Architectural Hinges

PHOENIX

product selector guide

PHOENIX

introduction

Phoenix architectural hinges have been designed as a comprehensive suite of products to meet a wide variety of demands, ranging from low cost, low usage lightweight door applications, through to high door weight, high usage, minimal maintenance installations.

This guide introduces the 7 Phoenix architectural hinge ranges and provides recommendations as to the most suitable hinge range for a particular application, allowing Architectural Ironmongers to quote competitively at all contract levels, and end users to select discerningly.

The brochure is divided into three sections:

The seven hinge ranges -
which includes specific information on each Phoenix hinge range, including details of the different bearing technologies utilised.

The seven steps to choosing the right hinge -
which covers each of the seven steps to be followed to choose the correct hinges for a particular application. This section also includes a double page selection chart.

Technical information
The final section covers the more technical aspects that need to be considered and the standards that need to be complied with, together with an enquiry form and contact details on the back cover.

seven hinge ranges

Phoenix Architectural Hinges - Data sheets
The following pages describe the Phoenix architectural hinge ranges in further detail. Familiarisation of the various attributes of each range will assist the selection of particular Phoenix hinges for particular applications.

Further data sheets, covering full product code numbers, dimensions and certification are available from your Phoenix hinge supplier or by visiting our web site

www.phoenix-architectural-hinges.co.uk







seven

Loadmaster Hinge Range

Code 7900 LM Range

- Maintenance free bearing design
- Available in mild steel and 316 & 304 stainless steel
- Heavy duty construction and appearance
- Tested to EN1935 : 2002 Grades 12 - 14
- CERTIFIRE approved
- Holes countersunk to suit No 12 w/screws or M6 m/c screws
- Full range of options and finishes available
- 25 year guarantee

Bearing Technology

The Phoenix Loadmaster hinge incorporates a traditional style of oilite bearing, used routinely in engineering applications for over 70 years.

The one half of the bearing is manufactured as a sintered bronze bush and then impregnated for life with a high performance lubricant. This runs against a suitably machined metal bearing surface. The two halves of the bearing are pressed into machined recesses in each half of the Loadmaster hinge, providing both vertical and lateral protection against wear. A strong looking hinge with a distinctive visual bearing design.

Performance

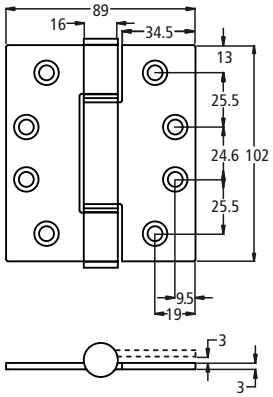
The 7900 Loadmaster (LM) Range has been designed with strength and physical appearance in mind, integral bushes offering a maintenance free hinge designed to meet prestige building requirements.

Recommended for adjusted door weights up to and beyond 160 kilos, fitted with or without door closer devices, and annual usage up to 150,000 cycles.

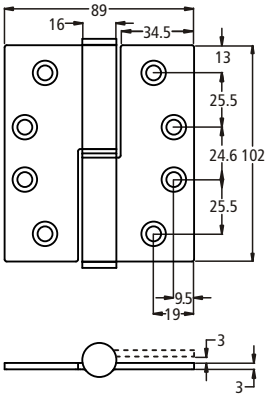
Available in both fixed pin and lift-off variants, the 7900 Loadmaster Range will suit doors from 44 to 68mm thick. The Loadmaster Range has been tested to EN1935 : 2002, is CERTIFIRE approved and comes with a 25 year guarantee.

Specification

Fixed Pin

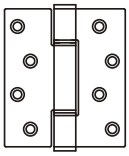


Lift-Off

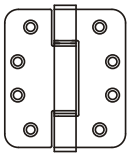


Lift-off is available in all options except Dog bolt and Conductor

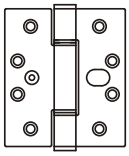
Further options:



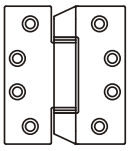
Staggered holes



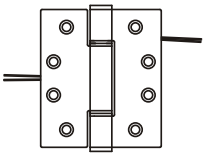
Radiused corners



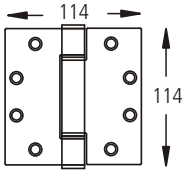
Dog bolt



Anti-ligature hinge



Conductor hinge



Also available in hinge width & height 114mm (thickness 4mm)

An extra heavy duty version of the Loadmaster is available with 4mm hinge leaf thickness for use on door sets where above EN1935 : 2002 Grade 14 is required.

Product codes

H x W x T	Butt	Lift off	
			
102 x 89 x 3 114 x 114 x 4	7935 7980	7955	7956

Dual Bearing Hinge Range

Code 7800 DB Range

- Traditional 5 knuckle hinge incorporating fully concealed high performance bearings
- Maintenance free, low friction design
- Available in mild steel and grade 304 stainless steel
- 3 hinge sizes available
- Tested to EN1935 : 2002 Grade 13
- CERTIFIRE approved
- Full range of options and finishes available
- Holes countersunk to suit No12 w/screws, M6 m/c screws
- 25 year guarantee

Bearing Technology

A hybrid five knuckle hinge incorporating two styles of bearing, plain knuckle bearings at the centre, and concealed or shrouded polymer bearings at the outer knuckle load bearing faces.

This allows a hinge style regularly seen in recent years to be brought into the 21st century, with polymer low friction, low maintenance bearing technology being applied to the outer bearings. This type of hinge remains a popular solution for steel doorsets, providing the instant reassurance of plain knuckle technology with the confident longevity of ongoing reliability of high performance polymer materials protecting against both vertical and lateral wear.

Performance

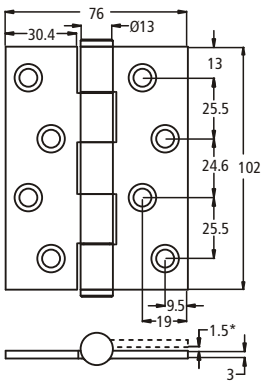
The Phoenix 7800 Dual Bearing (DB) Range utilises advanced maintenance free polymer bushes incorporated within a traditional 5 knuckle hinge design.

Recommended for adjusted door weights up to 120 kilos, doors with or without all types of door closer, and annual usage up to 200,000 cycles. Particularly suited for metal doorset applications.

An enhanced security hinge option is available for use on ballistic doorsets. All hinge options have been tested to EN1935 : 2002 and are CERTIFIRE approved and come with a 25 year guarantee.

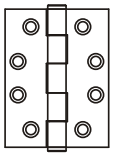
Specification

Fixed Pin

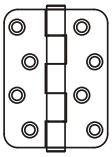


*Changes to the hinge joggle (part swaged parallel closed hinge gap) may be made from time to time to suit latest doorset legislation.

