SERVICE TRAINING MANUAL FOR

LM600A

LM800A

LM1000A

CHAMBERLAIN™

LiftMaster™

PROFESSIONAL

Contents

Overview

MODELS			
Features	**LM600A**	**LM800A**	**LM1000A**
Nominal pull force	600N	800N	1000N
Opener type	Belt/Chain	Belt/Chain	Belt/Chain
Electronic limit switch	Yes	Yes	Yes
“Smart” receiver	Yes	Yes	Yes
Radio frequency	433,92MHz Rolling Code	433,92MHz Rolling Code	433,92MHz Rolling Code
Number of remote controls (supplied as standard)	1	1	2
Multi-function door control panel	Accessory	Standard / 78LM	Standard / 98LM
Illuminated door control button	Yes	No	No
Maximum travel timer	Yes	Yes	Yes
Keyless entry system	Accessory	Accessory	Accessory
Protector System™ (Infrared Sensor)*	Accessory	Accessory	Accessory
Lighting	230V/40W	230V/40W	230V/40W
Duration of light cycle	1,5 – 4,5 min.	1,5 – 4,5 min.	1,5 – 4,5 min.
Quick-connect terminals	No	Yes	No
Rail type	C-rail 30mm	C-rail 30mm	C-rail 30mm
Rail length	Up to 3,0m	Up to 3,0m	Up to 3,0m
Maximum door width	5,0m	5,0m	5,0m
Maximum door weight	90kg	110kg	130kg
Recommended max. dimensions			
Soft start/Soft stop	Yes	Yes	Yes
Motor warranty	3 years	4 years	5 years
Full warranty	2 years	2 years	2 years

* Depending on model concerned

Features

1. LiftMaster openers work with a smooth-operating soft start /soft stop mechanism. The opener starts more slowly and accelerates immediately thereafter. Shortly before reaching the stop point, the speed is smoothly reduced again.
2 LiftMaster DC Door Openers 800 and 1000 have an automatic closing system. When a person enters or leaves the garage, the garage door closes automatically after the programmed period (4 - 180 sec.) has elapsed. This feature is only available in conjunction with a connected light barrier. If the beam from the Infrared Sensor is interrupted by an obstacle, it forces a closing door to re-open and prevents an open door from closing on it.
3. The Protector System (Infrared Sensor) operates with an infrared beam. If this beam is interrupted when the door is closing, it reverses the door and then opens it fully.
4. All LiftMaster DC openers are equipped with a lighting system intended to accommodate a light bulb (40W/230V, E27), which is controlled via the opener. The light switches on when the opener is activated and automatically switches off 2.5 minutes later (factory setting). The lighting can however be set individually to switch off after 1.5, 2.5, 3.5 or 4.5 min.
5. In the case of models supplied with a multi-function door control panel, the light can be operated independently of the actual functionality of the door opener.
6. The garage door can be opened using the multi-function door control panel, the illuminated door control button, the remote control, the keyless entry system or the (outside) keylock.
7. Models supplied with a multi-function door control panel are fitted with a “lock” switch. The display light behind the switch flashes when the “lock” switch is activated. In this state, the receiver does not accept any signals from the remote control. The keylock or keyless access system can however be used to operate the door.
8. The “Smart” receiver has 16/32/64 memory registers (600A/800A/1000A). Each memory register can be used for a remote control or keyless entry system. The receiver and remote controls work on the basis of the rolling code principle, i.e. the code that is transmitted whenever a button is pressed is changed each time. A code that has already been transmitted cannot be re-used. Up to 12 billion codes can be transmitted. Moreover, each remote control is equipped with its own individual code.
9. The garage door opener can be stopped at any time to, for instance, give the garage an airing. The PosiLock™ System is only active when the door is in a closed state. The PosiLock™ System “secures” the door 27 seconds after it has reached its end point of travel. If rotation is recognized by the motor when opening, the microchip orders the opener to then close again. The safety reverse facility is not active in such cases.
10. All models are compatible with the Infrared Sensor (770E). The sensors are fitted on both sides of the garage door and operate with an invisible infrared beam. The door is forced to immediately reverse before it makes contact with any given obstacle.
11. Electronic limit switches - the positions “UP” (OPEN) and “DOWN” (CLOSE) are electronically regulated in a precise manner. Please follow all the steps described in the instructions in full.
12. Door-in-door (slip-door) contact – the slip-door contact serves to secure an “access door” (communication door) built into a garage door. If switch 16200LM is not installed, the jumper must then be left connected on the opener.
13. Flashing light. Connect both wires to the FLA230 flash-lamp on the terminal unit. When the opener is operated, the flash-lamp starts flashing two seconds prior to the door starting to move. A 230 volt power supply is additionally needed for the light bulb in the flash-lamp.
14. Coaxial aerial connection (ANT4X-1LM) – an outside aerial is available as an accessory in cases where the range of the remote control is inadequate or structural specifics reduce its range. An aerial can be created using a standard 75 ohm coaxial cable (television aerial cable). The original aerial must be cut off for this purpose. Use a coaxial cable with a plug connection. 250mm of insulation should stripped from the outside end of the cable. Fix the aerial as high up as possible to achieve optimum range.

Specifications

Nominal voltage	230-240V, 50Hz
Nominal pull force	600N (model 600A), 800N (model 800A), 1000N (model 1000A)
Power consumption (operation)	130W (model 600A), 165W (model 800A), 190W (model 1000A)
Torque	6Nm (model 600A), 8Nm (model 800A), 10Nm (model 1000A)
Power consumption in standby mode	5,0W (model 800A & LM600A), 5,5W (model 1000A)

Motor

Type	DC motor with permanent lubrication
Voltage	24V direct current

Drive mechanism

Distance of travel	Adjustable up to 5m (with 3m rail + 2m extension)
Speed	Approx. 160mm/s (fast), smooth soft start/soft stop
Lighting	1 x 40W; 1.5 to 4.5 minute delay after opener stops (adjustable)
Door linkage	Adjustable door arm. Pull rope trolley release

Safety

Personal safety	Stop in UP (OPEN) or DOWN (CLOSE) direction via push-button at any time.
Electronic	Automatic upward and downward force programming
Electrical	Low-voltage wiring for accessories
Limit switch adjustment	Electronically
Start circuit	Low-voltage circuit for accessories

Dimensions

Length (overall)	See table of lengths on page 5
Headroom required	30mm (C-rail)
Hanging weight	Approx. 9,0kg

Rail Table

With door openers LM600A, LM800A and LM1000A	
Rail type	**Door height**
C-rail (chain)	
7017CR3	One-piece C-rail, chain, for 1.7m doors
7023CR3	One-piece C-rail, chain, for 2.3m doors
7025CR3	One-piece C-rail, chain, for 2.5m doors
7030CR3	One-piece C-rail, chain, for 3.0m doors
7423CR3	4-piece C-rail, chain, 2.3m
7010CR3	1.0m rail extension, chain, chain extension, chain lock, rail
7020CR3	2.0m rail extension, chain, chain extension, chain lock, rail
C-rail (belt)	
8023CR3	One-piece C-rail, belt, for 2.3m doors
8025CR3	One-piece C-rail, belt, for 2.5m doors
8030CR3	One-piece C-rail, belt, for 3.0m doors
8423CR3	4-piece C-rail, belt, for 2.3m doors
8430CR3	4-piece C-rail, belt, for 3.0m doors
8010CR3	1.0m rail extension, for 8030CR3 belt, belt for 4.0m, rail
8020CR3	2.0m rail extension, for 8030CR3 belt, belt for 5.0m, rail

Overview of Recommended Rails / Motors

	LM1000	LM800	LM600	5580	3780	LM60
7017CR3	**X**	**X**	**X**	**X**	**X**	
7023CR3	**X**	**X**	**X**	**X**	**X**	
7025CR3	**X**	**X**	**X**	**X**	**X**	
7030CR3	**X**	**X**		**X**	**X**	
7423CR3	**X**	**X**	**X**	**X**	**X**	**(Standard)**
7010CR3	**X**	**X**		**X**	**X**	
7020CR3	**X**	**X**		**X**	**X**	
8023CR3	**X**	**X**	**X**			
8025CR3	**X**	**X**	**X**			
8030CR3	**X**	**X**				
8423CR3	**X**	**X**	**X**			**(Standard)**
8430CR3	**X**	**X**				
8010CR3	**X**	**X**				
8020CR3	**X**	**X**				

Installation

Check the garage door and the assembly accessories prior to installing the door opener.

- Ensure that there is sufficient headroom, there aren't any worn rollers on the door, the cables / ropes are not chafed, the door is balanced and the rollers have been lubricated.
- Only connect the opener to a mains supply that has been EARTHED in accordance with the standards and regulations applying locally.
- The door should close fully.
- To avoid serious personal injury, remove all the ropes and wires connected to the garage door prior to installing the garage door opener.
- Disengage all the garage door locks to avoid damage to the garage door.
- Read the LiftMaster installation instructions carefully and then pass them on to the customer.

Installation

Once you have determined which garage door the opener should be installed on, please note the following instructions.

- Ensure that the trolley bracket is firmly attached to the garage. If it is incorrectly installed, the safety reverse system may not function properly.
- Follow the instructions given by the door manufacturer as to whether the door needs reinforcing so that it does not bend or become deformed.
- The installation and electric wiring must be installed in accordance with the relevant regulations.
- The garage door must reverse on contact with an obstacle at least 50mm high laid flat on the floor. Failure to carry out the safety reverse system test may result in serious personal injury.
- The door control button and switch should not be mounted in the immediate vicinity of the door while its moving parts should be located at a minimum height of 1.5m (out of the reach of children).
- Permanently fasten the caution label to the wall near the door control button as a reminder of safe operating procedures.
- Instruct the customers as to the functioning and operating of the garage door opener, how the safety reverse system works, the nature of routine maintenance work, etc.

