



**LIFETIME
WARRANTY**

**BHMATM
CERTIFIED**
Be Safe. Be Secure. Look for the Mark.



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CAL-ROYAL

P R O D U C T S, I N C.

Lifetime Warranty on Commercial Grade Hinges

BHMA CERTIFIED

CAL-ROYAL'S complete line of Commercial, Residential and Continuous Gear Hinges offer unsurpassed value, quality and service. Engineered to meet or exceed industry standards that customers have come to expect.

GENERAL INFORMATION

ANSI Products Standards

CAL-ROYAL HINGES complies with ANSI A156.1 (Butts and Hinges), A156.7 (Template hinge dimensions), A156.17 (Self Closing Hinges and Pivots), A 156.18 (materials and Finishes).

Plain Bearing Standard Weight

For Standard weight doors receiving low frequency service.

Template hinges are furnished with all machine and wood screws.

Ball Bearing Standard Weight

For Standard weight doors receiving average frequency service.

Template hinges are furnished with all machine and wood screws.

Ball Bearing Heavy Weight

For Heavy Doors (such as entrance and corridors) or doors receiving high frequency service. Inner edges are beveled to conform the shape of barrel and to make close fitting joints. Heavy weight template hinges are equipped with all machine and one half screws.

Half Surface

One leaf is mortised in the frame and the other is surface applied to the face of the door (wood door with wood frame or metal core door with hollow metal frame).

Half Mortise

One leaf is mortised in the door and the other is surface applied to the frame (hollow metal door with channel iron frame).

Swing Clear

For use where conditions require a completely clear opening when door is opened to 90° angle. Inner edges of leaves are beveled to conform to shape of barrel and to make close fitting joints. Phillips head threaded plug permits hinge to be reversed to suit application.

Full Mortise

Both leaves are mortised. One leaf in the door and one leaf in the frame (wood door or hollow metal door with channel iron frame).

Full Surface

Both leaves are applied to the surface, one to the door and the other to the frame (metal core door or hollow metal door with channel iron frame).

Materials and Finishes

Wrought Steel: Satin finishes or highly polished and plated. All plated finishes have a clear baked finish.

Wrought Stainless Steel:

Satin finish non-ferrous, non-corrosive grade 304.

Stock Finishes:

Refer to our price list for stock finishes. Materials such as solid brass are available on request. Prefix SB before part #.

Tips

Button: All hinges have flat button tip, except concealed ball bearing hinges which are flush.

Non-removable Pins: Removable threaded set screw in barrel prevent pin from being removed when door is closed. Available on all hinges. Use N.R.P. for ordering.

Special Pins: Solid brass pins, stainless steel pins and Hospital Tips are available on request. Decorative tips are also available on 4 1/2" x 4 1/2", 4" x 4", 3 1/2" x 3 1/2" commercial hinges and 4" x 4" and 3 1/2" x 3 1/2" residential hinges. Add BT (Ball Tip), ST (Steeple Tip) before part number for specification. Other Size Hinge tips also available based on factory order.



STEEPLE TIP



BALL TIP



HOSPITAL TIP



ACORN TIP



URN TIP

Packaging

All hinges are individually wrapped to protect the finish.

Commercial grade hinges are packed 3 pieces per inner box with all machine and all wood screws. Residential hinges are packed one pair per box, bulk assembled or unassembled. Spring hinges are packed 2 pieces per box. Refer to price list for carton quantities.

BASIC INFORMATION

Types of Hinges:

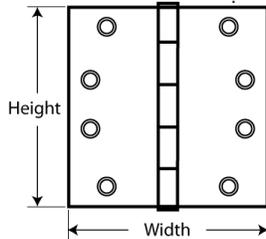
Full Mortise – Both leaves are mortised. One leaf on the frame and one on the door.

Half Mortise – One leaf is mortised in the door and the other is surface applied to the frame.

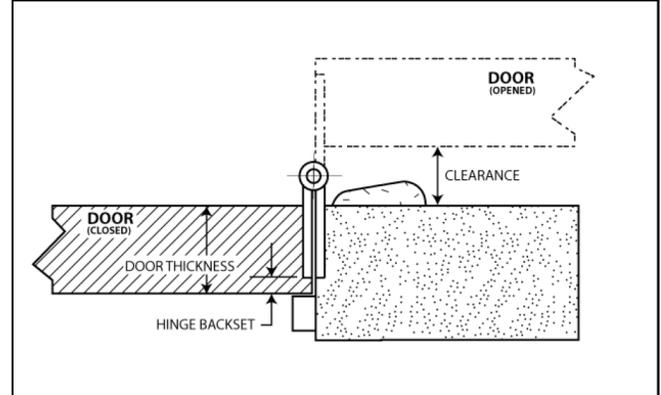
Full Surface – Both leaves are applied to the surface. One to the door and the other to the frame which may be a metal core door or hollow metal door with channel iron frame.

Half Surface – One leaf is mortised to the frame and the other is surface applied to the face of the door which may be a wood door with wood frame or a metal core door with hollow metal frame.

Hinge Size Configuration - Hinges are measured by its height and its width. The first dimension is the height and the second is the width. Width is measured when the hinge is in the open position as shown in the figure below



Determining the width of hinges needed:



$$WIDTH = DT - HB \times 2 + CR$$

DT - DOOR THICKNESS
HB - HINGE BACKSET
CR - CLEARANCE REQUIRED

Determining the number of hinges needed:

Generally there should be 1 hinge for every 30" of door height. Refer to table below for quick reference.

HEIGHT OF DOOR	NUMBER OF HINGES
60" or below	2
61" – 90"	3
91" – 120"	4

If the result of the formula above would correspond to a non standard hinge, then go to the next larger hinge width.

RECOMMENDED HINGE BACKSET:

For doors 2 1/4" thick and below, 1/4" (6.4 mm) backset is recommended.
For doors over 2 1/4", 3/8" (9.5 mm) backset is recommended.

Determining the height of hinges needed:

GUIDELINES FOR HINGE HEIGHT SELECTION			
DOOR WEIGHT, lbs.	DOOR WIDTH	DOOR THICKNESS	FULL MORTISE HINGE HEIGHT
75	32"	1 3/8"	3 1/2"
	36"	1 3/8"	4"
150	32"	1 3/8"	4"
	36"	1 3/8"	4"
150	32"	1 3/4"	4 1/2"
	36"	1 3/4"	4 1/2"
175	32"	1 3/8"	5"
	36"	1 3/8"	5"
175	36"	1 3/4"	5"
	48"	1 3/4"	5"
230	36"	1 3/8"	6"
	48"	1 3/8"	6"
230	36"	1 3/4"	6"
	48"	1 3/4"	6"

Selecting the Proper weight and Bearing Type:

Standard Weight - Plain Bearing
Standard Weight - Ball Bearing, Concealed bearing
Heavy Weight - Ball Bearing, Concealed bearing

Considerations in determining Weight and Bearing type:

