



SECTIONAL DOORS

INSTALLATION GUIDE

(incl. “Custom Collection” Doors)

*THIS GUIDE IS FOR USE BY EXPERIENCED INSTALLERS
OF GARAGE DOORS*

*By undertaking the installation of this door, the installer
understands the dangers associated with the installation.*

*Steel-Line Garage Doors is not responsible for any and all
liability resulting in the injury and or death derived from an
improper installation.*

Revised Jan 2021

Revisions

- 6/11/2013 "Custom Collections" aluminium sectional door added. Revision to Low Head Room Rear Mount added.
- 7/10/2014 Revised guide on tapered panels, including adding drawings. "Guide" was "Instructions".
- April 2016 Noggin diagram revised for Merlin operators & to match horizontal track sizes.
- Oct 2016 Custom Collection strut change & location. LHR External Cable Bottom Bracket was not reinforced.
- Sept 2020 Flag Bracket fixing minimum requirement reduced to 2 (page 11)



GENERAL WARNING

To install this door safely, a number of precautions must be taken. For safety of all concerned, pay heed to the warnings and instructions given below.



SPECIAL SAFETY WARNINGS OR REMARKS IN THIS MANUAL ARE INDICATED WITH THIS SYMBOL. PLEASE READ WARNINGS CAREFULLY.

- Please read this installation guide completely prior to installation. It is very important to install this door correctly in order to achieve proper and safe operation.
- All the components which have been supplied are designed for this specific sectional overhead door. Replacement or adding additional components may have an adverse effect on the performance, safety and the guarantee of the door.
- Springs, cables and bottom brackets are under strong tension. Do not attempt to loosen any fasteners on these components while under tension, otherwise the sudden release of the spring forces will result in severe risk of injury.
- All instructions are given as if viewing the door from **inside looking out**.

General Note

It is recognised that experienced installers may carry out the installation in a different manner, or vary the sequence of installation that is contained in this manual. Also the use of different horizontal track hangers and/or fixings (taking into account the second warning noted above) may occur, or different techniques and/or varying dimensions that are contained in this guide may be used to achieve the same outcome. This guide is only intended to be a general guide on how to install a Steel-Line sectional overhead door and is not intended to be presented as the only way to install this door.

Parts Check List

Before installation, check that the following list of parts have been provided. If anything is missing from this list please contact your nearest Steel-Line branch or Steel-Line distributor/reseller.

- Pack of door panels, one fitted with bottom weatherseal.
- One pair of vertical tracks (straight). Low Headroom Doors (LHR) will have 2 pairs of straight tracks – one pair longer than the other.
- One pair of horizontal tracks (curved).
- One shaft (usually a galvanised steel tube).
- Pack of spring/s.
- One hardware box.

For doors 4.1m and over:

- Depending on door size and number of panels, 1–6 reinforcing struts are provided. Refer to the packing slip provided on the hardware box for correct number for door size. Location of these struts are as follows:

No of Door Panels	1 Strut	2 Struts	3 Struts	4 Struts	5 Struts	6 Struts
4 Panels	Top Panel	Top Panel & Btm Panel	Top 2 Panels & Btm Panel	Every Panel		
5 Panels	Top Panel	Top Panel & Btm Panel	Top 2 Panels & Btm Panel	Top 3 Panels & Btm Panel	Every Panel	
6 Panels		Top Panel & Btm Panel	Top 2 Panels & Btm Panel	Top 3 Panels & Btm Panel	Top 4 Panels & Btm Panel	Every Panel

(Btm = Bottom)

“Custom Collection” Range of Sectional Doors – These doors are supplied with single 75 x 25 aluminium angle strut (door width over 3500 wide), or a 75 x 25 aluminium angle strut for every panel (door width over 5600 wide).

The hardware box should contain:

- Packing List of door details (***do not throw this away as it contains information that helps in the installation of the door***)
- 2 End Bearing Brackets.
- 1 Centre Bearing Bracket (2 required for 3 or 4 springs).
- Pair of Flag Brackets (L/H & R/H).
- 2 Support Angles (for horizontal track to Flag Bracket).

- 4 or 8 (wide/tall doors) lengths of Perforated Angles for mounting horizontal track off wall/ceiling.
- Track Brackets – 4 off (doors up to 2285 high); 6 off (doors up to 2850 high); 8 off (doors > 2855 high)
- 2 Cable Drums – Red for L/H; Black for R/H.
- 2 Cables.
- Pair of Bottom Brackets (L/H & R/H).
- 2 Adjustable Top Panel Top Brackets (4 for doors over 5.3m wide)
- Rollers – 10 (4 panel doors); 12 (5 panel doors); 14 (6 panel doors). Doors over 5.3m wide are provided with long axle rollers to suit double hinges (panels fitted with double end stiles).
- Plastic Hinges (number dependant on door size). There will be numbered hinges to suit rollers (#1 up to #4) plus intermediate hinges.

“Custom Collection” Doors – These are supplied with adjustable zinc plated metal side hinges (in lieu of numbered hinges) and zinc plated metal intermediate hinges.

- Bags of various fasteners.
- Lockset Kit (optional)

Low Headroom Front Spring Doors should also contain:

- Pair of LHR Support Plates (L/H & R/H).
- Pair of Plastic Curves (L/H & R/H).
- 6 Dual Track Joiners.
- 2 LHR Top Wheel Brackets
- Bag of Fasteners for above.
- **(Optional)** Pair of External Cable Bottom Panel Brackets (L/H & R/H) with clevis pins & split pins.