Opener Logic (Design)

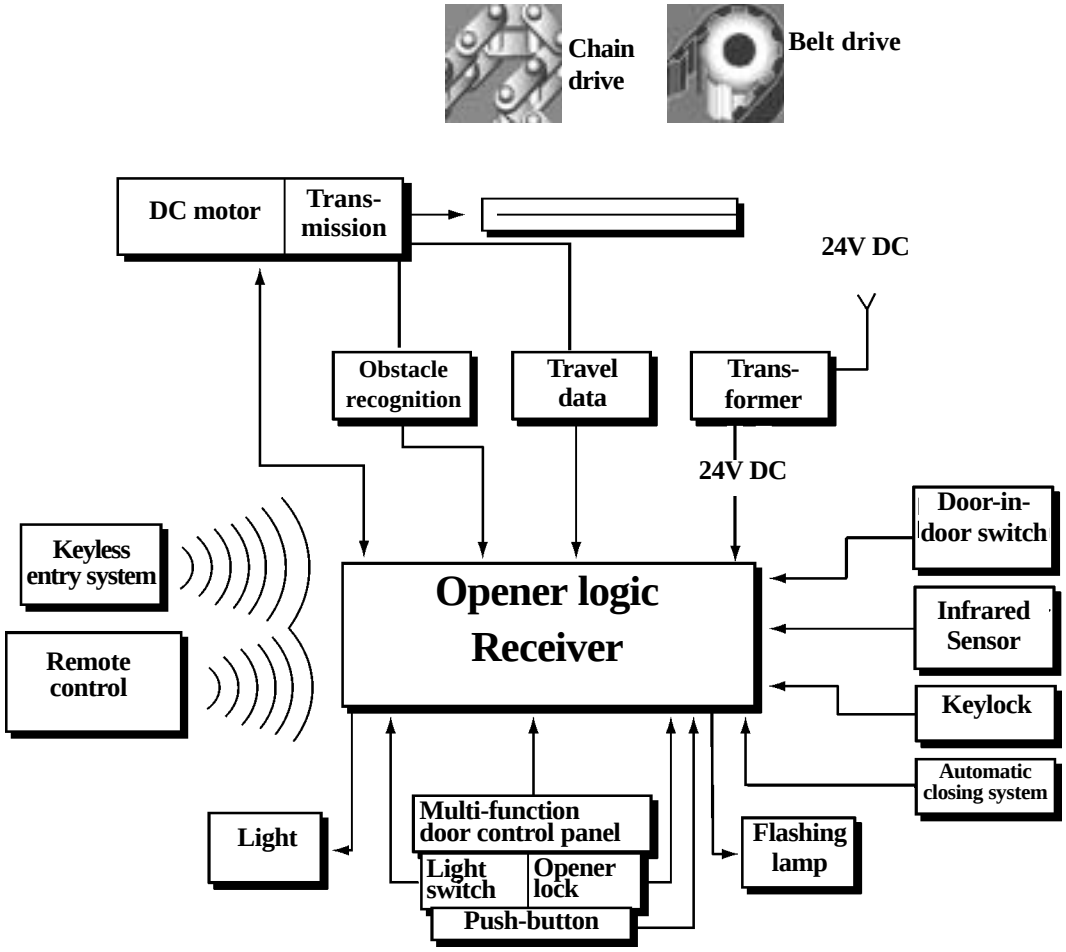


FIGURE 1: DESIGN

The opener is activated by operating the remote control, the wall-mounted multi-function door control panel, the illuminated wall-mounted door control push-button or the keyless entry system. When the drive is activated, it either opens or closes the garage door and then switches itself off.

Opener Logic (Design) (contd.)

Light Delay Mechanism

All LiftMaster DC door openers are fitted with a socket to accommodate a light bulb (max. 40W, 230V, E27) which is regulated via the drive control system.

The light is switched on automatically when the opener is activated, and switches itself back off again 2.5 minutes later (factory setting).

Safety Reverse Mechanism

1. The force is set on the back of the door opener by means of the red push-button (see description in “Force Programming Cycle” section).
2. The door stops and reverses if it encounters an obstacle when closing.
3. The door stops if it encounters an obstacle when opening. The door can be stopped at any time when closing.
4. The time setting for the “automatic closing system” can be programmed such that the door closes 60, 120 or 180 seconds after it has opened (the minimum setting is 4 seconds). If the light beam emitted by the Infrared Sensor is interrupted, the period set for the “automatic closing system” restarts from scratch.

Manual Release in Case of Power Failure

By pulling on the red release handle, the garage door can be operated manually in case of power failure. In the case of the C-rail, the trolley does not automatically re-engage the next time the opener is activated. The manual release lever must be reset by hand.

Receiver/Control Module

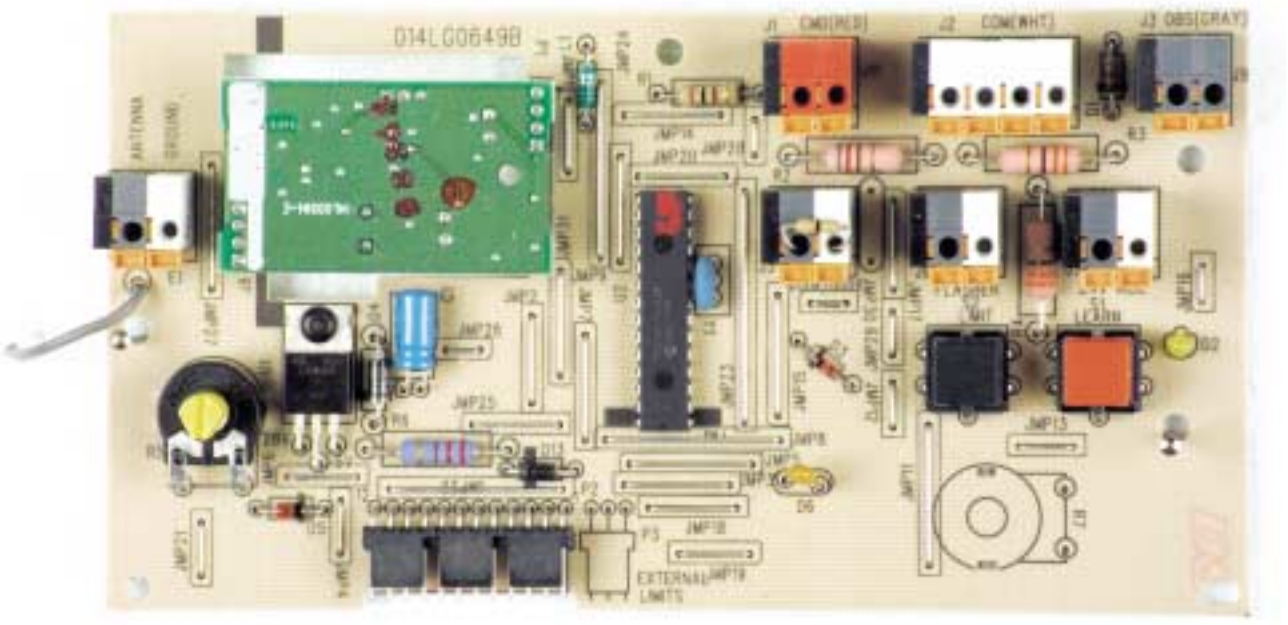
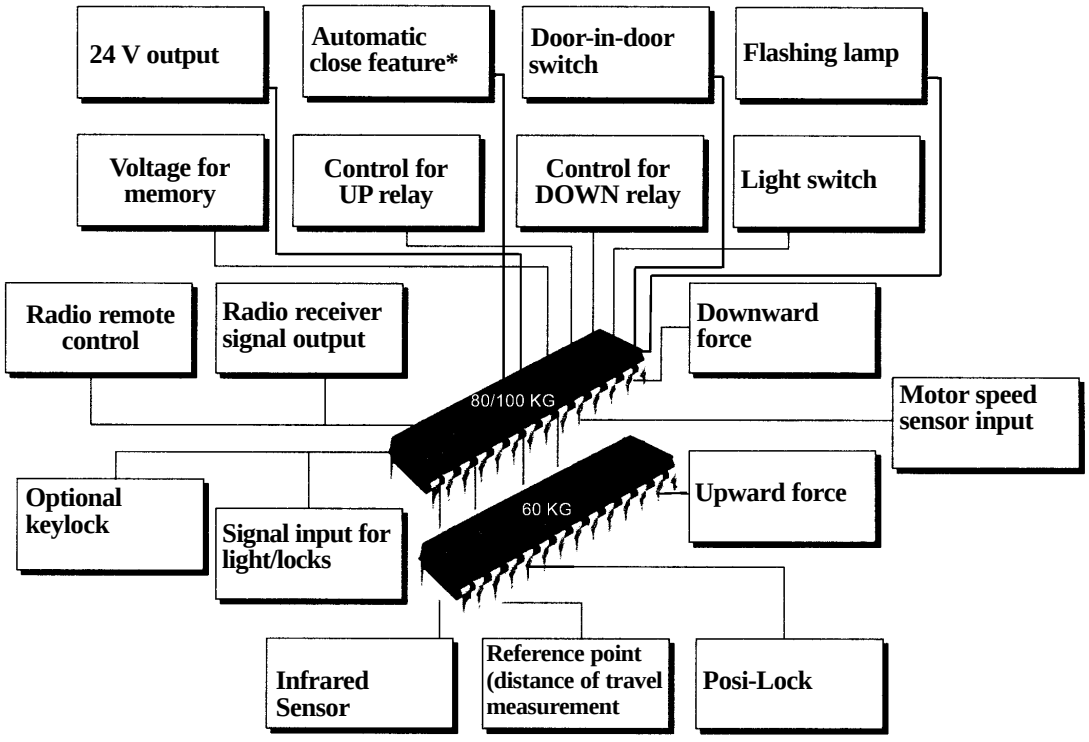


