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The Door and Operator Dealer's Diary

Think Professional! • Look Professional! • Be Professional!

The AMOROC Mission Statement

The **AMOROC** group of companies is your partner in the garage door industry. We are **committed** to improving standards throughout the industry. **Professionalism** at every level and in every aspect of the industry is a passion and an obsession with us. **Knowledge, know-how** and **commitment** are the “**keys**” to a better, brighter and profitable future. We are here to help and serve the industry.

The Basics of Garage Door Hardware Selection Very Important Notes

Providing accurate information is the secret to obtaining the correct hardware for your garage door installation, saving you time and money and making the installation of the door a profitable exercise!

..... **There are no short-cuts!!!**

Tools Required:-
1 x 5 m Tape Measure, (or longer) 1 x Bathroom Scale
1 x Pencil 1 x Writing Pad

Rule No 1:- Measure and weigh accurately
Rule No 2:- Measure sizes in millimetres (mm) and mass (weight) in kilograms (kg)

Example:- 2440 mm wide x 2135 mm high; mass = 68 kg

and not 2m 44 (is that 44 cm or 44 mm??) x “more or less my height”, (typical “over the phone” description); mass = “more or less standard”, (or “not so heavy” or “very heavy”).

What is “nearly standard size”? What is “my height”?? What is “not so heavy”???

Fact No. 1

There are only 2 recognised “**standard**” sizes for garage door openings!

Standard Single Door size = 2440 mm wide x 2135 mm high
(in the “old” measurements) = 8ft wide x 7ft high)

Standard Double Door size = 4880 mm wide x 2135 mm high
(in the “old” measurements) = 16ft wide x 7ft high)

There are no other “standard” sizes for garage doors!
(including so called “caravan” height doors), and ever more importantly

Fact No. 2

There is no thing as a “standard weight” for garage doors!
Each and every door must be considered independently!

Enquire about AMOROC’S Training courses.

The more you know, the easier the job will be, the more money you will make!

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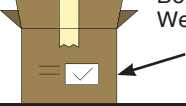
The Authors and publishers have expended considerable time, skill and effort on developing and producing this manual, which has a value considerably in excess of the cost of the paper and printing, and will not hesitate to take legal action against any infringer. Such action may include criminal prosecution.

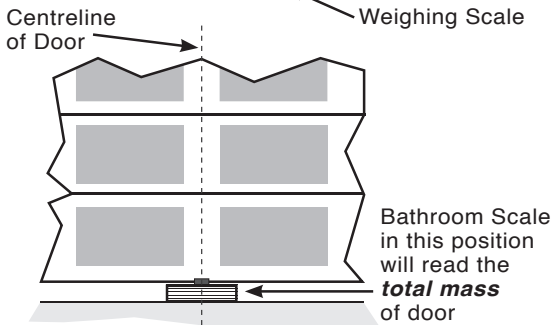
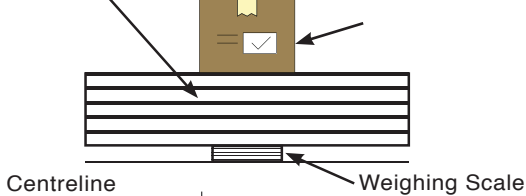
How to specify garage door hardware for "new" and "exciting" door installations

Think Professional! • Look Professional! • Be Professional!

What is the Mass of the Door ???

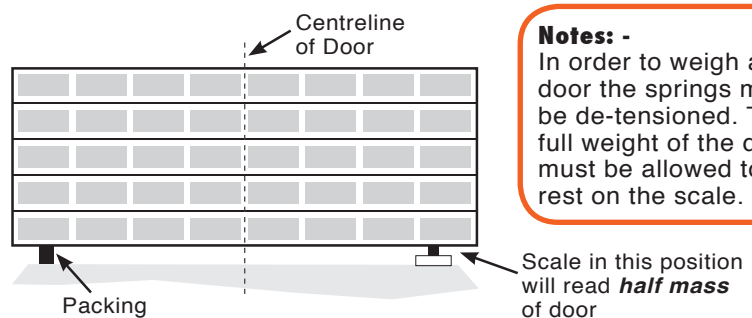
The "moving mass" of the door is:- the mass of the door sections plus the mass of the hardware attached to the door.

Door Sections  Box of Hardware - (included "Top-hat" Struts, Weatherseals, Locks, etc.)



Below are two methods that can be used to obtain the mass of doors that are already installed. In both cases a simple "Bathroom" quality scale is used.

Rule No. 1: - Never guess the mass of a door Weigh it!!!



Notes: -

In order to weigh a door the springs must be de-tensioned. The full weight of the door must be allowed to rest on the scale.

Weighing a "Single" Size Door

Door Mass (Weight)

Doorweights vary according to the type of material used, the style and method of construction of the door. The weights of timber doors especially may vary by as much as **15%** from one to the next *even though they may be of the same size, style and timber and from the same manufacturer.*

Timber is not a homogenous material in the way steel is. The density and moisture content of the door will greatly affect the weight of the door. For example, a **20** panel standard single size sectional **Meranti** door can weigh **60 kg**, whilst an indentially sized door from the same manufacturer using a different grade or batch of **Meranti** can easily weigh as much as **70 kg**.

By comparison, a similarly sized and constructed **Saligna** garage door can weigh **70 - 75 kg** and as much as **85 kg** if the timber used is **Iroko** or **Merbau**. Then there are also the differences in construction between the various manufacturers to take into account when determining the weight of the door. Some may make the door frame **30 - 32 mm** thick, whilst others finish at **36 - 38 mm**. **That's a 15 - 20% difference in thickness and weight!** This also accounts for the difference in cost between the various makes of doors.

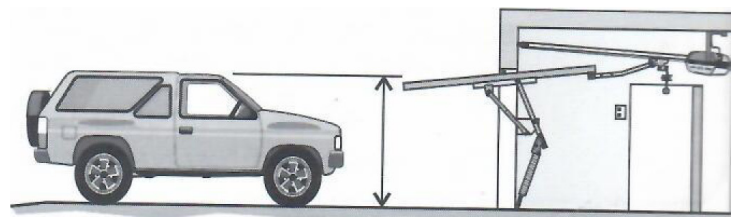
What Size is the Vehicle???

And what about the type and size of the vehicle using the garage???