- 1) Weight of Door
- 2) Frequency of Use
- 3) Frame
- 4) Door Hardware

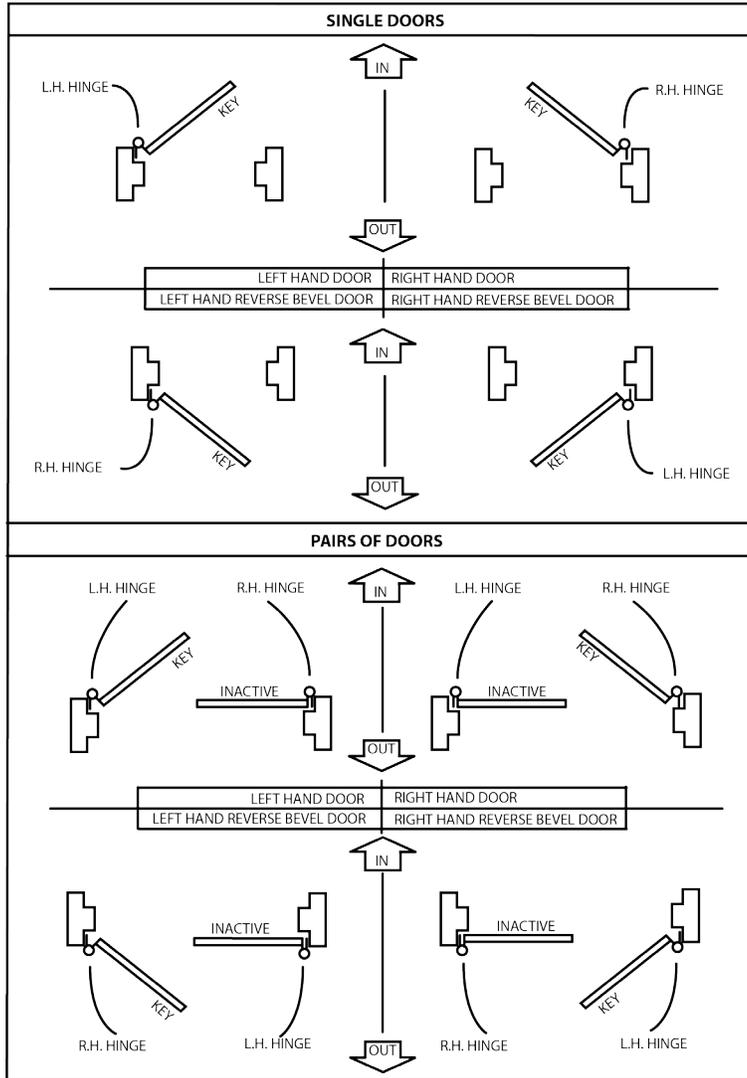
▶ Always use ball bearing or concealed bearing hinges for doors with door closers and in all fire rated openings. Heavy Weight doors and high frequency doors should use heavy weight ball bearing or concealed bearing hinges.

▶ Use ball bearing or concealed bearing hinge with spring hinges.

BASIC INFORMATION

Determining handing:

Some hinge applications require correct hinge handing. It is therefore necessary to distinguish what type of hinge handing a particular application may require. Shown in the illustration below, the suffix L.H. (left hand) and R.H. (right hand) would classify their handing.



The hand of a hinge is determined from the outside of the door to which it is applied. This is usually the keyed side. When standing outside, if the door opens away to the right, it requires a right-hand hinge also referred to as RH. If it opens away to the left, then it requires a left-hand hinge also termed as LH.

When standing outside, if the door opens towards the right, it requires a left-hand hinge, also referred to as right hand reverse bevel or RHRB. If it opens towards the left, it will require a right-hand hinge, also referred to as left hand reversed bevel or LHRB.

Guidelines for Frequency of Door Usage:

BUILD TYPE	DAILY USAGE	YEARLY USAGE	HINGE TYPE
High Frequency/ Heavy Weight Door			<i>Heavy Weight</i>
Large Department Store Entrance	5,000	1,825,000	
Hospital Corridor and Surgical Doors	5,000	1,825,000	
Large Office Building Entrance	4,000	1,460,000	
School Entrance	1,250	356,200	
School Toilet Door	1,250	356,200	
Office Stairwell	500	182,500	
Office Building Toilet Door	400	118,000	
Medium Frequency/ Medium Weight Door			<i>Standard Weight</i>
School Corridor Door	100	36,500	
Hospital Consultation Rooms	100	36,500	
Office Building Corridor Door	80	15,000	
Store Toilet Door	60	15,000	
Storage Room	50	18,250	
Low Frequency/ Light Weight Door			<i>Plain bearing</i>
Residential Entrance	30	10,950	
Interior Residential	20	7,300	

Minimum Architectural Hinge Requirements:

Grade 1:	2,500,000	Heavy Weight Ball and Concealed Bearing
Grade 2:	1,500,000	Standard Weight Ball & Concealed Bearing
Grade 3:	350,000	Light Weight Plain Bearing

Type of materials:

Steel – Durable, has great strength but is highly corrosive. Rusting will result if the material is used in an uncontrolled environment, like places near the sea where the atmosphere is salty. Steel is best to use in a stable contained surroundings such as inside a building where the temperature and humidity are controlled. Steel hinges can be used on listed fire rated or labeled door openings.

Stainless Steel – This material is also durable and has great strength, but does not corrode like steel. This is best to use on highly corrosive areas. A 316 grade stainless steel or clear coat over 304L is recommended. Stainless steel can also be polished to a satin or bright finish. Stainless steel hinges can also be used on listed fire rated or labeled door openings.

Brass – Like stainless steel, brass is also non-corrosive and rust resistant. And although brass has less strength compared to steel and stainless steel, it is very decorative. It is often used in applications where appearance is taken into consideration over strength as it can be polished and plated in various finishes. But due to its low melting point, brass may not be used on listed fire rated door openings.

BASIC INFORMATION

Guidelines for Estimating Door Weight:
(Weight in Pounds per Square Foot)

DOOR THICKNESS	1 3/8"	1 3/4"	2"	2 1/4"	2 1/2"
Material					
Hollow Metal 18 gauge	4.3	4.6			
Hollow Metal 16 gauge	5.4	5.8			
Hollow Metal 15 gauge	6.2	6.5			
Hollow Metal 14 gauge	7.0	7.3			
Hollow Metal 13 gauge	8.3	8.7			
Hollow Metal 12 gauge	9.9	10.2			
Hollow Metal 11 gauge	11.2	11.6			
Hollow Metal 10 gauge	12.8	13.0			
Ash	4.5	5.3	6.0	6.8	7.5
Birch	3.8	4.3	5.0	5.6	6.3
Fir	3.0	3.5	4.0	4.5	5.0
Mahogany	4.5	5.3	6.0	6.8	7.5
Oak	6.0	7.3	8.0	9.0	10.0
White Pine	3.0	3.5	4.0	4.0	5.0
Mineral Core		4.0			

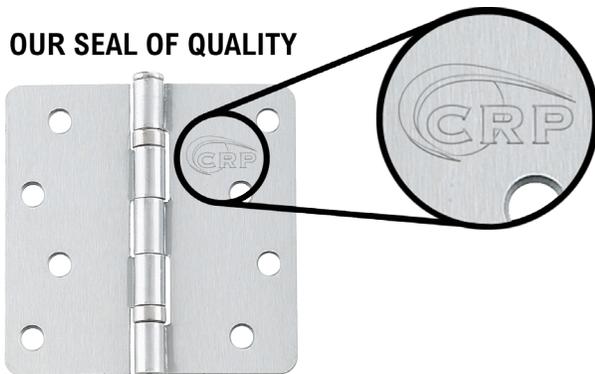
Types of Finishes:

All steel and brass material hinges can be plated to match the available finishes that are listed in the American National Standards Institute or ANSI, standard ANSI/BHMA A156.18 Materials and Finishes.

