



# prolift 230T

garage door opener  
for overhead sectional  
and one piece tilt doors

Installation instructions



# Important safety instructions for installation

To prevent fire or shock hazard, do not expose the opener to rain or moisture.

To avoid electrical shock do not open the cabinet without disconnecting the opener from the mains.



**WARNING Incorrect installation can lead to severe injury. Follow all installation instructions.**

Garage doors are under great spring tension. Do not attempt to adjust spring tension. Do not loosen any brackets under spring tension. Do not remove springs from the door. Merlin does not accept responsibility for damage or injury resulting from installing this opener. Unless you have appropriate training, refer door adjustments to the door manufacturer.

To avoid difficulty during installation, do not connect the opener to the mains or run the door opener until instructed to do so.

Do not use force sensitivity adjustments to compensate for a binding or sticking garage door. Excessive force may damage the garage door.

Before installing the drive remove all unnecessary ropes or chains and disable any equipment, such as locks, that is not needed for powered operation.

Before installing the drive check that the door is in good mechanical condition and that it is correctly balanced. Check that it opens and closes properly.

Install the actuating member for the manual release (red handle on a rope) such that it rests at a height of less than 1.8 m.

Install any fixed control, wired or wireless, within sight of the door but away from moving parts and at a height of more than 1.5 m.

Install the drive such that all moving parts (except the door and the manual release) are at a height of more than 1.8 m.

Permanently attach the label warning against entrapment in a prominent place, or near any fixed control.

Permanently fix the label concerning the manual release adjacent to its actuating member (thread the cord through the holes in the manual release warning card).

After installation, ensure that the mechanism is properly adjusted and that the drive reverses when the door contacts a 40mm (50mm for UK) high object placed on the floor.

The appliance is not intended for use by young children or infirm persons without supervision.

If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.

## **CE compliance after installation (EC countries only)**

It is the responsibility of the installer of the opener to ensure that the forces measured at the leading edge of the door are within the guidelines of BSEN 60335-2-95:2001. This may require adjustment of the drive and may also require adjustment of the door. Specialised measurement equipment may be required. Contact Merlin for assistance if necessary. If the measured forces exceed the guidelines then Merlin M102 non-contact sensors must be fitted.

# Site Requirements

## **Electrical Power Supply**

The opener is for 220-240 Volts AC - 50 Hz. There must be an earthed power point within 1.6 metres of the mounting position.

## **Garage Door**

This opener is designed for a residential overhead garage door up to 6 m wide, either sectional or one-piece tilting. Using the standard length pole and chain it is suitable for door heights up to 2.2 m. Alternative poles and chains are available to suit door heights up to 2.4 m and 3.1 m. Contact Merlin for solutions to suit door heights up to 4.5 m.

Check that it is possible to raise the door by hand through the full height of the opening. The door should operate smoothly, lifting up and down without the door or door mechanism binding. The door must not jam in the tracks.

A properly balanced tilt door will stop of its own accord at about the two thirds closed position. (Springs may need adjustment accordingly).

For one piece tilt doors over 4.5 m in width built out of cedar or ply it is advisable to use the smaller 15 tooth sprocket.

A properly sprung sectional door will either close of its own accord for the last 500mm of its travel or it will require a very light added force. If the door springs back, it is advisable to have the spring tension adjusted. Springs can only be adjusted safely by a trained professional.

If in doubt about whether the door is suitable for automation consult Merlin.

## **Tilt door clearances**

The opener has been designed to fit most existing doors. The minimum installation clearance from the garage ceiling to the top edge of the door during any part of the door's travel is 100mm.

The header bracket is to fit as close as practical above the top of the door, in the centre.

The door bracket is to fit at the highest possible point of the door, in the centre. The bracket may be fixed vertically or horizontally to suit. A solid fixing point is required.

The overall length of the opener when assembled depends on the length of pole fitted. The overall length is 400mm more than the length of the pole.

Clear space of around 600mm is required behind the fully open door.

## **Sectional door clearance guidelines**

For sectional doors using torsion springs the minimum allowable height from the top of the closed door to the ceiling is 200mm.

For sectional doors using tension springs the minimum allowable height from the top of the closed door to the ceiling is 280mm.

The header bracket is to fit 200-300mm above the top of the door at the centre or directly above the torsion bar.

The door bracket is to fit in line with the top rollers in the top panel. It may fit vertically or horizontally. A solid fixing point is required.

The overall length of the opener when assembled depends on the length of pole fitted. The overall length is 400mm more than the length of the pole.

Clear space of around 600mm is required behind the fully open door.

