

ULTRA CHARGE[®]

Interactive SCR Industrial Battery Charger



The quality leader for battery charging flexibility and temperature compensation

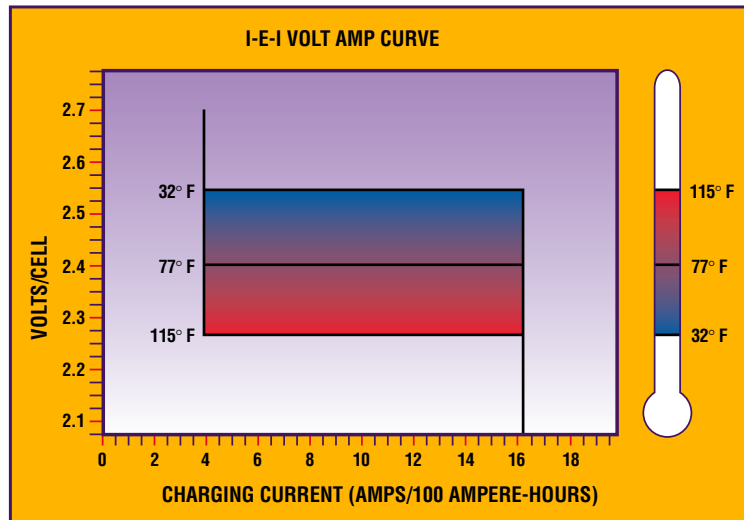
- ⚡ Charges 100% discharged batteries in 8 hours or less*
- ⚡ Adapts to all battery types with 5 user-selectable charge curve options*
- ⚡ **New** Timer Start Mode lets you choose the time and rate of charge*
- ⚡ **New** programming feature assigns battery capacity and type to voltage*
- ⚡ Compensates for battery operating temperatures automatically; from 32° F to 115° F with optional BID module*
- ⚡ Data-Mate™ and CDAC® compatible*
- ⚡ UL listed, CSA certified*

AMETEK[®]
PRESTOLITE POWER



Flexible, temperature-compensat

Gassing Voltage vs Electrolyte Temperature



Ultra Charge automatically compensates for battery electrolyte temperatures that are outside of the charging norm.

⚡ The world's most flexible battery charger

The Ultra Charge is globally recognized as an industry leader when it comes to battery charging flexibility and service. Plus, the fact that it offers temperature compensation makes Ultra Charge a popular choice for many environments. With it, you can charge lead acid batteries of any voltage, any ampere-hour size, any cell construction type, and at almost any temperature.

One of the most significant factors in prolonging battery life is giving proper attention to the battery's electrolyte temperature at charging. Because conventional chargers are designed to charge batteries that are 77° F, any deviation of more than 10° F creates a special condition which can impact battery operation and life. For example, when the electrolyte temperature of a battery has been lowered, say due to a cold-storage application, the battery's gassing point will be higher than normal. As a result, the charger must compensate for this change. Traditionally, this change was managed by oversizing the charger or extending the charge time with a change in the 80% point of the control. Although limited success can be achieved in applications involving a constant temperature, these options may not be practical for all applications.

Ultra Charge's temperature compensation assures your battery of a full charge regardless of operating temperature. Because it is normal for the temperature of a battery to rise as much as 25° F during the charging cycle, Ultra Charge compensates for battery temperature changes throughout the charge cycle. And, especially for applications where the battery temperature rises during weekly operations and cools down over the weekend, Ultra Charge's flexibility eliminates need to wait for the battery to be near the "right temperature for charging" or to adjust the control.

⚡ Charger design

The Ultra Charge's design is based on a silicon controlled rectifier (SCR) power supply and features state-of-the-art electronics. Its microprocessor-based control, the UC2000, is the key to what makes the Ultra Charge a truly interactive industrial battery charger.

⚡ Charge operation

With the Ultra-Charge, the battery determines its own charge cycle rate in accordance with its state of discharge. The Ultra Charge provides a constant current-constant voltage-constant current (I-E-I) charge curve to eliminate the possibility of overcharging, even with line voltage variations of $\pm 10\%$, and it completes the charge at the proper current regardless of battery age or specific gravity.

⚡ Ideal for many environments

Ultra Charge is ideal for a wide variety of environments because it is capable of using various inputs, such as battery temperature, type, and size, to automatically adjust the output charge characteristics within the limits of its own power circuit, providing an optimum charge.