Low Headroom Rear Spring Doors kit should also contain as above for front spring plus:

- 2 Cable Pulleys.
- 2 Cable Pulley Brackets.
- Pair of Reinforced External Cable Bottom Panel Brackets (L/H & R/H) with clevis pin & split pin for cable attachment.
- 2 Plastic Packers (for bottom panel brackets).
- Additional Fasteners for above.

SECTION 1: Pre-Installation Checks

A Sectional Overhead Door is designed to be fitted behind the opening so the following dimensions need to be checked before fully unpacking the door for installation.

- Opening Width:** Check that the panels supplied overlap the daylight opening width by 25–35mm each side.
- Side Clearance:** The minimum side clearances are (based on 25mm overlap per side):

Door Type	Minimum Side Clearance (per side)
Standard Headroom	125mm
Low Headroom	150mm

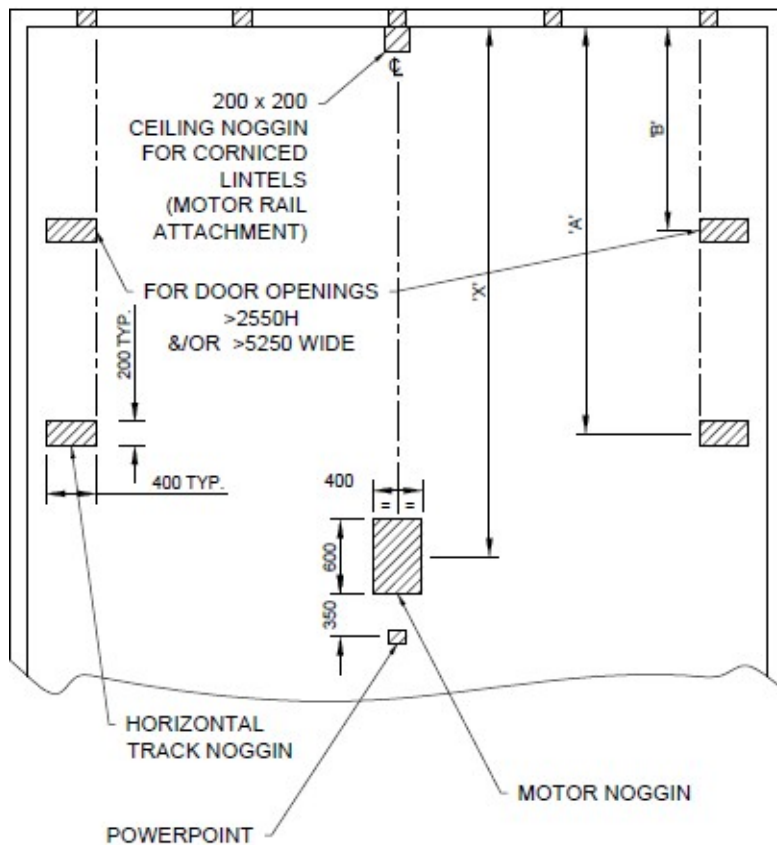
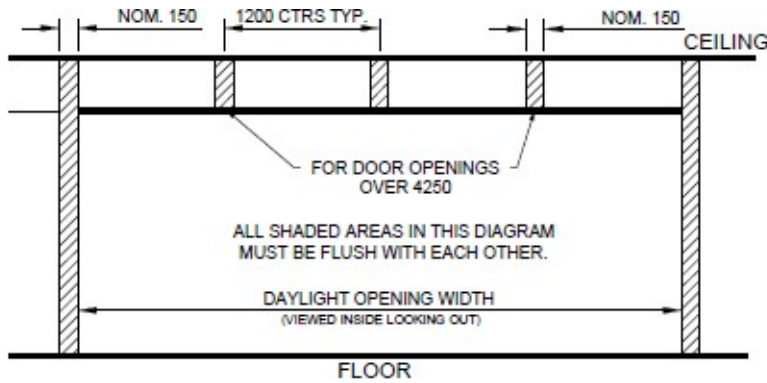
- Opening Height:** The door will fit any opening height up to 30mm less than specified door height (refer packing list for door size supplied).
- Headroom:** A minimum clearance between the supplied door height and the ceiling and clear opening distance from lintel back into garage. See Chart below:

Door Type	Standard Headroom	Low Headroom – Front Spring Mount	Low Headroom – Rear Spring Mount
Manual			
Minimum Headroom (mm)	290	200	150
Minimum Clear Opening Distance	Door Height + 200mm	Door Height + 250mm	
Motorised			
Minimum Headroom (mm)	340	250	200
Minimum Clear Opening Distance *	4200mm OR 4750mm (Doors > 2.58m high) *		

* This clearance is for Steel-Line “Boss” operators and is a general guide only. Motor and drive track can be measured on site to confirm minimum clear opening distance.

5. Structural Condition of Opening: *IT IS THE INSTALLER'S RESPONSIBILITY TO ENSURE THE AREA AROUND THE OPENING IS STRONG ENOUGH TO SUPPORT THE DOOR.*

Please refer to the recommended nogging details below:



TRACK NOGGINS		
OPENING HT.	DIM 'A'	DIM 'B'
TO 2580H	2400	1200
2585 TO 3415	3000	1500

MOTOR NOGGIN		
MODEL	OPENING HT.	DIM 'X'
ST50EV	TO 2500	3150
MT100EVO	2505 TO 3400	4040*

* WITH 1m RAIL EXTENSION.

