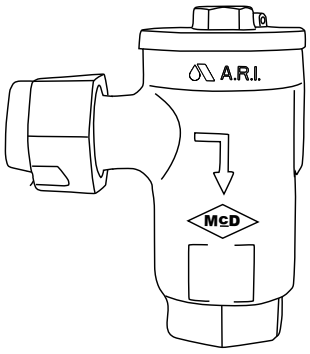
Sizes - Outlet Connection
3 = 3/4"

Meter Type
1 - Volumetric Meter (V) Positive Displacement
2 - Multi-Jet Meter (M2) Contact factory with name of meter, manufacturer, and model number for assistance in determining appropriate UFR or see table on the following page.

Backflow Prevention
X001 - Without Backflow Prevention



Not all sizes or combinations available - contact factory.



7202 Angle Single Check & Non-Check Valve

Meter Manufacturer	Model(s)	Measurement Element	Meter Type	→	UFR Type	UFR Marking
Neptune	T10	Nutating Disc	Volumetric Displacement Positive Displacement (PD)	→	Volumetric	White Tag
Badger	25 - 35					
Hersey	400 Series - II's					
Sensus / Rockwell	SR - SRII	Oscillating Piston				
Elster / Kent Amco	C700					
Master Meter	MMPD					
Master Meter	BLMJ - MMMJ	Multi-Jet	Velocity	→	Multi-Jet	Blue Tag
Sensus	PMM					
Elster Amco	M140 (MO-C)					
Hays	MR - MT					
Precision	PM - PMM					
Sensus	iPERL	Magnetic	Solid State	→	N/A	N/A
Badger	E-Series	Ultrasonic				
Elster	SM-700	Fluidic Oscilation				
Actaris		Single Jet	Velocity		Contact Factory	Contact Factory
	MC15 - MC20	Multi-Jet	Velocity		Contact Factory	Contact Factory
	MSD - TNII	(not sold in US)	Velocity		Contact Factory	Contact Factory

Meter shall comply with the AWWA C700-90 accuracy requirements as specified in section 3.8 of the standard.

UFR-V for Volumetric (Positive Displacement) Meters

Model No.	Meter Size	Inlet	Outlet
7202-3HE 331	5/8"	Meter swivel nut with saddle	3/4" FNPT integral
7202-3HE 431	5/8" x 3/4" or 3/4"	Meter swivel nut with saddle	3/4" FNPT integral
7202-3JE 331	5/8"	Meter swivel integral	3/4" FNPT integral
7202-3JE 431	5/8" x 3/4" or 3/4"	Meter swivel integral	3/4" FNPT integral
7202-3Y2 231	5/8"	Iron Yoke Star Nut	3/4" -22 CTS compression
7202-3Y2 331	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" -22 CTS compression
7202-3YE 231	5/8"	Iron Yoke Star Nut	3/4" FNPT integral
7202-3YE 331	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" FNPT integral

UFR-M2 for Multi-Jet Meters

Model No.	Meter Size	Inlet	Outlet
7202-3HE 332	5/8"	Meter swivel nut with saddle	3/4" FNPT integral
7202-3HE 432	5/8" x 3/4" or 3/4"	Meter swivel nut with saddle	3/4" FNPT integral
7202-3JE 332	5/8"	Meter swivel integral	3/4" FNPT integral
7202-3JE 432	5/8" x 3/4" or 3/4"	Meter swivel integral	3/4" FNPT integral
7202-3Y2 232	5/8"	Iron Yoke Star Nut	3/4" -22 CTS compression
7202-3Y2 332	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" -22 CTS compression
7202-3YE 232	5/8"	Iron Yoke Star Nut	3/4" FNPT integral
7202-3YE 332	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" FNPT integral

*Insert Stiffeners Required on ALL Flexible Plastic Connections
**Add X001 for Non-Check Valve UFR

NOTE: Add "W" in place of "-" for pentagon test plug in cap i.e. 7202-3JE 331 = 7202W3JE 331.

7211 Inline Dual Check

A.Y. McDonald Mfg. 7211 Series UFR Style Inline Dual Check Valve is an innovative design that allows low volumes of water usage (previously unmeasured by the water meter) to be measured simply by batching the usage. Studies show that 5% to 10% of total water consumption is lost due to low, unmeasured flows.

FOR 5/8", 5/8" X 3/4" & 3/4" WATER METERS

- Cast brass housing construction conforms to AWWA C-800 (latest revision)
- Self-cleaning cartridge assembly
- Available with a wide variety of meter, threaded, or compression connections
- Check Valve is equal to the McDonald 711 Series lay lengths for ease in retrofitting
- For use with Volumetric (Positive Displacement) & Multi-jet meters
- Designed to be installed after the meter
- UFR is directional

How to Order

Order Model 7211-3JM 431

7211	-	3	J	M		4	3	1
Model Number Required	Standard	Meter Size	Inlet & Outlet Connection		Space	Thread Size	Sizes - Outlet Connection	Meter Type

7211 = Inline Dual Check w/ UFR

3 = 3/4"

Inlet & Outlet Connection -
A = Male meter thread integral
B = Male meter thread union
C = -22 CTS compression union
D = G CTS compression union
E = FNPT integral
F = FNPT union
G = T CTS compression union
H = Meter swivel integral with saddle nut
J = Meter swivel integral
K = K-Style male thread integral
L = K-Style female thread integral
M= MNPT union
N= Meter female thread union
O= H CTS Handyloc compression union
P = MNPT integral
Q = K Style male thread union
R = Q CTS compression union
S = H CTS Handyloc compression integral
T = T CTS compression integral
U = G CTS compression integral
V = Q CTS compression integral
W= Yoke box cradle
Y = Yoke style thread male integral
2 = -22 CTS compression integral

METER SIZE	THREAD SIZED	THREAD DESIGNATION
5/8"	3/4"	3
5/8" x 3/4"	1"	4
3/4"	1"	4

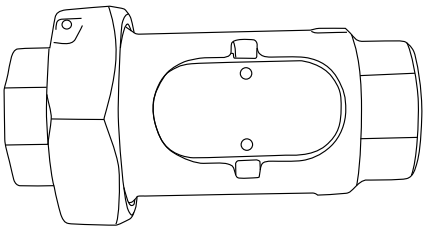
For Iron Yokes use the following designation

METER SIZE	THREAD SIZE	THREAD DESIGNATION
5/8"	-	2
5/8" x 3/4"	-	3
3/4"	-	3

1 = 1/2" **3** = 3/4"
2 = 5/8" **4** = 1"

1 - Volumetric Meter (V) Positive Displacement

2 - Multi-Jet Meter (M2) Contact factory with name of meter, manufacturer, and model number for assistance in determining appropriate UFR or see table on the following page.