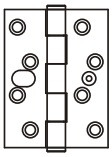
Further options:



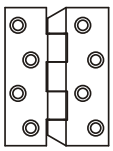
ANSI hole pattern



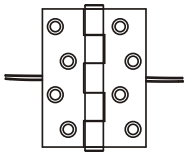
Radiused corners



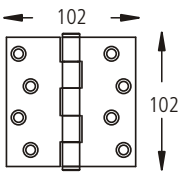
Dog bolt

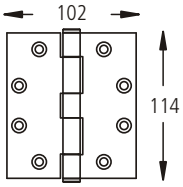


Anti-ligature hinge



Conductor hinge





Also available in two further hinge sizes

Product codes

H x W x T	Butt
102 x 76 x 3	7850
102 x 102 x 3	7860
114 x 102 x 3	7845

Concealed Bearing Hinge Range

Code 7700 CB Range

- Fully concealed bearing design
- Integrated high performance bearings
- Maintenance free, low friction design
- Available in mild steel, 304 & 316 stainless steel
- 3 hinge widths available
- Tested to EN1935 : 2002 Grades 13 - 14
- Independently tested to 1,000,000 cycles
- CERTIFIRE approved
- Holes countersunk to suit No 12 w/screws or M6 m/c screws
- Full range of options and finishes available
- 32 year guarantee

Bearing technology

The full 'bells and whistles' bearing and hinge design solution. Clean lined, three knuckle hinges, no obtrusive bearing to affect the pleasing aesthetics, yet packed with high performance power.

The central knuckle on each hinge is machined to take a stepped high technology polymer bush, requiring no lubrication, and providing both vertical and lateral low friction, extremely low wear characteristics.

Performance

The Phoenix 7700 Concealed Bearing (CB) Hinge utilises advanced polymer bushes to provide a totally maintenance free, low friction hinge.

Recommended for adjusted door weights up to 160 kilos, doors with or without all types of door closer, and annual usage up to 200,000 cycles.

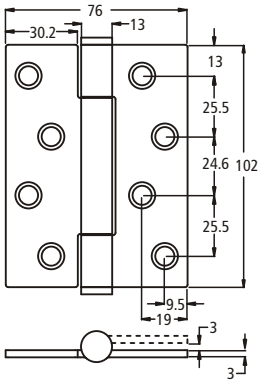
All hinge options have been tested to EN1935 : 2002 and are CERTIFIRE approved and come with a 32 year guarantee.

Suitable for 44mm to 54mm and thicker doors in all types of use and from light through to high duty applications.

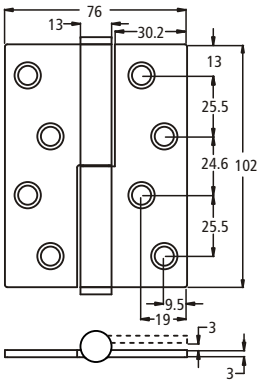
Specification

Available in 3 hinge widths in both Fixed Pin and Lift Off variants the 7700 CB series offers the specifier an extensive range of options to suit every door situation.

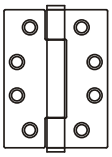
Fixed Pin



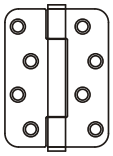
Lift-Off



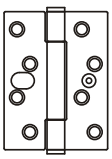
Further options:



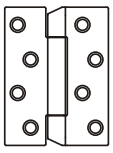
ANSI hole pattern (Template drilled)



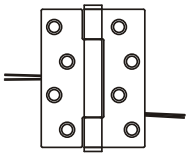
Radiused corners



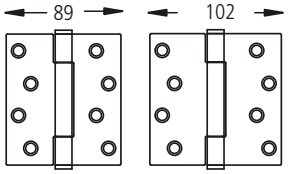
Dog bolt



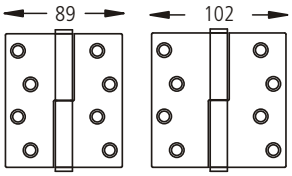
Anti-ligature hinge



Conductor hinge



Fixed Pin also available in hinge widths 89mm & 102mm



Lift-Off also available in hinge widths 89mm & 102mm

Product codes

H x W x T	Butt	Lift off	
102 x 76 x 3	7730	7755	7756
102 x 89 x 3	7735	7765	7766
102 x 102 x 3	7740	7775	7776

Slimline Hinge Range

Code 7500 SL Range

- Unique slim barrel design
- Extra deep thrust washers for high loading and long life
- Endurance tested to over 2,000,000 cycles
- Tested to EN1935 : 2002 Grade 13
- CERTIFIRE approved
- Unique twin pin lift-off available
- 3 hinge widths available
- Holes countersunk to suit No 10 w/screws or M5 m/c screws
- Full range of options and finishes available
- 25 year guarantee

Bearing Technology

The Phoenix Slimline hinges incorporate a unique design of solid extra deep turned phosphor bronze thrust washers and a slim knuckle diameter, resulting in a very aesthetically appealing product.

This traditional bearing material is then lightly nickel plated to match the hinge finish, and pre-lubricated, to give a very high performing bearing for its size. Slimline hinges have considerable appeal where both an attractive yet minimally visually intrusive solution is required.

Performance

The 7500 Series Slimline Range offers the specifier a truly unique hinge for high quality installations. Its slim barrel demonstrates design elegance whilst maintaining exceptional performance - the Slimline Range has been tested to in excess of 2,000,000 cycles.

Recommended for adjusted door weights up to 120 kilos, annual usage up to 100,000 cycles, doors with or without all types of door closer.

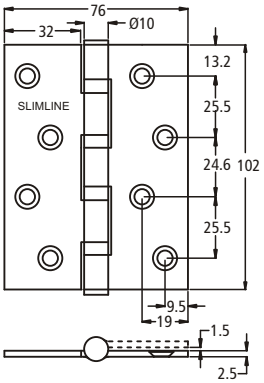
Suitable for 35mm to 54mm thick routinely used domestic, office and commercial doors.

All hinge options have been tested to EN1935 : 2002, are CERTIFIRE approved and come with a 25 year guarantee.

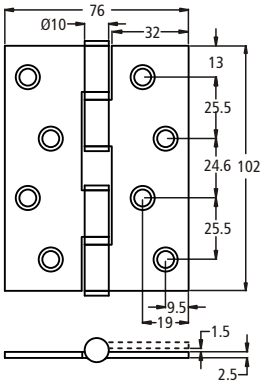
Specification

Available in 3 hinge widths and also as a twin pin lift-off, the Slimline Range gives the specifier the capability to choose the correct hinge for almost every application.

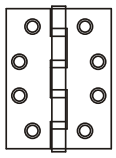
Fixed Pin



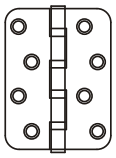
Twin Pin Lift-Off



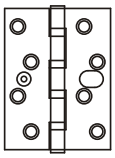
Further options:



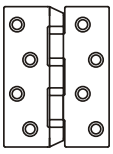
ANSI hole pattern (Template drilled)



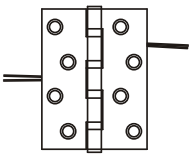
Radiused corners



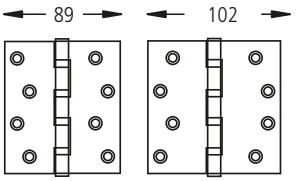
Dog bolt



Anti-ligature hinge



Conductor hinge



Also available in hinge widths 89mm & 102mm

Product codes

H x W x T	Butt	Lift off - Twin Pin	
			
102 x 76 x 2.5	7530	7585	7586
102 x 89 x 2.5	7535		
102 x 102 x 2.5	7540		

Shrouded Bearing Hinge Range

Bearing Technology

The Phoenix shrouded bearing hinges represent an excellent combination of high performance, high value for money technology.

