HYDROMETERS

SAVE SPACE WITH A VALVE AND WATER METER IN ONE UNIT

SUPERIOR HYDRAULIC PERFORMANCE AND RELIABLE FLOW MEASURING

PRODUCT ADVANTAGES

- Double-chambered valve provides quick acting and positive opening and closing.
- Rugged, heavy-duty construction with corrosion-resistant body for reliable performance.
- Stainless steel encapsulated registers guaranteed against fogging due to moisture.
- Globe configuration with built-in straightening vane requires no straight pipe installation saving space.
- Low head loss for energy efficiency and +/-2% accuracy across all flow ranges.

APPLICATIONS

- High pressure, remote control applications
- For communication with irrigation controllers and central control units
- For use as a remote master valve for automated operation
- For variety of pilot options: manual electric, pressure reducing manual electric

SPECIFICATIONS

- Sizes: 1 ½", 2", 3", 4", 6" and 8"
- Maximum Working Pressure:
  Manual Electric - 235 psi
  Pressure Reducing Manual Electric - 140 psi
  Higher pressures available
- Minimum Working Pressure: 14 psi
- Maximum Liquid Temperature: 140° F
- Connections: Flanged, Threaded
- Body: Cast Iron, Epoxy Coated
- Valve Diaphragm: Reinforced Natural Rubber

HYDROMETERS

Reed Switch Register


Reed Switch Only

Photo Diode Register

REED SWITCH REGISTER

The Reed Switch Register has a low frequency pulse output for functions relating primarily to recording volume and communication with control and monitoring equipment. Registers are interchangeable and easily replaced with common tools. They are removable even when the meter is operating. A leak indicator in the center of the dial registers the lowest flow through the meter. Flows are totalled in U.S. Gallons and each dial face indicates the multiplication factor.

- Magnetic coupling activates the reed switch creating a pulsed output.
- Dry contact uses very little electric power.
- Calculates volume related functions such as data recorders or simple counters.

Maximum contact current is 50 mA and maximum contact voltage is 48 VDC.

PHOTO DIODE REGISTER

The Photo Diode Register has a standard or high frequency pulse output (open collector) for functions such as rate of flow, recording total volume, and communicating with control and monitoring equipment. Registers are interchangeable and easily replaced with common tools. They are removable even when the meter is operating. Flows are totalled in U.S. Gallons and each dial face indicates the multiplication factor.

- A sensor combines an IR light source and a light sensitive diode in one package. Signals are created when the light beam created by the IR light is interrupted by a rotating element.
- Requires a constant supply of DC power.

Minimum contact current is 15 mA to a maximum of 25 mA DC through a resistor and maximum voltage is 28 VDC.

READING A HYDROMETER REGISTER

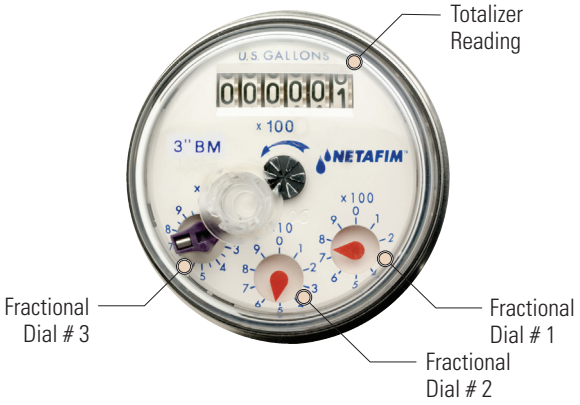
The Total Flow for a Hydrometer register is calculated by adding the readings from the Totalizer and the three fractional dials. The three fractional dials measure quantities smaller than the totalizer reading and are continuously turning while calculating the flow.

