FLOW METERS FOR MINING

◆ NETAFIM™

'IRT' FLOW METERS

MINING DIVISION

Ideal for Moderate to Dirty Water Conditions

Description
Netafim USA's 'IRT' Flow Meter, with its specially designed paddle wheel measuring device, provides a free water passage resulting in low head loss and the ability to accurately measure water with high levels of impurities or debris. Accuracy is achieved over a wide range of flows.

Features
- Negligible head loss.
- Simple maintenance - field replaceable calibrated measuring unit.
- Registers are stainless steel/glass encapsulated and guaranteed against fogging due to moisture.
- Bearings are continuously flushed during operation to eliminate deposits of solids.

Product Offering
Available sizes: 3", 4", 6", 8" and 10"

Specifications
- Maximum Working Pressure: 230 psi
- Maximum Liquid Temperature: 140° F
- Body Material: Epoxy Coated Cast Iron
- Connections: Flanged

Installation Requirements
- Straight pipe installation requirement: 10 x diameter pipe upstream (before the meter) and 5 x diameter pipe downstream (after the meter).
- The meter may be installed in any position.
  For non-horizontal positions, the flow should be upwards.
- Thoroughly flush the pipeline prior to installation of the meter.
- Install the meter so the pipe is filled with solution at all times during metering.
- Recommendation: Install Continuous Acting Air Valves of proper size and type to eliminate air.

'IRT' Water Meters
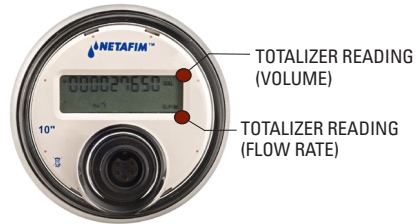### Straight Pipe Installation Requirement
10 x D and 5 x D

Size	Upstream Distance	Downstream Distance	Meter Length	Total Requirement
3"	30"	15"	9"	54"
4"	40"	20"	10"	70"
6"	60"	30"	12"	102"
8"	80"	40"	14"	134"
10"	100"	50"	16"	166"

'IRT' REGISTERS

ER Digital Register
Gallon or Acre Feet Totalizer

Meter Sizes	3" to 10"	3" to 10"
Register Totalizer	Gallon	Acre Feet
Pulse Output (Gals/Pulse)	.1. 1. 10, 100, 1000	.0001, .001, .01, .1
Flow Rate Units	GPM	GPM

TOTALIZER READING (VOLUME)

TOTALIZER READING (FLOW RATE)

ER REGISTER

ER REGISTER WITH PULSE OUTPUT CONNECTION

REGISTERS ARE EASY TO INSTALL AND REMOVE

Step 1: Loosen and unscrew the plastic closing ring and cap assembly that secures the register.

Step 2: Lift off the plastic closing ring and cap assembly. Lift out the register from its sealed compartment.
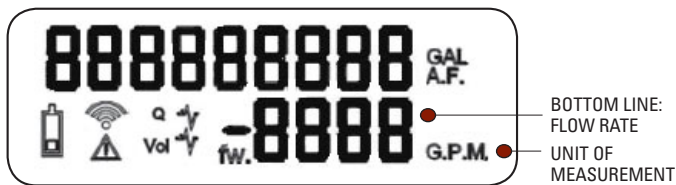
How to Read a Flow Meter Register

Multi-line LCD digital readout displays 9 digits for Total Volume in U.S. Gallons (U.S.G.) or Acre Feet and 4 digits for Rate of Flow in Gallons per Minute (GPM). It's programmable to display a variety of volume and flow units for multiple pipe sizes.

Calculatingn Rate of Flow
The bottom row of numbers, four (4) in total, display the current flow rate. Directly to the right of this number is the unit of measurement for the displayed flow rate.

BOTTOM LINE: FLOW RATE

UNIT OF MEASUREMENT

NOTE: If the flow rate is negative (-), the register is reading reverse flow.

POSITIVE ICON (+) TOTAL VOLUME OF WATER IN FORWARD FLOW DIRECTION

TOTALIZER READING (VOLUME)

TOTALIZER READING (FLOW RATE)

Calculating Total Volume
The top row of numbers, nine (9) in total, display the total volume of water that has passed through the meter. Directly to the right of this number is the unit of measurement for the displayed total volume.