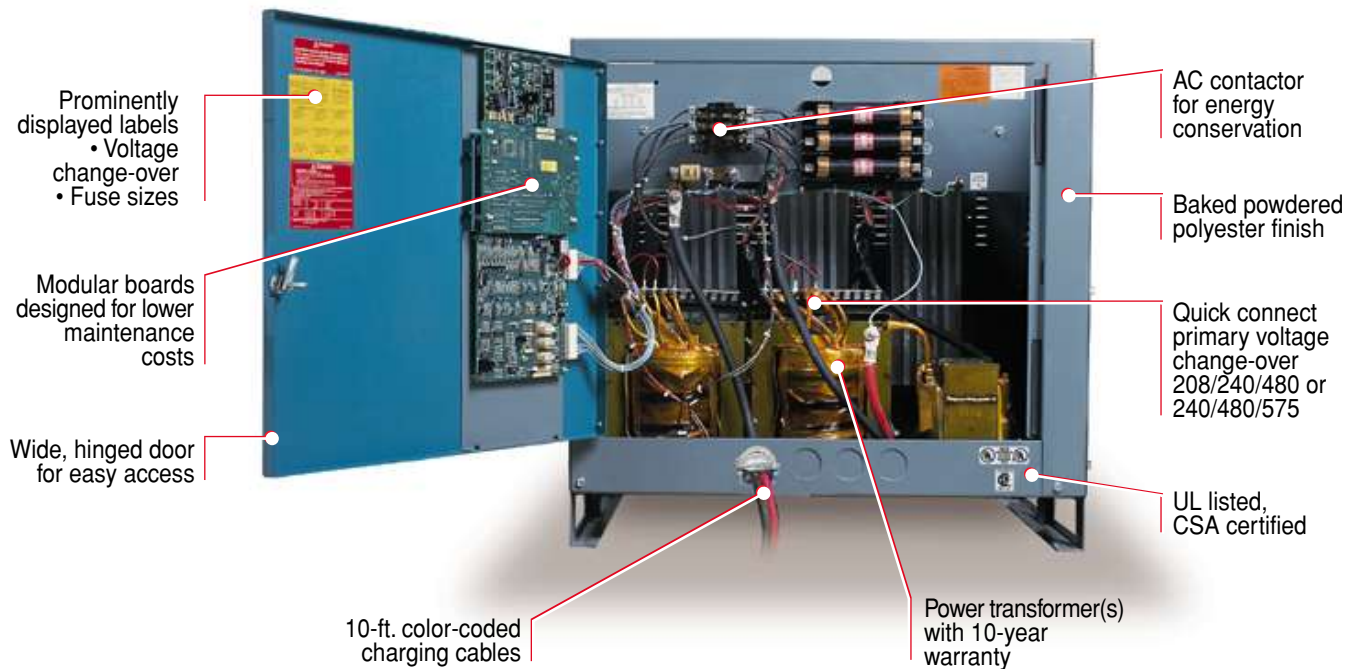
Great for harsh environments – like those found in textile and carpet mills, trucking, foundry and cold storage warehousing – Ultra Charge can be used to meet special battery charging practices brought forth by workplace regulations as mandated by the Air Quality Act, OSHA and EPA in requiring electric trucks for applications historically served by internal combustion trucks.

⚡ Optional battery identification module



With a Battery Identification (BID) module connected to the battery, Ultra Charge can automatically adjust its output to match the electrolyte temperature of the battery, compensating for temperatures ranging from 32° F to 115° F. Once the battery is connected to the charger, Ultra Charge reads the BID program information which identifies the battery along with its ampere-hour rating, voltage, construction, and electrolyte temperature. Ultra Charge then regulates its output curve based on this information. During the charge cycle, Ultra Charge continuously monitors the battery's temperature, via the BID module, and adjusts its output throughout the charge cycle to match the charging battery's temperature. For more stable environments, the battery temperature can also be manually programmed into Ultra Charge.

ing Ultra Charge works successfully in any e



⚡ Assign ampere-hour capacity and battery type according to voltage

Now, through Ultra Charge's enhanced multi-voltage, multi-ampere-hour capability, you can program the charger to charge batteries automatically – (without BID) according to battery voltage. Particularly convenient for battery fleets in which batteries can be grouped by battery voltage and ampere-hour capacity (for example, all 24-volt batteries with ampere-hour capacities of 510 A-H; all 36-volt batteries with 750 A-H; etc.), Ultra Charge allows you to enter a specific charge rate for a particular voltage so when the battery is connected, the charger automatically begins charging once it recognizes the battery's voltage*.