FIGURE 2: Receiver/Control module



*** Only for door openers with 80/100kg**

FIGURE 3

LiftMaster “Smart” Receiver

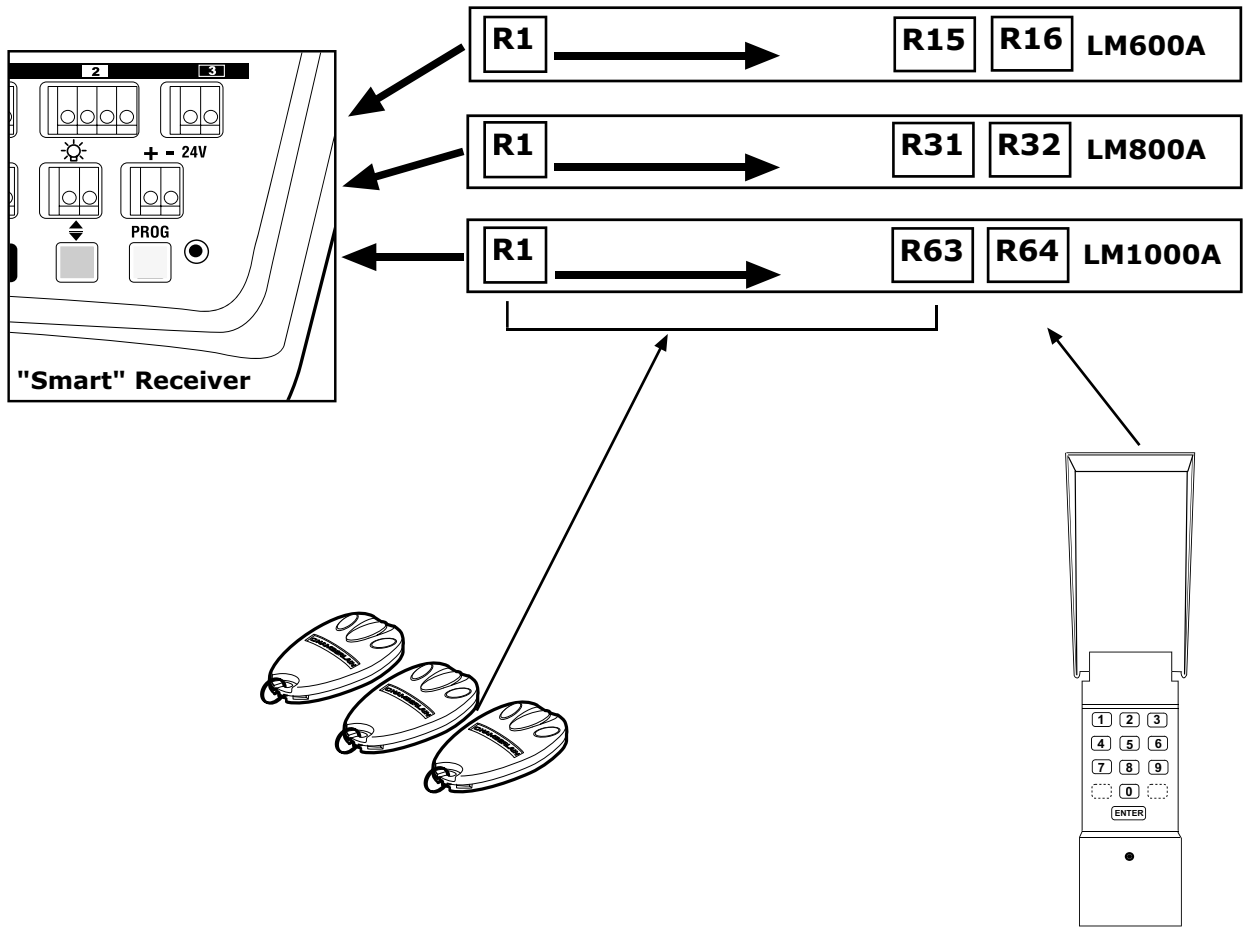


FIGURE 4 “Smart” Receiver

The “Smart” receiver is equipped with a chip encompassing 16/32/64 memory registers (600A/800A/1000A) and a “non-volatile” memory. The remote control is fitted with rolling code technology as standard. The first 15/31/63 memory registers (R1 to R15/31/63) are intended for remote controls (models 94330E, 94333E, 94335E, 4330E, 4333E and 4335E), the memory registers (R16/32/64) can store a keyless entry system (model 9747E).

If the PROG button (“Smart” button) is pressed and held for longer than approx. 6 seconds, all the memory slots will be deleted.

The LED indicator light next to the button also goes out as an additional signal.

It is not possible to use rolling and billion code remote controls at the same time. If billion code remote controls are to be used, then all the rolling code remote controls need to be deleted before the first billion code remote control can be programmed on to the receiver. The number of available memory registers is not affected by this.

Remote Control Features

The remote controls use a trinary system (3-phase) for transmission purposes.
They are equipped with either a crystal or saw base printed circuit board in order to comply with the strict EMC (electromagnetic compatibility) requirements.
The remote controls (models 94335E, 94330E and 94333E) are equipped with two 3-volt lithium batteries (CR2032). The batteries have a service life of up to 5 years.

When the remote control is activated, it generates a pulsating radio signal.

When the receiver in the door opener picks up a signal, it compares the signal with the code it has memorized. The receiver verifies the coding twice. If it accepts the code, the door opener will be activated. The receiver's decoder has a response time of 0.3 seconds – from the activation of the remote control to the opening of the garage door.

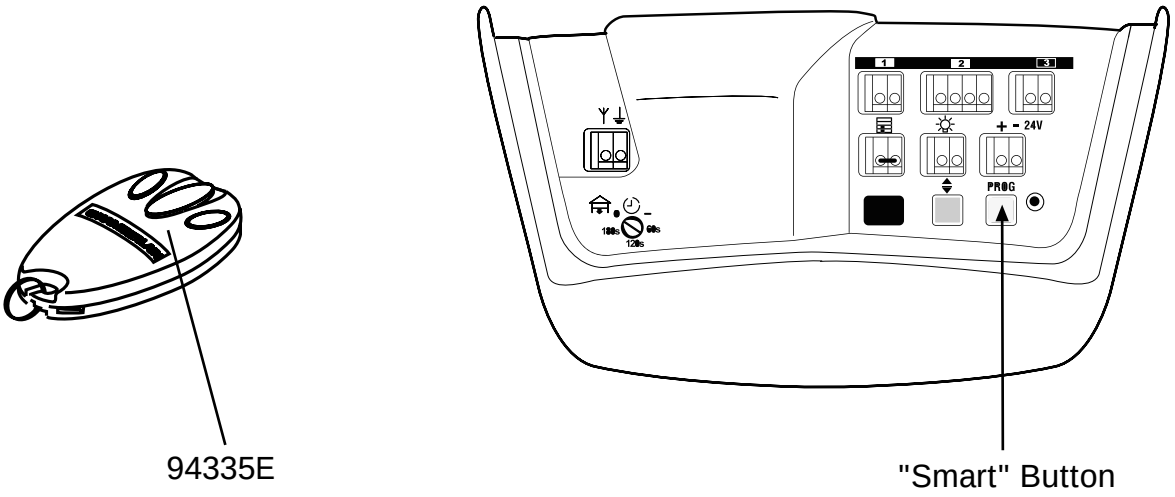


FIGURE 5 Features of the remote control and receiver

Remote Control Models

Remote Control with Rolling Code Technology

For the secure control of your garage door from your vehicle. Rolling code technology ensures that your garage remains secure even if your remote control is stolen or copied.

Model 94330E and 94333E remote controls are equipped with two 3-volt lithium batteries (CR2032).

The model 94335E remote control is fitted with one 3-volt lithium battery (CR2032). The battery has a service life of up to 5 years.

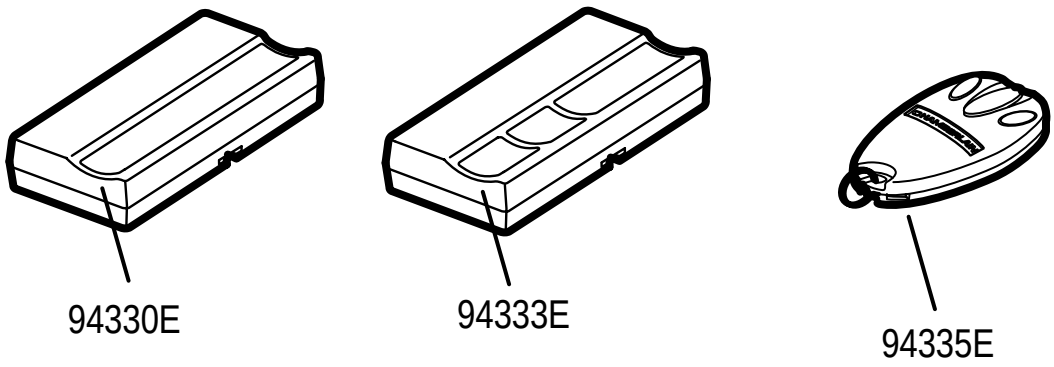


FIGURE 6 Remote Control Models

Programming the Receiver on to the Remote Control

Programming the Receiver on to the Remote Control

1. Press and hold the button on the remote control.
2. Press and release the PROG button (“Smart” button) on the back of the opener. The light on the opener flashes once as confirmation.
3. Release the button on the remote control.
4. Finished.

The opener will now operate when the button on the remote control is pressed.

Programming the Remote Control using the Wall-Mounted Multi-Function Door Control Panel

1. *With the door in a closed state, press* and hold the button on the remote control.
2. Press and hold the light button on the multi-function door control panel.
3. Continue holding both buttons while you press the push bar on the multi-function door control panel.
4. Release all the buttons when the opener light flashes once.
5. Finished.

Now the opener will open or close when the button on the remote control is pressed.

Deletion of all Remote Control Codes

Press and hold the “PROG” button (“Smart” button) on the back of the opener until the indicator light goes out (approx. 6 seconds). All codes previously programmed on to the door opener will thus be deleted.