NOTE: FOR OTHER OPERATORS PLEASE CHECK MANUFACTURER'S MANUALS.

Revised APRIL 2016

SECTION 2: Installation

- 1. Assemble Bottom Panel:** Select bottom panel (fitted with bottom rail & weatherseal) and fit the 2 bottom brackets to bottom corners of panel using a minimum of 4 self-drilling metal screws per bracket. The 'D' holes in bracket should fit over end stile screws with bracket being flush fit on stile and bottom of bracket should be level with bottom of panel face (or ~5mm up from bottom face of the bottom rail). Refer Figure 1A. Both brackets should be level with each other.



Figure 1A – Bracket & Strut Position on Bottom Panel

“Custom Collection” Doors – Line bottom of bracket level with bottom panel rail and fix with self-drilling screws top (2 off) & bottom (2 off) of bracket.

If door width supplied is greater than 5600 wide, then supplied 75 x 25 aluminium angle strut should be fixed to stiles in up against the triangular “V” of intermediate hinges. See photos below. Use the self-drilling screws provided, one in the end stiles with 2 per intermediate stiles (shown by red circles in photos).



For LHR rear mount doors (and for LHR front mount where external cable kit specified) standard bottom bracket is replaced by reinforced external cable bottom bracket which should be fitted with accompanying packer with bottom of bracket as noted above for standard bracket, using a minimum of 4 self-drilling metal screws per bracket. Refer Figure 1B.

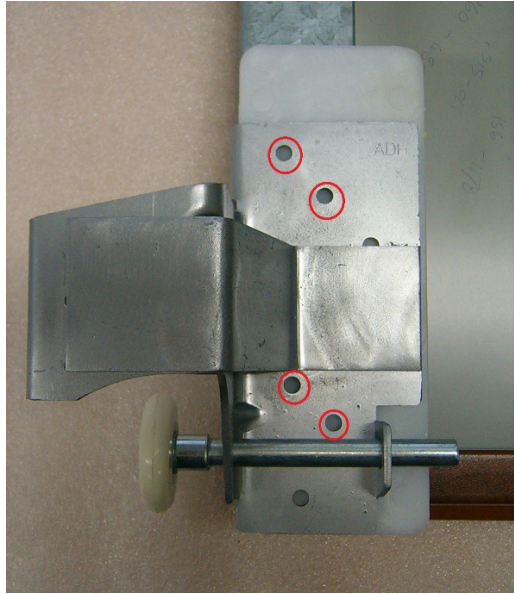
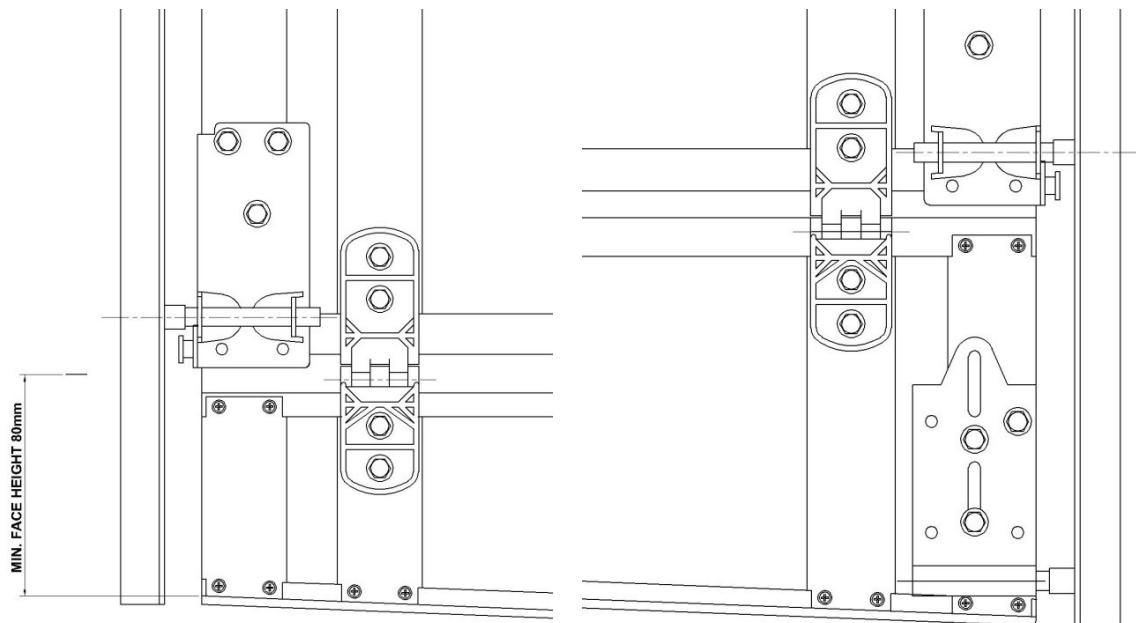


Figure 1B – LHR Rear Bracket on Bottom Panel



NB: If installing tapered bottom panel (i.e. “cut & fold” tapered bottom panel), fit bottom bracket to short height side corner first and then fix second bracket level with the first. If the taper dimension from one side to the other is 35mm or less, the “long side” of taper should clear jamb wall as bottom panel goes through curve of horizontal track. Taper measurements larger than 35mm on tapered bottom panel are likely to hit jamb wall and will effectively become the maximum door opening height.