This outstanding feature eliminates the need in many applications for a BID module to charge batteries automatically. In addition, if the same voltage batteries are of a certain type, such as sealed maintenance-free, this information, too, can be programmed so that batteries of various types can be recognized and automatically charged with the same charger.

* Only one ampere-hour charge rate can be specified per battery voltage.

⚡ Timer start mode

Timer Start Mode lets you override Ultra Charge's automatic start/stop feature by allowing you to manually select the desired charge time at the desired charge rate. Choose up to 23 hours and 59 minutes of extended charge time, ideal for equalizing batteries with mismatched cells or for recovering sulfated batteries.

⚡ Regulation

The Ultra Charge is designed to hold the finish voltage rate to within $\pm 1\%$ and the finish current rate to within $\pm 2\%$ with line voltage variations of $\pm 10\%$.

⚡ Rating

Rated to recharge 100% discharged batteries in its ampere-hour rating within 8 hours, even batteries with electrolyte temperatures as low as 32° F.

⚡ Easy to change AC input voltage

AC input voltage change-overs are completed in minutes with conveniently located taps and quick-connect jumpers. Standard voltage taps include 208/240/480-volt service. Also available in 240/480/575-volt service.

Note: All models operate on 50 or 60 Hz, without adjustment.

⚡ Warranty/10-3-1

For the original purchaser, repair costs are minimized through a ten-year warranty on power transformers and silicon controlled rectifiers, plus three years on electronic PC boards and one year on other components.

⚡ Convection cooled, quiet

With Ultra Charge, there are no fans to draw in dirty air and its low sound levels allow for quiet operation.

⚡ Functional cabinet design

Constructed from heavy-gauge sheet steel and coated with environmentally friendly, electrostatically applied polyester powder paint, Ultra Charge's cabinet is incredibly durable and features a large door that opens a full 180° to provide easy access to AC connections and to facilitate any required service.

⚡ UL, CSA and BCI

Most Ultra Charge models are UL listed, CSA certified and meet BCI requirements, adding further support to the "safety first" design.

⚡ Flexible cabinet mounting

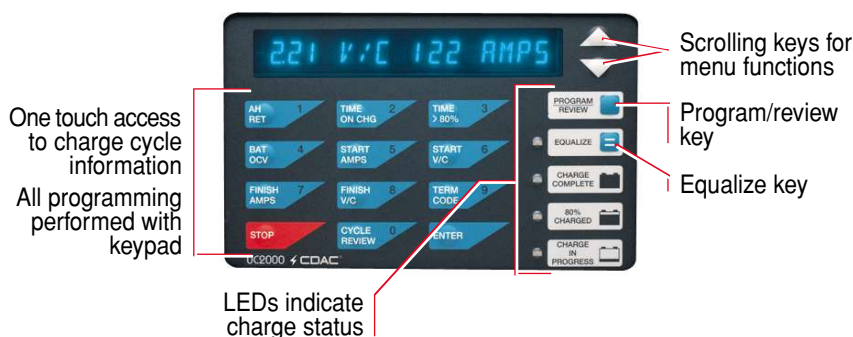
Ultra Charge comes in case sizes that can be wall, bench, or floor mounted and can be stacked up to three units high. It can also be stacked with Accu-Chargers and R-Series chargers.

⚡ Efficient, low-cost operation

Ultra Charge's energy-efficient SCR design converts the AC input power to usable DC output power at low cost. Plus, the Ultra Charge has, as standard equipment, an AC contactor that greatly reduces the amount of idle power consumption.

⚡ Unaffected by AC power failure

In the event of the loss of AC service, Ultra Charge will resume charging precisely where it was interrupted when service is restored.



Automatic equalization can be programmed by day of week or by number of charge cycles from 1 to 30. When any automatic equalize function is selected, the equalize button on the keypad is disabled to prevent unnecessary equalize charges. The ability to automatically equalize batteries provides an exact schedule of equalize charges for better battery maintenance and longer battery life.