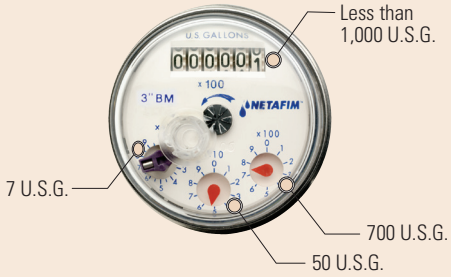
TOTALIZER READING: Rotates sequentially for each 1000 U.S.G. (U.S. Gallons) calculated Number displayed is multiplied by 1000 to reach total U.S.G.

FRACTIONAL DIAL # 1: Each number (1-9) on the dial is multiplied by 100 to reach U.S.G. One complete revolution of this dial = 1000 U.S.G.

FRACTIONAL DIAL # 2: Each number (1-9) on the dial is multiplied by 10 to reach U.S.G. One complete revolution of this dial = 100 U.S.G.

FRACTIONAL DIAL # 3: Each number (1-9) on the dial is multiplied by 1 to reach U.S.G. One complete revolution of this dial = 10 U.S.G.





CALCULATING THE TOTAL FLOW FOR THIS REGISTER

Totalizer Reading: 0
0 x 1000 = 0
Fractional Dial # 1: 7
7 x 100 = 700
Fractional Dial # 2: 5
5 x 10 = 50
Fractional Dial # 3: 7
7 x 1 = 7

Calculation:
Add Totalizer Reading and all Fractional Dial Readings

0 + 700 + 50 + 7 = 757 U.S.G.
757 U.S. Gallons is the Current Total Flow

NOTE: If the totalizer reading is between numbers (a number is partially visible), always default to the lower of the two numbers when calculating flow. If a fractional dial is pointing between numbers, always default to the lower of the two numbers.

HYDROMETERS

PERFORMANCE DATA

SIZE	LOWEST FLOW within ± 5% Accuracy	LOWEST FLOW within ± 2% Accuracy	NOMINAL FLOW within ± 2% Accuracy	MAXIMUM FLOW within ± 2% Accuracy
1 ½"	1.8 GPM	4.4 GPM	44 GPM	55 GPM
2"	5.3 GPM	20 GPM	66 GPM	95 GPM
3"	14 GPM	53 GPM	176 GPM	220 GPM
4"	21 GPM	79 GPM	264 GPM	380 GPM
6"	53 GPM	198 GPM	660 GPM	860 GPM
8"	97 GPM	357 GPM	1,189 GPM	1,500 GPM

Cv VALUES

SIZE	Cv (Flow Rate at 1.0 psi of Headloss)
1 ½"	23 GPM
2"	35 GPM
3"	92 GPM
4"	139 GPM
6"	347 GPM
8"	624 GPM

$\Delta P = (Q/Cv)^2$
P = psi
Q = GPM = desired pressure loss
Cv = flow at which 1 psi of head loss occurs

FRICTION LOSS VS. PRESSURE LOSS (psi)

SIZE	FLOW RATE IN GPM																												
	1.8	4.4	5.3	14	20	21	53	55	79	97	95	125	150	198	220	250	300	357	380	400	500	700	860	900	950	1,000	1,250	1,500
1 ½"	0.01	0.04	0.1	0.4	0.8	0.8	5.3	5.7																				
2"			0.02	0.2	0.3	0.4	2.3	2.5	5.1	7.7	7.4																	
3"				0.02	0.05	0.1	0.3	0.4	0.7	1.1	1.1	1.8	2.7	4.6	5.7													
4"						0.02	0.1	0.2	0.3	0.5	0.5	0.8	1.2	2.0	2.5	3.2	4.7	6.6	7.5									
6"							0.02	0.03	0.05	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.7	1.1	1.2	1.3	2.1	4.1	6.1					
8"										0.02	0.02	0.04	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.6	1.3	1.9	2.1	2.3	2.6	4.0	5.8