If a separate hinged taper panel is supplied (recommended for taper dimensions larger than 35mm), this is fixed to bottom panel using hinges mounted to stiles located in same position as for double end stile doors (nominal 30mm gap between end stile and the inner stile - doors wider than 5300 have all panels fitted with double end stiles). If there is large difference in taper dimension, it may be prudent to fit an additional roller to the bottom of longest height side of tapered panel using a LHR Top Bracket. Refer to drawings below.



Drawing showing the short side (LH) & long side (RH) of Hinged Taper Panel

Next attach the bottom half of #1 Hinges to the top corners of bottom panel using 2 self-tapping sheet metal screws screwing through the punched holes in end stiles (hinge is clearly marked which end is the bottom). If panel is supplied with double end stiles, then 2 off #1 Hinges will need to be attached to each top corner. Then fix the bottom half of an intermediate hinge to top of each intermediate stile in panel using 2 self-tapping sheet metal screws screwing through the punched holes in stiles.

	
<p>Figure 1C – Adjustable Metal Side Hinge for “Custom Collection” Doors</p>	<p>Figure 1D – Intermediate Metal Hinge for “Custom Collection” Doors</p>
<p>“Custom Collection” Doors – Attach adjustable Vee portion of side hinge (small male portion of hinge is fixed to bottom of second panel) with side of hinge flush with side of panel and hinge resting on ledge at back of male profile of top rail and fix using 4 self-drilling screws provided (see Figure 1C). Fit a roller in axle carrier of side hinge, but leave fixing finger tight for time being. The intermediate hinges should be located centrally above the stiles with small half (female half) of hinge facing down (see Figure 1D). Again rest hinge on ledge and fix with 3 self-drilling screws. Fit an intermediate hinge above each stile of panel following above procedure.</p>	

If more than one strut is supplied with door, fit one strut to bottom panel just above bottom brackets and fix to the end stiles first, followed by intermediate stiles with 2 self-drilling metal screws per stile. Trim weatherseal with a knife so about 10 – 15mm protrudes out each end.

Centralise bottom panel in the door opening so that overlap is even on both sides. Check level of panel with a spirit level and shim one end of panel, if required. Temporarily fix or hold panel to jamb and fit a wheel roller to each corner of panel.

- Fix Vertical Tracks:** Using table below measure and cut the vertical tracks (the straight lengths of track) to correct size, removing any surplus from the bottom of the track (top of track has 2 horizontal holes that line up with bottom of flag bracket).

Door Type	Vertical Track Length
Standard Headroom	Door Height* less 250mm
Low Headroom	Door Height* less 380mm

* Note: This is **NOT** the opening height.

Fit the correct hand flag bracket (mounting flange facing outwards away from opening) to the top of the vertical track so that the dimension from back of flag bracket mounting flange to the back of the track measures 65mm for 4 panel doors and 70mm for 5 & 6 panel doors. Use the ribbed mushroom head bolts, but only tighten the flanged nuts just enough to hold track at this stage. See Figures 2, 3 & 4.

Attach track brackets to tracks, using the same fixings and tightening flanged nuts as above.

With a gap of 5–10mm between roller axle step and outside edge of bottom bracket, slide a track down over wheels, ensure track is vertical, the rollers are sitting in the centre and just touching the vee groove of the track. Mark flag & bracket position onto jamb/lintel (mark centre of slot in bracket to allow later adjustment if required).

Fix to jamb/lintel using coach bolts & flat washers (wood fix), or coach bolts, flat washers and masonry anchors (masonry fix), or self-tapping metal screws (steel fix).

Flag bracket should be fixed using a minimum of 2 of the appropriate fasteners to suit jamb/lintel material as noted above. Do the same for opposite hand track.

The top of both tracks should be checked that they are level with each other. If not level, either trim bottom of one track, or lift one track up. Do not leave gap larger than 10–15mm off floor. Tighten all fixings just enough to hold track at this stage.

- 3. Mount Horizontal Tracks:** Fit one end of support angle to flag bracket using one cuphead bolt as provided. Fit curved end of horizontal track to bottom of flag bracket and support angle as shown in Figure 2 using the ribbed mushroom head bolts leaving the nuts finger tight. Aim for 1–3mm gap between tracks, as too much gap will cause rollers to drop into gap making door operation noisy.

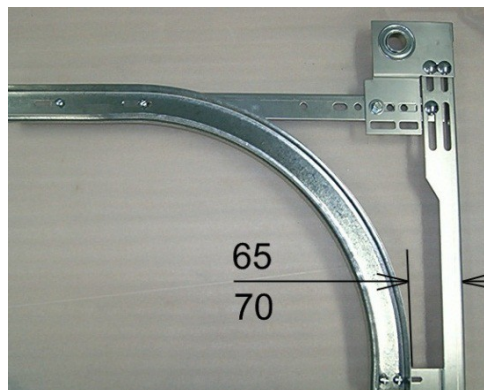


Figure 2 – Mounting Horizontal Track/Support Angle & End Bracket

The other end of horizontal track should be supported by a suitable stand, a ladder or rope initially, or fixed loosely by the perforated angles supplied, or by using the optional Horizontal Track Hanger Brackets (roller door pressed metal bracket BK2P). When fitting the rearhanger/s to the ends of the horizontal tracks, ensure that tracks are level and square to the opening (measure across diagonals and adjust as necessary) and level. Refer Figure 5 for typical rear track hanger/s. Figure 6 shows a suitable track support stand.

