Jeffrey Knight
jknight@ewingirrigation.com

EWING®

What is a “Good Rain”??

- Light Rain = 0.098 in/hr
- Moderate Rain = 0.39 in/hr
- Heavy Rain = 2.0 in/hr
- Violent Rain = > 2.0 in/hr

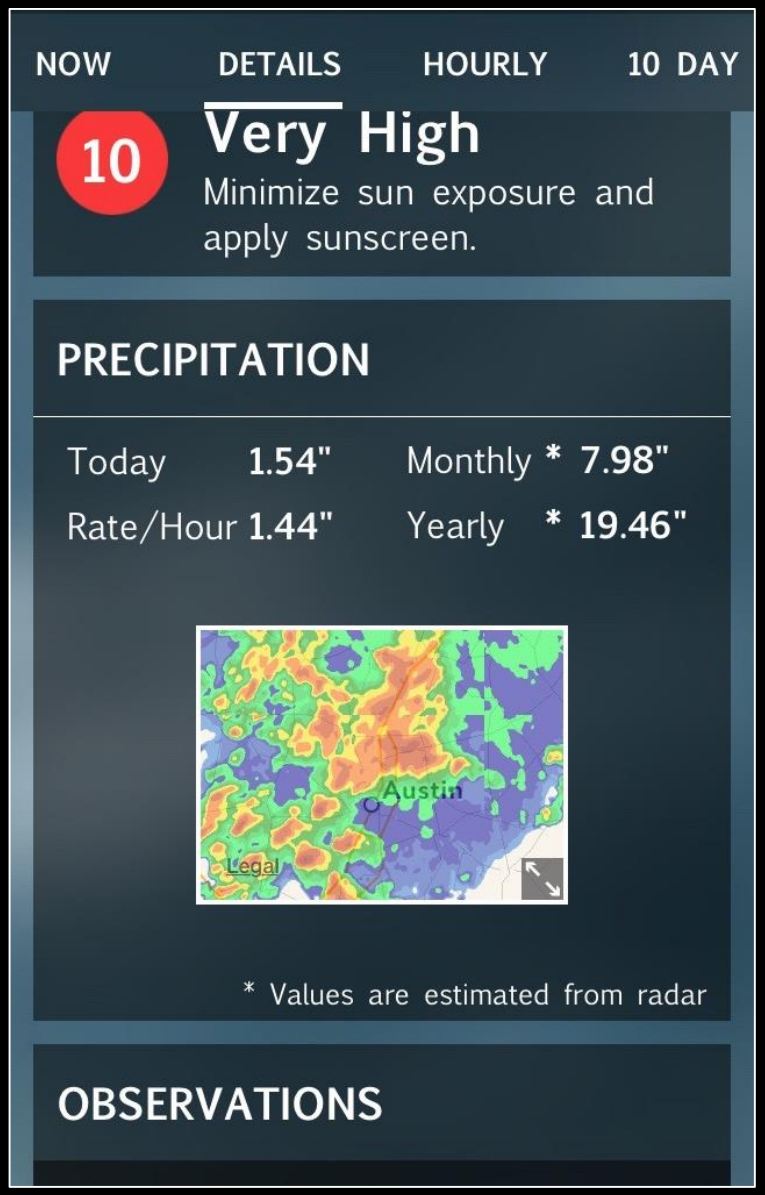
What is a “Good Rain”??

- Light Rain = 0.098 in/hr
- Moderate Rain = 0.39 in/hr
- Heavy Rain = 2.0 in/hr
- Violent Rain = > 2.0 in/hr

Moderate or Heavy?

Precipitation Rates

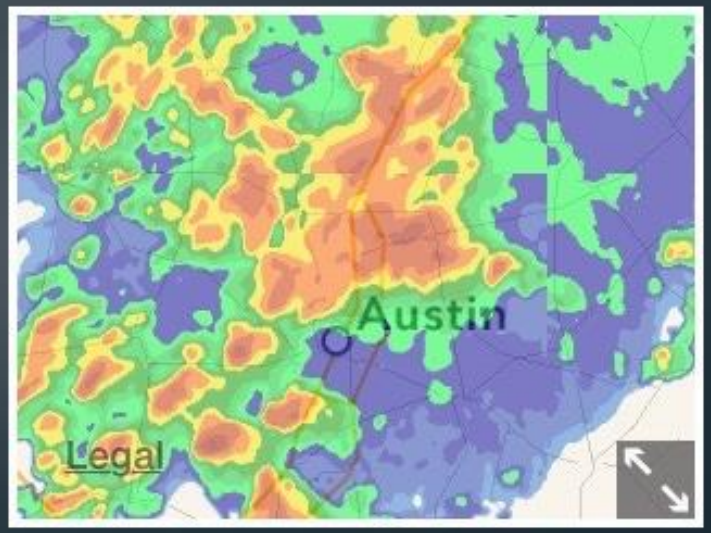
- Spray Heads = 1.58 in/hr
- Rotary Heads = 0.5 – 1.0 in/hr
- Inline Drip (0.9 gph on a 12”x12” grid = 1.43 in/hr
- Dripper (point source) ????



Screen Shot from an iphone weather app

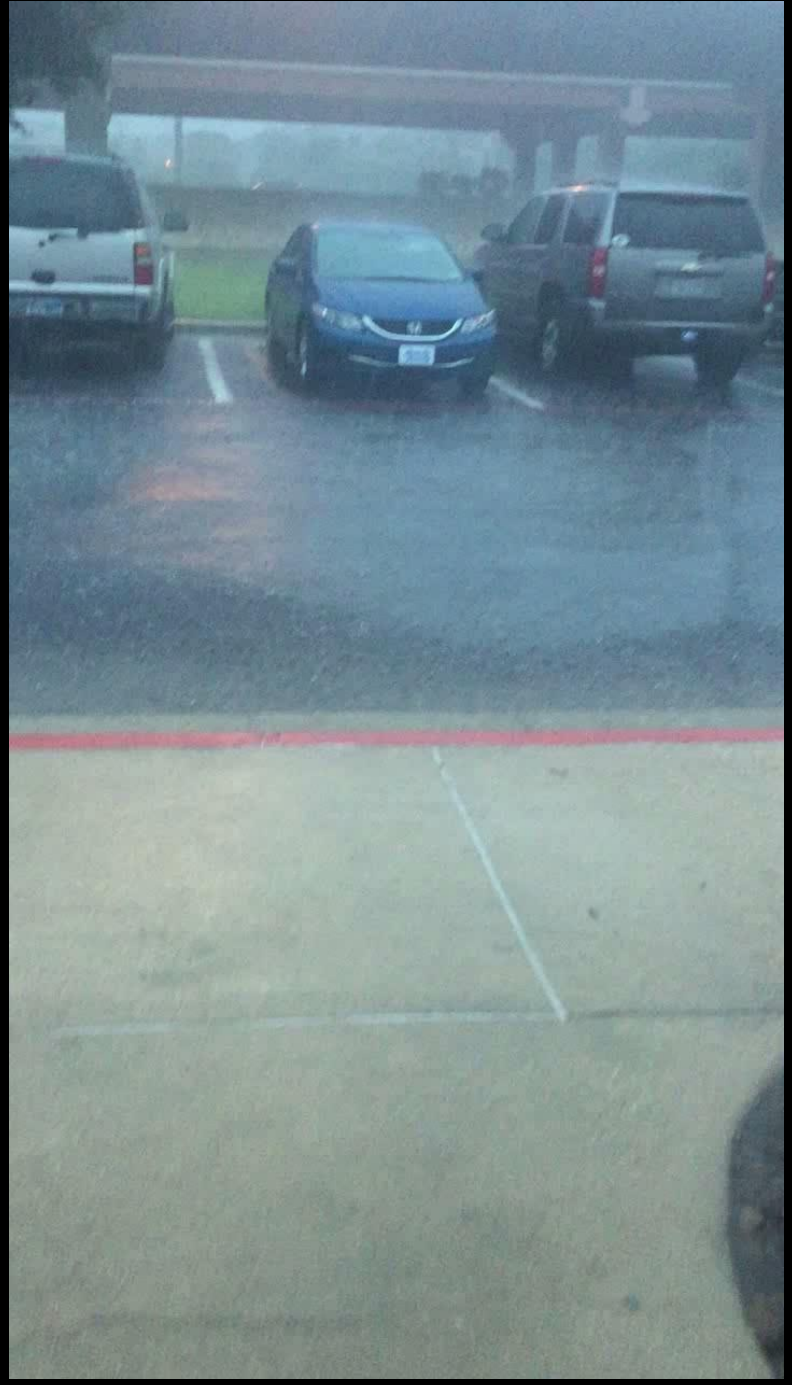
PRECIPITATION

Today	1.54"	Monthly *	7.98"
Rate/Hour	1.44"	Yearly *	19.46"



* Values are estimated from radar

Same as Sprays and Inline Drip Irrigation



Poor sprinkler selection without consideration for soil type and slope will lead to excessive runoff!


How do you KNOW when a system is Horrible?


RV PARK

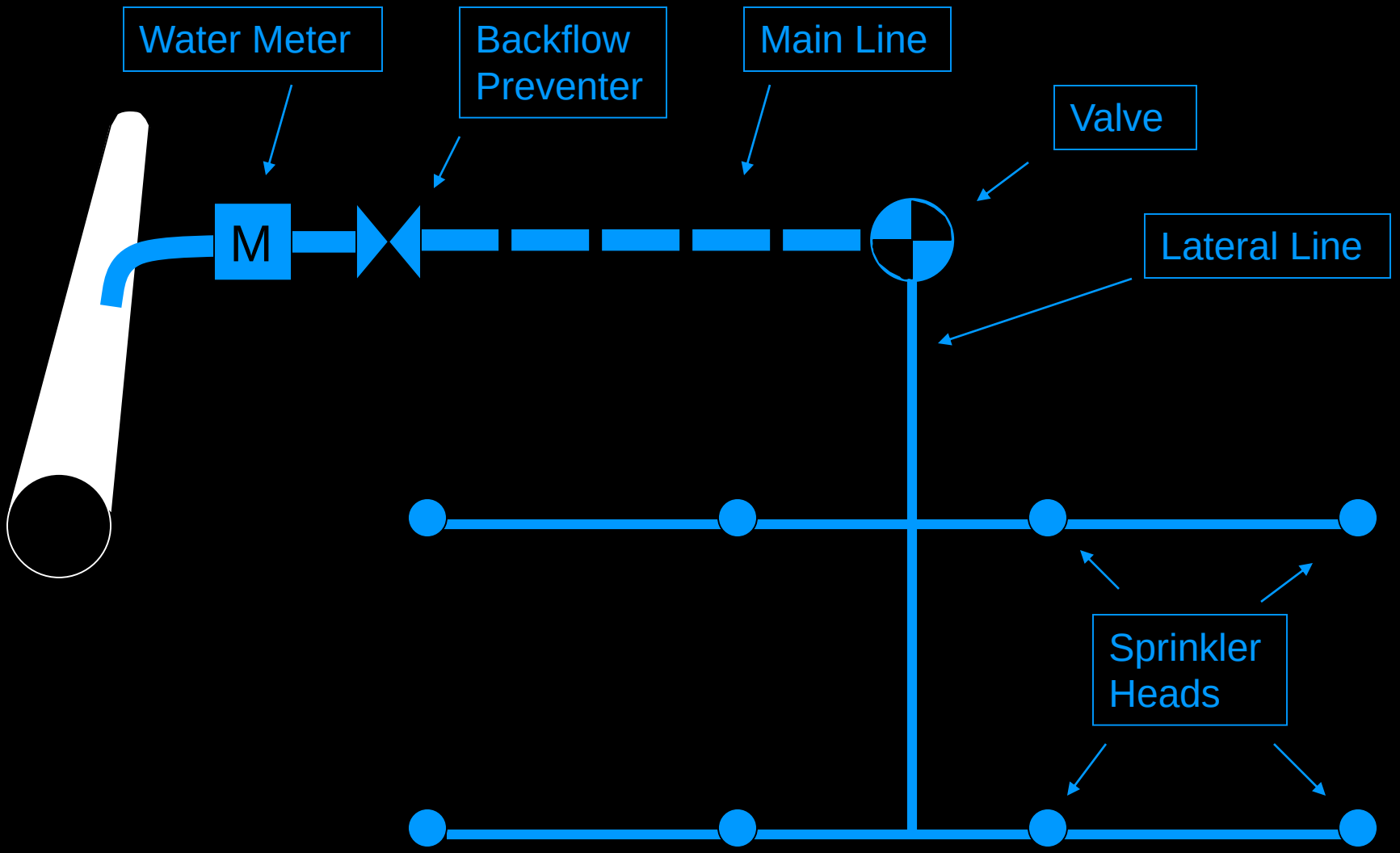

48

Irrigation Troubleshooting

4 Secrets to Successful Irrigation System Renovation

1. Pressure
2. Spacing
3. Matched Precipitation
4. Maintenance

What's it all about?



How much **PRESSURE** do we **need**?