The design externally is based around the familiar ball race shroud style common on many bearing hinges, but the internal technology is vastly superior. The steel point loaded ball bearings have been replaced with a lubrication free, high performance polymer bearing material working against a smooth stainless steel washer face. Except if needed to alleviate abrasion of the hinge pin against the hinge bore, no re-lubrication is required. Whilst more visually appealing and higher performance hinges exist, this bearing will deliver excellent performance.

Performance

The Phoenix 7200 Shrouded Bearing (SB) Range utilises advanced polymer bushes to provide a totally maintenance free, low friction hinge.

Recommended for door weights of up to 120 kilos, annual usage up to 100,000 cycles, doors with or without all types of door closer.

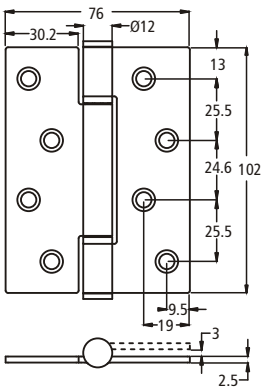
All hinge options have been tested to EN1935 : 2002 and are CERTIFIRE approved and come with a 25 year guarantee.

Suitable for 35mm to 54mm thick routinely used domestic, office and commercial doors.

Specification

Available in 2 hinge widths in both fixed pin and lift-off variants. The 7200 SB series offers the specifier an extensive range of options to suit every door application.

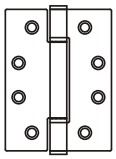
Fixed Pin



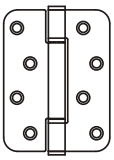
Code 7200 SB Range

- Shrouded bearing design
- Available in mild steel and stainless steel
- 2 hinge widths available
- Integrated high performance bearings
- Maintenance free low friction design
- Tested to EN1935 : 2002 Grades 12 - 13
- CERTIFIRE approved
- Holes countersunk to suit No 10 w/screws, M5 m/c screws
- Full range of options and finishes available
- 25 year guarantee

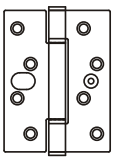
Further options:



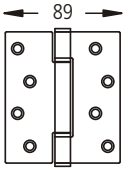
ANSI hole pattern



Radiused corners



Dog bolt



Fixed Pin available in
hinge widths 76mm & 89mm

Product codes

H x W x T	Butt
102 x 76 x 2.5	7230
102 x 89 x 2.5	7235

Double Washered Hinge Range

Code 7100 DW Range

- Double Washered Knuckles for additional load carrying capacity
- Spun hinge pin for additional security
- Hinge range tested to EN1935: 2002 Grade 10
- CERTIFIRE approved
- Pozidrive steel or stainless steel screws included
- A range of options and finishes available
- Available in mild steel and stainless steel

Bearing Technology

The Phoenix double washered bearing considerably enhances the performance of a plain bearing hinge by the use of a pair of freely rotating stainless steel washers between each hinge knuckle.

Periodic re-lubrication will still be required, but the smooth washer faces dramatically improve the wear characteristics as well as lowering the opening and closing forces.

Performance

The Phoenix Code 7100 Double Washered (DW) range is manufactured to suit medium duty applications.

Recommended for door weights of up to 60 kilos, annual usage up to 25,000 cycles, no or light duty door closer devices.

Lightest option for low and medium use apartment and office doors, starting at 29mm but also up to 44mm thick.

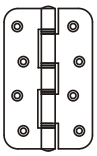
All hinge options have been tested to EN1935 : 2002, and are CERTIFIRE approved.

The range is therefore ideal for apartments and communal dwellings.

Specification

Available in narrow hinge widths to suit doors from 29mm upwards.

Further options:

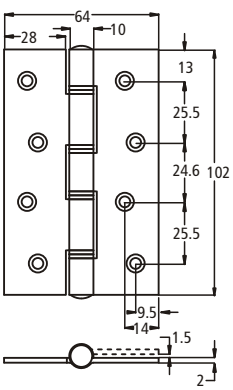


Radiused corners

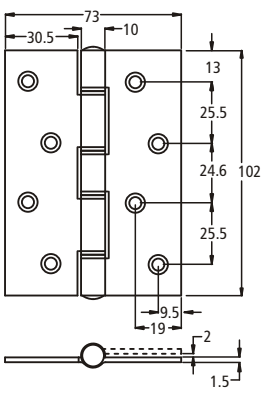
Product codes

H x W x T	Butt
102 x 64 x 2	7125
102 x 73 x 2	7100

Fixed Pin



Fixed Pin



Plain Knuckle Hinge Range

Code 7000 PK Range

- Plain knuckle hinges
- Spun hinge pin for additional security
- Hinge range tested to EN1935 : 2002 Grades 1-7
- Pozidrive steel or stainless steel screws included
- Non-handed design for universal fitting
- Extensive range of sizes available
- Available in mild steel and stainless steel for arduous environments
- Full range of finishes available

Bearing Technology

The Phoenix plain knuckle bearing relies on the rolled end faces of the hinge knuckles for the vertical wear faces, and the inner surface of the hinge knuckle against the hinge pin for the lateral wear face. Resistance to wear is low, but so long as the hinge is used in low cycle, low door weight applications, and is regularly kept lubricated, it will still provide a lifetime of satisfactory performance.

Performance

The Phoenix Code 7000 Plain Knuckle (PK) Butt Hinge Range all have 5 knuckles with a continuous hinge pin, the heads being riveted over for extra security.

Recommended for door weights of under 40 kilos, annual usage under 10,000 cycles, no door closer devices.

Suitable for use on a wide range of applications, including high quality joinery, such as cabinet and cupboard doors through to internal dwelling doors. Ideal where low door weight and low frequency of use are applicable. All hinge options have been tested to EN1935 : 2002.

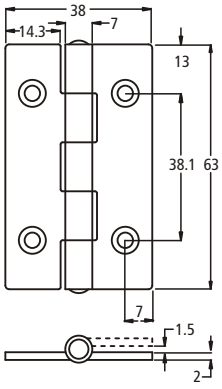
Specification

Recommended for cupboards, wardrobes and louvre doors, together with domestic doors with relatively low usage.

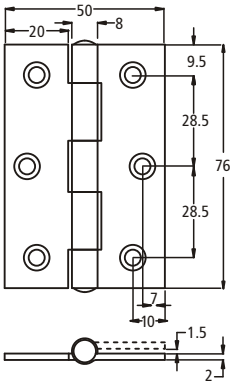
Product codes

H x W x T	Butt
64 x 38 x 2	7035
76 x 50 x 2	7040
102 x 73 x 2	7050

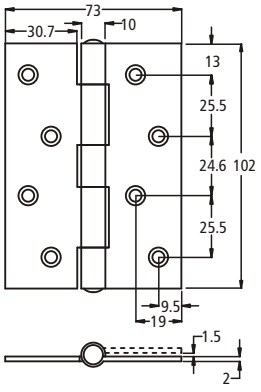
Fixed Pin 4 holes



Fixed Pin 6 holes



Fixed Pin 8 holes



PHOENIX

The hinge selection process

7 easy steps to the perfect solution

1 step

Doorset dynamics

Confirm that single axis hinges, as they are correctly called, are the preferred solution.

