FLUSH MOUNT SECTIONAL DOOR 2.0

SAFE INSTALLATION GUIDE

⚠ READ THIS ENTIRE GUIDE BEFORE STARTING WORK

- This document must be read and understood in full — including the safety warnings — before installation, adjustment or de-tensioning work begins.
- This guide supplements, and does not replace, your site-specific SWMS/JSA.
- If you are not trained and assessed as competent in torsion spring tensioning, **STOP** and have a trained installer complete that part of the job.

These instructions are provided for use by trained and experienced garage door installers.

makers for life

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Safe Installation Guide

Door installation involves stored spring energy, moving parts and working at height. The hazards below must be understood and controlled before and during every installation.

⚠ HAZARD: MANUAL HANDLING — DOOR WEIGHT

- Flush mount sectional doors can weigh up to 250 kg (551 lbs).
- Before handling the door, refer to the chart at page 8 of this guide to determine the estimated weight of the door.
- **Mechanical handling must be used wherever reasonably practicable to eliminate or minimise manual handling of the door.**
- Where site access conditions prevent mechanical lifting equipment from being used to transport the door to the installation position, this does not automatically permit a two-person manual lift or carry.
- Before team handling is undertaken, you must assess the hazardous manual task and determine whether the door can be moved safely. The assessment must consider the door's weight, length and diameter, available handholds, stability and balance, carrying distance, floor condition, slopes or steps, access restrictions, required postures, potential for sudden movement or loss of control, crush hazards and the number and capability of people involved.
- Alternative mechanical or handling aids must be used wherever reasonably practicable.
- Where team handling remains necessary, the number of persons required must be appropriate to the weight, dimensions and difficulty of the task. One person must coordinate the movement and all persons involved must understand the lifting and handling method before commencing.
- If the load cannot be moved without high or sudden force, awkward posture, loss-of-control or crush risk, the task must not proceed until another method of handling is determined that does not expose you or others to a risk of injury by the use of sudden force to lift a weight of that level.

⚠ HAZARD: SPECIALISED TOOLS ONLY — TRAINED PERSONNEL ONLY

- Adjusting, tensioning, de-tensioning or disassembling the spring system must only be carried out by personnel who are trained and assessed as competent in this specific task.
- Do NOT use multigrips, shifting spanners, screwdrivers or any other generic or improvised tool to wind, hold or release spring tension. These tools can slip under load and are not designed to control the release of stored spring energy.
- **The correct tools for this door are two winding bars 400–500mm long made from solid cold rolled steel. For appropriate bar designs, see page 19 of this guide.**

⚠ HAZARD: STORED ENERGY IN SPRING SYSTEMS (uncontrolled release)

- The torsion springs are wound under high force to balance the weight of the door. That force is stored energy, similar to a compressed spring or coil, generally equal to the door weight.
- If this energy is released suddenly or in an uncontrolled way, winding tools, the axle or springs can spin or whip violently, causing severe crush injuries, broken bones, eye injury, or death.
- Adjusting, tensioning, de-tensioning or disassembling the spring system must only be carried out by personnel who are trained and assessed as competent in this specific task.
- Keep your head and body well clear at all times of the direct line of axle winding tools. Never stand in line with them.
- Do NOT use multigrips, shifting spanners, screwdrivers or any other generic or improvised tool to wind, hold or release spring tension. These tools can slip under load and are not designed to control the release of stored spring energy.

⚠ HAZARD: WORKING AT HEIGHT — LADDERS

- Fitting brackets and guides, and adjusting spring tension, often requires working above shoulder height. A fall from even a modest height can cause fatal or life-changing injury.
- **Do NOT use A-frame step ladders for this installation.**
- A-frame ladders do not provide a stable, secure standing platform for the sideways reaching and overhead work needed to fit brackets, position guides and tension springs, and increase the risk of a fall from height.
- A podium-style ladder platform ladder with a guard / handrail provides a stable base for overhead work. Where door height or site conditions makes a podium-style ladder unsuitable, use a quality adjustable height platform step ladder with a minimum load rating of 150 kg and a safety gate. Where door height or site conditions make neither a podium-style ladder or a platform step ladder suitable, use a certified elevating work platform or scaffold.

General ladder rules

Ladders are commonly used during installation and maintenance activities; however, incorrect selection, setup or use can result in serious injuries from falls, instability or loss of balance.

Ladder safety begins with selecting the correct equipment for the task, ensuring it is in good condition and setting it up on a stable surface before use. Workers must always follow safe climbing practices and recognise when a ladder is not the most suitable option.

Where work is prolonged, requires an installer to balance awkwardly, requires significant movement or cannot be performed safely while maintaining a stable position, a platform ladder or elevating work platform (EWP) should be used instead.



- Inspect the ladder before use — remove any damaged ladder from service immediately.
- Use an industrial-rated ladder/platform with a minimum load rating of 150 kg.
- Set up on a solid, level surface with non-slip feet; lock all locking devices before climbing.
- Maintain three points of contact when climbing up or down.
- An equivalent fold-away platform ladder may be used, but it must incorporate a ladder safety gate. See the example below —



An example of a fold down adjustable height platform step ladder with a safety gate and outriggers providing a stable base and safe reach access. Recommended platform ladder: Bailey 170KG adjustable platform step ladder.

Below is an example of a locking ladder safety gate that can be fitted to a foldable platform ladder to help prevent backwards falls.





Personal protective equipment (PPE)

- Safety glasses / eye protection
- Cut-resistant gloves suited to handling sheet steel and springs
- Steel-capped safety boots
- Hearing protection where power tools are in extended use
- High-visibility clothing where required by site rules

Before each use, check all PPE for cleanliness and damage — do not use PPE that is dirty, cracked, torn, worn thin, or otherwise compromised, as damaged or contaminated PPE will not provide the protection intended and can create a false sense of safety. Replace any item that fails inspection before starting work, and store PPE correctly between uses to prevent damage and contamination.