Battery cool down – Battery cool down allows the battery to cool down completely before use, which allows for increased control of battery rotation, resulting in increased battery efficiency and longer life. Battery cool down can be programmed from the Ultra Charge keypad from 0-8 hours in one hour increments. After the recharge is complete the display will read "battery cool down" until the predetermined cool down period has ended at which time the charge complete LED is illuminated.

⚡ Input current balancing circuit

For three-phase Ultra Charge models, the input current balancing circuit constantly compares the current in all three phases and adjusts the SCR firing angle to compensate for any unbalance at $\pm 10\%$ of the rated input current. Unlike other SCR chargers, it requires no factory or field calibration, and is not affected by any component changes such as SCRs, transformers, and PC boards, thus ensuring trouble-free operation over the lifetime of the charger.

⚡ UC2000 control

The flexibility of the Ultra Charge is defined by the state-of-the-art micro-controller in the UC2000 charge control. Its operating functions are distributed between two boards to assist the troubleshooting and to lower maintenance costs. The UC2000 has three main components: control board, regulator board, and keypad/display and three major functions: review, archive, and programming.

Control board provides the basic operating features of the charger including auto start/stop, DV/DT charge termination, auto equalize, charge cycle review, real time clock and communications.

Regulator board determines the charger's DC output voltage and current through the firing or switching of the SCRs.

Keypad/display provides user-friendly interface with the charger through one-touch access to charging information. The 16-character alphanumeric display provides bright, easy-to-read messages in plain English. The control's durable membrane keypad is impervious to moisture and mechanical shock, and four highly visible LEDs laminated into the keypad convey charge status at a glance, even from a distance and over a wide viewing angle.

Review function conveys information on the most recent charge cycle and charger setup configuration. It permits up to 50 items of charge cycle information to be retrieved and displayed. One-button access is available at any time for the following nine items of charge information:

1. Ampere-hours returned
2. Total charge time
3. Time-80% to charge complete
4. Battery open-circuit voltage
5. Start amps
6. Start volts
7. Finish amps
8. Finish volts
9. Termination method

Archive function allows 19 items of information per charge cycle to be stored, retrieved and displayed. The operator may select a specific cycle or all stored cycles for review. The information from the 30 most recent charge cycles is stored in the archive records.

Programming function configures the charger for the user's specific application. All programming is performed with the keypad on the front of the charger, and its 16-character display indicates the selected function and verifies that the programming was accepted.

The UC2000 control features outstanding programming options which include:

Security – Dual levels of security protect settings from unauthorized changes. The first password prompt occurs as soon as the programming function is selected. Programming functions that affect the values of the charger's output curve are protected by a second password to ensure safe charging of your batteries.

Start modes – Six programmable options allow you to select the start mode that offers your operation the greatest safety and savings. Choose from automatic start, push to start, delayed start, time of day, time-of-day block out and elapsed time.

Automatic or manual equalize operation – An equalize charge of three hours beyond a normal DV/DT charge termination can be selected manually or be set to occur automatically.

DV/DT charge termination

The UC2000 uses a patented DV/DT charge termination technique, or rate of change of battery voltage with respect to time, to determine when to terminate a charge cycle. This proprietary technique, used in conjunction with the I-E-I curve of the Ultra Charge, ensures that the rate of change for battery voltage and current always provides an efficient and accurate termination of charge. DV/DT has proven to be the most effective and precise method of charge termination. No predetermined amount of time is built into the charge termination routine and the actual battery voltage determines when to terminate the charge. Batteries receive the precise charge required to bring them back to full capacity and are protected against over or undercharge. This reduces battery maintenance and battery life is extended.

If a voltage/time charge termination is preferred, the UC2000 can be set for this popular termination method via the keypad.



⚡ Output curve monitoring

The Ultra Charge's unique curve monitoring feature protects the battery from over or undercharging caused by charger component failure.

The control calculates a window for each of the four sections of the output charge curve. If, during the charge cycle, the output curve is measured to be outside any of the four windows, a charge curve error is generated and the charge cycle is terminated. If the output is temperature compensated, the windows will be adjusted accordingly.

⚡ Programmable operating modes

Four operating modes are available on the Ultra Charge: multi-cell, fixed-cell, BID and timer start mode.