Anti-rust finishes:

When using steel based materials hinges, special finishing procedures can be done which will improve and add protection to the product. A nickel undercoat may be applied prior to plating. But although this will give added protection and make it rust resistant, it is still not considered rust proof. Stainless steel or brass which is a non-ferrous material may be used if a true rust-resisting hinge is needed.

OUR SEAL OF QUALITY



ALL HINGES ARE STAMPED WITH CRP LOGO. ALSO AVAILABLE W/O LOGO. PREFIX "UN" WHEN ORDERING. REFER TO PRICE LIST FOR STOCK ITEMS.

Electrified Hinges:

The Electrified Hinge made door wiring easy, safe and reliable. Power can now be transferred from the frame into the door either exposed or concealed.

With the introduction of electrified hinges, we are now able to monitor the position of the door, transfer power and incorporate both functions into a single hinge. More so, we now have the ability to electrify other hardware items such as exit devices, electric strikes and electrified locks.

Full mortise hinges are highly recommended for modification purposes. However, monitoring can be supplied on a half surface hinge if the need arises. It is also recommended that the Center Hinge Location be used with all electrically modified hinges.

The maximum voltage that is allowed in electrified hinges is 48 volts. Higher voltage is not allowed because of potential dangers. The current (amperes) should also be taken into consideration.



FOR QUICK CONNECT OPTION ON 8-WIRE & 12-WIRE ELECTRIFICATION, PREFIX "ELQC" BEFORE ITEM #.



molex
MICRO-FIT 3.0™ INTERCONNECT SYSTEM AVAILABLE TO RETROFIT COMMON QUICK CONNECTION SYSTEMS SUCH AS ELECTROLYNX® OR ALLEGION CONNECT®.

4-, 6- and 8-wire available on all standard weight, heavy weight and concealed ball bearing hinges in all sizes. Specify Hinge.

ENERGY TRANSFER HINGES FOR CYLINDRICAL LOCKS, MORTISE LOCKS AND PANIC TRIMS

Prefix **ELE** + (No. of wires) before **ITEM #**

- ELE4: 4 Wires** - 26 gauge - 1A@24V (per pair)
- ELE6: 6 Wires** - 28 gauge - 1A@24V (per pair)
- ELE8: 8 Wires** - 28 gauge - 1A@24V (per pair) - **ELQC8:** (For QC Option)
- ELE12: 12 Wires** - 28 gauge - 1A@24V (per pair) - **ELQC12:** (For QC Option)

ENERGY TRANSFER HINGES FOR ELECTRIFIED PANIC BAR (ELR)

Prefix **ELELR** + (No. of wires) before **ITEM #**

- ELELR4: 2 Wire** -18 gauge, 5A (16A in-rush for 300 ms.) + **2 Wire** -26 gauge
- ELELR6: 2 Wire** -18 gauge, 5A (16A in-rush for 300 ms.) + **4 Wire** -28 gauge
- ELELR8: 2 Wire** -18 gauge, 5A (16A in-rush for 300 ms.) + **6 Wire** -28 gauge
- ELELR12: 2 Wire** -18 gauge, 5A (16A in-rush for 300 ms.) + **10 Wire** -28 gauge

NOTE: All hinges are sold with a minimum order quantity (MOQ) equal to or exactly divisible by the inner box quantity specified in the catalog or price book.

	FULL MORTISE TYPE HINGES Heavy Weight • Four Ball Bearing • Template			
	ITEM #	SIZE	GAUGE	
	BB5500	5" x 5"	.190	
	BB5210	5 x 4 1/2"	.190	
	BB5254	5" x 4"	.190	
	BB5200	4 1/2" x 4 1/2"	.180	
	BB52454	4 1/2" x 4 1/2"	.180	
BBRC5835	3 1/2" x 3 1/2"	.123		
Size: Maximum of 8" x 8" available upon request		Material: Steel, Stainless Steel, Brass		
Size of FH Screws		Pieces Per Box	Pieces Per Carton	
Machine	Wood	3	48	
1/2" x 12 - 24	1" x 12			

	FULL MORTISE TYPE HINGES Standard • Two Ball Bearing • Template			
	Two Ball Bearing, 1/4" Radius Round Corner			
	ITEM #	SIZE	GAUGE	
	RCBB31 N.R.P.	4 1/2" x 4 1/2"	.134	
	Two Ball Bearing, 1/8" Radius Round Corner			
	RCBB454 N.R.P.	4 1/2" x 4"	.190	
	Two Ball Bearing, Square Corner			
	BB55	5" x 5"	.146	
	BB545	5 x 4 1/2"	.146	
	BB54	5" x 4"	.146	
	BB31	4 1/2" x 4 1/2"	.134	
	BB454	4 1/2" x 4"	.134	
	BBSC56	4" x 4"	.130	
	BBSC77*	3 1/2" x 3 1/2"	.123	
BBSC33*	3" x 3"	.123		
Size: Maximum of 6" x 6" available upon request		Material: Steel, Stainless Steel, Brass		
Size of FH Screws		Pieces Per Box	Pieces Per Carton	
Machine	Wood	3	48	
1/2" x 12 - 24	1 1/4" x 12			
*Supplied with 1/2" x 10-24 machine screws and 1 x 9 wood screws, 2 pieces/inner box 100 pieces/carton				

	MADE IN TAIWAN HINGES THAT MEET THE BUY AMERICAN ACT Full Mortise Type			
	Two Ball bearing • Standard Weight			
	ITEM #	SIZE	GAUGE	
	TABB31	4 1/2" x 4 1/2"	.134	
	TABB545	5" x 4 1/2"	.146	
	Four Ball bearing • Heavy Weight			
	TABB5200	4 1/2" x 4 1/2"	.180	
Material: Steel, Stainless Steel				
Size of FH Screws		Pieces Per Box	Pieces Per Carton	
Machine	Wood	3	48	
1/2" x 12 - 24	1 1/4" x 12			

	FULL MORTISE TYPE HINGES Standard Weight • Plain Bearing • Template			
	ITEM #	SIZE	GAUGE	
	TBH55	5" x 5"	.146	
	TBH30	4 1/2" x 4 1/2"	.134	
	TBH454	4 1/2" x 4"	.134	
	TBHSC55	4" x 4"	.130	
	TBHSC77	3 1/2" x 3 1/2"	.123	
	TBHSC33	3" x 3"	.123	
	Size: Maximum of 6" x 6" available upon request		Material: Steel, Stainless Steel, Brass	
	Size of FH Screws		Pieces Per Box	Pieces Per Carton
	Machine	Wood	3	48
1/2" x 12 - 24	1 1/4" x 12			
*Supplied with 1/2" x 10-24 machine screws and 1 x 9 wood screws, 2 pieces/inner box 100 pieces/carton				

NOTE: All hinges are sold with a minimum order quantity (MOQ) equal to or exactly divisible by the inner box quantity specified in the catalog or price book.