This most important question is very seldom asked by Door Dealers and Installers. It is arguable the most important question that should be asked as the answer can affect every aspect of door selection imaginable, e.g. type, size and construction, as well as the most critical phase of the work, **the installation !!!!**

When advising clients on the selection of a suitable garage door, remember to ask the question

.. **"what type of vehicle will be parked in this garage?"**



..... **Make sure the vehicle will pass under the door**

Door Duty Rating

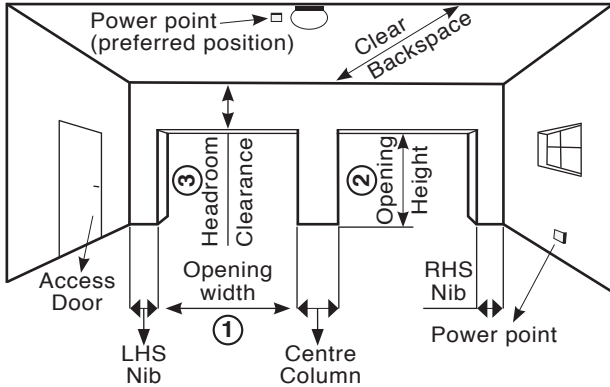
The selection of the hardware to be used for any particular installation begins with accurately determining the size and mass of the door, **but that is not all that is required.** The application of the door, i.e. **the duty cycle** it will be required to perform and **the environment** in which it will be operating are equally important.

For normal domestic applications, a duty rating of **2 000** cycles per year is used. This equates to approximately 5 cycles per day. The design "**life expectancy**" of components such as springs, liftings cables, rollers, cable drums and bearings is **10 000** cycles for domestic doors, **which equates to 5 years of usage. After that period, they need to be replaced!!!**

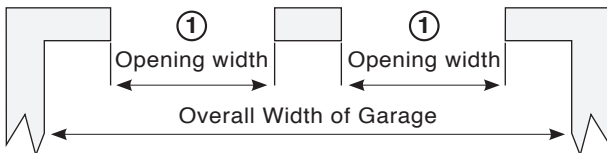
When doors have to endure a higher traffic density of say **50 - 60** cycles per day, (or approx **20 000** cycles per year), **then every component making up the door must be designed, constructed and selected accordingly to suit the application.**

..... **There are no short-cuts!!!**

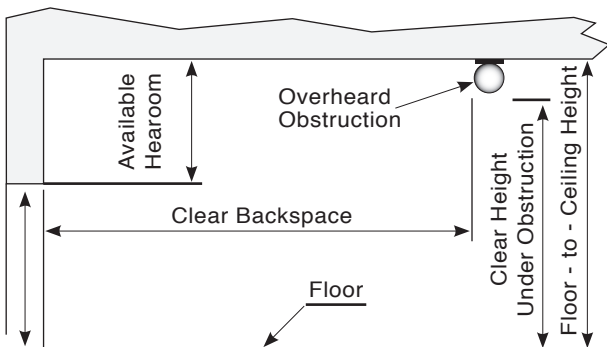
The Garage Door and Operator Dealer's Diary



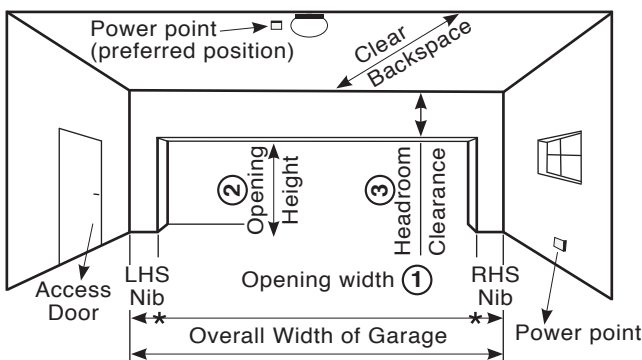
**Typical Garage Design
(with 2 single size doors)**



Plan View of Garage



Cross-Section Through Garage



**Typical Garage Design
(with 1 double size door)**

Measuring for Garage Doors

In order to ensure a trouble-free installation be sure to obtain all the dimensions indicated.

Measurements in millimetres only.

| | | |
|-------------------------|---|----|
| Opening Width | = | mm |
| Opening Height | = | mm |
| LHS Nib | = | mm |
| RHS Nib | = | mm |
| Centre Column | = | mm |
| Available Headroom | = | mm |
| Clear Backspace | = | mm |
| Overall Garage Width | = | mm |
| Floor-to-ceiling Height | = | mm |

Important Notes:-

- 1) Measure each door independently.
- 2) Check that the garage structure is square and plumb. Make a note of every discrepancy especially obstructions.
- 3) Be sure to measure the **overall width** of the garage, especially if the **Nibs** are small or the door openings are narrower than standard.
- 4) Measure the size and position of all obstructions.
- 5) Indicate whether or not there is a separate access door into the garage. If there isn't one then extra equipment will have to be installed if the door is to be automated, (e.g. an "**Emergency Key-release Mechanism**").
- 6) Is power provided inside the garage?
- 7) Is the structure finished? (i.e. plaster work, floor-screed, etc.)

Standard Opening Sizes

| | |
|---------------------------|-----------------------------|
| Single Size Door:- | 2440 mm wide x 2135 mm high |
| Double Size Door:- | 4880 mm wide x 2135 mm high |

Caravan Door:- The height of caravan doors will depend on whether a 5 Section or a 6 Section, (or even more sections), are to be used. A daylight opening height of 2550 mm is normally sufficient for caravans, Minibus and 4x4 vehicles with roof-racks.

Space Required for Standard Size Sectional Doors:-

| | Recommended | Minimum |
|-------------------------------|-------------|---------|
| Headroom (automatic door) | = 425 mm | 360 mm |
| or (manual door) | = 325 mm | 285 mm |
| Nibs (both sides) | = 220 mm | 120 mm |
| Centre Column | = 330 mm | 240 mm |
| Backspace (automatic door) | = 3100 mm | N.A. |
| or (manual door) | = 2650 mm | 2450 mm |
| Overall garage width (single) | = 2740 mm | 2680 mm |
| or (double) | = 1580 mm | 5120 mm |

Take note of the minimums required! If the space available is less than the minimums stated, special equipment may be required.

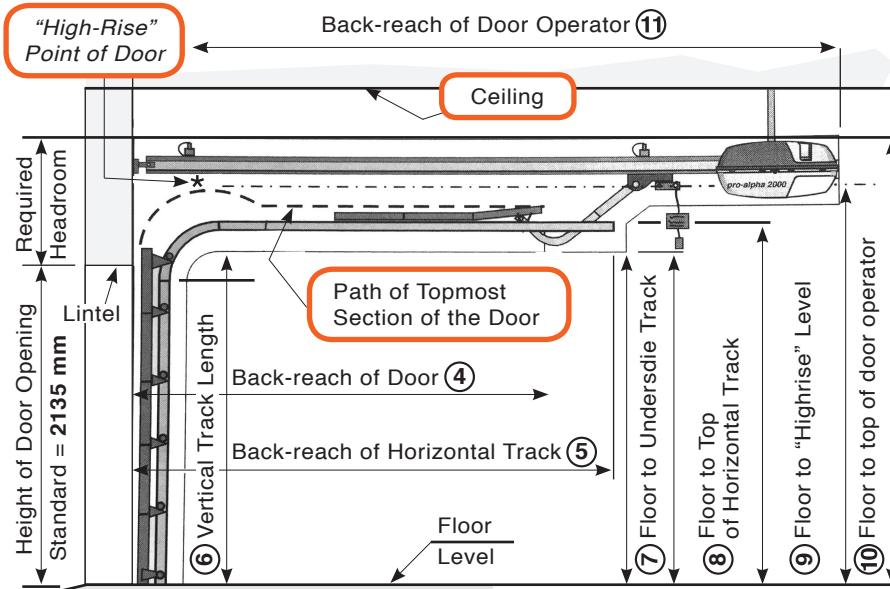
These dimensions will be affected by the design of the door, i.e. if the door is a 4 or 5 section door and also, each manufacturer may make the door sections a little wider or higher than the next one.