## Door Locks

Existing door locks must be removed or disabled. (The opener or the door can be damaged if you try to use it to open a locked door).

## One Piece doors opening over footpaths

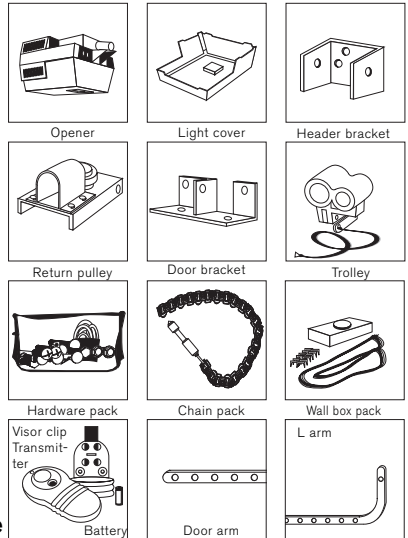
Ensure parts of the door do not extend over public footpaths or roads.

# Preparing the opener

### STEP 1: Check the contents of the package.

Your package should contain: this manual, a warranty sheet, one or more remote control transmitters, wall box pack (some models only), hardware pack, chain pack, trolley, header bracket, door bracket, door arm, L arm, return pulley assembly, light cover, red release rope (with manual release warning card) and one assembled door opener.

**CAUTION Do not plug in the power head to test it before installation. The power head is shipped with the limit switches set for a door in an open position. Operation before the correct point in the installation process can lead to a damaged door or opener.**



### STEP 2: Contents of the package

If your door is greater than 3 m tall or if your door is greater than 2.5 m tall and you will use the 15 T sprocket :

Switch the TALL DOOR option on the control panel into the ON position. This will allow the opener to run for 40 seconds instead of 30.

If you have a sectional door and you want to have auto-closing:

Select the timing of your choice from the autoclose option switches on the control panel. The options are off, 30 seconds, 60 seconds and 90 seconds.

For a 30 second delay: autoclose short ON

For a 60 second delay: autoclose long ON

For a 90 second delay: both short and long ON

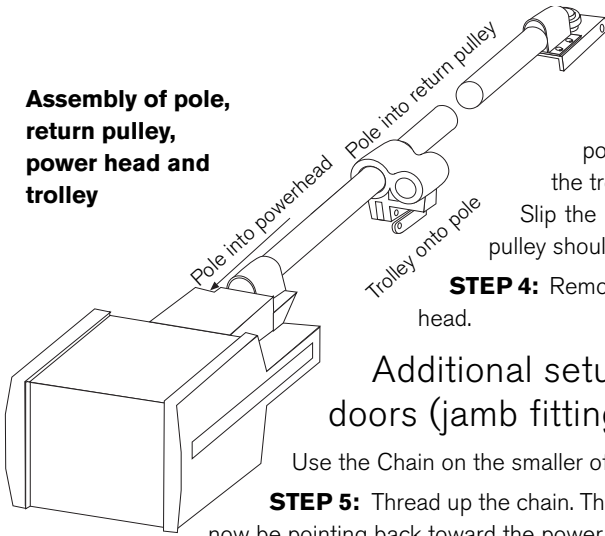
**NOTE Auto-closing will only work if the beam sensors are correctly fitted, correctly functioning and unobstructed.**



**WARNING Merlin does not recommend auto-closing of one piece tilt doors because beam sensors will not prevent the door from hitting an object close to the outside of the door.**

# Additional setup for trackless tilt doors (jamb fittings) only

## Assembly of pole, return pulley, power head and trolley



The pole should be shortened for a trackless tilt door.

**STEP 3:** Assemble the trolley and header bracket to the pole. Slip the pole into the return pulley assembly. Slide the trolley over the pole.

Slip the pole into the power head. The return pulley should be aligned with the sprocket.

**STEP 4:** Remove the sprocket cover from the power head.

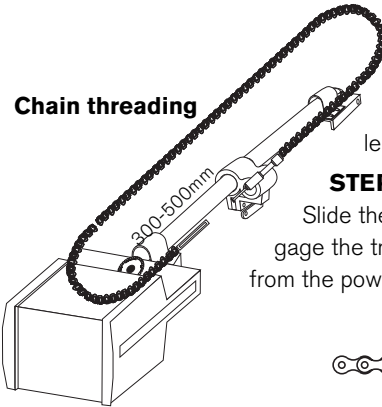
## Additional setup for trackless tilt doors (jamb fittings) only

Use the Chain on the smaller of the two sprockets.

