Arizona Swimming

Equipment
Rental Guide

Photos for Figure 1, Figure 2, Figure 6, Figure 8 and Figure 11 courtesy of Phoenix Swim Club.

Photos for Figure 3, Figure 4 and Figure 5 courtesy of Helen Casseday and Swim Neptune.

Information for loading of equipment into transport vehicles and for guidelines for transporting equipment was drawn from U-Haul rental guides and from Ford Motor Company Truck and SUV owner manuals.

First edition created April 2019. Subsequent revisions in July 2019, November 2019, August 2020, November 2020 and August 2021

WELCOME TO EQUIPMENT RENTING!

Arizona Swimming, Inc. is delighted that you have chosen to rent its timing equipment for your swimming event! It is our pleasure to furnish your team with the gear necessary to help ensure that all swimmers who compete in the meet(s) your team will host have a fair chance for an accurate start and an accurate official time.

We encourage you to thoroughly review this guide between now and the deck set-up for your event. It will help familiarize you with the equipment, the proper and/or suggested set-ups of the equipment, the protocol for storing and maintaining the equipment between sessions and the protocols for handling the equipment during the meet as well as before and after the event.

Should you have any further questions, please do not hesitate to contact the Equipment Chair at equipment@azswimming.org. (Note the contact information listed below.)

Please keep this guide handy throughout your rental, and be sure that you return it with the equipment at the end of your rental.

HELPFUL CONTACT INFORMATION:

Arizona Swimming Office:
(602) 264-2443 (phone) office@azswimming.org (email)

Arizona Swimming Equipment Chair:
(602) 421-6399 (cell) equipment@azswimming.org (email)

Colorado Time Systems (for Start System and Timing System technical support):
(800) 287-0653 (toll-free in North America) www.coloradotime.com

I. PACKAGING OF MATERIALS BEFORE AND AT END OF RENTAL

Arizona Swimming has organized the timing equipment in containers noted below as follows:

A. Large black chest (has two wheels and horizontal extendable grip handle on opposite ends):
   1. 4 to 5 three-prong grounded extension cords (some will be on reels, some will not)
   2. 3 large rectangular horn speakers (connection cables have yellow or black banana plugs)
   3. 1 150- to 200-foot long start system microphone extension cable
   4. 4 to 5 long black jumper cables—each with yellow- or black-colored banana plugs
   5. 1 red-colored or black-colored banana plug black jumper cable
   6. 2 male-end dipole plug black scoreboard data cables
   7. 1 8-lane or 10-lane prime harness
   8. 1 set of lane identifier cones numbered 1-10

B. Yellow chest with black cover (has two wheels and vertical extendable grip handle):
   1. 32 cut-off push buttons (also known as “pickles” or “plungers”)
   2. 1 8-lane or 10-lane prime harness

C. Black Start System Case (has two wheels on base at one end and extendable handle on base at other end to roll case when standing vertically—is also foam rubber-cushioned inside):
   1. 1 Colorado Time Systems Championship Start System module
   2. 2 Start System microphones (each has 25-foot long cable with male end tri-pole plug)
   3. 1 6-ohm black speaker (mounts on matching speaker bracket on Start System module—also has bolt and nut to secure brackets and has short yellow banana plug black cable)
   4. 1 Colorado Time System Class 2 block power supply (has long thin DC output cable)

D. Tan Printer Case (has two wheels on base at one end and extendable handle on base at other end to roll case when standing vertically—is also foam rubber-cushioned inside):
   1. 1 black & white laser printer (OKI or Brother brand)
   2. 1 3-prong 115-v AC power cable (male plug at one end, female connector plug at other)
   3. 1 parallel port printer data cable
   4. 1 multi-outlet power strip

E. Silver Gray Timing System Case
   1. 1 Colorado Time System System 5 Timing module mainframe
   2. 1 Class 2 block power supply (has short DC output cable; AC input is 2- or 3-prong plug)
   3. 1 9-pin data connector cable (to connect timing module to PC with Hy-Tek software)

F. Black or Gray Stopwatch Case
   1. 12 to 14 single-function stopwatches or dual-function stopwatches

G. Colorado Time Systems Start System Tripod – with male trapezoid bracket on to which Championship Start System with matching female trapezoid bracket slides for mounting

If your rental is an **Automatic** (1 cut-off push button and one touchpad in each lane at the Near End [and also at the Far End—usually at Long Course meets]), you will also have the following items (plus the eight ones listed above) with the Arizona Swimming trailer:

H. Two touchpad caddies—each containing:
    1. 6 touchpads placed evenly across 5 slots
    2. 1 caddy cover (**NOTE: See diagram on top for correct way to place touchpads in caddy**)

I. 8 touchpads placed horizontally in 4 slots on middle deck with 2 touchpads each slot: lower pad has connector block end inserted first, upper pad has connector block end inserted last

J. One 8-lane or 10-lane prime harness (hanging on garden hose coil bracket in right front interior of trailer) (NOTE: 8-lane backup harness [if needed] will also hang on this bracket.)

K. Two 50-meter-length prime lane harness extension cables (hanging on garden hose coil bracket in left front interior of trailer)

L. Set of metal brackets (inside black canvas bag)--to hold touchpads in place on lane end walls

M. Set of 11 Plexiglas brackets (on upper right shelf)—to hold touchpads in place on lane end walls (used where pool gutters are at deck level)

N. One medium sized dark-gray case
    1. Eight distance freestyle final lap warning hand bells

O. One 30-foot length iron chain (to secure trailer to fixed or heavy object at location)

P. Three padlocks (two for trailer doors, one for use with chain)

Q. One trailer lighting harness connection adapter (to connect parallel harness to circular port)

R. One trailer tongue lock-out bar device

S. Four-spoke lug nut wrench (for use in changing any flat tire on trailer)

T. Six wooden wheel chocks

U. Spare tire (secured with two lug nuts and balance plate on outside left front of trailer)

V. Keys (on purple lanyard—one for padlocks, another for trailer hitch tongue lockout bar device; hanging on hook to left of trailer permit sleeve) (***IMPORTANT:*** *Do NOT store the keys in the trailer during the rental! Keep them in a logistically safe location!*)

(For an Automatic I rental or Automatic II rental, consult the *Arizona Swimming Trailer Guide*.)

Depending on equipment availability and the needs of your rental, the actual number of items supplied may vary. At check-out, the Equipment Chair will complete, in your presence, an Arizona Swimming Equipment Rental Inventory Form—which will note the number of each item contained in your specific rental. You will receive a copy of this, as will the Equipment Chair. **Please consult your copy before you unpack your equipment for your event and before you re-pack the equipment for return—and be sure to bring your copy with you at the return.** You will be responsible for any items determined to be missing or damaged.

II. "CHECK-OUT" OF EQUIPMENT

A. Pre-Rental Arrangements

After Arizona Swimming approves your rental application, contact the Equipment Chair (equipment@azswimming.org) to set a meeting time at the storage locker to pick up the equipment. (You should also supply a telephone number at which the Chair can reach you.)

Should you be unable to meet the Chair and instead need to delegate a "team representative" to pick up and/or later return the equipment, please provide the Chair and the Arizona Swimming office with this person's name, email address and telephone number.

B. What You Will Need

Each rental will have a minimum of 6 containers—some of which are bulky and/or heavy. Thus, you will need a motor vehicle with sufficient space, load mass capacity and axle capacity to carry these items. Suggested minimum examples of this include:

1) Full-size pick-up truck (e.g., Ford F-150, Ford F-Super Duty, Chevrolet Silverado, GMC Sierra, Chrysler/Dodge Ram Series, Nissan Titan, Toyota Tundra)
2) Full-size van (e.g., Ford Transit, Ford E-Series, Chevrolet Express, GMC Savana)
3) Full-size or mid-size SUV (e.g., Ford Expedition, Ford Excursion, Ford Explorer, Chevrolet Tahoe, GMC Yukon, Chevrolet/GMC Suburban, Toyota Land Cruiser)
4) Mid-size van (e.g., Ford Transit Connect, Chrysler Pacific, Honda Odyssey).

We do NOT recommend a miniature/compact pick-up truck (e.g., Ford Ranger, Chevy S-10, Toyota Tacoma, etc.) **or a compact SUV** (e.g., Ford Escape, etc.). These might not have sufficient space for all the items or sufficient carrying capacity for the added load mass.

IMPORTANT: If your rental is an Automatic I or an Automatic II, you must also consult the *Arizona Swimming Trailer Towing Guide* for additional vehicle requirements. *This is critical—because you (or your team representative) will be towing the Arizona Swimming trailer with all the items listed in Section I. That guide will also have instructions on towing the trailer.*

C. Loading The Equipment

At checkout, the Equipment Chair will help you with loading the materials into your vehicle (or, in the case of an Automatic I/Automatic II rental, connecting the Arizona Swimming trailer).

The chief principle to remember, however, is that 60 % of the load mass must be distributed as evenly as possible across the FRONT half of your vehicle's designated cargo space—and the remaining 40% must be distributed evenly across the REAR half of that space.

Also, heavier items must be towards the floor of the cargo area, with lighter items towards the top. ***Any deviation from this principle can risk an unsafe transport condition—including (but not limited to) vehicle rollover and loss of cargo.***

For a full-size pick-up truck or a full-size van, the vehicle's rear axle is usually the midpoint between the front half and the rear half of the cargo space. For SUVs and mini-vans, this point

might be slightly in front of the rear axle. (If you fold the center and/or sole rear passenger seats down in an SUV, this will move the midpoint further forward.)