Contact **AMOROC** for advice before making the door!

The Garage Door and Operator Dealer's Diary

How much "Working Space" is really needed?

(See also page 3-16)



Important Notes:-

The following table shows the **minimum amount of "Working Space"** that is required for the normal installation of standard size Sectional doors. If the space available is less than that stated here, then special equipment may be required to undertake the installations.

Certain assumptions have been made, i.e.:-

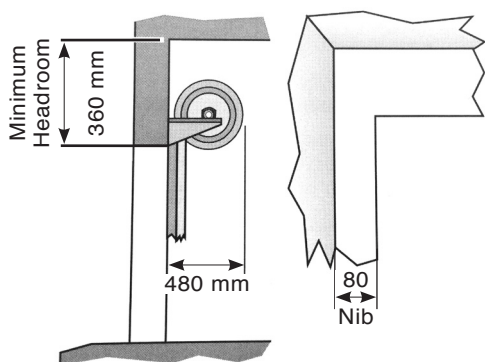
- 1) The opening sizes are standard as per page 3-16.
- 2) The structure is level, square, plumb and true as the case may be.
- 3) For sectional doors, the door panel overlaps the opening by **no more than 25 mm** at the top and sides

"Working Space" Required for Standard Size Sectional Doors

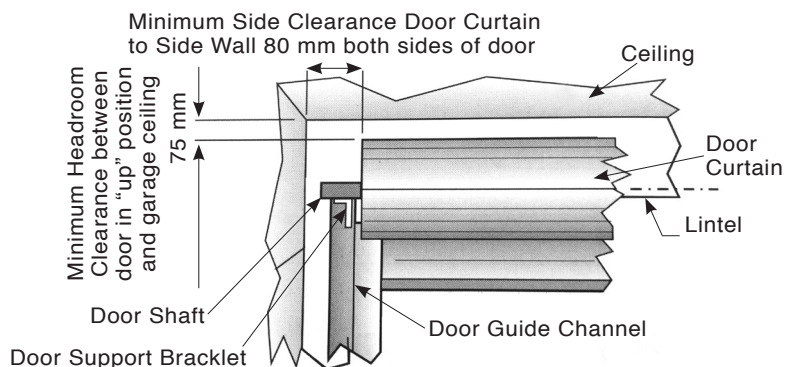
All dimensions in mm

| Opening Width (1) | Opening Height (2) | No. of Sect. | Track Radius | Minimum Headroom (3) | | Back-reach Door (4) | Back-reach Track (5) | Vertical Track (6) | Floor-to - Track U/side (7) : Top (8) | | Highrise Level (9) | Top of GDO (10) | Back-reach GDO (11) |
|-------------------|--------------------|--------------|------------------|----------------------|------------|---------------------|----------------------|--------------------|---------------------------------------|-------------|--------------------|-----------------|---------------------|
| | | | | Manual | Automatic | | | | | | | | |
| 2440 | 2135 | 6 | 254 (10") | 240 | 315 | 2260 | 2260 | 1930 | 2180 | 2235 | 2380 | 2445 | 3100 |
| 2440 | 2135 | 5 | 305 (12") | 285 | 360 | 2220 | 2600 | 1930 | 2220 | 2275 | 2420 | 2500 | 3100 |
| 2440 | 2135 | 4 | 380 (15") | 365 | 240 | 2200 | 2600 | 1930 | 2300 | 2355 | 2500 | 2575 | 3100 |
| 2440 | 2550 | 6 | 305 (12") | 290 | 360 | 2665 | 2900 | 2350 | 2640 | 2695 | 2840 | 2910 | 3800 |
| 2440 | 2550 | 5 | 380 (15") | 365 | 240 | 2665 | 2900 | 2430 | 2800 | 2855 | 2925 | 3070 | 3800 |
| 4880 | 2135 | 6 | 254 (10") | 240 | 315 | 2260 | 2650 | 1930 | 2180 | 2235 | 2380 | 2445 | 3100 |
| 4880 | 2135 | 5 | 305 (12") | 285 | 360 | 2220 | 2220 | 1930 | 2220 | 2275 | 2420 | 2500 | 3100 |
| 4880 | 2135 | 4 | 380 (15") | 365 | 440 | 2200 | 2200 | 1930 | 2300 | 2355 | 2500 | 2575 | 3100 |
| 4880 | 2550 | 6 | 305 (12") | 290 | 360 | 2665 | 2665 | 2350 | 2640 | 2695 | 2840 | 2910 | 3800 |
| 4880 | 2550 | 5 | 380 (15") | 365 | 440 | 2665 | 2665 | 2430 | 2800 | 2855 | 2925 | 3070 | 3800 |

Space Required for Standard Size Steel Roll-up Doors



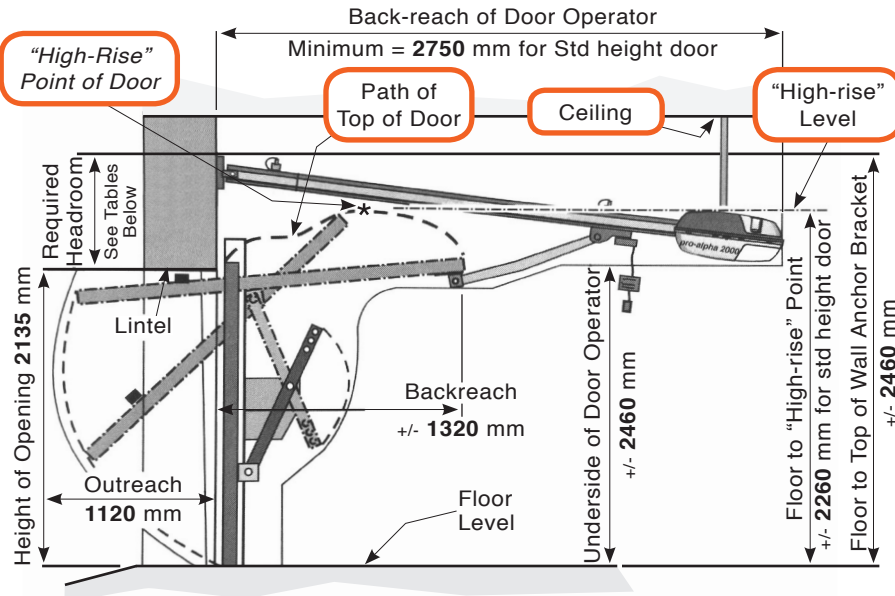
Minimum Space Required for Installation of a Standard "pro-rola" System



The Garage Door and Operator Dealer's Diary

How much "Working Space" is really needed?