**STEP 5:** Thread up the chain. The threaded end of the torpedo should now be pointing back toward the power head.

## Additional setup for trackless tilt doors (jamb fittings) only

### Chain threading

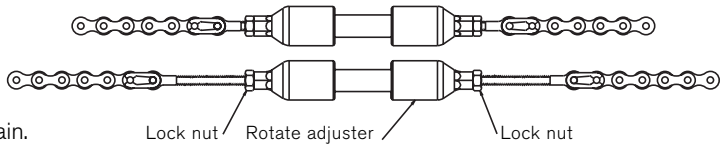


The chain will need to be shortened to suit the choice of pole length and sprocket size.

**STEP 6:** Connect the two ends of the chain.

Slide the trolley over the torpedo and flip the release lever up to engage the trolley with the torpedo. The trolley should be 300 to 500mm from the power head.

### Connecting the chain



**STEP 7:** Tension the chain.

**STEP 8:** Attach mounting strapping to the power head. Black 1/4" machine screws for the rubber mounting bushes are in the hardware pack. Attach your mounting strapping using these screws. Place a washer between the rubber bush and the strapping.

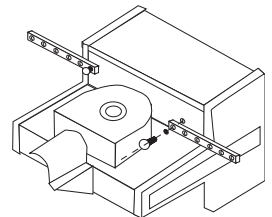
**NOTE:** The sprocket cover must be attached to the opener using the screws provided.

### Correct chain tension



Chain hangs no lower than the pole

### Attaching mounting strapping



# Installing the opener



**WARNING** Garage doors are under great spring tension. Do not remove the springs. Merlin does not accept responsibility for damage or injury resulting from installing this opener. Please read this manual fully before attempting installation.

## STEP 1:

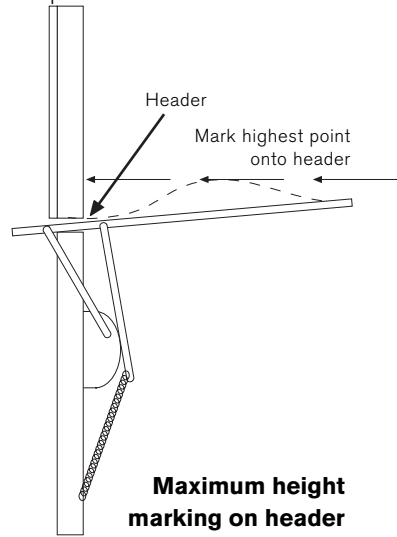
Check that there is a power point available and that there is adequate clearance to mount the opener onto the door. Check that the door is in good mechanical condition, correctly balanced and opens properly.

**STEP 2:** Close the door.

**STEP 3:** Mark the centre line of the door using a tape measure and pencil. Mark on the header above the door and mark the door itself at the top edges.

**STEP 4:** Check the installation height of the opener. Slowly open the door and observe the point at which the top edge of the door is closest to the ceiling. Measure the height of the top edge of the door from the floor of the garage at this point. You may have to clamp the door in position or use blocks to hold it.

**STEP 5:** Close the door again and mark this maximum door height onto the header above the top edge of the door. (On tilt doors with tracks, this maximum height might be as low as the top edge of the closed door.) If a sectional door torsion bar or spring is in the way, mark the next clear space on the wall above. Extend the door centre line up to intersect with the new height line.

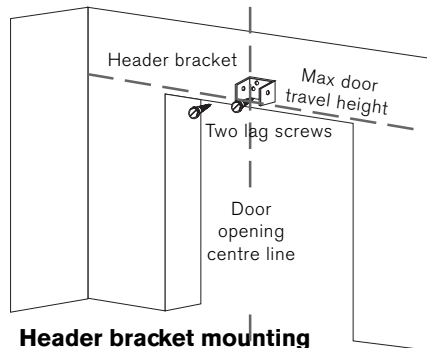


## Additional setup for trackless tilt doors (jamb fittings) only

Mark a horizontal line 300mm above this maximum door height line. If there is insufficient space above to allow the line to be 300mm above the maximum height, then draw the line 80mm below the ceiling. Extend the door centre line up to intersect with the new height line.

**STEP 6:** Fit the header bracket to the header above the top of the door. The header bracket must be attached to a rigid part of the garage such as a beam, with the bottom edge of the bracket no lower than the height line that has just been marked. The centre line of the door must align with the centre line of the header bracket.

**STEP 7:** Place the opener assembly in the centre of the garage floor, resting on its styrofoam or cardboard packing to protect the power head from scratching by the garage floor.



**Header bracket mounting**

**STEP 8:** Lift the return pulley assembly up to the header bracket and attach by pushing the clevis pin through both the header bracket and the return pulley assembly. Fit the clevis pin clip to secure the clevis pin.