D. Transporting the Equipment

Carrying a heavy load requires exercising extra caution while driving. **Thus, you must:**

1) Drive slower than you normally do.
2) Allow more time and greater following distances for travel.
3) **Be aware of changes in weather conditions and/or road conditions.**
4) Anticipate stops more often—and apply your brakes earlier than usual for stops.
5) Be further prepared for anything that will require you to abruptly apply your brakes.
6) Be more attentive to the views that your side rearview mirrors supply.
7) Ensure your tires are properly inflated—rear ones slightly more than front ones.
8) **Avoid sharp turns or abrupt maneuvers.** Slow down to reasonable speeds for turns.
9) Downshift to a lower gear (manual transmission), turn off Overdrive or use Tow/Haul feature (automatic transmission) when ascending or descending a slope.
10) ***NEVER coast in "Neutral"*** (illegal - ARS 28-295) ***or "ride the brakes" on a descent!***
11) Turn off your vehicle's air conditioning when ascending long steep slopes—especially if operating in warm or hot ambient temperatures. (This is to reduce the risk of engine overheating.)
12) ***Wear your seat belt at all times****. (This includes passengers, too!)*
13) **Periodically check your cargo to ensure no loss occurs**. (This is especially the case if your cargo space is the open bed of a pickup truck.)
14) ***PAY ATTENTION TO YOUR DRIVING***. Do NOT allow distractions of any sort.

Additionally, for the sake of protecting the equipment, **remember—it is YOUR responsibility to secure your vehicle at all times**:

- Never leave your vehicle with any of its doors or gates open and/or unlocked—regardless of whether you are driving or parked (loading and unloading excepted).
- ***NEVER leave the key in the ignition or leave your vehicle's engine running if you have to step away from it for ANY reason—NOT EVEN FOR A SHORT TIME.***
- Should you need to open any door on your vehicle that leads to access of the cargo space, make sure you fully close and latch that door before you resume driving.
- When parking your vehicle, **always fully set its parking brake**. ***Never rely on the PARK position*** (automatic transmission vehicle) ***or on the 1st gear or Reverse gear positions*** (manual transmission vehicle) ***alone to hold the vehicle in place***.
- **Avoid parking your vehicle on an incline/decline or any surface that is not level.**
- If you are transporting the equipment in an open-bed pick-up truck, try to get the equipment to your destination as soon as you can without any interruption.

If you are towing the Arizona Swimming trailer (Automatic I rentals and Automatic II rentals), consult the *Arizona Swimming Trailer Towing Guide* for additional instructions.

III. SPECIAL SITUATIONS

A. If Any Non-Theft Loss or Non-Vandalism Damage Occurs To The Equipment

1. Immediately notify the Equipment Chair and the Arizona Swimming Office of the situation.
2. **If fire is involved in damage, call 911 immediately!**
3. Take photos of any visible damage—**no matter how small**.
4. Make a written documentation of the loss or damage with as much detail as possible (e.g., date, time noted, description of items lost or damaged, location of where equipment was at the time of loss or damage, etc.). Submit a copy of this to the Equipment Chair and to the Arizona Swimming Office. (If fire department was involved, obtain a report [or means of securing such] from the station captain or battalion commander present, and include a copy of this with the aforementioned written documentation.)
5. If loss or damage is due to vehicle accident during transportation of equipment, also contact law enforcement authorities. Obtain an official printout of the law enforcement authority report and include a copy of this with the aforementioned written documentation.
6. Be ready to further discuss with the Arizona Swimming Office the details behind the loss or damage after your rental is complete.

B. If Vandalism or Theft Occurs To The Equipment

1. **Notify law enforcement authorities** (e.g., city police, county sheriff, Arizona Department of Public Safety, etc.) **and/or fire department** (if arson is involved) **without delay!**
2. Also contact the Equipment Chair and the Arizona Swimming Office and report the incident. (If you telephone these two parties and there is no answer, leave a voice message with details and mark your voice message "urgent".)
3. Take photos of all visible damage—**no matter how small**. (NOTE: Photos and/or videos of the theft or vandalism in action may prove valuable, if anyone is able to take these.)
4. If you or anyone witnesses the vandalism or theft in progress, **do not put your or anyone's personal safety at risk by attempting to stop the vandalism or theft if the situation appears too dangerous for any civilian intervention**.
5. Make a written documentation of the incident with as much detail as possible (e.g., date, time noted, description of items stolen or vandalized, location of where equipment was at the time of the incident, persons involved, etc.). Submit a copy of this (as well as applicable photos and/or videos) to the Equipment Chair and to the Arizona Swimming Office.
6. When law enforcement and/or fire department arrive(s), provide all necessary details to the officers. Obtain an official printout of the law enforcement authority report and/or fire department report and forward a copy of each to the Equipment Chair and to the Arizona Swimming Office.

IV. UNLOADING AND STORING EQUIPMENT BEFORE THE EVENT

It will be extremely helpful if you have access to a securable storage space that has a **working 3-prong grounded 115-volt 60 Hz AC power outlet**. **This is crucial if there will be a long period between the equipment check-out/return dates and the event date(s) and/or if the meet is more than one day long.** See if you or your team can arrange for this in advance of your rental. (NOTE: If such is not possible, you can use the wall-mounted power strip inside the trailer for this power source. For this option, you will need to use the long extension cord in the trailer and connect it to a 3-prong grounded 115-volt 60 Hz AC power outlet nearby.)

When unloading the equipment, you will need to unload the following item first:

- Championship Start System and matched power supply (Item I.C.1 and Item I.C.4)

Connect this item to the working grounded 115-volt AC power source right away. First connect the block power supply to the AC power outlet. Then, connect the DC output plug of the power supply to the EXTERNAL POWER jack on the left side of the Start System. (Make sure the Start System is NOT turned on. When the main switch [which is the large black rocker switch that is near the EXTERNAL POWER jack] has its **upper** side flat against the wall on this side of the Start System, this is the "Off" position.)

The Start System contains two internal Sealed Lead-Acid (SLA) storage batteries. These must be charged to and maintained at full reserve capacity whenever the Start System is not in use.

DANGER: PREVENT ENTRAPMENT INSIDE THE TRAILER!!!

If you are renting the Arizona Swimming Trailer, **take extra precautions during unloading** (and later during re-loading) **to eliminate the risk of anyone** (yourself included) **becoming trapped inside it either by accident or by nefarious acts**!

1) Once you unlock a padlock and a trailer door, **immediately re-lock that padlock like so**:
   a) MAKE SURE THE DOOR(S) IS (ARE) UNLATCHED AND OPEN.
   b) For the front compartment door, lock the padlock on the outside door jamb hole.
   c) For the rear compartment double doors, fit the two door latch handle holders on the **left** door together and lock the padlock through the holes of each.
2) **NEVER**, UNDER **ANY** CIRCUMSTANCES, PERMIT ANYONE TO PLAY INSIDE THE TRAILER!
3) ***ABSOLUTELY NO PRACTICAL JOKING OR HORSEPLAY ON, IN OR WITH THE TRAILER!***
4) Open the roof vent—especially if storing the trailer in hot ambient temperatures. (Close this vent before towing the trailer.)
5) Before closing and re-locking the trailer compartment doors, **always thoroughly inspect each compartment to be sure no one** (adult or child) **is inside**. If necessary, use a flashlight or the interior trailer lighting for illumination. (For the latter, you will need 3-prong 115-volt AC outlet nearby to connect the power strip to which the lights are connected.)
6) **Always know who has the key to the padlocks and how to reach that person! (If you are that person, keep the key with you at all times. NEVER LET IT OUT OF YOUR SIGHT!)**

V. SETTING UP THE EQUIPMENT FOR THE EVENT

A. Examine the Deck

Consider the following when preparing the event venue deck for the equipment set-up:

- Availability and proximity of a three-prong grounded 115-volt 60 Hz AC power outlet equipped with Ground Fault Circuit Interrupter (GFCI) protection (**IMPORTANT: This is a MANDATORY safety requirement**. See 103.22 in the USA Swimming Rulebook.)
- How much foot traffic will occur between this AC power outlet and the "Home Base" (defined below) for timing equipment (the less traffic, the better)
- Whether the pool has at least one side with no interruption in the deck space either via a heavy or immovable obstacle or via water
- Whether any races will start from the Far End and Near End (each defined below)

B. Establish a "Home Base" for the Timing Equipment

1. This "base" is at one of the pool corners perpendicular to the row of starting blocks. All Administrative Official/Referee activity occurs here. It also establishes the Ends and Sides:

    - **Near End:** Contains all the aforementioned starting blocks; all even-numbered length races (e.g., SC 50 yards, SC 100 yards, LC 100 meters, etc.) will start from here, and all races will finish here. (EXCEPTION: See the Far End definition below.)
    - **Far End:** Is directly opposite the Near End; may or may not have starting blocks (usually not with 25-yard pools); all one-length only races (e.g., SC 25 yards, LC 50 meters) will start from here. (EXCEPTION: For a Long Course Meters pool where this end either has no starting blocks or has insufficient water depth by USA Swimming standards, all 1-length races will start from the Near End and finish here.)
    - **Near Side:** Is the same side containing the "Home Base" corner formed from this side being perpendicular with the Near End.
    - **Far Side:** Is directly opposite the Near Side.
    - **Main Starter Area:** Is a virtual quadrilateral between the "Home Base" and the Near Side; Deck Referee, Starter and Near End Order of Finish Judge (where applicable) currently on or coming on post will operate in this area. **No one else should walk through or be in this area.** (NOTE: Depending on the venue design, you may need to set the Main Starter Area on the other side of the pool opposite Home Base.)
    - **Auxiliary Starter Area:** Has same format as the Main Starter Area—except will be at the Far End on the same side; used only if 1-length races will start from the Far End, and only Deck Referee and Starter on post for such races will operate in this area.