7211 Inline Dual Check

Meter Manufacturer	Model(s)	Measurement Element	Meter Type		UFR Type	UFR Marking
Neptune	T10	Nutating Disc	Volumetric Displacement Positive Displacement (PD)	→	Volumetric	White Tag
Badger	25 - 35					
Hersey	400 Series - II's					
Sensus / Rockwell	SR - SRII	Oscillating Piston				
Elster / Kent Amco	C700					
Master Meter	MMPD					
Master Meter	BLMJ - MMMJ	Multi-Jet	Velocity	→	Multi-Jet	Blue Tag
Sensus	PMM					
Elster Amco	M140 (MO-C)					
Hays	MR - MT					
Precision	PM - PMM					
Sensus	iPERL	Magnetic	Solid State	→	N/A	N/A
Badger	E-Series	Ultrasonic				
Elster	SM-700	Fluidic Oscilation				
Actaris		Single Jet	Velocity		Contact Factory	Contact Factory
	MC15 - MC20	Multi-Jet	Velocity		Contact Factory	Contact Factory
	MSD - TNII	(not sold in US)	Velocity		Contact Factory	Contact Factory

Meter shall comply with the AWWA C700-90 accuracy requirements as specified in section 3.8 of the standard.

UFR-V for Volumetric (Positive Displacement) Meters

Model No.	Meter Size	Inlet	Outlet
7211-3FE 331		3/4" FNPT Union	3/4" FNPT Integral
7211-3HB 441	5/8" x 3/4" or 3/4"	Meter swivel integral w/ meter support	Male meter thread union
7211-3JB 441	5/8" x 3/4" or 3/4"	Meter swivel integral	Male meter thread union
7211-3JC 331	5/8"	Meter swivel integral	3/4" -22 CTS compression union*
7211-3JC 431	5/8" x 3/4" or 3/4"	Meter swivel integral	3/4" -22 CTS compression union*
7211-3JF 331	5/8"	Meter swivel integral	3/4" FNPT union
7211-3JF 431	5/8" x 3/4" or 3/4"	Meter swivel integral	3/4" FNPT union
7211-3JG 331	5/8"	Meter swivel integral	3/4" "T" CTS compression union*
7211-3JG 431	5/8" x 3/4" or 3/4"	Meter swivel integral	3/4" "T" CTS compression union*
7211-3JM 331	5/8"	Meter swivel integral	3/4" MNPT union
7211-3JM 431	5/8" x 3/4" or 3/4"	Meter swivel integral	3/4" MNPT union
7211-3JQ 331	5/8"	Meter swivel integral	3/4" "Q" CTS compression*
7211-3JQ 431	5/8" x 3/4" or 3/4"	Meter swivel integral	3/4" "Q" CTS compression*
7211-3LK 331	5/8" x 3/4" or 3/4"	3/4" Female "K" thread	3/4" Male "K" thread
7211-3MP 331		3/4" MNPT Union	3/4" MNPT Integral
7211-3NA 331	5/8"	5/8" Female meter thread union	5/8" Male meter thread integral
7211-3NA 431	Cross size	3/4" Female meter thread union	5/8" Male meter thread integral
7211-3NA 441	5/8" x 3/4" or 3/4"	3/4" Female meter thread union	3/4" Male meter thread integral
7211-3YC 331	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" -22 CTS compression union*
7211-3YF 331	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" FNPT union

UFR-M2 for Multi-Jet Meters

Model No.	Meter Size	Inlet	Outlet
7211-3FE 332		3/4" FNPT Union	3/4" FNPT integral
7211-3HB 442	5/8" x 3/4" or 3/4"	Meter swivel integral w/ meter support	Male meter thread union
7211-3JB 442	5/8" x 3/4" or 3/4"	Meter swivel integral	Male meter thread union
7211-3JC 332	5/8"	Meter swivel integral	3/4" -22 CTS compression union*
7211-3JC 432	5/8" x 3/4" or 3/4"	Meter swivel integral	3/4" -22 CTS compression union*
7211-3JF 332	5/8"	Meter swivel integral	3/4" FNPT union
7211-3JF 432	5/8" x 3/4" or 3/4"	Meter swivel integral	3/4" FNPT union
7211-3JG 332	5/8"	Meter swivel integral	3/4" "T" CTS compression union*
7211-3JG 432	5/8" x 3/4" or 3/4"	Meter swivel integral	3/4" "T" CTS compression union*
7211-3JM 332	5/8"	Meter swivel integral	3/4" MNPT union
7211-3JM 432	5/8" x 3/4" or 3/4"	Meter swivel integral	3/4" MNPT union
7211-3JQ 332	5/8"	Meter swivel integral	3/4" "Q" CTS compression*
7211-3JQ 432	5/8" x 3/4" or 3/4"	Meter swivel integral	3/4" "Q" CTS compression*
7211-3LK 332	5/8" x 3/4" or 3/4"	3/4" Female "K" thread	3/4" Male "K" thread
7211-3MP 332		3/4" MNPT union	3/4" MNPT integral
7211-3NA 332	5/8"	5/8" Female meter thread union	5/8" Male meter thread integral
7211-3NA 432	Cross size	3/4" Female meter thread union	5/8" Male meter thread integral
7211-3NA 442	5/8" x 3/4" or 3/4"	3/4" Female meter thread union	3/4" Male meter thread integral
7211-3YC 332	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" -22 CTS compression union*
7211-3YF 332	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" FNPT union

OPTIONS

- For Handyloc - Replace "R" to "O" for compression union and "V" to "S" for compression integral on 3/4" copper tube only.

*Insert Stiffeners Required on ALL Flexible Plastic Connections

7212 Angle Dual Check

A.Y. McDonald Mfg. 7212 Series UFR Style Angle Dual Check Valve is an innovative design that allows low volumes of water usage (previously unmeasured by the water meter) to be measured simply by batching the usage. Studies show that 5% to 10% of total water consumption is lost due to low, unmeasured flows. This device is in service worldwide.