	FULL MORTISE TYPE HINGES • Standard Weight • Template				
	1/4" Radius • Plain Bearing				
	ITEM #	SIZE		GAUGE	
	TBHRC44	4" x 4"		.130	
	TBHRC66*	3 1/2" x 3 1/2"		.123	
	5/8" Radius • Plain Bearing • Non Template				
	TBHRC5844	4" x 4"		.130	
	1/4" Radius • Ball Bearing				
	BBRC45	4" x 4"		.130	
	5/8" Radius • Ball Bearing • Non Template				
BBRC5844	4" x 4"		.130		
BBRC5835	3 1/2" x 3 1/2"		.123		
Material: Steel, Stainless Steel, Brass					
Size of FH Screws		Pieces Per Box	Pieces Per Carton		
Machine	Wood	3	48		
1/2" x 12 - 24	1" x 12				
* Supplied with 1/2" x 10-24 machine screws and 1" x 9 wood screws, 2 pieces/inner box 100 pieces/carton					
	CONCEALED BALL BEARING HINGES • Full Mortise Type • Template				
	Standard Weight Hinges				
	ITEM #	SIZE		GAUGE	
	BB2255	5" x 5"		.145	
	BB2200	4 1/2" x 4 1/2"		.134	
	BB22454	4 1/2" x 4"		.134	
	Heavy Weight Hinges				
	BB7755	5" x 5"		.190	
	BB3300	4 1/2" x 4 1/2"		.190	
	BB1000	4 1/2" x 4"		.190	
Special sizes available upon request		Material: Steel, Stainless Steel, Brass			
Size of FH Screws		Pieces Per Box	Pieces Per Carton		
Machine	Wood	3	48		
1/2" x 12 - 24	1 1/4" x 12				
	FULL SURFACE TYPE HINGES				
	Standard Weight Ball Bearing • Template				
	ITEM #	SIZE		GAUGE	
	FSHBB45 N.R.P.	4 1/2"		.134	
	Non-Removable Pin		Material: Steel, Stainless Steel		
	Size of FH Screws		Pieces Per Box	Pieces Per Carton	
	Jamb	Door	2	24	
1/2" x 12 - 24OH	2 x 1/4" - 20 OH				
	HALF MORTISE TYPE HINGES				
	Standard Weight • Ball Bearing • Template				
	ITEM #	SIZE		GAUGE	
	HMBB4100 N.R.P.	4 1/2"		.134	
	Size: Available up to 5" upon request		Material: Steel, Stainless Steel Non-Removable Pin		
	Size of FH Screws		Pieces Per Box	Pieces Per Carton	
	Jamb	Wood	3	48	
1/2" x 12 - 24OH	1/2" x 12 - 24MS				
	1 1/4" x 12WS				

NOTE: All hinges are sold with a minimum order quantity (MOQ) equal to or exactly divisible by the inner box quantity specified in the catalog or price book.

	HALF SURFACE TYPE • Standard Weight Hinges Ball Bearing • Template			
	ITEM #	SIZE		GAUGE
	HSBB4900 N.R.P.	4 ½"		.134
	Size: Available up to 5" upon request		Material: Steel, Stainless Steel Non-Removable Pin	
	Size of FH Screws		Pieces Per Box	Pieces Per Carton
	Jamb ½" x 12 - 24 FH	Door 2" x ¼" - 20 OS	3	48
	SWING CLEAR • Full Mortise Type • Ball Bearing • Template			
	Two Ball Bearing, 5/8" Radius Round Corner			
	ITEM #	SIZE		GAUGE
	BB40058	4"		.130
	BB35058	3 ½"		.123
	Two Ball Bearing, Square Corner			
	BB600	4 ½"		.134
	BB400	4"		.130
	BB350	3 ½"		.123
	Hinge Size	Size of Screws		Pieces Per Box Pieces Per Carton
		Machine	Wood	
3 ½"	10-24 x ½"	10 x 1 F.H.	2 50	
4"	12-24 x ½"	12 x 1 F.H.		
Four Ball Bearing Heavy Weight Hinges				
BB800	4 ½"		.190	
Size: Available up to 5" upon request		Material: Steel, Stainless Steel		
Hinge Size	Size of FH Screws		Pieces Per Box Pieces Per Carton	
	Jamb	Door		
4 ½"	½" x 12 - 24	½" x 12 - 24MS 1 ¼" x 12WS	3 48	
	HOSPITAL TIP Full Mortise Type • Ball Bearing • Template			
	Two Ball Bearing Standard Weight			
	ITEM #	SIZE		GAUGE
	HOSBB31 N.R.P.	4 ½" x 4 ½"		.134
	Four Ball Bearing Heavy Weight			
	HOSBB5200 N.R.P.	4 ½" x 4 ½"		.180
HOSBB5210 N.R.P.	5" x 4 ½"		.190	
Size: Maximum of 6" x 6" available upon request		Material: Steel, Stainless Steel		
Size of FH Screws		Pieces Per Box	Pieces Per Carton	
	Machine	Wood		
½" x 12 - 24		1 ¼" x 12	3 48	
	WIDE THROW HINGES Full Mortise Type • Standard Weight • Two Ball Bearing • Template			
	ITEM #	SIZE		GAUGE
	WTHBB456	4 ½" x 6"		.146
	Size: Maximum of 6" x 6" available upon request		Material: Steel, Stainless Steel	
	Size of FH Screws		Pieces Per Box	Pieces Per Carton
		Machine	Wood	
½" x 12 - 24		1 ¼" x 12	3 48	

NOTE: All hinges are sold with a minimum order quantity (MOQ) equal to or exactly divisible by the inner box quantity specified in the catalog or price book.

	SPRING HINGES (Commercial) Full Mortise Type • Template • Single Acting			
	ITEM #	SIZE	GAUGE	
	NEWSH140	4 1/2" x 4 1/2"	.134	
	NEWSH454	4 1/2" x 4"	.134	
	Size: 4" x 4" and 3 1/2" x 3 1/2", available upon request		Material: Steel, Stainless Steel	
	Size of FH Screws		Pieces Per Box	Pieces Per Carton
	Machine	Wood	2	48
1/2" x 12 - 24	1 1/4" x 12			
<p>1 set per inner box</p>	COMBINATION HINGES • Full Mortise Type Set of 2 pcs Spring Hinges (SH140) and 1 pc 2-Ball Bearing Hinges (BB31)			
	ITEM #	SIZE	GAUGE	
	BB14031 (SOLD per set)	4 1/2" x 4 1/2" (2 pcs) Spring Hinges	.134	
		4 1/2" x 4 1/2" (1 pc) 2-Ball Bearing Hinge	.134	
	Material: Steel, Stainless Steel			
	Size of FH Screws		Set Per Box	Sets Per Carton
	Machine	Wood	1	16
1/2" x 12 - 24	1 1/4" x 12			
	SPRING HINGES (RESIDENTIAL) Full Mortise Type Template • Single Acting			
	Round Corner, 1/4" Radius (Template)			
	ITEM #	SIZE	GAUGE	
	NEWSH44R	4" x 4"	.110	
	NEWSH35R	3 1/2" x 3 1/2"	.110	
	Round Corner, 5/8" Radius (4"x 4" Non Template)			
	NEWSH4458R	4" x 4"	.110	
	NEWSH3558R	3 1/2" x 3 1/2"	.110	
	Square Corner, (Template)			
	NEWSCSH35	3 1/2" x 3 1/2"	.110	
	Material: Steel, Stainless Steel, Brass			
	Size of FH Screws		Pieces Per Box	Pieces Per Carton
	Machine	Wood	2	48
1/2" x 12 - 24 w/ #10 Head (4"x4")	1" x 10			
1/2" x 10 - 24 w/ #10 Head (3 1/2"x 3 1/2")	1" x 10			
	Castlegate Combination Square-Round Corner			
	CSH4458RSLH (Left Hand)	4" x 4"	.110	
	CSH4458RSLRH (Right Hand)	4" x 4"	.110	
	Size of FH Screws		Pieces Per Box	Pieces Per Carton
	Machine	Wood	2	48
	1/2" x 10 - 24 w/ #10 Head	1" x 10		
	Benchmark Round Corner, 5/8" Radius			
	NBENSH4458R	4" x 4"	.110	
	Material: Steel, Stainless Steel			
	Size of FH Screws		Pieces Per Box	Pieces Per Carton
Machine	Wood	2	48	
1/2" x 12 - 24 w/ #10 Head	1" x 10			

NOTE: All hinges are sold with a minimum order quantity (MOQ) equal to or exactly divisible by the inner box quantity specified in the catalog or price book.