2. In addition to the timing equipment, you should have the following items at this base:

    - At least two rectangular tables that are at least 24 inches wide (front to rear)
    - Sufficient chairs (recommend 3 for each table) for staff manning these tables
    - For outdoor events, enough tents to provide cover for the tables and equipment from sun and other elements—and a means of anchoring the tents to the deck

3. Lastly, consider the following when establishing the "Home Base":

   - The two aforementioned tables should be far away enough from the Near Side to allow the Deck Referee and Starter (and Near Side Order of Finish Judge, if used) on post sufficient space in the Main Starter Area to exercise their tasks—and to keep the equipment dry. However, <u>they should not be too far away such that any unauthorized individuals</u> (e.g., parents, coaches, swimmers, etc.) <u>can easily walk through this area</u>.
   - The table on which the Timing System module will sit should have one end parallel with the Near End, and the Timing System module should be close to this end.
   - If the Home Base will be far from a 115-volt GFCI AC power outlet, or if you cannot reduce or bar heavy foot traffic across any distance between the AC power outlet and the Base, consider running any extension cord used under a rigid plastic cable protector. Alternatively, it can be run between a high point on the tent and a high point above the AC power source. (**For this option, you MUST make sure the tent is secured to the deck.**) ***Avoid running AC extension cords under mats or rugs as much as possible.***
   - ***NEVER RUN AC EXTENSION CORDS OR ANY CONNECTION BETWEEN THEM ACROSS ANY BODY OF WATER OR ACROSS ANY DECK SPACE WHERE WATER CAN COLLECT!***
   - If your meet will use a scoreboard, try to have the Home Base as close as possible to either the scoreboard itself or the scoreboard connection port. (This connection point may be far away in the case of a permanent facility scoreboard.)

C. <u>Lay Out the Prime Lane Harness(es)</u>

1. Remove one of the **prime lane harnesses** from item I.A., item I.B or the trailer. (This harness has a port for each lane with female connection points labeled "PRIME" and "BUTTON A" plus an extra port labeled "START" and "BACKUP START" at each end of the row of ports.) **Be sure the harness you use has enough lane ports for the lanes you will use for the meet.** Thus, if you will use 10 lanes at the meet, you will need the 10-lane prime harness.
   NOTE: To help you properly identify and select from them, each harness will have a small label on its cable near the parallel connector point, with the characters in this format:

   X Y Z

   X = indicates the number of lane ports on the harness (will be 8 or 10)
   Y = indicates whether the harness is a Prime type (P) or a Backup type (B)
   Z = indicates the harness number in the type (1, 2, 3 or 4 for a 10-lane Prime, 1 for an 8-lane Prime, 1 or 2 for an 8-lane Backup)

2. Carefully uncoil the harness cable on the end with the parallel connector until you find the port with a blue numeral 1 on it. On the Near End of the pool, place this port on the deck centered just behind the starting block of the lane closest to the Home Base/Near Side. (Thus, if Home Base is set near Lane 8 [or Lane 10], this port goes behind that lane!)
3. Carefully uncoil the harness cable on its opposite end (which is the end that will have all the remaining lane connection ports) so that the port with the blue numeral 2 on it is now on the deck centered just behind the starting block of the next adjacent lane.

4. Repeat step C.3 to lay out each of the remaining lane connection ports of the harness for the remaining respective lanes on the Near End. **Take care to not skip or shift any ports.**
5. For any remaining ports on this harness beyond the last lane, carefully keep the harness cable neatly coiled on this end and tuck this coil such that it will be out of any traffic areas and not present a trip hazard. (**See Figure 1**.) (NOTE: For a Main Starter Area placed on the Far Side of the pool, you must straighten out this end of the harness to allow access to the "START/BACKUP START" port located on this end.)
6. On the parallel connector end of the harness, locate the "START/BACKUP START" port (just before the port mentioned in IV.C.2). Straighten out the cable so that you can place this port as close as it will go towards the Home Base without shifting the lane port placements.
7. Lay out the rest of the parallel connector end of the prime lane harness cable on the deck going towards the Home Base table. Coil the remaining slack in the cable loosely but securely around one of the legs of the table while leaving just enough slack to allow connection to the Timing Module. Tuck this cable out of traffic areas. (**See Figure 2.**)
8. If your meet is Long Course with touchpads also at the Far End, repeat steps C.1 through C.7 to lay out a prime harness for the Far End. Additionally:
   a. You must run a prime lane harness extension cable (Item I.K) along the Near Side. (<u>Be sure you have the correct male/female parallel connector ends of this cable both at the Near End and at the Far End</u>.) Securely connect the Far End prime harness to this cable.
   b. For step C.7, you will need to loosely secure some part of the connector end of the Far End prime lane harness to a close fixed object on the deck (e.g., pool ladder rail, etc.).

Figure 1


Figure 2

D. <u>Lay Out the Start System Speaker Cables</u>

1. Carefully uncoil one of the speaker cables (Item I.A.4) starting on the Far Side-Near End backstroke flagpole, beginning by laying one of the yellow banana plugs of this cable at the backstroke flagpole no more than 5 meters from this corner. (Secure this cable end here.) *
2. Continue by going behind each starting block on the Near End, placing the speaker cable adjacent to and parallel with the prime lane harness. (**NOTE:** Take care to not let any part of the cable drift into the pool during this process.) *
3. From the Near Side-Near End corner, extend the rest of the cable so that not only is the banana plug on this end of the cable at the Near End-Near Side backstroke flagpole but also at least 5 feet of slack in the cable remains available. *
4. If any 1-length only races will either start from the Far End or start from the Near End and finish at the Far End, you must run an extension speaker cable along the Near Side. When doing so, leave at least 5 feet of slack in the cable end at the Far End-Near Side backstroke

flagpole and at least 6 feet of slack in the cable end at the Near End-Near Side backstroke flagpole. Connect this cable to the speaker cable previously laid out in step D.3 via the yellow banana plugs of each. Additionally, for a Long Course meet:

a. Use the longest extension speaker cable available for this run. (NOTE: You may need to use two speaker cables connected in tandem [via a banana plug at one end of each] to run the entire length of the Near Side. If so, make a small tie between the cables near their plugs before connecting them to help reduce the risk of disconnection.)
b. If all 1-length only races will start from the Far End, repeat steps D.1 through D.3 to lay out a speaker cable for the Far End. (You may need less slack in the cable on the Far End-Near Side.) Connect this cable to the speaker cable running along the Near Side.

E. Set Out the Deck Speaker(s) for the Start System

1. Take one of the three rectangular horn speakers (Item I.A.2), and place it at the Far Side-Near End backstroke flagpole.
2. Uncoil most of the black cable from around the mounting bracket of this speaker while leaving one loop around the bracket and looping some part of the cable closer to the speaker once or twice around the backstroke flag pole.
3. Face the horn of the speaker towards the midpoint between the starting blocks for the half of the lanes closer to the Far Side. Adjust the angle of the speaker such that its central rear-to-front axis is approximately level with the starting blocks' platforms.
4. Connect the banana plug of the speaker's cable to the banana plug of the aforementioned speaker cable (from Step D.2).
5. If the conditions in Step D.4 above apply, repeat Steps E.1 through E.4 to set out and connect the other speaker(s) that will be closest to and point towards the Far End. Additionally, if the meet is Long Course and the condition in step D.4.b applies:
   a. You must place a speaker at each Far End backstroke flagpole.
   b. Face the horn of the speaker on the Far End-Near Side backstroke flagpole towards the midpoint between the starting blocks for the half of the lanes closer to the Near Side. (This would be symmetrical to the orientation of the other speaker on the Far Side.)
   c. Connect the speaker in Step E.5.b to the speaker cables described in step D.4.b.

IMPORTANT! For a Short Course competition course in a sectioned-off part of a 50 meter pool with either an extremely narrow bulkhead or no bulkhead and with the lanes perpendicular to the ends of the 50 meter pool, make the following alternate adjustments to steps D.1 through D.3 and steps E.1 through E.4:

- Uncoil one of the speaker cables via starting with placing one of the yellow banana plugs beneath the middle of the starting block that is farthest away from the Main Starter Area. Secure this end of the cable to the block. Then run this speaker cable down towards the starting block that is closest to the Main Starter Area, followed by placing the remaining coil of the cable beneath the latter starting block.
- Uncoil one of the other speaker cables via starting with securing one end of it to the block closest to the Main Starter Area and connecting its yellow banana plug to the banana plug of the earlier mentioned speaker cable. (Tie a small knot in it to secure the plugs together.)

Then run the remainder of this cable towards the Main Starter Area or to where you will place the Start System module, following with placing the remaining coil in that spot.

- Take one rectangular horn speaker and place it centered beneath the starting block furthest away from the Main Starter Area. Angle this speaker slightly upward and face its front towards the other remaining starting blocks going towards the Near Side. Then connect it to the speaker cable banana plug secured to this starting block.
- Take another rectangular horn speaker and place it centered beneath the starting block closest to the Main Starter Area. Angle this speaker slightly upward and face its front towards the starting blocks going towards the Far Side. Then connect it to the two already connected banana plugs beneath this starting block.

(**NOTE:** You can also do this on the Far End of a long course pool where all 1-length races start from there and a speaker cable is too short to set speakers there at the backstroke flagpoles.

