

“WATER CHAMP” CONTROLLER

OPERATING INSTRUCTIONS

**9-Zone, 12-Zone & 15-Zone
Outdoor / Indoor
Irrigation Controllers**

Covering Models:
R-90, R-120, R-150
WC-9INO, WC-12INO, WC-15INO



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Dear Customer,

The people at Champion Irrigation Products thank you for purchasing this product. We trust it will give you years of dependable service as it was built to very high standards. It is technologically state-of-the-art, easy to program, and a real value. If you should have any questions please call us at (800) 33-CHAMP [800-332-4267]. The “Water Champ” controllers are available in 4, 6, 9, 12 & 15 zone indoor/outdoor models, and have 3 independent programs, A, B, and C, of which any one can be used for the lawn, one for shrubs, and one program for a drip system. Among the other features and benefits, the “Water Champ” Controllers have the following:

- A lifetime calendar for watering only ODD or EVEN days in the event of a need to conform to local water restrictions.
- OFF/RAIN switch position to stop watering during rainy days.
- 3 MANUAL RUN options - ALL MANUAL with Program A, then B, then C; run just Program A or B or C; run an individual zone only.
- 4 START TIMES for each program for newly seeded lawns, new sod, or hot weather.
- WATER DAYS options allow watering specific days of the week on SET DAYS, or water on SKIP DAYS skipping from 1 to 30 days. Add the ODD/EVEN option to water only on odd or even calendar days if required by local restrictions.
- ZONE RUN TIME allows valve run times from 1 minute to 1 hour in 1 minute increments and 1 hour to 12 hours in ten minute increments.
- % watering (water budgeting) allows increased (up to 200%) or decreased (down to 10%) valve run times without reprogramming - great for water conservation.
- Automatic and internal features include a factory set (default) program to water every zone daily for 10 minutes starting at 5:00 a.m. Internal switch (SW2) will allow Program C to be run at the same time as Programs A or B (drip system application). The RAIN terminal will allow a rain sensor shut-off. No fuse is required as the controller has automatic circuit protection, skips any shorted zone, and shows shorted zone as a ‘bad’ zone in the LCD display. Pushing the σ or τ arrows together tests all zones for a short. An internal lithium battery backs up the calendar and memory of your programs for up to 7 years. The RESET switch allows resetting the controller back to the factory set default program.
- All zone run times count down during the run cycle, and skip days count down as the day(s) pass.
- Controller will operate in auto-run from any position of the rotary dial except OFF/RAIN.

Your Champion controller provides the convenience of automatic watering and the flexibility to make the most of our precious water resources. Your controller was designed to be easy to program and operate. Please refer to this guide to learn the best way to install and use your controller.

INSTALLATION

Indoors

Locate your controller indoors near a standard 110v AC outlet. The outlet should not be controlled by a switch or share the same circuit with a garage door opener, electric dryer, or other large appliance or inductive motor. The location should be protected from moisture and temperatures exceeding 120^o Fahrenheit.

Outdoors

Your Water Champ controller includes a weatherproof power cord. If you wish to hard wire your controller to conduit, the factory installed power cord can be easily removed. Turn off the circuit breaker for the 110V circuit. Attach the black wire to the 110V black lead. Attach the green wire to the ground lead.

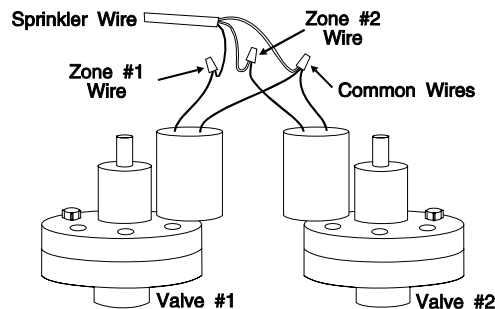
Use a professional electrician if you are not comfortable with the direct wiring of your controller.

Note: Electrical codes may vary from location to location. Please check your local codes before beginning work.

When installed outdoors, utilizing a standard electrical outlet, plug grounded power cord into recommended ground fault circuit interrupter (GFI) with a weatherproof cover to prevent possible shock/ short circuit. Provide a water drip loop for the power cable, to insure water will not flow directly into the power outlet / receptacle.