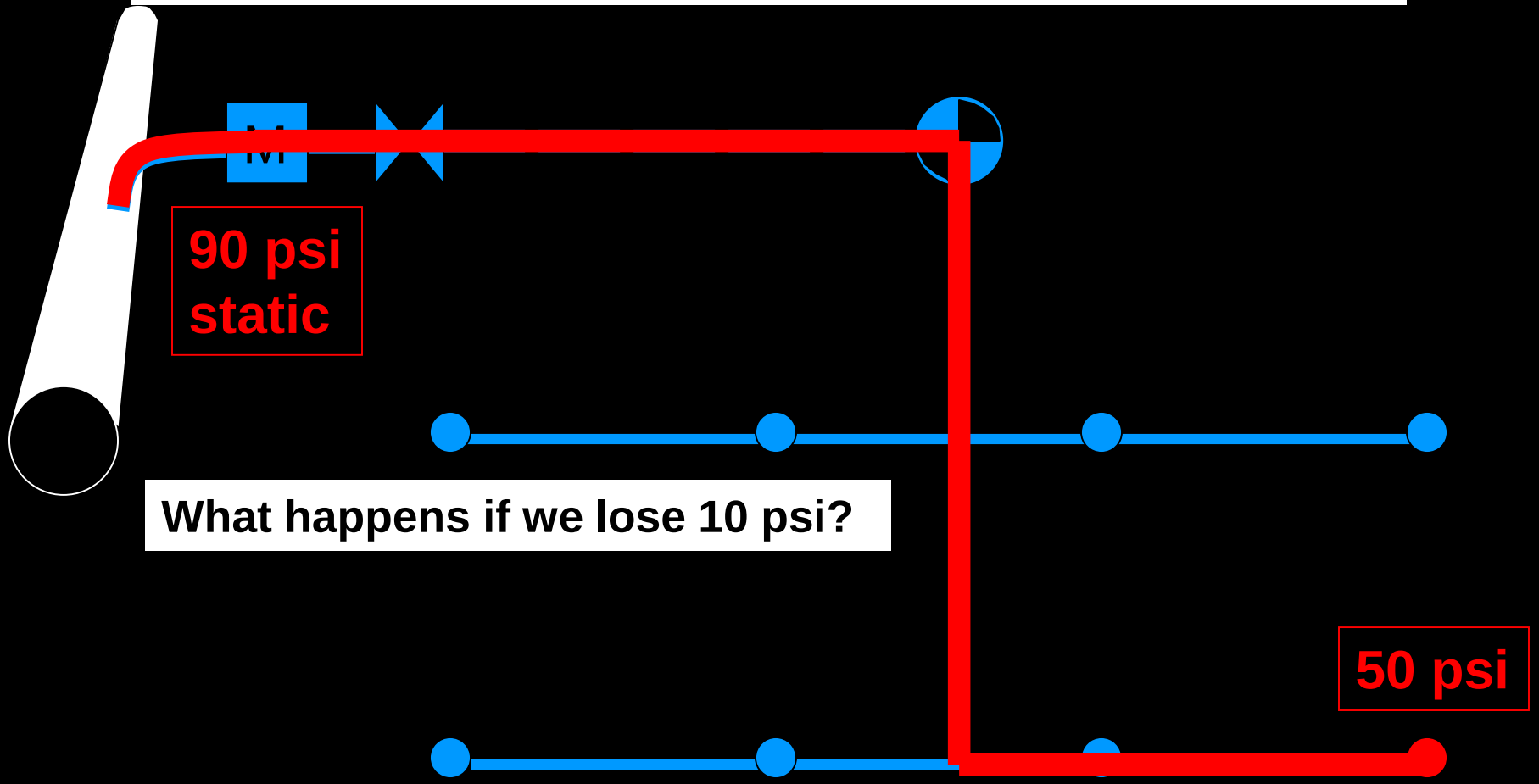
I-25 *Plus* Nozzle Performance Data

Nozzle	Pressure PSI	Radius ft.	Flow GPM	Precip in/hr ■	Precip in/hr ▲
4 Yellow	40	40'	3.8	0.46	0.53
	50				
	60				
	70				
5 White	40				
	50	44'	4.8	0.48	0.55
	60	45'	5.3	0.50	0.58
	70	46'	5.6	0.51	0.59
7 Orange	40	45'	6.6	0.63	0.72
	50	47'	7.0	0.61	0.70
	60	48'	7.5	0.63	0.72
	70	49'	7.9	0.63	0.73
8 Lt. Brown	40	47'	7.7	0.67	0.77
	50	49'	8.3	0.67	0.77
	60	50'	9.2	0.71	0.82
	70	51'	9.9	0.73	0.85

What is the minimum and maximum pressure required?

How much **PRESSURE** do we **need**?