F. Set up the Start System

1. Carefully unpack the following components from the Start System case:
   a. Black 6-ohm speaker with short cable and bolt and nut
   b. Start System microphone with 25-foot cable (2 will be in the case)
2. Gather the red/black banana plug cable (Item I.A.5) and the Championship Start System module from where it is being charged. (NOTE: The latter item will be heavy.)
3. Retrieve the Start System tripod, and fully expand its legs by pushing the exterior bracket hub of the leg base away from the top of the tripod until it will go no further. (**Full expansion of the legs is important to reduce the risk of overturning.**) Secure the hub in place via **tightening the knob by hand—never with tools**. Do NOT over-tighten.
   a. Place the tripod such that its shaft is close to (but not flush with) and even with or slightly behind the Near End-Near Side backstroke flagpole. One tripod leg should point towards the pool with the other two legs pointing away from the pool. **This is important to reduce the risk of the Start System falling into the pool.** (NOTE: If the flagpole's insertion base is too close to the poolside, move the tripod further back. **NEVER PLACE THE TRIPOD DIRECTLY AT THE SIDE OF THE POOL OR ON A NARROW BULKHEAD!** **) See **Figure 3** (Right way) and **Figure 4** (WRONG way) below.

Figure 3 (Right)


Figure 4 (WRONG)

   b. If a bungee cord or a rope is available, use this to secure the tripod to the backstroke flagpole, taking care to leave space between the flagpole and the tripod shaft.

4. Mount the black 6-ohm speaker on the Championship Start System like so:
    a. Remove the bolt and nut from the speaker mount bracket. (**DON'T LOSE THESE!**)
    b. With the speaker's horn facing the same way as front of the Start System does, insert the speaker's mounting bracket prongs into the matching bracket inserts on the Start System. (The latter is on the Start System's left side as you face its front.)
    c. Line up the holes in both brackets, and then use the bolt and nut (from step F.3.a) to secure the speaker to the Start System. (**Tighten the bolt and nut by hand only.**)
    d. Connect the speaker's banana plug to the AUX SPKR port (female connecting port that is yellow in color) found just below the speaker mount bracket.
5. Carefully mount and secure the Start System on the tripod:
    a. Make sure enough space is between the backstroke flagpole and the tripod.
    b. Note the narrower part of the mounting base (trapezoid-shaped) on the tripod and the wider matching part (also trapezoidal) on the bottom of the Start System.
    c. Slide the wider part of the Start System mounting base onto the narrower part of the tripod mounting base, taking care to guide the two bases such that the matching guide rails on each line up. **Any deviation will result in an unsecured mounting and can risk the Start System falling off the tripod, causing serious injury or damage.**
    d. Secure the mounting brackets together via hand-tightening both the friction screw underneath the tripod mounting base and the friction screw on the side of the tripod mounting base. (**CAUTION:** Do NOT over-tighten or use tools to tighten. The receiving female threads are plastic and can easily be stripped.)
6. Face the front of the Start System towards the Near End starting blocks.
    a. Make sure that the speaker horn faces the midpoint between the half of the starting blocks that are closer to the Near Side.
    b. Also, be sure that the Start System's strobe dome is easily visible from behind all lanes on both the Near End and the Far End, with nothing blocking it.
    c. If necessary, loosen the friction screw on the side of the tripod mount base so that you can rotate the Start System without having to change the tripod's position. Retighten this screw once you have set the Start System in place.
7. Connect the speaker cable (from step D.3 [and step D.4 if applicable]) to the Start System via plugging its yellow banana plug into the SPKR ONLY port (yellow female port) on the Start System's right side. (**IMPORTANT:** Do NOT plug into the TIMER START port.)
8. Connect the Start System microphone(s).
    a. **Make sure the Start System is turned OFF**.
    b. For the Near End microphone, connect its plug to whichever microphone jack on the front of the Start System (MIC 1 or MIC 2) will be closer to the Near End. (NOTE: Loop the cable closer to the plug once around the tripod leg hub knob.) Holster the microphone on one of the holders on the Start System or hang it up on one of the horizontal rails of the tent (if available). ***Do NOT lay it loosely on any surface***.
    c. If any races will start from the Far End, set up the Auxiliary Starter Area microphone:
        - Take the microphone extension cable (Item I.A.3) and run it along the Near Side of the pool starting with the female connector end at the Far End-Near Side backstroke flagpole. (Leave 6 inches of slack and secure this end to the pole.)

- Plug the Far End microphone into the female connector end of the extension cable, and plug the male connector end of the extension cable into the other microphone jack on the Start System. (***IMPORTANT:*** *Secure the Auxiliary Starter Area microphone in a safe spot—****do NOT lay it on the deck or loosely on any surface****. Also, make sure the connection between the Far-End microphone and the microphone extension cable does not lie in or across any water.*)

***** IMPORTANT!*** If, due to pool design, a Short Course competition course must be in a sectioned off middle part of a 50 meter pool (see notice at the end of V.E above) such that the Main Starter Area must be on a narrow bulkhead and not directly in front of "Home Base" (e.g., Chandler HS Aquatic Center), make the following adjustments to Steps F.3 and F.8:

- Place the Start System tripod on the deck right in front of the "Home Base" table, taking care to have it so that all lane timers can see the Start System when it is on the tripod.
- Take the microphone extension cable and begin via securing its female connection end to the backstroke flagpole with that end significantly elevated above the bulkhead. Run the remaining length towards the Start System tripod and coil remaining slack below the tripod.
- Connect the Start System microphone to the female connection end of the extension cable. Secure this microphone in some fashion to the backstroke flagpole so that it does not lie on the bulkhead surface. Then connect the extension cable's male end to MIC 1 or MIC 2.

G. Connect the Start System to the Near End Prime Lane Harness

1. Take the red/black banana plug cable (from step F.2).
2. Connect one of its plugs to the Start System via securely plugging it into the TIMER START port (black female port located just below the aforementioned SPKR ONLY port). ***Do NOT connect to the SPKR ONLY port or the AUX SPKR port!***
3. Run the cable carefully underneath one of the tripod legs and continue along the side of the pool (allow space between cable and poolside) towards the prime lane harness. (Try to keep this cable out of foot traffic areas.)
4. Plug the other red/black banana plug of the cable into the START point on the "START/BACKUP START" port of the prime lane harness. (See **Figure 5.**) **Do NOT connect to BACKUP START**. (Otherwise, the Timing System will have inaccurate race starts.)

Figure 5
(Banana plug from start jumper cable connected to START point on start port of prime lane harness)

See **Figure 6** below for a hypothetical rough diagram of the layouts specified in V.B through V.F.

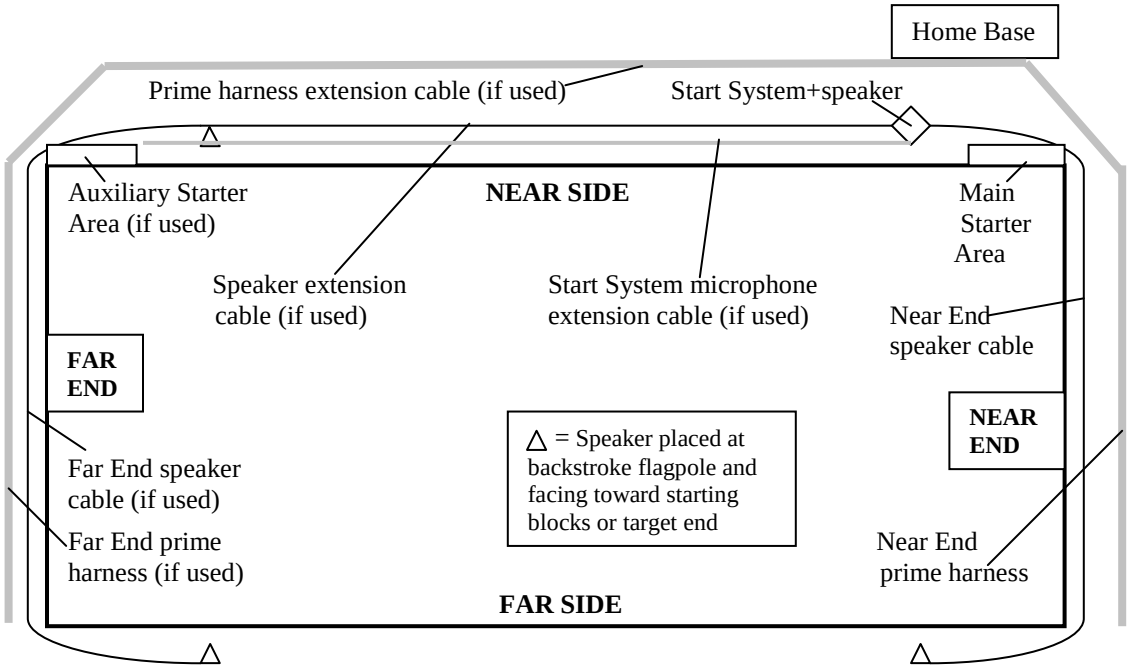

Figure 6

(**NOTE:** If the Main Starter Area [and Auxiliary Starter Area, if used] will be set on the Far Side opposite Home Base, adjust the microphone extension cable and speaker cable placement and slack length specifications in V.D through V.F accordingly, and use the START/BACKUP START port at the end of the Near End prime harness for connecting the Start System [see V.G].)

H. Configure the Start System for the Meet

Consult the manual for the Championship Start System (available for download from Colorado Time Systems and also included with the Start System) for specific instructions on configuration and operation. Chief points to remember are:

1. Always make sure the "STROBE ON/OFF" switch (located above the black speaker mounting bracket) is turned ON. (The red part of this switch will show when the switch is in the ON position.) **The strobe will not flash on starts if the switch is OFF**.
2. **Connect and disconnect microphones only when the Start System is turned off.** Doing otherwise will trigger a start pulse. (The Start System's main switch is the large black rocker switch on the left side panel. When the top part of the switch is flat, the switch is OFF; when the bottom part of the switch is flat, the switch is ON).
3. The AUX SPKR volume control (lower right of the front panel of the Start System) controls the <u>entire volume only from the speaker connected to the AUX SPKR port</u> (on the left panel of the Start System). By contrast, MIC 1 and MIC 2 volume controls control the <u>vocal volume</u> of the respective microphone connected to each; they do **not** control the <u>start tone volume</u> (which is fixed at maximum volume).

