



WARNING

- The human body can generate static electricity which can damage electronic equipment - AVOID TOUCHING THE TOP OF THE TT300 CIRCUIT BOARD!
- For INDOOR use only.
- The TT300 is not suitable for use by children under 14 years of age unless supervised by an adult.

GETTING STARTED

Refer to fig. 1

The TT300 will operate a model railway point (turnout), of up to GAUGE 1 size, using either *digital command control* (DCC) or “conventional” operation using a direct-current (DC) power supply.

Once correctly installed, the unit requires NO mechanical adjustment as the end of travel of the point is automatically detected and the point *blades* are held against the *stock rails* with a moderate force.

Installing the unit - also see notes on page 5

The TT300 is usually mounted to the underside of the *track bed*, directly underneath the point, using two 3.5mm diameter *countersunk* wood screws as shown in fig. 2a. This provides the simplest mounting arrangement as the drive pin directly engages with the throw bar on the point as shown in fig.2b.

We recommend the use of two spacers, positioned as shown in fig. 2, to provide stability and clearance as the mounting screws are tightened. A suitable material is 3mm (1/8”) square balsa wood strip. The drive pin is a push fit into an internal plastic arm and the pin may be removed for cutting to length.

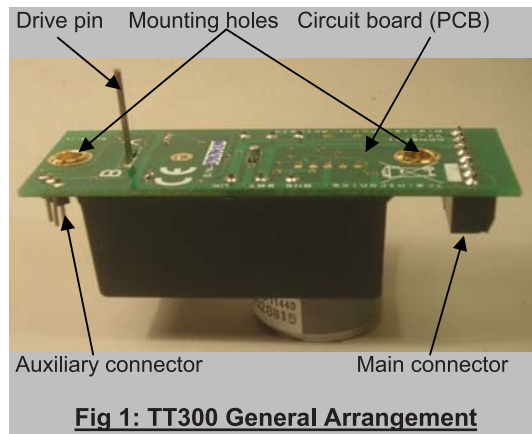
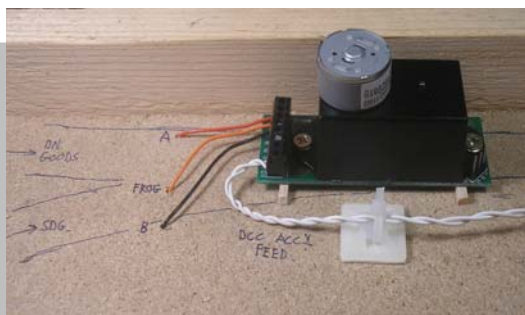


Fig 1: TT300 General Arrangement



WARNING

- **DO NOT** apply power to the TT300 if the drive pin is not fitted (or internal damage may result)!
- The unit **MUST NOT** make contact with any electrically-conductive parts!
- **DO NOT OVERTIGHTEN** the mounting screws. **Under no circumstances must the circuit board be flexed or distorted!!**



(note outline of point – unit could be turned 180°)

Fig.2a: TT300 Installation – underside view

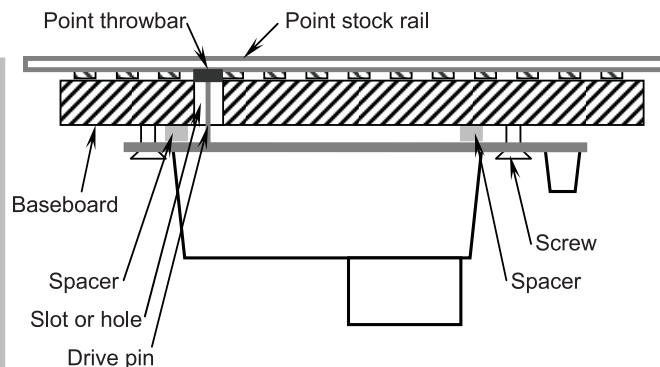
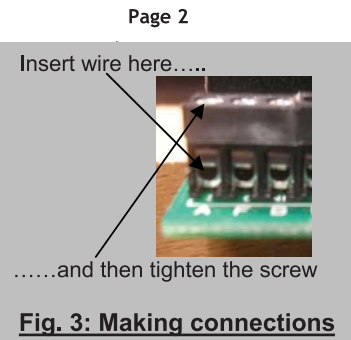


Fig.2b: Sectional view through point & baseboard

Wiring

Fig. 3 shows how to make electrical connections to the **main** connector of the TT300. Use stranded insulated wire, of 7/0.2mm size, with about 6mm of insulation stripped from the end. However, for scales larger than OO (or HO) gauge, we recommend using 16/0.2mm wire for the “A”, “B” and “F” (frog supply) connections as the wire will need to carry a larger current. Your Traintronics dealer should stock suitable wire. **MAKE FIRM CONNECTIONS BUT DO NOT TRAP THE WIRE INSULATION!**

Wiring Information - (terminals labelled in white on the PCB).