± 2% Accuracy

± 5% Accuracy

Pressure loss in psi = $(GPM/Cv)^2$

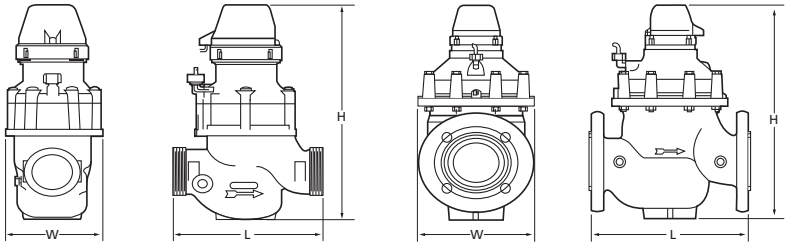
EXAMPLE: 2" Hydrometer, design flow @ 55 GPM (55 GPM / 35)^2 = 2.5 psi headloss

PHOTO DIODE REGISTER PULSE OUTPUTS

SIZE	STD FREQUENCY GALLONS/ PULSE	STD FREQUENCY PULSE/ GALLON	HIGH FREQUENCY GALLONS/ PULSE	HIGH FREQUENCY PULSE/ GALLON
1½"	0.1	10	0.0053	187.900
2"	0.1	10	0.0085	117.000
3"	0.1	10	0.025	48.710
4"	0.1	10	0.0556	17.993
6"	1	1	0.174	5.747
8"	1	1	0.317	3.152

REED SWITCH REGISTER PULSE OUTPUTS

SIZE	LOW FREQUENCY GALLONS/ PULSE	LOW FREQUENCY PULSE/ GALLON
1½", 2", 3", 4"	1	1
6", 8"	10	0.1



DIMENSIONS

SIZE →	1 ½"	2"	3"	4"	6"	8"
Length (L)	6 5/16"	6 1/4"	9 9/16"	10 15/16"	19 1/2"	20 11/16"
Width (W)	4 3/4"	4 3/4"	8 1/4"	9 1/16"	14 7/8"	17 3/4"
Height (H)	10 5/16"	13 13/16"	16 15/16"	17 3/4"	25 7/16"	25 5/8"
Weight	4 lbs.	7 lbs.	52 lbs.	65 lbs.	245 lbs.	309 lbs.

Installation Requirements: Globe configuration hydrometers have no straight pipe installation requirements.

HYDROMETERS

ORDERING INFORMATION

SIZE	MODEL NUMBER	REGISTER	GALLONS/ PULSE	CONNECTION
1 ½"	36HM1.5TG	Reed Switch	1	Union
	36HM1.5TG.1	Photo Diode	0.1	Union
	36HM1.5TG-.0053	Photo Diode	0.0053	Union
2"	36HM2TG	Reed Switch	1	Threaded
	36HM2TG.1	Photo Diode	0.1	Threaded
	36HM2TG-.0085	Photo Diode	0.0085	Threaded
3"	36HM3FG-1	Reed Switch	1	Flanged
	36HM3FG.1	Photo Diode	0.1	Flanged
	36HM3FG-.0205	Photo Diode	0.0205	Flanged
4"	36HM4FG	Reed Switch	10	Flanged
	36HM4FG1	Reed Switch	1	Flanged
	36HM4FG-.0566	Photo Diode	0.0566	Flanged
6"	36HM6FG	Reed Switch	10	Flanged
	36HM6FG1	Photo Diode	1	Flanged
	36HM6FG-.1739	Photo Diode	0.1739	Flanged
8"	36HM8FG-10	Reed Switch	10	Flanged
	36HM8FG1	Photo Diode	1	Flanged
	36HM8FG-.3173	Photo Diode	0.3173	Flanged

Maximum Pressure: 235 psi
Call Netafim USA Customer Service for Item Numbers.
6" and 8" Sizes are Non-Stock, Special Order Items.

HYDROMETER CONTROL OPTIONS

FUNCTION	CODE
Manual	M
Manual Electric	MEL
Hydraulic Remote Control	RC
Pressure Reducing	PR
Pressure Reducing Manual Electric	PRMEL
Pressure Reducing Remote Control	PRRC
Pressure Reducing and Sustaining	PRPS
Pressure Reducing and Sustaining Electric	PRPSEL
Pressure Sustaining	PS
Pressure Sustaining Electric Normally Closed	PSEL

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