Rear hangers can be mounted off the wall in situations of tight side room, supporting track from underneath and fixing with small length of angle, or track bracket for LHR doors. The horizontal leg of hanger should not protrude more than 30mm past track otherwise it may interfere with door operation. Ideally both hangers should be mounted off wall, or off ceiling, but there may be some situations where it is necessary to mount one side off wall, the other off the ceiling.



A sway brace should be fitted to perforated angles to prevent any spreading movement of track which could allow door to fall. Rear hanger needs to be fixed securely as it supports weight of door when fully open.

For low head room (LHR) doors the LH & RH support plates from LHR kit replaces the standard support angle above. The plastic curve and LHR horizontal top track (the longer of the 2 pairs of straight lengths provided) and standard horizontal track are fitted to this plate. Refer Figure 3 for LHR front mount and Figure 4 for LHR rear mount. Past the support plate the dual horizontal tracks are held together by track connecting plates contained in LHR kits. Fasten with the ribbed mushroom head bolts.

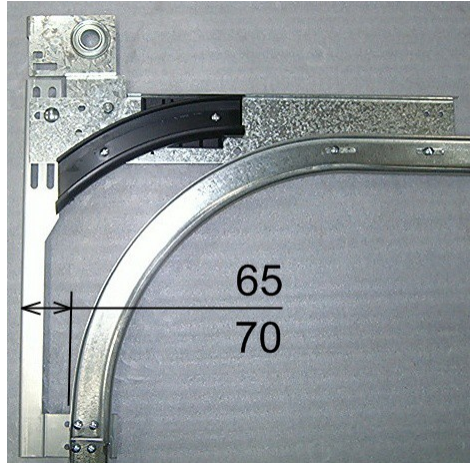


Figure 3 – Low Headroom Front Track Assembly (Top Horizontal Track not shown). Plastic curve is shown mounted most rearward position (suits drum cable wheel inside end bearing). Can be mounted in front position (see Figure 4 - for drum cable wheel outside end bearing)

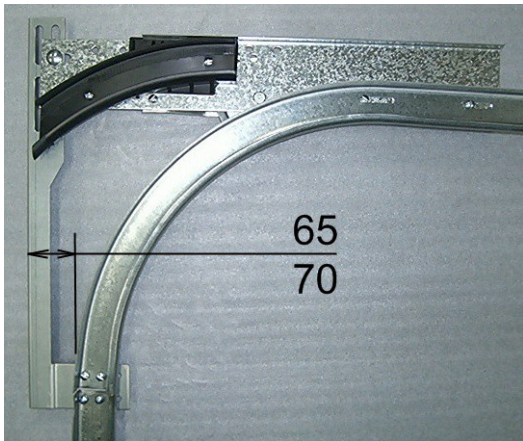


Figure 4 – Low Head Room Rear Track Assembly (Top Horizontal Track not shown in top LH photo). Support angle is added to provide additional support to junction plate, but requires 2 @ Ø7 holes to be drilled (as shown by red circles in bottom RH photo) through support angle to allow fixings to be fitted.



Figure 5 – Typical Rear Track Hangers for End of 2400 Horizontal Track (old style angle Roller Door bracket shown)



Figure 6 – Typical Support Stand

4. **Shaft Assembly:** If necessary cut shaft to suit door and side room (Rule of Thumb: Shaft Length = Door Width + 300mm). Slide the centre bearing bracket (cut corner facing the floor), springs, cable drums and end bearing brackets in that order onto shaft. The LH spring & cable drum are painted RED, while RH versions are painted BLACK to aid assembly. The end bearing bracket tab (& protruding bearing) for lintel attachment should face outwards away from door. Refer Figures 2 & 3.

Note 4.1: For LHR Rear & LHR Front doors specified with external cable bottom brackets, the cable drum will need to fit outside the end bearing brackets. End bearing brackets need to be fitted opposite to above, i.e. bearing & bracket tab should face inwards towards centre of door (this prevent possibility of bearing being pushed out of bracket by sideways movement of door). The cable drums are also reversed (i.e. LH drum fitted to RHS; RH drum fitted to LHS) to give better access to square head screws.

Note 4.2: For 4 spring doors the two inner LH & RH springs need to be slid on first, followed by centre brackets, outer springs, cable drums & end bearing brackets as noted above.

Using assistance if necessary, place shaft assembly on top of each support angle (or support plates for LHR front doors) and fit to flag brackets/support angle/plate using the cuphead bolts supplied (refer Figure 2 for standard headroom or Figures 3 & 4 for LHR front doors). End bracket should also be fixed to lintel unless height restrictions prevent this occurring, in which case the bent up tab for lintel fixing should be removed from end bearing bracket to facilitate lowering of this bracket, but lintel to shaft dimension must match centre bracket. Shaft should be centred so equal amount of shaft protrudes from each end bearing bracket.

The centre bracket can now be fixed to lintel. Ensure the shaft is level and that there is sufficient side room for springs, then mark and fix bracket around the centre of the door opening using two of the fasteners to suit lintel material.