The <i>main</i> terminals are:	“D1”	- Power, or DCC, input
	“D2”	- Power, or DCC, input
	“G”	- Ground or <i>common return</i> for indicators
	“N”	- Normal indicator (LED) output (see full User Guide)
	“R”	- Reversed indicator (LED) output (see full User Guide)
	“B”	- Rail B power input (for live frog power - see page 4)
	“F”	- Output supplying live frog (see page 4)
	“A”	- Rail A power input (for live frog power - see page 4)
The <i>auxiliary</i> terminals are:	“r”	- Output indicating “point reversed” (see Full User Guide)
	“G”	- Ground or <i>common return</i> for “C” input
	“C”	- Remote Control input (see Full User Guide)

The TT300 will draw very little current from your layout - no more than 20mA (0.02A) when *idling* and less than 100mA (0.1A) when driving between *normal/reversed* (*closed/thrown*) positions.

Fig. 4 shows a basic configuration for operation under DCC where the point state is selected by sending *accessory* instructions from your DCC *command station*.

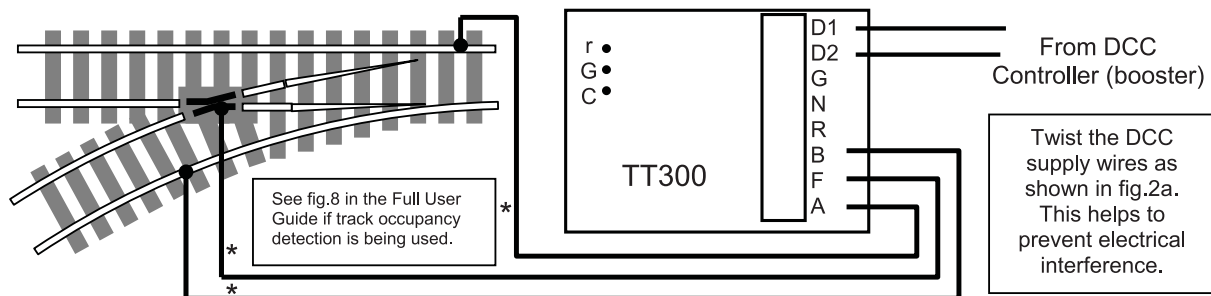


Fig. 4: Wiring for DCC control (wires marked “*” are for “live” frogs and are optional – see page 4)

Fig. 5 shows operation **without DCC**, using DC power and a *double-pole/double-throw* (DPDT) switch. In this case, the point state is determined by the *polarity* of the DC power supply - if the “D2” terminal is *positive*, the TT300 will drive towards “A” (marked on the PCB in white) and it will drive to “B” when “D2” is *negative*.

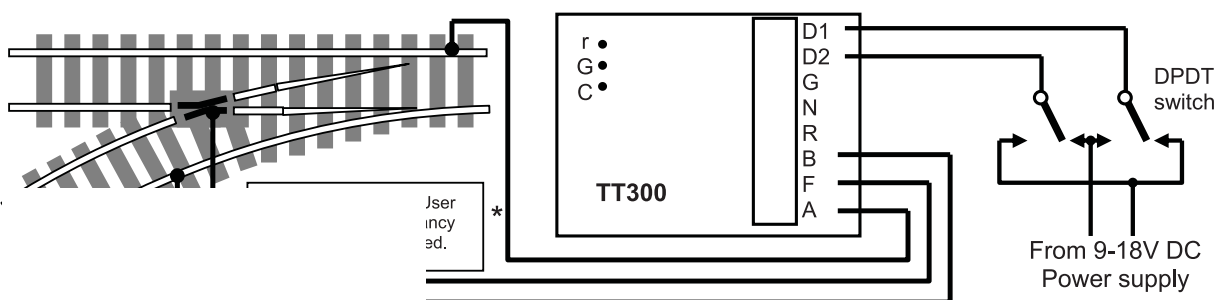


Fig. 5: Wiring for DC operation without DCC (wires marked “*” are for “live” frogs and are optional – see page 4)

OPERATING

Page 3

DCC Operation

This section assumes that you have a DCC system - including a *command station*, *booster* and *decoder programmer* (often combined in one unit) - which is fully compliant with the *National Model Railroad Association* (NMRA) DCC Standards and Recommended Practices. As all DCC systems vary in their exact operating methods, please read the following instructions in conjunction with your DCC system manual.

Initial testing

With the unit wired as shown in fig. 4, turn on the DCC controller.

Refer to your DCC system manual and perform the following actions:-

- Select *accessory* (“point”, “switch” or “turnout”) NUMBER 1 on the controller.
- Send a single “POINT NORMAL” (or “turnout/switch” “closed/on”) command.

The TT300 should drive its output pin towards the “A” mark on the PCB and then stop. If the unit is already installed, then the point blades should be driven in the “A” direction until one blade is closed firmly against its associated stock rail. (This assumes that the drive pin is initially centred - see page 5)

See the “Troubleshooting” section in the Full User Guide if the above action does not occur.

Changing the point address

By re-programming *configuration variable* (CV) 1 the *address* of the point can be changed. CV1 may be set to any number between 1 and 255 inclusive (See “Advanced Features” in the Full User Guide to set higher values of address).

