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Telling **bigtrak** what to do is called ‘programming’. When you programme **bigtrak** you enter instructions into the keyboard located on top of the vehicle. The keyboard will direct **bigtrak** in the same way that a steering wheel and brakes direct a car.

It’s easy to learn how to programme **bigtrak**. Each separate instruction is detailed so that you can try them one by one.

**ALWAYS TAKE CARE WHEN HANDLING YOUR **bigtrak**.**  
Place it on the floor gently, do not drop it, this may cause damage. When picking up **bigtrak**, grip centre wheels with both hands. We do not recommend use of your **bigtrak** on stairs, water, dirt and sand. This will cause permanent damage and may void your guarantee.
LABELLING (See Figs 1, 2 and 3)

We include a set of easy-to-apply labels with bigtrak which add exciting detail. All the labels are numbered, and you will see their correct positions from the following diagrams.

Peel the backing off the labels one at a time and apply them as shown. Once they are correctly positioned, rub them down firmly.
**BATTERIES**

**bigtrak** requires 3 x D size batteries. We recommend the use of alkaline batteries for longer life. Find the red ON/OFF switch to the right of the keyboard. ‘ON’ is forward, ‘OFF’ is back (see Fig. 4). Make sure that the switch is in the OFF position before inserting the batteries.

![Fig. 4](image)

1. Find the battery box underneath bigtrak (FIG. 5.)
2. Remove the two screws from the hatch and put to one side.

![Fig. 5](image)

1. Match the polarity of each of the three batteries with polarity signs shown inside the battery compartment. Insert the batteries as shown in Fig. 6. Replace the battery cover and screws.

![Fig. 6](image)

2. **bigtrak** will ‘beep’ after 15 seconds when it is turned on and is not being used. Program will go to sleep mode until wake up by pressing **GO** to continue the last program or pressing **CM** to set up a new program.
BATTERY LIFE AND REPLACEMENT

1. To obtain good operation we recommend to use alkaline batteries.

2. Do not use rechargeable batteries.

3. Non-rechargeable batteries are not to be recharged.

4. Different types of battery or new and used batteries are not to be mixed.

5. Only batteries of the same or equivalent type as recommended are to be used.

6. Batteries are to be inserted with correct polarity.

7. Exhausted batteries are to be removed from the bank.

8. The supply terminals are not to be short-circuited.

9. Important malfunction may occur when power in the batteries are running low. Please replace with brand new batteries.

Please keep information for future reference
THE KEYBOARD

The keyboard is placed on the top of bigtrak. By pressing various combinations of keys on the keyboard, you can programme bigtrak to obey your commands.

Each key has a different purpose and is marked either with a letter, number or symbol.

Your new bigtrak has been pre-programmed at the factory with a very simple sequence of movements already placed into its memory.

Push the switch to ON, and press the TEST key. bigtrak will then move forward 2 lengths, fire three times, wait 3 to 4 seconds and then reverse 2 lengths to its starting position.
Every time you turn bigtrak on, this programme is present and ready for use when you press the Test key. This key will only work once after the bigtrak has been switched on and before pressing any other keys.

Once you have seen how bigtrak works, you will want to start inventing your own programmes. To programme, you will need to learn what the other keys do. Practice using each key as you read about it.

**CLEAR MEMORY**

Find the key that is marked CM. This is the CLEAR KEY. Pressing this key will remove or erase all instructions from bigtrak’s memory. When you erase entries with this key, the entire computer memory becomes blank and you can then programme new instructions for bigtrak to perform.

When you want to change programmes, CM is the first key to press. If you do not press CM then the entire previous programme is ‘remembered’ by bigtrak, and can be repeated by pressing GO.

If you add more instructions, bigtrak will repeat the first programme and then perform your new commands when you press GO.

NOTE: bigtrak must be programmed every time you switch it OFF and ON again.

Press CM to cancel the TEST programme, and read about the next key, which is GO.

Press GO to action each step programmed into bigtrak’s memory.
At the top of the instruction panel are four arrows that surround the letter \( \text{P} \). The arrows are to tell \textit{bigtrak} to move forward, backward left or right.
When you press one of these keys you programme bigtrak to move either backwards or forwards from its position. As you will need to tell bigtrak how far to move, you must also programme a second instruction.