It is important that centre bearing bracket is securely fastened to lintel as this bracket supports the full spring force (roughly equivalent to weight of the door).

For LHR rear mount doors the shaft assembly end bearing brackets should be fixed to end of the dual track (refer Figure 7) and centre bearing bracket securely fastened to ceiling, heeding the warning noted above.

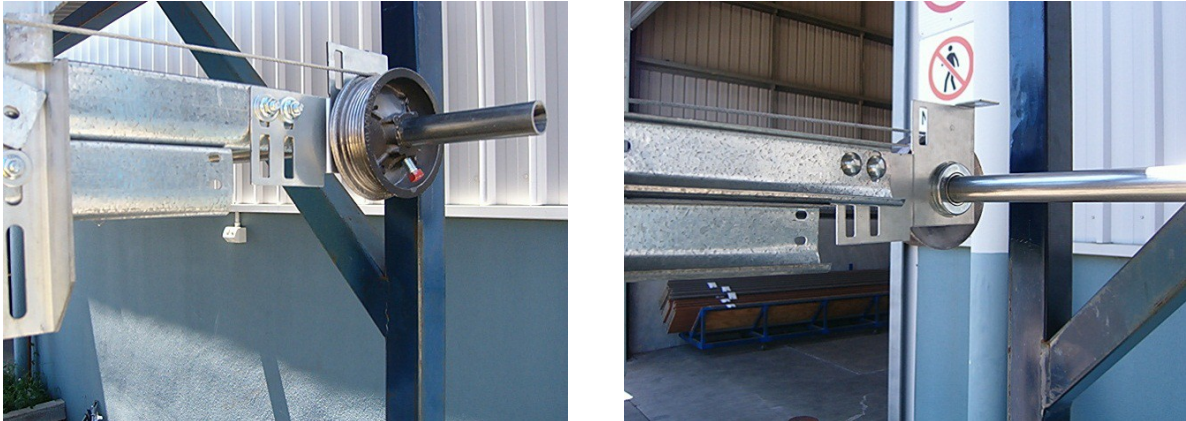


Figure 7 – LHR Rear Shaft assembly

- 5. Assemble & Fit Intermediate Panels:** Fit bottom halves of intermediate hinges to top of each intermediate stile of next panel as per bottom panel. Fit strut/s and/or lockset if supplied (refer lockset instructions with kit). If both supplied fit strut first in centre of panel height, then fit lockset either above or below strut, ensuring internal handle does not interfere with strut in its operation.

“Custom Collection” Doors – Fit side hinges and intermediate hinges as per the bottom panel instructions. For doors over 5600 wide fit 75 x 25 aluminium angle strut as per bottom panel instructions.

Place panel on top of bottom panel and temporarily fix to jamb, or with an assistant holding panel, fit roller into track, slide on #2 hinge (or two #2 hinges in case of double end stiles on panel) and fix bottom half of hinge to top corner of second panel using sheet metal screws into pre-formed holes in end stile. Do the same for the opposite corner.

“Custom Collection” Doors – Remove axle carrier from side hinge, fit roller and locate roller into track and re-assemble axle carrier to side hinge. **NB:** Axle carrier can be mounted two ways – either flat of carrier towards door, or away from door. For intermediate panels locate carrier to give best position of roller without interfering with hinge fixings. Adjust & nip up axle carrier fixings for both bottom & second panel to smallest gap possible without face of panel rubbing up against jambs (a gap of 2 – 3 mm is recommended, but is dependant on the material and surface roughness of jamb). Because of use of the adjustable side hinges, the vertical track can be fully tightened, however ensure both vertical tracks are located the same distance from jamb top & bottom to minimise any potential cause of door operation problems.

Remove temporary fixing (if used), line second panel edge up with bottom panel and fix the top half of #1 hinge into bottom corner of second panel using sheet metal screws and aligning holes in hinge with punched holes in end stile. Do the same for opposite end and then fix all the top halves of intermediate hinges between both panels using the sheet metal screws.

“Custom Collection” Doors – Align panels & fix top halves of side & intermediate hinges of bottom panel to second panel using self-drilling screws provided. Repeat procedure above for rest of the intermediate panels.

Repeat above for all the intermediate panels. Hinge #3 should be fitted on outsides between 3rd & 4th panel and Hinge #4 between 4th & 5th panel. For 6 panel doors #4 hinges are also fitted between 5th & 6th panel. Refer to Table in Parts List for which panels to fix struts to.

6. **Adjust & Tighten Tracks:** Adjust vertical track so that the panel faces have the smallest consistent gap to ensure door operation without rubbing against jamb. On inconsistent surfaces such as brick work adjust panel face so it just rests on highest protrusion and panels are vertical.

“Custom Collection” Doors – Vertical tracks should have been tightened in Step 5.