Static Pressure – Desired Head Pressure

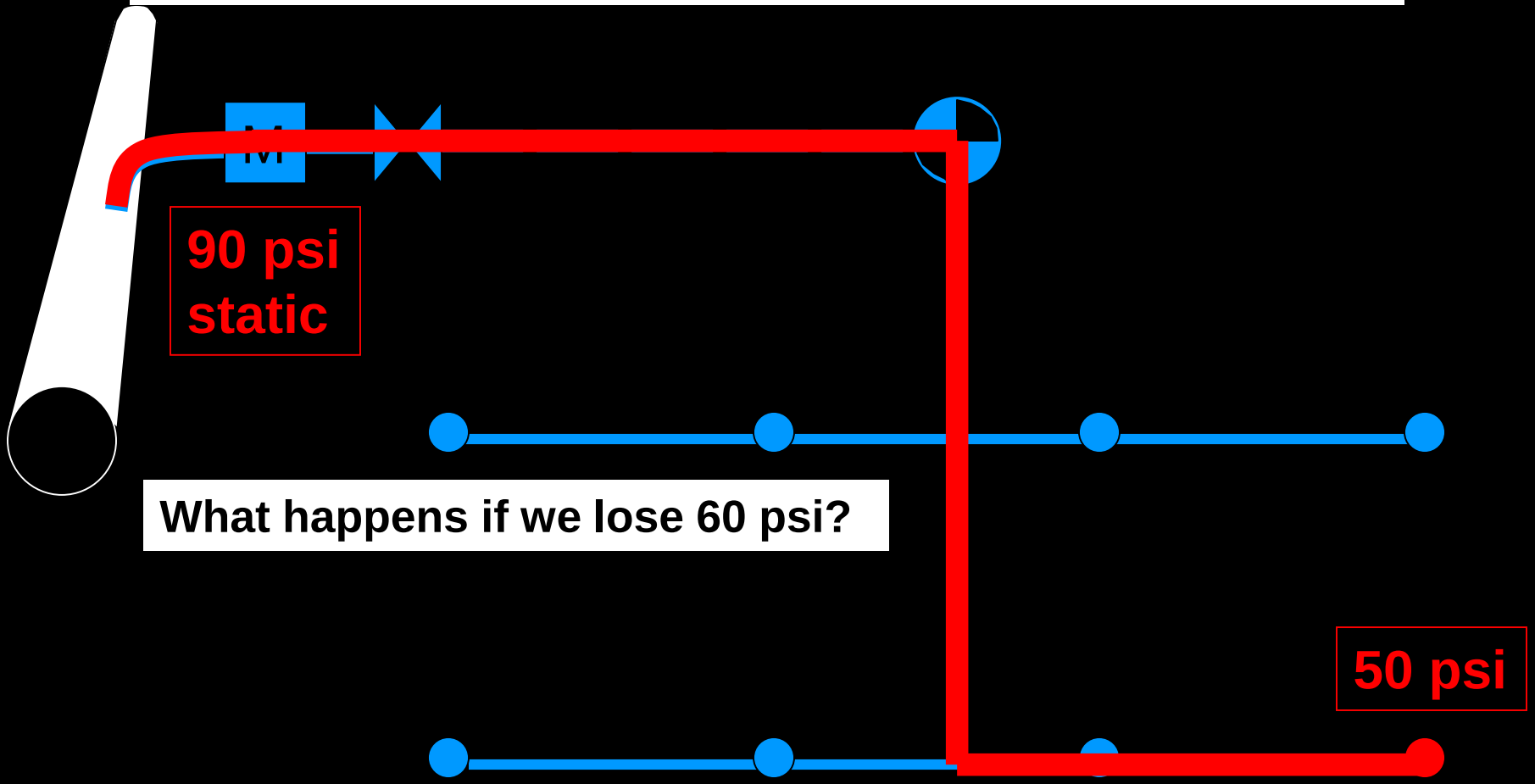


Misting

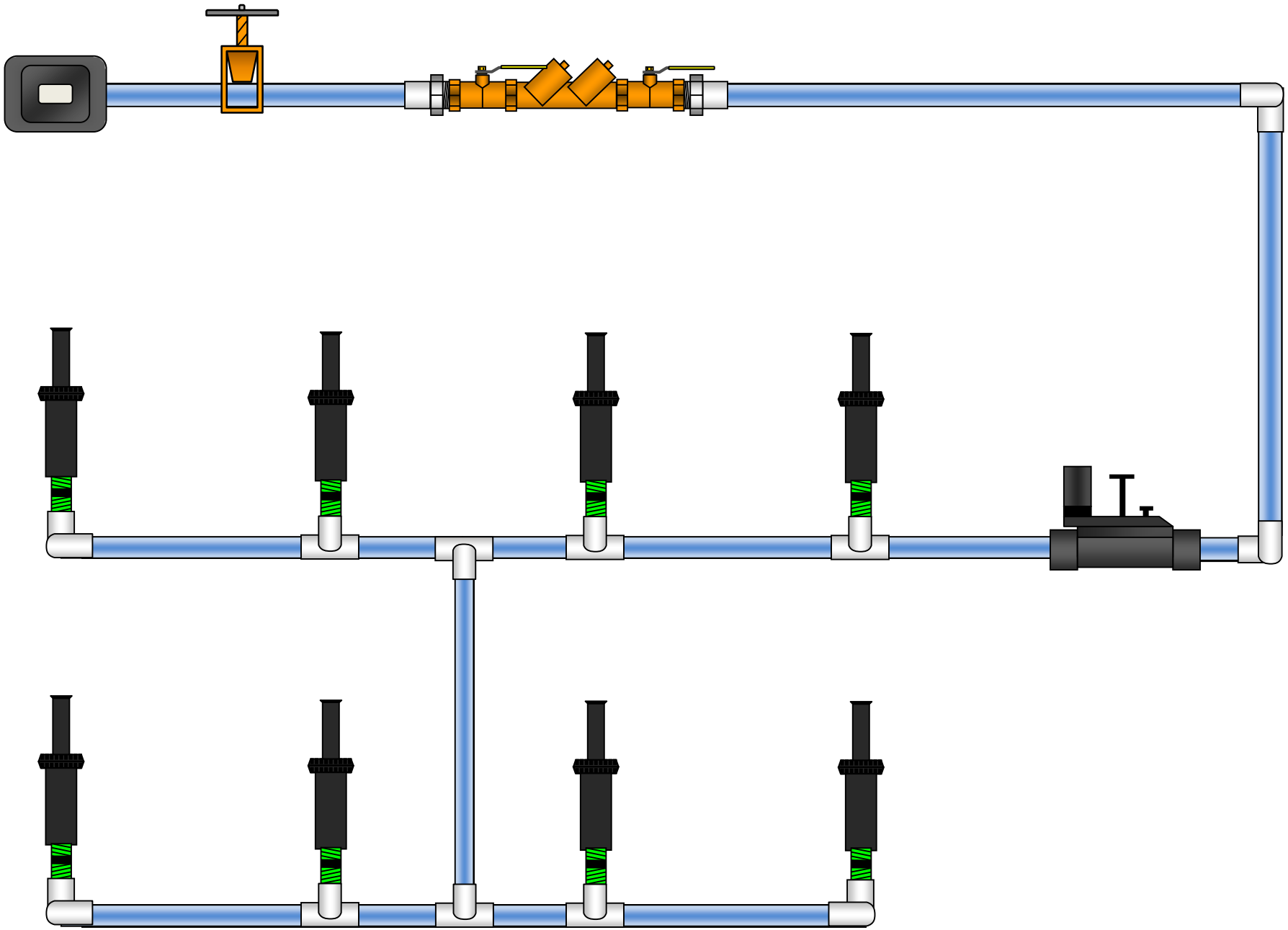

PE0304

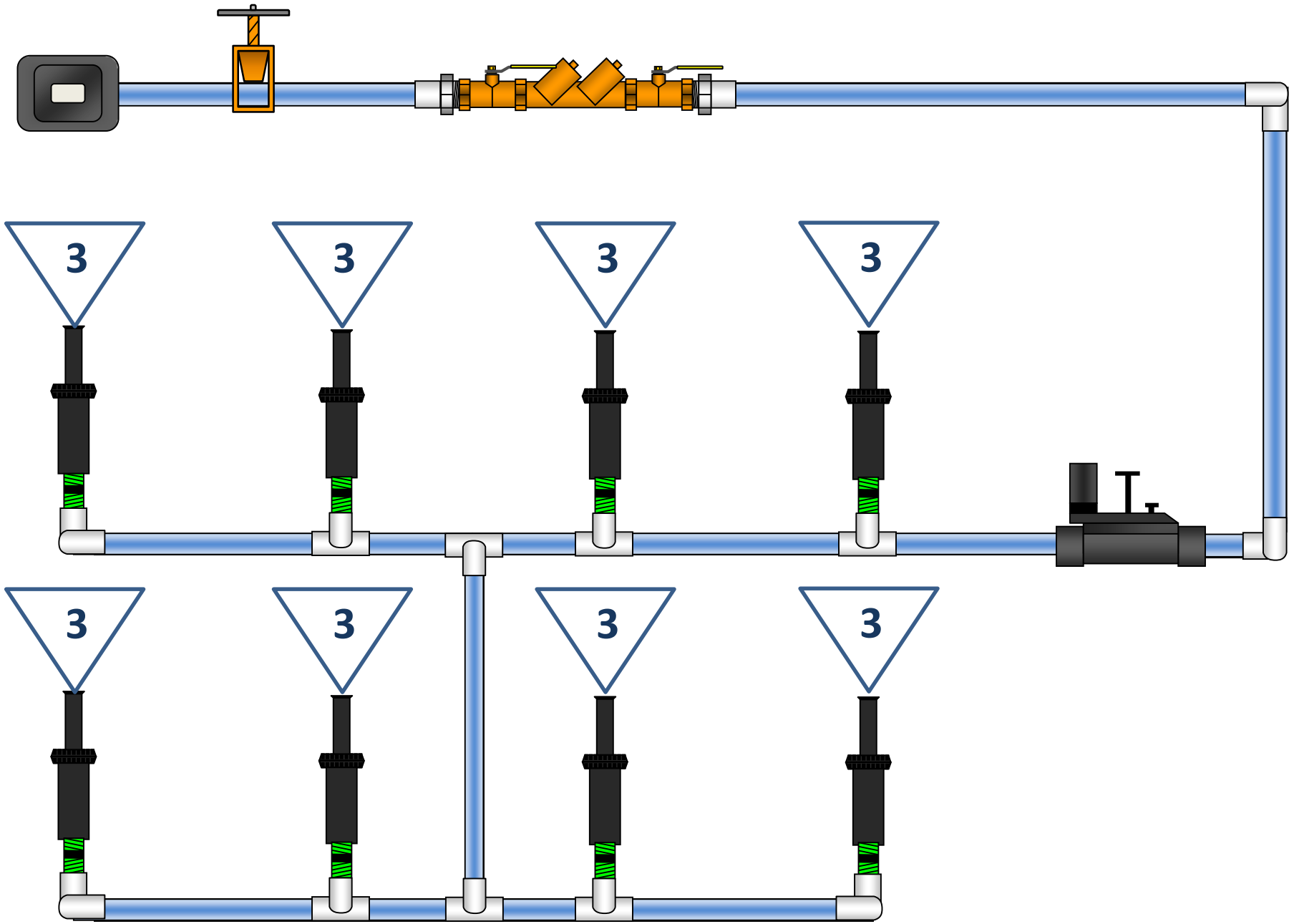
How much **PRESSURE** can we lose?

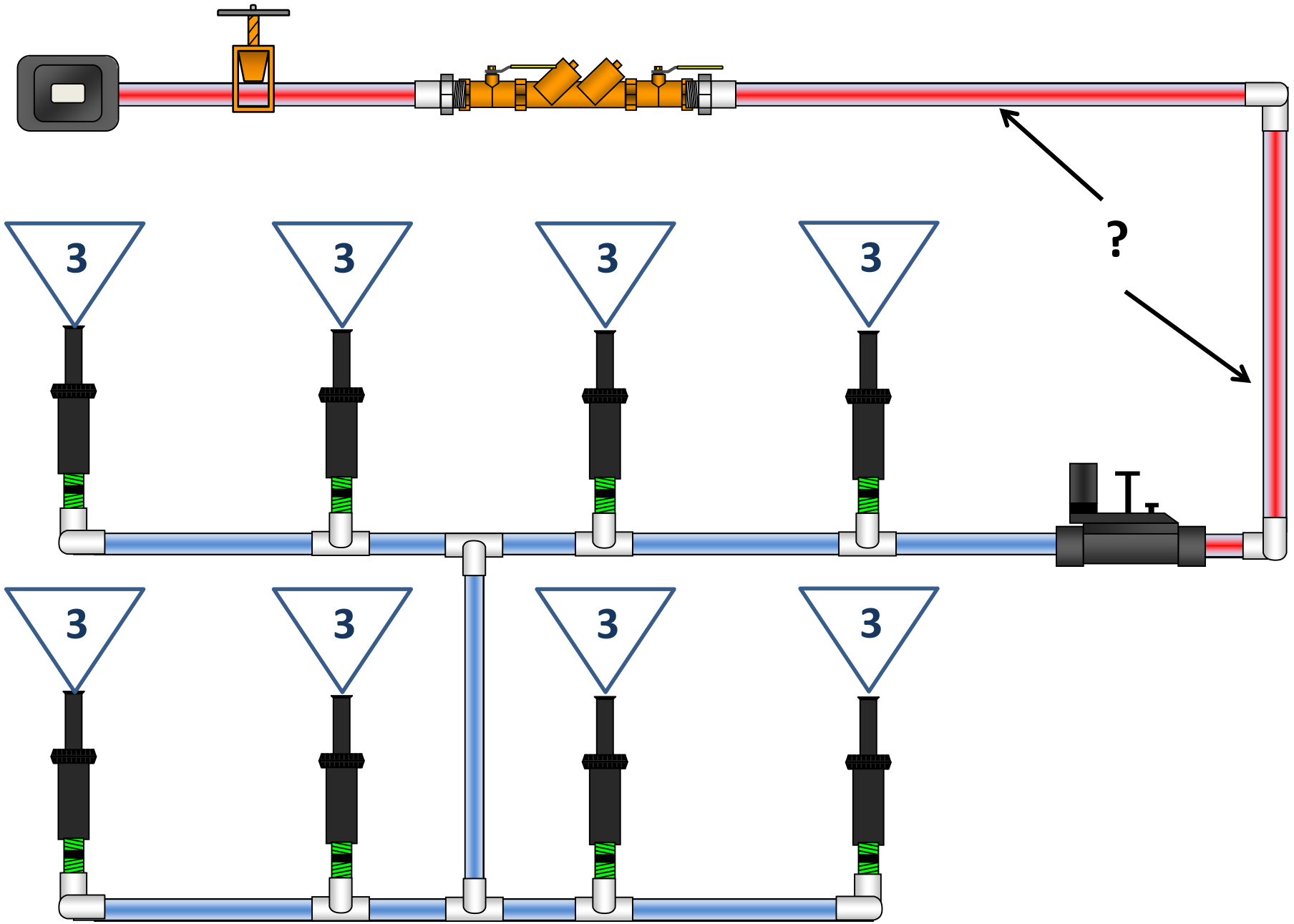
Static Pressure – Desired Head Pressure

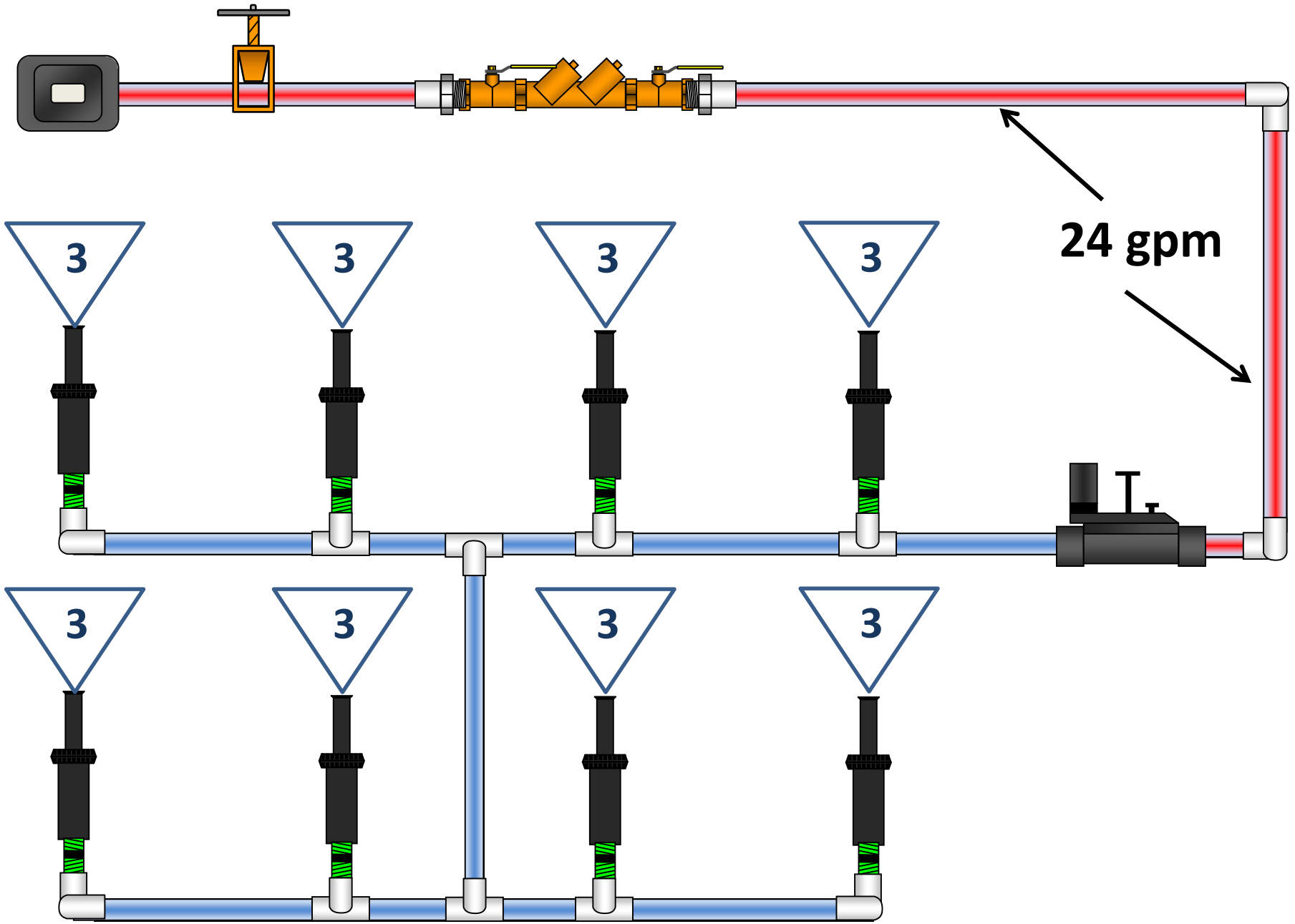



Map
Satellite
A
100 ft
50 m
©2006 Google - Imagery ©2006 DigitalGlobe, Map data ©2006 NAVTEQ™ - Terms of Use