Multi-Cell Mode allows the charger to automatically adjust its output to match the voltage of the battery. The battery's ampere-hour size is set by the user.

Fixed-Cell Mode a specific voltage and ampere-hour is set into the control and rejects batteries of other voltages.

BID Mode matches the output to the battery information programmed into the module. Use of the BID ensures the correct output for the battery that is connected.

Timer Start Mode permits you to manually override the charger's automatic start/stop feature and select the desired charge time at the desired charge rate.

In applications where daily charging is not required, one charger can service two batteries of varying cell-size, and/or ampere-hour rating.

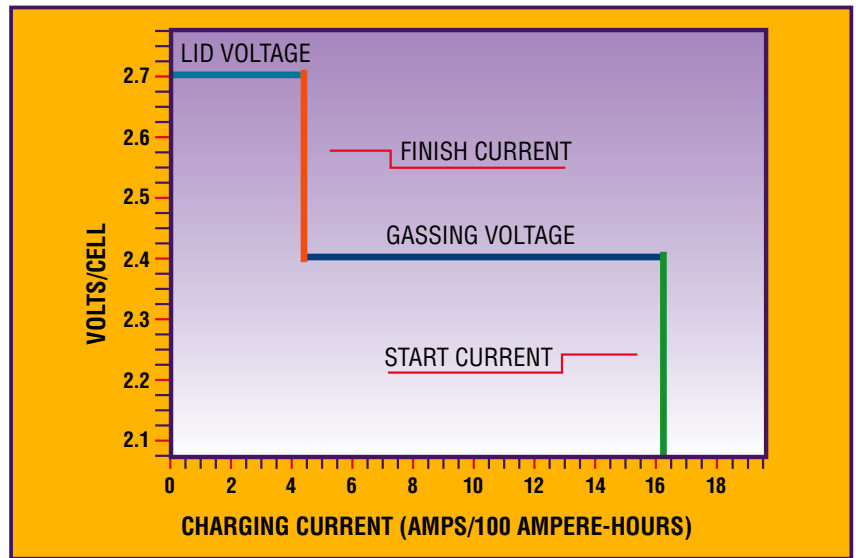
⚡ Adapts to all battery types

Battery charging requirements change with the technology of battery construction. The Ultra Charge is designed to adapt to those changes with user-selectable output curves.

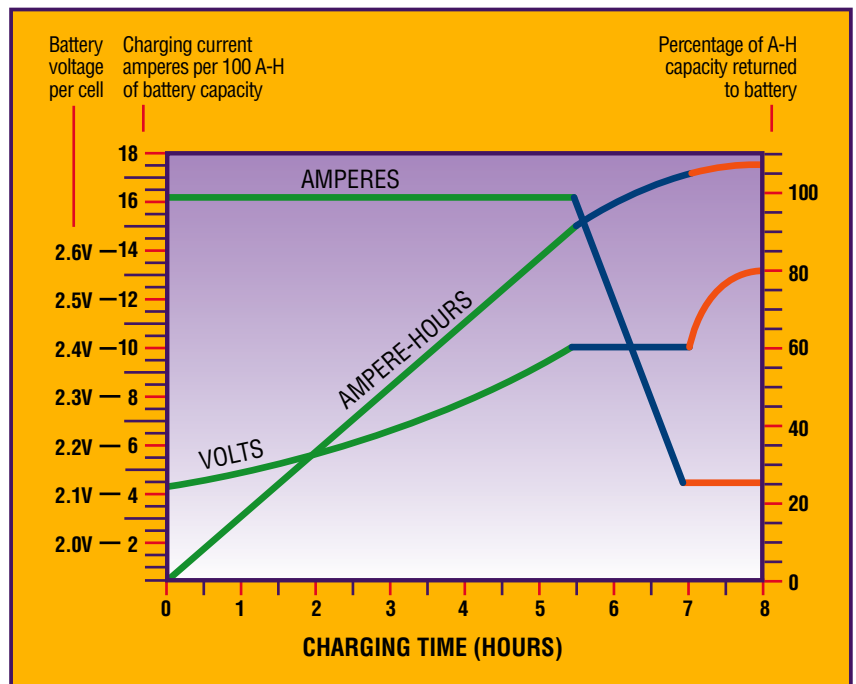
Ultra Charge has four preprogrammed output curves along with a fifth user-programmable custom curve. The default curve is for flooded lead-acid batteries, and the other three curves are for sealed lead-acid batteries. The custom curve allows the user to establish the curve for new technologies, unusual application requirements, or customer preference.