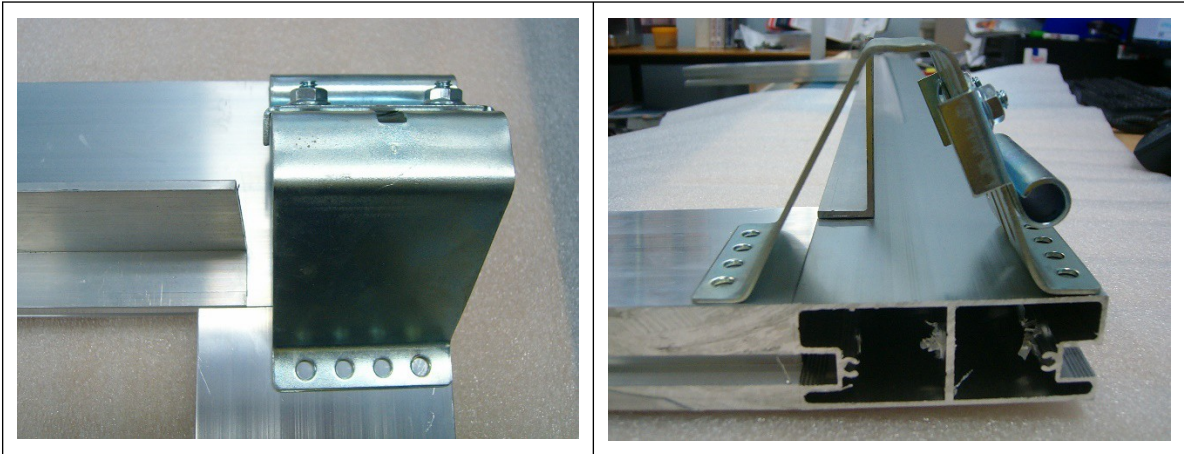
The horizontal track fittings can be tightened ensuring a continuous channel for wheels to travel from vertical track to horizontal track and horizontal track is square with opening, parallel and level.

7. **Assemble Top Panel:** Remove the roller axle carrier from adjustable top bracket and fit both V brackets with the slots for adjustable wheel carrier facing up (two top brackets required for double end stile panels) up against screws holding stiles to panel and fix with 4 self-drilling metal screws. This bracket orientation is important as the aim is to get top wheel as far into curve of horizontal track as possible to minimise load (and potential activation of obstruction safety system) on motorised doors, while ensuring top panel is vertical in the closed position.

“Custom Collection” Doors – With top panel fitted to door and temporarily held to jamb, fit roller into axle carrier of top bracket & locate roller in curved portion of track. With bracket edge flush with panel edge slide top bracket up until top of bracket is flush with top of rail (of top panel), or until axle carrier is 5mm away from its maximum outward adjustment, then fix to panel using 4 self-drilling screws. **NB:** *Axle carrier can be mounted two ways – either flat of carrier towards door, or away from door. For Top Bracket flat of carrier towards door gives maximum adjustment away from door.* Repeat for opposite side, ensuring brackets are located in same position on both sides of panel.

For doors over 3500 wide, fix the supplied 75 x 25 aluminium angle strut to top rail with end of 25 leg of angle flush with bottom of top rail as shown in photos below. Use self-drilling screws at about 600mm centres.

For doors over 5600 wide, fix the top 75 x 25 aluminium angle strut as per bottom & other panels, so each looks the same inside as well as outside, using self-drilling metal screws into the stiles.



Fit strut (if supplied) to the top of panel just below top panel adjustable bracket with two self-drilling metal screws per stile. Refer Figure 8.

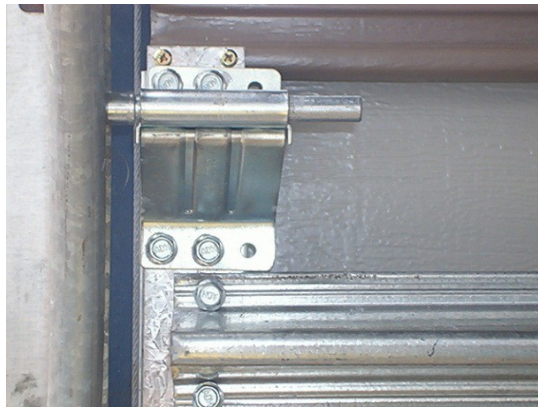


Figure 8 – Top Bracket Mounting with Strut (if supplied)

Note 7.1: For motorised doors check the size of the arm bracket (hockey stick) supplied with motor to be fixed to this panel. Use this bracket as gauge for placement of strut.

Note 7.2: For doors fitted with windows, the strut might be seen in the location above. It may be necessary to cut the 'hat' section out of strut to the width of bracket and axle, leaving the mounting flanges to be mounted under V bracket. Alternatively strut can be mounted at top of panel with bracket underneath, but the vertical track height would need to be reduced by a further 50 – 80mm so top wheel is as far into curve of horizontal track as noted above.

Place top panel on top of other panels and temporarily fix, or get an assistant to hold, while fitting the roller and carrier to the top panel adjustable bracket. Adjust roller axle carrier up or down bracket to get top panel face vertical with rest of panels, then tighten carrier into position.

For LHR doors the adjustable top bracket is replaced by LHR top brackets found in LHR kit. Roller should be fitted into plastic curve and fit bracket to top panel with the roller axle section at top of bracket facing away from panel to inside and fix with 3 self-drilling metal screws. Refer Figure 9. The bracket should be placed in position on end stile so top panel face is vertical with rest of panels and under strut (if supplied). Top portion of this bracket can be bent inwards (towards rear of garage) to help achieve the vertical position if required.



Figure 9 – LHR Top Bracket Mounting

- 8. Assemble Springs and Cable Drums:** Fit cable loop over bottom bracket pin and feed cable up behind rollers to cable drum, putting cable end into slot on outside face (away from door) of cable drum. Ensure cable has a straight run with no interference.

