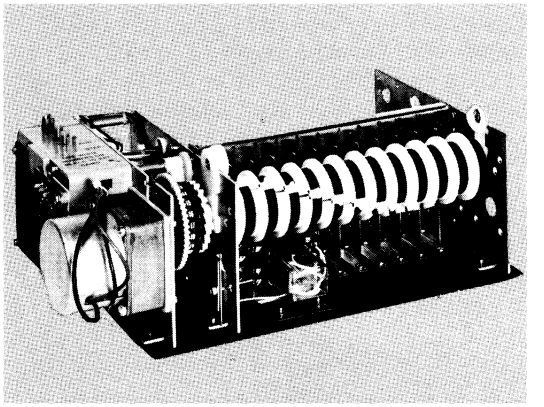
SERIES

# atc 1800 STEPSWITCH

## MOTOR•DRIVEN STEP PROGRAMMER

**ADVANCING A STEP AT A TIME IN RESPONSE TO EXTERNAL INPUT PULSES, THE ATC 1800 CLOSES AND OPENS UP TO 20 LOAD SWITCHES AT EACH STEP, IN A PREDETERMINED BUT FULLY ADJUSTABLE PATTERN OF 2 TO 20 INTERRELATED STEPS. WITH ITS TWO OPTIONAL TAP SWITCHES, THE 1800 CAN RESPOND TO A SEPARATE EXTERNAL PULSE AT EACH STEP OF THE PROGRAM, THUS PROVIDING INTERLOCKED SEQUENCE CONTROL OF COMPLEX OPERATIONS WITHOUT THE USE OF RELAYS.**



## PRODUCT HIGHLIGHTS

### SLIDING-SEGMENT CAMS

The unique ATC cam consists of 20 sliding segments. To actuate a load switch at any step in the program, merely slide the appropriate segment to the right; or slide it to the left, if the switch is *not* to be actuated. No tools or parts are required; the segments are held securely in position but are readily changed to the opposite position at any time.

### LONG LIFE

For optimum life and reliability, the ATC 1800 employs a pulse motor drive rather than the commonly used solenoid; the high-torque AC pulse motor is rated for continuous duty. Use of heavy-duty precision-type load switches and optional tap switches avoids the problems that are frequently encountered with open blade switches.

### ONE OR TWO OPTIONAL TAP SWITCHES

These factory-installed, permanently-lubricated, twenty-position rotary switches greatly expand the usefulness of the 1800 Step Programmer (see section on Applications.) Rated at 5 amps, they are protected against decay due to arcing by a plug-in interruptor relay.

### PROGRAM STORAGE

The entire cam shaft assembly can be easily removed, when desired, without tools and without disturbing the program . . . and replaced with a separate assembly (optional.) The cam shaft assembly thus provides storable memory of a complete program and is easily replaced when needed.

### APPROVALS

U.L. Recognized
1800C: CSA

## OPERATION

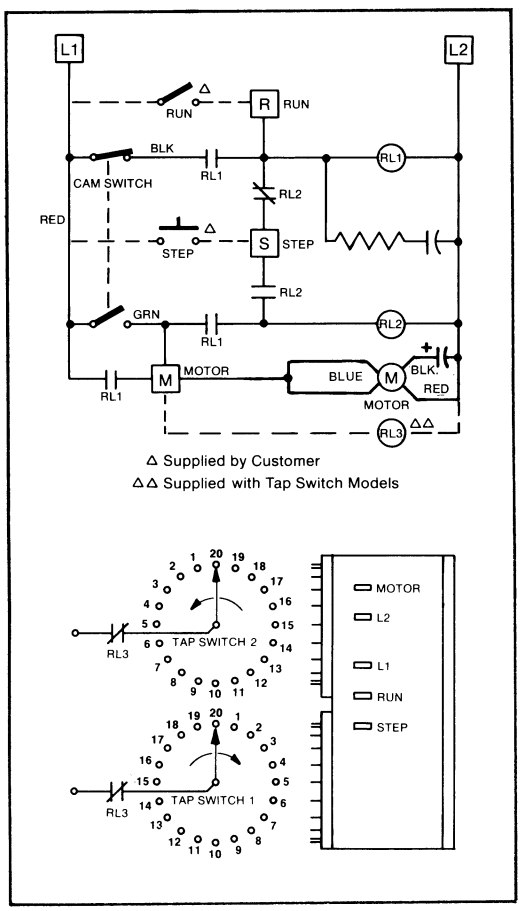
The ATC 1800 advances a step every time it receives a signal from an external device such as a limit switch, temperature switch, timer, pushbutton, etc. Without the optional tap switch, it usually receives the step input signal from the same device; with the tap switch, as many as 20 such devices may be connected to different steps in the 20-step program so that the 1800 will advance only when it receives a signal from the desired device.