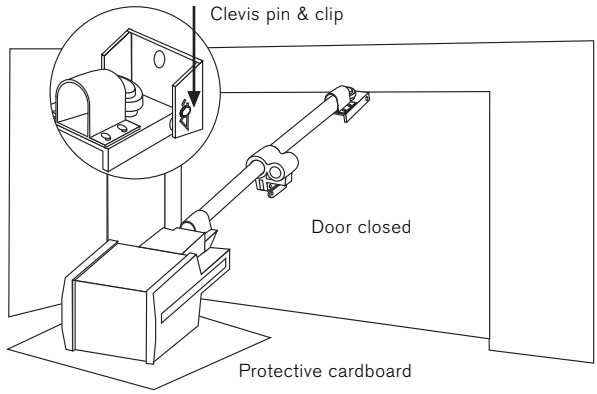
**STEP 9:** Lift the power head end of the opener to the ceiling. Add temporary support so that the pole is level to the garage floor. Open the door.

**STEP 10:** Line up the centre of the pole with the marked centre line of the door.

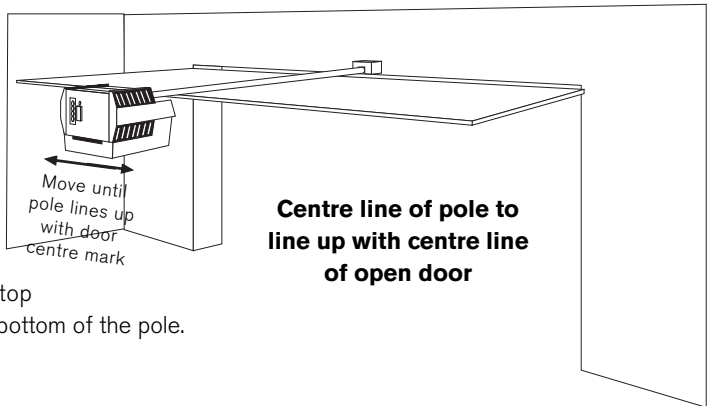
**STEP 11:** Locate a ceiling joist in the area where the straps will attach to the ceiling.

**STEP 12:**

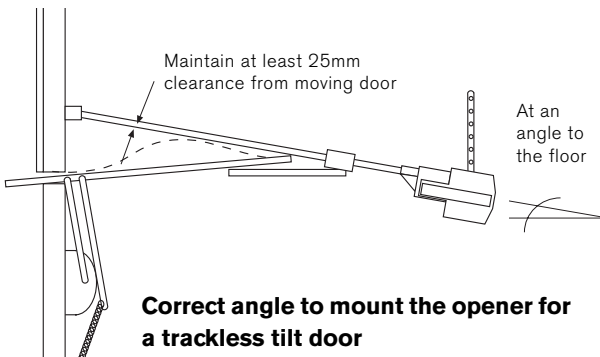
Before attaching the straps to the joists, set the level of the opener. Check that the door does not hit the pole when manually opening and closing. Allow a minimum of 25mm clearance between the top edge of the door and the bottom of the pole.



**Attaching the return pulley assembly to the header bracket**



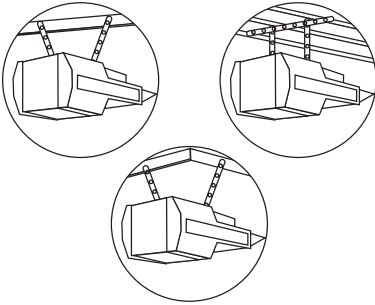
**Centre line of pole to line up with centre line of open door**



**Correct angle to mount the opener for a trackless tilt door**

**Additional setup for trackless tilt doors (jamb fittings) only**

It is better to mount the opener at an upward facing angle for trackless tilt doors. Allow the opener to hang at the lowest possible point that maintains at least 25mm clearance between the pole and the top edge of the closing door.

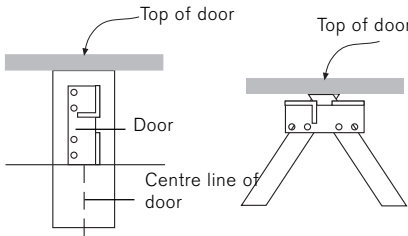


**STEP 13:** Fasten the straps solidly to the joists.

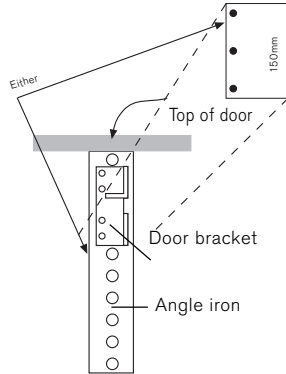
**STEP 14:** Close the door manually.