4. The audio volume from any speaker connected to the SPKR ONLY port (on the right panel) follows the same rules as described in the second sentence of IV.H.3 above.
5. When the Start System is not in use (e.g., between sessions), turn its main switch off. (After the last session of the day, connect the Start System to external power.)

I. Lay Out the Scoreboard Cable (omit if your event will not use a scoreboard)

1. Take both of the scoreboard data cables (Item I.A.6).
2. If there is a large distance between the Home Base and the scoreboard data connector point, be ready to use both of these cables plus a female-to-female connector (not furnished) between the two should one cable prove insufficient to cover this distance.
3. Plug one end of one cable into the scoreboard data connector point. Secure this cable to a fixed object on the deck nearby via winding it once or twice around the object.
4. Begin running this cable along the deck going towards the Home Base—all while taking care to keep the cable out of any foot traffic areas and out of any trip areas.
5. When you reach the home base, secure the cable via coiling the remaining slack loosely around one of the legs of the Home Base table on which the Timing System will sit. Leave at least four feet of slack in the end of the cable.

J. Place and Connect the AC Power Extension Cord(s)

1. Remember to follow the principles stated in IV.B.3 above regarding extension cords. ***DANGER: UNDER NO CIRCUMSTANCES IS ANYONE TO EVER CUT ANY CORNERS OR EXERCISE CARELESSNESS, RECKLESSNESS, NONCHALANCE OR NEGLIGENCE WHEN IT COMES TO ELECTRICAL SAFETY AND PREVENTING ELECTRICAL HAZARDS—ESPECIALLY IN OR NEAR A WET ENVIRONMENT!*** This includes (but is not limited to) the following **no-no's** in addition to the ones stated in IV.B.3:
   - Never use a 3-prong-to-two-prong adapter plug on or with an extension cord.
   - Never use any 3-prong extension cord that is missing its rounded grounding prong—and never cut off, pull off or file off this prong from any 3-prong cord.
   - **Never use an extension cord that shows any signs of wear or fraying at any point**. Inspect each cord carefully for any exposed copper wiring before using it.
   - **Never allow anything sharp and/or heavy to rub across or rest on extension cords.**
   - ***Never pull on any cord to disconnect it.*** Grasp and pull only by the plug.
   - ***NEVER STAND IN ANY WATER (regardless of depth) WHILE HANDLING A LIVE ELECTRICAL CORD OR HANDLE ANY ELECTRICAL CORD OR PLUG WITH WET HANDS!***
   - **Never connect any high-current drawing devices** (e.g., electric heaters, coffee makers, swamp coolers, etc.) **to any part of the circuit supplying the timing equipment**. (**THIS INCLUDES THE POWER STRIP!**)
2. ***REMEMBER:*** **AC POWER CIRCUIT SUPPLYING POWER MUST HAVE GFCI PROTECTION!**
3. When connecting the extension cord to the 115-volt AC wall outlet, first secure this end of the cord to a fixed solid object near the receptacle (via winding the cord twice around the object). Leave enough slack on the end such that you can plug the cord securely into the receptacle without strain on the cord or prongs. (See **Figure 7.**)

Figure 7
(Extension cord anchored to fixed object with sufficient slack)

4. At the female end of the extension cord, leave enough slack to allow for connecting the power strip to it without allowing this connection to lay on the deck or be where it can be easily tripped on or disconnected.
5. **Keep any connection between electrical cords and power outlets** (whether from a wall receptacle, power strip or extension cord) **out of "splash" zones** (e.g., zones where water splashed from the pool can land) **and out of areas where water can easily reach it and collect**. Should any water enter such a connection, it will at best cause nuisance tripping of the GFCI protector on the involved power source. (If this happens, the protector will not stay reset until the dampness or connection ground fault is removed.) At worst, it will cause a serious electrical shock hazard or electrocution hazard.
6. **Make sure all connections are fully in.** No prong of any plug should ever be exposed.
7. At any junction between a female end of an extension cord and the male end of another cord, secure the cords via a knot.

K. Set Out the Power Strip

1. Open the tan printer case and remove the power strip found inside.
2. Set this strip on top of the table such that its outlets are within reach of the power cords from the timing system module, the timing system module printer, the Hy-Tek PC (with the meet management software) and the Hy-Tek PC printer. **Make sure the power strip is not in a "splash zone" and that its main switch is not placed such that it can be accidentally moved into the wrong position.**
   a. Alternatively, the power strip can be mounted beneath the table via suspending it from or fastening it to one of the table's stabilizer bars. **If you place the strip in this position, make sure its outlets will face AWAY from the pool or any "splash zone".**
   b. **NEVER PLACE THE POWER STRIP ON THE GROUND OR ON THE DECK!**
3. Once you have set the power strip, connect its plug to the extension cord and turn the strip's main switch to ON. (Verify the strip is energized via the pilot lamp lighting up.)

L. Set up the Timing System Module

1. Carefully remove the System 5 from its case along with the 2- or 3-prong block power supply and the data cable. (Close and latch the case and place in a secure area.)

2. Connect the DC output plug of the power supply to the EXTERNAL POWER port on the back of the System 5. Then plug the power supply into the power outlet that is **furthest away** from the switch on the power strip. (**Connecting it to any other outlet will block the outlets above it or block the main switch of the strip**.)
3. Connect and secure the male end of the 9-pin data cable to the COM PORT 1 on the back of the System 5. (**CAUTION:** Observe correct polarity when plugging it in.) Then connect the female end of this cable to a USB adapter cable—of which the USB connector end will connect to the PC that contains the Hy-Tek Meet Manager Software.
4. Connect one male plug end of the scoreboard data cable to the SCBD port on the back of the System 5. Connect the other to the scoreboard's data input port.
5. Plug the parallel connector of the Near End prime lane harness into the PRIMARY INPUT parallel port on the back of the System 5. (**CAUTION:** The connector and port are both trapezoidal in shape and thus can only be connected when both are in the same orientation, with the wider base on top and the lower base on bottom. *If the connector will not plug in, do NOT force it. First check to be sure the polarity is correct.)* Fully push in and secure the connector by fastening the bail clips on each side of the connector.
6. If you will use touchpads and/or cutoff buttons at the Far End, connect the 50 meter prime lane harness extension cable to the FAR END INPUT port on the back of the System 5. **Follow the same tips and precautions listed in V.L.5 above.**

M. Set up the Timing System Module Printer

1. Remove the printer, its AC power cord and its parallel data cable from its case.
2. Make sure the printer is turned **off** (horizontal rocker switch found on the side of the printer and labeled "O" and "I" on each end is the power switch; O=Off, I=On).
3. Connect the female end of the AC power cord to the matching port on the back of the printer (observe correct polarity!) Plug the male end into the power strip using the outlet that is just above the block power supply for the System 5 (see V.L.2 above).
4. Connect the female connector end of the printer data cable to the parallel port on the back of the printer. (Snap the bail retention clips into place, if available.) Then connect the male connector end of the cable to the PRINTER PORT on the back of the System 5—after which you should secure the latter connection via fastening the connector screws.
5. Power on the printer by turning it on via its rocker switch. Observe that it proceeds through its self-test—after which the printer should show it is ready (see LEDs or LCD).
6. Add paper to the printer's tray, if necessary. (**Do NOT use paper that is presently or was once wet—as this can risk jams**. Also, **wet paper can damage the internal parts**!)

N. Connect the Cut-Off Push Buttons and Touchpads to the Lane Harness(es)

1. **For Semi-Automatic Rentals** (2 cut-off push buttons in each lane):
   a. Place two cut-off push buttons on the Near End starting block of each lane.
   b. In one lane, fully insert the banana plug of one cut-off push button into the PRIME point on that lane's respective port of the prime lane harness. Fully insert the banana plug of the other cut-off push button into the BUTTON A point on the lane's port. (**See Figure 10.**) (IMPORTANT: Make sure that the banana plug has no loose

wires and that the plug's prongs are not missing any retentive clips. Do not use a cut-off push button that exhibits any flaws in these areas. Mark it with a description of the problem so it can undergo repair/replacement.)

c. Carefully stow the cut off push buttons such that no one can trip over them but that lane timers can easily reach and use them. (Try to rest the cut-off pushbutton connected to the PRIME point rest on one side of the block and rest the cut-off pushbutton connected to the BUTTON A point on the other side of the block.)
d. Repeat steps IV.N.1.b and IV.N.1.c for each of the remaining lanes.
e. For a Long Course meet with all 1-length only races starting from the Near End, repeat steps IV.N.1.a through IV.N.1.d for connecting cut-off push buttons to the Far End prime lane harness.

2. **For Automatic Rentals** (1 touch-pad and 1 cut-off push button in each lane):
   a. Place one cut-off push button on the Near End starting block of each lane.
   b. In one lane, fully insert the banana plug of the cut-off push button into the BUTTON A point on that lane's respective port of the prime lane harness. (IMPORTANT: Make sure the banana plug has no loose wires and that the plug's prongs are not missing any retentive clips. Do not use a cut-off push button with any flaws in these areas. Mark it with a description of the problem so it can undergo repair/replacement.)
   c. Carefully stow the cut-off push button such that no one can step on it or trip over it and also such that lane timers can easily reach it.
   d. Repeat Steps IV.N.2.b and IV.N.2.c for each of the remaining lanes. (**NOTE:** When stowing the cut-off pushbuttons, try to rest them on the same side of each block.)
   e. Place and secure touchpad mounting brackets (supplied with the rental—or you may use your own provided they have the rough Velcro grip surfaces on them) as follows:
      1) If the pool's gutter is recessed and below the deck level, use two of the "upside down U" brackets (see **Figure 8**) in each lane, placing one close to each end of the gutter lip in a lane. (**Make sure the width of the gutter lip matches that of a bracket**. Too loose a fit will risk the touchpad easily falling off the gutter lip.)
      2) If the pool's gutter is at the same level as the deck and/or the water surface, use the set of Plexiglas brackets (see **Figure 9**). For each bracket, place its longer thin plastic side in the pool and the shorter thick rubber side on the gutter so the gutter lip is in between the two sides. Center the bracket on the gutter lip. (**NOTE:** If possible, place these brackets such that two intermediate lanes share one bracket and the two end lanes each have an additional bracket nearly flush against the side wall of that lane. This will allow all of the touchpads and brackets to be mounted together in tandem and greatly reduce the risk of any touchpad falling off the gutter lip.)

