Door Hinges
Introduction

ASSA ABLOY

Hinges

Description:
A door is just a slab of wood or a piece of metal until it is fitted with hinges and attached to a frame. A door hung properly and fitted with the correct hinges becomes a work of art, but, because of its near effortless operation, it usually goes unnoticed.

Hinges could well be called the unsung heroes of the hardware industry. They are only noticed when they have been used improperly. On the other hand, correctly selected hinges will do their job quietly and effectively for the lifetime of the structure as long as they are given minimal maintenance.

Features:
- ANSI/BHMA Grade 1
- Five Knuckle ball bearing butt hinges
- All hinges are template drilled
- Suitable for wood and metal doors
- Available in 304 Grade Stainless Steel
- Other options also available

Finish: 630,626, Other finishes available upon request

Door thickness mm	Door Width mm	Hinge Height mm	Hinge Width mm
35	Up to 800	88	88
	Over 800	100	88
44	Up to 900	114	101
	Over 900	127	114
	Up to 1200	127	127
50	Up to 1050	127	114
57	Up to 1050	127	127
63	Up to 1050	127	127

Door Hinges
Different Kinds

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Application determines different kind of hinges

Full mortise
Wood Doors, Wood Jamb

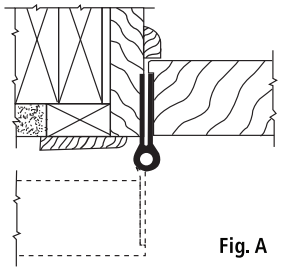


Fig. A

Full mortise
Wood Doors, Hollow Metal Jamb

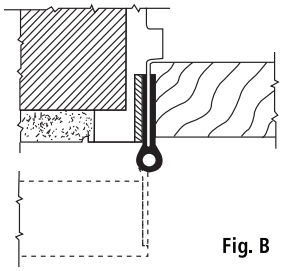


Fig. B

Full mortise
Hollow Metal Doors,
Hollow Metal Jamb

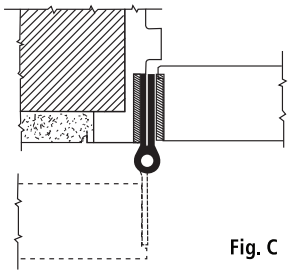


Fig. C

Half mortise
Hollow Metal Doors
Channel Iron Jamb

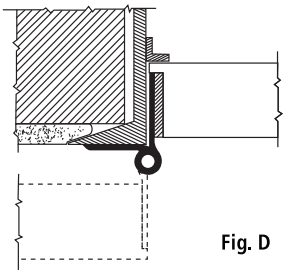


Fig. D

Half surface
Wood Doors, Wood Jamb

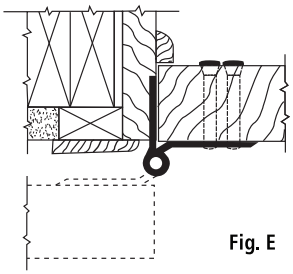


Fig. E

Half surface
Kalamein Doors,
Hollow Metal Jamb

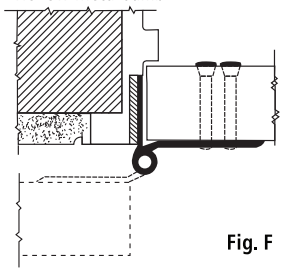


Fig. F

Full surface
Kalamein Doors, Channel Iron Jamb