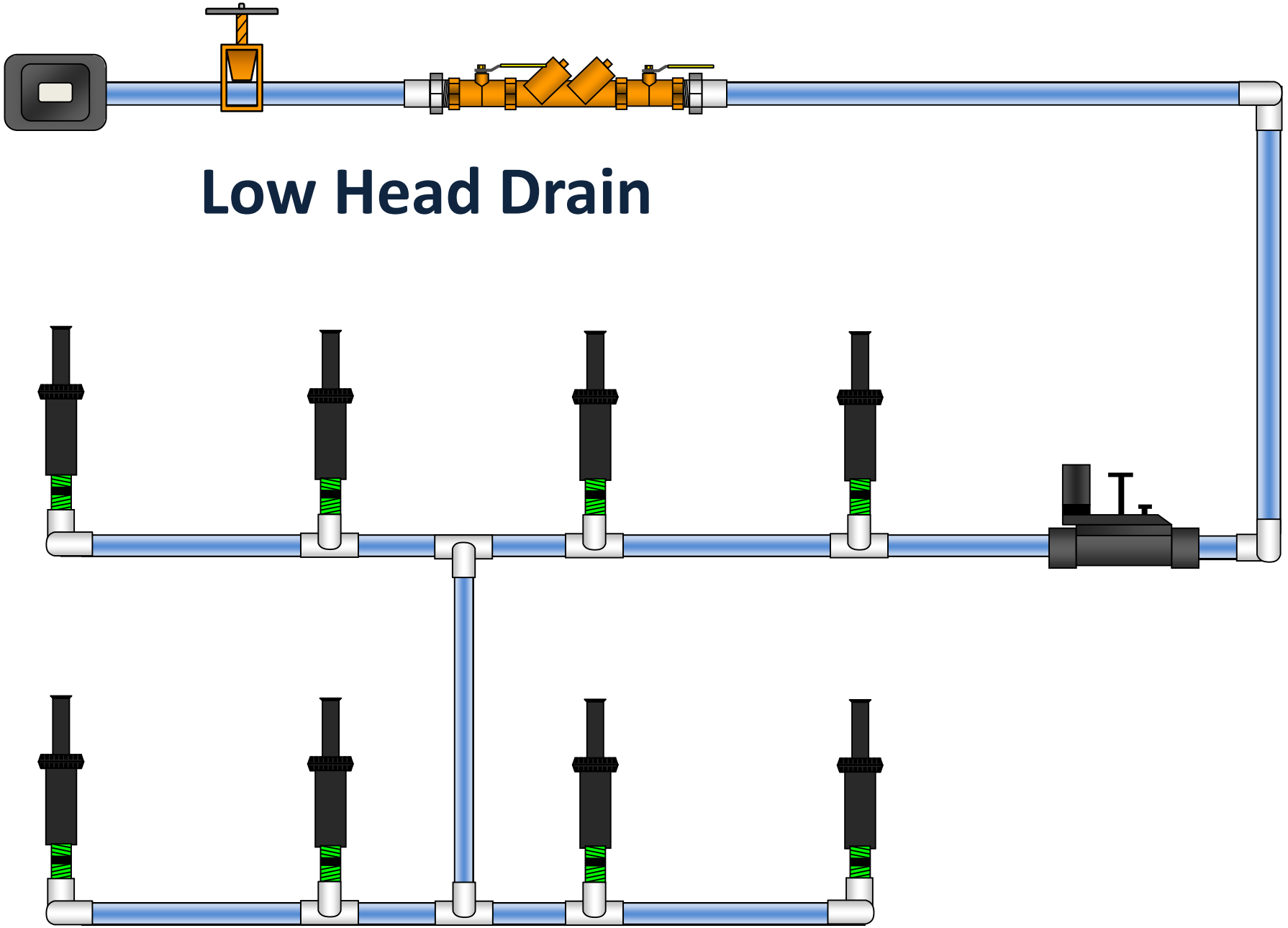



3
3
3
3
3
3
3
3

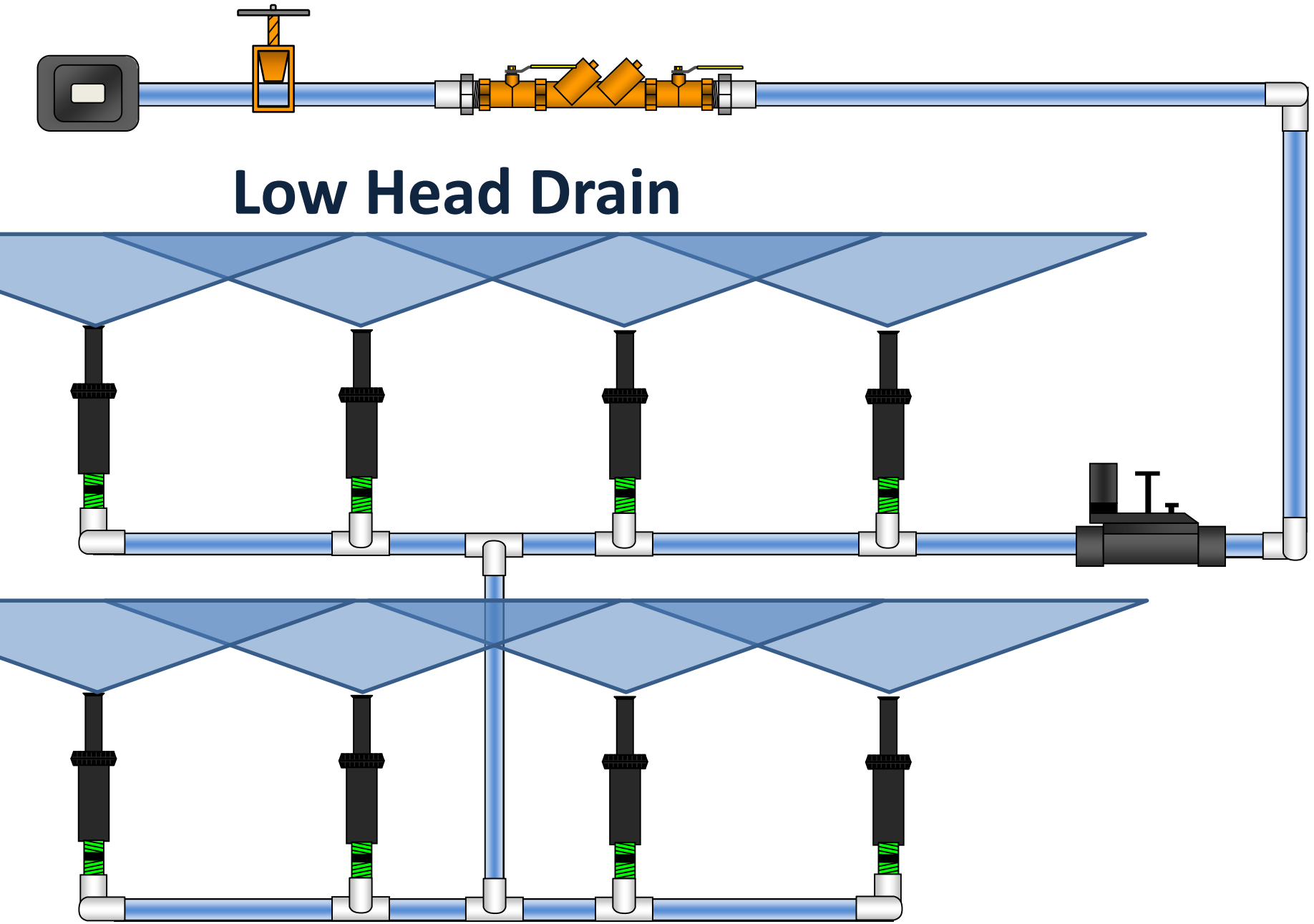

3
3
3
3
3
3
3
3
?

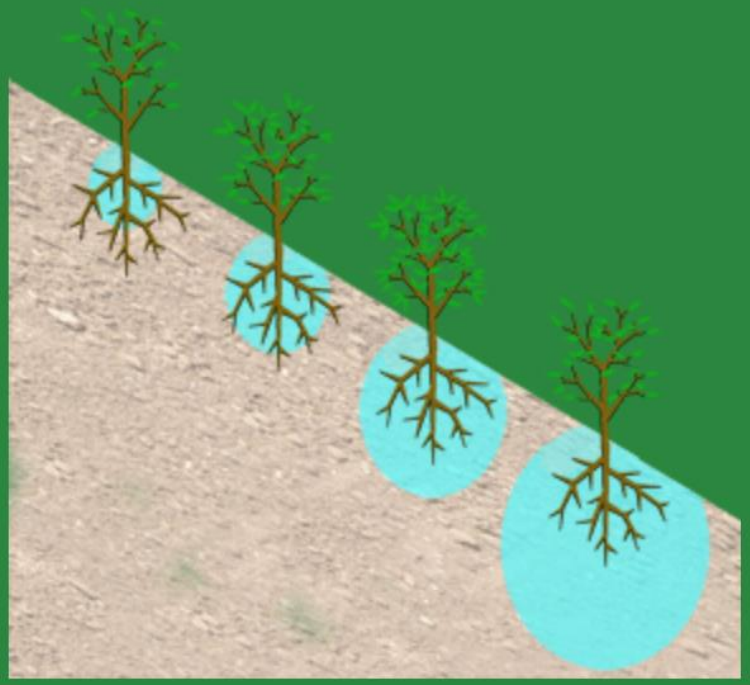

3
3
3
3
24 gpm
3
3
3
3

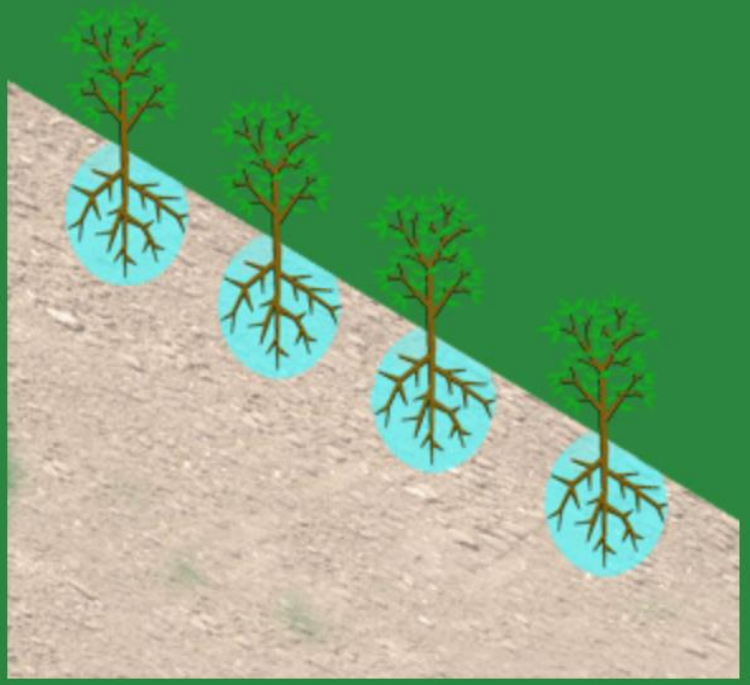
Low Head Drain



Low Head Drain



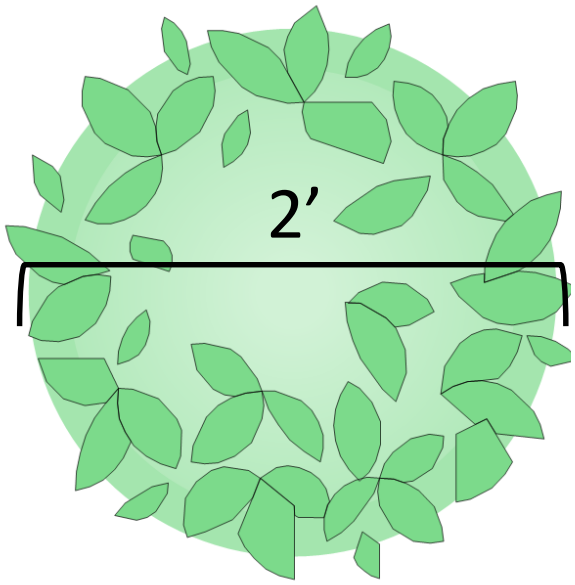


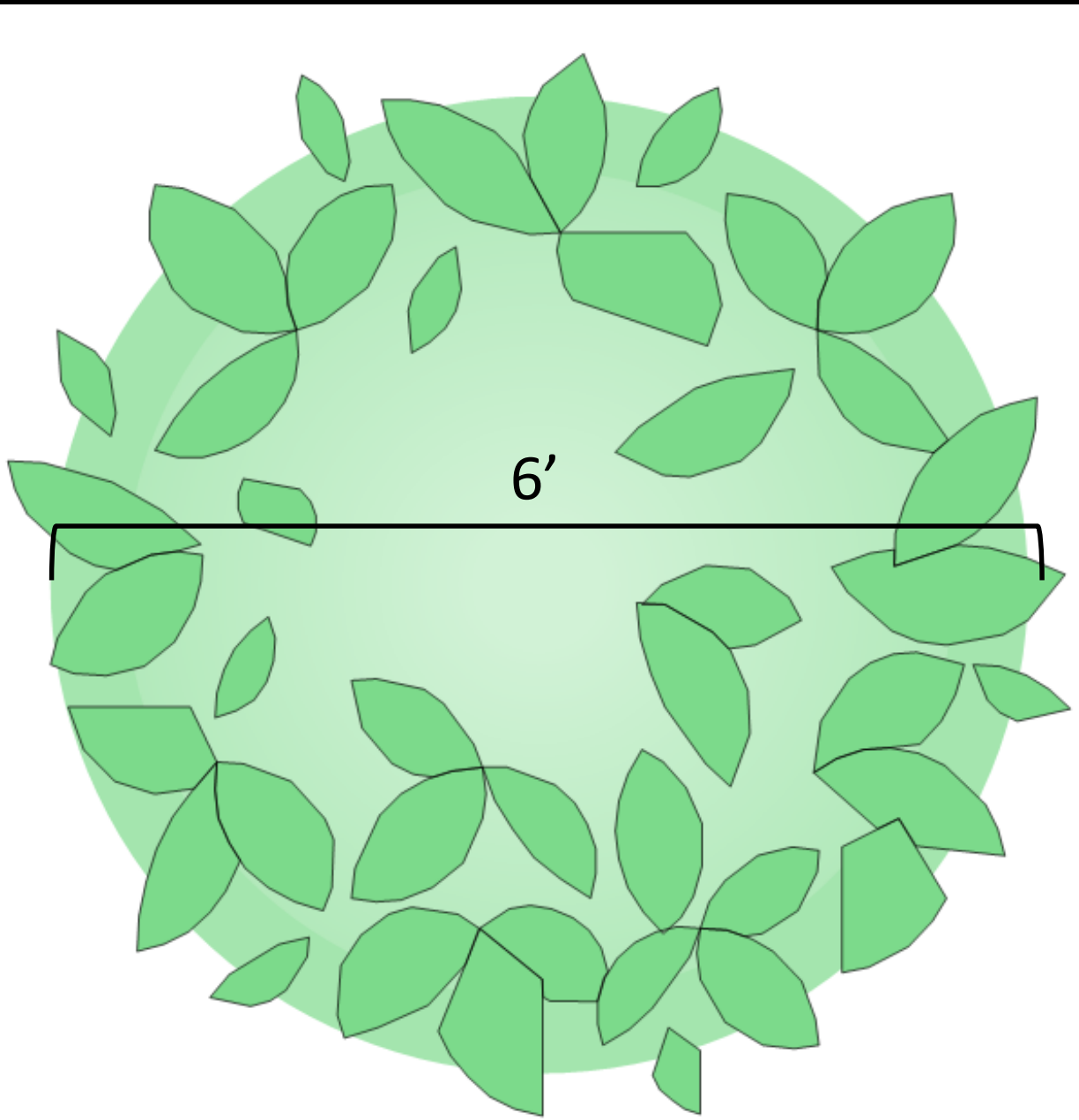



8301

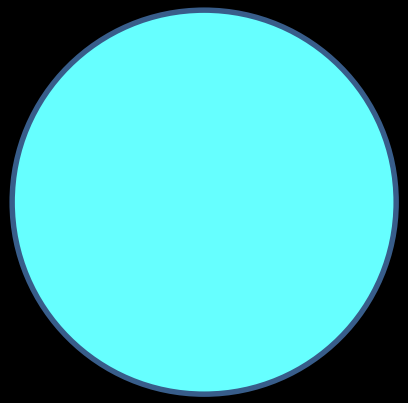
2’ vs 6’ shrub

How many drippers per plant?