EXTRUDED SOLID BRASS HINGES Full Mortise Type • Two Ball Bearing • Template																																																															
  BL ST AC UR				LIFE TIME FINISH			ITEM #	SIZE	GAUGE	LIFSBBH45	4 1/2" x 4 1/2"	.134	LIFSBBH44	4" x 4"	.130	LIFSBBH35	3 1/2" x 3 1/2"	.123	STANDARD FINISH			SBBH45	4 1/2" x 4 1/2"	.134	SBBH44	4" x 4"	.130	SBBH35	3 1/2" x 3 1/2"	.123	FULL MORTISE, PLAIN BEARING			SBH45	4 1/2" x 4 1/2"	.134	SBH44	4" x 4"	.130	SBH35	3 1/2" x 3 1/2"	.123	Material: Steel, Stainless Steel, Brass				DECORATIVE TIPS FOR EXTRUDED HINGES (BRASS)			Unit Ea Per Hinge	Ball Tip (BL), Steeple Tip (ST), Acorn Tip (AC), Um Tip (UR)			1	Size of Wood Screws	3 1/2" - 1" x 10	Pieces Per Box	Pieces Per Carton	4" - 1" x 12	2	60		4 1/2" - 1 1/4" x 12
				LIFE TIME FINISH																																																											
				ITEM #	SIZE	GAUGE																																																									
				LIFSBBH45	4 1/2" x 4 1/2"	.134																																																									
				LIFSBBH44	4" x 4"	.130																																																									
				LIFSBBH35	3 1/2" x 3 1/2"	.123																																																									
				STANDARD FINISH																																																											
				SBBH45	4 1/2" x 4 1/2"	.134																																																									
				SBBH44	4" x 4"	.130																																																									
				SBBH35	3 1/2" x 3 1/2"	.123																																																									
FULL MORTISE, PLAIN BEARING																																																															
SBH45	4 1/2" x 4 1/2"	.134																																																													
SBH44	4" x 4"	.130																																																													
SBH35	3 1/2" x 3 1/2"	.123																																																													
Material: Steel, Stainless Steel, Brass																																																															
DECORATIVE TIPS FOR EXTRUDED HINGES (BRASS)			Unit Ea Per Hinge																																																												
Ball Tip (BL), Steeple Tip (ST), Acorn Tip (AC), Um Tip (UR)			1																																																												
Size of Wood Screws	3 1/2" - 1" x 10	Pieces Per Box	Pieces Per Carton																																																												
	4" - 1" x 12	2	60																																																												
	4 1/2" - 1 1/4" x 12																																																														

CASTLEGATE COMBINATION SQUARE-ROUND CORNER PLAIN BEARING HINGES																									
				ITEM #	SIZE	GAUGE	CAS44R (Right Hand)	4"x4"	.098	CAS44L (Left Hand)	4"x4"	.098	Material: Steel, Stainless Steel			Size of Screws		Pieces Per Box	Pieces Per Carton	Machine	Wood	2	48	1/2" x 12 - 24 w/ #10 Head	1" x 9
				ITEM #	SIZE	GAUGE																			
				CAS44R (Right Hand)	4"x4"	.098																			
				CAS44L (Left Hand)	4"x4"	.098																			
				Material: Steel, Stainless Steel																					
				Size of Screws		Pieces Per Box	Pieces Per Carton																		
				Machine	Wood	2	48																		
				1/2" x 12 - 24 w/ #10 Head	1" x 9																				

RESIDENTIAL WEIGHT HINGES Full Mortise Type • Two Ball Bearing • 5 Knuckles			
1/4" Radius			
ITEM #	SIZE	GAUGE	
BBRH60	4" x 4"	.097	
BBRH61	3 1/2" x 3 1/2"	.085	
5/8" Radius			
BBRH40	4" x 4"	.097	
BBRH35	3 1/2" x 3 1/2"	.085	
4" x 4" Non Template Type, 3 1/2" x 3 1/2" Template Type		Material: Steel, Stainless Steel, Brass	
Size of Wood Screws		Pieces Per Box	Pieces Per Carton
4" x 4"	1" x 9	2, Assembled	100
3 1/2" x 3 1/2"	3/4" x 9		

RESIDENTIAL WEIGHT HINGES Full Mortise Type • Plain Bearing • 5 Knuckles			
1/4" Radius			
ITEM #	SIZE	GAUGE	
RH60	4" x 4"	.097	
RH61	3 1/2" x 3 1/2"	.085	
5/8" Radius			
RH40	4" x 4"	.097	
RH35	3 1/2" x 3 1/2"	.085	
10RH35*			
Square Corner			
RH91	4" x 4"	.097	
RH90	3 1/2" x 3 1/2"	.085	
RH33	3" x 3"	.085	
4" x 4" Non Template Type, 3 1/2" x 3 1/2" Template Type		Material: Steel, Stainless Steel, Brass	
Size of Wood Screws		Pieces Per Box	Pieces Per Carton
4" x 4"	1" x 9	2, Assembled 100, Unassembled	100
3 1/2" x 3 1/2"	3/4" x 9		
3 1/2" x 3 1/2"*	1" x 9		

NOTE: All hinges are sold with a minimum order quantity (MOQ) equal to or exactly divisible by the inner box quantity specified in the catalog or price book.

	RESIDENTIAL WEIGHT HINGES Benchmark • Hole Pattern • Bulk Assembled			
	5/8" Radius			
	ITEM #	SIZE		GAUGE
	BENRH40B	4" x 4"		.085
	Material:??			
	Size of Screws		Pieces Per Box	Pieces Per Carton
Machine	Wood	---	100	
1/2" x 10-24 per hinge (4)	3/4" x #10 (3), #10 x 2" (1)			
	RESIDENTIAL WEIGHT HINGES Full Mortise Type • Plain Bearing • 6 Knuckles • Bulk Unassembled			
	5/8" Radius			
	ITEM #	SIZE		GAUGE
	UARH356	3 1/2" x 3 1/2"		.085
	Material: Steel, Stainless Steel, Brass			
	4" x 4" Non Template Type, 3 1/2" x 3 1/2" Template Type			
Size of Wood Screws		Pieces Per Box	Pieces Per Carton	
3 1/2" x 3 1/2"	3/4" x 9	---	100	
	TIMELY, REDDI FRAME RESIDENTIAL WEIGHT HINGES Plain Bearing • Template			
	1/4" Radius			
	ITEM #	SIZE		GAUGE
	TBHRC33	4" x 4"		.097
	For use on Metal Frames and Wood Doors			
	Material: Steel, Stainless Steel, Brass			
Size of Screws		Pieces Per Box	Pieces Per Carton	
Machine	Wood	3	48	
1/2" x 12 - 24 with #10 Head	1" x 10			
	TIMELY, REDDI FRAME RESIDENTIAL WEIGHT HINGES Plain Bearing • Template			
	1/4" Radius			
	ITEM #	SIZE		GAUGE
	TBHRC45	3 1/2" x 3 1/2"		.085
	For use on Metal Frames and Wood Doors			
	Material: Steel, Stainless Steel, Brass			
Size of Wood Screws		Pieces Per Box	Pieces Per Carton	
Machine	Wood	2	100	
1/2" x 10 - 24 with #10 Head	3/4" x 10			
	RESIDENTIAL STAINLESS STEEL HINGES, SQUARE CORNER Full Mortise Type • Residential Weight • Plain Bearing			
	ITEM #	SIZE		GAUGE
	LTBHSC55	4" x 4"		.080
	LTBHSC77	3 1/2" x 3 1/2"		.080
	LTBHSC77	3" x 3"		.080
	Material: Stainless Steel			
Size of Wood Screws		Pieces Per Box	Pieces Per Carton	
Machine	Wood	2	100	
N/A	3/4" x 9			