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 weather seal.
- Two pairs of straight tracks – one pair longer than the other.
- One pair of horizontal tracks (curved)
- One shaft – galvanised steel tube to suit door width
- Pack of spring/s.
- **One standard hardware box**.
- **One flush mount kit.**
- One pair 100x100x10 aluminium angle (jamb).
- One length of 100x100x6 aluminium angle (header).
- One pair of brush side seals with aluminium H - carrier
- 65mm steel strut (as required), powder coated to match panels (optional).

Doors 3500mm wide and above will have one strut per panel. All doors are supplied with 65mm high roll formed steel strut (door width over 3500 wide). All struts are powder coated to match door panels (optional).

The **standard 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)***
- 2nos. End Bearing Brackets (**not required – use 2nos. Centre Bearing Brackets provide with the Flush Mount Kit**)
- 1no. Centre Bearing Bracket (**additional 1no. provided in the Flush Mount Kit)**).
- Pair of Flag Brackets (L/H & R/H)
- 2nos. 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)
- 2nos. Cable Drums – Red for L/H; Black for R/H.
- 2nos. Cables **(1/8" for doors up to 250kg)**
- Pair of Bottom Brackets (L/H & R/H).
- 2nos. Adjustable Top Panel Top Brackets (**not required – LHR Top Brackets will be provided in Flush Mount Kit**)
- Rollers – 10 (4 panel doors); 12 (5 panel doors); 14 (6 panel doors). Doors over 4.5m wide or 175kg total weight are provided with long axle rollers to suit double hinges (panels fitted with double end stiles).

- Adjustable zinc plated metal side hinges (in lieu of numbered hinges) and zinc plated metal intermediate hinges.
- Bags of various fasteners.
- Lockset Kit (optional)

Flush Mount Kit Front Spring Doors should contain:

- Pair of LHR Support Plates (L/H & R/H)
- 6nos. Dual Track Joiners.
- 6nos. LHR Top Brackets
- Pair of Reinforced External Cable Bottom Panel Brackets (L/H & R/H) with clevis pin & split pin for cable attachment.
- 4nos. Plastic Packers for bottom panel brackets.
- 4nos. roller shaft collar with grub screw.
- 3nos. Centre Bearing Brackets
- Bag of Fasteners for above.

Approximate Door Weight Chart

STEEL-LINE GARAGE DOORS

Flush Mount SD Weight Chart (kg) - *Frame Only incl. Hardware*

Height up to	Width up to 2000	2250	2500	2750	3000	3250	3500	3750	4000	4250	4500	4750	5000	5250	5500	
1800	43	46	50	53	56	61	65	85	94	101	105	109	113	120	125	4 Panels
2000	45	48	52	55	58	64	67	88	96	104	108	112	116	123	128	
2200	47	50	54	57	60	66	70	90	98	107	111	115	119	126	132	
2400	49	52	56	59	62	68	72	93	101	110	114	118	122	130	135	
2600	57	61	64	68	71	80	83	109	120	130	135	140	144	154	159	5 Panels
2800	59	63	66	70	73	82	86	111	122	132	137	142	147	157	163	
3000	61	65	68	72	75	85	88	114	124	135	140	145	150	160	166	
3200	68	72	76	81	85	96	100	130	142	154	160	167	173	184	191	6 Panels
3400	70	74	79	83	87	98	102	133	145	157	163	170	176	187	194	
3640	73	77	81	85	89	101	105	136	148	160	166	173	179	191	198	
	2	2	2	2	2	3	3	3	3	4	4	4	4	4	5	

Notes:
1. Door widths over 3500mm will have 1no. 65mm steel strut per panel.
2. Door widths over 4500mm will have double end stiles.
3. Total door weights (incl. cladding) over 175kg will have double end stiles.
4. Maximum total door weight (incl. cladding) is 250kg.

Note. Maximum total door weight including cladding is 250kg.

Pre-Installation Checks

A Flush Mount Sectional Overhead Door is designed to sit within the jambs; The following dimensions need to be checked before fully unpacking the door for installation (refer Fig. 2.1.1).

1. **Opening width:** Check that the panels supplied are narrower than opening by at least 230mm.

   door panel width = opening width – 230mm

2. **Side room:** A minimum of 50mm side room is required over and above door width.
3. **Opening height:** The door will sit within the opening therefore the total height of the panels will be shorter by at least 140mm.

   total panel height = opening height –140mm

4. **Headroom:** A minimum 200mm from lintel to ceiling.
5. **Backroom (operator clearance):** Minimum required operator clearance is **3500**mm for doors up to **2500**mm high or **4500**mm for doors up to **3500**mm high