The following summary should assist.

Hinges are a low cost, well established hardware, solution. Available for factory fit to pre-machined doors or on site installation, as butt hinges or lift-off hinges for easy door removal, and in a wide variety of styles and finishes. Correctly selected a door hinge set will last the full life of the door.

Other options.

Continuous hinge

Covered separately within the Phoenix range. A more costly alternative to using separate butt hinges, but an ideal solution where high security, vandal proof or blast proof doors are required. See Phoenix Continuous Hinge Catalogue.

Pivot sets

The pivot point is within the top and bottom edge of the door, utilising pivots mounted on the door frame or into the floor. This creates a much larger door to frame opening at the pivot end, as well as giving no support from flexing to the centre of the door.

Floor springs

An expensive solution, although often essential where door weights are high and / or door usage is very high. Doors can usually pivot in either direction, and the system incorporates the door closer.

Other door dynamics such as revolving doors, swing doors and sliding doors are usually eliminated through cost or preferred doorset action.

seven

PHOENIX

2 step

Establish the hinge performance requirements

It is essential to establish what task is being asked of the hinges. Only by knowing the door weight, size, usage, and whether a door closer is to be used can a simple assessment be made as to the most suitable grade of hinge to use. Phoenix high performance architectural hinges are tested and marked with the appropriate EN 1935 grade. If required see the technical section for a more detailed explanation.

Follow the steps below to make sure that the right range, having a sufficiently high hinge grade, is selected.

Establish the door mass.

This must include all ironmongery. This can be accurately achieved by weighing the complete assembly, or assessed by reference to the technical section. This value is the unadjusted door weight. If no door closer is fitted, the unadjusted door weight can be used for hinge selection.

Although 3, or sometimes more, hinges will be fitted, even with no door closer the unadjusted door weight must be below the maximum weight of the finally selected EN 1935 grade.

Effect of a door closer.

If fitting a standard closing action only door closer add 20% to the total door weight. This then becomes the adjusted door weight.

If fitting a backcheck door closer (also acts to check the full opening position of the door) then add 75% to the total door weight.

These adjustments are recommended to compensate for the increased stresses on the hinges and fixings which door closers generate.

Measure the door dimensions - oversize doors.

If the door width exceeds 1000mm then a further adjustment needs to be made by reference to the technical section.

Hinge performance on doors exceeding 2100mm in height is resolved by using 4 or more hinges. Door thickness affects the hinge width which is covered by the selection chart.

Hinge sizes for different door thicknesses are covered by Step 5.

Estimate the annual usage

Either by observation over a typical day, or by use of the guidance chart in the technical section, assess the estimated annual number of opening cycles.

By using the selection chart, establish all Phoenix hinge ranges where the recommended maximum door weight, (after all adjustments), and the recommended maximum annual cycles, exceed the values calculated. Alternatively refer to the EN 1935 grade, which after a short while will become second nature as to which grade is suitable for certain doors and applications.

7 easy steps

3 step

Check for further certification and performance requirements

As well as establishing the EN 1935 performance grade, other objectives may need to be met.

CE marking to allow for use on fire doors.

CERTIFIRE certification to ensure compatibility when fitted on fire doors with a wide range of other door ironmongery and doorsets.

Typical opening force (torque) per hinge, beneficial in meeting Building Regulations and DDA (Disability Discrimination Act) recommendations.

Level of corrosion resistance.

Answers to these questions are contained within the technical section and shown against each hinge range on the selection chart.

CE

BSI REGISTERED FIRM Q5634

certifire CF351

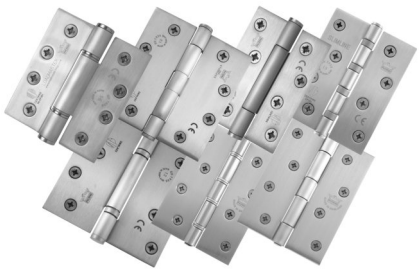
4 step

Choose the hinge model

From the information already established, hinge range selection can be made directly using the selection chart.

Where several ranges provide the same grade solution, consider the relative aesthetics of each range. Further guidance on the benefits of each Phoenix hinge range is provided in the data sheets in the following section.

Whilst we would recommend that particular parts of the building are suited with the same hinge range, it is not necessary to use the same hinge throughout. Entrances are often fitted with top of the range products, whereas utility areas can have a lower cost solution whilst still maintaining high performance.



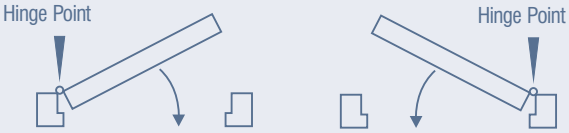
5 step

Select additional features required

Establish from the options available which further attributes are required of the product. See Hinge Selection Chart to confirm the hinge options that are available in each Phoenix architectural hinge range. The more specialised options are comprehensively covered in the Phoenix Architectural Hinges Special Options Guide.

Figure A

Architectural hinge handing varies from supplier to supplier and from Standard to Standard. Phoenix architectural hinges are coded and handed as set out below.



Clockwise Closing

Phoenix lift off hinge codes end in 5.

(As per EN12519 this would be a right handed door.)

Anti-Clockwise Closing

Phoenix lift off hinge codes end in 6.

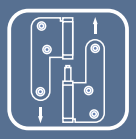
(As per EN12519 this would be a left handed door.)

5a step

Basic product options

Butt hinges

Typically 3 or 5 knuckle hinges. The use of an odd number of knuckles allows the hinge pin to be captive in the end knuckles. Butt hinges are the preferred solution when the doors are not likely to need to be regularly removed.



Lift off hinges

Provide flexibility in use by allowing removal of doors from their frames for ease of doorset manufacture, installation and maintenance. Fully routed lift off hinges are often favoured on factory machined doors.

See Figure A above for selection of the hinge handing.

Hinge width

For both aesthetic and fire safety reasons hinges should be rebated so as to leave a minimum of 7mm on 30 minute fire doors, and 12mm on 60 minute fire doors, between the hinge rebated edge and the opposite face of the door. The hinge selection guide advises the minimum door thickness for each hinge range. The data sheets show the actual hinge widths.

Fixing hole patterns:

Staggered hole pattern

Staggered (zig zag) hole pattern for traditional fit to timber doors.

ANSI hole pattern

ANSI (American National Standards Institute) hole pattern favoured by steel doorset manufacturers. Also sometimes known as 'template drilled' hole pattern.

Hinge corners

Square corners are usually preferred for on site or hand cutting in.
10mm radiused corners for doors routed at manufacture or using a routing jig.

Fasteners

Posidrive woodscrews for timber doors and frames.
Machine screws for metal doorsets.

7 easy steps

5b step

Additional product options

It is not possible to include within a general guide a full description of the various additional options that are available within the Phoenix architectural hinge range. A separate brochure, entitled Phoenix Architectural Hinges Special Options, is available through your supplier, or through the web site www.phoenix-architectural-hinges.co.uk

Security features

The higher specification Phoenix hinge ranges offer the following security features as optional extras.

- Security bolt (dog bolt)
- Pinned hinge pin
- Welded knuckles
- Security screws

Safety features

Anti-ligature ends. Angled hinge tips providing a necessary safety feature wherever there is a risk of occupants self harming. Also known as hospital tips.