πr^2



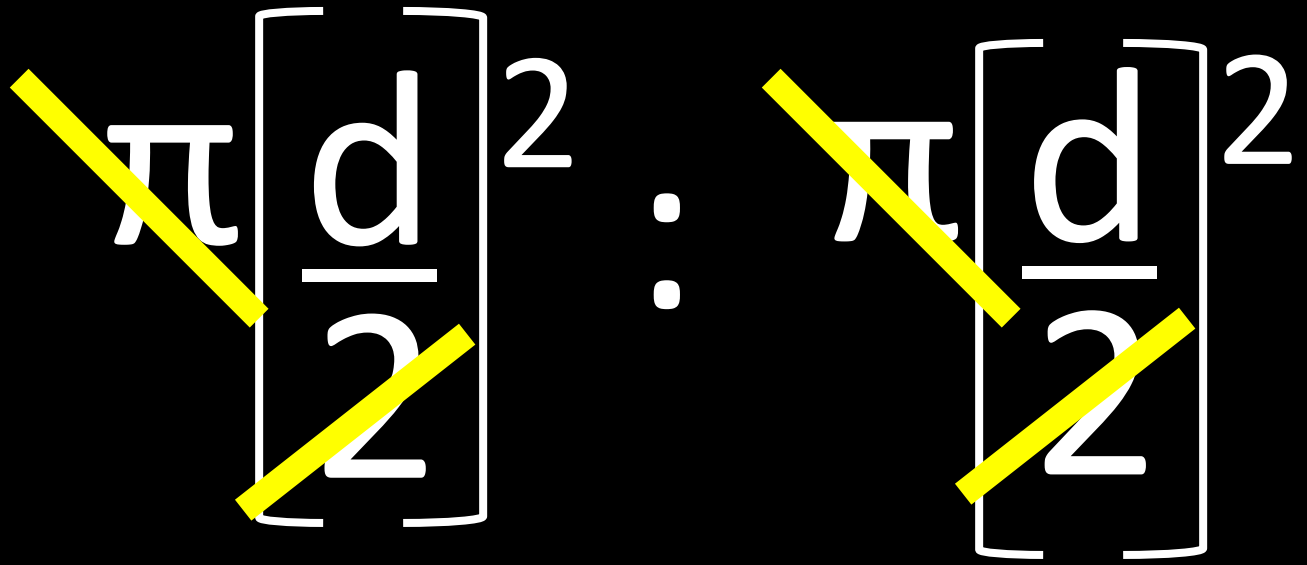
1”

πr^2

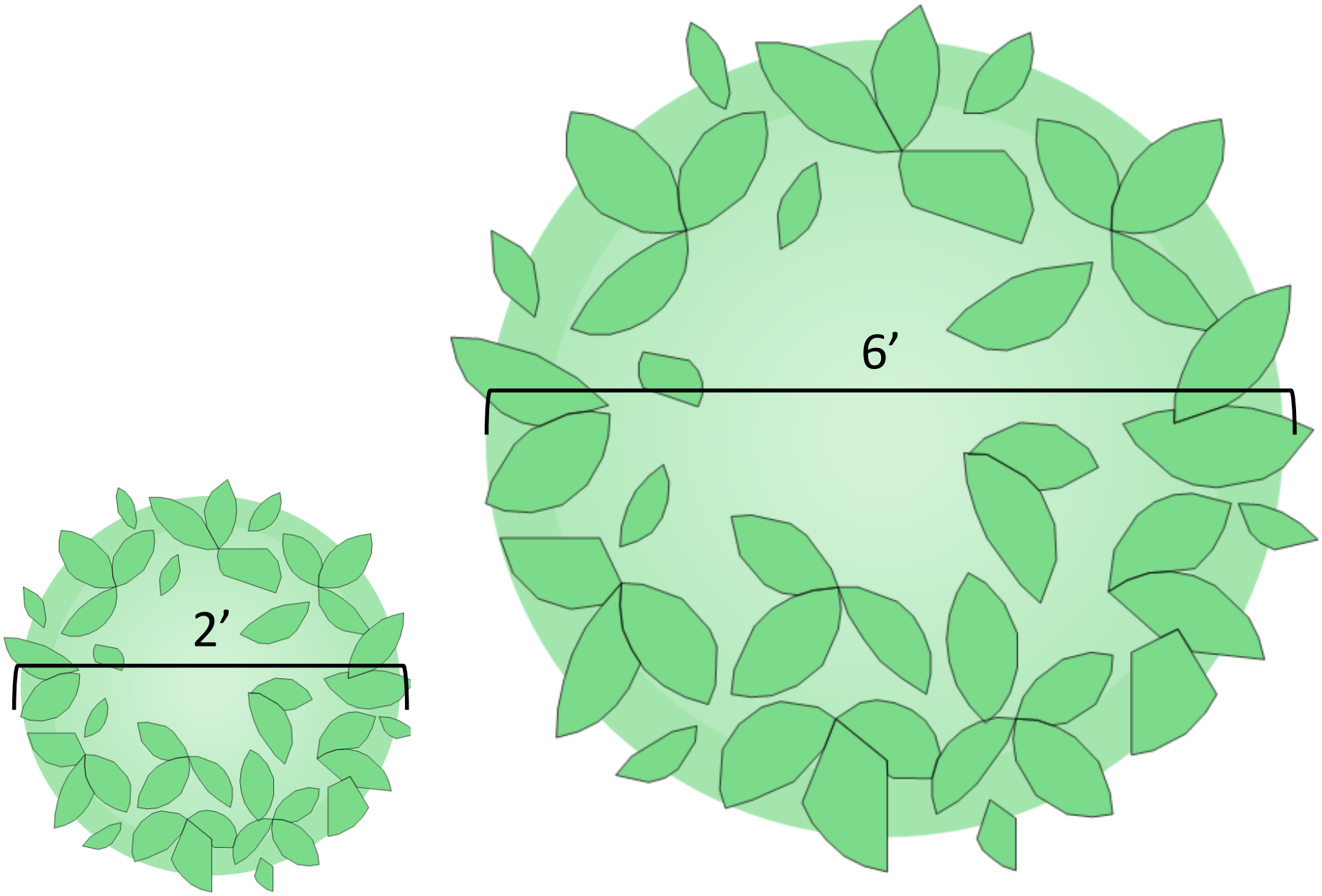
2”

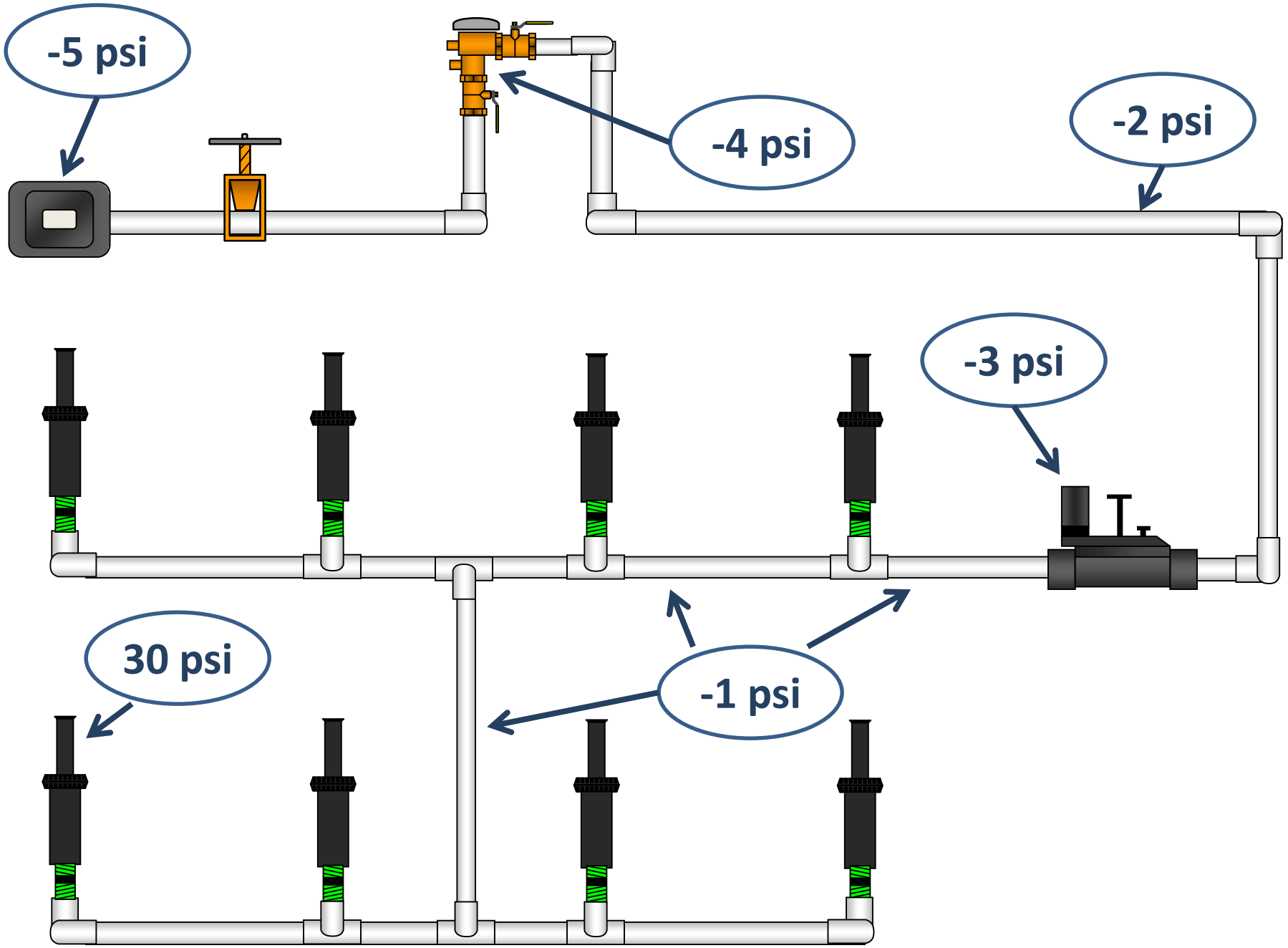
$$\cancel{\pi r^2} : \cancel{\pi r^2}$$

$$\pi\left[\frac{d}{2}\right]^2 : \pi\left[\frac{d}{2}\right]^2$$

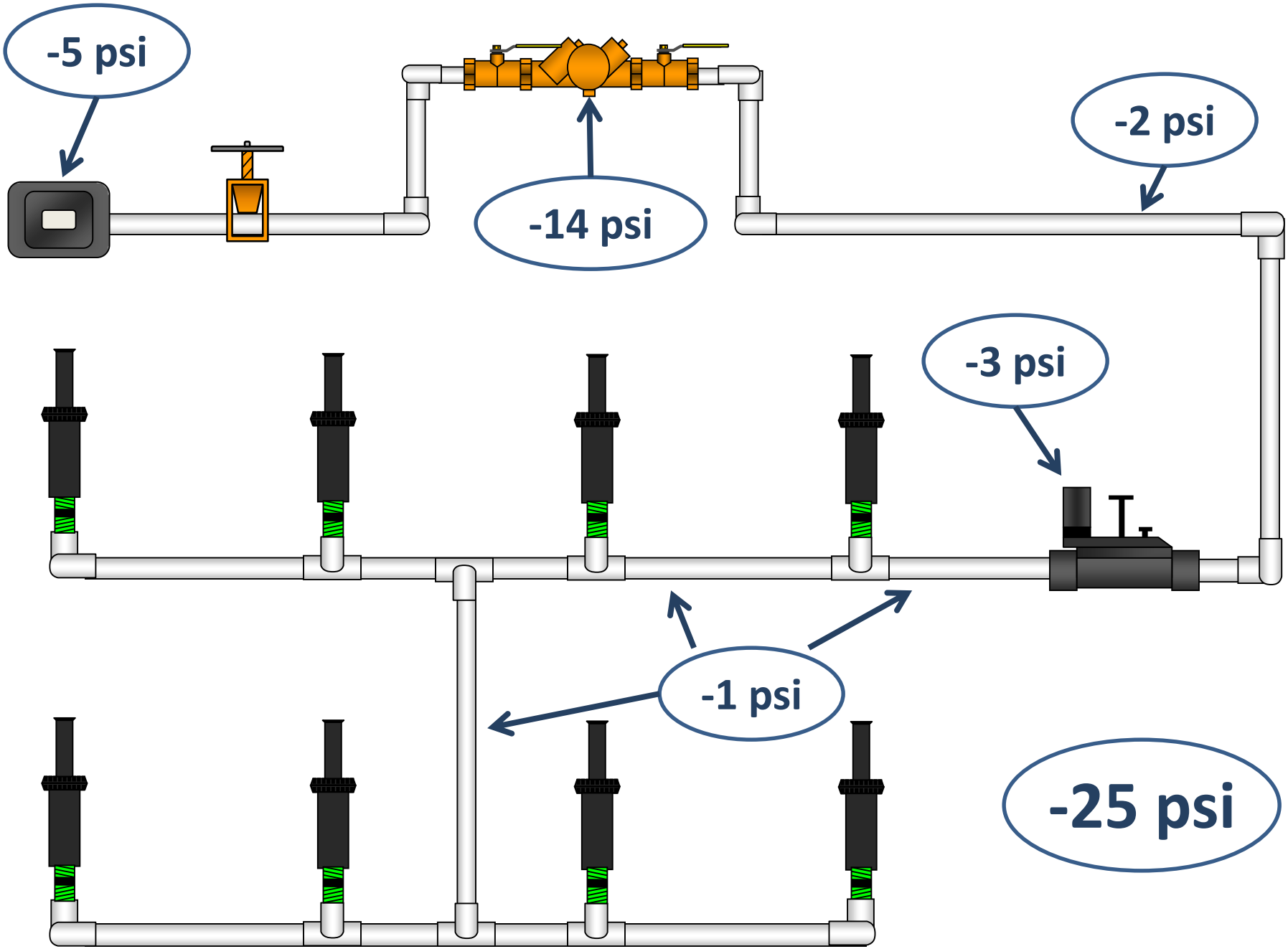


$d^2 : d^2$


6’
2’