(See also page 3-16)



Important Notes:-

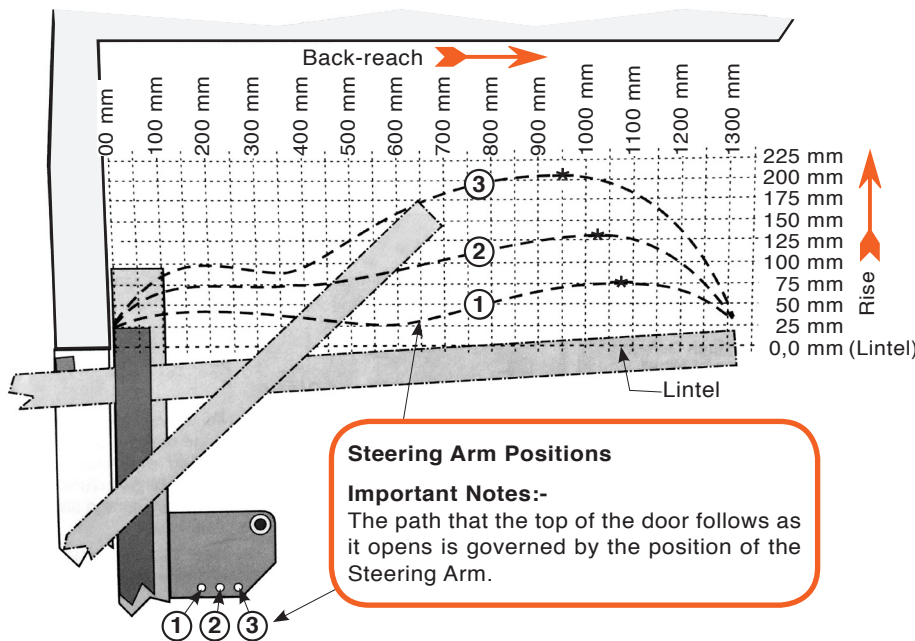
The following table shows the **minimum amount of "Working Space"** that is required for the normal installation of standard size Tip-Up doors. If the space available is less than that stated here, then special equipment may be required to undertake the installations.

Certain assumptions have been made, i.e.:-

- 1) The opening sizes are standard as per page 3-16.
- 2) The structure is level, square, plumb and true as the case may be.
- 3) For sectional doors, the door panel overlaps the opening by **no more than 25 mm** at the top and is narrower than the opening width by 40 mm.

"Working Space" Required for Standard Size Tip-Up Doors

All dimensions in mm



Steering Arm Positions

Important Notes:-

The path that the top of the door follows as it opens is governed by the position of the Steering Arm.

Minimum Headroom Required

| Pos. | Manual | Automatic |
|------|--------|----------------|
| 1 | 75 mm | Not Applicable |
| 2 | 130 mm | 325 mm |
| 3 | 210 mm | 400 mm |

Position 1:- "Low-headroom" setting. Not suitable for automatic operation!

Position 2:- "Normal" setting. Suitable for automatic operation. Most commonly used position for Steering Arm.

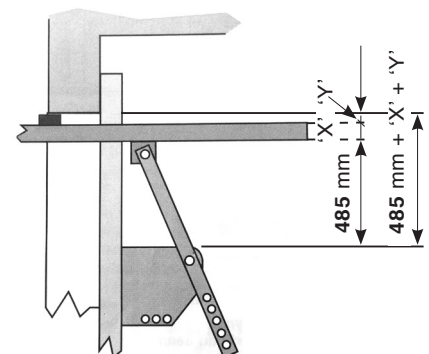
Position 3:- "High-headroom" setting. Best position for automatic operation.

The dimensions stated are "approximate" only as they are influenced by factors such as the door thickness the exact height of the door panel and the spacing of the "jamb" mounted Power Plate from the wall.

Important Notes:-

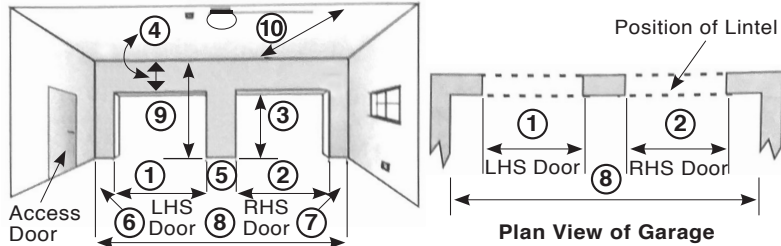
"Setting-up" Dimensions for AMOROC Tip-Up Hardware.

| | | |
|--------------------------|---|--------|
| Radius of Power Arm | = | 485 mm |
| Thickness of door panel | = | "X" mm |
| Height of Rubber Stopper | = | "Y" mm |

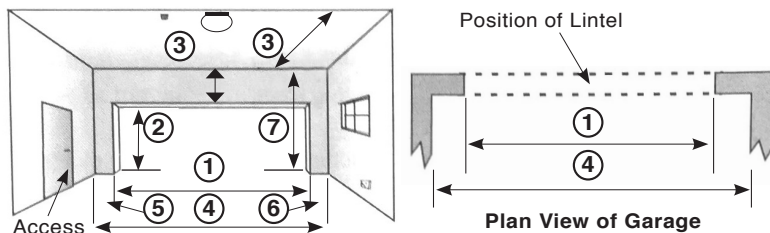


The Garage Door Manual

Garage Type 1

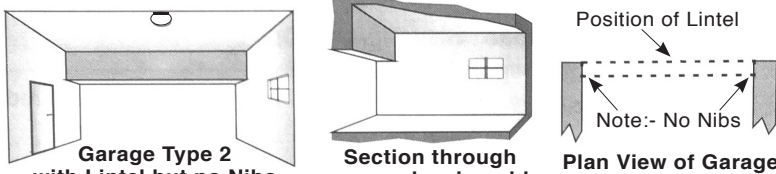


Type 1 Garage Arrangement (with 2 single size doors)



Type 1 Garage Arrangement (with 1 double door)