NOTE: All hinges are sold with a minimum order quantity (MOQ) equal to or exactly divisible by the inner box quantity specified in the catalog or price book.

PARLIAMENT HINGES Full Mortise Type • Plain Bearing • Template			
ITEM #	SIZE	GAUGE	
PARH458C	4 5/8" x 2 1/2"	.093	
PARH4B	4" x 2 1/2"	.093	
PARH3A	3" x 2 1/4"	.093	
Material: Brass			
Size of FH Screws		Pieces Per Box	Pieces Per Carton
Machine	Wood	2	100
N/A	3/4" x 9		

SOLID BRASS CABINET HINGES			
ITEM #	SIZE	GAUGE	
CABH-2015	2" x 1 1/2"	.093	
CABH-2517	2 1/2" x 1.700"	.093	
Size of FH Screws		Pieces Per Box	Pieces Per Carton
Machine	Wood	2	100
N/A	3/4" x 6		

REINFORCING PIVOT HINGES			
ITEM #	SIZE	GAUGE	
RPH45	4 1/2"	.187	
RPH45SHIM	1/8" Shim plate for RPH45 (Used for doors with 1/8" Reveal)		
Material: Steel			
Size of Wood Screws		Pieces Per Box	Pieces Per Carton
Machine	Wood	2	100
1/2" x 10 - 24	3/4" x 10		

HINGE SCREWS

STEEL SCREWS FOR CONTRACT GRADE SIZE 4", 4.5" and 5"		
ITEM #	FINISH	
	MACHINE 1/2" x 12-24 FPHM	
	MSC1224	USP, US26D, US10A, US10B, US10, US4, US3, US26, DURO, US32D
	WOOD 1 1/4" x 12 FPHW	
	WSC11412	USP, US26D, US10A, US10B, US10, US4, US3, US26, DURO, US32D
	WOOD 1" x 12 FPHW	
	WSC11299	USP, US26D, US10A, US10B, US10, US4, US3, US26, US15, DURO

STEEL SCREWS FOR RESIDENTIAL HINGES (4" x 4" and 3 1/2" x 3 1/2")		
ITEM #	FINISH	
	WOOD 1" x 9 With flycut (4" x 4" Size Hinge)	
	TWSC19	US26D, US10A, US4, US3, US26
	WOOD 3/4" x 9 With flycut (3 1/2" x 3 1/2" Size Hinge)	
	RESWC349	US26D, US10A, US4, US3, US26

STEEL SCREWS FOR TBHRC33 AND TBHRC45, 4" x 4" and 3 1/2" x 3 1/2" TIMELY HINGES, 4" x 4" and 3 1/2" x 3 1/2" SPRING HINGES, 3 1/2" x 3 1/2" CONTRACT GRADE HINGES		
ITEM #	FINISH	
	MACHINE 1/2" x 12-24 with #10 head FPHM (4" x 4" Size Hinge, 1/4" radius)	
	TMC1224	USP, US26D, US10A, US4, US3, US26, US28, US15, US10B, DURO
	MACHINE 1/2" x 10-24 with #10 head FPHM (4" x 4" Size Hinge, 5/8" radius)	
	TMC10244458R	USP, US26D, US10A, US4, US3, US26, US10B, DURO
	WOOD 1" x 10 FPHW (4" x 4" size hinge)	
	TWSC110	USP, US26D, US10A, US4, US3, US26, US15, US10B, US15A, USP, DURO
	MACHINE 1/2" x 10-24 No. 9 HEAD FPHM (3 1/2" x 3 1/2" Size Hinge)	
	TMC121024	USP, US26D, US10A, US4, US3, US26, US10B, US32D, DURO
	WOOD 1" x 9 FPHW (3 1/2" x 3 1/2" size hinge)	
	TWSC19	USP, US26D, US10A, US4, US3, US26, US28, US10B, US15, US15A, DURO

NOTE: All hinges are sold with a minimum order quantity (MOQ) equal to or exactly divisible by the inner box quantity specified in the catalog or price book.

TYPE	CAL-ROYAL	ANSI	HAGER	STANLEY	MCKINNEY	PBB	
Steel / Stainless 2 Ball Bearings	BB55	5" x 5"	A8112 A5112 (Stainless Steel)	BB1279 BB1191 (Stainless Steel)	FBB179 FBB191 (Stainless Steel)	TB2714 TB2314 (Stainless Steel)	BB81 BB51 (Stainless Steel)
	BB545	5" x 4 1/2"					
	BB54	5" x 4"					
	BB31	4 1/2" x 4 1/2"					
	BB454	4 1/2" x 4"					
	BBSC56	4" x 4"					
	BBRC45	4" x 4" (1/4" Rad.)					
	BBSC77	3 1/2" x 3 1/2"					
Stainless Steel, add 32D after part#							
Steel / Stainless Plain Bearing	TBH30	4 1/2" x 4 1/2"	A8133 A5133 (Stainless Steel)	1279 1191 (Stainless Steel)	F179 F191 (Stainless Steel)	T2714 T2314 (Stainless Steel)	PB81 PB51 (Stainless Steel)
	TBH454	4 1/2" x 4"					
	TBHSC55	4" x 4"					
	TBHRC44	4" x 4" (1/4" Rad.)					
	TBHSC77	3 1/2" x 3 1/2"					
	TBHRC66	3 1/2" x 3 1/2" (1/4" Rad.)					
Stainless Steel, add 32D after part#							
Brass, 2 Ball Bearings	SBBB31	4 1/2" x 4 1/2"	A2112	BB1191	FBB191	TB2314	BB21
Brass, Plain Bearing	SBTBH30	4 1/2" x 4 1/2"	A2133	1191	F191	T2314	PB21
Steel, Half Mortise, 2 Ball Bearings	HMBB4100	4 1/2"	A8212	BB1129	FBB167	TB2774	BB82
Stainless Steel, add 32D after part#							
Steel, Half Surface, 2 Ball Bearings	HSBB4900	4 1/2"	A8412	BB1173	FBB173	TB2772	BB84
Stainless Steel, add 32D after part#							
Steel, Swing Clear, 2 Ball Bearings	BB600	4 1/2"	A8122	BB1260	FBB248	TB2895	SC81
Steel, Bearing Concealed	BB2200	4 1/2" x 4 1/2"	A8112	BB700	CB1900	TA714	CB81
Stainless Steel, add 32D after part#							
"UL" Spring Hinge, Commercial	SH140 SH454	4 1/2" x 4 1/2" 4 1/2" x 4"	K8107-IF	1250	2060	1502	SP81
Stainless Steel, add 32D after part#							
"UL" Spring Hinge, Commercial / Residential	SH4458R SH44R SH35R SH3558R	4" x 4", (5/8" Rad.) 4" x 4", (1/4" Rad.) 3 1/2" x 3 1/2" (1/4" Rad.) 3 1/2" x 3 1/2" (5/8" Rad.)	K8107IF	1251	2060	1502	RS81
Steel, 4 Ball Bearings, Heavy Gauge	BB5210 BB5254 BB5200 BB52454	5" x 4 1/2" 5" x 4" 4 1/2" x 4 1/2" 4 1/2" x 4"	A8111 A5111 (Stainless Steel)	BB1168 BB1199 (Stainless Steel)	FBB168 FBB199 (Stainless Steel)	T4B3786 T4B3386 (Stainless Steel)	4B81 4B51 (Stainless Steel)
Stainless Steel, add 32D after part#							