FOR 5/8", 5/8" X 3/4" & 3/4" WATER METERS

- Cast brass housing construction conforms to AWWA C-800 (latest revision)
- Self-cleaning cartridge assembly
- Check valve is equal to the McDonald 7112 Series lay lengths for ease in retrofitting
- Meter swivel nut inlet with optional FNPT, CTS (G, Q, T, -22 series), and flare outlets
- Can be incorporated in to any settings that currently accept our 7112 series angle dual check valve configuration
- For use with Volumetric (Positive Displacement) & Multi-Jet meters
- Designed to be installed after the meter
- UFR is directional

How to Order

Order Model 7212-3HE 431

7212	-	3	H	E		4	3	1
Model Number Required	Standard	Meter Size	Inlet & Outlet Connection		Space	Thread Size	Sizes - Outlet Connection	Meter Type

7212 = Angle Dual Check w/ UFR

3 = 3/4"

Inlet & Outlet Connection -
B = -3G PEP Compression integral
E = FNPT integral
H = Meter swivel integral with saddle nut
I = -3H PEP Handyloc compression integral
J = Meter swivel integral
Q = Q CTS compression integral
R = Copper flare integral
S = H CTS Handyloc compression integral
T = T CTS compression integral
U = G CTS compression integral
Y = Iron yoke male thread integral
Z = -3Q PEP compression integral
2 = -22 CTS compression integral

METER SIZE	THREAD SIZED	THREAD DESIGNATION
5/8"	3/4"	3
5/8" x 3/4"	1"	4
3/4"	1"	4
1"	1 1/4"	5

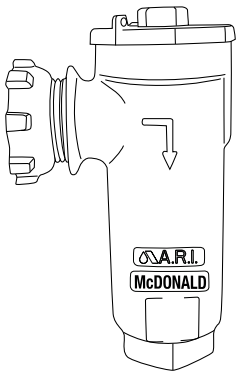
For Iron Yokes use the following designation

METER SIZE	THREAD SIZE	THREAD DESIGNATION
5/8"	-	2
5/8" x 3/4"	-	3
3/4"	-	3
1"	-	4

3 = 3/4"

1 - Volumetric Meter (V) Positive Displacement

2 - Multi-Jet Meter (M2) Contact factory with name of meter, manufacturer, and model number for assistance in determining appropriate UFR or see table on the following page.



7212 Angle Dual Check

Meter Manufacturer	Model(s)	Measurement Element	Meter Type	→	UFR Type	UFR Marking
Neptune	T10	Nutating Disc	Volumetric Displacement Positive Displacement (PD)	→	Volumetric	Model # on tag
Badger	25 - 35					
Hersey	400 Series - II's					
Sensus / Rockwell	SR - SRII	Oscillating Piston				
Elster / Kent Amco	C700					
Master Meter	MMPD					
Master Meter	BLMJ - MMMJ	Multi-Jet	Velocity	→	Multi-Jet	Model # on tag
Sensus	PMM					
Elster Amco	M140 (MO-C)					
Hays	MR - MT					
Precision	PM - PMM					
Sensus	iPERL	Magnetic	Solid State		N/A	N/A
Badger	E-Series	Ultrasonic				
Elster	SM-700	Fluidic Oscilation				
Actaris		Single Jet	Velocity	→	Contact Factory	Contact Factory
	MC15 - MC20	Multi-Jet	Velocity		Contact Factory	Contact Factory
	MSD - TNII	(not sold in US)	Velocity		Contact Factory	Contact Factory

Meter shall comply with the AWWA C700-90 accuracy requirements as specified in section 3.8 of the standard.

NOTE: Add "W" in place of "-" for pentagon test plug in cap i.e. 7212-3JE 331 =7212W3JE 331.

UFR-V for Volumetric (Positive Displacement) Meters

Model No.	Meter Size	Inlet	Outlet
7212-3HE 331	5/8"	Meter swivel nut w/ support	FNPT
7212-3HE 431	5/8" x 3/4" or 3/4"	Meter swivel nut w/ support	3/4" FNPT
7212-3JE 331	5/8"	Meter swivel nut	FNPT
7212-3JE 431	5/8" x 3/4" or 3/4"	Meter swivel nut	3/4" FNPT
7212-3YE 231	5/8"	Iron Yoke Star Nut	FNPT
7212-3YE 331	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" FNPT
7212-3YQ 231	5/8"	Iron Yoke Star Nut	Q CTS compression
7212-3YQ 331	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" Q CTS compression
7212-3YR 231	5/8"	Iron Yoke Star Nut	Copper flare
7212-3YR 331	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" Copper flare
7212-3YT 231	5/8"	Iron Yoke Star Nut	T CTS compression
7212-3YT 331	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" T CTS compression
7212-3Y2 231	5/8"	Iron Yoke Star Nut	-22 CTS compression
7212-3Y2 331	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" -22 CTS compression

UFR-M2 for Multi-Jet Meters

Model No.	Meter Size	Inlet	Outlet
7212-3HE 332	5/8"	Meter swivel nut w/ support	FNPT
7212-3HE 432	5/8" x 3/4" or 3/4"	Meter swivel nut w/ support	3/4" FNPT
7212-3JE 332	5/8"	Meter swivel nut	FNPT
7212-3JE 432	5/8" x 3/4" or 3/4"	Meter swivel nut	3/4" FNPT
7212-3YE 232	5/8"	Iron Yoke Star Nut	FNPT
7212-3YE 332	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" FNPT
7212-3YQ 232	5/8"	Iron Yoke Star Nut	Q CTS compression
7212-3YQ 332	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" Q CTS compression
7212-3YR 232	5/8"	Iron Yoke Star Nut	Copper flare
7212-3YR 332	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" Copper flare
7212-3YT 232	5/8"	Iron Yoke Star Nut	T CTS compression
7212-3YT 332	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" T CTS compression
7212-3Y2 232	5/8"	Iron Yoke Star Nut	-22 CTS compression
7212-3Y2 332	5/8" x 3/4" or 3/4"	Iron Yoke Star Nut	3/4" -22 CTS compression

*Insert Stiffeners Required on ALL Flexible Plastic Connections

7214 Inline Accessible Dual Check

A.Y. McDonald Mfg. 7214 Series UFR Style Inline Accessible Dual Check Valve is an innovative design that allows low volumes of water usage (previously unmeasured by the water meter) to be measured simply by batching the usage. Studies show that 5% to 10% of total water consumption is lost due to low, unmeasured flows. This device is in service worldwide.