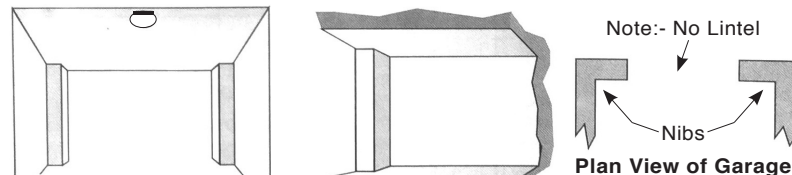
Garage Type 2



Garage Type 2 with Lintel but no Nibs

Section through garage showing side walls without Nibs

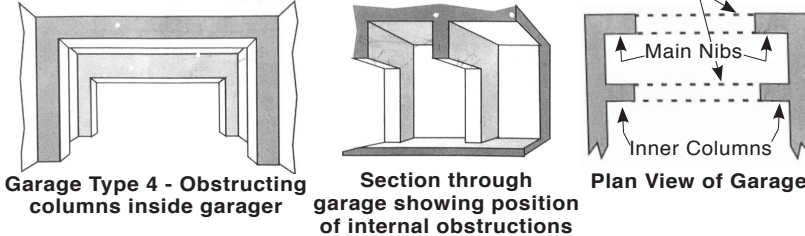
Garage Type 3



Garage Type 3 with Lintel but no Lintel

Sectional view through garage showing position of Nibs

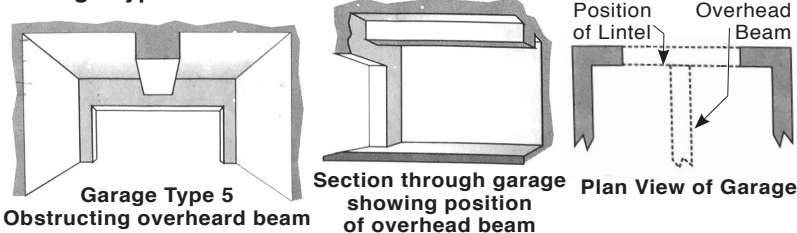
Garage Type 4



Garage Type 4 - Obstructing columns inside garager

Section through garage showing position of internal obstructions

Garage Type 5



Garage Type 5 Obstructing overhead beam

Section through garage showing position of overhead beam

Measuring Garages for New Door

- 1) In the garage door industry, garage doors are always identified according to their position as viewed from **inside** of the garage.
- 2) Measure accurately, all dimensions being in **mm**.
- 3) Record **all** the dimensions shown.

For your convenience, a number of typical "problem" openings are shown and categorised. Use these drawings to explain exactly what types of problems have to be considered when designing the door / door hardware / automation system.

Type 1 Garage

This is the most common type of garage structure. The openings have **Nibs**, (both LH and RH), as well as **Headroom** above the Lintel. There are no other obstructions inside of the garage. The **Backspace** is clear the full depth of the garage.

Type 2 Garage

The structure has an overhead Lintel providing headroom, but there are no Nibs. The side walls are flush with the "daylight" opening.

It will be necessary to create "false" nibs before doors can be installed.

Type 3 Garage

There is no "headroom"! The structure has Nibs at either side but no overhead Lintel. The ceiling is flush with the "daylight" opening.

"Headroom" is an essential requirement for all "overhead" type garage doors. It will be necessary to create the necessary headroom with a header panel before doors can be installed.

Type 4 Garage

"Headroom" and Nib space appear to be adequate, but behind the opening there is an **obstructing column and overhead beam**. Depending on the distance of the column from the "opening" the sizing of the garage door will have to be carefully considered.

"Side-room", (i.e. clear Nib space), is an essential requirement for all "jamb-mounted" type garage doors.

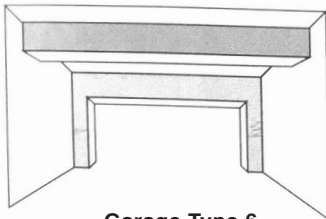
Type 5 Garage

"Headroom" and Nib space appear to be adequate, but behind the Lintel there is an **obstructing column and overhead beam**. Depending on the height of the beam above the floor, the sizing of the garage door will have to be carefully considered.

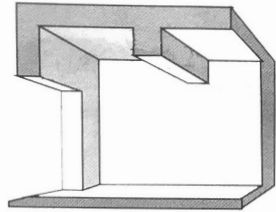
Such obstructions normally require the use of "special" hardware.

The Garage Door Manual

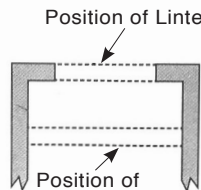
Garage Type 6



Garage Type 6
Obstructing beam behind Lintel



Section through garage
showing
obstructing beam



Position of Lintel
Position of
Overhead
Beam
Plan View
of Garage

Type 6 Garage

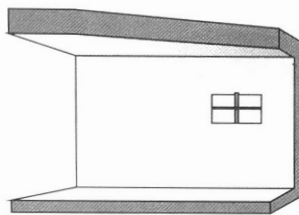
"Headroom" and "Nib" space are adequate, but behind parallel to the Lintel there is an **obstructing overhead beam**. This beam effectively reduces the headroom space available. Depending on the height of the beam above the floor and the distance from the opening, the sizing of the garage door will have to be carefully considered.

Such obstructions normally require the use of "special" hardware.

Garage Type 7



Garage Type 7
Tunnel Type - No Nibs
and No Lintel



Section through garage showing
"tunnel" type structure

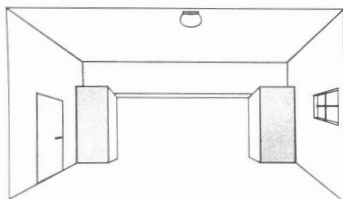
Type 7 Garage

There is no "headroom" and no "Nib" space! The structure is like a "tunnel".

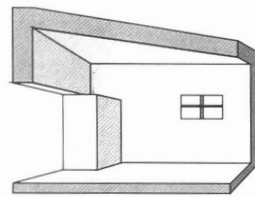
Both the headroom and nib space must be created before a door can be installed.

"Special" hardware and purpose made doors are often required for installations in this type of garage.

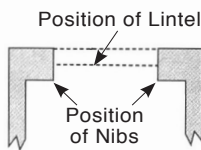
Garage Type 8



Garage Type 8
With producing Nibs
Lintel and Nibs are not flush



Section through garage
showing position of
Lintel and Nibs



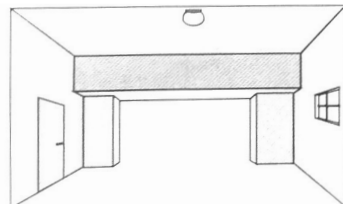
Position of Lintel
Position of
Nibs
Plan View
of Garage

Type 8 Garage

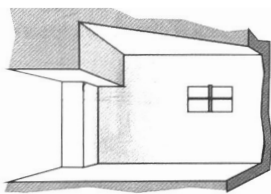
"Headroom" and "Nib" space are adequate, **but the nibs extend beyond the inside face of the Lintel**. This does present a problem for the installation of certain types of doors, notably "sectional" type doors.

Ideally the lintel and nibs should be flush with each other. It may be necessary to provide a top "filter" piece to close the gap which will be left. Sectional Doors may require some special equipment and installation techniques.

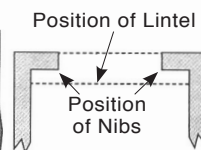
Garage Type 9



Garage Type 9
With producing Lintel
Lintel and Nibs are not flush



Section through garage
showing position of
Lintel and Nibs



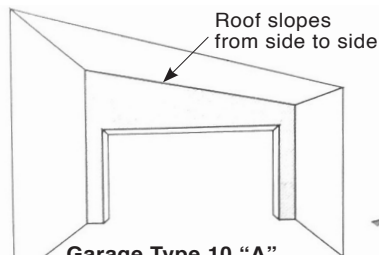
Position of Lintel
Position of
Nibs
Plan View
of Garage

Type 9 Garage

Similar to "Type 8" structures, **"Type 9" garages have the lintel extending beyond the nibs**. This makes the Type 9 garage a more difficult installation to contend with. If the lintel extends too far beyond the nib, the garage structure may have to be modified or else the hardware may have to be specially designed to suit, the application.