◇◇◇ All hinges above are available in steel, brass and stainless steel. Brass base prefix "SB" before part #. Stainless steel add US32D after part #. Consult factory for more information on hinge comparisons not shown.

Intertek ETL SEMKO

September 24, 2003

Mr. Kaye Yashar
Cal-Royal Products, Inc.
6605 Flotilla St.,
City of Commerce, CA 90040

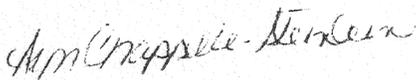
Dear Mr. Yashar:

Per your request the following is a summary of the results of testing on various model hinges:

Model	ANSI/BHMA Standard	Grade	Test Result	Intertek Report No.	Report Date
BB-31	A156.1-1997	2	COMPLIANT	3006833	11/15/01
TBH-30	A156.1-1997	3	COMPLIANT	3006833	04/05/01
BB5200	A156.1-2000	1	COMPLIANT	3038274-001	08/22/03

Thank you for turning to Intertek with your testing needs. If you have any questions or further needs, please contact us.

Sincerely,



Ayn Chappelle-Steinlein
Project Manager – Hardware
Building Products Group
Intertek



Intertek Testing Services NA, Inc.

8431 Murphy Drive, Middleton, WI 53562

Telephone: 608-836-4400 Fax: 608-831-9279 Web: www.intertek-etlsemko.com



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FULL MORTISE TEMPLATE HINGES
Plain Bearing . Standard Weight
 Brass ANSI A2133
 Stainless Steel ANSI A5133
 with stainless steel pin
 Steel with steel pin ANSI A8133

Five knuckle non-rising removable pin, button tip and plug.

Cal-Royal Part #	Size Open (Inches)	Gauge of Metal	Number of Holes	Machine Screw Size	Wood Screw Size	Inner Box Quantity	Pieces/ Case
TBHSC33	3 x 3	.119	6	½ x 12-24	1 x 9	2 Ea.	100
TBHSC77 TBHRC66 (RC) ¼" Rad	3½ x 3½	.119	6	½ x 10-24	1 x 9	2 Ea.	100
TBHSC55 TBHRC44 (RC) ¼" Rad TBHRC5844 (RC) ⅝" Rad	4 x 4	.129	8	½ x 12-24	1 x 12	3 Ea.	48
TBHSC435	4 x 3½	.119	8	½ x 12-24	1 x 12	3 Ea.	48
TBH30	4½ x 4½	.134	8	½ x 12-24	1¼ x 12	3 Ea.	48
TBH454	4½ x 4	.134	8	½ x 12-24	1¼ x 12	3 Ea.	48
TBH54	5 x 4	.145	8	½ x 12-24	1¼ x 12	3 Ea.	24
TBH545	5 x 4½	.145	8	½ x 12-24	1¼ x 12	3 Ea.	24
TBH55	5 x 5	.145	8	½ x 12-24	1¼ x 12	3 Ea.	24
TBH645	6 x 4½	.160	10	½ x ¼-20	1½ x 14	3 Ea.	24
TBH65	6 x 5	.160	10	½ x ¼-20	1½ x 14	3 Ea.	24
TBH66	6 x 6	.160	10	½ x ¼-20	1½ x 14	3 Ea.	24

CAL-ROYAL PRODUCTS, INC. Template hinges are manufactured to close tolerances and meet all specifications and requirements set by the American National Standards Institute (ANSI A156.7). **All hinges are ANSI templates. All hinges above are available in steel, brass and stainless steel base. Brass base prefix "SB" before part #. Stainless steel add 32D after part #. All hinges above are packed with all wood and machine screws.**



FULL MORTISE TEMPLATE HINGES
Ball Bearing . Standard Weight
 Brass ANSI A2112
 Stainless Steel ANSI A5111
 with stainless steel pin
 Steel with steel pin ANSI A8112

Five knuckle two ball bearings, non-rising removable pin, button tip and plug.

Cal-Royal Part #	Size Open (Inches)	Gauge of Metal	Number of Holes	Machine Screw Size	Wood Screw Size	Inner Box Quantity	Pieces/ Case
BBSC33	3" x 3"	.123	6	½ x 10-24	1 x 9	2 Ea.	100
BBSC77	3½ x 3½	.123	6	½ x 10-24	1 x 9	2 Ea.	100
BBRC5835	3½ x 3½	.123	6	½ x 10-24	1 x 9	2 Ea.	100
BBSC56 BBRC45 (RC) ¼" Rad BBRC5844 (RC) ⅝" Rad	4 x 4	.129	8	½ x 12-24	1 x 12	3 Ea.	48
BBSC435	4 x 3½	.119	8	½ x 12-24	1 x 12	3 Ea.	48
BB454	4½ x 4	.134	8	½ x 12-24	1¼ x 12	3 Ea.	48
BB31	4½ x 4½	.134	8	½ x 12-24	1¼ x 12	3 Ea.	48
BB54	5 x 4	.145	8	½ x 12-24	1¼ x 12	3 Ea.	24
BB545	5 x 4½	.145	8	½ x 12-24	1¼ x 12	3 Ea.	24
BB55	5 x 5	.145	8	½ x 12-24	1¼ x 12	3 Ea.	24
BB645	6 x 4½	.160	10	½ x ¼-20	1½ x 14	3 Ea.	24
BB65	6 x 5	.160	10	½ x ¼-20	1½ x 14	3 Ea.	24
BB66	6 x 6	.160	10	½ x ¼-20	1½ x 14	3 Ea.	24

CAL-ROYAL PRODUCTS, INC. Template hinges are manufactured to close tolerances and meet all specifications and requirements set by the American National Standards Institute (ANSI A156.7). **All above hinges are available in steel, brass and stainless steel base. Brass base prefix "SB" before part #. Stainless steel add 32D after part #. All hinges above are packed with all wood and machine screws.**





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FULL MORTISE TEMPLATE HINGES
Ball Bearing . Heavy Weight
 Brass ANSI A2111
 Stainless Steel ANSI A5111
 with stainless steel pin
 Steel with steel pin ANSI A8111

Five knuckle four ball bearings, non-rising removable pin, button tip and plug.