FOR 5/8", 5/8" X 3/4" & 3/4" WATER METERS

- Cast brass housing construction conforms to AWWA C-800 (latest revision)
- Self-cleaning cartridge assembly
- Check valve is equal to the McDonald 7111 Series lay lengths for ease in retrofitting
- Meter swivel nut inlet with optional FNPT, CTS (G, Q, T, -22 series), & Flare outlets
- Available with a wide variety of meter, threaded or compression connections
- Offers access to the individual cartridge checks without disturbing the piping system on which it is installed
- Top cap on check valve is sealed with an EPDM O-ring and allows easy access to check cartridges
- For use with Volumetric (Positive Displacement) & Multi-Jet meters
- Designed to be installed after the meter
- UFR is directional

How to Order

Order Model 7214-3JE 431

7214	-	3	J	E		4	3	1
Model Number Required	Standard Size	Meter Connection	Inlet & Outlet Connection		Space	Thread Size	Sizes - Outlet Connection	Meter Type

7214 = Inline Accessible Dual Check w/ UFR

3 = 3/4"

Inlet & Outlet Connection -
E = FNPT Integral
G = G CTS compression integral
H = Meter swivel integral with saddle nut
J = Meter swivel integral
K = K Style male thread integral
P = MNPT integral
Q = Q CTS compression integral
T = T CTS compression integral
Y = Iron yoke male thread integral
2 = -22 CTS compression integral

METER SIZE	THREAD SIZED	THREAD DESIGNATION
5/8"	3/4"	3
5/8" x 3/4"	1"	4
3/4"	1"	4
1"	1 1/4"	5

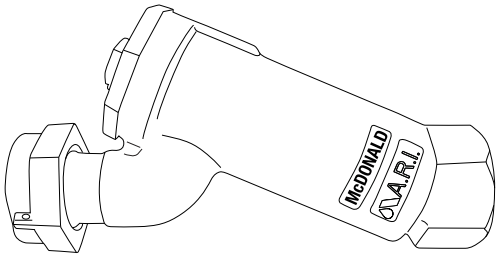
For Iron Yokes use the following designation

METER SIZE	THREAD SIZE	THREAD DESIGNATION
5/8"	-	2
5/8" x 3/4"	-	3
3/4"	-	3
1"	-	4

1 = 1/2" **3** = 3/4"
2 = 5/8" **4** = 1"

1 - Volumetric Meter (V) Positive Displacement
2 - Multi-Jet Meter (M2) Contact factory with name of meter, manufacturer, and model number for assistance in determining appropriate UFR or see table on the following page.

7214 Inline Accessible Dual Check



Meter Manufacturer	Model(s)	Measurement Element	Meter Type	→	UFR Type	UFR Marking
Neptune	T10	Nutating Disc	Volumetric Displacement Positive Displacement (PD)	→	Volumetric	White Tag
Badger	25 - 35					
Hersey	400 Series - II's					
Sensus / Rockwell	SR - SRII	Oscillating Piston				
Elster / Kent Amco	C700					
Master Meter	MMPD					
Master Meter	BLMJ - MMMJ	Multi-Jet	Velocity	→	Multi-Jet	Blue Tag
Sensus	PMM					
Elster Amco	M140 (MO-C)					
Hays	MR - MT					
Precision	PM - PMM					
Sensus	iPERL	Magnetic	Solid State	→	N/A	N/A
Badger	E-Series	Ultrasonic				
Elster	SM-700	Fluidic Oscilation				
Actaris		Single Jet	Velocity		Contact Factory	Contact Factory
	MC15 - MC20	Multi-Jet	Velocity		Contact Factory	Contact Factory
	MSD - TNII	(not sold in US)	Velocity		Contact Factory	Contact Factory

Meter shall comply with the AWWA C700-90 accuracy requirements as specified in section 3.8 of the standard.

UFR-V for Volumetric (Positive Displacement) Meters

Model No.	Meter Size	Inlet	Outlet
7214-3JE 431	5/8" x 3/4" or 3/4"	Meter swivel nut	3/4" FNPT integral
7214-3JK 431	5/8" x 3/4" or 3/4"	Meter swivel nut	3/4" Male "K" thread
7214-3JL 431	5/8" x 3/4" or 3/4"	Meter swivel nut	3/4" Female "K" thread
7214-3JP 431	5/8" x 3/4" or 3/4"	Meter swivel nut	3/4" MNPT integral
7214-3JQ 431	5/8" x 3/4" or 3/4"	Meter swivel nut	3/4" "Q" CTS compression

UFR-M2 for Multi-Jet Meters

Model No.	Meter Size	Inlet	Outlet
7214-3JE 432	5/8" x 3/4" or 3/4"	Meter swivel nut	3/4" FNPT integral
7214-3JK 432	5/8" x 3/4" or 3/4"	Meter swivel nut	3/4" Male "K" thread
7214-3JL 432	5/8" x 3/4" or 3/4"	Meter swivel nut	3/4" Female "K" thread
7214-3JP 432	5/8" x 3/4" or 3/4"	Meter swivel nut	3/4" MNPT integral
7214-3JQ 432	5/8" x 3/4" or 3/4"	Meter swivel nut	3/4" "Q" CTS compression

714U Yoke Expander

A.Y. McDonald Mfg. Series 714U Style UFR Yoke Expansion Connection is an innovative design that allows low volumes of water usage (previously unmeasured by the water meter) to be measured simply by batching the usage. Studies show that 5% to 10% of total water consumption is lost due to low, unmeasured flows.

FOR 5/8" X 3/4" & 3/4" WATER METERS

- Cast brass housing construction conforms to AWWA C-800 (latest revision)
- Self-cleaning internal components
- Includes three star nut gasket
- For use with Volumetric (Positive Displacement) & Multi-Jet meters
- Designed to be installed **PRIOR** to the meter
- UFR is directional

How to Order

Order Model 714U2E X950

714	U	2	E		X950
Basic UFR Valve Model Number		Meter Size	Inlet &Outlet Connection	Space	UFR Type

714U = UFR Yoke Expander

2 = 5/8" x 3/4" or 3/4"

E = Yoke Expander - All Iron Yoke & Non-Ball Valve Yokes Boxes

EYBV = Yoke Expander - Only for Yoke Box and Long Yoke box w/ Ball Valve Inlet

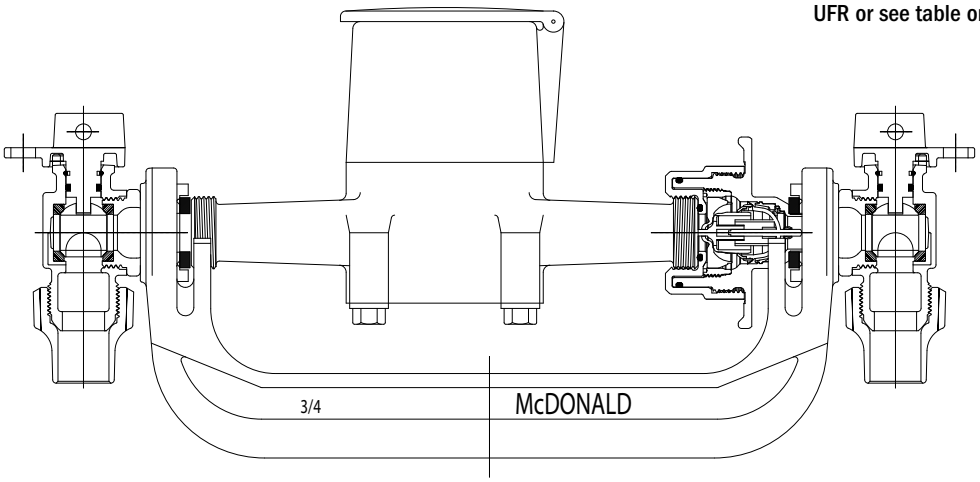
X950 V = Volumetric (Positive Displacement Meter) Meter w/Backflow Prevention