#4



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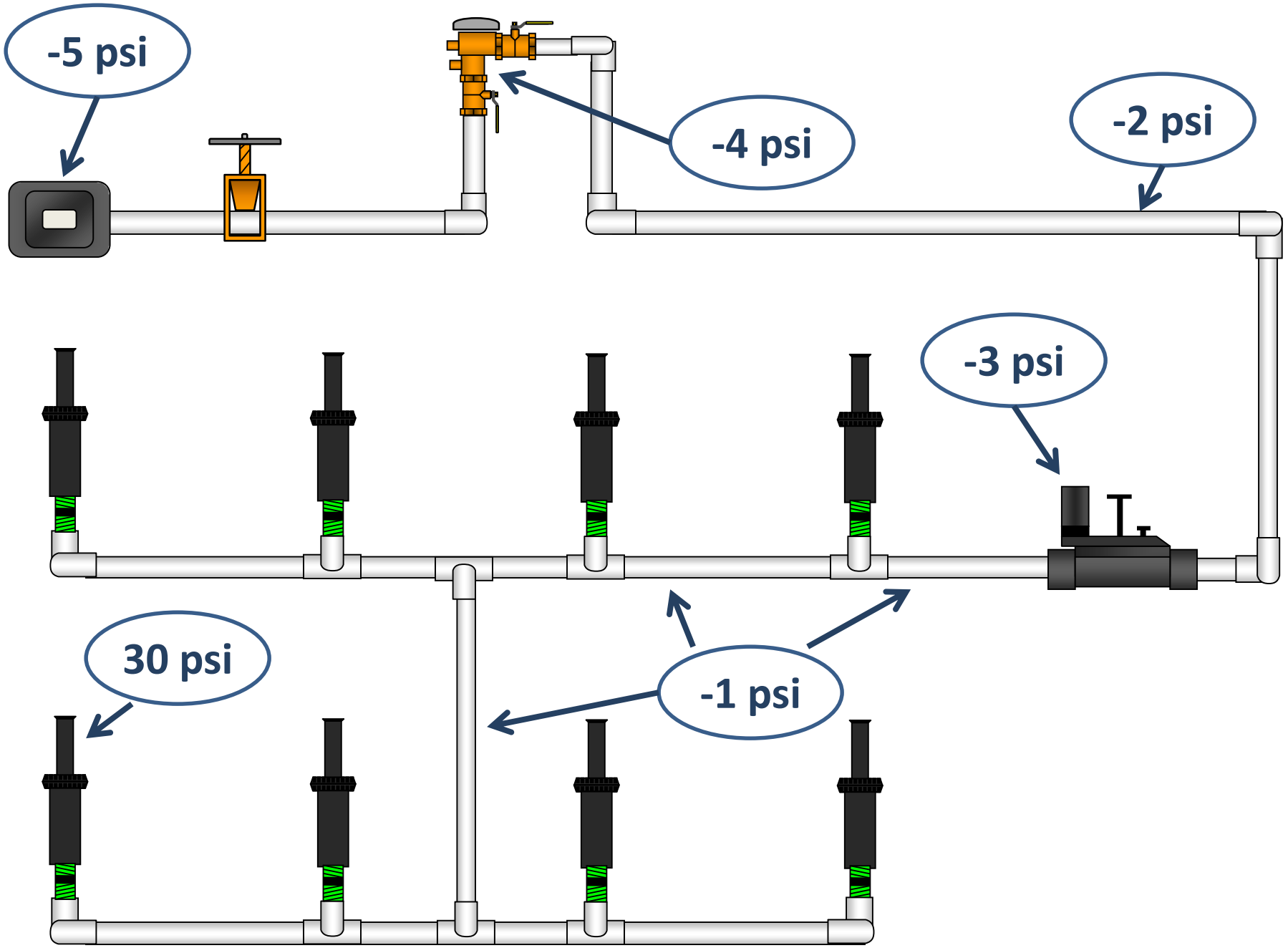

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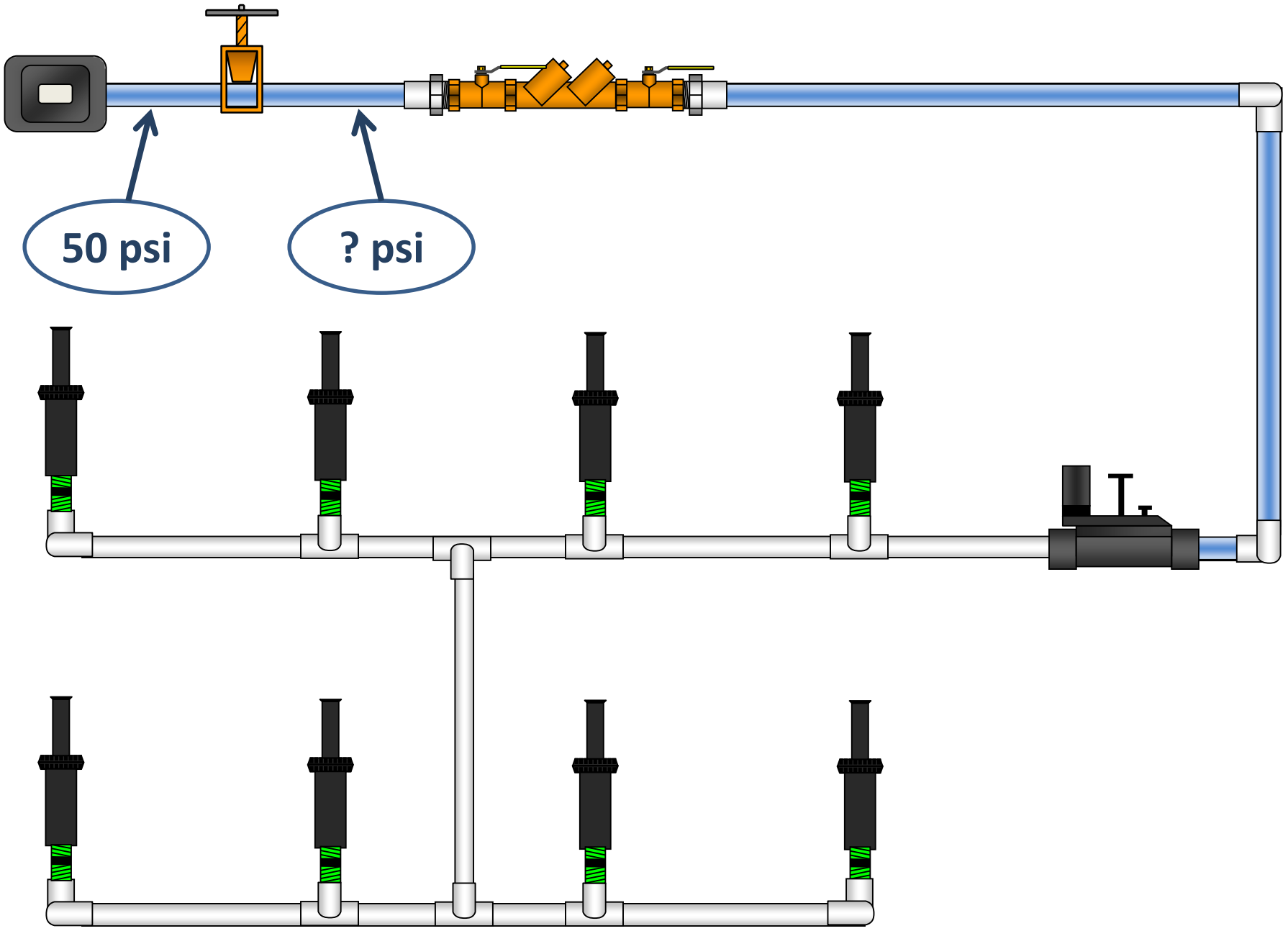
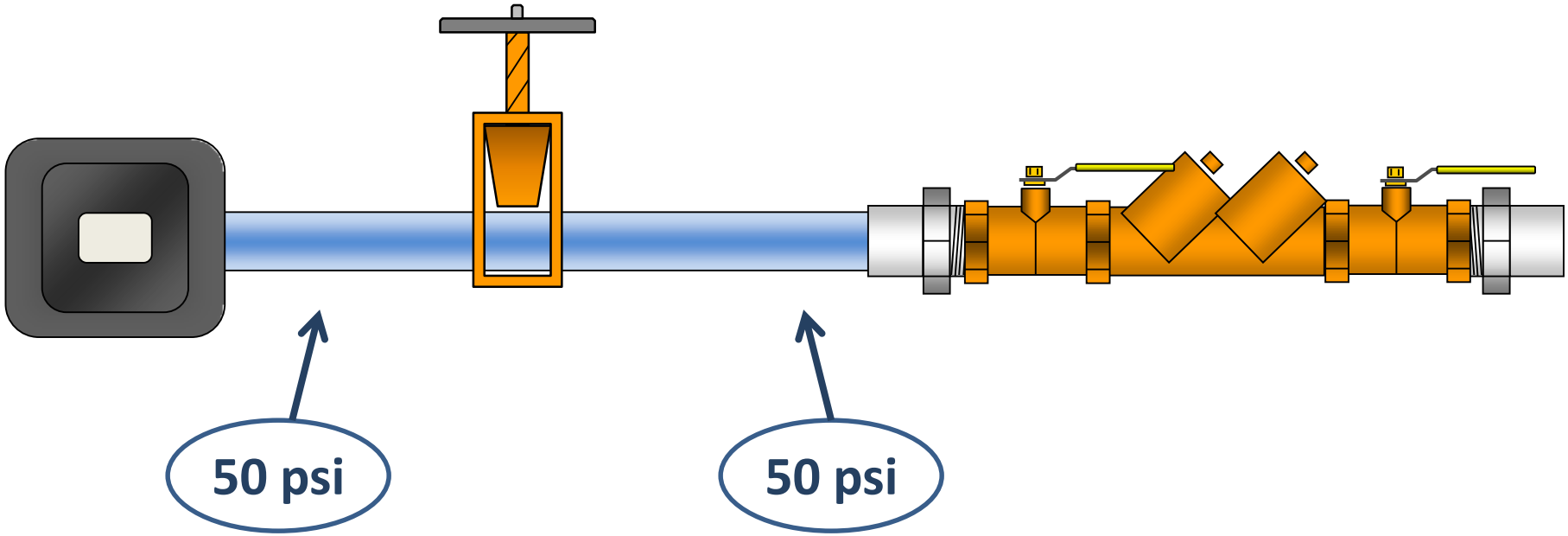
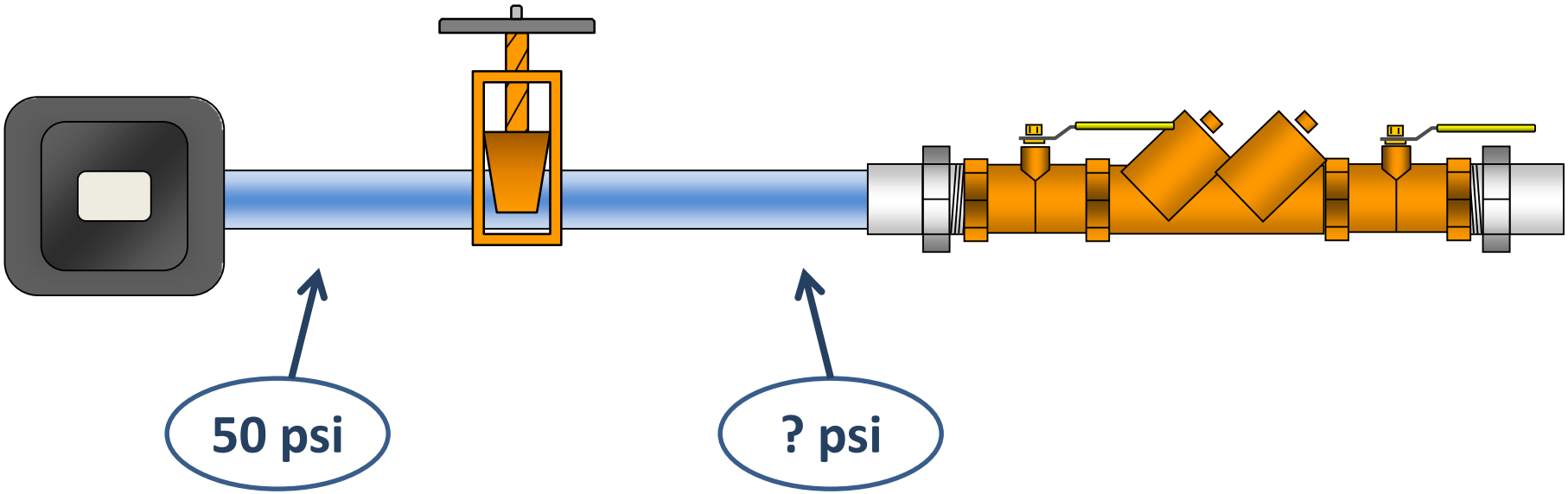
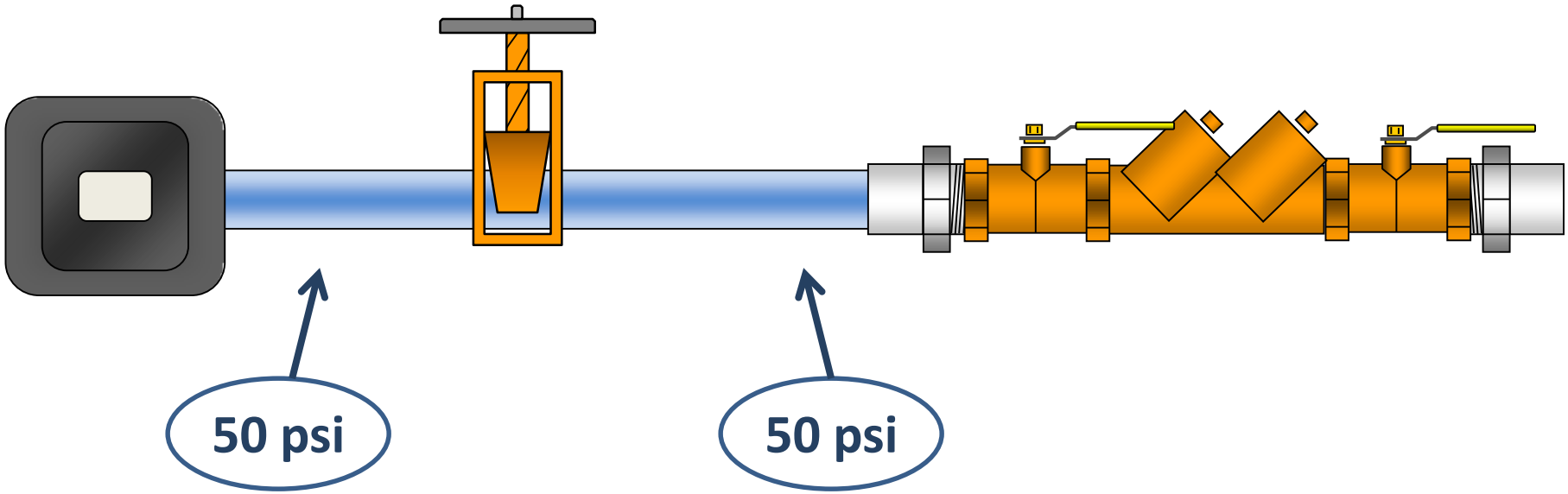
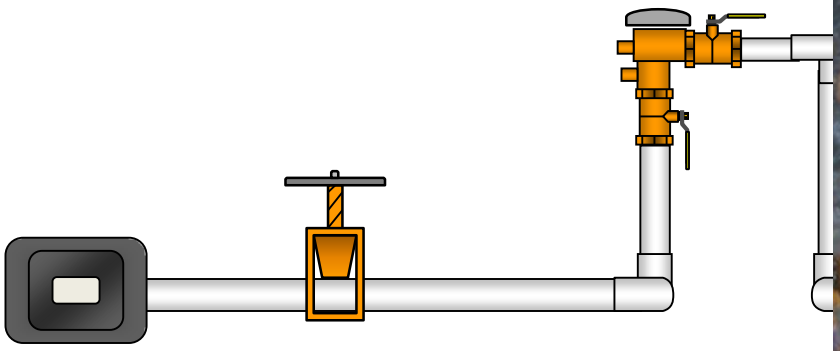