Again, refer to your DCC system manual for details. The programmer - or the programming output of a combined command station and programmer - should be connected to the “D1” and “D2” terminals of the TT300.

NOTE: Some DCC system instructions refer to decoder *registers* rather than *CV numbers*. In this case, the point address is set in **register 1** and a value between 1 and 255 (inclusive) is, again, allowed.

Controlling the point

In order to change the point state, perform the following actions:-

- On the DCC controller, select the *accessory* (“point”, “switch” or “turnout”) number corresponding to the value programmed into CV1 (or *register 1*).
- Send a “POINT NORMAL” (or “closed/on”) command to drive in the “A” direction.

Or:-

- Send a “POINT REVERSED” (or “thrown/off”) command to drive in the “B” direction.

Changing the operating sense

Depending upon whether your point is left or right hand, and depending upon the orientation of the TT300, you may need to change the *operating sense*. This means that a “POINT NORMAL” (or “closed/on”) command and a “POINT REVERSED” (or “thrown/off”) command will drive in the

reverse operating sense (and reducing by 128 restores the *original*

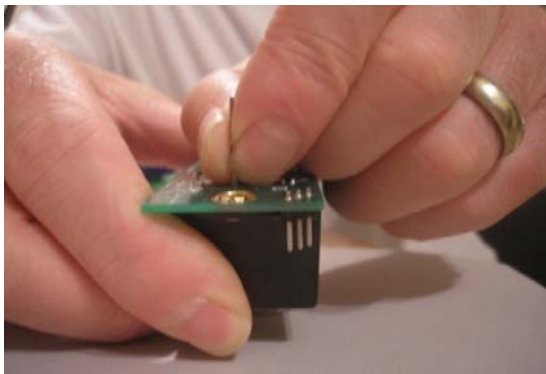
See the “Advanced Features” section of the Full User Guide for further information.

INSTALLATION TIPS

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We recommend that the following advice and photographs are followed to ensure trouble-free installation and operation:-

1 Centre the drive pin.....



clearance within this hole.

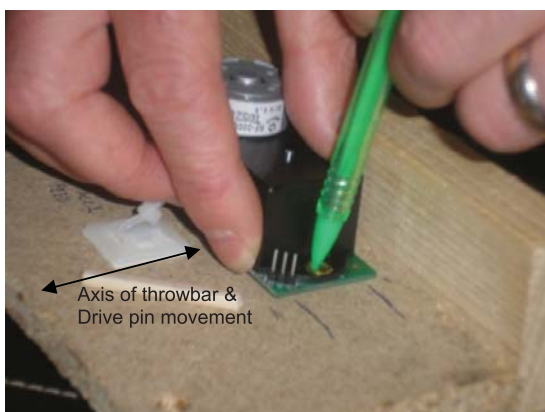
Move the drive pin to within about a millimetre of the centre of its slot, holding the pin as close as possible to the PCB.

You may or may not hear the internal gears moving. (The internal parts are pressed together and the tightness of fit varies between units).

Centring the drive pin ensures that there is adequate movement available in both directions.

Ensure that the baseboard has a hole or slot cut under the point throwbar and that the TT300 drive pin has sufficient

2 Align the TT300 and drill the mounting holes.....



Insert the drive pin through the slot in the baseboard and then into the point *throwbar*. Once the drive pin is engaged in the throwbar, move the TT300 sideways slightly aiming to centre the point blades mid-way between the stock rails.

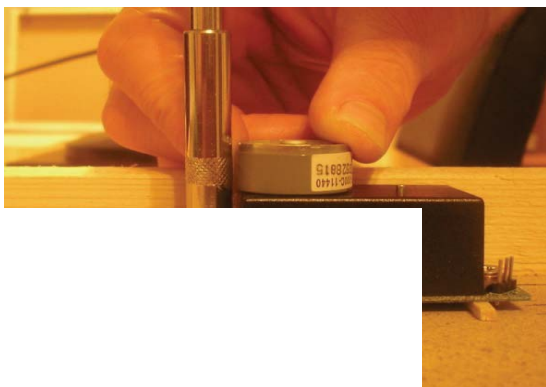
Hold the TT300 against the baseboard ensuring that its drive pin slot is aligned parallel to the line of the point throwbar (see picture).

“Spot through” the mounting holes with a pencil, as shown, to mark their positions on the baseboard.

Remove the TT300 and drill a *pilot hole*, at the centre of each pencil mark, using a 2.5mm drill bit.

NOTE: The drive pin should be cut to length at this stage - do not forget to add 3mm to allow for the spacers!

3 Install and secure the TT300.....



Remove the unit from the baseboard and clean away any sawdust or other debris.

Re-install the TT300, adding the 3mm spacers, and secure in position using two 3.5mm diameter *countersunk* woodscrews. DO NOT OVER-TIGHTEN THE SCREWS!

NOTE - The TT300 may be mounted the opposite way round to that shown if your baseboard structure, or track layout, demands it. You can change the *operating sense* of the unit as described on page 3 (and in the Full User Guide).

Don't forget the spacers !