**STEP 15:** Attach the door bracket to the door.

**Mounting strap methods**



**Door Bracket mounting**



**STEP 16:** Connect one end of the straight door arm to the trolley. Attach to the trolley using the short clevis pin and its clip.

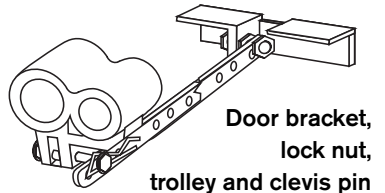
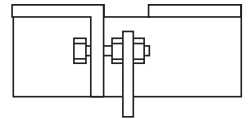
Usually the straight arm is all that is required on tilting doors. Usually the L arm is attached between the door and the straight arm for use with sectional doors. You may have to shorten or re-drill the door arm.

You may need to use the L-arm to prevent fouling of the door in the fully open position.

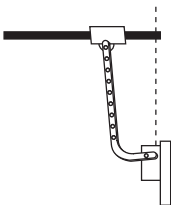
**CAUTION** When the door is fully closed the door arm must not ever become vertical. The door arm must remain at less than a right angle to the pole.

Disengage the trolley.

Connect the free end of door arm assembly to the door bracket.

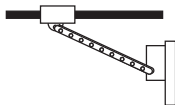


**Door bracket, lock nut, trolley and clevis pin**

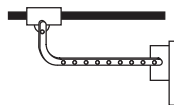


Preferable for sectional doors

**Door arm examples**



Preferable for tilt doors



OK for tilt doors



### STEP 17:

If a wall control box is included in your opener then locate a convenient position to mount the wall control box. The garage door should be visible from this location. There should be no moving parts of the door or opener within 1.8 metres of this box and the box should be placed higher than 1.5 metres from the floor.

Connect the wire to the manual control accessory terminals on the rear of the power head. Take care to keep frayed wire ends from shorting across terminals.

Route wire from the power head to the location for the wall control box. Allow some slack in the wire to the power head. Connect the wire to the two terminals inside the wall control box. Mount the box to the wall.

**CAUTION** Keep the push button cable at least 60mm clear of mains power cables if it is parallel to them. Do not run the push button wiring through the same cavities in the wall as the mains power. Mains and low voltage wiring can cross with no problems.

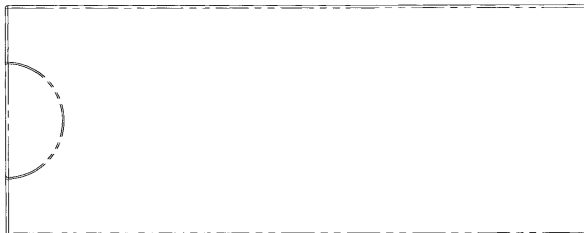
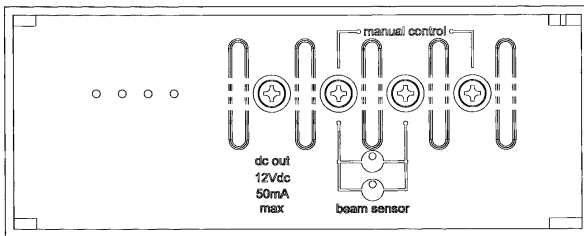
**STEP 18:** Remove or disable any door locking mechanism. Remove unnecessary ropes or chains

**STEP 20:** Fit the light cover into position and lock the cover securely.

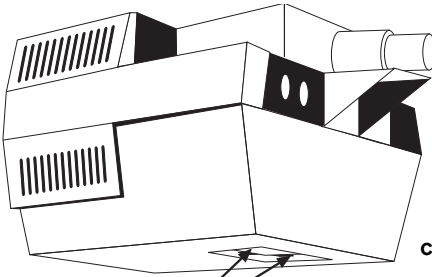
**STEP 21:** Manually raise the door and re-engage the trolley.

**STEP 22:** Attach the red release rope through the hole in the trolley release lever. The handle must be fitted at a height of less than 1.8 metres.

Ensure the release cord is threaded through the manual release warning card.



# Setting the door travel



Door travel limit adjustments

**NOTE** Repeated operation of the opener in a short period of time during setup may trigger the thermal cutout of the motor. In this case you will have to wait for approximately five minutes for the motor to cool sufficiently to continue the installation process. If the unit has overheated you will hear the relays clicking in response to the transmitter or pushbutton but the motor will not operate. After cooling down, normal operation is able to resume.