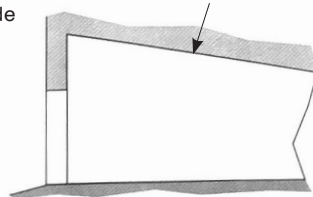
Sectional type doors in particular are affected by this type of garage structure and may require some special installation techniques.

Garage Type 10 - (A & B)



Garage Type 10 "A"
with sloping roof

Roof slopes
from front to back



Garage Type 10 "B"
with sloping roof

Type "10A" Garage

The roof slopes across the face of the door effectively reducing the "headroom" to what is available at the **lowest side**.

Type "10B" Garage

The roof in "Type 10 B" structures slopes **either from the "front-to-back" as shown or from "back-to-front"**. In either case, the headroom available is reduced to whatever the minimum is, (i.e. worst case). You must consider the **lowest side** to be your effective "available headroom".

Special installation techniques or hardware may be required.

Replacing Torsion Springs

When replacing the springs of a garage door which is not of a standard height, or else, the mass of the door, (i.e. weight), is also uncertain, then follow the steps below when selecting replacement springs:-

The Recommended Procedure

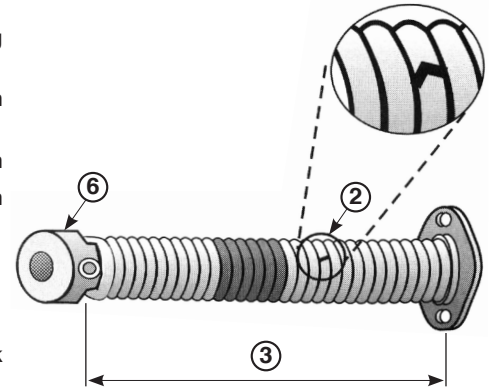
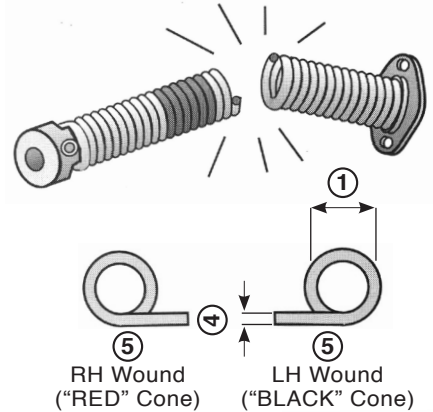
- 1) Weigh the door using the procedures described on page 2-16.
- 2) Measure all the dimensions required, i.e. opening height, door width, drum size, door duty rating, etc., etc.
- 3) Fax all the data to **AMOROC** on 028 313 1338
- 4) **Important Notes:- Never replace only one spring in a multi spring system!**

If one spring is broken, it is certain that the remaining springs are on the verge of failure as well. Springs are designed to last for a specific number of cycles, e.g. **10 000** or **15 000** as the case may be. When one fails, the other is bound to follow suit within a short period. **It does not make economic sense to replace only one spring and then have to repeat the whole procedure again within a month or two.**

The Alternative Procedure

If the original springs are available and are not too badly damaged, the following procedure may be used:- **(All measurements in mm)**

- 1) Measurement the "outside" diameter of the spring coil. ① mm
- 2) If the spring is broken, place the 2 halves of the spring together, and measure the length of the spring coils. ③ mm
- 3) Measure the diameter of the wire. ④ mm
This must be done accurately. If no Vernier or Micrometer is available, then:-
- count the total number of coils.
- divide the length of the spring (coils only), by the total number of coils.
The answer is a reasonably accurate measurement of the wire diameter.
- 4) Note the colour of the winding cone, Red or Black, (i.e. RH or LH ⑤ Red / Black Wound respectively?)



Notes:- 1) This alternative method is **not guaranteed** to be **100%** accurate as the assumption made is that the spring being used as the sample was in fact of the **correct size and rating in the first place???** **This is not always the case!!!**
The surrest method is to weigh the door and obtain **all** measurements below in section headed **"Spring Assistance Request"**.

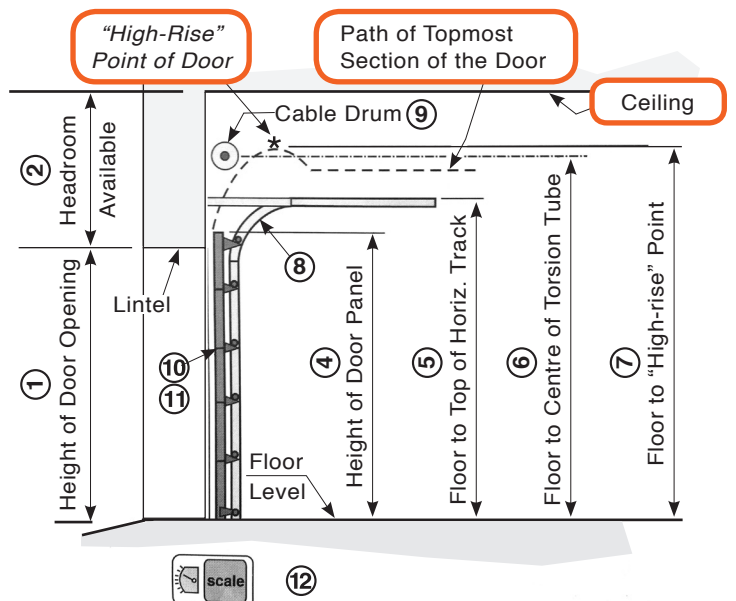
- 2) Reputable door manufacturers and installers attach an information label on the door which states the mass of the door and other relevant information pertaining to the springs and cable drums used on the door.