Mounting Your Controller

Screw one of the supplied #8 screws into a wall at eye level. Leave 1/4" of the screw head extending from the surface. Use an anchor bolt for drywall or masonry. Slip the buttonhole opening on the back of the box over the screw head. Open the lower door. Install two more screws from the front, through the holes at the bottom of the box.



Wiring Your Valves

Use color-coded 18 gauge (16 or 14 gauge can also be used) plastic jacketed sprinkler wire to connect the controller to your valves. If you plan to bury the wire, use a route that will not be disturbed later by digging. Each valve has two wires. Use one wire for power and one for common, it doesn't matter which one you use.

Connect the common wires from all the valves to one of the color-coded sprinkler wires (usually the white wire). Connect the other wire from each valve to a single color-coded wire. Use moisture resistant wire nuts or grease caps to secure the connections

Wiring Your Controller

Remove the panel (PCB Board). Place to the inside of the door and secure with a rubber band or spring clip. Using a small screwdriver, attach the "C" common wire to a terminal marked "COM"

Attach the wire to the right side of the screw, under the clip, or wrap the wire around the screw before tightening.

Attach the wire for zone #1 to the zone marked “V1. Attach the remaining zone wires in the same manner.

Note: the zone wires come in from the top of the terminal modules.

Caution: wire only one valve to each terminal to avoid damage.

Water Champ controllers include universal multiple common terminals. If you are connected to one common, you are connected to all commons. Your white (common) wire only need to connect to one common terminal “C”. In any one of the terminal blocks. The additional “C” terminals are for your convenience, should you have common wires coming from multiple locations (such as front and back yard).

PUMP START AND MASTER VALVE

Attach the wire from the pump start relay or master valve to the “MV” terminal, the other wire to the common “C” terminal. To prevent damaging your pump in the event that the default factory preset program turns on, attach a jumper wire from any unused zone terminal to any operating zone terminal. This way, the pump will not operate against a closed system.

RAIN SENSOR

The looped wire must remain connected between the rain and OV terminal when a rain sensor is not in use. To install a rain sensor, remove the looped wire and connect on rain sensor wire to the rain terminal and the other wire to the OV terminal.

UNDERGROUND SPRINKLER SYSTEMS

There are three components of an automatic sprinkler system. The controller (brain), automatic valves (zones), and sprinklers. The controller tells the valves when, and how long to supply water to the sprinklers. Each valve controls a group of sprinklers known as a zone. Each valve is connected to a numbered terminal in the controller marked 1, 23, etc. for the zone number. The valves operate in numerical order within each program, which is called a cycle.

Each program requires three basic instructions as follows:

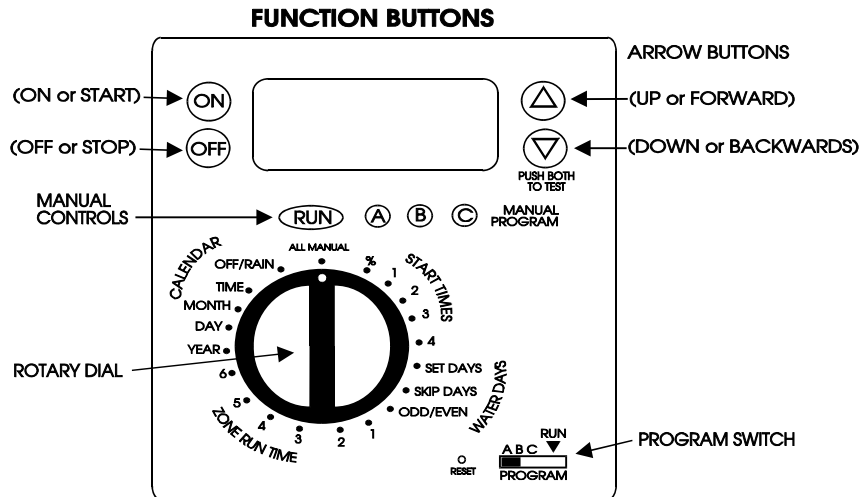
- What days to water – called Water Days
- What time of day to water – called Start Times
- How long to water – called Zone Run Time

PROGRAMMING YOUR CONTROLLER

Programs A, B, & C

Your controller allows you to set three independent programs: A, B, and C. Each program can have its own set of start times, run times and watering days. Use these programs to satisfy the different watering needs of your landscape. For example, you may use program A to water the lawn in the morning every other day for ten minutes only in each lawn zone. Use program B for example, to water shrubs on Tuesdays and Saturdays for thirty minutes only in each shrub zone.