Decorative features

Decorative end caps (Finials).

Special usage features

Flush hinge
These hinges do not require rebating, the outer leaf being fitted to the frame surface, the inner leaf to the door surface.

Rising hinge
Fitted in situations like cloakrooms where the door falls naturally to the closed position.

Falling hinge
Similar to the above but self opening under gravity.

Projection hinge
An over width hinge allowing a door to open fully past an architrave.

Parliament hinge
A scalloped decorative version of the above.

Swing clear hinge
A cranked hinge allowing a door to open fully clear of the frame opening.

Conductor hinge
An electrically wired hinge used when fitting electronic lock devices to the door.

Fire door hinge set
A pre-prepared set of fire door hinges, complete with intumescent material.

Glass door hinge
Specially adapted hinges for installation on glass doors.

Bespoke hinges
Odd leaf, cranked, offset leaf, door - frame alt. gap, etc.

Special material hinges
Includes solid brass, bronze and aluminium hinges.

Special finish hinges
Additional finishes not covered within the normal offering.

6 step

Material, finish and cost

Establish the preferred material the hinges should be made from.

Stainless steels are very often the best solution, but steel hinges with plated or applied finishes can offer a more cost effective solution. We would recommend the selection of material and finish at the same time. If the chosen material and finish proves too expensive, repeat the process looking at cheaper alternatives, being mindful that this may result, often acceptably, in a lower performance, aesthetic appearance or higher maintenance hinge solution.

Finishes

Base material

- Steel Self-Colour
- Brass Self-Colour
- Aluminium Self-Colour
- Stainless Self-Colour

Mechanical Finishes

- Brushed Satin Stainless
- Polished Stainless

Applied finishes

- Brass
- Zinc
- Brushed nickel
- Chrome
- Bronze

Coloured finishes - Available to special order

- White (HW01)
- Black (R9005)
- Green (R6005)
- Blue (R5010)
- Lt. silver (S25)
- Mid. bronze (B59)
- Grey (R7035)
- Yellow (R1021)
- Brown (R8017)
- Red (R3003)
- Dk. silver (S48)
- Mid. gold (G79)

Material options

Stainless steel hinges are recommended for all potentially corrosive or weather exposed installations

S316 Stainless steel 316 grade - Marine grade stainless steel recommended for all high corrosion environments, including use in coastal regions and swimming baths, etc.

S304 Stainless steel 304 grade - The commonly used grade of stainless steel suitable for most internal and external environments.

S200/400 Stainless steel - Inferior grades of stainless steel, subject to some corrosion in external or damp environments.

M Mild steel - A strong base material, relying on the protective finish to provide corrosion protection. Generally utilised within the building rather than externally.

Br Brass - A relatively soft alloy of copper and zinc, which is offered only as a special for non fire door applications.

Al Aluminium - Not offered within the Phoenix architectural hinge range.

Finish options
Whilst Phoenix architectural hinges can be finished in a wide variety of mechanical, plated, or applied finishes, the following represent the main finishes in which the hinges are available.

On stainless steel:
Mechanical (direct surface) finishes
SSS - Satin polished
PSS - Bright polished

Chemically bonded dyed lacquer finishes
SSBr - Satin brass
PSBr - Polished brass
SSBro - Satin antique bronze
PSBro - Polished antique bronze

On Mild Steel
See the Selection Chart for the wide range of options available.

Other finish types
RAL colours - A basic range of RAL colours as used in the architectural ironmongery trade, plus others to special order.

7 easy steps

7 step

Order requirements

By this stage you should have been able to select suitable hinges that meet both the technical requirements and your own preferences. Collate the information for each door into a summarised order, and then present to your Phoenix hinge supplier for converting to a priced quotation or order confirmation. An enquiry form is available at the end of this brochure and on the web site that can assist with this process. If there are any further technical queries that you have, ask your supplier for clarification, or visit: www.phoenix-architectural-hinges.co.uk

The information contained above is of a generalised nature and is for guidance only. For further assistance arrange for a RIBA (Royal Institute of British Architects) qualified architect, or GAI (Guild of Architectural Ironmongers) qualified specifier to assess the application.

Phoenix Architectural Hinges Product Selection Guide

The product selection guide overleaf provides guidance as to which products will meet particular applications, as well as allowing rapid comparison between the various hinge ranges on offer.

Phoenix Architectural Hinges - Data sheets

The pages following the selector chart describe the Phoenix Architectural hinge ranges in further detail. Familiarisation of the various attributes of each range will assist the selection of particular Phoenix hinges for particular applications. Further data sheets, covering full product code numbers, dimensions, and certification are available from your Phoenix hinge supplier or by visiting our web site: www.phoenix-architectural-hinges.co.uk

Guarantee

Phoenix Architectural Hinges - Guarantee

All the Phoenix architectural hinge ranges come with a performance guarantee based on EN 1935 test results. Each range is guaranteed for a maximum period as shown on the chart, and up to a maximum number of cycles, being the annual recommended maximum as shown on the chart times the number of years of the guarantee, whichever occurs first.

Replacement contribution is of the equivalent current hinges supplied to the distributor's UK base in proportion to the remaining period / usage of the warranty still outstanding, and is subject to confirmation that the hinges have been correctly specified, fitted and maintained as outlined in this brochure and on the fitting instructions supplied with the products.

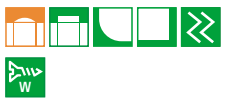
Hinge Selection Chart - Phoenix Architectural Hinges

Step 1	Quick Check Guide	7000 PK Plain Knuckle Range	7100 DW Double Washer Range	7200 SB Shrouded Bearing Range	7500 SL Slimline Range	7700 CB Concealed Bearing Range
1.1	Overall performance	*	**	***	****	*****
1.2	Maintenance rating	*	**	*****	****	*****
1.3	Suitability for use with door closers	Not Suitable	Standard d/c.	All Types inc. back check d/c.	All Types inc. back check d/c.	All Types inc. back check d/c.
1.4	Hinge performance guarantee period	5 Years	10 Years	25 Years	25 Years	32 Years
1.5	Recommended usage - Max cycles per year	5,000	25,000	60,000	80,000	100,000

Step 2	Doorset Data	7000 PK Plain Knuckle Range	7100 DW Double Washer Range	7200 SB Shrouded Bearing Range	7500 SL Slimline Range	7700 CB Concealed Bearing Range
2.1	Max door weight - Inc. ironmongery	Up to 40kg	60kg	100kg	120kg	160kg
2.2	Door to frame gap	1.5mm	1.5mm & 2mm	3mm	1.5mm & 3mm	3mm
2.3	Recommended door thickness	15mm - 44mm	29mm - 44mm	35mm - 54mm	35mm - 54mm	44mm - 65mm

Step 3	Technical Information	7000 PK Plain Knuckle Range	7100 DW Double Washer Range	7200 SB Shrouded Bearing Range	7500 SL Slimline Range	7700 CB Concealed Bearing Range
3.1	Industry accreditations	EN1935 1-7	CE EN1935 10	CE EN1935 11-13	CE EN1935 12-13	CE EN1935 13-14
3.2	Fire rating	N/A	FD 30 (W)	FD 30 (W) FD 240 (M)	FD 30 (W) FD 240 (M)	FD 30 (W) FD 240 (M)
3.3	Opening force (torque) - Refer to key	<1.5nm	<1.5nm	<1.5nm	<2nm	<1.5nm
3.4	Corrosion resistance	1-3	1-3	1-3	1-3	1-4