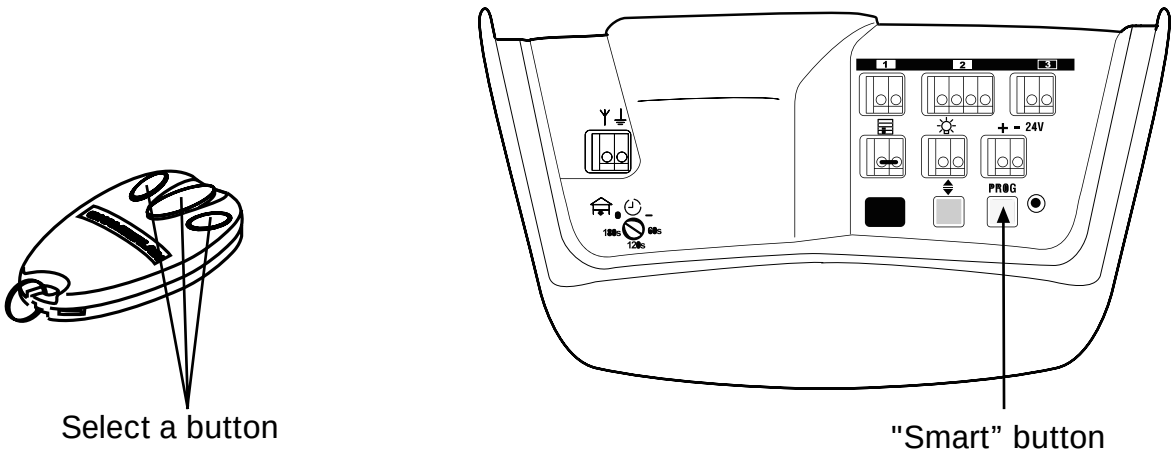


FIGURE 7 Programming the receiver

Programming the Keyless Entry System (Model 9747E)

Special Features

The keyless entry systems are compatible with all “Smart” receivers with the same frequency.

Personal code: Input of a 4-digit code of your choice (10,000 options). Your personal code can be changed by programming a new code or deleting it.

Operation: 9747E models have a 9-volt power supply. The garage door opener is activated when a four-digit code is entered and confirmed by pressing the ENTER button.

If the wrong number is accidentally entered, this can be corrected immediately. By pressing the ENTER button, only the last four digits input are accepted.

The keypad flashes for 15 seconds as soon as the code has been transmitted. During this period, it is possible to STOP or REVERSE the door’s movement by pressing the ENTER button.

Entering or Changing Your Personal Code

We recommend that you program your personal code before installing the keyless entry system. Before proceeding, test the reception in the chosen location.

1. Select a 4-digit code using numbers from 0 to 9. All the numbers can be used more than once (e.g. 4,7,1,1).
2. Input the numbers into the keyless entry system. Press and hold the ENTER button. The indicator light on the keyless entry system will shine.
3. Briefly press the PROG button (“Smart” button) on the door opener. The indicator light flashes once and the door is activated. The receiver has now learned the code selected via the buttons.

The door opener now operates when the code is input and the ENTER button is pressed.

You can also program the keyless entry system via the multi-function door control panel.

1. *With the door in a closed state,* input the code number on the keyless entry system and hold the ENTER button.
2. Press and hold the light button on the multi-function door control panel.
4. Press and hold the push bar on the multi-function door control panel.

Changing the Code on the Keyless Entry System

Input the code valid at the given time into the keyless entry system.

• Press and hold the number 0. Additionally press the ENTER button.
• The door opener light flashes twice.
• Now you can release the buttons.
• Input the new 4-digit code number into the keyless entry system.
• Then press and hold the ENTER button.

The receiver has now learned the new code selected via the buttons.

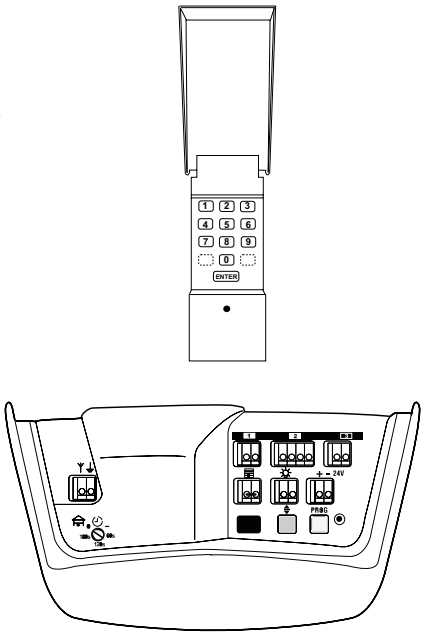


FIGURE 8

Multi-Function Door Control Panel

The multi-function door control panel is intended to open and close the garage door from inside.

Further special features are described here in brief:

Lock/Safety Switch

Remote operation can be prevented at the push of a button – the receiver then accepts no further signals emitted by the remote control. The garage door can however be activated via the multi-function door control panel, the outside keylock or keyless entry system. The flashing LED indicator light behind the "Start" button shows that the "Lock/Safety" switch has been activated.

Light Switch

The light switch can be used to switch the light on and off without activating the door opener. The light can be switched off by pressing the light switch again or by opening or closing the garage door.

If the garage door is activated, the light switches off automatically after 1.5, 2.5, 3.5 or 4.5 minutes depending on the given setting.

Programming the Remote Control/Keyless Entry System via the Multi-Function Door Control Panel

1. **Remote control –** press and hold the button on the remote control while the door is in a closed state.

   Keyless access system – input the 4-digit code number via the keypad and hold the ENTER button.
2. Press and hold the light button on the multi-function door control panel. Press the button on the remote control or the ENTER button on the keyless entry system. Press and hold the push bar on the multi-function door control panel.
3. Release all the buttons when the door opener light starts flashing. The new code has been programmed.

NOTE: Consult pages 13-14 for further information on programming the remote control and the keyless entry system.

Operation of door opener light

Press the LIGHT button to turn the opener light on or off. This button will not control the opener light when the door is opening or closing. If you turn the light on and then activate the door opener, the light will remain on for 1.5 – 4.5 minutes. Press again to turn it off sooner. The standard 2.5 minute interval can be changed to 1.5, 3.5 or 4.5 minutes as follows:

Press and hold the LOCK button until the light on the door opener starts flashing (about 10 seconds). A single flash indicates that the timer has been reset to 1.5 minutes. Repeat the procedure and the light will flash twice, resetting the timer to 2.5 minutes. Repeat again for a 3.5 minute interval and a further time for the maximum possible interval of 4.5 minutes.

Multi-Function Door Control Panel (contd.)

Lock feature

This is designed to prevent the garage door being operated via a remote control. The garage door can however still be operated via the multi-function door control panel, the outside keylock or keyless entry system.

To activate the lock, press and hold the LOCK button (3) for two seconds. The push bar light will flash as long as the LOCK feature is on. To turn the lock off, press and hold the LOCK button again for two seconds. The push bar light will stop flashing. The LOCK feature will also turn off whenever the LEARN button on the door opener has been activated.

Open/Close/Stop operation (only in conjunction with a multi-function door control panel):

Your remote control can be programmed to operate one door using all three buttons – the left button for just opening the door, the middle button for closing it and the right button for stopping it. This mode of operation can be set as follows:

1. With the door closed, press and hold the left button on the remote control.

2. Press and hold the LOCK button on the door control panel.

3. Press and hold the push bar on the door control panel.

Release all the buttons when the door opener light starts flashing. Test by pressing the left (OPEN) button on the remote control. The door should open. Press it again if the door is open – nothing should happen (no reaction) in this case. Press the middle (CLOSE) button and the door should close. Press the right button (STOP) while the door is in motion. The door should stop immediately.

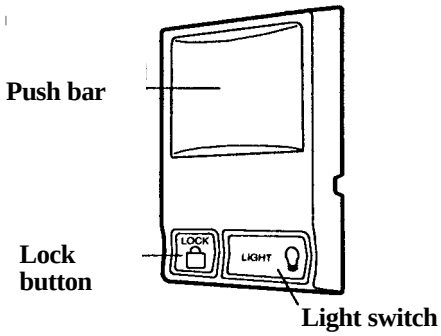


FIGURE 9 Multi-function door control panel

Connections

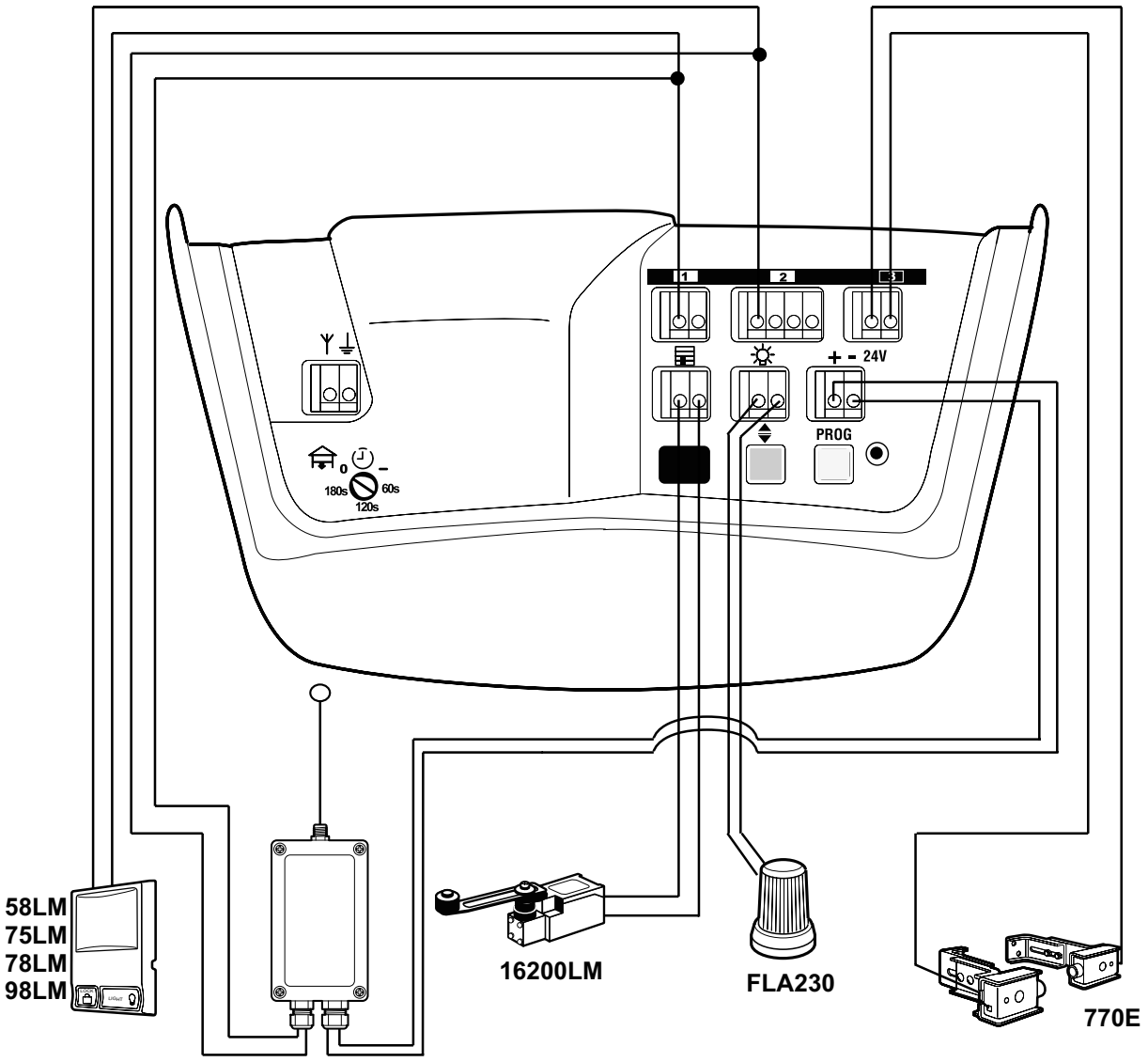


FIGURE 10

Automatic Setting of the Limits

Electronic travel limits regulate the points at which the door will stop when moving up or down. The upper end point of travel is set manually at the push of a button. The lower point is set automatically (step 4). For this step, the remote control that is supplied as standard is required. Use only this remote control as it has been pre-programmed (see the "Programming the Door Opener and Remote Control" section).