The graphs below show recharge data for a complete I-E-I charge cycle. Notice that during the constant start current (green) portion of the curve, the ampere-hours returned and the battery voltage increase as the charge cycle progresses. When the constant gassing voltage (blue) portion is reached, the charger current decreases until the constant finish current (red) is reached. The correct finish current is then maintained until the charger is terminated by the DV/DT function of the control.

Typical I-E-I output characteristics



Typical I-E-I charging characteristics



⚡ Energy saving features

Charging batteries during off-peak hours using DELAYED START or TIME-OF-DAY START features of the UC2000 control can yield up to 50% in energy savings. The UC2000 also offers BLOCK OUT TIME to lower utility bills and reduce peak demand by blocking out a period of charging time on one or more chargers.

⚡ Quality built for years of trouble free service

The Ultra Charge is engineered to meet the everyday challenges associated with charging batteries. Unmatched in construction, reliability and value, the Ultra Charge is subject to intensive quality control and test procedures to ensure many years of trouble-free service.

Advanced Technologies Simplify Fleet Management

CDAC[®]
CHARGER DATA ACQUISITION AND CONTROL

DATA-MATE[™]

Combine the Ultra Charge, with either Data-Mate or CDAC, for unparalleled fleet management. Each system gives you the ability to monitor fleet operations, maximize equipment utilization, and extend battery life. Ask your dealer how the Ultra Charge and Data-Mate or CDAC can work for you!

Ultra Charge models

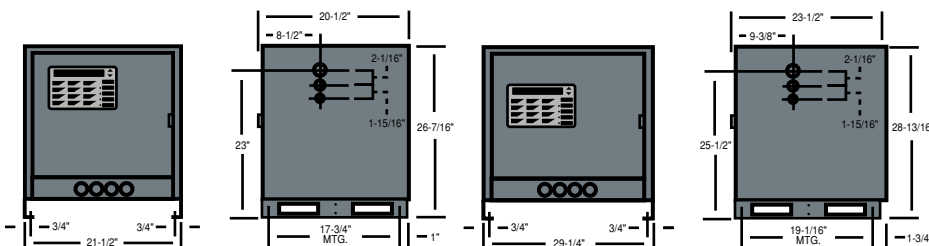
Application		Output	Model Number		AC Input Amperes		Weight, lbs.
Maximum A-H size in 8 hours	Cell size	DC output amperes	1-phase S case	3-phase T case	1-phase 50/60 Hz 208/240/480 VAC	3-phase 50/60 Hz 208/240/480, 575 VAC	Approximate shipping weight
300	6, 9, 12	49	300S1-12		13/11/6		185
500	6, 9, 12	82	500S1-12		21/19/9		200
750	6, 9, 12	122	750S1-12		33/29/14		260
500	6, 9, 12	82		500T3-12		11/10/5, 4	255
750	6, 9, 12	122		750T3-12		15/13/7, 6	295
1050	6, 9, 12	171		1050T3-12		21/18/9, 8	320
600	6, 9, 12, 18	98	600S1-18		39/34/17		275
750	6, 9, 12, 18	122		750T3-18		23/20/10, 8	350
1050	6, 9, 12, 18	171		1050T3-18		32/28/13, 12	410
1200	6, 9, 12, 18	196		1200T3-18		37/32/16, 13	455
1400	6, 9, 12, 18	228		1400T3-18		44/38/19, 16	555
500	6, 9, 12, 18, 24	82	500S1-24		41/36/18		295
650	6, 9, 12, 18, 24	106		650T3-24		25/22/11, 9	350
750	6, 9, 12, 18, 24	122		750T3-24		30/26/13, 11	390
1050	6, 9, 12, 18, 24	171		1050T3-24		43/37/18, 15	455
1200	6, 9, 12, 18, 24	196		1200T3-24		48/42/21, 18	520
550	12, 18, 24, 36, 40*	90		550T3-40		37/32/16, 14	405
850	12, 18, 24, 36, 40*	139		850T3-40		NA/NA/26, 21	580

*Control does not auto select between 36 and 40 cells

Dimensions

"S" case

"T" case



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