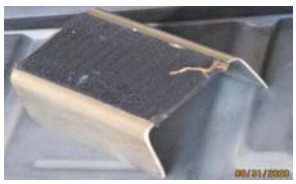

Figure 8

Figure 9

3) If you have your own brackets to use, place them on the gutter lip as you normally would.

f. Carefully remove a touchpad either from the caddy or from the horizontal racks of the AZ Swimming trailer. (CAUTION: Do not bend, twist or injure the pad in any way. Also, ***NEVER USE A TOUCHPAD'S CABLE TO CARRY OR PULL IT*.** [This can break the cable away from the connector block—and will be expensive or impossible to repair.]) **Ask for help if you find that a touchpad proves too awkward to handle**.

g. In one lane on the Near End, install a touchpad on the wall of that lane as follows:

- Insert the pad at an angle such that the top of the pad is slightly further out than the base of the pad (which should be against the wall).
- Carefully and slowly slide the pad downward while closing the originally formed angle. **Make sure the pad is centered in the lane at its final resting point.**
- Make sure the touchpad's smooth Velcro surface underneath its connector side makes good contact with the bracket's rough Velcro surface.

h. Fully insert the banana plug of this touchpad into the PRIME point on this lane's respective port of the prime lane harness. (See **Figure 10.**) (IMPORTANT: Make sure the banana plug has no loose wires and that the plug's prongs are not missing any retentive clips. <u>If the plug exhibits any flaw in these areas, do not use this touchpad</u>; mark it with a description of the problem so it can undergo repair/replacement.)

i. Repeat steps IV.N.2.f through IV.N.2.h for each of the remaining lanes.

j. If the meet is Long Course and you desire to have Far End Splits, repeat steps IV.N.2.f through IV.N.2.i for each of the lanes on the Far End.
   1) If all 1-length races start from the Near End, also repeat steps IV.N.2.a through IV.N.2.d to connect cut-off push buttons to the Far End prime lane harness.
   2) If it is not feasible to install touchpads on the Far End, follow Step IV.N.1.e above for connecting two cut-off push buttons on the Far End prime lane harness. (**NOTE**: This will require configuring the System 5 to accommodate a Semi-Automatic finish on the Far End for such races.)

Figure 10

(Cable from touchpad [Automatic rental] or cutoff pushbutton [Semi-Automatic rental] plugged into PRIME point and cutoff pushbutton plugged into BUTTON A point on prime lane harness)

O. Power On and Configure the System 5 Timing Module

1. If using touchpads, have the pool clear of swimmers before powering up and configuring the System 5. (Otherwise, the System 5 will fail its Finish Self-Test during power-up.)

2. Find the red rocker main power switch on the back of the System 5 (labeled POWER above it), and press its top side (this will be labeled with a "I") so that it is flat against the rear panel. (This turns the power to the System 5 on.)
3. Observe that the System 5's console LCD shows it proceeding through its Self-Tests. (If necessary, adjust the contrast by turning the dial labeled "CONTRAST" [located on the back panel just left of the red rocker power switch] until you obtain the desired level.)
4. Once all Self-Tests show "Passed", the Sports Menu should display next, with "Swimming" being among the available choices.
5. Locate the soft key that bears the LCD label of "SWIMMING/DIVING", and press that soft key to load the Swimming software.
6. Consult the System 5 instruction manual (see page 4-30 especially) to set the current time of day and date on the System 5. Once this is done, consult with the Meet Referee and Administrative Referee/Official (along with the manual) to configure the timing parameters (e.g., pool course format, number of lanes used, lane mapping, US or metric length units, pad and button finish or two-button finish, pad arm delay time, etc.).
7. Ensure the System 5 is in RESET mode via the console display showing this word. If it is not, simultaneously press the two RESET buttons on the System 5's console keyboard. ***This is important. The System 5 must be in RESET mode for the next two steps.***
8. Allow Administrative Referee/Official to upload the meet information from the Meet Manager software to the System 5 for the upcoming session. Once they inform you that the upload is complete, verify that it occurred correctly via the following:
    a. On the console keyboard, press EDIT/EVENT HEAT.
    b. On the console keypad, enter the first event number of the upcoming session, and press ENTER.
    c. Press 1 (for the first heat), followed by ENTER.
    d. Compare the event number, heat 1 and the event description appearing on the console display with the first event listed on the timeline for the upcoming session.
9. Set the System 5 for a "pseudo event" (i.e., a non-existent event):
    a. On the console keyboard, press EDIT EVENT/HEAT.
    b. On the console keypad, enter any 3-digit number that begins with 8 or 9 in the hundreds digit place, and press ENTER. Then enter the number 1 or 2 (for the heat) and press ENTER. Observe that the entered Event and Heat numbers appear both on the console display and on the scoreboard (if you use one).
    c. Press the "50" key (for a Short Course Yards/Meters pool or for a Long Course Meters pool with either no Far End splits or all 1-length races finishing at the Far End) or "100" key (for a Long Course Meters pool).
    d. Ensure the System 5 is back in RESET mode, with the pseudo-event number and heat 1 or 2 for a 50 yards/meters or 100 meters race (depending on the course conditions described in IV.O.9.c above) appearing on the console display. (The System 5 must be in RESET mode for the System 5 to receive a start pulse.) The System 5 is now ready to receive a test start.

VI. THROUGHOUT THE MEET

A. Protect The Equipment from Any Insult

1. **Make sure to shield ALL equipment on the table, the extension cords and the power strip from any exposure to water**—whether from rain or splash from the pool.
2. **Make sure no cable becomes disconnected or drifts into any trip area.** If using touchpads, make sure any slack in the cable does not drift into the water in a lane.
3. ***REMEMBER: TOUCHPADS ARE DELICATE AND EXPENSIVE!***
   - Store any touchpads you don't use back in their caddy. **Make sure to follow the diagram on the caddy cover for correct storage of the touchpads in the caddy**.
   - ***KEEP ALL TOUCHPADS OUT OF ANY SUNLIGHT***. **DIRECT SUNLIGHT** (especially in hot ambient temperatures) **WILL WARP AND IRREVERSIBLY DAMAGE A TOUCHPAD**. (If you store any touchpads in the Arizona Swimming trailer and you find you cannot park it in a shaded area, open the roof vent of the trailer at least halfway.)

B. Periodically Check for Continuity in AC Power

1. If the System 5 LCD display flashes the word "BATTERY", the System 5 has lost its external power supply and is now operating on its internal batteries. Should this happen, first be sure the block power supply has not become disconnected from the power strip or from the System 5 itself. If these are OK, see VI.B.2 below.
2. On the power strip, if the pilot lamp goes out, the strip has lost its AC power source. Should this happen, first make sure the strip is still connected to its AC power source (e.g., no disconnection between cords and/or AC outlet, etc.). If this is OK, see if the strip's main switch has been accidentally turned off, or if its circuit breaker has tripped.
   a. If the circuit breaker has tripped, see if the strip has too large of a load on it. **The only items that should be connected to the strip are the System 5** (via its power supply)**, the System 5 printer, the Hy-Tek PC and the Hy-Tek PC printer.** ANY OTHER DEVICES CONNECTED TO IT MUST CREATE A CUMULATIVE LOAD NO LARGER THAN 100 WATTS. Remove anything extraneous from the strip, and **be sure no AC power cords have any frays in the**m. Then reset the circuit breaker.
   b. If the circuit breaker has not tripped, see if the power strip's main switch has been accidentally turned off.
   c. If neither the strip's circuit breaker has tripped nor has its main switch been turned off, proceed to VI.B.3 below.
3. See if the extension cord supplying the power strip has been unplugged from its GFCI-equipped AC power outlet. If it has not, proceed to VI.B.4 below.
4. See if the AC power outlet supplying the strip has a tripped CFCI breaker.
   a. If the GFCI breaker has tripped, first be sure no water or liquid has entered any connection between extension cords or any outlets on the power strip—and that there is no fraying of the extension cord. Then reset this breaker. (If it immediately trips again, check to see if water may have or has entered any device connected to any part of the circuit leading from this outlet.)

b. If the GFCI breaker has not tripped but there is still no power, consult venue facility management to see if the house circuit breaker supplying this AC outlet has tripped.

C. Maintain the Batteries on the Start System In Between Sessions

1. Check to be sure that the "LO BATT" LED on the Start System is not lit.
2. At the end of each session, turn the Start System off at its main switch. (Verify that it is off by noting that the green POWER LED is not lit.)
3. If the meet is a prelim-final meet, connect the Start System to its external power supply in between the prelim and final sessions—if possible. (You MUST connect the Start System to its external power supply [which must be plugged into a **working** 115-volt AC power outlet] after the last session of each day of the meet. This is for the sake of recharging the internal SLA batteries of the Start System for the next day.)