1. To activate: Press and hold the black button (1) on the back of the door opener for approx. 2 seconds and then release it in order to activate the programm. The LED indicator light (3) next to the buttons will start flashing slowly to show that the door opener is in "LEARN" mode.

2. To open the garage door: Press and hold the black button (1) until the door has reached the desired upper end point of travel (OPEN). If the door opens too wide, the red button ("Smart" button) (2) can be used to reverse it. Check to ensure that the door is high enough for your vehicle. Adjust as necessary.

3. Learn cycle: If the desired UP (OPEN) position has been found, press the button on the remote control or door control button (4). The door will then travel to the floor*, reverse and re-open up to the desired upper point of travel. The LED indicator light stops flashing and goes out. The door opener has now "learned" its upper and lower end points of travel.

* If the door does not travel to the floor but instead stops or reverses beforehand, the factory-set force that has been pre-programmed is too low than that actually required. The door opener reacts as an indication that the force setting needs to be increased. In this case, please programm the lower point manually.

4. .Once the travel distance has been learned, the force setting needs to be programmed. Press and release the red button twice. The yellow LED indicator light starts to flash and the door opener is in "Force Learning" mode. Press the button on the remote control or the push bar on the door control panel. The door will travel right down to the floor and remain in this position. Next you should press the remote control button or push bar on the door control panel again and the door will re-open fully. The yellow LED indicator light will stop flashing and the force learning cycle has been completed. The door must travel through at least one complete cycle.

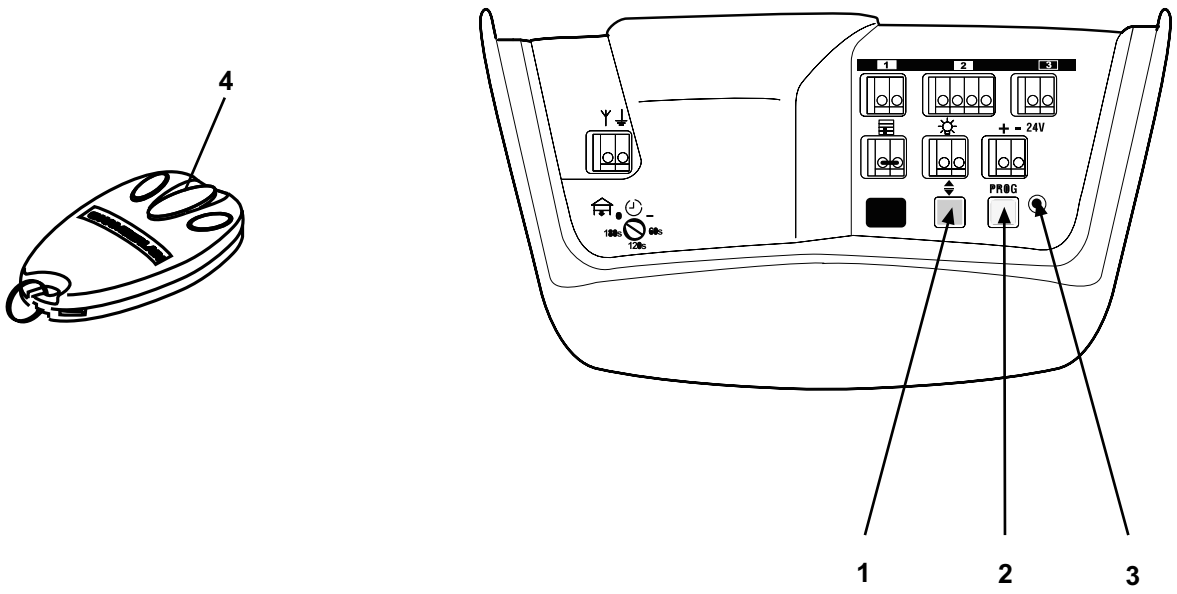


FIGURE 11 Setting of the limits

Manual Setting of the Limits

Procedure:

1. To activate: Press and hold the black button (1) on the back of the door opener for approx. 2 seconds and then release it in order to activate the programm. The LED indicator light (3) next to the buttons will start flashing slowly to show that the door opener is in “LEARN” mode.
2. To open the garage door: Press and hold the black button (1) until the door has reached the desired upper end point of travel (OPEN). If the door opens too wide, the red button (“Smart” button) (2) can be used to reverse it. Check to ensure that the door is high enough for your vehicle. Adjust as necessary.
3. Press the remote control or the push bar on the door control panel. This sets the limit for the door’s fully UP (OPEN) position (programmed). The door will then begin to close. Immediately press either the orange or black button. The door will stop. Adjust the desired DOWN (CLOSED) position of the door using the black and orange buttons. Check to be sure the door closes fully without applying excessive pressure on the rail (rail should not bow upwards and the chain/belt should not sag or droop below the rail). This sets the limit for the door’s fully DOWN (CLOSED) position. The door begins to open.

Note: *If neither the black nor the orange button is pressed before the door reaches the floor, the garage door opener will attempt to carry out an automatic limit setting manoeuvre, reversing the door off the floor and stopping at the UP (OPEN) limit position that has been set. If the worklight does not flash ten times, the limit setting procedure has been successful and doesn’t need to be carried out manually; the DOWN (CLOSED) door position is set on the floor.*

Regardless of whether ***the limits are set automatically or manually, the force MUST be programmed in order to properly complete the setting of the limits.***

4. Open and close the door two or three times with the remote control or via the door control panel.
   - If the door does not stop in the desired UP (OPEN) position or reverses before it stops in the DOWN (CLOSED) door position, *repeat the manual setting of limits procedure.*
   - If the door stops in the both the desired UP (OPEN) and DOWN (CLOSED) positions, proceed to the “Testing the Safety Reverse System” section.

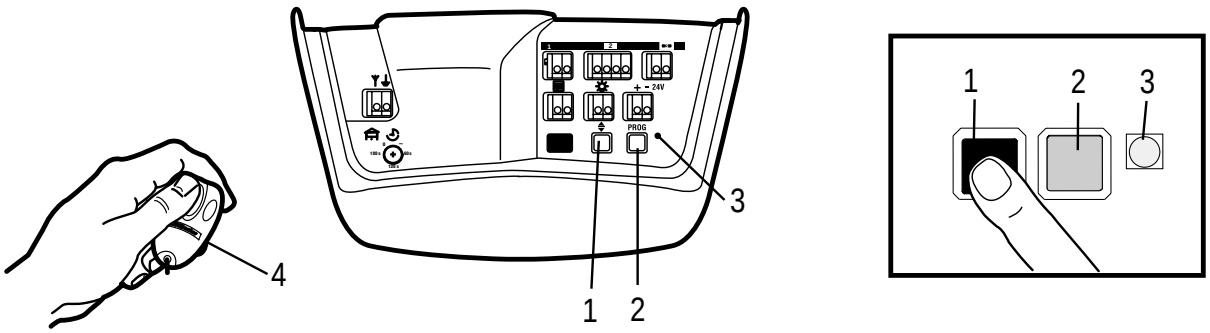
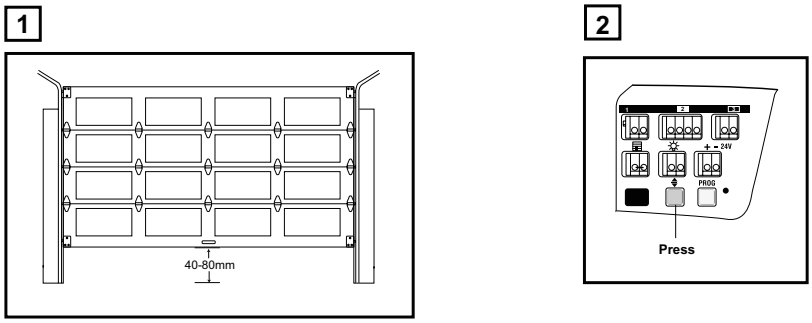
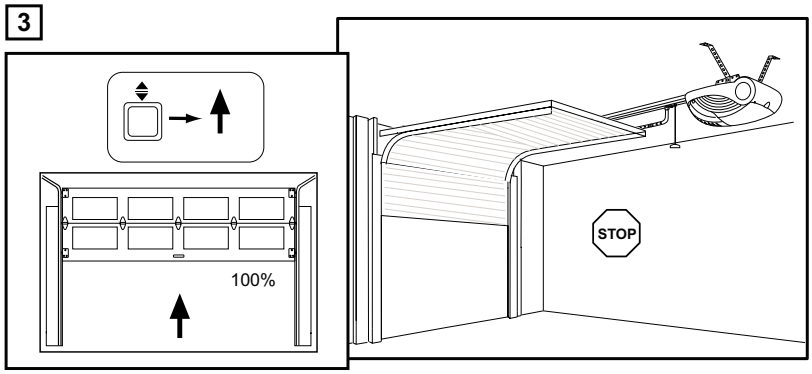