Use program C for drip system watering for example, once a week for four hours and thirty minutes only in each drip zone. (When setting different programs, be careful to avoid setting a start time for one program that will begin while another program is still watering unless using SW2 (see page 9). Erratic operation of the controller may result from overlapping programs.)



Setting the Current Calendar Time, Month, Day, & Year

Start programming your controller by setting the CALENDAR TIME (current time A.M. or P.M., MONTH [01 = Jan., 02 = Feb., and so on], DAY [day of the month], and YEAR [98=1998, 00=2000, and so on]).

- Turn the rotary dial counterclockwise (left) to the TIME position. The display will read '12:00 A.M.' (for initial setting only). Set the current time by pushing the σ or τ button until the correct A.M. or P.M. time is shown in the LCD display.
- Turn the dial to MONTH and set the current month. For example, '01' is January, '02' is February, and '12' is December.
- Turn the dial to DAY and set the current day of the month, one (1) through thirty-one (31).
- Turn the dial to YEAR and set the current year, starting at '98' for 1998. '00' is the year 2000 and so on.

The calendar is accurate for the life of the controller (including leap years and the turn of the century). With the internal lithium battery, all programs and current time will be retained for up to seven (7) years or longer even with occasional power interruptions. When the calendar is set, the current day of the week will have a bracket around it. [W] for example.

Factory Set/Default Program

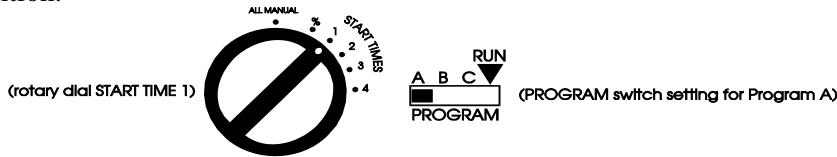
Your "Water Champ" Controller is shipped from the factory with a permanent program for easy programming and as a backup default program. Every zone has ten (10) minutes run time and is assigned to Program A, scheduled to water every day at 5:00 A.M. You can program what you want over this factory set program, but in the event that the AC power is off and the backup lithium battery (7 to 9 year life) is no longer functioning

Setting a Watering Schedule

Your "Water Champ" controller has programs A, B, and C, which allows you to set three independent programs. Each program can have its' own set of start times, run times, and watering days. The dial selects the different program information by setting the PROGRAM switch to the desired program to be set or altered. Use these programs to satisfy the different watering needs of your landscape. Determine what you would like to do with Program A. If it is to water your lawns for example, decide the number of start times needed (generally one or two), and the duration of watering (generally fifteen minutes or less per zone unless rotors or impacts are used). The total length of watering time will be equal to the sum of the watering times for all the operating zones. Watering should be done very early in the morning to assure adequate water pressure, less wind dispersal, diminished chance of leaf burn, and reduced evaporation. Watering at night can promote fungus growth.

Setting Start Times

- Turn the rotary dial to START TIMES position 1. Move the PROGRAM switch left to the 'A' position.



- To set START TIME 1 (factory set/default is set at 5:00 AM, suggested setting: between 4:00 A.M. and 6:00 A.M.) push the σ UP (to advance) or τ DOWN (to recede) buttons to change the displayed starting time.
- Use the same procedure to set a second start time if desired using START TIME 2. Generally second waterings are set for the afternoon so be sure to check that the correct A.M. or P.M. indicator is shown in the LCD display.
- Start Times 3 and 4 might be used for newly seeded lawns or new sod. They are also set using the same procedure.
- Should you no longer need a start time (i.e. newly seeded lawn matures), push the OFF button to cancel. They are retained in the memory. If you wish to use them again, push the ON button.

Setting Watering Days

In WATER DAYS you may use either SET DAYS (7 days of the week) or SKIP DAYS (skip from 0 to 30 days) in any combination of Programs A, B, or C. Programs A and B can be on SET DAYS and Program C can be on SKIP DAYS. However, ODD/EVEN can only be set when using SKIP DAYS, **not** when using SET DAYS.