Spring Assistance Request

Fax information to to **AMOROC** on 028 313 1338

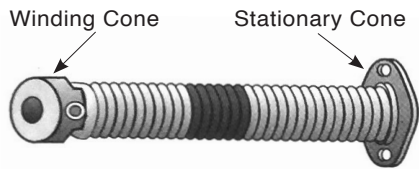
Door Data

- | | |
|-----|---|
| ① = | mm (Opening Height) |
| ② = | mm (Headroom) |
| ③ = | mm (Opening Width) |
| ④ = | mm (Panel Height) |
| ⑤ = | mm (Top Horiz) |
| ⑥ = | mm (CL of Tube) |
| ⑦ = | mm ("High-rise" Point) |
| ⑧ = | 10" / 12" / 15" / 20" (Track Radius - inches) |
| ⑨ = | 400-8 / 400-12 / (Drum Size) |
| ⑩ = | No. of Sections |
| ⑪ = | Wood / Steel / GRP (Material of Door) |
| ⑫ = | kgs (Mass of Door) |
| ⑬ = | Cycles / day (Duty Rating) |

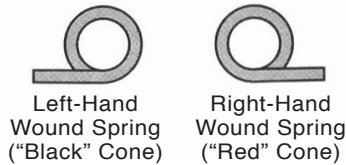


Torsion Springs

Springs - "TORSION" Type



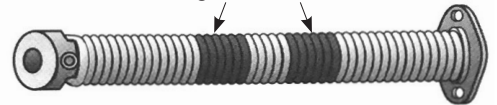
Torsion Spring with 1 colour band for standard 2135 mm high doors



Left-Hand Wound Spring ("Black" Cone) Right-Hand Wound Spring ("Red" Cone)

Colour Code on Winding Cone indicates if spring is Left-Hand or Right-Hand wound.

Torsion Springs with 2 or more Colour Bands are for special applications and non-standard height doors.

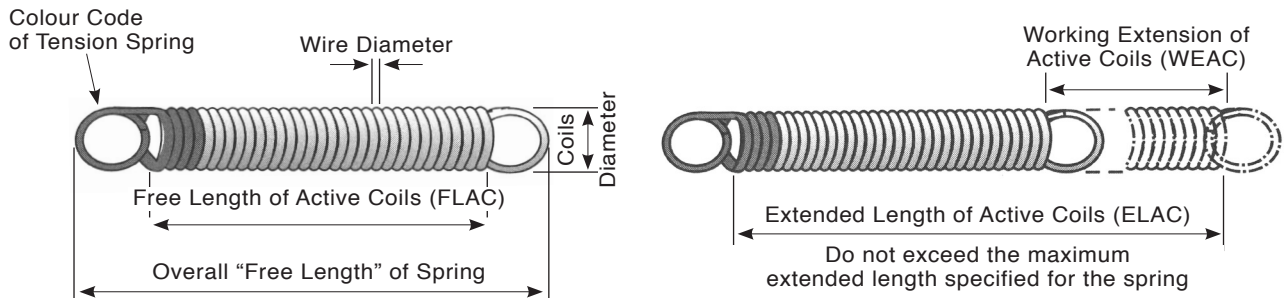


| Spring Rating Door Mass x Height of Door | Stock Code | Cone Colour | Duty Rating | Life Cycles | Package |
|---|--|--------------|----------------------|------------------|--------------|
| 40 kg x 2135 H 40 kg x 2135 H | 4 SPR 040-213 LH 4 SPR 040-213 RH | Red Black | Domestic Domestic | 10 000 10 000 | Each Each |
| 40 kg x 2550 H 40 kg x 2550 H | 4 SPR 040-255 LH 4 SPR 040-255 RH | Red Black | Domestic Domestic | 10 000 10 000 | Each Each |
| 50 kg x 2135 H 50 kg x 2135 H | 4 SPR 050-213 LH 4 SPR 050-213 RH | Red Black | Domestic Domestic | 10 000 10 000 | Each Each |
| 50 kg x 2550 H 50 kg x 2550 H | 4 SPR 050-255 LH 4 SPR 050-255 RH | Red Black | Domestic Domestic | 10 000 10 000 | Each Each |
| 60 kg x 2135 H 60 kg x 2135 H | 4 SPR 060-213 LH 4 SPR 060-213 RH | Red Black | Domestic Domestic | 10 000 10 000 | Each Each |
| 60 kg x 2550 H 60 kg x 2550 H | 4 SPR 060-255 LH 4 SPR 060-255 RH | Red Black | Domestic Domestic | 10 000 10 000 | Each Each |
| 70 kg x 2135 H 70 kg x 2135 H | 4 SPR 070-213 LH 4 SPR 070-213 RH | Red Black | Domestic Domestic | 10 000 10 000 | Each Each |
| 70 kg x 2550 H 70 kg x 2550 H | 4 SPR 070-255 LH 4 SPR 070-255 RH | Red Black | Domestic Domestic | 10 000 10 000 | Each Each |
| 80 kg x 2135 H 80 kg x 2135 H | 4 SPR 080-213 LH 4 SPR 080-213 RH | Red Black | Domestic Domestic | 10 000 10 000 | Each Each |
| 80 kg x 2550 H 80 kg x 2550 H | 4 SPR 080-255 LH 4 SPR 080-255 RH | Red Black | Domestic Domestic | 10 000 10 000 | Each Each |
| 90 kg x 2135 H 90 kg x 2135 H | 4 SPR 090-213 LH 4 SPR 090-213 RH | Red Black | Domestic Domestic | 10 000 10 000 | Each Each |
| 90 kg x 2550 H 90 kg x 2550 H | 4 SPR 090-255 LH 4 SPR 090-255 RH | Red Black | Domestic Domestic | 10 000 10 000 | Each Each |
| 100 kg x 2135 H 100 kg x 2135 H | 4 SPR 0100-213 LH 4 SPR 0100-213 RH | Red Black | Domestic Domestic | 10 000 10 000 | Each Each |
| 100 kg x 2550 H 100 kg x 2550 H | 4 SPR 0100-255 LH 4 SPR 0100-255 RH | Red Black | Domestic Domestic | 10 000 10 000 | Each Each |

"Torsion" Springs for doors which have different "duty rating", height or weight specifications to those stated above are available on request.

Torsion Springs

Springs - "TENSION" Type - "Double" Loop Both Ends - Sectional Doors



Tension Springs - Sectional Doors

| Spring Rating Door Mass kg. / Height mm | Stock Code | Colour Code | | WEAC mm | ELAC Max. mm | Packing |
|--|----------------|-------------|------------|------------|-----------------|---------|
| | | New | Old | | | |
| 35 - 40 kg. / 2135 | 4 SPR 035 TENS | Light Green | Gold | 1065 | 1715 | Each |
| 40 - 45 kg. / 2135 | 4 SPR 040 TENS | Cream | Cream | 1065 | 1715 | Each |
| 45 - 50 kg. / 2135 | 4 SPR 045 TENS | White | White | 1065 | 1715 | Each |
| 50 - 55 kg. / 2135 | 4 SPR 050 TENS | Yellow | Pink | 1065 | 1715 | Each |
| 55 - 60 kg. / 2135 | 4 SPR 055 TENS | Green | Blue | 1065 | 1715 | Each |
| 60 - 65 kg. / 2135 | 4 SPR 060 TENS | Blue | Grey | 1065 | 1715 | Each |
| 65 - 70 kg. / 2135 | 4 SPR 065 TENS | Red | Green | 1065 | 1715 | Each |
| 70 - 75 kg. / 2135 | 4 SPR 070 TENS | Brown | Brown | 1065 | 1715 | Each |
| 75 - 80 kg. / 2135 | 4 SPR 075 TENS | Orange | Yellow | 1065 | 1715 | Each |
| 80 - 85 kg. / 2135 | 4 SPR 080 TENS | Gold | Orange | 1065 | 1715 | Each |
| 85 - 90 kg. / 2135 | 4 SPR 085 TENS | Light Blue | Light Blue | 1065 | 1715 | Each |

It is recommended that "Torsion" spring systems be used wherever possible for "Sectional" type doors... The torsion spring system is safer, more reliable and more predictable than "Tension" spring systems.