50 psi
? psi

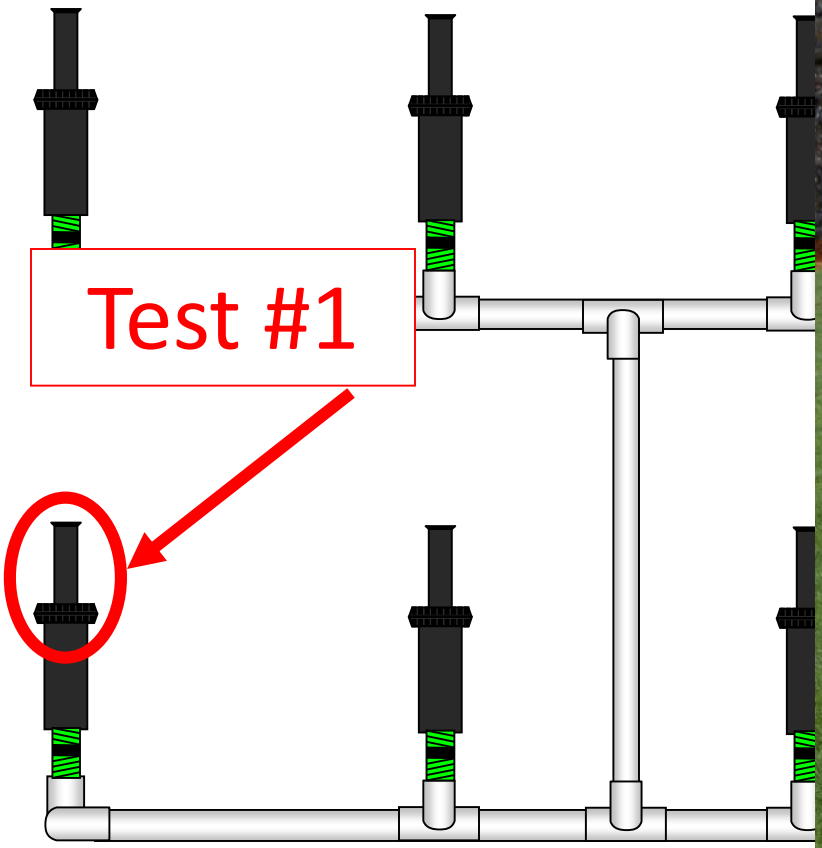

50 psi
50 psi

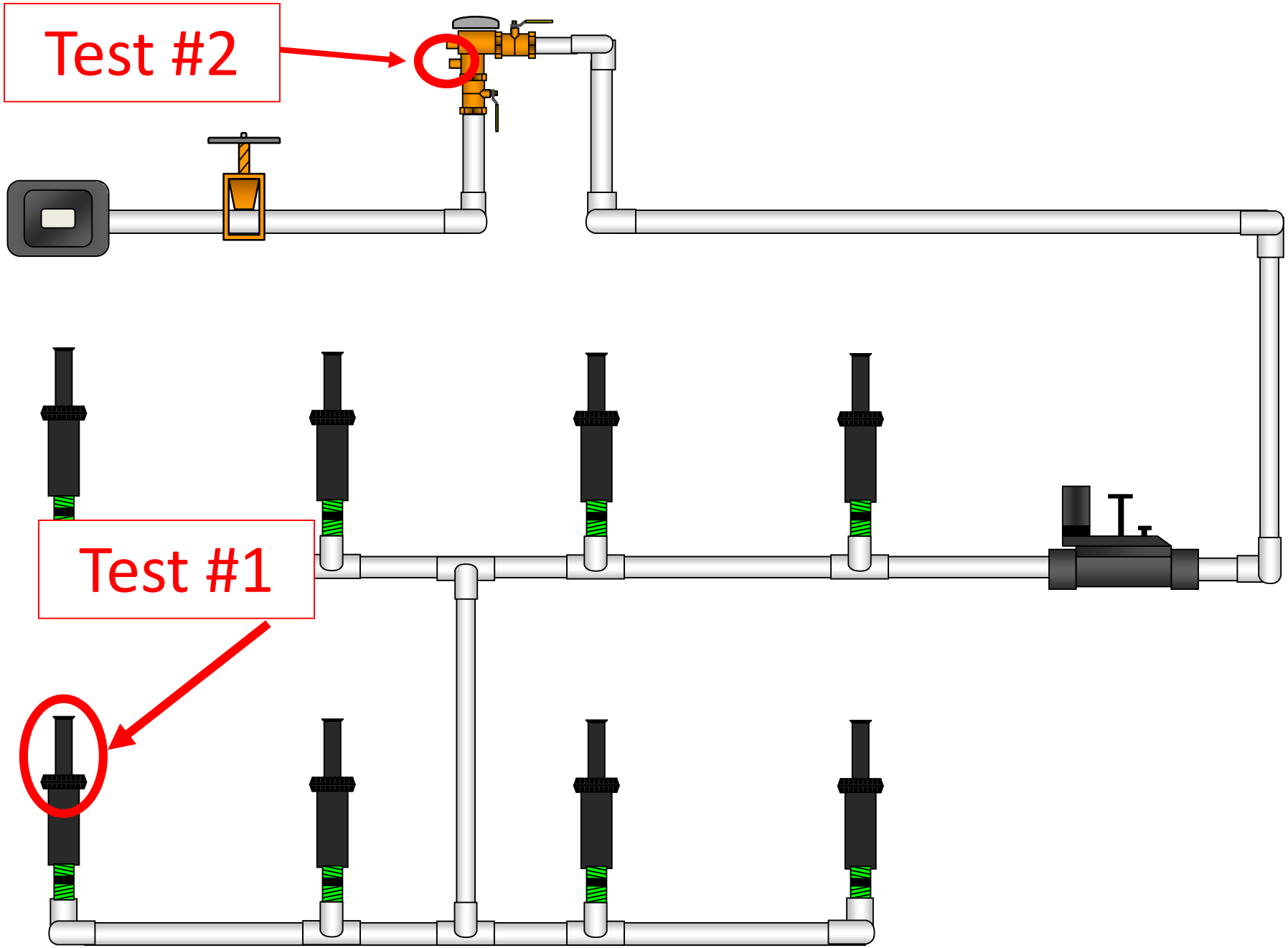

50 psi
? psi


50 psi
50 psi




WINTERS
www.winters.com
psi


Test #1

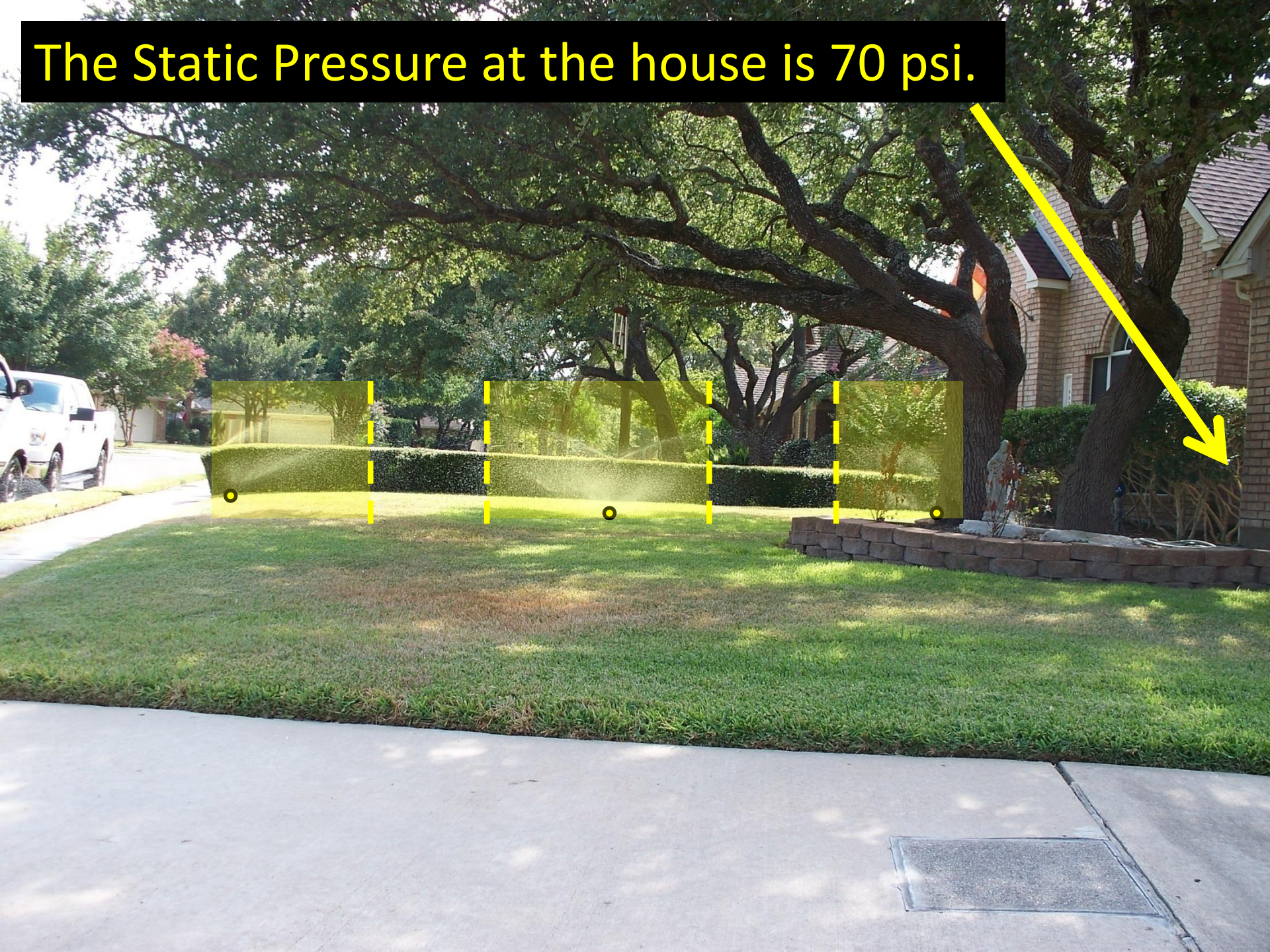

Test #2
Test #1

Example #1

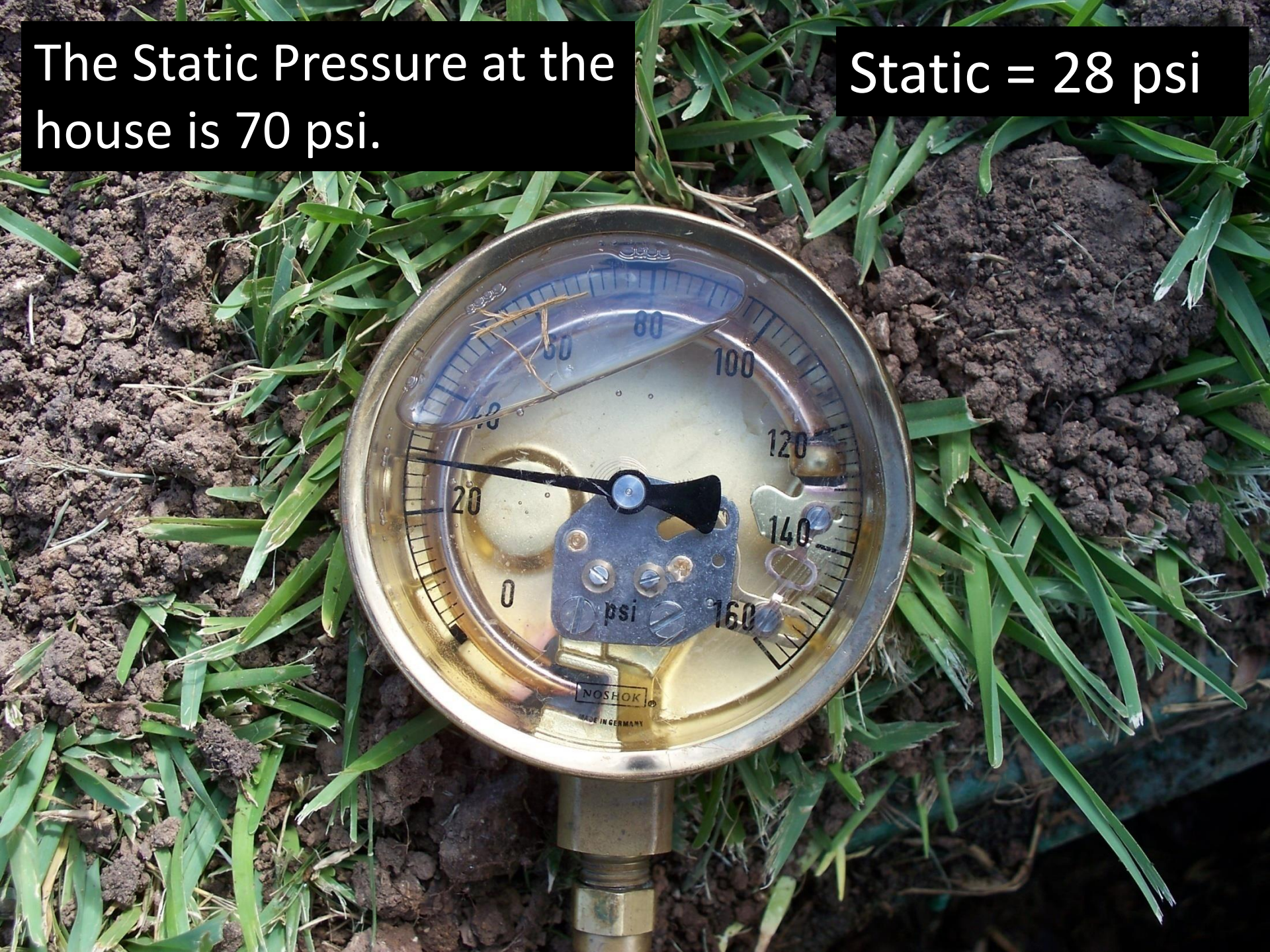
Problems:

1) Heads have poor pressure

Two other contractors have attempted to fix the system without success.


The Static Pressure at the house is 70 psi.


0
20
40
60
80
100
120
140
160
psi


The Static Pressure at the house is 70 psi.
Static = 28 psi
80
100
120
20
140
0
psi
160
NOSHOK


Pressure regulator was adjusted to 60 psi.


Pressure regulator was adjusted to 60 psi.
0
20
40
60
80
100
120
140
160
psi


802
APX

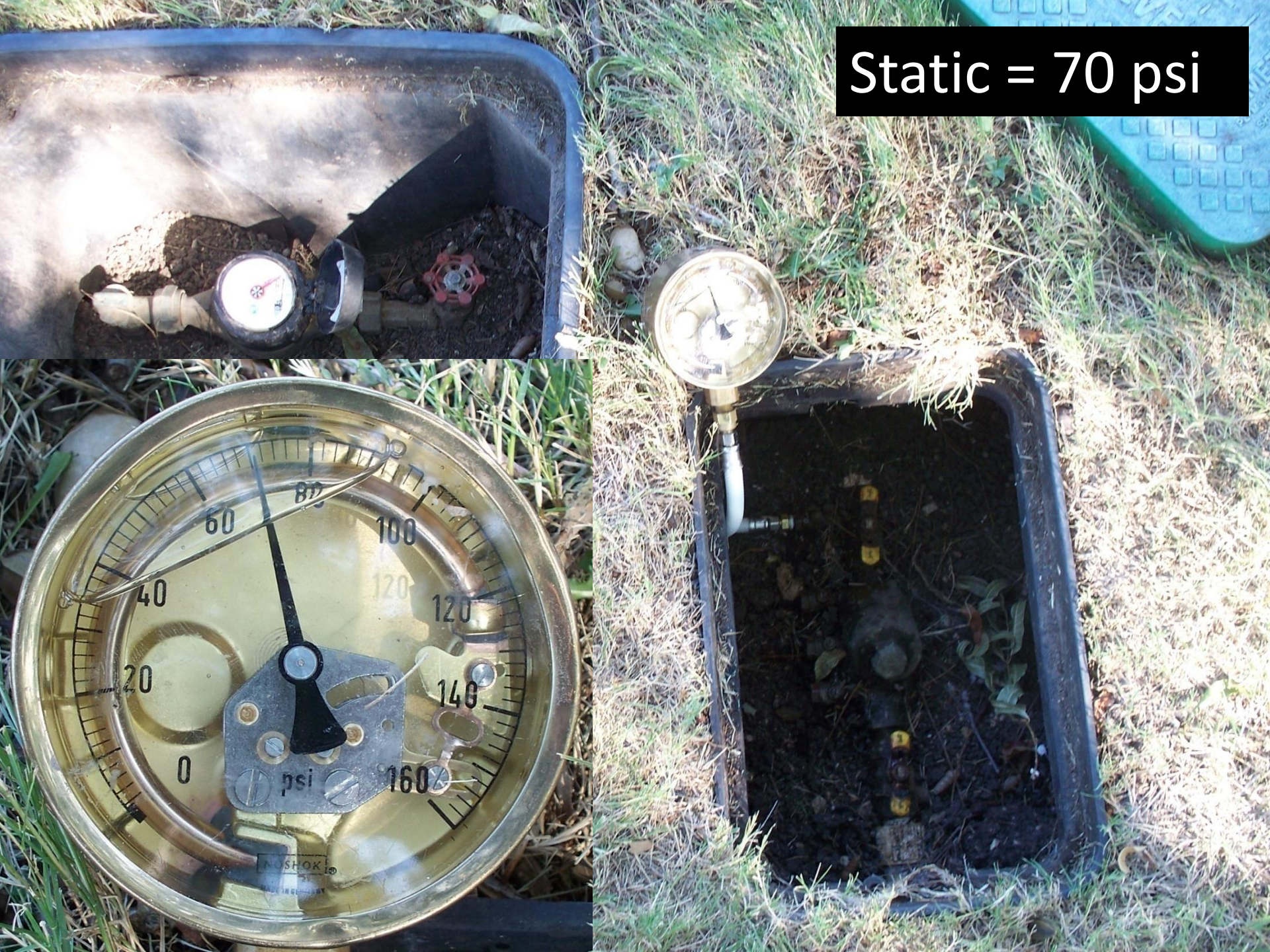