FIGURE 12 Setting of the limits

Travel Setting





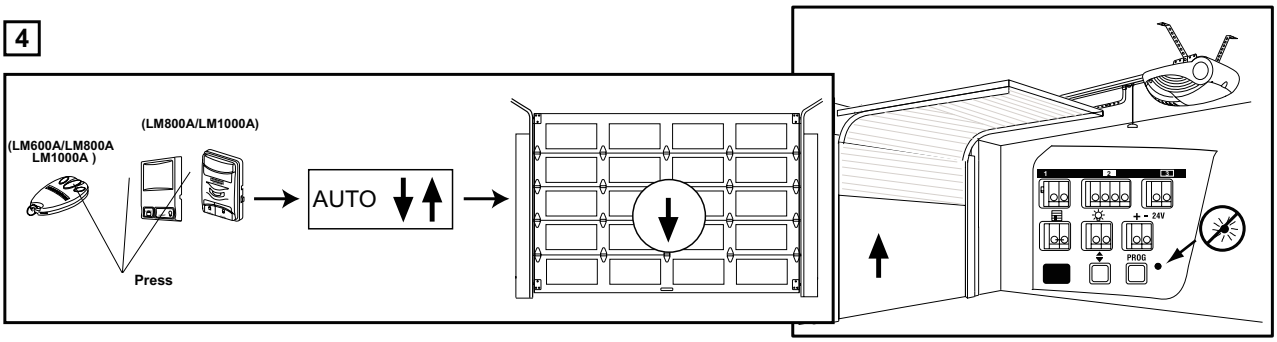


FIGURE 13 Setting of limits

Setting the Force

The force, as measured at the closing edge of the door, should not exceed 150N (15kg). If the closing force is measured at more than 150N (15kg), a Infrared Sensor needs to be installed.

Do not readjust the force to correct any problems with jamming or sticking the door may have. The use of excessive force can affect the proper functioning of the safety reverse system or cause damage to the garage door.

The force is set (1&2) by means of the red button located on the back of the door opener.

As the weather can affect the smooth-running of the garage door, it may be necessary for occasional adjustments to be made for this reason. These are made fully automatically by the door opener itself.

Whenever the door moves, the opener checks the force requirement fully automatically and adjusts it as necessary.

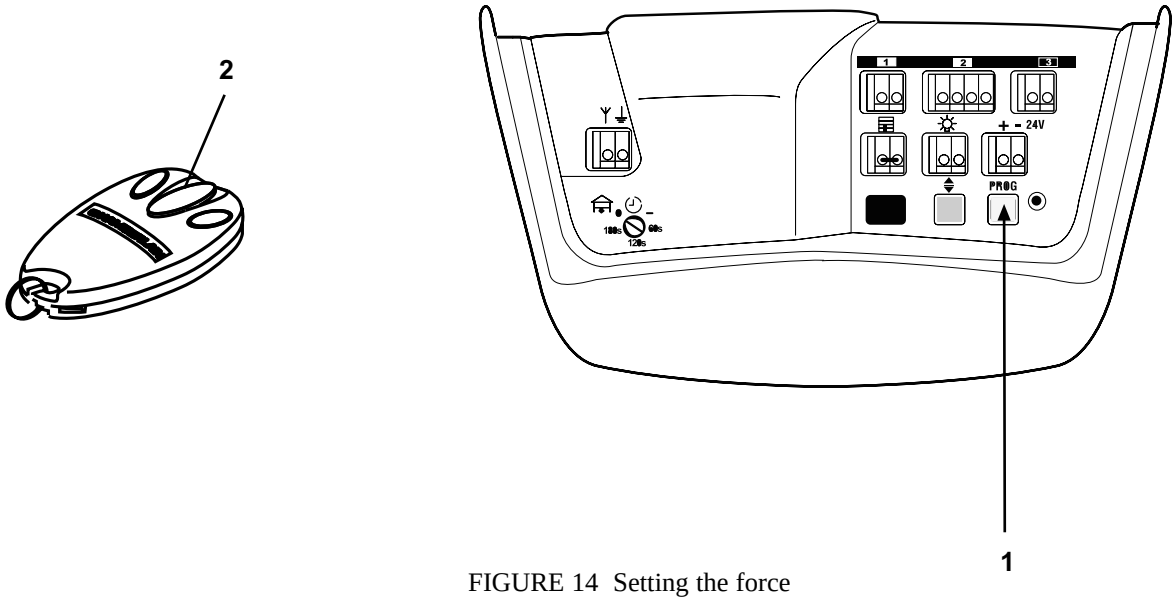


FIGURE 14 Setting the force

Automatic Reverse System

Test the safety reverse system after

1. each time the limits and force are set
2. each time the garage door is repaired or adjusted (including springs or other bracket elements)
3. each time the garage floor is repaired or modified
4 each time the garage door opener is repaired or adjusted.

CONSULT THE INSTALLATION INSTRUCTIONS FOR FURTHER INFORMATION ON THE 50MM TEST.

Obstacle Test

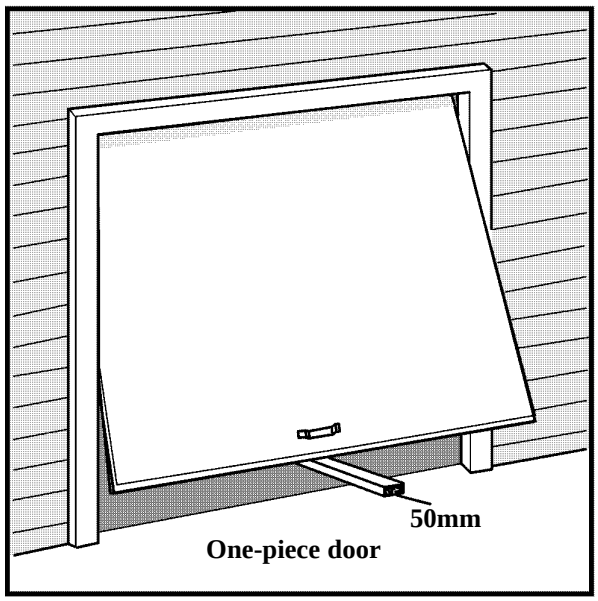
THE SAFETY REVERSE TEST IS VERY IMPORTANT. THE GARAGE DOOR MUST REVERSE ON CONTACT WITH AN OBSTACLE 50MM HIGH LAID FLAT ON THE GARAGE FLOOR. FAILURE TO PROPERLY ADJUST THE OPENER MAY RESULT IN SERIOUS PERSONAL INJURY FROM A CLOSING GARAGE DOOR. REPEAT THIS TEST ONCE A MONTH AND MAKE ANY ADJUSTMENTS THAT MAY BE NEEDED.

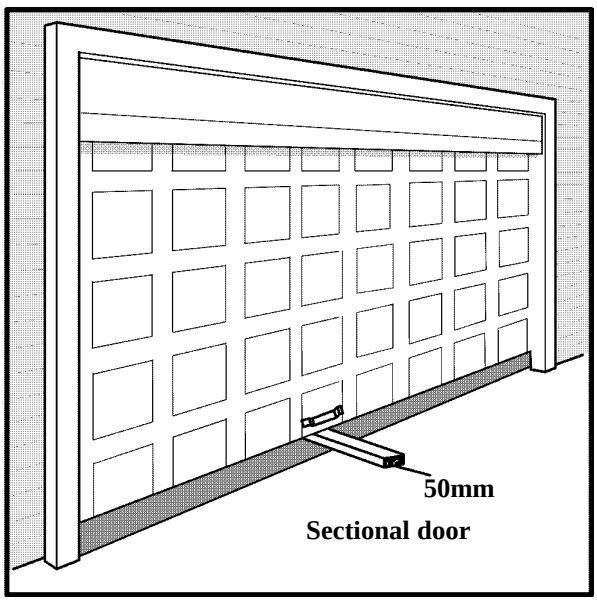
Procedure: Always start with the garage door in an open state. Lay an obstacle 50mm high flat on the floor under the garage door. Move the door in a downward direction; the door must reverse on making contact with the obstacle. If it does not stop, the force needs to be reset.

If the door reverses when making contact with a 50mm obstacle, remove the obstacle and run the door opener through a full cycle. The door should not reverse when in an UP (CLOSED) position. After this, reset the force and repeat the safety reverse test.

Note: In the case of sectional doors, it is important that the door arm (pull arm) is not vertical when the door is UP (CLOSED). There is a risk that the door arm folds over forwards (moves through more than 90 degrees).

FIGURE 15 Obstacle test





The Protector System™ Infrared Sensor

THE FORCE, AS MEASURED AT THE CLOSING EDGE OF THE DOOR, SHOULD NOT EXCEED 150N (15KG). IF THE CLOSING FORCE IS MEASURED AT MORE THAN 150N (15KG), A INFRARED SENSOR NEEDS TO BE INSTALLED. IN THE CASE OF THE LM800 AND LM1000 MODELS, THE PROTECTOR SYSTEM MUST BE INSTALLED BEFORE THE AUTOMATIC CLOSING SYSTEM CAN BE OPERATED.

Study the details printed on the label attached to each module in order to identify the given Protector System (Infrared Sensor). The transmission lens sends an invisible beam of light to the receiver lens. If this beam of light is interrupted during the closing cycle, the door stops and then re-opens fully; the LED indicator light on the back of the opener flashes 5 times. The modules must be installed on both sides of the garage door, providing the sun doesn't shine directly into the receiver lens. However, the panels must be fastened and connected such that the transmission and receiver lens are opposite each other, as shown in figure 16.

IN ORDER TO PROTECT YOUNG CHILDREN, THE PROTECTOR SYSTEM (INFRARED SENSOR) SHOULD BE INSTALLED APPROX. 350MM ABOVE THE GARAGE FLOOR. THE POWER SUPPLY TO THE OPENER SHOULD BE DISCONNECTED PRIOR TO INSTALLING THE PROTECTOR SYSTEM (INFRARED SENSOR).

Testing the Protector System™

Place an obstacle beneath the door that is large enough to interrupt the sensor beam in the doorway.

The door must reverse and move to a fully UP (OPEN) position before making contact with the obstacle.

Note: The garage door opener will not close if the LED indicator light in one of the sensors is flashing.