Power is applied continuously to the L1 and L2 terminals but the 1800 does not step until power is applied to the *Step* terminal for at least 0.030 second. The pulse motor advances a single step on the *make* of the step signal, no matter how long the signal remains **on.**

At each step, each SPDT load switch is actuated whenever the cam segment is in the right-hand position, and not actuated when it is on the left.

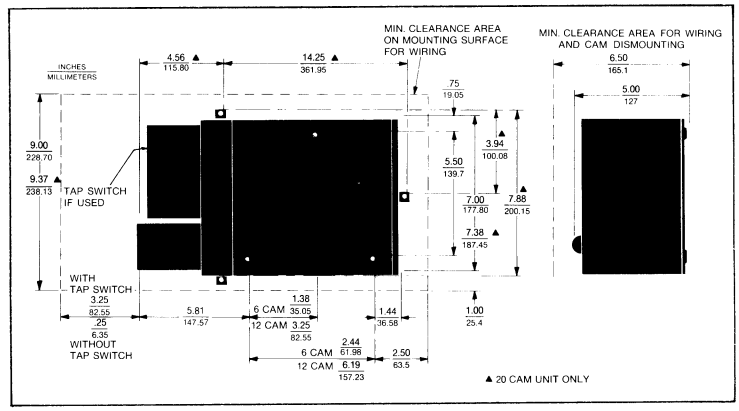
Homing — running without a pause through unused positions in the 20-step program — is accomplished by applying power to the *Run* terminal. This can be done through a separate homing switch, through one of the load switches selected for this purpose, or through one of the tap switches.

When the 1800 is ordered with an optional tap switch, a chassis-mounted relay is provided. Its coil is factory-wired between the *Motor* and L2 terminals, and its N.C. contact is wired in series with the wiper contact of the tap switch, to protect it against arcing. All terminals are factory-wired to the 1800's control module and motor.



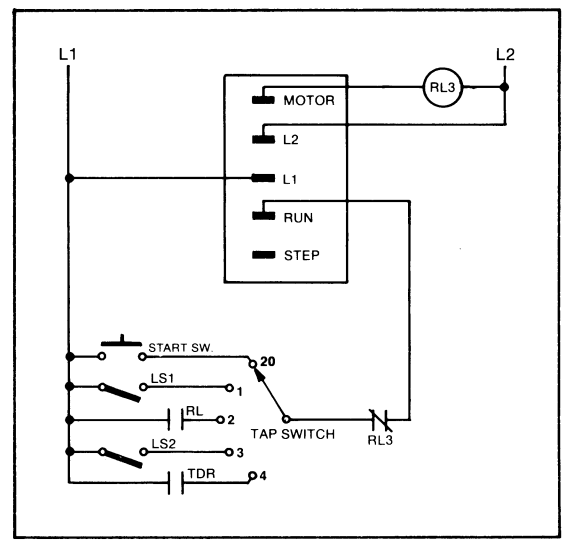

**CAUTION:** When command output signal is applied to either the Step or Run terminal, an output appears on the other terminal. In the case of a signal on the Step terminal, the output signal is momentary. A command input signal on the run terminal, the output signal on the step terminal appears until command signal is removed.

## DIMENSIONS




## TYPICAL APPLICATIONS

The optional tap switches greatly expand the usefulness of the ATC 1800 Programmer. Each is a 20-position rotary switch whose wiper is synchronized with the stepping motor. The tap switches increase the flexibility of the 1800 in many different applications, some of which are described here.