TOP LINE: TOTAL VOLUME

UNIT OF MEASUREMENT

NOTE: If the icon to the left of the totalizer number is positive (+), the register is reading the total amount of water in a forward flow direction. If the icon is negative (-), the register is reading the total amount of water in a reverse flow direction.
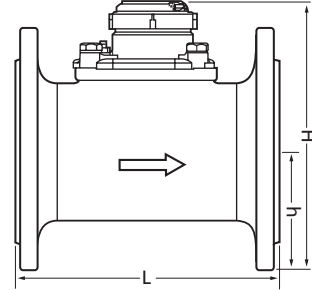
TOTAL VOLUME FOR THIS REGISTER
Totalizer Reading: 27,650 Forward Direction
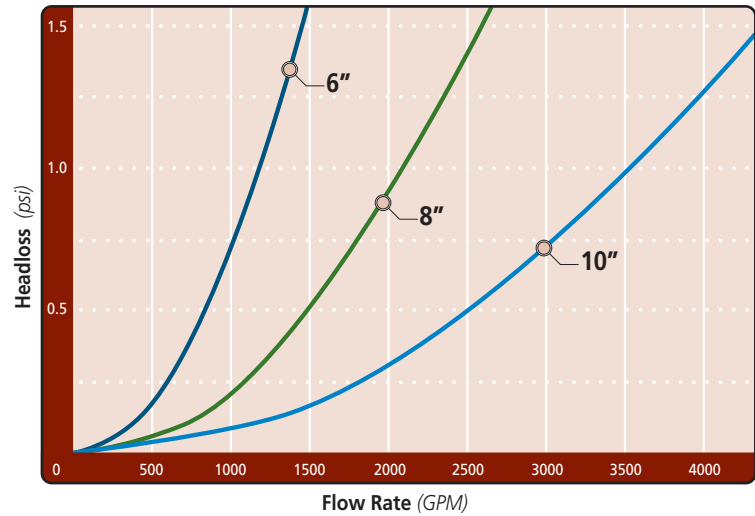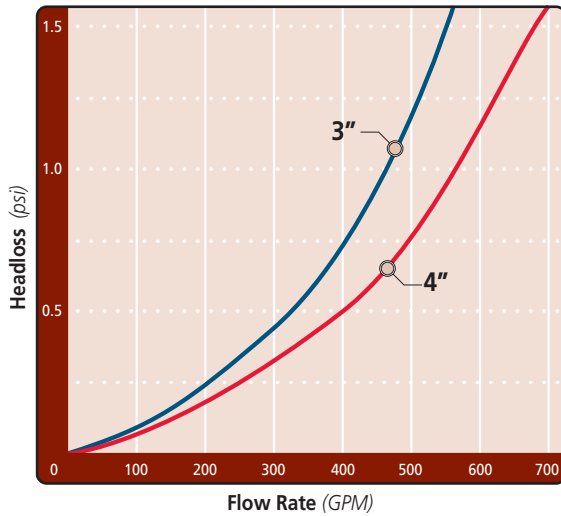**27,650 GAL is the Current Total Volume**

Dimensions and Weights

Size	L Length	H Height	h Height	Weight
3"	9"	9 ½"	3 ½"	40 lbs.
4"	9 ¾"	10 ¼"	4 ¼"	50 lbs.
6"	11 ¾"	12 ¼"	5"	73 lbs.
8"	13 ¾"	12 ½"	6 ¼"	95 lbs.
10"	15 ¾"	13 ½"	7 ¾"	125 lbs.

Headloss Charts

Performance Data

Size	Lowest Flow within ± 5% Accuracy	Lowest Flow within ± 2% Accuracy	Nominal Flow within ± 2% Accuracy	Maximum Flow within ± 2% Accuracy
3"	20 GPM	45 GPM	400 GPM	500 GPM
4"	30 GPM	50 GPM	500 GPM	688 GPM
6"	45 GPM	65 GPM	1,100 GPM	1,375 GPM
8"	80 GPM	130 GPM	1,980 GPM	2,475 GPM
10"	170 GPM	300 GPM	3,300 GPM	4,125 GPM

ORDERING INFORMATION

36 IRT ___ SIZE ___ **ER** ___ VOLUME ___ FLOW RATE ___ OUTPUT 1 ___ OUTPUT 2 ___ DIRECTION ___

SIZE	VOLUME	FLOW RATE	OUTPUT 1 AND OUTPUT 2 **	FLOW DIRECTION
3F = 3"	1 = GALLONS	1 = GPM	C = .1 GALLON PER PULSE	F = FORWARD
4F = 4"	2 = ACRE FEET		D = 1 GALLON PER PULSE	R = REVERSE
6F = 6"			E = 10 GALLONS PER PULSE	A = ALTERNATING
8F = 8"			F = 100 GALLONS PER PULSE	N = NET
10F = 10"			G = 1000 GALLONS PER PULSE	
			H = 0.0001 AF PER PULSE (OR 32.6 GAL PER PULSE)	
			I = 0.001 AF PER PULSE (OR 326 GAL PER PULSE)	
			J = 0.01 AF PER PULSE (OR 3,259 GAL PER PULSE)	
			K = 0.1 AF PER PULSE (OR 32,585 GAL PER PULSE)	

ORDERING EXAMPLE:

36IRT3FER11EEF

3" IRT Series Water Meter, ER Register, Volume in Gallons, Flow Rate in Gallons per Minute, Pulse Output 1 is 10 Gallons per Pulse, Pulse Output 2 is 10 Gallons per Pulse, Forward Flow Direction

** Pulse rate is based on volume units.
If volume is in Acre Feet and Option D is chosen for Output 1 or 2, it will result in 1 pulse every acre foot of water that passes through the meter.

Preventive Maintenance

Due to the 24-hour a day operation of a heap leach pad, flow meters need to be inspected and cleaned after each cycle.