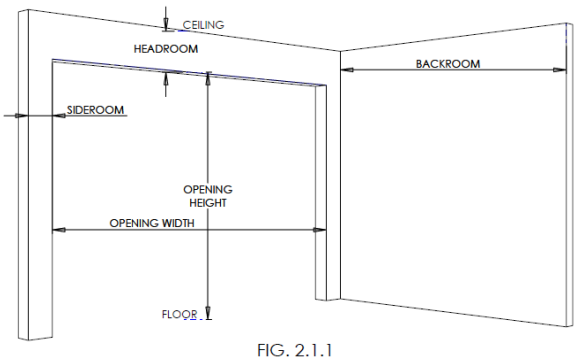
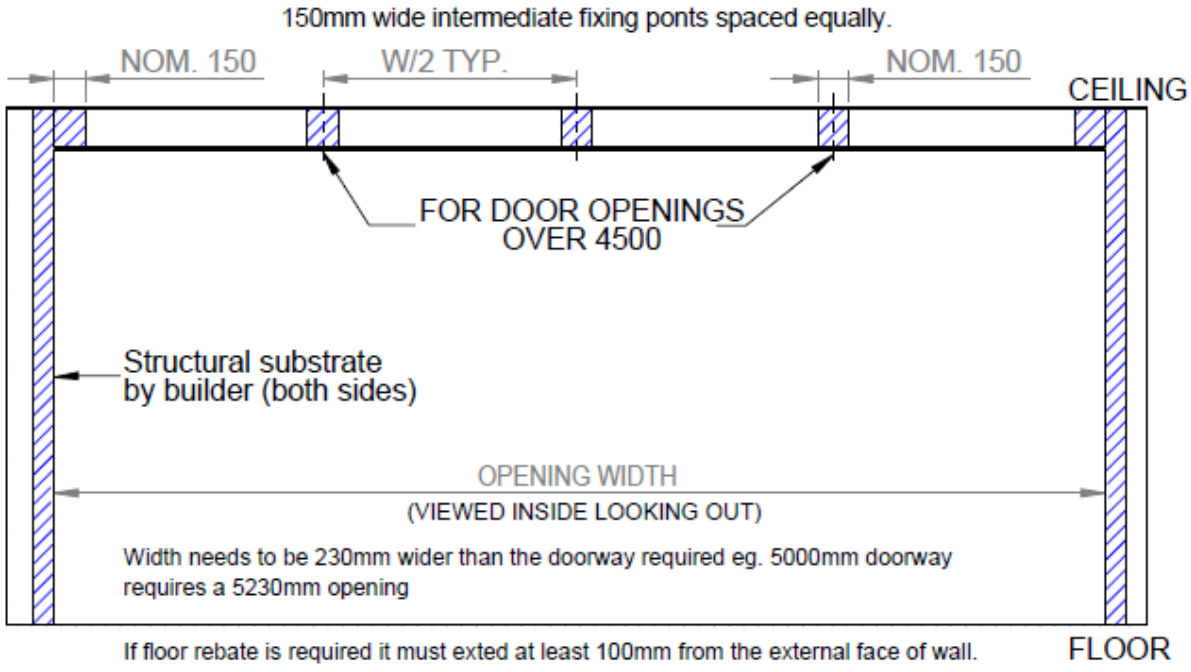
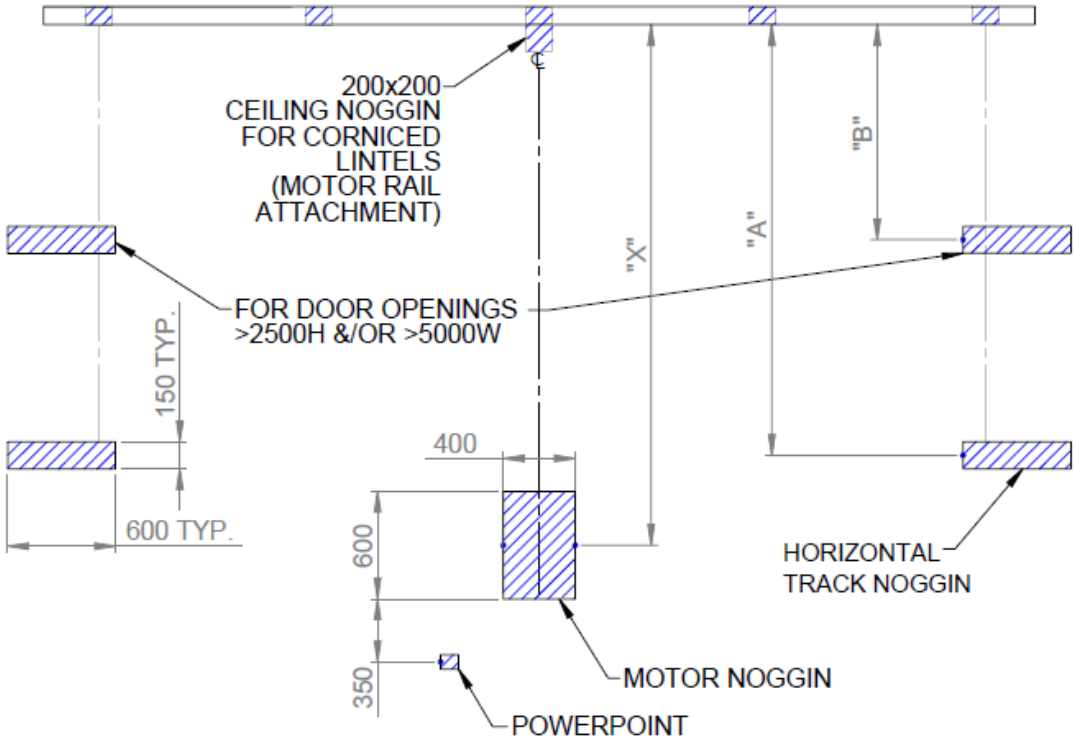


FIG. 2.1.1

6. **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 and on the following page:





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

MOTOR NOGGINS		
MODEL	OPENING HT.	DIM "X"
SD800	TO 2500	3150
MS105	2505 TO 3400	4040*

NOTE: FOR OTHER OPERATOR PLEASE CHECK MANUFACTURER'S MANUAL.

*WITH 1m RAIL EXTENSION

Vertical Track Assembly (for doors up to 250kg)

1. Cut vertical straight tracks 395mm off nominated door height from the bottom of each track.

   vertical track length = opening height (lintel to floor) – 395mm

2. Fix the flag bracket and track brackets to the vertical track using the supplied ribbed mushroom head track bolts (1/4"-20 x 1" LG) with serrated flange nut as shown in Fig. 3.1 but only tighten just enough to hold it together at this stage.

   NB: The slots provided in both the flag bracket and track brackets allows for slight movement of the tracks.