D. Be Aware of Troubleshooting Needs on the Equipment

Due to multiple situations that can arise with numerous different parts of the equipment, it is not feasible to list all symptoms, their possible causes and the corresponding remedies in this guide. Instead, **please consult the troubleshooting section in the respective manuals** for the Timing System, the Start System and/or the Touchpads if any irregularity arises throughout the meet sessions or during the set-up and/or testing.

In performing any troubleshooting, however, please follow these general guidelines:

1. Be sure all cable connections are secure, **fully in and to the correct points**.
2. Make sure that all electrical connections are fully secure—and that no water has found (or can find) its way into any electrical connection.
3. If a circuit breaker or GFCI outlet trips immediately after you reset it, **find what is causing it to trip before resetting it a second time**. (Circuit breakers and GFCI outlets that repeatedly trip may indicate a serious electrical fault that must be resolved first. **Continuously resetting a tripping circuit breaker without eliminating the problem will eventually wear out the breaker and risk a dangerous electrical and/or fire hazard**.)
4. If a touchpad is too buoyant, ***NEVER, UNDER ANY CIRCUMSTANCES, TRY TO EVACUATE THE AIR WHILE THE TOUCHPAD IS STILL IN THE WATER!*** This will risk water entering the touchpad's interior—which will irreversibly damage an expensive touchpad.
5. *Regardless of what anyone may tell you,* ***PLEASE—DO NOT USE WD-40 ON ANY CABLE CONNECTIONS!*** Despite popular belief, this does not work in eliminating any lime corrosion or enhancing any electrical conduction. Also, WD-40 is petroleum-based (i.e., it is a product of **crude oil**—as is gasoline, kerosene, diesel fuel, motor oil, etc.). *It is thus a health hazard and must never be allowed to contaminate the pool water!*

E. Store the Equipment Properly Between Days of the Meet

1. After completing all necessary data exchange between the System 5 and the PC with the Hy-Tek Meet Management software, power down the System 5 via turning its main

switch on the back panel to the "OFF" position. (The red switch's lower half labeled with the "O" should be flat against the panel wall in this case.)

2. Allow the Hy-Tek Meet Management operator to finish with any data processing and to power down the PC mentioned in item V.E.1 above).
3. Turn off the Start System. (In doing this, turn off only the large black main rocker switch such that its upper half is flat against the panel. **Do NOT turn off the Strobe switch**.)
4. Disconnect the speaker cable, the start cable and all microphones from the Start System. Carefully loosen the friction grip screw on the female mounting platform of the Start System tripod until you are able to slide the Start System off this platform. (CAUTION: Do not loosen the screw too much such that it falls out of its hole.)
5. Unplug all devices connected to the power strip. **Take the Start System (plus its microphone) indoors or to the designated secured area and connect it to a working AC power outlet immediately.** (NOTE: You must have the large block power supply for the Start System handy to connect it to an AC power source. Also, this designated area should be lockable and unexposed to the elements.)
6. Carefully disconnect all cables from the back of System 5. (REMEMBER—retract the bail wires on the harness parallel connectors first and unfasten the screws on the other parallel connectors first!) Store the System 5 block power supply and the 9-pin data cable in the recess inside the gray case, and follow with the System 5. (CAUTION: Carefully pack in these materials—do not cram them in haphazardly. **See Figures 11, 12 and 13 for re-packing sequence**.) Take this case into the designated secured area.
7. Turn off the printer that is connected to the System 5, and keep its power cord and data cable connected to it. Store this printer in the designated area in its case or on top of it.
8. Make sure all cables that connect to the System 5 that will stay out on deck have their connection ends off the ground and are kept in a dry state. (If the weather forecast predicts any possibility of rain for later in the evening or overnight, wrap the prime lane harness' parallel connector with plastic Saran wrap [or equivalent].)

Figure 11
(Power supply and data cable in first)

Figure 12
(Resting pad in second)

Figure 13
(System 5 on top last)

VII. UPON CONCLUSION OF THE MEET

A. Close Down the Home Base

1. Follow Steps 1 through 7 in Section VI.E above—**with the following exceptions:**
   a. **Consult your copy of the Arizona Swimming Equipment Rental Inventory Form to be sure you re-pack exactly all equipment that you received**—no more, no less.
   b. In Step 4, also disconnect the start cable from its port on the near end harness. Coil (do NOT bunch) this cord into a small circle and lay it near the large black chest.
   c. In Step 5, for the Start System, unplug all 25-foot cable microphones and the microphone extension cable at their connection points. Carefully coil (do NOT bunch) each cable each into a small circle. If a Velcro tie is attached to the cable, use this to secure the cable into this circle. Place all microphones loosely into the Start System case, and take this case into the storage area with the Start System to have it ready for re-packing the Start System on the day of the equipment return.
   d. In Step 6, take care to repack not only the block power supply but also the 9-pin data cable in the case for System 5 along with the System 5.
   e. In Step 7, disconnect all cables from the printer. Carefully repack the printer in its case, and follow with the power cable, data cable and power strip. Make sure no cables are lying across any seal seat, and then securely close and latch the case.

2. Unplug all 3-prong extension cords, and carefully coil (do NOT bunch) each into either a small circle or around its reel assembly (if provided). Secure any coiled cord that is not around a reel with a bungee tie to prevent it from becoming scattered when repacked. Lay these near the large black chest with the aforementioned start cable.

3. Disconnect all scoreboard output cables and coil each either around their reel assembly or in a small circle. Place these near the large black chest along with the aforementioned extension cords and start cable.

B. Collect and Store All Cutoff Pushbuttons

1. Unplug each cutoff push button from its port on all the lane harnesses, and collect these into sets of eight each. (NOTE: If you placed any cutoff push button aside due to trouble, make sure to flag it with a note explaining the problem. Keep this button out of any set.)
2. Line up eight cutoff buttons in a set with the button assemblies even with each other. (**See Figure 14 for similar method**.)
3. Hang all eight cables of a set over your arm or hand such that the button assemblies hang down on one end and the banana plugs hang down on the other. (**See Figure 15**.)
4. With your other hand gripping all the cables that hang down, take the top loop and tie a firm (but not too tight) knot with this bunch of cables. (**See Figure 16**.) Place this knot of 8 cutoff push buttons inside the yellow storage bin.
5. Repeat Steps B2 through B5 for all the remaining cutoff buttons.

Figure 14
(Buttons on one end, banana plugs on the other end—all in straight line)

Figure 15
(Loop formed—with buttons hanging on one side banana plugs on other side)

Figure 16
(Loose knot formed)

C. Remove and Store the Touchpads (Automatic I and Automatic II Rentals only)

(**IMPORTANT:** Consult the *Arizona Swimming Trailer Guide* for additional information on how to properly reload other equipment on the trailer along with the touchpads.)

1. Unplug a touchpad from its port on the lane harness. Lay the cable flat on the deck such that it is diagonally straight away from its connector block.
2. Carefully lift a touchpad from the water, taking care to not bump or bang any part of the touchpad against a starting block's features as you do. (Have someone help you either with lifting the touchpad or removing its brackets before you lift the pad.)
3. Gently lay the touchpad slanted against the starting block's back end, taking care to not let it fall either way. (Keep the cable out of any trip areas.)
4. If the touchpad brackets belong to AZ Swimming, place these on the starting block.
5. Repeat Steps C1 through C4 for the remaining touchpads and brackets.
6. Collect and store all AZ Swimming brackets:
   a. If you used the "upside down U" metal ones (Figure 8), place these in their black canvas bag, and place the canvas bag near the black storage chest.
   b. If you used the long Plexiglas ones (Figure 9), place these on the far right of the trailer top shelf.

7. Gently and evenly stow any touchpad that proved problematic or that suffered any damage on the trailer top shelf. (**CAUTION**: **Take care to not lay them on top of any other object on the shelf.**) Attach a note explaining the trouble.
8. Carefully stow all functioning touchpads in the caddy from which they came or in the horizontal slots on the trailer.
    a. When stowing touchpads in a caddy, **follow the diagram shown on one end of the caddy cover for the correct pattern of inserting the touchpads. (See Figures 17, 18, 19 and 20.) DO *NOT* DEVIATE FROM THIS PATTERN.** Also, EACH CADDY CAN HOLD **SIX TOUCHPADS AT MOST**. ***NEVER ATTEMPT TO CRAM IN MORE THAN SIX.***

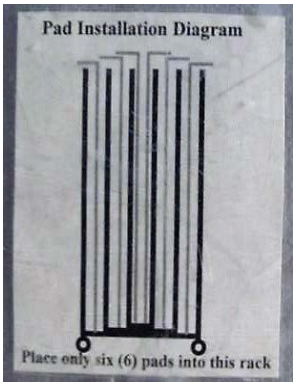

Figure 17
Pad insertion diagram


Figure 18
First two pads inserted


Figure 19
Next two pads inserted


Figure 20
Final two pads inserted

    b. If stowing touchpads in one of the four horizontal slots on the trailer, **each slot can only hold two touchpads—AND EACH TOUCHPAD MUST HAVE ITS FRONT SURFACE FACING UP UPON INSERTION**. The first one inserted in a slot must be with the connector block edge inserted in first. The second one goes on top of this with its connector block edge going in last. **When inserting touchpads, take care to keep the cables out from under the touchpads**, **and do NOT let anything snag the cables**. After you finish loading touch pads on the horizontal slots, re-install the vertical stops on each slot bay of the middle shelf to help hold the touch pads in place.
9. On each caddy, take the cables of three touchpads and pull them slightly taut (NOT TIGHTLY) across the tops of the pads to the handle on the other end, and wrap these cables securely around the handle. Repeat in the opposite direction for the other three cables. Secure the cover on each caddy such that the aforementioned insertion diagram is on the NON-STEERING end. (The wheels on this end cannot swivel while in motion.)
10. Carefully roll the caddy back to the trailer, with the STEERING end going first.
11. Make sure the trailer wheels are securely chocked—and that the trailer cannot move.
12. Have someone help you lift the STEERING end of a caddy into one side of the trailer's lower deck. Then, carefully push the rest of the caddy in while the other person guides the caddy in such that the steering wheels line up on each side of the fixed woodblock on the floor when the wheels reach the furthest front part of the lower deck. The caddy should be flush with the interior side of the trailer. (**See Figure 21**.)
13. Repeat Step C11 for the other caddy.

