

This program will calculate the total head required for your pond system The water temperature is assumed to be 20 degrees Centigrade, about 70 degrees Fahrenheit. Certain input data MUST be entered here in one of the 3 sections The three sections are: one for USA units, one for UK units and the other one for metric units

No protection of any cells has been done. If you want to "play around" do so but keep master copy of this file

FOR USA WE WILL USE US GALLS, FT, INCHES, AND SO ON all in Red

FOR UK WE WILL USE Imperial GALLS, FT, INCHES, AND SO ON - all in BLUE

FOR METRIC WE WILL USE LITRES, METRES CUBIC METRES AND SO ON - all in Black

INPUT DATA AREA						
Choose Your Region For Units	USA		UK		METRIC	
Take Care when entering data in this section - this will determine your correct pump selection	unit to use	value of unit	unit to use	value of unit	unit to use	value of unit
Width of waterfall lip, if no waterfall enter ZERO. If this is not ZERO then pond volume basis is totally ignored. Take CARE	Inches	0.0	Inches		cm	
Height of waterfall inlet above pond surface or height difference between pond surface and highest point in water circuit if no waterfall - eg biofilter inlet.	Feet	0.5	Feet		metres	
Pipe Length	Feet	15.0	Feet		Metres	
QUANTITY of Flow Required if no waterfall. Remember if you keep koi insert the pond volume here. If you only keep goldfish insert half of pond volume here	US Gallons/hr	600	Imperial Gallons/hr		Litres/hour	
Internal Diameter of Pipe	Inches	1.0	Inches		cm	

No more data needs to be entered, Everything else will be calculated below

For Answers See Below - in Orange Section

CALCULATIONS AREA - do not change anything here

	USA		UK		METRIC	
QUANTITY FLOW Required for waterfall (Q)	Cu Feet/hour	80.208	Cu Feet/hour	0.000	Cu Metres/hour	0.000
Internal diameter of pipe (D)	Feet	0.0833	Feet	0.0000	Metres	0.0000
Cross sectional area of pipe (A)	Sq Feet	0.005456	Sq Feet	0.000000	Sq Metres	0.000000
Pipe Length (L)	Feet	15.00	Feet	0.00	Metres	0.00
Velocity of water in pipe (V)	Feet/sec	4.083	Feet/sec	#DIV/0!	Metres/sec	#DIV/0!
Reynold's Number Re = VD/mu	None	32,132	None	#DIV/0!	None	#DIV/0!
friction factor for use in friction loss equation approx based upon smooth pipe	None	0.020	None	0.020	None	0.020
Acceleration due to gravity (g)	Feet/sec/sec	32.20	Feet/sec/sec	32.20	metres/sec/sec	9.81
L/D	None	180.00	None	#DIV/0!	None	#DIV/0!
V^2/2g	None	0.2589	None	#DIV/0!	None	#DIV/0!
Head Loss due to friction	Feet	0.93	Feet	#DIV/0!	Metres	#DIV/0!
Head Loss due to fittings - assumed 20% of friction loss	Feet	0.19	Feet	#DIV/0!	Metres	#DIV/0!

Here are Your Answers

	USA		UK		METRIC	
TOTAL HEAD Required to select correct pump	Feet	1.6	Feet	#DIV/0!	Metres	#DIV/0!
TOTAL VOLUME required to select correct pump	US Gallons/Hr	600.0	Gallons/Hr	-	Litres/hour	-