X951 V = Volumetric (Positive Displacement) Meter No Backflow Prevention (NCV)

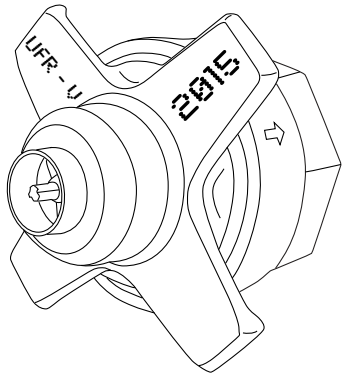
X960 M2 = Multi-Jet Meter w/Backflow Prevention

X961 M2 = Multi-Jet Meter No Backflow Prevention (NCV)

Contact factory with name of meter, manufacturer, and model number for assistance in determining appropriate UFR or see table on the following page.



714U Yoke Expander



Meter Manufacturer	Model(s)	Measurement Element	Meter Type	→	UFR Type	UFR Marking	No Check UFR Marking
Neptune	T10	Nutating Disc	Volumetric Displacement Positive Displacement (PD)	→	Volumetric	UFR - V	UFR - V - NCV
Badger	25 - 35						
Hersey	400 Series - II's						
Sensus / Rockwell	SR - SRII	Oscillating Piston					
Elster / Kent Amco	C700						
Master Meter	MMPD						
Master Meter	BLMJ - MMMJ	Multi-Jet	Velocity	→	Multi-Jet	UFR - M2	UFR - M2 - NCV
Sensus	PMM						
Elster Amco	M140 (MO-C)						
Hays	MR - MT						
Precision	PM - PMM						
Sensus	iPERL	Magnetic	Solid State	→	N/A	N/A	N/A
Badger	E-Series	Ultrasonic					
Elster	SM-700	Fluidic Oscilation					
Actaris		Single Jet	Velocity		Contact Factory	Contact Factory	Contact Factory
	MC15 - MC20	Multi-Jet	Velocity		Contact Factory	Contact Factory	Contact Factory
	MSD - TNII	(not sold in US)	Velocity		Contact Factory	Contact Factory	Contact Factory

Meter shall comply with the AWWA C700-90 accuracy requirements as specified in section 3.8 of the standard.

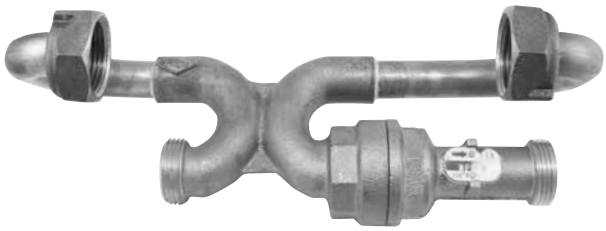
UFR-V for Volumetric (Positive Displacement) Meters

Model No.	Meter Size	Description
714U2E x950	5/8" x 3/4" or 3/4"	Expansion connection
714U2E x951	5/8" x 3/4" or 3/4"	Expansion connection - Non-Check Valve
714U2EYBV x950	5/8" x 3/4" or 3/4"	Expansion connection - For Yoke Box ball valve only
714U2EYBV x951	5/8" x 3/4" or 3/4"	Expansion connection - For Yoke Box ball valve only - Non-Check Valve

UFR-M2 for Multi-Jet Meters

Model No.	Meter Size	Description
714U2E x960	5/8" x 3/4" or 3/4"	Expansion connection
714U2E x961	5/8" x 3/4" or 3/4"	Expansion connection - Non-Check Valve
714U2EYBV x960	5/8" x 3/4" or 3/4"	Expansion connection - For Yoke Box ball valve only
714U2EYBV x961	5/8" x 3/4" or 3/4"	Expansion connection - For Yoke Box ball valve only - Non-Check Valve

710 SERIES - Resetter

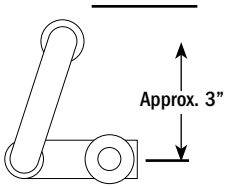


A.Y. McDonald Mfg. 710 Series Style UFR Resetter is an innovative design that allows low volumes of water usage (previously unmeasured by the water meter) to be measured simply by batching the usage. Studies show that 5% to 10% of total water consumption is lost due to low, unmeasured flows. This device is in service worldwide.

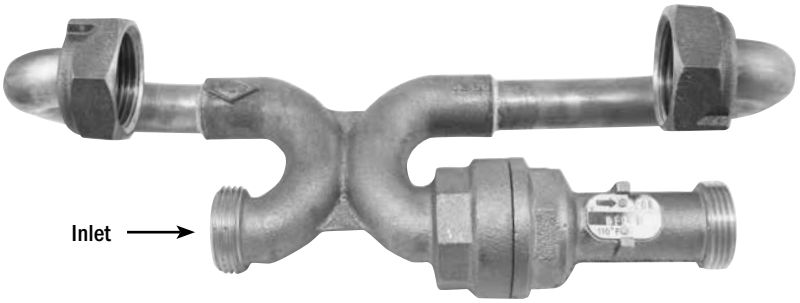
FOR 5/8", 5/8" X 3/4" & 3/4" WATER METERS

- Unique and patented product designed to easily retrofit existing meter installations to include the UFR
- Cast brass base and meter nut construction conforms to AWWA C-800 (latest revision)
- Self-cleaning internal components
- Available as a non-check valve where thermal expansion is an issue
- For use with Volumetric (Positive Displacement) & Multi-Jet meters
- UFR is directional