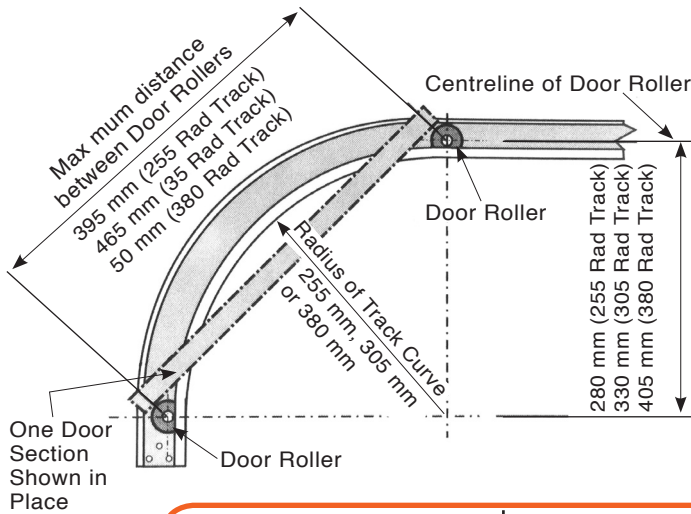
Springs - "Tension" Type - "Double" Loop Both Ends - Tip-Up Doors

The following Tension type springs for Tip-up doors are available "on request".

Tension Springs - Tip-Up Door

| Spring Rating Door Mass kg. / Height mm | Stock Code | Colour Code | WEAC mm | ELAC Max. mm | Packing |
|--|----------------|-------------|------------|-----------------|---------|
| 60 - 65 kg. / 2135 | 4 SPR 60 TIP 7 | Black | 720 | 1200 | Each |
| 70 - 75 kg. / 2135 | 4 SPR 70 TIP 7 | Red | 720 | 1200 | Each |
| 80 - 85 kg. / 2135 | 4 SPR 80 TIP 7 | White | 720 | 1200 | Each |

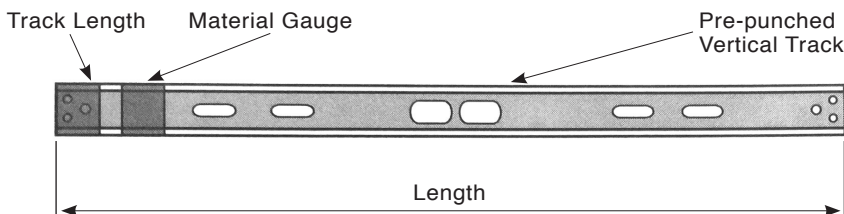
Relationship between Track Radius and Height of Door Panel Sections



The maximum distance between successive door rollers is determined by the **radius** of the **Horizontal Door Tracks**. As the door rolls from the vertical to the horizontal position, it is most important that at least one of the door rollers is **always** in the curved section of the track. If the door panel section is too wide, then the door will not run smoothly in the tracks. It will move with an erratic and jerky motion. This is because one roller will already be in the horizontally portion of the track whilst the following roller is still in the vertical section. This action puts a great deal of strain on the door mechanism, **especially the door panel frame and door hinges**, and can cause the door to sustain serious damage. This condition has been known to cause serious and even permanent damage to the door operator if one is fitted.

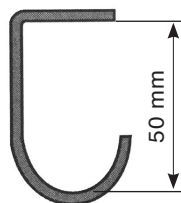
| Track Radius (inches) | Track Radius (mm) | Maximum Panel Height (mm) |
|-----------------------|-------------------|---------------------------|
| 10 | 255 | 395 |
| 12 | 305 | 465 |
| 15 | 380 | 570 |

Vertical Track for Sectional Doors

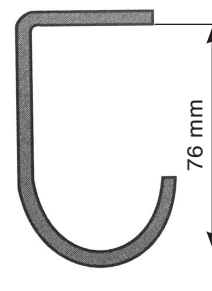


Holes for Track-Brackets, Splicing Plates and Lock Striker Plates are pre-punched for quick and accurate installation.

Standard 2" (50 mm) Track Profile



Standard 3" (76 mm) Track Profile



Vertical Tracks

Notes:- The following Vertical Tracks are available "ex stock" from AMOROC.

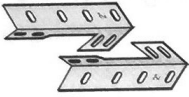

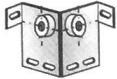


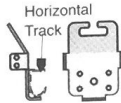


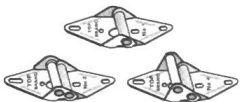






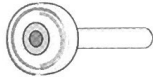
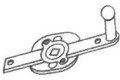




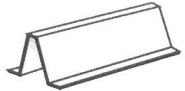





- 1) 50 mm (2") door tracks for **door heights up to 4000 mm high**. Tracks for doors heights over 4000 mm are available **on request**.
- 2) 3" (76 mm) door tracks are available on request.
- 3) Vertical Tracks for standard height doors are "pre-punched" for quick and accurate attachment of track mounting brackets and door lock striker plates.
- 4) Colour codes:- Vertical Tracks are "colour coded" according to their gauge-thickness and length.

2"Track Length Calculations

How to calculate the correct length of vertical track of Sectional Garage Doors:-

$$\text{Vertical Track Length} = \text{Height of garage opening} \text{ minus } 200 \text{ mm}$$

Relationship between Track Radius and Height of Door Panel Sections

| Picture | Description | Picture | Description |
|---|--|--|--|
|  | "Flag" Brackets (Track Header Brackets) |  | Track Mounted Pulleys |
|  | Side Bearing Plates |  | Spring Mounted Pulleys |
|  | Centre Bearing Plates |  | Horizontal Track |
|  | Bottom Corner Lifting Bracket |  | Tension Spring Anchor Brackets |
|  | Side and Centre Hinges- 14 & 18 Gauges |  | Tension Springs Safety Cables |
|  | Top Adjustable Roller Brackets |  | S & W Hooks for Tension Spring Systems |
|  | Spring Latch |  | Cable Lifting Drums |
|  | Lock Striker Plate |  | Door Rollers for Sectional Overhead Doors |
|  | Lock inside Swivel Handle |  | Door Lifting Handles |
|  | "L" Type Vertical Track Jamb Brackets |  | Wire Rope Lifting Cables |
|  | Fasteners for hinges |  | Prepunched Galvanised Tophat Bracing Struts |
|  | Fasteners for tracks and bearings |  | Galvanised Torsion Tubes |
|  | Fasteners and Anchor Plugs |  | Rubber Weather Seals - with Aluminium Retainer |
| | |  | Installation and Owner's Manuals & Information Lables |