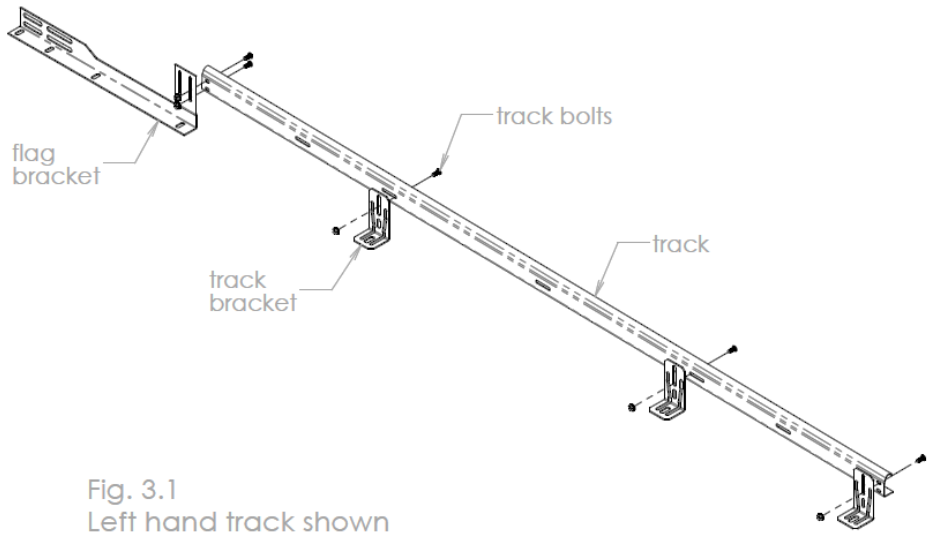


Fig. 3.1
Left hand track shown

Step-by-Step Installation

Door Panels

1. Open the pack of door panels. The bottom panel (fitted with bottom rail and weather seal) should be on top of the pack. Start with the bottom panel.
2. Place the reinforced external cable bracket onto the bottom panel as shown in Fig. 3.2 using Tek screws.

   NB: Additional roller bracket required for double stile panels.
3. Slide in roller with 10mm spacer through the reinforced external cable bracket.
4. Secure each end of lifting cable onto the reinforced cable bracket using a lock pin.
5. Attached the intermediate metal hinges to the top of the panel at every door stile using 3nos. Tek screws, then place 2nos. adjustable side metal hinges (if double end stiles) to either side of the panel and secure with 4nos. Tek screws. Refer Fig. 3.2.1 and Fig. 3.2.2.
6. Insert the roller with 10mm spacer (no.1 hinge only) onto the adjustable axle carrier.

   NB: When the panel is in place the adjustable axle carrier can be adjusted to ensure the panel is parallel with the opening.
7. Repeat steps 5 and 6 to assemble other middle panels.

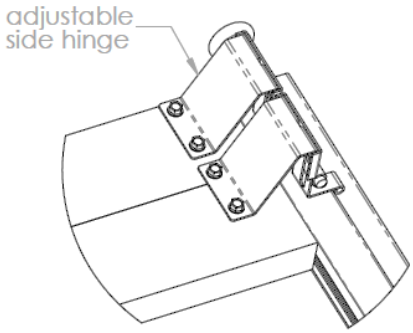


Fig. 3.2.1
bottom panel
double end stile shown

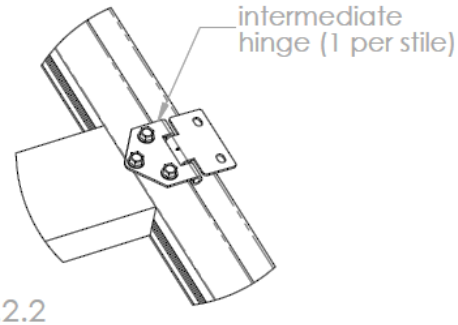


Fig. 3.2.2
bottom panel
double end stile shown

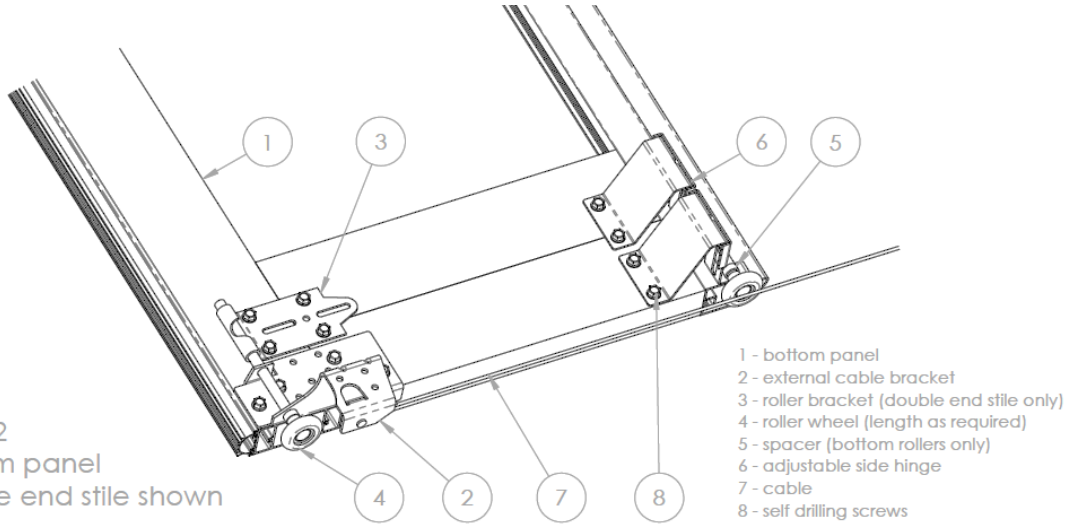


Fig. 3.2
bottom panel
double end stile shown

Aluminium Door Jambs and Header

1. Check if supplied 100x100x10 aluminium angle (jamb) and 100x100x6 aluminium angle (header) will fit inside the opening, cut any excess allowing 5-10mm total clearance as shown in Fig. 4.1
2. Secure the 100x100x10 aluminium angle to one side of the existing building substrate, use construction packers to keep it plumb. Set the angle flush to front of cladding substrate.

   NB: If angle is being pushed forward past the slab, a solid temporary fixing is required to sit the bottom of the door during the installation and cladding stage. This should be noted at time of measure and required by the builder to complete.
3. Repeat step 2 for the other side.
4. Secure the header angle to the underside of the lintel flushed with the jamb angles.