If the protector system (Infrared Sensor) has not been correctly connected or aligned prior to the end of the closing cycle, the garage door can be closed manually via the control button on the opener, the multi-function door control panel or the keyless entry system.

Fail-Safe System

The door opener can be set to "Fail-safe" mode by interrupting a small diode located between terminals 2 and 3 on the back of the door control. It then checks on an ongoing basis whether a Infrared Sensor is connected, whether it is operational and whether any fault/obstacle has been reported.

***Note:* As from production date October 2004, all openers will be equipped with an automatic Infrared Sensor recognition system. If a Infrared Sensor is correctly connected for just a few seconds, the door control recognizes this and, from this point on, the Infrared Sensor will be mandatorily demanded by the software. Should the Infrared Sensor no longer be installed or have been dismantled, the door control needs to be reset.**

1. Disconnect all the cables to the Infrared Sensor.
2. Remove the door opener from the mains (pull the plug out).
3. Reconnect the plug after 5 seconds.
4. Disconnect the opener from the mains after a further 5 seconds.
5. Reconnect the plug after another 5 seconds. The "only with a Infrared Sensor" requirement has thus been deleted on the door opener.

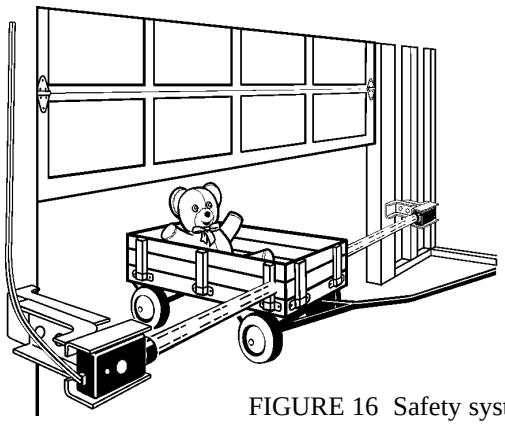


FIGURE 16 Safety system (IR Sensor System)

Troubleshooting Infrared Sensor

1. ***In the event of the receiver LED indicator light not coming on after installation, check the following:***
   - Power supply to the door opener.
   - Short circuit in the black/white wire. This can occur under the cable terminals or connection terminals.
   - Incorrect wiring between the sensor and the door opener.
   - Interruption of power circuit (broken circuit).

2. ***If the transmitter LED indicator light shines steadily but the receiver LED indicator light does not, you must:***
   - See if an obstacle is in the way.
   - Check the alignment.
   - Check the connections.

(NOTE: CONSULT PAGES 28-30 FOR FURTHER INFORMATION ON INFRARED SENSOR FAULT ANALYSIS).

Setting the Tension (Chain/Belt)

The correct adjustment of the tension, the chain or the belt is key to the service life of the motor.

Incorrect tensioning causes the motor bearing to wear prematurely.

Thread the spring nut on to the carriage screw until finger tight. Insert the tip of a screwdriver (1) into one of the slots in the nut ring (2) and brace it firmly against the header sleeve. Fit an open-end spanner (3) on the square head of the spring nut (4) and turn the spring nut by approx. 90° in a clockwise direction until the nut ring (2) is released against the header sleeve (5). This sets the spring to the optimum chain tension. If the chain is too loose, it can slip off the sprocket. If the chain does slip, re-tighten the spring nut by turning the nut 180° in a clockwise direction.

The spring should not be pressed completely together.

It is normal for the chain or belt to sag somewhat when the door is UP (CLOSED), but this has no effect on the service life of the opener.

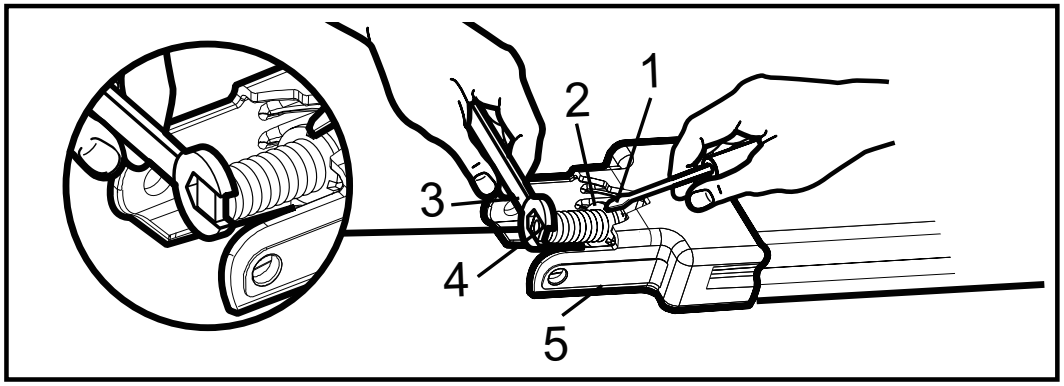


FIGURE 17 C-rail

Remote Control Tester M18E
M18E-400 Test Set

The remote control tester immediately indicates the transmitter's relative signal output performance. The actual signal output level can only be determined by comparing it with a transmitter that has been proven to be a "good" one. The tester additionally indicates an approximate signal frequency value but cannot guarantee that the set frequency values fall within the tolerance range of the factory-set values.
Users are advised to re-run the transmission range test with a different receiver module if the ranges achieved are non-compliant.

M18E-400 test set can be used to determine transmission strength, battery power and alignment.

Remote Control Test

To test the transmitter, the selector switch should be set at 433MHz/12V. Next, set the sensitivity range switch to LOW. Place the tester on a non-metallic surface and hold the transmitter 100mm – 150mm above the upper edge of the tester. Press the button on the transmitter. The indicator light should come on in the "Transmitter OK" area of the display.

Interference Test

The M18E-400 test set can be used to identify sources of interference that prevent the garage door opener from receiving signals transmitted by the remote control. Turn the power switch to ON and position the sensitivity range switch to HI (High). If the intensity indicator light shines green, reset the selector switch to the MED (Medium) position and continue your search. If the indicator light again shines green, reset the switch to LOW. You should now be in the immediate vicinity of the source of interference (fluorescent tubes, poor wiring or other incorrectly insulated electrical appliances).

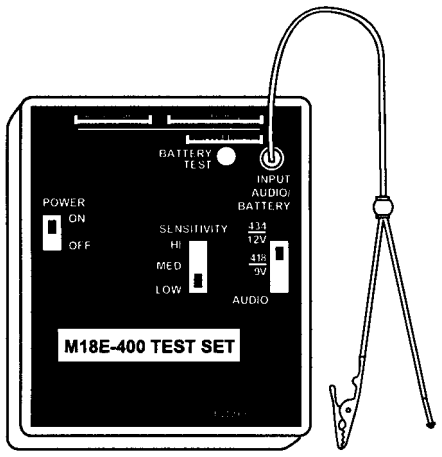


FIGURE 18 M-18 test

Motors and transmissions

All DC openers are equipped with a permanently lubricated 24-volt direct current motor. The reference point system for travel evaluation is located in the motor (figure 19). The reference point supports the opener's logic system in calculating the distance of travel.
Figure 20 shows all the parts in their dismantled form including the large motor speed sensor wheel, the two small reference point wheels with the windows that are located above one another and the control unit. Figure 21 shows the parts in their assembled form ready for fitting to the motor.

FIGURE 19

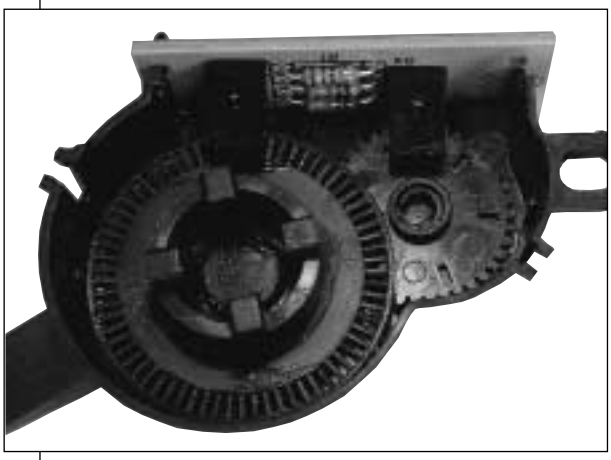


FIGURE 20

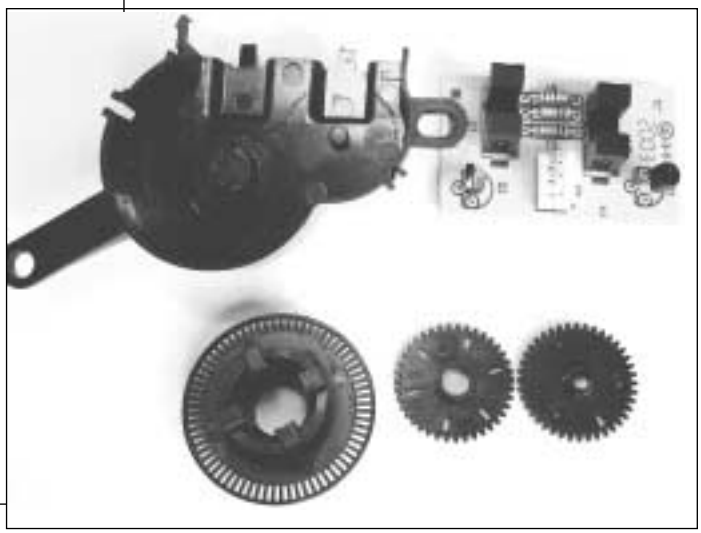


FIGURE 21

Motor Replacement

The motor can be removed as a complete unit as follows:

1. Switch off the power supply.
2. Remove the light cover.
3. Remove the cover (2 screws).
4. Disconnect the plug from the motor.
5. Disconnect the motor lead cables (black and red).
6. Remove the motor mounting screws (3 screws - see figure 22).
7. Repeat steps 2 to 6 to re-install the motor.
8. Slot the cover back in place before reconnecting the power supply.
9. Test the safety reverse system (see page 22).

Note: Make sure that the cable harness and motor leads are all connected.