1. Make sure water is turned off or meter is isolated and no water or water pressure is present.

2. Remove the metering unit.

3. Spin the impeller with your hand to ensure that it spins freely. If it does not spin freely, refer to the Troubleshooting Section.

4. While spinning the impeller, note that the register is coupled and the dials are turning - this indicates the water meter is functioning properly.

5. Clean the unit with clean water, reassemble the meter and put it back into service.

IRT has 3 Simple Components

Register

Metering Unit
Easily removed for inspection by unscrewing four bolts

Body

'IRT' TROUBLESHOOTING

SYMPTOM	CAUSE	SOLUTION
Meter will not register.	Improper installation.	Install per recommendations. 10 diameters of pipe upstream, 5 diameters of pipe downstream and proper air valve size, type and location.
	Debris is caught in the impeller.	Remove metering unit, inspect and clean the impeller to remove any debris.
	Metering unit is not driving register.	Remove metering unit and inspect. Spin impeller. It should spin freely and the register should be coupled. If this does not resolve the issue, replace metering unit and register.
Meter registers high or low.	Improper installation.	Install per recommendations. 10 diameters of pipe upstream, 5 diameters of pipe downstream and proper air valve size, type and location.
	Pipe not full of water.	Ensure pipe is full of water without air entrapment.
	Air in the pipeline.	Check to ensure proper installation of meter and air valves.
	Obstruction of pipeline upstream of water meter.	Check to ensure all debris has been removed and there is free flow of water into the pipeline.

TAMPER PROOF SEAL ENSURES UNAUTHORIZED REMOVAL AND/OR TAMPERING OF THE METER REGISTER
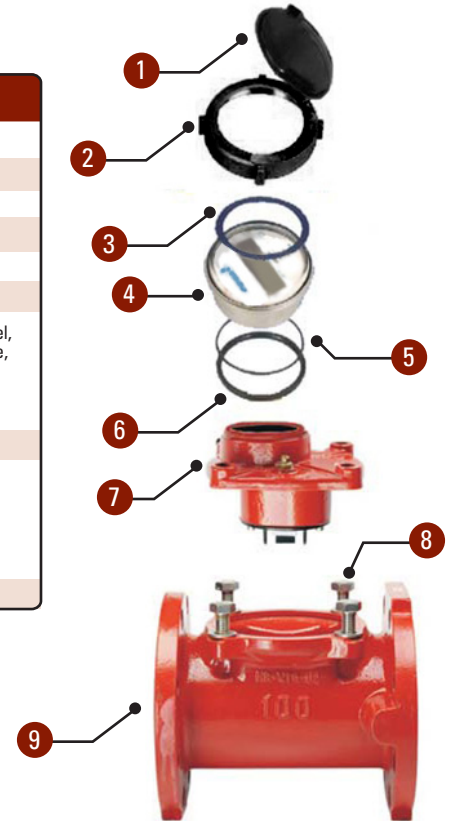
'IRT' PARTS & MATERIALS LIST

Parts and Materials

The IRT Flow Meter does not have any brass parts, making it suitable for most mining applications.

Key	Item Number	Model Number	Description	Material
1	70220-009370	3627631510	Dust Cover - Digital Register	Polypropylene
2	70220-010660	3625822319	Dust Cover Assy - Digital Register	Polypropylene
3	70220-010610	3623142709	Sliding Ring	Acetal
4	-	36IRT3RO*****	IRT Register Head - ER Digital	304 Stainless Steel, Glass
5	70220-010550	3620613009	Register O-Ring	Rubber
6	70220-0105700	3623142609	Pressure Ring	Acetal
7	70261-009000 70261-009300 70261-009600 70261-009800 70261-008700	36IRT3F-HEAD 36IRT4F-HEAD 36IRT6F-HEAD 36IRT8F-HEAD 36IRT10F-HEAD	3" IRT Metering Unit 4" IRT Metering Unit 6" IRT Metering Unit 8" IRT Metering Unit 10" IRT Metering Unit	Nylon 6.6, 316 Stainless Steel, 304 Stainless Steel, Graphite, Hard Ferrite, Polypropylene, Epoxy Coated Cast Iron, Sapphire Bearings
8	70220-009745	36210282109	3" - 10" IRT Bolt	304 Stainless Steel
9	- - 70261-009550 70261-009780 70261-010100	36IRT3F-BODY 36IRT4F-BODY 36IRT6F-BODY 36IRT8F-BODY 36IRT10F-BODY	3" IRT Meter Body (does not include bolts) 4" IRT Meter Body (does not include bolts) 6" IRT Meter Body (does not include bolts) 8" IRT Meter Body (does not include bolts) 10" IRT Meter Body (does not include bolts)	Epoxy Coated Cast Iron
-	-	36603509	3" - 4" IRT Cover O-Ring[+]	Rubber

[+] Located between metering unit and meter body.

ER Digital Register - refer to the Ordering Chart to determine the Model Number based on Volume, Flow Rate, Output 1 & 2 and Flow Direction.