Example #2

Problems:

1) Heads have poor pressure
2) Water bill is too high

One other contractor has attempted to fix the system without success.


10 psi at head


Static = 70 psi
60
100
40
120
20
140
0
psi
160


Dynamic = 50 psi
0
20
40
60
80
100
120
140
160
psi
NOSHOK


Move gauge to the 4th test cock and re-test.

40 psi loss through the DCV!

37P-13


850
3/4-HB


0
50
100
150
200
250
4
8
12
3/4 HB

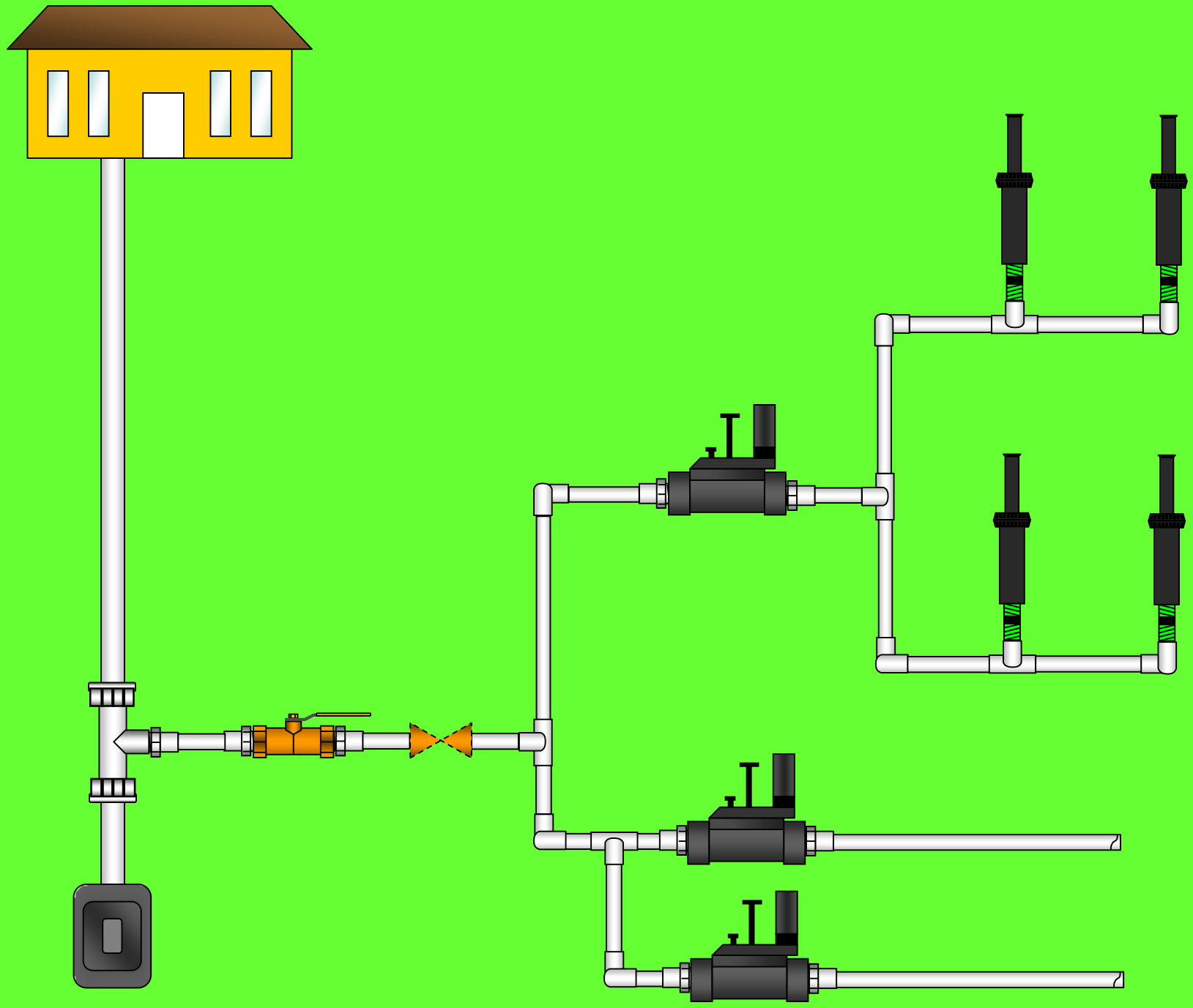
37P-13


0
20
40
60
80
100
120
140
160
PSI


850
1" HD


0
20
40
60
80
100
120
140
160
psi
850
1" HD

psi
0
20
40
60
80
100
120
140
160
850
HD




0
20
40
60
80
100
120
140
160
PSI


80
120
140
160
psi
0


80
120
140
160
psi
0

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