To water on specific days of the week, rotate the dial to the SET DAYS position in the WATER DAYS segment of the dial. S M T W T F S (Sunday through Saturday) are the seven days of the week shown in the display. Use the σ button to advance through the days of the week (the τ button will reverse through the week). The selected day will blink. If you want that particular day to water, push the ON button and a box (bracket) will appear around that day. To turn off a day press the OFF button. For example, to water on Mondays, Wednesdays, and Fridays, the display should show: **S M T W T F S**

If you want a consistent number of days between watering, rotate the dial to SKIP DAYS (do not use the SET DAYS position). With this setting you can skip watering from one (1) to thirty (30) days or set at 0 to water everyday. If you set SKIP 1 DAY(S) you will water every other day, if you set SKIP 2 DAY(S) you will water every third day, and so on, up to skipping 30 days (orchards or vineyards).

If you have restrictions from your water company and they require watering on ODD or EVEN calendar days, set your SKIP DAYS first, then turn the dial to ODD/EVEN and push the σ or τ arrow to toggle between ODD and EVEN settings in the LCD display.

Setting Zone Run Times

Next move the rotary dial to the ZONE RUN TIME segment of the controller so that it points to the first zone (also known as a station) that operates a valve in the area you want watered in Program A (or whichever program you are setting). This would usually be zone 1. Determine how long you want the sprinklers to water depending on the type of sprinklers (impacts: 30 - 45 minutes, pop-ups: 10 - 15 minutes) and the type of vegetation (see EFFICIENT RUN TIMES in the next section for more detail). Each zone can run from 1 to 60 minutes in 1-minute increments, and from 1 hour to 12 hours in 10-minute increments (generally for drip systems). Use the σ (to increase) or τ (to decrease) buttons to set the run time for each zone you wish to use

in the program you are setting. **(NOTE: The factory set/default program has each zone set at 10 minutes in Program A. Make sure the run times for the zones you are not using are set to OFF by pressing the OFF button while the rotary dial is pointing to that zone).**

Each zone can ONLY be assigned to ONE program. Zone 1 for example, cannot be used in Program A and again in Program B or C. The 10 minute default zone run times can be changed to anything from the 10 minute default setting down to 1 minute, or up to 12 hours by using the σ or τ buttons, and assigned to any program A, B, or C by moving the PROGRAM switch to the appropriate program and moving the σ or τ buttons.

Efficient Run Times

An efficient run time depends upon several factors: the type of plants being watered, temperature, humidity, soil type, slope of landscape, and type of sprinklers. For most lawns, the amount of water needed per week ranges from about 2" in hot climates down to 1/2" in cooler climates. Trees and shrubs have deeper root structures and require long slow watering, which can best be applied by shrub sprays, a bubbler, or a drip system. High humidity reduces water demands. If your soil is sandy, or you are watering on a slope, water frequently with short run times. Clay soil holds water better, so water less often and use short run times. For more precise guidelines, check with a local nursery or gardening service regarding your specific needs.

To learn the rate at which your sprinklers apply water, do a "Can Test". Place several 1 lb. coffee cans or other similar size containers evenly across your lawn. Run your sprinklers until the average water depth in the containers reaches 1". Record the run time. Divide 60 minutes by the time you measured to determine the average inches per hour your sprinklers distribute (e.g. with 30 min. fill time, $60 \text{ min.} \div 30 \text{ min.} = 2 \text{ inches per hour}$). Use this information to plan your watering schedule.

Plants need more water during hot weather months and less during cold weather months. Use your controller's WATER BUDGETING (%) feature to make easy, one-step seasonal adjustments to your run times.

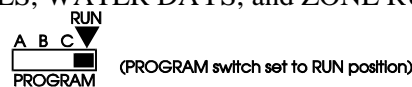
Setting Additional Programs

When you have finished setting the zone run times for Program A, move the program selector switch to Program B if you desire a B program for shrubs or a drip system. Repeat instructions for Program A to set Program B beginning with START TIMES, then WATER DAYS, then ZONE RUN TIMES. Remember to not overlap START TIMES by adding up the combined run times for all zones in Program A and add that amount to Program A's START TIME to determine the earliest START TIME for Program B. For example, if START TIME 1 for Program A is set to 4:00 A.M. and Zone 1 runs for 10 minutes, Zone 2 for 25 minutes, Zone 3 for 30 minutes, and Zone 4 for 10 minutes (all in Program A) then the combined total run time is 75 minutes, therefore Program B could not start until 75 minutes or more past 4:00 A.M., so the first available START TIME for Program B would be 5:15 A.M.

Continuing programming your WATER CHAMP controller until you have covered all Programs A, B, and/or C START TIMES, WATER DAYS, and ZONE RUN TIMES you wish.