**Different input pulses for different steps**

The tap switch can be used to connect the appropriate device — pushbutton, limit switch, relay, TDR, etc. — to the stepping motor. At each step, the connected device provides the input pulse that steps the programmer to the next step. If the device is closed when the 1800 arrives at that step, the programmer drives through the step without pausing, until it reaches a step where there is an open input switch.

When the 1800 is set up to provide more than one program per revolution, each input device must be connected to all the tap switch positions that represent the appropriate step in the program.

## SPECIFICATIONS

**NUMBER OF STEPS**
2 to 20.

**STEPPING SPEED**
For 60 Hz operation — 180 ms
For 50 Hz operation — 215 ms

**CAMS**
6, 12 or 20 cams as specified; each 1-3/4" dia; molded, high-impact plastic.
Sliding-segment type, programmable without parts or tools.
Camshaft assembly removable without tools and without changing programs.

**LOAD SWITCHES**
NUMBER: One for each cam (6, 12 or 20.)
CONTACT RATING: 10 A at 115V AC (non-inductive.)
CONTACT ACTION: SPDT (form C), precision type.
LIFE EXPECTANCY: 200,000 operations at 10 A; 1,500,000 at 5 A (average).

**PULSE DRIVE**
AC motor, rated for continuous duty.
Steps on *make;* min. pulse required: 0.030 sec; no limit on max. pulse duration.

**TERMINALS**
LOAD SWITCHES: accept .250" push-on connectors.
TAP SWITCH: accept .110" push-on connectors.
CONTROL: accept one .250", or two .110" push-on connectors.

**TAP SWITCHES(Optional)**
One or two, as specified.
Rated 5 A at 115V AC (non-inductive) as supplied with interruptor relay.
Mechanically synchronized to step position.
Min. open circuit (between steps); 100 ms.

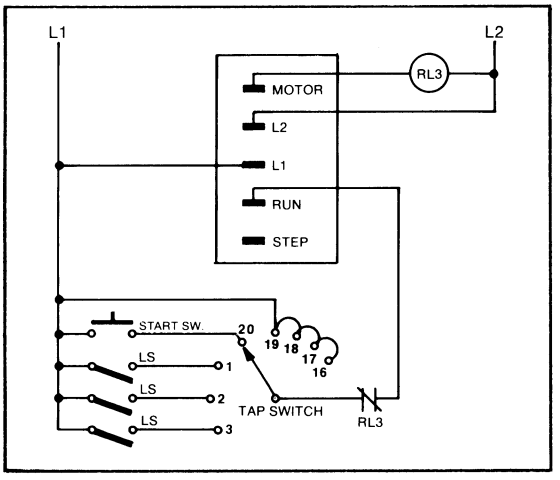
**POWER REQUIREMENTS**
120V, 50/60 Hz.
15 watts.

**LIFE**
20,000,000 steps

**TEMPERATURE RATING**
0° to 125°F.

**WEIGHT**
NET:
**1806** — 5 lbs., 8 oz.
**1812** — 6 lbs., 12 oz.
**1820** — 10 lbs., 8 oz.
SHIPPING:
**1806** — 6 lbs., 2 oz.
**1812** — 7 lbs., 6 oz.
**1820** — 11 lbs., 2 oz.

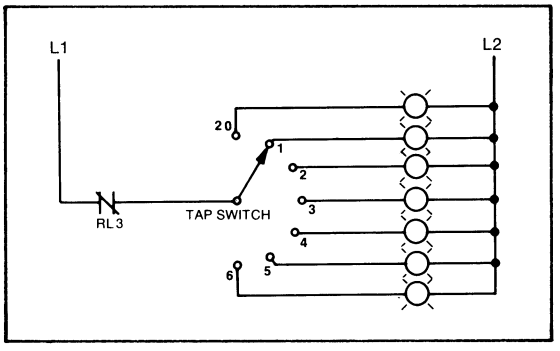
**Before starting your design, read the safety statement in the front of the ATC catalog.**