The limit adjustment screws are inside the lamp cover and are marked as up limit and down limit. One full turn of either screw results in around 250mm of trolley travel.

**STEP 1:** Plug the opener into an earthed three-pin 220-240V outlet and switch on the power. The opener's courtesy lamp may turn on, or may flash for five seconds.

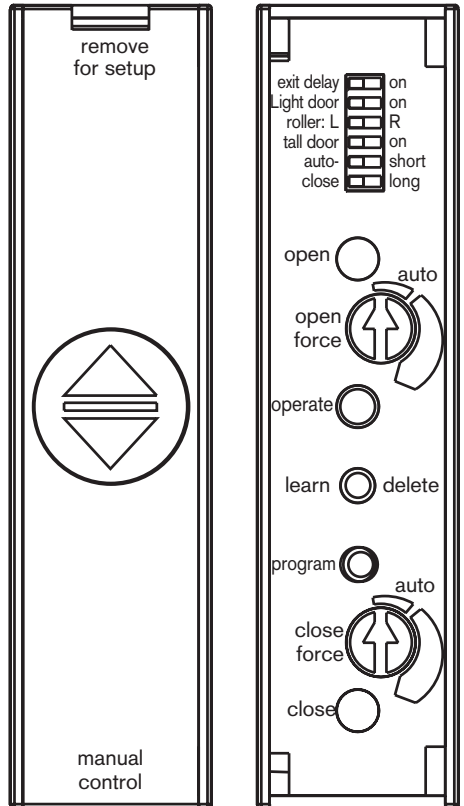
**STEP 2:** Remove the lamp cover by turning the catch on its underside. Remove the green control panel cover to expose the setup controls. Observe the red and green indicator LEDs. The red LED will stay on continuously at the fully closed position. The green LED will stay on continuously at the fully open position. Identify the green operate button. Ensure the door is engaged on the trolley.

**STEP 3:** Press and hold the green operate button to move the door up and down into the required fully open or fully closed positions. Each time the operate button is pressed the door will stop or move in the opposite direction.

**STEP 4:** When the door is at the fully closed position, turn the down-limit screw (located adjacent to the courtesy lamp) until the red close-LED stays on continuously.

**STEP 5:** When the door is at the fully open position, turn the up-limit screw (located adjacent to the courtesy lamp) until the green up-LED stays on continuously.

**STEP 6:** If the door can not be moved sufficiently far then look at the red and green LEDs. If one of these is on continuously then the door has stopped at a limit point. Adjust that limit to allow more travel. One turn of a limit adjustment screw results in 250mm of door travel.

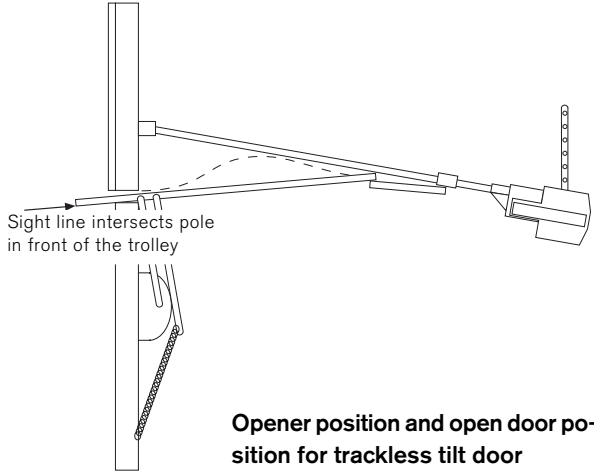


## Additional setup for trackless tilt doors (jamb fittings) only

The aim of these steps is to make the opener push in the direction that the door edge is moving. Preferably the door edge is being forced upward slightly as the closing cycle begins.

You must adjust the top limit of travel so that if you sight along the fully open door the sight line intersects the pole in front of the trolley.

If the door does not open far enough after setting the top limit of travel correctly then it will be necessary to make some installation changes. You will need to try some or all of: raising the location of the header bracket further, lowering the power head further or increasing the length of the door arm further.



**WARNING** The door is not safe for unsupervised operation until the force sensitivity has been set.

Opener position and open door position for trackless tilt door

## Setting the force sensitivity

**STEP 1:** Remove the lamp cover by turning the catch on its underside. Remove the green control panel cover.

**STEP 2:** Identify the green and the red control knobs marked open-force and close-force.

Note: The opener can be set to either determine its own safe operating force level, or it can be set to allow a deliberately greater amount of force to be applied to the door.