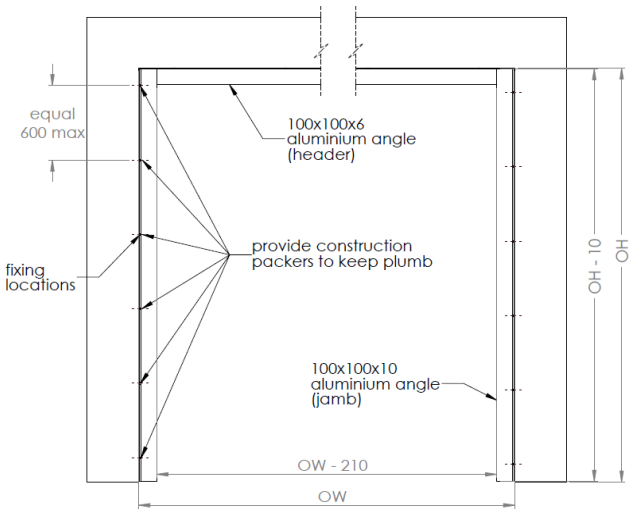


Fig. 4.1
aluminium door jamb and header

Vertical Tracks (for doors up to 250kg)

1. Mark a datum line on each aluminium jamb.
2. Set the vertical track assembly parallel on both sides of the aluminium jamb.
3. The vertical tracks should be panel width + 30mm apart. Use the datum marks to ensure the tracks are level with each other and of the same distance to the top and bottom of the track or the door will not work properly.
4. Use the adjustable track bracket and set the bottom of the track **25mm** from the front of the angle, see Fig. 4.2.
5. Temporarily fix in position with at least 2nos. fixings to the flag bracket and one to each of the track brackets. This will hold track in position but allows for minor adjustments.

   NB: Do not leave gap larger than 10-15mm off the floor.

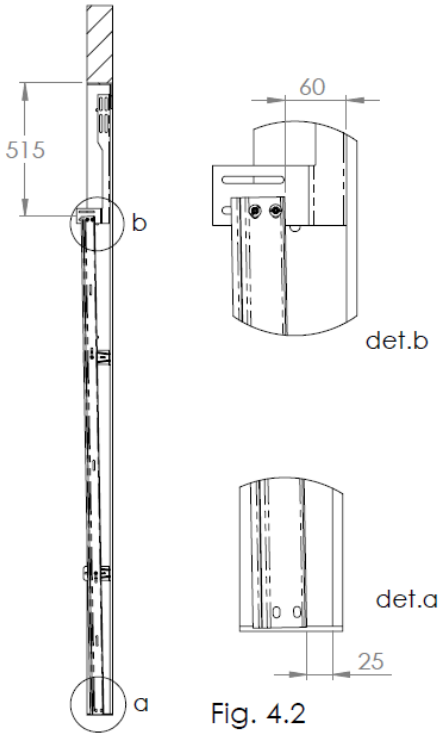


Fig. 4.2
vertical tracks

Horizontal Tracks (for doors up to 250kg)

1. Assemble the low headroom track as shown in Fig. 4.3 using the LHR support plate, track connecting plates, nuts and bolts provided.

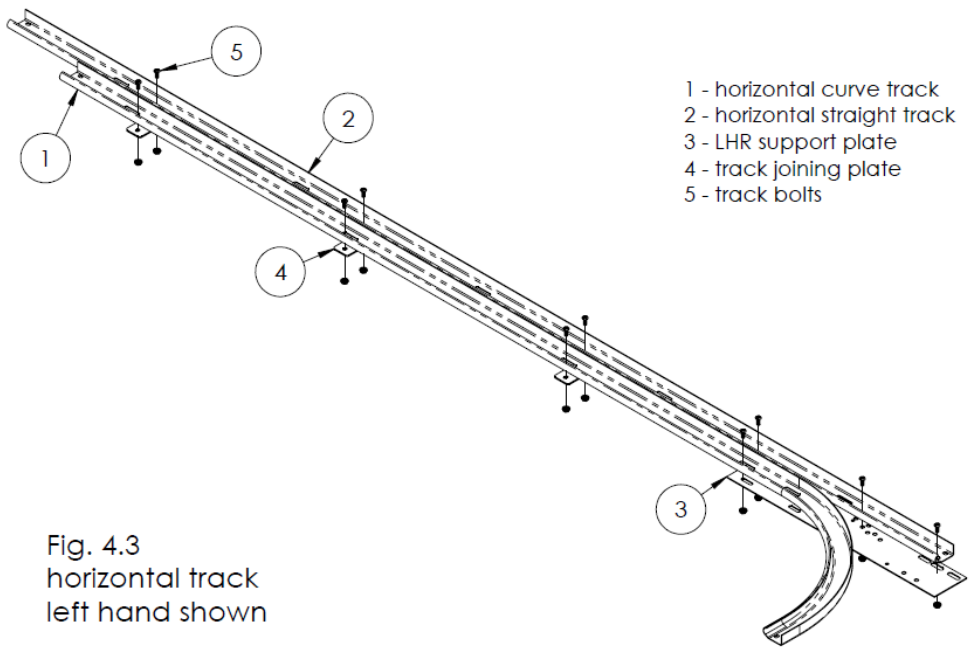


Fig. 4.3
horizontal track
left hand shown

2. Lift the track assembly into position and secure to the flag bracket using one carriage bolt provided. Refer Fig. 4.3.1 and Fig. 4.3.2.

   NB: The other end of the horizontal track must be supported by a suitable stand temporarily.

3. Install the rear track hanger to the end of the tracks ensuring that tracks are level and square to the opening (measure across diagonals and adjust as required).

4. Install additional hangers as required, refer to noggin details for hanger locations in page 8.

   NB: Track hangers can be mounted off the wall in situations with tight side room.