Offset Left View Standard



Side View
72° Offset
Standard



Model 710-203NNU X72X952

710	-	2	03	N	N	U	-		X72	X952
Horizontal Resetter Series 710	**Dash = Standard** For crossed sized meter sets **A** = 5/8" **B** = 5/8" x 3/4" **C** = 3/4"	**Meter Size** **1** = 5/8" **2** = 5/8" x 3/4" **3** = 3/4"	**Height** 3" or 6"	**Meter Connections** N = No valve (meter nut only without saddle) *Q = Lockwing ball valve (without saddle)		**UFR**		**Space**	**Tube Offset** See above side view	**UFR Type**

X950 = Replaceable meter coupling for Volumetric/PD Meter
X951 = Replaceable Non-Check meter coupling for Volumetric/PD Meter
X952 = Built-in replaceable cartridge for Volumeticr/PD Meter
X953 = Built-in replaceable Non-Check cartridge for Volumetic/PD Meter
X960 = Replaceable meter coupling for Multi-jet Meter
X961 = Replaceable Non-Check meter coupling for Multi-jet Meter
X962 = Built-in replaceable cartridge for Multi-jet Meter
X963 = Built-in replaceable Non-Check cartridge for Multi-jet Meter

* For angle ball valves integral to resetter, contact factory.

- Resetters with cross-over meter sizes are available. Contact factory.

Contact factory with name of meter, manufacturer, model number for assistance in determining appropriate UFR or see table on the following page.

710 SERIES - Resetter

Meter Manufacturer	Model(s)	Measurement Element	Meter Type	→	UFR Type	UFR Marking	No Check UFR Marking
Neptune	T10	Nutating Disc	Volumetric Displacement Positive Displacement (PD)	→	Volumetric	White Tag	White Tag - NCV
Badger	25 - 35						
Hersey	400 Series - II's						
Sensus / Rockwell	SR - SRII	Oscillating Piston					
Elster / Kent Amco	C700						
Master Meter	MMPD						
Master Meter	BLMJ - MMMJ	Multi-Jet	Velocity	→	Multi-Jet	Blue Tag	Blue Tag - NCV
Sensus	PMM						
Elster Amco	M140 (MO-C)						
Hays	MR - MT						
Precision	PM - PMM						
Sensus	iPERL	Magnetic	Solid State	→	N/A	N/A	N/A
Badger	E-Series	Ultrasonic					
Elster	SM-700	Fluidic Oscilation					
Actaris		Single Jet	Velocity		Contact Factory	Contact Factory	Contact Factory
	MC15 - MC20	Multi-Jet	Velocity		Contact Factory	Contact Factory	Contact Factory
	MSD - TNII	(not sold in US)	Velocity		Contact Factory	Contact Factory	Contact Factory

UFR-V for Volumetric (Positive Displacement) Meters

Model No.	Meter Size	Rise & Angle	UFR Type	Check / Non-Check
710-103NNU- X72X950	5/8"	3" at 72°	Replaceable meter coupling	Check
710-103NNU- X72X951	5/8"	3" at 72°	Replaceable meter coupling	Non-Check
710-103NNU- X72X952	5/8"	3" at 72°	Replaceable cartridge	Check
710-103NNU- X72X953	5/8"	3" at 72°	Replaceable cartridge	Non-Check
710-203NNU- X72X950	5/8" x 3/4"	3" at 72°	Replaceable meter coupling	Check
710-203NNU- X72X951	5/8" x 3/4"	3" at 72°	Replaceable meter coupling	Non-Check
710-203NNU- X72X952	5/8" x 3/4"	3" at 72°	Replaceable cartridge	Check
710-203NNU- X72X953	5/8" x 3/4"	3" at 72°	Replaceable cartridge	Non-Check
710-303NNU- X72X950	3/4"	3" at 72°	Replaceable meter coupling	Check
710-303NNU- X72X951	3/4"	3" at 72°	Replaceable meter coupling	Non-Check
710-303NNU- X72X952	3/4"	3" at 72°	Replaceable cartridge	Check
710-303NNU- X72X953	3/4"	3" at 72°	Replaceable cartridge	Non-Check

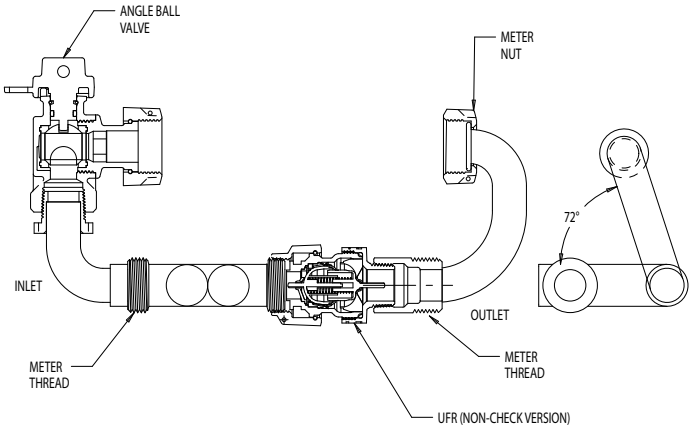
UFR-M2 for Multi-Jet Meters

Model No.	Meter Size	Rise & Angle	UFR Type	Check / Non-Check
710-103NNU- X72X960	5/8"	3" at 72°	Replaceable meter coupling	Check
710-103NNU- X72X961	5/8"	3" at 72°	Replaceable meter coupling	Non-Check
710-103NNU- X72X962	5/8"	3" at 72°	Replaceable cartridge	Check
710-103NNU- X72X963	5/8"	3" at 72°	Replaceable cartridge	Non-Check
710-203NNU- X72X960	5/8" x 3/4"	3" at 72°	Replaceable meter coupling	Check
710-203NNU- X72X961	5/8" x 3/4"	3" at 72°	Replaceable meter coupling	Non-Check
710-203NNU- X72X962	5/8" x 3/4"	3" at 72°	Replaceable cartridge	Check
710-203NNU- X72X963	5/8" x 3/4"	3" at 72°	Replaceable cartridge	Non-Check
710-303NNU- X72X960	3/4"	3" at 72°	Replaceable meter coupling	Check
710-303NNU- X72X961	3/4"	3" at 72°	Replaceable meter coupling	Non-Check
710-303NNU- X72X962	3/4"	3" at 72°	Replaceable cartridge	Check
710-303NNU- X72X963	3/4"	3" at 72°	Replaceable cartridge	Non-Check