**STEP 3:** To set the force levels automatically, press the program button and turn the control knobs fully anticlockwise. Ensure that the door is engaged to the opener. Then operate the opener to move the door in a single unobstructed movement from one limit position to the other. If no obstruction was sensed during this cycle then the opener will save the settings to memory. Operate the opener to move the door back to the original limit position. Again, if no obstruction is sensed, the settings will be stored in memory.

**STEP 4:** To set the force levels at some higher level, rotate the control knob to some position clockwise from the auto-setting point.

**STEP 5:** If a very light door is being operated, and if a very gentle closing force is required, then set the option switch marked 'Light door' to the ON position. Note that on a heavier door this option switch position may result in unintended detections of obstructions.

**NOTE:** To reset the adaptive and automatic force settings at any time, press the program button once.

# Setting up wireless controls

Wireless controls can operate the opener, or the opener's courtesy lamp, by sending coded radio signals. These coded signals use high-security code-hopping.

Wireless controls can be hand-held or fixed to walls, such as a wireless keypad, or a wireless wall-switch.

Up to 20 Merlin wireless controls can be learned by the opener. After this, the 20th wireless control is over-written in the opener's memory.

All wireless controls can be deleted from the opener's memory.

There is a learn button on the underside of the opener inside the lamp cover. The small button on a Merlin M-122 wired wall-switch can also be used as the learn button.

If a setting is enabled in the opener, then it is possible to use any existing learned wireless control as a learn button. (See separate section following.)

Remove the lamp cover by turning the catch on it's underside. Remove the green control panel cover to expose the setup controls. Identify the red learn button.

## **To learn a remote button to operate the opener:**

Press the learn button for 1-2 seconds, until the courtesy lamp begins to flash slowly.

Press the desired remote button, wait 1 second, press the desired remote button again. The courtesy lamp will stop flashing once learning is complete.

## **To learn one remote button to operate the opener and another to operate the lamp:**

Press the learn button for 1-2 seconds, until the courtesy lamp begins to flash slowly.

Press the desired remote button for control of the opener, wait 1 second, press the desired remote button for control of the courtesy lamp. The courtesy lamp will stop flashing once learning is complete.

## **To delete all remote controls from the opener's memory**

Press and hold the Learn (or setup on some models) button for eleven seconds, until the courtesy lamp stops flashing. After six seconds it will flash fast as a warning. If you release the learn (or setup) button during this warning period then the memory will not be wiped.

# Remote transmitter learning

Remote Transmitter Learning (RTL), when enabled, allows any existing learned wireless control to be used as a learn button for the learning of additional wireless controls. Note that this feature trades convenience for security. If it is chosen to disable RTL (the default setting at manufacture is enabled) then the level of security is increased. It is recommended that after use this feature be disabled.

## **To enable or disable RTL:**

Remove the lamp cover by turning the catch on its underside. Remove the green control panel cover to expose the setup controls. Identify the red learn button and the black program button. Hold both of these buttons down for three seconds until the courtesy lamp begins to flash. Release both buttons.

Six flashes confirms that RTL is now enabled.

Four flashes confirms that RTL is now disabled.

## **To place the opener in learn mode using RTL:**

Select any two or four button Merlin hand held remote control that is already learned in to the opener. Call this the master remote.

Press the North and the South buttons together for 2-3 seconds.

The courtesy lamp on the opener will begin to repeat a cycle of flashing three times and pausing. If you have several openers that operate from this master remote, then all these openers will begin to flash their courtesy lamps.

Press the button on the master remote that would normally operate the opener that you want to learn another remote into. Now that opener will go into learn mode, and any other openers that were flashing will return to their normal standby state.

The courtesy lamp on the opener that is in learn mode will begin to flash slowly. If no signals are received for 20 seconds, the opener will revert to its normal standby state.

## **To learn a button to operate the opener:**

Press the desired remote button, wait 1 second, press the desired remote button again. The courtesy lamp will stop flashing once learning is complete.

To learn one remote button to operate the opener and another to operate the lamp:

Press the learn button for 1-2 seconds, until the courtesy lamp begins to flash slowly.

Press the desired remote button for control of the opener, wait 1 second, press the desired remote button for control of the courtesy lamp. The courtesy lamp will stop flashing once learning is complete.

# Improving the door security

If there is a clear gap above the top of the closed door it is possible in some cases for people to gain unauthorised access to the garage after an opener is fitted. You can improve the security by adding a strip of metal or wood over any gap to block access to the manual release rope.

# Adding the Merlin M102 non-contact beam sensor (Optional)

Non-contact Near-Infra-Red beam sensors are optional but may be required in EC countries. Merlin strongly suggests they be fitted for increased levels of safety.