Important Programming Notes

The Program Switch must be in the RUN position for automatic or manual watering, and in the A, B, or C position to set program START TIMES, WATER DAYS, and ZONE RUN TIMES.



The start of watering is delayed on either automatic or manual runs on every zone/valve and the Master Valve/Pump Start by ten (10) seconds.

Note: the red LED in the lower left corner of the faceplate label lights at the start of AUTO, MANUAL, or TEST functions and stays on while AC current is being supplied to any terminal (a program is running).

The advantage of this 10-second delay is the demand for electrical current does not come on all at the same time if 2 zones or the pump start come on simultaneously. It also allows time to do a visual check of your zones to see if they are watering properly.

When the controller is watering, the display will show the active zone number and the corresponding program the zone has been programmed into and count down the remaining run time when running in the AUTO position. To stop watering at any time, push the OFF button.

OPERATING YOUR CONTROLLER

Automatic Operation

Whenever your controller is programmed with START TIMES, WATER DAYS, and ZONE RUN TIMES it is ready to automatically water (so long as the rotary dial is not pointing to the OFF/RAIN position).

Manual Operation (Turning on your sprinklers right now)

There are three ways to turn on your sprinklers manually:

1. **PRESET ALL PROGRAM WATERING:** with the rotary dial at the ALL MANUAL position, push the RUN button. Zones 1 to 4 (or 1 to 6 on six station models) will water the time you set in ZONE RUN TIME in Program A, then B, then C. (Remember each zone can only be assigned to one of the three programs A, B, or C).
2. **PRESET INDIVIDUAL PROGRAM WATERING:** With the rotary dial in the ALL MANUAL position, push the desired Program A, B, or C button to water just the zones in that program the preset run times you programmed - remember the 10 second delay before the sprinklers start watering.
3. **MANUAL WATERING A SINGLE ZONE:** Move the rotary switch to the zone you wish to water. If you wish to water the zone for the same amount of time you have already programmed, push the RUN button then move the dial back to the ALL MANUAL position. If you wish to run the zone more or less than the programmed run time, slide the program switch to the program that the zone is in and use the σ (to increase) or τ (to decrease) buttons to enter the time you wish to run then move the program switch back to the RUN position and press the RUN button then move the dial back to the ALL MANUAL position. After watering, reprogram the zone to the Program run time you wish.

FEATURES

OFF/RAIN

Turn the rotary dial to the OFF/RAIN position if you do not want to water due to rain or for any other reason. The time and all programs will be retained, but electricity will not go to the valves to turn them on. Be sure to turn the rotary dial out of the OFF/RAIN position and back to the ALL MANUAL position to water again.

% Watering/Water Budgeting

At about the one (1) o'clock position on the rotary dial between ALL MANUAL and START TIME 1 positions is the % sign. In this position the LCD reads 100% that means the zones water the exact time you entered into the program. With this function, you can alter your zone run times to match the moisture demand based on the current weather. If it is hot and dry, you can increase the run time - cold and damp, you can decrease the programmed run time.

The σ or τ arrows control the percentage adjustment up to 200% or down to 10% in 10% increments (steps). For any percentage other than 100%, the % sign will remain in the LCD readout indicating a percentage run time adjustment. As an example, if you had ten (10) minutes on zone 1 and set % watering at 50 %, zone 1 would water for five (5) minutes. All zones in all programs are in an override with % watering. It is a beneficial tool to use for water conservation. If you return % back to 100%, the original zone run times are still programmed. This is the easiest way to change the length of time you water. With % watering, zone run

times can go as short as 10% of one (1) minute (equivalent to six seconds) for nursery application or newly seeded lawns.

Zone Test

By pushing both σ and τ arrows at the same time, a zone test starts with zone 1 to check if there is a bad zone, a short on the wires, or a faulty solenoid. The test has a ten (10) second delay then counts down ten (10) seconds in the LCD, then moves to zone 2 and so forth. If a short exists, a bad zone # will be indicated on the LCD. If multiple zones are shorted, the bad zones will be indicated in the LCD. Bad zones will be skipped in the watering cycle and reported until fixed.

Reset Button

If you wish to reset or erase all programs you entered, be sure the rotary dial is in the RUN/ALL MANUAL position, then push the RESET button (located just to the left of the PROGRAM selector switch) with a pen tip. Your controller will then contain only the factory-preset program. You can then reprogram the CALENDAR and any new schedules you wish.