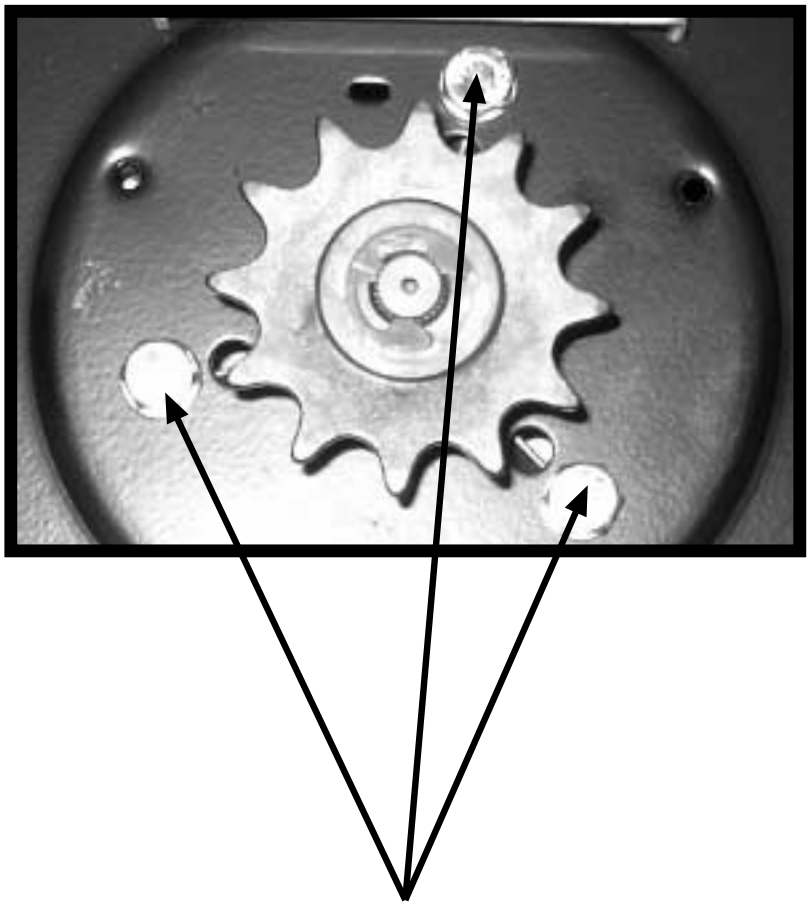


FIGURE 22 Motor replacement

Troubleshooting

General troubleshooting

When servicing the garage door opener, the most important thing is to identify the cause of the fault. The technician must decide whether the problem has been caused by the:

- Installation
- Drive mechanism
- Remote control
- Radio receiver/Circuit board

Installation

The garage door opener should be installed such that a minimum amount of force is needed to move the door.

- If the door “jumps” during its initial movement, check whether the opener and the bracket have been fitted at the correct angle to the door.
- Disengage the door from the rail by pulling down on the red release handle and open it manually to ensure that the door is balanced. If the spring is too weak, the garage door opener carries the weight of the garage door. The garage door opener is capable of doing this, but an important feature is thereby lost – its safety. All repairs to the garage door should be carried out prior to the installation.
- Try moving the door from the position in which the opener ‘bites’. In this way, parts that stick or jam can be easily identified.

Opener

Remove any additional devices that may be connected. Bridge terminals 1+ 2. The opener ought to function if there is no problem. If the opener doesn’t function, consult the Troubleshooting table.

Microprocessor/Control module

Receiver/Control electronics with a yellow or blue force setting have an inbuilt self-diagnostic feature. The flashing LED indicator light (next to the PROG button) is very useful for remedying faults.

DIAGNOSIS

FLASHING	PROBLEM
1x flash	Protector System™ interrupted, incorrectly aligned or an object has interrupted the Infrared Sensor for more than 4 seconds
2x flashes	Protector System™ (Infrared Sensor) cable short-circuited or incorrectly connected.
3x flashes	Push-button or door control panel short-circuited
4x flashes	Infrared Sensor slightly incorrectly aligned (dull or flashing sensor LED light indicator)
5x flashes	No motor speed detected after one second. Motor has stalled or the electronics did not recognize the motor speed monitoring signal. The opener stops or reverses door within 1 second
6x flashes	Motor speed sensor caused the door to reverse (force setting)
7x flashes	Control (disconnect opener from mains then reconnect)
9x flashes	No reference point recognized during travel
Fast flashing	Remote control signal being received (opener possibly not programmed on remote control)

Troubleshooting (contd.)

1. The opener doesn't operate from either the door control panel or the remote control:

- Does the opener have electric power? Plug a lamp into the socket. If it doesn't light up, check the fuse box or the circuit breaker.
- Have you disengaged all the door locks? Re-read the installation instruction warnings on page 1.
- Is there a build-up of ice or snow under the door? The door may be frozen to the ground. Remove any obstacles.
- The garage door spring may have broken. Have it replaced by persons qualified to do so.

2. The opener operates from the remote control but not from the door control panel:

- Is the door control panel button lit? If not, remove the bell wire from the opener terminals. Short the red and white terminals by touching both terminals at the same time with a piece of wire. If the opener runs, check for a faulty wire connection to the door control panel, a short under the staples or a broken wire.
- Are all the wire connections in order? Re-read page 4 of the installation instructions.

3. The opener operates from the door control panel but not from the remote control:

- Replace the battery if necessary.
- If you have two or more remote controls and only one operates, repeat the routines detailed in the "Programming the Opener and Remote Control" and "Programming the Keyless Entry System" sections.
- Is the door control button flashing? Then the lock feature on the opener has been activated. If you have a multi-function door control panel, press and hold the lock button for 2 seconds. The door control button will stop flashing.

4. The remote control has a short range:

- Has a battery been fitted?
- Change the location of the remote control in your car.
- Metal garage doors, foil-backed insulation or metal sidings will reduce the transmission range.

5. The door reverses for no apparent reason and the opener light doesn't flash:

- Is something obstructing the door? Pull the release handle. Operate the door manually. If it is unbalanced or jams, have it repaired by persons qualified to so.
- Clear any ice or snow from the garage floor area where the garage door closes.
- Repeat the routines detailed in the "Setting the Limits" and "Setting the Force" sections in the instructions.

Repeat the safety reverse test after any necessary adjustments have been made.

6. The door reverses for no apparent reason and the opener light flashes for 5 seconds after reversing:

Check the Protector System™ (Infrared Sensor) (if you have installed this accessory). Correct the alignment if the LED indicator light is flashing.

Troubleshooting (contd.)

7. The noise made by the opener is disturbing for fellow occupants of the house:

If the operational noise is a problem because of the proximity of the opener to living quarters, it is advisable to install the Vibration Isolator Kit 89LM. This kit was designed to reduce the "sounding board" effect and is easy to install.

8. The garage door opens and closes by itself:

Make sure the push-button on the remote control is not stuck in the "on" position.

9. The door stops, but doesn't close completely:

Repeat the routine detailed in the "Setting the Limits" section.

Repeat the safety reverse test after any adjustment of door arm length, closing force or DOWN (CLOSED) limit.

10. The door opens but won't close:

- Check the Protector System™ (Infrared Sensor) (if you have installed this accessory). Correct the alignment if the LED indicator light is flashing.
- If the opener light does not flash and the installation is a new one, repeat the routines detailed in the "Setting the Limits" and "Setting the Force" sections of the instructions.

Repeat the safety reverse test after any necessary adjustments have been made.

11. The opener light does not turn on:

Replace the light bulb (max. 24V/21W). Replace any defective light bulbs with rough-service ones.

12. The opener creaks:

The door may be unbalanced or springs broken. Close the door and use the manual release rope and handle to disconnect the trolley. Open and close the door manually. A properly balanced door will stay at any point of travel and be supported entirely by its springs. If this is not the case, have the problem remedied by persons qualified to do so.

13. The opener motor hums briefly, then won't work:

- The garage door springs are possibly broken. SEE ABOVE.
- If the problem occurs during the initial operation of the opener, the door is locked. Disengage the door lock.

Repeat the safety reverse test after any necessary adjustments have been made.

14. The opener won't activate due to power failure:

- Pull the manual release rope on the handle down and back to disconnect the trolley. The door can now be opened and closed manually. When then power has been restored, pull the release handle straight down. The next time the opener is activated, the trolley will automatically reconnect.
- The outside quick release, which is available as an accessory, disconnects the trolley from outside the garage in case of power failure.

Troubleshooting (contd.)

15. Setting the limits manually:

To program the limits manually:

1. Press and hold the black button until the yellow LED indicator light starts flashing slowly and then release.
2. Adjust the position of the door by using the black and orange buttons. The black button moves the door UP (OPEN) and the orange one moves the door DOWN (CLOSE). Check to be sure the door opens high enough for your vehicle.
3. Press the remote control or door control panel. This sets the limit for the door's UP (OPEN) position. The door then begins to close. **Immediately press the orange or black button.** The door will stop.
4. Adjust the desired DOWN (CLOSED) position using the black and orange buttons. Check to be sure the door closes fully without applying excessive pressure to the rail (rail should not bow upwards nor should the chain/ belt sag or droop below the rail). Press the remote control or door control panel. This sets the limit for the door's DOWN (CLOSED) position. The door then begins to open.

Note: If neither the black nor the orange button is pressed before the door reaches the floor, the garage door opener will attempt to carry out an automatic limit setting manoeuvre, reversing the door off the floor and stopping at the UP (OPEN) limit position that has been set. If the worklight does not flash ten times, the limit setting procedure has been successful and doesn't need to be carried out manually; the DOWN (CLOSED) door position is set on the floor. ***Regardless of whether the limits are set automatically or manually, the force MUST be programmed in order to properly complete the setting of the limits. See the "Setting the Force" section.***

4. Open and close the door two or three times with the remote control or via the door control panel.
   - If the door does not stop in the desired UP (OPEN) position or reverses before it stops in the DOWN (CLOSED) door position, *repeat the manual setting of limits procedure.*
   - If the door stops in the both the desired UP (OPEN) and DOWN (CLOSED) positions, proceed to the "Testing the Safety Reverse System" section.

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2. ITEM NUMBER

3. ITEM DESCRIPTION

4. MODEL NUMBER OF GARAGE DOOR OPENER (UNDER THE LIGHT COVER)

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Chamberlain GmbH
Service Department
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D66793 Saarwellingen
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