UNIVERSAL PHOTONICS INCORPORATED

COOLANT MANAGEMENT: ACCURATE MIXING

Many coolant problems result from improper mixing ratios of water or coolant due to:

- Not accurately measuring volume of the mixing container
- Judging the mix ratio of coolant to water by "color" or how "slippery the mixture feels"
- Measuring by "GLUBS" (the sound made when coolant is poured directly from its container into the water)

To alleviate problems and reduce Coolant cost:

- ✓ **Accurately measure mixing container volume and the amount of coolant**
- ✓ **Accurately measure amount of coolant**
- ✓ **Begin using manufacturer's recommended ratio & with the next batch, adjust as needed***
- ✓ **Change more often**

Calculating Coolant Amount Required for Desired Ratio

1. Decide the ratio that you want to use, i.e. 20:1, 25:1
2. Apply Fomula:

$$\frac{\text{Desired Ratio}}{\text{Container Volume (Gals)}} = \frac{\text{128 Ounces (= 1 Gal)}}{\text{X (Coolant Amount)}}$$

Example *for 30 gallon Rectangular Tank w/ mixture ratio of 20:1, Requires 6 quarts of Coolant*

$$\frac{20}{30 \text{ Gallon Container}} = \frac{128 \text{ Ounces}}{X}$$

20X = 3840 Ounces *X = 192 Ounces or 6 Quarts*

Calculating Container Volume When measuring container height, allow room in the container for coolant to be added

Rectangular Tank

- Inside Dimensions L x W x H = Volume cubic inches
- Volume in cubic inches x .0043290 = Volume gallons

Example:
L x W x H
38 ½" x 15" x 12" = 6930 cubic inches
6930 x .0043290 = 30 gallons

Cylinder Tank

- Opening inside diameter ÷ 2 = Radius = R
- Cylinder inside height = E
- Volume of cylinder = $\pi \times R^2 \times E$, *($\pi = 3.142$)*

Example:
Inside diameter = 10" ÷ 2 = 5"
Inside height = 14 ¾"

Cylinder Volume = 3.142 x 5^2 x 14 ¾
V = 3.142 x 25 x 14 ¾
V = 1158.6125 cubic inches
1158.625 x .0043290 = 5 gallons

*Example: *Manufacturer recommends 20:1. For second batch, try a 25:1 mix. Continue procedure until performance is reduced. Then return to last ratio that met desired specifications.*