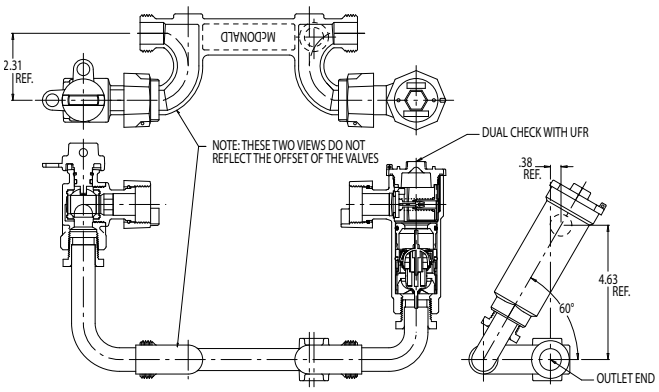
See next page →

UFR Meter Setters and Resetters

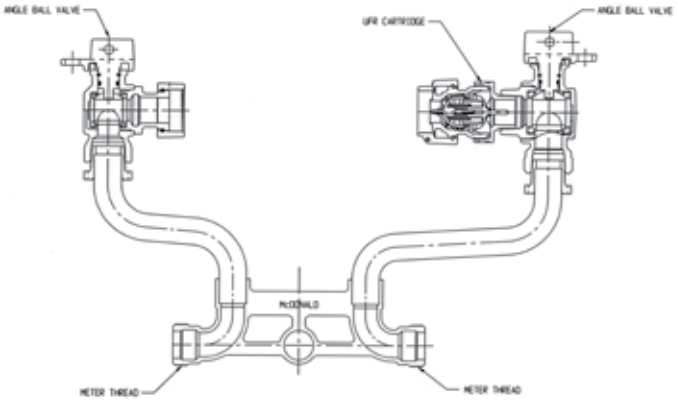
The UFR can be conveniently added to most A.Y. McDonald meter setters and resetters. Please contact the factory for pricing and availability.