Step 4	Range Information	7000 PK Plain Knuckle Range	7100 DW Double Washer Range	7200 SB Shrouded Bearing Range	7500 SL Slimline Range	7700 CB Concealed Bearing Range
4.1	Material thickness	2mm	2mm	2.5mm	2.5mm	3mm
4.2	Hinge barrel diameter	7mm, 8mm & 10mm	10mm	12mm	10mm	13mm
4.3	Standard hinge size options H x W	64 x 38, 76 x 50, 102 x 73	102 x 64 / 73	102 x 76 / 89	102 x 76 / 89 /102	102 x 76 / 89 / 102
4.4	Material options	S304, M, S200/400	S304, M, S200/400,	S304, M, S200/400,	S304	S316, S304, Br, M

Step 5	Product Options	7000 PK Plain Knuckle Range	7100 DW Double Washer Range	7200 SB Shrouded Bearing Range	7500 SL Slimline Range	7700 CB Concealed Bearing Range
5a	Barrel model - Refer to key	5Kn	5Kn	3Kn LS LR	5Kn LT	3Kn LS LR
5a	Basic product options Refer to key					
5b	Additional product options Refer to key	BS	BS	BS	BS	BS

Step 6	Finish Options	7000 PK Plain Knuckle Range	7100 DW Double Washer Range	7200 SB Shrouded Bearing Range	7500 SL Slimline Range	7700 CB Concealed Bearing Range
6.1	Stainless Steel	SSS PSS S	SSS PSS	SSS PSS SSBr PSBr +AM	SSS PSS PSBr PSBro SSBr SSBro SRAL +AM	SSS PSS PSBr SSBr SSBro PSBro SRAL +AM
	Mild Steel	MZA MSZA	MPBr MPNi MW	MSZA MPZA MSNi MSNS +AM		MSZA MPZA MSNS MPBrS MPCr MPBr MSNi MPNi MRAL +AM

Step 7	Supply Information	7000 PK Plain Knuckle Range	7100 DW Double Washer Range	7200 SB Shrouded Bearing Range	7500 SL Slimline Range	7700 CB Concealed Bearing Range
7.1	Product Weight: 3 hinges + fasteners - Kg	Various options	0.5kg	0.7kg	0.6kg	0.8kg
7.2	Pack/Box/Carton packed qty.	Various options	3 / 12 / 96	3 / 12 / 60	3 / 12 / 60	3 / 12 / 60

Chart Identification: Standard option | Limited option | Special

7800 DB Dual Bearing Range	7900 LM Loadmaster Range
****	****
****	****
All Types inc. back check d/c.	All Types inc. back check d/c.
25 Years	25 Years
80,000	80,000

7800 DB Dual Bearing Range	7900 LM Loadmaster Range
120kg	160kg
1.5mm & 3mm	3mm
45mm - 55mm	44mm - 68mm

7800 DB Dual Bearing Range	7900 LM Loadmaster Range
CE EN1935 12-13	CE EN1935 12-14
FD 240 (M)	FD 30 (W) FD 240 (M)
<2nm	<2nm
1-3	1-4

7800 DB Dual Bearing Range	7900 LM Loadmaster Range
3mm	3mm
13mm	16mm
102 x 102 / 114	102 x 89
S304, M	S316, S304, M, Br

7800 DB Dual Bearing Range	7900 LM Loadmaster Range
5Kn	3Kn LS

7800 DB Dual Bearing Range	7900 LM Loadmaster Range
SSS PSS PSBr SW SRAL +AM	SSS PSS PSBr SSBr SSBro PSBro SRAL +AM
MSZA	MSZA MPZA MSNS MPBrS MPCr MPBr MSNi MPNi MRAL +AM

7800 DB Dual Bearing Range	7900 LM Loadmaster Range
1.0kg	1.0kg
3 / 6 / 30	3 / 24

1 Key

1.1	'Phoenix' star rating: *BASIC ⟶ *****HIGH PERFORMANCE
1.2	'Phoenix' star rating: *BASIC ⟶ *****HIGH PERFORMANCE
1.3	See also notes on Step 2 - page 12
1.4	See also notes on Step 7 - page 17
1.5	See also notes on Step 7 - page 17

2 Key

2.1	See also notes on Step 2 - page 12 and technical pages
2.2	See also notes on Door - Frame gap - technical pages
2.3	See also notes on Step 5 - page 14

3 Key

3.1	CE marked	EN1935 grade	
3.2	Certifire marked	FD(W) - Timber Doors (minutes)	FD(M) - Metal Doors (minutes)
3.3	Target torque (opening force) per hinge		
3.4	See notes on Step 5 - page 14		

4 Key

4.1	2mm - 3mm Hinge leaf thickness options
4.2	See product data sheets
4.3	See product data sheets
4.4	See notes on Step 6 - page 16

5 Key

5a	3Kn 3 Knuckle butt	5Kn 5 Knuckle butt	LS Standard lift off	LR Routed lift off	LT Twin pin lift off	
5a	Spin riveted pin	Button tip riveted	Radiused corners	ANSI fixing holes	Machine screws	
	Button tip pin	Square corners	Staggered fixing holes	Wood screws		
5b	Security (dog) bolt	Anti-ligature ends	Projection hinge	Flush hinge	Fire door hinge set	BS Bespoke hinges
	Pinned hinge pin	Security screws	Swing clear hinge	Rising hinge	Glass door hinge	
	W Welded knuckles	Decorative end caps	Parliament hinge	Falling hinge	Conductor hinge	

6 Key

Finishes available for mild steel

M	No pre-finish
MZA	Clear zinc
MSZA	Clear zinc on satin polished
MPZA	Clear zinc on bright polished
MPBr	Polished electro brass plate
MSNi	Satin nickel plate
MPNi	Polished nickel plate
MPBrS	Simulated polished brass (brass lacquer)
MSNS	Simulated stainless steel (satin nickel plate)
MPCr	Bright chrome
MW	White
MRAL	Colours
+AM	Anti-microbial finished

Finishes available for stainless steel

S	No pre-finish
SSS	Satin polished
PSS	Bright polished
SSBr	Satin brass
PSBr	Polished brass
SSBro	Satin antique bronze
PSBro	Polished antique bronze
SW	White
SRAL	Colours
+AM	Anti-microbial finished (See special options brochure)

All hinges are supplied with fixings as standard.

The following pages provide further explanation about the terms used in the hinge selection steps and selector chart.

BS EN 1935

This is the European standard for the classification of the strength and durability of side hung metal hinges. Hinges are tested against a standard door and number of cycles to achieve certification. A single hinge is tested, whereas in reality a minimum of three hinges will support the door. The chart below shows the various grades.

Hinge Grade	Usage	Test Cycles	Door Mass
1	Window	10,000	10kg
2	Window	10,000	20kg
3	Window/Door	25,000	20kg
4	Door	200,000	20kg
5	Window	10,000	40kg
6	Window/Door	25,000	40kg
7	Door	200,000	40kg
8	Window	10,000	60kg
9	Window/Door	25,000	60kg
10	Door	200,000	60kg
11	Door	200,000	80kg
12	Door	200,000	100kg
13	Door	200,000	120kg
14	Door	200,000	160kg

CE

Hinges that are used on fire or escape routes must legally be CE marked. The mark on the product will satisfy building inspectors and trading standards officers that you have done your best to ensure that the building is safe to use. Increasingly it will become the duty of the building owner to ensure that the building is safe to use and this is where CE marked products can help.