To do this, you have to press one or two of the number keys. Each number will tell bigtrak to move one times its own length, so the higher the number you press, the further it will go. You can press any number from 1 to 99.

Try this sequence:

Press CM Press then 1 Press GO

Watch bigtrak move forward its own length of 33cm plus an additional distance of up to 10cm depending on the condition and type of the running surface.

Try this sequence:

Press CM Press 2 Press 2 Press GO

After you have seen bigtrak complete this programme, go on to the next section.
TURNING LEFT AND RIGHT

These arrows are to be found each side of the P button. When you press one of these arrows, bigtrak will turn to that side. But you must also programme a second instruction to tell bigtrak how far to turn. The examples below will help you programme bigtrak correctly. As each bigtrak is slightly different, you will need to experiment to find out exactly which number to press for the degree of turn that you want.

For example:

Press GO

will give you a full right hand turn, (or 15 minutes on the face of a watch)

will turn bigtrak to the left to face the opposite direction from the one in which it was pointed.
As you can see, to make bigtrak turn a full 360° you press the direction (left or right) and then 60 which is the equivalent to 60 minutes on the face of a watch.

IMPORTANT: To get to any point in the turn, you can programme bigtrak to move either right or left.

Try this sequence with a right turn: Press

```
| CM | 1 | 5 | 1 | GO |
```

bigtrak will move one 'length' forward, make a full right turn and move forwards again.

Try it another way. For a left hand turn, press

```
| CM | 1 | 5 | 1 | GO |
```

NOTE: You can add more steps to this short sequence (up to 16 different ones) and then bigtrak will do more complicated things.
The key marked with this symbol \( \text{FIRE} \) tells bigtrak to fire its “photon” beam against the enemy. You programme bigtrak to fire by pressing this key, but you must also programme a second instruction to tell bigtrak how many times to fire. Think how you will programme bigtrak to fire 9 times.

The correct sequence will be:

```
CM  FIRE  9  GO
```

bigtrak should now fire 9 times and stop.
If you programme bigtrak to fire, but forget to say ‘how many’, bigtrak will not accept any further instructions until you press a number key. This is also true for Forward, Reverse, Left, Right, Hold and Repeat.

Try this sequence of 7 steps:

<table>
<thead>
<tr>
<th>Press</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
<th>Step 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM</td>
<td>5</td>
<td>2</td>
<td>1 5</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

This is a diagram of what your **bigtrak**’s movement will look like.

![Diagram of bigtrak's movement](image)

**REVIEW**

Now look at what you have learnt about **bigtrak**

1. You know how to turn **bigtrak** on.

2. You know that you must press **GO** after your instructions to get **bigtrak** to operate.

3. You have learnt to instruct **bigtrak** to go forward, to reverse, and to turn right and left, and to fire its ‘photon’ canon.

You can instruct **bigtrak** to complete up to 16 different steps, one at a time and one after the other. There are a few more keys to get to know. Look at the rest of the pages to see what they do.
This symbol tells bigtrak to pause for a period of time before completing any more instructions. Press [P] if you want bigtrak to pause, but you must also programme a second instruction to tell bigtrak how long to pause, by pressing a number key.

Each unit of time on bigtrak is a tenth of a second. So if you want bigtrak to wait 6 seconds then you must programme [P] and [6 0].

Why? Because if 1 is one tenth of a second, then 10 is a whole second. So for 6 seconds you need to multiply 10 by 6, which is 60.

Try the following sequence which moves bigtrak forward 3 lengths, waits 4 seconds and then reverses 3 lengths.
This key will allow you to remove the last step entered into bigtrak’s memory, and is useful if you change your mind about a programme.

If you press \text{CE} you will cancel the last step in bigtrak’s memory, and if you continue to press it for a second and subsequent time, you will remove the last step each time. You could actually cancel a whole programme in this way, except that it would be quicker to press the \text{CM} key.

You cannot ‘skip’ steps by pressing \text{CE} as it will only remove the last step entered.