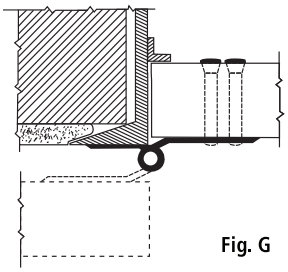


Fig. G

Full surface
Hollow Metal Doors
Channel Iron Jamb

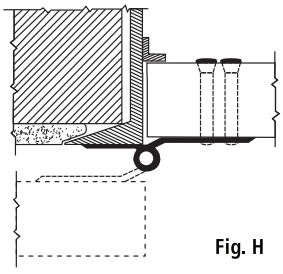


Fig. H

"Swing Clear" Full mortise
Wood Doors, Hollow Metal Jamb

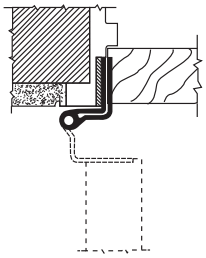


Fig. I

"Swing Clear" half mortise
Wood Doors
Channel Iron Jamb

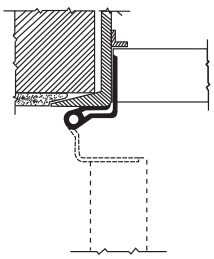


Fig. J

"Swing Clear" half surface
Kalamein Doors,
Hollow Metal Jamb

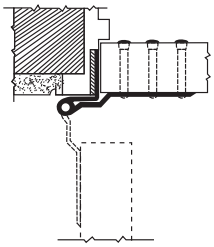


Fig. K

"Swing Clear" full mortise
Kalamein Doors,
Channel Iron Jamb

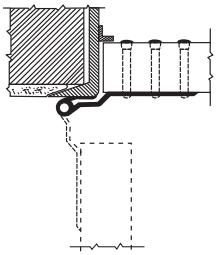


Fig. A

Door Hinges

Recommended sizes

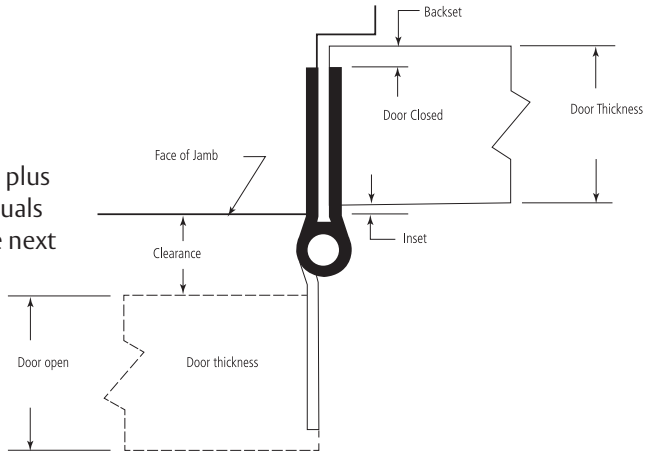
Recommendation for Sizes of Hinges

Door Thickness Inches	Door Width Inches	Hinge Height Inches	Hinge Width Inches
1 3/8	Up to 32 Over 32	3 1/2 4	3 1/2 3 1/2
1 3/4	Up to 36 Over 36 Up to 48	4 1/2 5 5	4 4 1/2 5
2	Up to 42	5	4 1/2
2 1/4	Up to 42	5	5
2 1/2	Up to 42	5	5

Formula to determine hinge width under normal conditions

1. Door Thickness
2. Backset
3. Clearance required
4. Inset

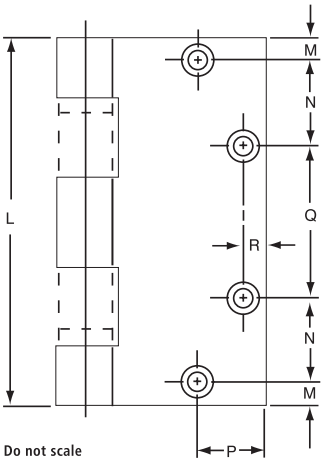
(door thickness minus backset) times 2 plus clearance required plus inset (if any) Equals hinge width (if not standard width - use next larger standard hinger width)

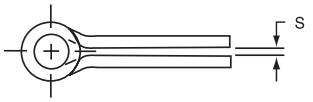


Butt Hinges

These template butt hinges are made in size, gauge and with screw holes located to conform to government and ANSI standards.:

Dimensions	Inches	mm
L	4.5000	114.30
M	0.508	12.90
N	1.125	28.58
P	1.000	25.40
Q	1.234	31.34
R	0.375	9.53
S	0.063	1.59





Hinge Maintenance

Location of Hinges on Doors
For general maintenance of Architectural grade hinges, we recommend that the pins be removed and liberally coated with general purpose grease, then re-inserted and the excess wiped off. Also we highly recommend that all attaching screws be checked for tightness.