LHR rear (and where specified for LHR front) doors will have external cable bracket on the bottom panel. Cable is fitted to bracket via a clevis pin and split pin.

Take up slack in cable by winding drum up and over away from lintel, ensuring cable lays correctly into grooves on drum. Once cable is taut, push the drum up against end bearing and continue to hold cable taut while tightening the square-head set screws to secure drum to shaft.

Repeat for the opposite hand cable & drum ensuring both cables have equal tension. If not adjust one cable drum until tension in both cables is the same. Tighten cable drum screws securely (Rule of Thumb – once screw has engaged shaft tighten a further 1½ turns).

Fix spring/s to centre bearing using hex bolts & nuts supplied and ensure they are fully tightened.

9. Tensioning the Springs



Assume the spring could break or the winding bar could slip from the spring fitting whenever you wind or unwind a spring.

While tensioning keep face, hands and body wherever possible clear of spring, spring cone and winding bars.

Never use screwdrivers. Only use winding bars of the correct size.

Winding Bars

Use two winding bars 400–500mm long. The winding bars should be made from solid cold rolled steel bar.

There are two acceptable designs for winding bars. The sizes given below suit spring winding plug sizes of 50.8mm (2in) and 66.7mm (2 5/8in).

Straight Bar Design

For a straight bar design the whole bar should be $\text{\O}12.7\text{mm}$. Add tape to show when the bar is fully inserted into the spring fitting.

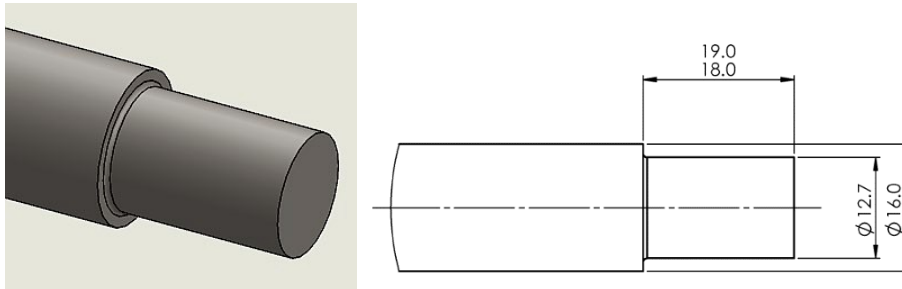
The ends that insert into the spring fitting should be cut off square and sharp – not rounded.



Stepped-Down Design

In a stepped-down design, the bar is bigger in diameter (e.g. $\text{\O}16\text{mm}$) and stepped-down only on the end 18–19mm to diameter $\text{\O}12.7\text{mm}$.

The ends that insert into the spring fitting should be cut off square and sharp – not rounded.



Place vice-grips or a G-clamp in the vertical track on one side above a roller to prevent door from lifting during tensioning.

Firmly attach a pair of vice-grips over the top of spring shaft so that handles of vice-grips are wedged up against the lintel or ceiling. This prevents the shaft turning during tensioning of springs. Refer Figure 10.



Figure 10 – Clamping Shaft Prior to Spring Tensioning
(vice-grips resting against ceiling in this case)

The springs may have a horizontal line marked on them to make it easy to count spring revolutions. If not, mark a horizontal line from one end of each spring to the other with chalk or paint.

Use two winding bars. **NB: Never use screwdrivers!**

Insert first bar into the spring winding cone and rotate up towards the ceiling and hold until second bar is inserted. See Figure 11.



Figure 11 – Tensioning Springs

Repeat this operation until the number of turns of springs matches the specified number of turns marked on packing list attached to hardware box.

It is good practise to stretch the spring outwards about 5mm to provide a small gap between coils. This minimises potential binding and spring noise as the door operates. Do this by securely holding a winding bar in the spring cone and tapping it outwards with a hammer.

Hold the spring winding cone in final position while securely tightening the two square-head set screws onto shaft (Rule of Thumb – once screw has engaged shaft tighten a further 1½ turns).

Repeat for each spring. All springs should ideally have same number of turns.

- 10. Checking Spring Tension:** Carefully release vice-grips on shaft, then remove vice-grips/clamps from track and check balance of door for ease of operation. Lubricate the springs with grease or spray-on lubricant.

Check alignment of horizontal tracks as door is being raised. The door should operate as follows:

- Door should rest on floor and not begin to open until lifted. If the door is difficult to lift, first check door is not too tight against jamb.
- A small lifting force is all that should be required to start opening door.
- At halfway opening point door should remain stationary by itself. A little movement either way is acceptable, but door should not take off in either direction.
- Door should roll smoothly and slowly to rest slightly under bottom edge of lintel and stay there. It should not move down by itself, or be hard to pull down from fully open position.
- Closing the door should require a small pull force away from fully open position, it should stay by itself around halfway position and stay down when it has reached the floor.

If door does not display the above, first check all tracks to ensure door rolls smoothly without binding in track and cable is not rubbing against anything. If OK then reduce or increase tension in all springs by maximum $\frac{1}{4}$ to $\frac{1}{2}$ turn until happy median is achieved.



Never touch a spring set screw without first inserting a winding bar.

Test door several times to ensure its operation is correct. Check that all fastenings are fully tightened.

If door still doesn't perform as expected consult your Steel-Line supplier.

- 11. Fitting Accessories:** With door in fully open position fit the door stops into position in the tracks.

If door came with motorised operator or jamb seals, these can be fitted now.