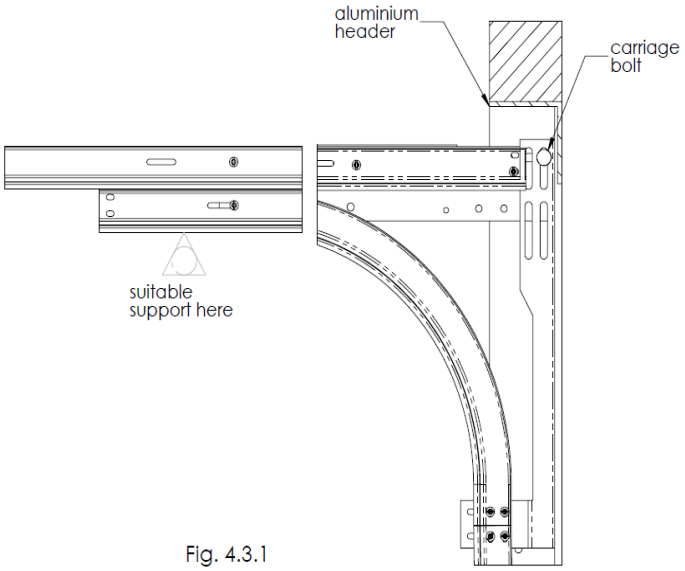


Fig. 4.3.1
left hand shown

> ⚠ **CRUSH / ENTANGLEMENT RISK**
>
> - A sway brace should be fitted to prevent any spreading movement of track which could cause the door to fall. Rear hanger needs to be fixed securely as it supports the weight of the door in the open position.

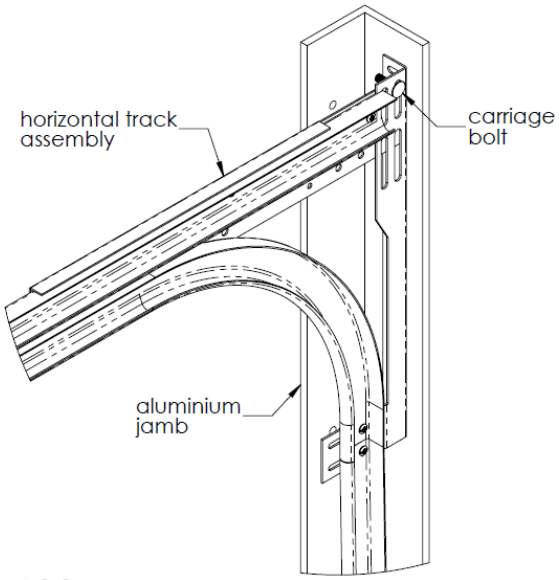


Fig. 4.3.2
left hand shown

Shaft Assembly (for doors up to 250kg)

1. Cut the shaft to suit door and side room.

   NB: Rule of thumb is shaft length = door width + 300mm.

2. Place the shaft on the floor and slide centre bearing plate/s, springs, end bearing plates (centre bearing plates included in Flush Mount Kit), and cable drums as shown on Fig. 4.4.1.

   NB: For four (4) spring doors, refer to Fig. 4.4.2.

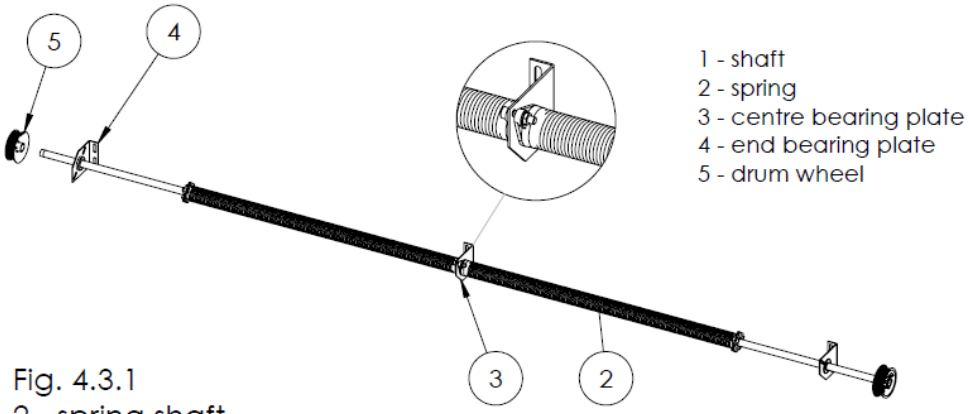


Fig. 4.3.1
2 - spring shaft

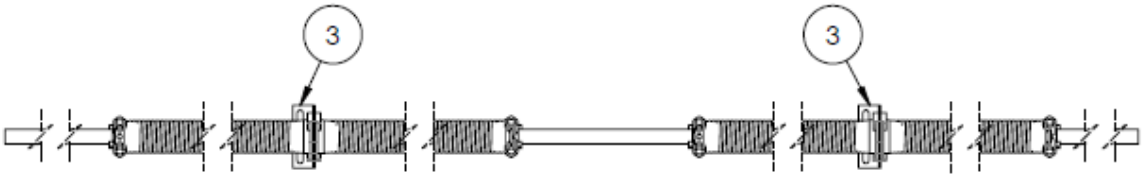


Fig. 4.4.2
4 - spring shaft

3. Lift shaft assembly on top of the lintel and position shaft centre approximately 120mm from the top of the horizontal tracks (see sheet 4 of Technical Detail Sheet). Secure using supplied/recommended fixing.
4. Adjust bearing plates and secure to the support plates and lintel substrate. Refer Fig. 4.4.3.
5. Centre the shaft into the opening so equal amount of shaft protrudes from each bearing plate.
6. Level the shaft and fix the centre bearing plates to the lintel using appropriate fasteners.
7. Secure the springs to the centre bearing plate/s.

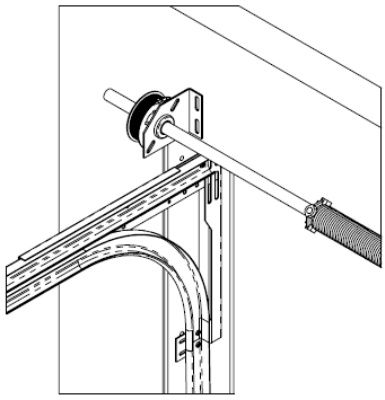


Fig. 4.4.3
left hand shown

Side Seals

1. Cut seal to size.
2. Trim the aluminium carrier to fit around the flag bracket and track brackets as shown in Fig. 4.5.
3. Secure the seal carrier to the jamb angle with small Tek screws. Adjust position as required.