If sensors are fitted the opener will only close when the sensors are fully functional and where their beam is unobstructed.

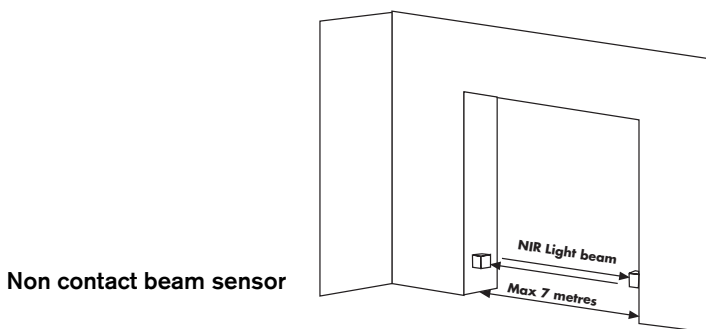
The sensors should be placed either side of the door opening, within 300mm of the door's opening, and within 100mm of the floor. Choose positions that will protect the sensors from accidental impact or water. If one sensor is marked 'receiver' then do not place that sensor where it will be subjected to bright direct sunlight. The high level of Infra Red light in bright sunlight may temporarily prevent normal operation of the opener.

Switch off the power to the opener. Run the pair of cables from each sensor back to the accessory terminals on the rear of the opener.

There is no need to connect the cables with any particular polarity.

Switch the power to the opener back on. Aim the sensors at each other using the adjustments provided. When correctly aligned and unobstructed the sensor LEDs will stop flashing and stay on continuously.

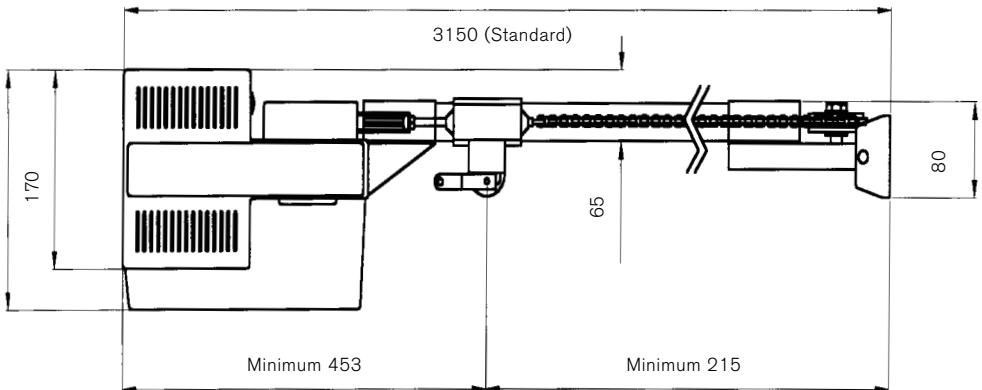
The door can open regardless of the sensor beam. Only the closing operation is affected by the state of the beam. If the beam is obstructed or if the sensors are not functioning then the door may still be closed by holding the manual control button down for at least two seconds, and keeping it held until the door is closed.



# Specifications

Replacement light bulb	E27 45mm Round, 40W maximum, RC preferred
Mains power required	220V to 240 V, 50 Hz, single phase AC, earthed
Suitable for	sectional doors, one piece tilt doors. Note that counterweight type doors are not suitable for automating
Stand-by power consumption	3 W
Operating power consumption	900 W
Net weight	15kg (installed using typical pole and strapping)
Trolley speed	depending on sprocket and load: 75 to 135mm/sec
Rated force	770N
Standard pole length	2750mm to suit chain supplied
Standard assembled overall length	pole length + 400mm = 3150mm
Standard trolley travel	pole length - 275mm = 2480mm
Minimum headroom required	100mm between the top edge of the door and the ceiling while the door is closing or opening
Minimum backroom required	600mm back from the rear edge of a fully opened door, depends on door arm chosen.
Ambient operating temperature	+5°C to +40°C.

## Overall dimensions



# Merlin service centres

## **New Zealand**

Auckland phone 09 415 4393

Phone toll free 0800 653 667 or 0800 MERLIN

Fax toll free 0800 653 663

## **Australia**

NSW, Vic, Qld, WA

Phone toll free 1 800 638 243

Fax toll free 1 800 640 243

## **England**

Phone toll free 0800 073 0112

Fax toll free 01709 514 534

**[www.merlingo.com](http://www.merlingo.com)**

Merlin does not accept responsibility for damage or injury resulting from installing this opener. Merlin reserves the right to change the design and specification without prior notification. Some features or accessories may not be available in certain markets or areas. Please check with your distributor.