INTERNAL FEATURES

The terminal strip appears as follows:

SW2 (Switch #2)

SW2 allows zones in Program C to run at the same time as zones in Programs A or B for drip systems when it is placed in the down position. In the up position the programs run in chronological (earliest clock time) order.

ADDITIONAL FEATURES

No backup battery needs to be purchased. An internal lithium battery is supplied. The expected life of the battery is up to seven (7) or more years. The battery backs up the customer entered programs (memory) and clock time in the event of a temporary AC power failure.

No fuse is required with this controller. It is state-of-the-art technology with automatic circuit surge protection, automatic restart, and override of a shorted zone. These features can give you greater confidence that you can go away on vacation and your yard will get watered.

Your “Water Champ” controller will “stack” program start times and runs logically. Start times are chronological (earliest clock time) and run until a program finishes in the event you programmed longer run times than can finish before the next start time. You could also extend run times into another program with % watering/Water Budgeting. Your controller will stack or hold this second program and start it when the first start time program finishes.

Programs could run past midnight (i.e. long drip system programs). The controller will cancel a previous days program when the first start time comes up on the next day. The exception to this is if WATER DAYS are set on SKIP DAYS and the ODD/EVEN feature is activated. In this case, any remaining program run time would be canceled at midnight so as not to be in violation of any water restrictions.

SOLUTIONS TO COMMON PROBLEMS

PROBLEM	POSSIBLE CAUSES & SOLUTIONS
One valve does not turn on, all others work correctly.	Wiring to valve broken. Solenoid faulty - test valve with good one. Program set for OFF watering time for that valve. Flow control on valve adjusted to off. Solenoid port clogged in valve, clean with paper clip.
All valves do not turn on	Controller is running on battery only. Check that the outlet and transformer are working. Controller Program switch is not set on RUN. Program set for no watering time. Wiring to valves broken - check common wire. Excess water pressure.
One valve won't shut off	Manually close flow adjustment screw. Valve needs cleaning or repair.
Display shows: AC	AC Power to controller is off. Check that AC power is on, then check that the transformer is working (use a multimeter).
Display flashing a zone #	The wire to the flashing station and common wire are shorted. Check wiring connections at the valve, at the controller and in between. Another cause is a shorted solenoid - A good solenoid has 15-35 ohms resistance.
Start times not correct	There could be an overlap of start times between programs A, B, & C. Set Start Time to a different time in one program.

PROGRAM INFORMATION

STATION RUN TIMES

STATION No.	LOCATION	STATION RUN TIME		
		PGM A	PGM B	PGM C
1				
2				
3				
4				
5				
6				

START TIMES

	START TIME 1	START TIME 2	START TIME 3	START TIME 4
PGM A				
PGM B				
PGM C				

WATERING DAYS

	S	M	T	W	T	F	S	SKIP DAYS
PGM A								
PGM B								
PGM C								

Limited 3-year warranty

Champion Irrigation Products hereinafter called "Champion" warrants that parts manufactured by it shall be free from defects in material and workmanship, under normal use, and service for a period of 3 years from date of purchase. This three-year period shall be known as the "warranty period." Champion will furnish or repair parts found to be defective during the warranty period, at no charge, under our defective return procedure.

CHAMPION'S LIABILITY IS SOLEY LIMITED TO ORIGONAL COST OF THE PARTS AND NO PAYMENT WILL BE MADE FOR CONSEQUENTIAL OR INCIDENTAL COSTS OR DAMAGES CAUSED BY PRODUCT FAILURE.

Buyer's remedies are limited to return of the products, and repayment of the price or to repair and replacement of non-conforming products or parts, in Champion's discretion. Products must be returned to Champion for inspection.

Champion does not assume liability for the defective products not manufactured or supplied by us, even though such products may be used in conjunction with our own. Champion assumes no liability for damages sustained in the adoption or use of our engineering data. Champion reserves the right to redesign, alter or modify its products without incurring liability for obsolete product or part inventory. No agent or representative of Champion has the authority to waive or alter this printed warranty or to make any representation or warranty not contained herein. **THERE ARE NO WARRANTIES, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THERE ARE NO WARRANTIES EXPRESS OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR A PERTICULAR PURPOSE, EXCEPT AS EXPRESSLY DESCRIBED ON THE FACE HEREOF.**