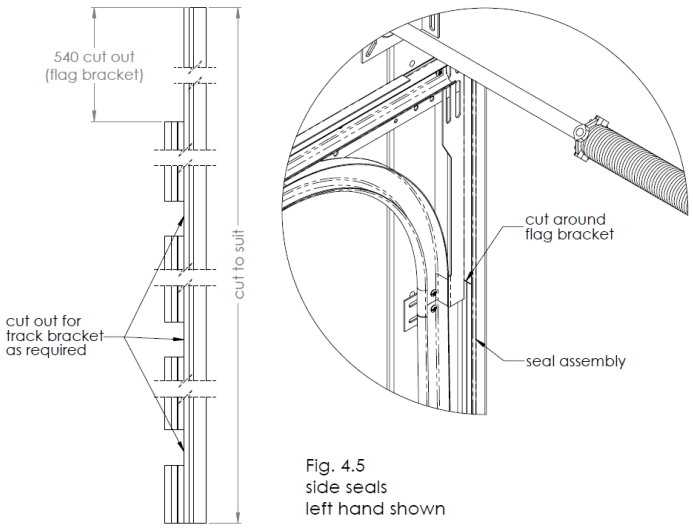


Fig. 4.5
side seals
left hand shown

Before building the door, please check side cable length and make necessary changes when required.

It is also important to bend the flag bracket joint and track brackets to clear the bottom bracket travel.

Bottom Panel

1. To help adjust and build the door vertically straight, if possible, fit a temporary substrate to the face to create a build line.
2. Lift the bottom panel into the opening and carefully lower the bottom roller of the bottom panel into the tracks.
3. Secure the panel into the opening using the side hinge rollers as shown in Fig. 4.6.1.
4. Level the door panel.
5. Check that the rollers are sitting in the centre of the vertical track.

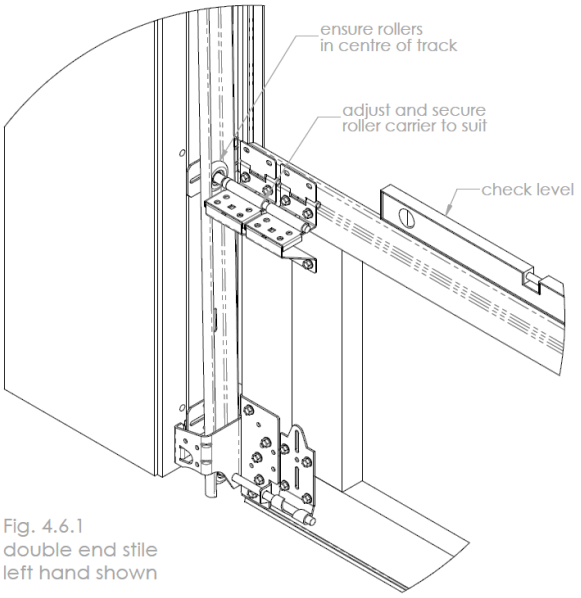


Fig. 4.6.1
double end stile
left hand shown

Intermediate Panels

1. **<u>Before adding the intermediate panel into the tracks, fit a temporary spacer, 1-2mm thick at each stile to give a good clearance between panels</u>**.
2. Remove the axle carrier from the side hinge.
3. Place panel on top of bottom panel and temporary fix to jamb, or with an assistant holding the panel, fit roller into track and re-assemble the axle carrier to side hinge. Refer Fig. 4.6.2.

   NB: Axle carrier can be mounted in two ways – either flat of carrier towards door or away from door.

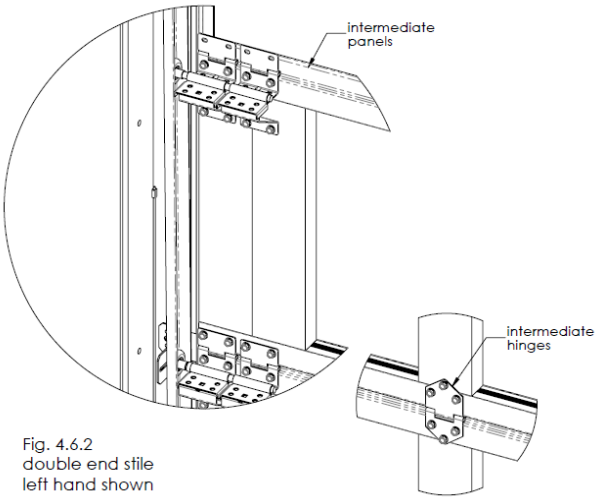


Fig. 4.6.2
double end stile
left hand shown

4. Locate carrier to give best position of roller without interfering with hinge fixings.
5. Align the panels and fix top halves of side and intermediate hinges of the bottom panel to the second panel using self-drilling screws provided.
6. Repeat 2 to 4 for the rest of intermediate panels.

Top Panel

1. Place the top panel into position and secure temporarily.
2. Fit the 'Low Headroom' top panel bracket, inserting the roller to the top horizontal track then securing to the top panel using the provided self-drilling screws, see Fig. 4.6.3.
3. Repeat for opposite side.
4. Secure the top panel to panel below as per previous panels.

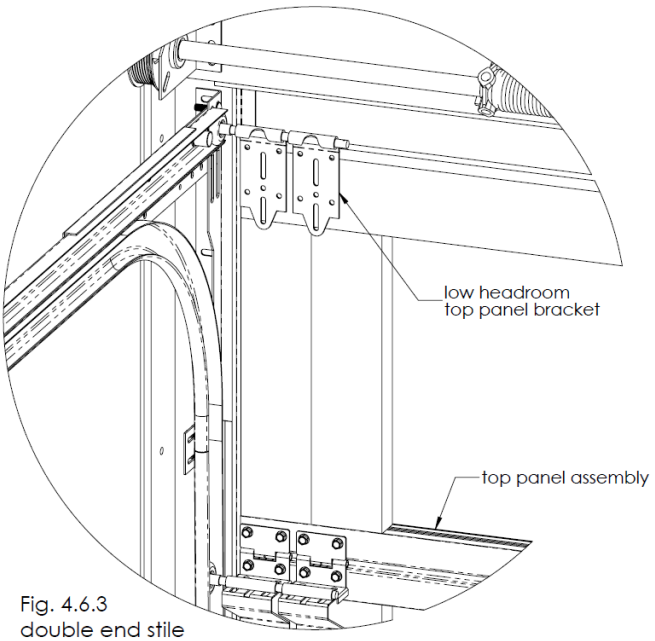


Fig. 4.6.3
double end stile
left hand shown

Pre-Tension and Securing Door for Final Cladding

1. Install temporary track stops behind the ‘Low Headroom’ top panel bracket, pushing the top panel forward to the desired cladding level. Refer Fig. 4.7.