**Homing through unused steps**

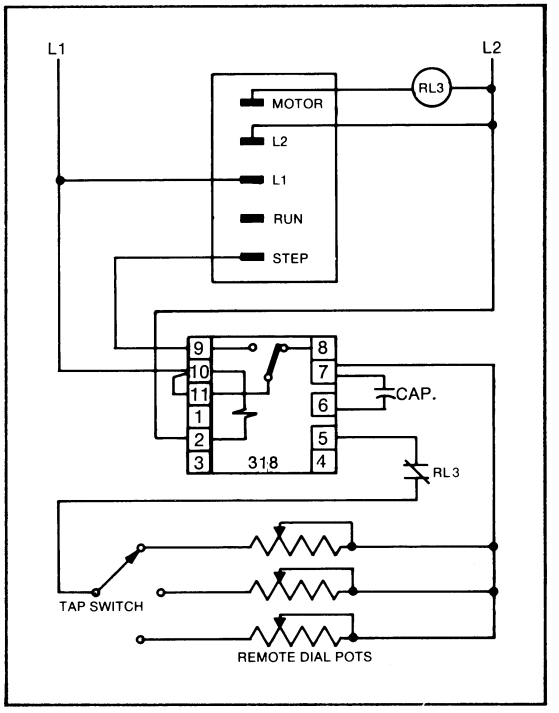
The program illustrated here has 16 steps. In order to make the 1800 "home" through the unused steps, the tap switch terminals for these steps are jumpered and connected between the $L_1$ and *Run* terminals of the 1800. When the programmer arrives at step 16, it will drive without pause until it reaches step 20, and then stops.

An unused load switch can be used to accomplish the same purpose, by programming it to the *closed* position in steps 16 through 19. The load switch is wired the same way as in the drawing between the $L_1$ and *Run* terminals of the programmer.




**Remote indication of step number**

Remote pilot lights can be used to indicate which program step is active, as the 1800 steps through the program. Each light is wired between the appropriate position on the tap switch and the $L_2$ terminal on the 1800.




**Different timed steps with a single timer**

For each timed step, the tap switch is used to connect one of the remote dial assemblies to the timing network of a single ATC series 318 timer. The dial setting determines the length of time the programmer "holds" in that step. If the time need not be adjustable, a fixed resistor can be used instead of a dial assembly.

In addition to the timed steps, if other steps must be controlled by a limit switch closure, use a second tap switch. Or, pulse "step" terminal from remote switches.

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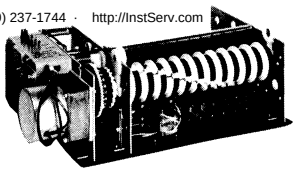

# MOTOR•DRIVEN STEP PROGRAMMER

**ORDERING CODE** **18 06 C 01 Q 20 X X**

**BASIC TYPE** — 18

**NUMBER OF SWITCHES AND CAMS** — 06

| | |
|---|---|
| **06** | 6 switches, 6 cams |
| **12** | 12 switches, 12 cams |
| **20** | 20 switches, 20 cams |
| **00** | Special |

**MODEL** — C

**DRIVE** — 01

| | |
|---|---|
| **01** | Maximum of 0.25 second per step on make of customer's contact |
| **00** | Special |

**VOLTAGE AND FREQUENCY** — Q

| | |
|---|---|
| **Q** | 120, 50/60 |
| **R** | 240, 50/60 |

**NUMBER OF STEPS PER REVOLUTION** — 20

| | |
|---|---|
| **20** | 20 Standard |

**FEATURES** — X

| | |
|---|---|
| **X** | No additional features, standard unit |
| **A** | One tap switch |
| **B** | Two tap switches |

**X** — Standard

| | |
|---|---|
| **K** | Special |

**ACCESSORIES**

| | |
|---|---|
| **18002603200** | Six-cam Assembly |
| **18002603300** | Twelve-cam Assembly |
| **18002603400** | Twenty-cam Assembly |

**AUTOMATIC TIMING & CONTROLS COMPANY, INC.**