For example, enter the following instructions:

\begin{verbatim}
CM \uparrow 5 \rightarrow 1 \rightarrow 7 \uparrow 4
\end{verbatim}

To cancel the last two steps, press \text{CE} and press \text{CE} again.

Your programme will now consist of just one step: \uparrow 5

You can now enter more instructions into bigtrak’s memory.
Find this key on the keyboard. It is very important because you can repeat orders that you have already put into the computer memory without having to enter them all over again. **But you can only use this key once during a programme.**

When you use the key, called the repeat key, **you must also programme a second instruction** to tell bigtrak how many previous steps to repeat by pressing a number key. It is important to know that bigtrak begins with the last step, counts backward the number of steps that you have told it to repeat and then counts forward through these steps, adding them to the existing program.
For example, to make bigtrak travel in a square, you would press this programme of 8 steps:

<table>
<thead>
<tr>
<th>Press</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
<th>Step 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Step 6 Step 7 Step 8

|   | 1      | 5      | 2      | 1      | 5      | GO    |

bigtrak will make the same square using a repeated sequence.

By pressing the Repeat key, you can programme the same square with only 5 steps:

<table>
<thead>
<tr>
<th>Press</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
<th>Step 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Step 6 Step 7 Step 8

|   | 1      | 5      | 2      | 1      | 5      | x2 4  GO |

**REMEMBER**

$x^2$ can be used only once during a complete programme. And don’t forget that the key repeats steps that were in the memory before you pressed $x^2$ and not what you enter in after it!

CM CE TEST and GO do not count as steps.
You can use the check key to find out whether your last instruction to bigtrak tells it what you want it to do.

The check key allows you to test instructions before they are fixed into bigtrak's memory, but you can only check the last entry made on the programmes by using this key.
For example: If you want bigtrak to make a full turn to the right, you will normally press ➩ 1 5. But because floor surfaces will vary from house to house, and room to room, ‘15’ may not be enough to make the turn that you want, or it may be too much. So to check whether you have programmed it accurately, press ✔.

Now watch bigtrak to see whether the instruction ‘15’ is good. If it is, then you can continue to programme bigtrak by entering more instructions and bigtrak will automatically record the step you have tested. But if it was not good for any reason, press the CE key to erase the last step. Then re-programme the turn and check the results. You can do this until you get the turn that you want, and then you can enter more instructions.

Remember:
✔️ will only check the last step you have programmed.

The OUT key is used together with bigtrak Transport that you can buy separately. When you press this key and the Transport is not attached, the step will count as one of your sixteen steps, and bigtrak will pause in its programme for 3-4 seconds.
GENERAL OBSERVATIONS

To get the most fun out of bigtrak you should remember:

1. All steps except TEST CM CE GO and ✓ need two or more separate instructions.
Look at the following chart to see which other instruction is needed each time.

<table>
<thead>
<tr>
<th></th>
<th>How far?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backwards / forwards</td>
<td>How much?</td>
</tr>
<tr>
<td>Turn</td>
<td>How long?</td>
</tr>
<tr>
<td>Fire</td>
<td>How many times?</td>
</tr>
<tr>
<td>Pause</td>
<td>How many steps?</td>
</tr>
<tr>
<td>Repeat</td>
<td></td>
</tr>
</tbody>
</table>

2. All surfaces that you can run bigtrak on will be different. The numbers you use for turns and distance will vary from surface to surface, so use your ✓ to find the correct number to programme.

3. bigtrak is designed to operate on a flat surface. When bigtrak runs into steep slopes or into any obstacles, such as walls or furniture it will stall the unit. The protection device will be activated (power cut off) to prevent the unit overheating. The unit will output the sleep mode tones alert once and enter sleep mode. The previous program is cleared after the protection device is activated.

4. Remember you can programme bigtrak with up to 16 different steps. These can include turns of more than 360°, up to 99 lengths of travel forwards or backwards, and up to 99 blasts of the photon beams per step. Remember CM CE TEST ✓ and GO do not count as steps.

5. We suggest that you chart out the various rooms in your house and mark in furniture that you want to avoid. Then you can have fun programming bigtrak to move from room to room around the house. Keep notes of successful programmes so that you can use them again.