   NB: An added stop in the centre of the door may be required depending on door width.
2. Feed cable into the cable drum. Take up the slack in cable by winding the drum up ensuring cable lays correctly into grooves on drum.
3. Once cable is tight, push the drum against the end bearing plate and tighten the square head set screws to secure drum to shaft.
4. Repeat for opposite side ensuring equal cable tension.
5. Pre-tension the spring to secure the cables ready for commissioning.

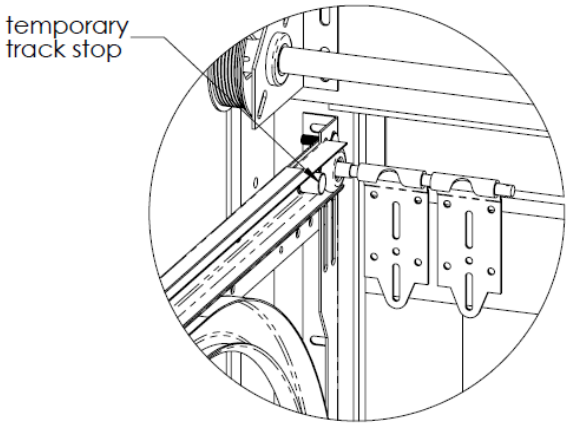


Fig. 4.7
temporary track stop
left hand shown

Pre-commissioning Checks

1. Check that bolts are all secured tight.
2. Cut off all protruding screws thread flush to the angle face to allow jamb to be cladded over.
3. Visually check completed door and make necessary adjustment to hinges if required.

Tensioning the Springs

> ⚠ **HIGHEST-RISK STEP — STORED SPRING ENERGY**
>
> - **This step must only be carried out by trained, competent installers.**
> - Use two winding bars 400–500mm long. Do not use a shorter/undersized bars or other tools.
> - Never stand in line with, or with your head/body close to, the winding tool or axle while adjusting the spring tension.
> - Assume the spring could break or the winding bar could slip from the spring fitting while adjusting the spring tension.

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 (2”) and 66.7mm (2 $^{5}/_{8}$”).

Straight Bar Design

For a straight bar design the whole bar should be Ø12.7mm. Add tape to show when the bar is fully inserted into the spring fitting.

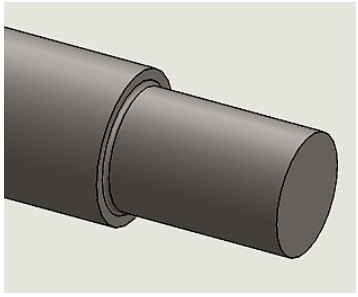
The ends that insert into the spring fitting should be cut off square and sharp – not rounded.

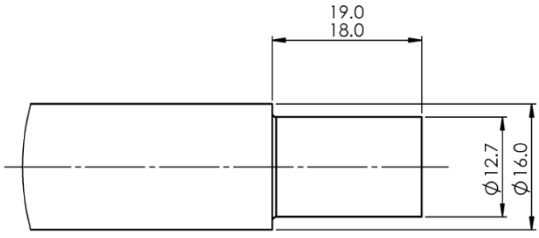


Stepped-Down Design

In a stepped-down design, the bar is bigger in diameter (e.g. Ø16mm) and stepped-down only on the end 18–19mm to diameter Ø12.7mm.

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





1. Remove temporary track stops. Refer to Fig. 4.7.
2. Place vice-grips or G-clamp in the vertical track on one side above a roller to prevent door from lifting during tensioning.
3. Firmly attach a pair of vice grips over the top of the spring shaft so that handles of vice grips are wedged up against the lintel or ceiling. This prevents shaft from turning while tensioning the spring.
4. The springs may have a horizontal line marked on them to make it easier to count the spring turns. If not, mark a horizontal line from one end of each spring to the other with chalk or paint.



⚠ HAZARD: STORED ENERGY IN SPRING SYSTEMS (uncontrolled release)

- **Never loosen a spring set screw without first inserting a winding bar and holding it steady while un-doing set screw.**

5. Using two winding bars, tension the spring. Insert first bar into the spring winding cone and rotate up towards the ceiling and hold until second bar is inserted, se Fig. 5.1.
6. Repeat this operation until the number of turns matches the specified number of turns marked on packing list attached to hardware box.

   NB: It is a good practice to stretch the spring outwards about 5mm to provide a small gap between coils. This minimises potential binding and spring noise during operation.
7. Hold the spring winding cone in final position while securely tightening the two square head set screws onto the shaft.
8. Repeat for each spring. All springs should have identical number of turns.



Fig. 5.1 Tensioning spring

Check and Adjust Spring Tension

1. Carefully release vice grips on shaft, then remove vice grips/clamps from tracks.
2. Check balance of door for ease of operation. The door should operate as follows:
   (a) Door should rest on floor just as all panels except the top are fully vertical.
   (b) The door will be slightly heavy to lift from the close position.
   (c) At halfway opening point door should remain stationary by itself.
3. Check alignment of horizontal tracks as door is being raised.
4. Fully open the door checking the final horizontal clearance so the lowest point of the door is 200mm below the opening avoiding the cables from going negative.
5. With the door fully open, set the track stops at the rear end of the horizontal track.
6. Adjust spring tension as required.
7. Lubricate spring full length to prevent noise and reduce friction.

Door Operator and Final Checks

1. Install door operator as per manufacturer's installation instructions.
2. Once the limits are set and sensitivity checked make any further adjustments needed.
3. Test door several times to ensure its operation is correct.
4. Check all fastenings are fully tightened.
5. Lubricate all moving parts.