CE marking is not easily achieved. Products have to be checked at independent test laboratories and the production is checked within the manufacturing factories. To keep your building safe only use products with this mark.

certifire CF351

CERTIFIRE is voluntary third party certification for fire protection products, operated by Warrington Certification

CERTIFIRE tests a huge range of hardware products. CERTIFIRE approved products will all work together on the door assembly to ensure maximum safety against spread of fire. CE marked products do not have the same rigorous certification requirements as CERTIFIRE approved products so to remove any doubt of your chosen hinge and door closer working together on your door assembly make sure that they are both CERTIFIRE approved.

DDA

The Disability Discrimination Act 1995 (DDA), is concerned with giving access to all to buildings. The more noticeable changes to buildings are the increasing numbers of disabled toilets. DDA is equally concerned about the ease of opening doors for wheelchair users and for this reason has specified the maximum opening forces for doors. Fire regulations demand all fire doors to close shut to prevent the spread of fire and though they take precedence over DDA can conflict with the DDA requirements. One way of ensuring that doors open easily for wheel chair users and also close to prevent the spread of fire is to use hinges with the lowest possible torque resistance. The European standard for hinges BS EN 1935 allows a maximum of 4Nm resistance to opening whereas the high quality bearings used in Phoenix high performance hinges will typically operate at less than a 1Nm resistance.

Adjusted door weights

The reliability of the hinges depends on several factors, door width and type of door closer being two important factors. Adjusted door weights for doors fitted with door closers are covered by Step 2 earlier in this guide. For doors of excessive width (1000mm or more) further adjustments need to be made to allow for the increased bending moment acting on the hinges.

Door Width mm	Theoretical Increase in door mass %
1000	0
1050	10
1100	18
1150	26
1200	33
1250	40

Further Technical Information

Door weight

The chart below provides the mass ranges of typical doors. Doorset manufacturers data or weighing scales should be used to accurately assess the door weight.

Mass ranges of typical doors	Size (mm)	Mass (kg)
Cupboard, wardrobe, cabinet Louvred doors and shutters	2040 x 626 x 40	3 to 10
Light internal large wardrobe and large louvred doors	2040 x 926 x 40	10 to 17.5
Medium internal doors	2040 x 1012 x 40	17.5 to 25
Heavy internal doors	2040 x 1012 x 40	25 to 37.5
Half hour fire doors	2040 x 826 x 44	25 to 37.4
Light external doors	2040 x 907 x 40	20 to 37.5
Heavy external doors	2040 x 1002 x 44	37.5 to 55
One hour fire doors	2040 x 826 x 54	37.5 to 72.5
Oversize or special external doors	2400 x 1200	55 to 110

Ironmongery

The weight of the ironmongery also places a load on the hinges. The allowances are shown in the table below.

Typical weight of ironmongery (kgs)			
	General	Aluminium	Stainless
Pair of Lever handles	0.7	0.4	1
Kickplate 900 x 200 x 1.5 (pair)	3	1.5	4
Heavy duty door closer	3	x	x
Economy door closer	2	x	x
Euro pattern lock 72mm ctrs	1	x	x
English pattern lock 57mm ctrs	0.5	x	x

Select the hinge grade to suit the total loading.

CE digit classification in detail

First digit: Category of use: there are four categories 1-4

Light duty: Low frequency of use by people with a high incentive to exercise care and with only a small chance of accidents occurring or of misuse.

Medium duty: Medium frequency of use by people with some incentive to exercise care but where there is some chance of accidents occurring or of misuse.

Heavy duty: High frequency of use by public and others with little incentive to exercise care and with a high chance of accidents occurring or of misuse.

Severe duty: For use on doors that are subject to frequent violent usage.

Second digit: Durability of hinges is classified into one of four categories of use; two are for windows and two for doors. Hinges for doors are tested to 25,000 and 200,000 cycles, whilst this may not seem to be many cycles when compared with the numbers in the annual usage table it must be remembered that the hinge test equipment in the standard applies the full test loads to one hinge and this greatly accelerates the actual wear in real use. The table on the next page shows the typical frequency of doors in use, the durability requirements and a subjective category of use.

Third digit: Test door mass : Currently there are eight weight grades for the test door though this will potentially be increased in future issues of the standard. The grades start at 10kg and go up to the maximum of 160kg.

Fourth digit: Fire behaviour:
Grade 0: not approved for use on fire/smoke resisting door assemblies, Grade 1 is suitable for use on fire/smoke resisting door assemblies. This 0 or 1 grading is likely to be superseded in revisions to standards, giving greater detail of exactly what fire rating was achieved. All fire tests must be carried out to EN1634.

Fifth digit: Safety : Only grade 1 hinges are acceptable. Grade 1 hinges meet the essential requirements of safety in use, which forms part of the Construction Products directive (89/106/EEC)

Sixth digit: Corrosion resistance : There are five grades of corrosion resistance ranging from 0 to 4.
Grade 0 no corrosion resistance
Grade 1 mild resistance
Grade 2 moderate resistance
Grade 3 high resistance
Grade 4 very high resistance
Corrosion testing is carried out in accordance with the test methods outlined in EN 1670

Grade 0 - No defined corrosion resistance
Grade 1 - 24 hours salt spray resistance
Grade 2 - 48 hours salt spray resistance
Grade 3 - 96 hours salt spray resistance
Grade 4 - 240 hours salt spray resistance

Seventh digit: Security : Two grades are identified. Grade 0 is not suitable and Grade 1 is suitable for security doors.

Eigth digit: Fourteen grades are identified within the standard, which are shown earlier under the BS EN 1935 classification.

Frequency of door operation				
Type of building and door	Estimated frequency		Category of Use	Durability
	Daily	Yearly		
Entrance to department store	5,000	1,500,000	S	7
Entrance to large office	4,000	1,200,000	S	7
Entrance to school	1,250	225,000	S	7
School toilet	1,250	225,000	S	7
Entrance to Bank	500	150,000	H	7
Office toilet	400	120,000	H	7
School corridor	80	24,000	M	7
Office building corridor door	75	22,500	M	7
Department store toilet	75	22,500	M	4
House entrance	40	14,000	M	4
House toilet	25	7,500	L	4
House corridor	10	3,000	L	4

Fire doors

Fire doors are identified by type, FD (Fire Door) E (Integrity) and EI (Integrity and insulation), and fire resistance (20 - 240 minutes). Phoenix hinge CERTIFIRE certification ensures that the higher performance hinges can be used on fire doors in accordance with the matrix of acceptable door types below.