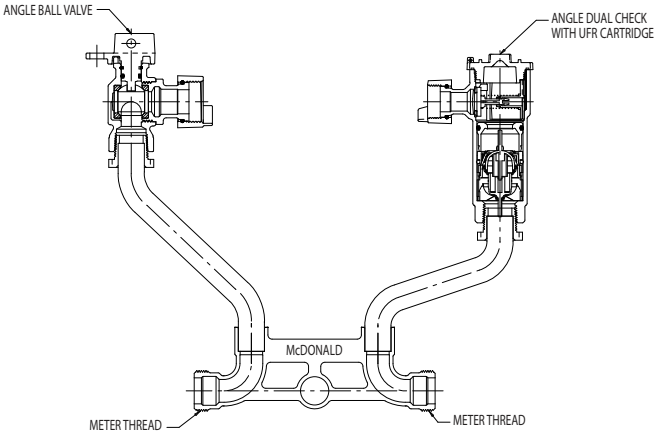
710 Series Meter Resetter



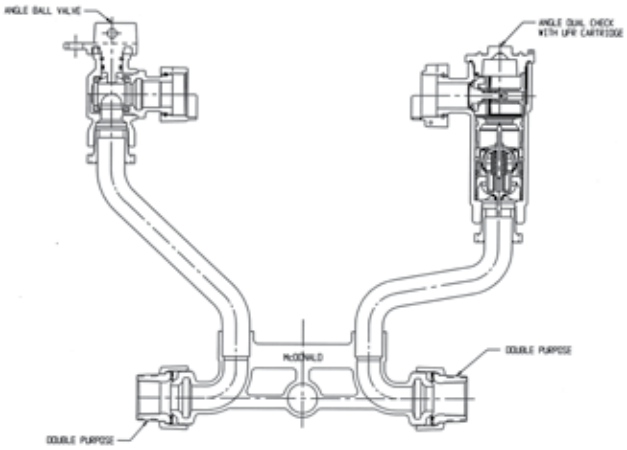
717 Series Meter Resetter



718 Series Meter Resetter

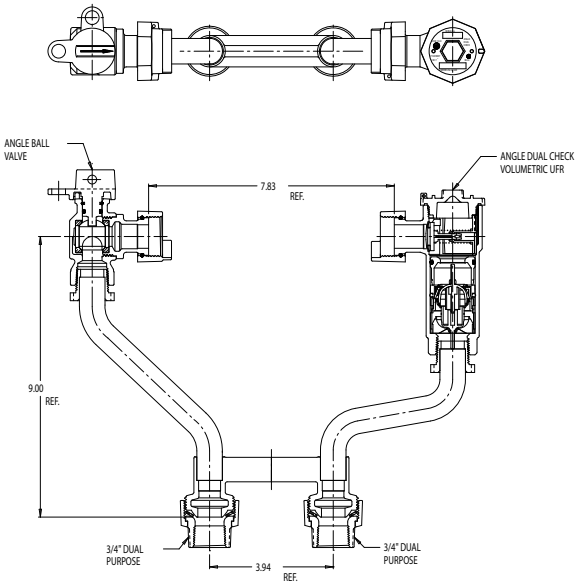


718 Series Meter Resetter

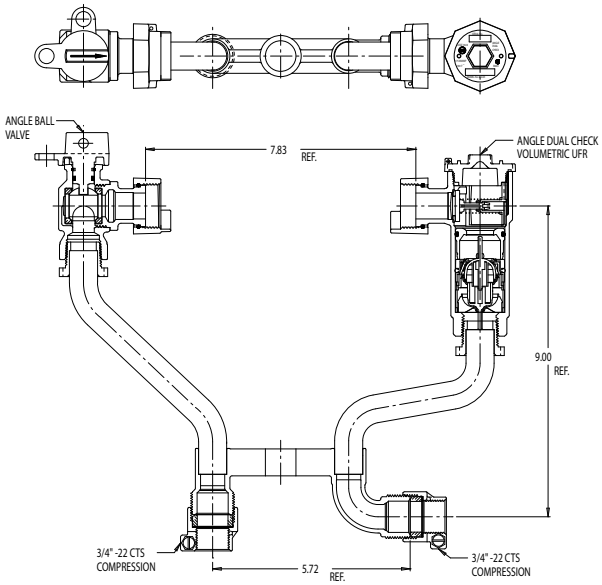


720 Series Meter Setter

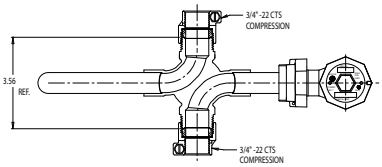
UFR Meter Setters and Resetters

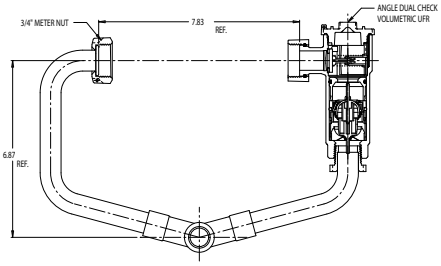


730 Series Meter Setter

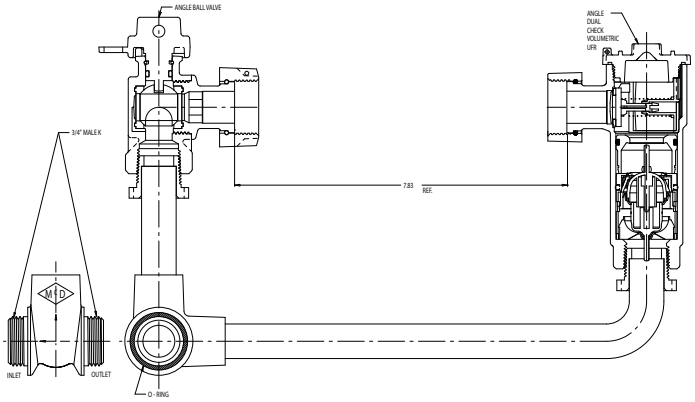


739 Series Meter Setter

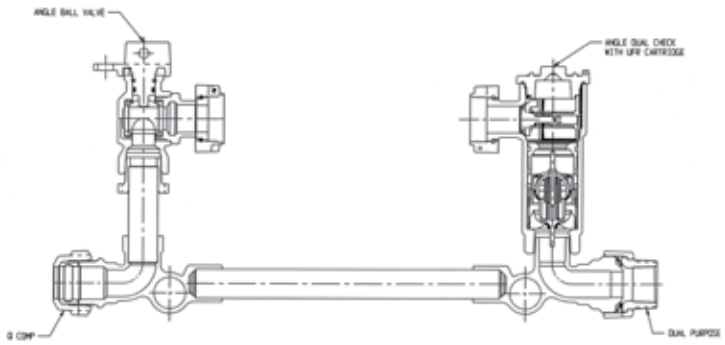




739 Series Meter Setter



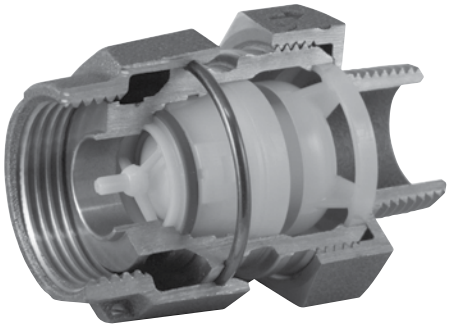
741 Series Meter Setter



770 Series Meter Setter

City of Dubuque - Contribution of UFR to "Smart Metering" Leak Detection System

Project Background:
In January of 2010, the City of Dubuque, Iowa began a change-out of its 22,500 existing water meters to new positive displacement (PD) meters. The project included an upgrade to a fixed base radio read network and implementation of over 18,000 Unmeasured-Flow Reducers (UFRs) by A.Y. McDonald Manufacturing Company. As part of the City's "Smarter Sustainable Dubuque" project, the intent was to be able to accurately measure consumption and notify residents of potential leaks in their homes, allowing them to consider corrective measures which translate into "smarter" water use.



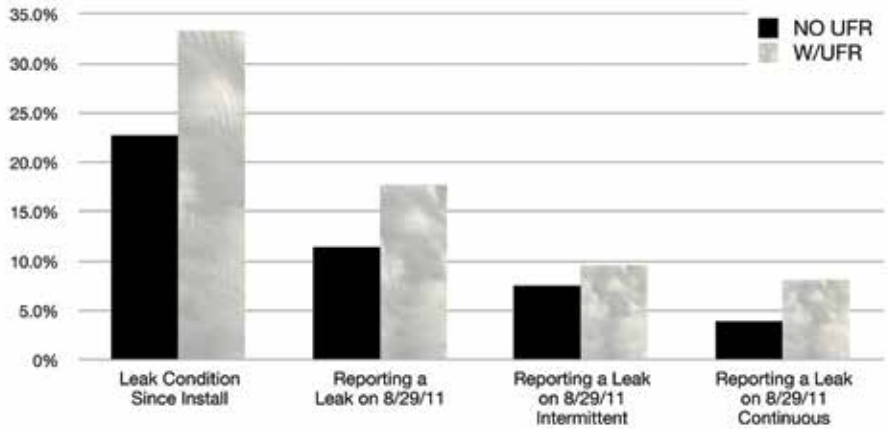
Installation:
With the project nearing completion, the City of Dubuque has installed 21,966 3/4" or smaller water meters. Of those, 18,699 were installed with a UFR meter coupling or with the UFR in a 10 series resetter. 3,267 services received no UFR due to PRV's or RPZ's located directly after the meter. The new PD meters, installed in the basement, utilize a digital data-logging register that transmits a signal to a meter interface unit (MIU) placed on the outside of the home.

Leak Detection Technology:
The register logs 96 data points every 24 hours (15 minute read intervals) and transmits that information to an MIU which then uploads the information via the fixed base radio network to the City's server once every 24 hours. The registers are equipped with a leak indicator that registers a leak based on the following criteria. If 56 to 95 of the 96 data points show usage, the system considers the home to have an intermittent leak. If all 96 of the data points show usage, the system considers the home to have a continuous leak.

The UFR Factor:
Even when installed in conjunction with one of the most accurate water meters available today, the UFR's contribution to the accuracy of the newly installed meters and the above mentioned leak detection system is dramatic:

Of the 3,267 new meters installed without UFR's:
- 22.7% have registered a leak condition since install
- 11.4% were reporting a leak condition on 8/29/11
  - 7.5% intermittent
  - 3.9% continuous

Of the 18,699 new meters installed with UFR's:
- 33.3% have registered a leak condition since install
- 17.7% were reporting a leak condition on 8/29/11
  - 9.6% intermittent
  - 8.1% continuous



Conclusion:
The UFR's contribution to the ability of the system to detect, report and measure leakage is as follows:
- On services with UFR's, an additional 10.6% of the meters have registered a leak condition since install.
- On services with UFR's, an additional 6.3% of the meters were reporting a leak condition on 8/29/11.

For more information about the UFR: www.ayufr.com

For more information about the City of Dubuque's meter change-out project: www.cityofdubuque.org and search "UFR".

A measurable improvement.

Our Unmeasured Flow Reducer (UFR) works with water meters to measure low-flow water caused by drips and leaks, reducing non-revenue water. It can also help homeowners identify and fix leaks, resulting in greater water conservation.

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- Products built exclusively for professional installation
- Application-specific solutions to meet your needs

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