

## POOL/SPA COMBINATION KIT

**Guidebook (#2004B) amplifies these instructions and should be read to use this product properly.**

1. Keep test kit out of reach of children.
2. Read precautions on all labels.
3. Store test kit in cool, dark place.
4. Replace reagents once each year.
5. Do not dispose of solutions in pool or spa.
6. Rinse cells / tubes before and after each test.
7. Obtain samples 18" (45 cm) below water surface.
8. Hold dropper bottle vertically when dispensing reagent.

**TO ORDER REPLACEMENT PARTS AND REAGENTS CALL TOLL-FREE  
800-TEST KIT (800-837-8548).**

### PROCEDURE:

NOTE: Be sure to pair the test cells and comparators correctly in the sanitizer and pH tests below. The correct test cell to use is printed on the face of the comparator.

#### Free Chlorine Test

1. Rinse and fill test cell (#4024 or #4025) to mark with water to be tested.
2. Add 5 drops R-0001 DPD Reagent #1 and 5 drops R-0002 DPD Reagent #2. Cap and mix. Wipe dry and place test cell in comparator WITH FROSTED SIDE FACING OPERATOR.
3. Match color with color standard. Record as parts per million (ppm) free chlorine ( $\text{Cl}_2$ ).
4. Save sample for total chlorine test.

Instr. #5507

#### Total Chlorine Test

1. Use treated sample from free chlorine test.
2. Add 5 drops R-0003 DPD Reagent #3. Cap and mix. Wipe dry and place test cell in comparator WITH FROSTED SIDE FACING OPERATOR.
3. Match color immediately. Record as parts per million (ppm) total chlorine ( $\text{Cl}_2$ ).

#### Combined Chlorine Test

1. Subtract free chlorine (FC) from total chlorine (TC). Record as parts per million (ppm) combined chlorine (CC) as  $\text{Cl}_2$ .  
Formula:  $\text{TC} - \text{FC} = \text{CC}$ .

#### pH Test

1. Rinse and fill 11.5 mL test cell (#4024) to 11.5 mL mark with water to be tested.
2. Using 1.0 mL pipet (#4030), add 0.5 mL R-1003J Phenol Red Indicator. Cap and mix. Wipe dry and place test cell in comparator WITH FROSTED SIDE FACING OPERATOR.
3. Match color with color standard. Record as pH units and save sample if pH needs adjustment. If sample color is between two values, pH is average of the two. To LOWER pH: See Acid Demand Test. To RAISE pH: See Base Demand Test.

#### Acid Demand Test

1. Use treated sample from pH test.
2. Add R-0853 Acid Demand Reagent dropwise. After each drop, count, cap and invert to mix, and compare with color standards until desired pH is matched. See Treatment Tables to continue.

#### Base Demand Test

1. Use treated sample from pH test.
2. Add R-0862 Base Demand Reagent dropwise. After each drop, count, cap and invert to mix, and compare with color standards until desired pH is matched. See Treatment Tables to continue.

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**Total Alkalinity (TA) Test**

1. Rinse and fill 25 mL sample tube (#9198) to 25 mL mark with water to be tested.\*
2. Add 2 drops R-0007 Thiosulfate N/10. Swirl to mix.
3. Add 5 drops R-0008 Total Alkalinity Indicator. Swirl to mix. Sample will turn green.
4. Add R-0009 Sulfuric Acid .12N dropwise, swirling and counting after each drop, until color changes from green to red.
5. Multiply drops in Step 4 by 10. Record as parts per million (ppm) total alkalinity as calcium carbonate (CaCO<sub>3</sub>). See Treatment Tables to continue.

**\*When high TA is anticipated:** Use 10 mL sample, 1 drop R-0007, 3 drops R-0008, and multiply drops in Step 4 by 25.

**Calcium Hardness (CH) Test**

1. Rinse and fill sample tube (#9198) to 25 mL mark with water to be tested.\*
2. Add 20 drops R-0010 Calcium Buffer. Swirl to mix.
3. Add 5 drops R-0011L Calcium Indicator Liquid. Swirl to mix. If calcium hardness is present, sample will turn red.
4. Add R-0012 Hardness Reagent dropwise, swirling and counting after each drop, until color changes from red to blue.
5. Multiply drops in Step 4 by 10. Record as parts per million (ppm) calcium hardness as calcium carbonate (CaCO<sub>3</sub>). See Treatment Tables to increase calcium hardness; high hardness can be eliminated by partially draining and refilling with fresh water of lower hardness.

**\*When high CH is anticipated:** Use 10 mL sample, 10 drops R-0010, 3 drops R-0011L, and multiply drops in Step 4 by 25.