Class	Approved door type						
Type of building and door	IMM	MM	TT	ITT	ITM	ITC	TM
FD20	✓	✓	✓	✓	Consult technical sales for advice on all options not covered by a tick within the matrix		
FD30	✓	✓		✓			
FD60 FD120 FD240	✓	✓					
E20 E120	✓	✓	✓	✓			
E30 E130	✓	✓		✓			
E60 E160 E90	✓	✓					
EI 90 E120 EI120	✓	✓					
E240 EI240	✓	✓					

Abbreviations

IMM Metal leaf, Metal frame and intumescent seals
MM Metal leaf, Metal frame
TT Timber leaf, Timber frame
ITT Timber leaf, Timber frame and intumescent seals
ITM Timber leaf, Metal frame and intumescent seals
ITC Timber leaf, Composite frame and intumescent seals
TM Timber leaf, Metal frame

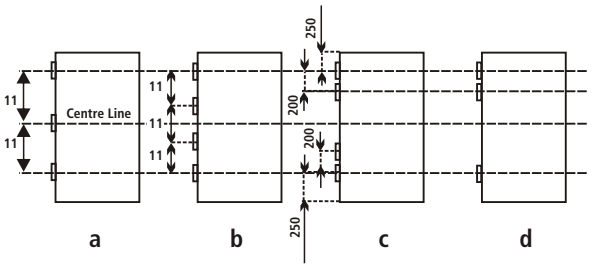
Door to frame clearances

The majority of architectural hinges are designed to be rebated flush into the door and frame. The gap when the hinge is closed to the parallel leaf position should therefore match the recommended clearance between door and frame. On steel doorsets this is usually set by the manufacturer. On timber doorsets the following guidelines can be used:
3mm for doors fitted with a combined intumescent and smoke seal. 2.5 - 3mm for doors fitted with intumescent only. For doors which are not fire doors the recommendation is for a consistent clearance between door and frame within the range of 1.5 to 3mm

Hinge positioning

On doors without door closers it is usually recommended to use three hinges, the top and bottom hinges being fitted approximately 250mm from the door end to the hinge centre, with the third hinge being positioned in the centre of the other two. Equally spaced hinges will minimise warping which may occur with extremes of temperature or humidity on either side of the door, Fig.1, a and b.

Unequally spaced hinges Fig.1, c and d, improve load bearing. This is recommended where the hinges are operating near their load bearing maximum or where door closers, particularly back check door closers, are in operation and the door is in high frequency use.



Hinge numbers

BS 4787 pt 1 states that normally three hinges are fitted to a door leaf but for doors exceeding 2100mm in height a fourth hinge should be fitted, and that this should be positioned about 200mm below the top hinge.

Care and maintenance

Architectural hinges play an important part in the overall performance of any building. All the Phoenix architectural hinge ranges are designed to give many years trouble free use with only the minimum of routine maintenance when selected in accordance with the guidelines in this product selection brochure and as stated on the fitting instructions leaflet. In order that hinges continue to operate at maximum efficiency they should be checked annually:-

- Ensure all fasteners are secure.
- Where necessary wipe clean with a solution of mild detergent applied with a soft damp cloth. Do not use abrasives or bleach as this may permanently damage the hinge surface and its components.
- Where regular lubrication is recommended re-lubricate the hinge pin and bearings using a light oil, ideally in aerosol form such as WD40 or Tri-Flo which can penetrate into the hinge internal areas.
- Check that no additional strains are present upon the door caused by building movement or due to warping of the door or frame. This can result in the hinges being put under severe additional loadings. Where problems of this nature occur then the cause of the problem needs to be eliminated, and the hinges re-fitted.

Enquiry form

(Photocopy blank form)

Enquiry date: ____ /____ /____ **Your ref:** _____
Enquiry no: _____ **Our ref:** _____

The following information will assist us in confirming your selection and preparing your quotation. Omit any questions where you are unsure of the information. Please forward the completed form to the address on the back cover of this brochure. Alternatively, you can visit our website: www.phoenix-architectural-hinges.co.uk

Contact Details

Title: _____ **Tel (day):** _____
Forename: _____ **Mobile:** _____
Surname: _____ **Fax:** _____
Job title: _____ **Email:** _____

Company name: _____ **Post code:** _____
Address: _____ **Country:** _____
Town: _____ **Business activity:** _____
County: _____

Doorset Details (See steps 2-3)

Door thickness: (mm) 35 ☐ 44 ☐ 54 ☐ 65 ☐ Other _____
Door size: (H & W in mm) Standard (1900 -2100 x 800 - 950) ☐ Other _____
Unadjusted door weight: (inc. ironmongery - kg) _____
Door closer: None ☐ Standard door closer ☐ Back-check door closer ☐
Adjusted door weight: (kg) _____
Estimated annual cycles: _____
Other requirements: EN 1935 Grade ____ CE marked (for fire doors): Yes ☐ No ☐ CERTIFIRE ☐

Product Details (See steps 4-7)

Hinge range: Loadmaster ☐ Dual bearing ☐ Concealed bearing ☐ Slimline ☐
Shrouded bearing ☐ Double washered ☐ Plain knuckle ☐
Basic options: Butt: 3 Knuckle ☐ 5 Knuckle ☐ Lift off: Standard ☐ Routed ☐ Twin Pin ☐
Hinge size: (H x W x T in mm) _____ **Hinge code:** (If known) _____
Fixing hole pattern: Staggered ☐ ANSI ☐ **Hinge corners:** Square ☐ 10mm Radius ☐
Fasteners: Wood screws ☐ Machine screws ☐
Additional features: (Security, safety, special usage, etc. See selection chart) Please List _____
_____
Material: Stainless steel: 316 ☐ 304 ☐ Other st. st. ☐ Mild steel ☐ Other metal: _____
Finish: _____
Quantity required: (singles) _____ **Fasteners required:** Yes ☐ No ☐
Packaging required: Standard ☐ Special: _____

Other Information

Is this: The only hinge requirement ☐ Alternative to earlier enquiry ☐ Additional item ☐
Quotation required by: ____ /____ / ____
_____

Product Selector

High Performance Ironmongery

Cooke Brothers is one of the leading UK based manufacturers and suppliers of architectural hinges, distributed under the Phoenix brand name.

Established in 1872 in the jewellery quarter of central Birmingham, the founders William and Edward Cooke focused on manufacturing hinges and fittings for the British cabinet makers. Over one hundred and thirty years on, the business, still based within 20 miles of its original site, and run by the fourth and fifth generation, continues to focus on producing high quality hinges and fittings for both the architectural ironmongery and the cabinet joinery markets.

Today's architectural hinge product range is designed to meet the ever growing demand for Strong, Reliable and Robust products which successfully compete throughout the world.

Further information

Product literature is available as follows:

- Individual leaflets covering the 7 Phoenix architectural hinge ranges
- Phoenix architectural hinges Product Selection Guide
- Phoenix architectural hinges Special Options Guide
- Phoenix Continuous Hinges
- Phoenix Architectural Ironmongery
- Phoenix Glass Door Ironmongery
- Phoenix Cabinet Handles
- Phoenix Shelf Support Systems
- Phoenix Cabinet Hinges and Fittings

Full data sheets on all products are available through the web sites:
www.cookebrothers.co.uk
www.phoenix-architectural-hinges.co.uk

Technical Sales:
Phone: +44 (0)1922 740011 Fax: +44 (0)1922 740003
Email: sales@cookebrothers.co.uk
Web: www.cookebrothers.co.uk
Web: www.phoenix-architectural-hinges.co.uk

Cooke Brothers Ltd, Northgate, Aldridge, Walsall, West Midlands, WS9 8TL United Kingdom