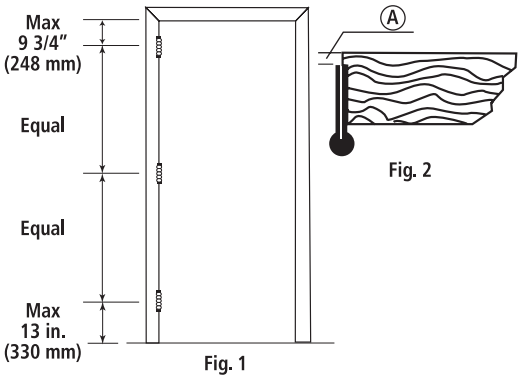


Fig. 1

Fig. 2

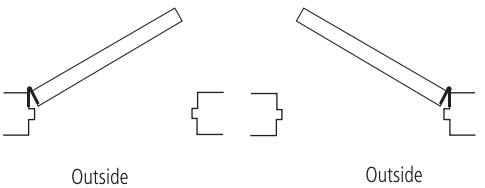
Number of Hinges per Door
The following quantity of hinges are recommended for doors of various sizes:
- 2 hinges: Doors up to 60 in. (1500mm) in height
- 3 hinges: Doors up to 60 in. (1500mm) but not over 90 in. (2500mm) in height
- 4 hinges: Doors over 90 in. (2250mm) but not over 120 in. (3000mm) in height

Note: Doors over 120 in (3000mm) add one hinge for each additional 30 in (750mm) or fraction thereof.

How to Determine Hand of Hinges
- The hand of a butt hinge is determined from the door to which it is applied
- The outside of a cupboard, bookcase or closet door is the room side. For other doors, the outside is usually the "push" or jamb side.
- If standing outside of a door which opens from you: to the right, it takes right hand butt hinges. If to the left, it takes left hand butt hinges.
- If standing outside of a door which opens towards you: to the right, it takes left hand butt hinges. If to the left, it takes right hand butt hinges.
- Reversed bevel doors are doors opening out.

In ordering butt hinges that are not reversible, the hand must always be specified.

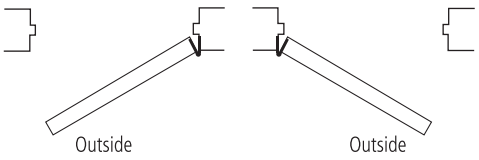
Door opening In



Left hand door takes left hand hinges

Right hand door takes right hand hinges

Doors opening out including closet, cupboard and bookcase doors



Right hand reverse door takes left hand hinges

Left hand reverse door takes right hand hinges

Hinge Requirements for Fire Doors

National Fire Protection Association, pamphlet no. 80 (NFPA-80) lists the guidelines for hinge uses with fire doors.

Attaching Hinges to Doors
Mortise hinges shall be secured to reinforcements in the doors with steel machine screws and surface hinges shall be attached with steel through-bolts.

Exception
Mortise hinges shall be secured to wood and plastic covered composite or wood core doors with No. 12 by 1 1/4 in (31.75mm) flat threaded-to-the-head, steel wood screws.

Attaching Hinges to Frame
Hinges shall be secured to frames with steel screws. Types of screws will vary depending on material used for the manufacture of labeled door frames. Refer to labeled door frame manufacturers instructions and published listings for specific screw requirements.

Hardware shall be examined frequently and any parts found to be inoperative shall be replaced immediately.

Mortise and surface hinges for swinging doors including spring hinges.