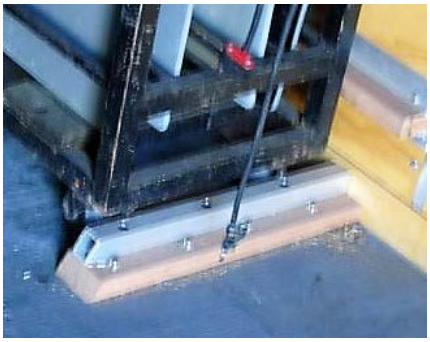

Figure 21
Front of touchpad caddy pushed all the way forward; flush with side wall and stop point

D. Collect All Lane Harnesses and Extension Cable(s)

1. Start at the furthest end of a harness, and carefully coil harness such that all the ports line up together and that one loop of cable is between each port and the coils are closely even in circumference. (NOTE: To prevent kinking of the harness cable, you will need to rotate the cable in the direction that you are coiling the harness as you go along. Thus, if you are coiling the harness in your left hand or to the left on the deck, you must rotate the cable to the left as you coil each loop.)
2. After the last port is in place, continue to coil the remainder of the harness onto the coiled stack until you have finished.
3. Secure this harness with a bungee tie or other small rope, and either store it in the yellow chest (see VI.I below) with the cutoff buttons or lay it near the large black chest.
4. Repeat Steps D1 through D3 for any remaining harness and for the extension cable(s), if you used them. (NOTE: Hang the extension cable on the left garden hose bracket in the front compartment of the trailer. [**See Figure 22**.] Additionally, if your rental is an Automatic I or Automatic II, you will have three prime harnesses. Hang one of them on the right garden hose bracket in the front compartment of the trailer. [If you used the backup harness, hang this on the bracket before the prime harness.] **See Figure 23**. Another will go in the yellow chest, and the last will go in the large black chest.)

Figure 22
Prime harness extension cables
(on left side of trailer front compartment)

Figure 23
Prime harness in front of backup harness
(on right side of trailer front compartment)

E. Collect all Start System Speakers and Speaker Cables

1. Unplug all speakers from the yellow banana plug jumper cable connections.
2. For each speaker, coil its cable around its base, and bring it over to the large black chest, with the horn facing downward. (This will drain out any residual water.)
3. Disconnect all yellow banana plug jumper cables from their connection points.
4. For each yellow banana plug jumper cable, coil it neatly into a circle via rotating the cable towards the coil as you gather each length. **Do NOT bunch or wrap.** Secure each coiled cable with a bungee cord or rope to avoid scattering, and lay it near the black chest with the speakers. (**See Figure 24 [Right way] and Figure 25 [WRONG way]**.)

Figure 24 (Right)

Figure 25 (WRONG)

F. Re-pack the Start System (**NOTE:** Do this on the day you return the equipment)

1. Disconnect the black speaker from the AUX SPKR output.
2. Unbolt the black speaker from its mounting bracket and remove the speaker from the bracket. (*CAUTION: Take care to securely refasten the mounting bolt and nut to either the speaker bracket or the mounting bracket on the Start System.)*
3. Disconnect the external power supply from the Start System, and unplug the power supply from its 115-volt AC source. Carefully coil (do not bunch) the thin DC output cord on itself in a small circle and secure with a twist-tie such that you leave a small bit of slack towards both the power supply and towards the DC output plug.
4. Coil the two 25-foot Start System microphones each in a small circle.
5. Using the photo diagram supplied in the Start System case as a guide, re-pack the items listed above in the foam packaging of the case. (CAUTION: Make sure no cables are resting on any seal seat of the case.)
6. Carefully close and latch the Start System case.

G. Gather All Lane Cones (if used)

1. Collect all the lane cones from the starting blocks.
2. Stack the cones in numerical order atop each other.
3. Lay the cones near the large black case.

H. Re-pack the Black Chest (**See Figures 27 and 28**)

1. Place all the speakers (from step VI.E.2) in the case with the horns facing downward and lined up flush with each other on one end of the case.
2. Place the 3-prong extension cords on the other end of the case, with the reeled ones standing on end flush with each other. (The ones not on reels can lay atop the reeled ones or next to them.)
3. Place the scoreboard cables in the center of the chest. Stand the reeled ones on end.
4. Lay the yellow banana plug jumper cables (for the speakers) on top, taking care to ensure that their coils are secured. Follow with the red/black banana plug jumper cable (for the start system connection to the prime lane harness).
5. Lay the Start System microphone extension cable atop the banana plug jumper cables.
6. Lay one of the prime harnesses atop the banana plug jumper cables and the microphone extension cable. (The other prime harness goes in the yellow chest.)
7. Place the lane cones where any remaining space provides.
8. Be sure no cables, fingers, etc. are lying across any seal seat of the case. Then carefully close the lid of the case such that it seats properly, and follow with securing the latches.

Figure 26
(Speakers, extension cords, scoreboard cables)

Figure 27
(Speaker cables, microphone extension cable, harness, etc.)

I. Re-pack the Yellow Chest (**See Figures 28 and 29**)

1. Ensure all cut-off pushbuttons from VI.B are resting in the base of the yellow chest. (NOTE: If you flagged any button as problematic, save this to put in the chest last.)
2. Place the other prime harness that was from this chest atop the cutoff buttons.
3. Make sure no cables are lying in a seal seat of the chest. Then place the black lid of this chest such that it seats correctly on the chest. Securely latch the lid in place.

Figure 28
Cut-off pushbuttons in first

Figure 29
Prime lane harness on top of pushbuttons

Re-pack the Stopwatches (if used)

1. Insert each stopwatch into a groove within the foam rubber packing of its case. (If the case does not have grooves, lay the stopwatches on end inside, taking care to neatly keep the lanyards out of any tangles.)
2. Carefully coil the lanyards into a circle such that no lanyard part is sticking outside the interior of the case.
3. Close and latch the stopwatch case.
4. Repeat Steps VI.J.1 through VI.J.3 for the other stopwatch case (if used).

J. Reload the Arizona Swimming Trailer (Automatic I and Automatic II Rentals only)

1. Please consult the *Arizona Swimming Trailer Guide* for information on how to properly reload the other equipment to be stored in the trailer after the touchpads.
2. If reloading the trailer in dim lighting conditions (e.g., after sundown), remember that the trailer has interior lighting—which you can use provided you have a 3-prong grounded 115-volt 60 Hz AC power outlet nearby.
3. Always remember—when reloading the trailer, **correct distribution of the weight inside it is critical for safe towing of the trailer.**
4. During the summer (and especially if the trailer will be stored for a while in hot ambient temperatures), if touchpads loaded in are still wet, open the roof vent of the trailer to allow ventilation and reduce the risk of moisture buildup and mold growth inside. (***CAUTION:*** *Remember—****fully close this roof vent <u>before</u> towing the trailer****!*)
5. Wait until the day you return the equipment to load in the Start System. (This to maintain a full charge on the SLA batteries in the Start System.)
6. Close, latch and secure the trailer doors with the padlocks.

K. Contact the Equipment Chair to Arrange for Equipment Return

See Article II (“CHECK-OUT OF EQUIPMENT) above for information on contacting the Equipment Chair to schedule the date of returning the equipment and on courier requirements for transportation.

VIII. RELOADING AND RETURNING THE EQUIPMENT

A. Ensure Arizona Swimming Trailer is Correctly Loaded and Secured (Automatic I and Automatic II Rentals only)

Consult the *Arizona Swimming Trailer Towing Guide* for information on loading and securing the trailer and for re-connecting it for towing.

B. Correctly Reload All Equipment into Transporting Vehicle (Semi-Automatic Rentals only)

1. Consult Article II ("CHECK-OUT OF EQUIPMENT") for information about vehicle requirements and transportation considerations.

2. Remember—**always think "SAFETY" when loading the equipment!**

    a. Make sure the transporting vehicle is parked on a flat, level surface, with the parking brake firmly set and the transmission lever in PARK (automatic transmission vehicles)/1st gear (manual transmission vehicles). THE VEHICLE'S ENGINE SHOULD **NOT** BE RUNNING, AND NEITHER SHOULD THE KEY BE IN THE IGNITION NOR SHOULD THE IGNITION BE ENABLED!
    b. Have someone help you with lifting the heavy items (e.g., black chest, Start System case, printer case, etc.)—especially if the transporting vehicle's cargo space designated for the equipment is high off the ground.
    c. **Lift with your LEGS—never with your back**.
    d. **Turn with your FEET—never with your back**.
    e. **NEVER OVERREACH**.

3. **REMEMBER THE 60/40 RULE!**

    a. **60% of the weight of the equipment must be evenly distributed across the FRONT half of your vehicle's cargo space**. The remaining 40% must be evenly distributed across the REAR half of that cargo space.
    b. **Heavier items must be towards the floor and front of the cargo space**.
    c. **DEVIATING FROM THE 60/40 RULE IS DANGEROUS**!

C. Return Equipment to Locker

1. Be sure you bring your copy of the Arizona Swimming Equipment Rental Inventory Form with you when you transport the equipment to the locker. The Equipment Chair will need to inventory all the equipment returned.
2. Remember—you will be responsible for any equipment or items that are found to be missing or damaged.

THANK YOU!