Builders Hardware
Doors up to 60 in. (1.522m) in height shall be provided with two hinges and an additional hinge for each additional 30 in. (0.762m)

Door rating. Hr						For 1 3/4 in. (44.5 mm) or thicker doors				Type hinge
						Maximum door size		Minimum hinges size		
						W	H	H	T	
3	1 1/2	1	3/4	1/2	1/3	4(1.22)	10(3.05)	4 1/2 (114.3)	0.180 (4.57)	Steel, Mortise or Surface
						4(1.22)	8(2.44)	4 1/2 (114.3)	0.134 (3.40)	
	1 1/2	1	3/4	1/2	1/3	3(0.91)	5(1.52)	4 (101.6)	0.130 (3.30)	
						2(0.61)	3(0.91)	3 (76.2)	0.092 (2.34)	
3	1 1/2	1	3/4	1/2	1/3	For 1 3/8 in. (34.93 mm) Doors				
						3(0.91)	7(2.13)	3 1/2 (88.9)	0.123 (3.12)	

Note 1:
All hinges except spring hinges, shall be of the ball bearing type. Hinges employing other antifriction bearing surfaces are permitted if they meet the test requirements of standard for butts hinges (ANSI A 156.1).

Note 2:
4-1 /2 in. (114mm) high, 0.180 in. (4.57mm) thick hinges should be used on doors which are unusually wide and heavy or which will receive high frequency use or unusual stresses.

Note 3:
Some manufacturers may provide fire doors with hinges of light weight which are not ball bearing when they are part of a listed assembly and meet the test requirements of ANSI A 156.1 and have been tested to a minimum of 350, 000 cycles.

Door Hinges
For Fire Doors

ASSA ABLOY

Builders Hardware:

Hinges

- Hinges shall be as specified in individual door manufacturer's published listings or Table
- Doors up to 60 in. (1.52 m) in height shall be provided with two hinges and an additional hinge for each additional 30 in. (076 m) of door height or fraction thereof.
- The distance between hinges shall be permitted to exceed 30 in (0.76 m).
- Where spring hinges are used, at least two shall be provided.
- All hinges or pivots, except spring hinges, shall be of the ball bearing type.
- Hinges or pivots employing other anti-friction bearing surfaces shall be permitted if they meet the requirements of ANSI/BHMA A156.1, Standard for Butts and Hinges.
- Spring hinges shall be labeled and shall meet the requirements of ANSI/BHMA A156.17, Standard for Self Closing Hinges & Pivots, Grade 1.
- Hinges 4 1/2 in. (114 mm) high and 0.180 in. (4.57 mm) thick shall be permitted for use on wide and heavy doors or doors that are subjected to heavy use or unusual stress.
- Fire doors with hinges of lighter weight that are not of the ball bearing type shall be permitted under the following conditions:
  1. They are part of a listed assembly.
  2. They meet the test requirements of ANSI/BHMA A156.1, Standard for Butts and Hinges.
  3. They have been tested to a minimum of 350,000 cycles.
- Pivot sets made up of components that are smaller or of a lighter gauge than shown in Table 6.4.3.1 shall be permitted to be used, provided they meet the requirements of ANSI/BHMA A156.4, Standard for Door Controls (Closers), and are in accordance with the manufacturer's label service procedures.

Attaching Hinges to Doors

- Hinges shall be secured in accordance with the listing and the manufacturer's installation instructions.Table 6.4.3.1 shall be permitted to be used, provided they meet the requirements of ANSI/BHMA A156.4, Standard for Door Controls (Closers), and are in accordance with the manufacturer's label service proceduresr's installation instructions.
- Mortise hinges shall be secured to reinforcements in the doors with steel machine screws..
- Mortise hinges shall be secured to wood and plastic-covered composite doors or wood core doors with No.12 x 1 1/4 in. (31.75 mm) flat, threaded-to-the-head, steel wood screws. Pilot holes shall be drilled that are 5/32 in. (4 mm) in diameter.
- Surface hinges shall be attached with steel through-bolts.

Attaching Hinges to Doors

- Hinges shall be secured to frames with steel screws.
- Types of screws shall be permitted to vary depending on material used for the manufacture of labeled door frames.
- The manufacturer's instructions and published listings for labeled door frames shall be referenced for specific screw requirements.

Shimming

- When required to meet the clearances stated in 6.3.1.7, the shimming of hinges using steel shims shall be permitted.