Cal-Royal Part #	Size Open (Inches)	Gauge of Metal	Number of Holes	Machine Screw Size	Wood Screw Size	Inner Box Quantity	Pieces/Case
BB52454	4½ x 4	.180	8	½ x 12-24	1¼ x 12	3 Ea.	24
BB5200	4½ x 4½	.180	8	½ x 12-24	1¼ x 12	3 Ea.	24
BB5254	5 x 4	.190	8	½ x 12-24	1¼ x 12	3 Ea.	24
BB5210	5 x 4½	.190	8	½ x 12-24	1¼ x 12	3 Ea.	24
BB5500	5 x 5	.190	8	½ x 12-24	1¼ x 12	3 Ea.	24
BB6450	6 x 4½	.190 Stainless Steel .203 Steel & Brass	10	½ x ¼-20	1½ x 14	3 Ea.	24
BB6500	6 x 5	.190 Stainless Steel .203 Steel & Brass	10	½ x ¼-20	1½ x 14	3 Ea.	24
BB6600	6 x 6	.190 Stainless Steel .203 Steel & Brass	10	½ x ¼-20	1½ x 14	3 Ea.	24
BB8600	8 x 6	.190 Stainless Steel .203 Steel & Brass	16	½ x ¼-20	1½ x 14	3 Ea.	12
BB8800	8 x 8	.190 Stainless Steel .203 Steel & Brass	16	½ x ¼-20	1½ x 14	3 Ea.	12

CAL-ROYAL PRODUCTS, INC. Template hinges are manufactured to close tolerances and meet all specifications and requirements set by the American National Standards Institute (ANSI A156.7) **All hinges are ANSI templates. Hinge testing conforms to ANSI A156.1. All hinges above are available in steel, brass, and stainless steel base. Brass base prefix "SB" before part #. Stainless steel and 32D after part #. All hinges above are packed all wood and machine screws.**





LIFETIME WARRANTY

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FULL MORTISE TEMPLATE HINGES
Concealed Ball Bearing . Heavy Weight
 Brass ANSI A2111
 Stainless Steel ANSI A5111
 with stainless steel pin
 Steel with steel pin ANSI A8111

Three knuckles with concealed ball bearings, non-rising removable pin, concealed pin head and plug

Cal-Royal Part #	Size Open (Inches)	Gauge of Metal	Number of Holes	Machine Screw Size	Wood Screw Size	Inner Box Quantity	Pieces/ Case
BB1000	4½ x 4	.180	8	½ x 12-24	1¼ x 12	3 Ea.	24
BB3300	4½ x 4½	.180	8	½ x 12-24	1¼ x 12	3 Ea.	24
BB7754	5 x 4	.190	8	½ x 12-24	1¼ x 12	3 Ea.	24
BB77545	5 x 4½	.190	8	½ x 12-24	1¼ x 12	3 Ea.	24
BB7755	5 x 5	.190	8	½ x 12-24	1¼ x 12	3 Ea.	24
BB77645	6 x 4½	.190 Stainless Steel .203 Steel & Brass	10	½ x ¼-20	1½ x 14	3 Ea.	24
BB7765	6 x 5	.190 Stainless Steel .203 Steel & Brass	10	½ x ¼-20	1½ x 14	3 Ea.	24
BB7766	6 x 6	.190 Stainless Steel .203 Steel & Brass	10	½ x ¼-20	1½ x 14	3 Ea.	24

CAL-ROYAL PRODUCTS, INC. Template hinges are manufactured to close tolerances and meet all specifications and requirements set by the American National Standards Institute (ANSI A156.7). **All hinges are ANSI templates. Hinge testing conforms to ANSI A156.1. All hinges above are available in steel, brass and stainless steel base. Brass base prefix "SB" before part #. Stainless steel and 32D after part #. All hinges above are packed with all wood and machine screws.**



LIFETIME WARRANTY

BHMATM CERTIFIED
Be Safe. Be Secure. Look for the Mark.

FULL MORTISE TEMPLATE HINGES
Concealed Ball Bearing . Standard Weight
 Brass ANSI A2112
 Stainless Steel ANSI A5112
 with stainless steel pin
 Steel with steel pin ANSI A8112

Three knuckles with concealed ball bearings, non-rising removable pin, concealed pin head and plug

Cal-Royal Part #	Size Open (Inches)	Gauge of Metal	Number of Holes	Machine Screw Size	Wood Screw Size	Inner Box Quantity	Pieces/ Case
BB223535	3½ x 3½	.119	6	½ x 10-24	1 x 9	2	100
BB224040	4 x 4	.129	8	½ x 12-24	1¼ x 12	3	48
BB22454	4½ x 4	.134	8	½ x 12-24	1¼ x 12	3	48
BB2200	4½ x 4½	.134	8	½ x 12-24	1¼ x 12	3	48
BB2254	5 x 4	.145	8	½ x 12-24	1¼ x 12	3	24
BB22545	5 x 4½	.145	8	½ x 12-24	1¼ x 12	3	24
BB2255	5 x 5	.145	8	½ x 12-24	1¼ x 12	3	24

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SPRING HINGE
Full Mortise . Template . Single Acting
 Steel ANSI K81071F



SH-35R-3.5 X 3.5



SH-4458R



SH-44R-4 X 4



SH-140-4.5 X 4.5

Cal-Royal Part #	Size Open (Inches)	Gauge of Metal	Number of Holes	Machine Screw Size	Wood Screw Size	Inner Box Quantity	Pieces/ Case
SH35R (RC) ¼" Rad	3½ x 3½	.115	6	½ x 10-24	1 x 9	2	48
SH3558R (RC) ⅝" Rad	3½ x 3½	.115	6	½ x 10-24	1 x 9	2	48
SCSH35	3½ x 3½	.115	6	½ x 10-24	1 x 9	2	48
SH44R (RC) ¼" Rad Template	4 x 4	.115	8	½ x 12-24 with #10 head	1 x 10	2	48
SH4458R (RC) ⅝" Rad Non Template	4 x 4	.115	8	½ x 12-24 with #10 head	1 x 10	2	48
BENSH4458R (RC) ⅝" Rad (Benchmark)	4 x 4	.115	8	½ x 12-24 with #10 head	1 x 10	2	48
SH454	4½ x 4	.134	8	½ x 12-24	1¼ x 12	2	48
SH140	4½ x 4½	.134	8	½ x 12-24	1¼ x 12	2	48

CAL-ROYAL PRODUCTS, INC. Template hinges are manufactured to close tolerances and meet all specifications and requirements set by the American National Standards Institute (ANSI A156.7). **All hinges are ANSI templates. Hinge testing conforms to ANSI A156.1. All hinges above are available in steel and stainless steel base. Add 32D after part # for stainless steel hinges. All hinges above are packed with all wood and machine screws.**

Maximum Door Sizes & Weights

Size	Recommended Max Door Weight (Lbs)	*Spring Hinges	Butt Hinges Labeled Doors Require Ball Bearing Hinges
3 ½" (Full Mortise)	50	2 Ea.	1 Ea.
	70	2 Ea.	1 Ea.
	90	3 Ea.	-----
4" (Full Mortise)	60	2 Ea.	1 Ea.
	85	2 Ea.	1 Ea.
	110	3 Ea.	-----
4 ½" (Full Mortise)	70	2 Ea.	1 Ea.
	115	2 Ea.	1 Ea.
	150	3 Ea.	-----

HINGE SELECTION

***Notes:** Wind conditions, excessive air pressure on one side of opening, or other adverse job conditions may require the use of all spring hinges. For maximum versatility use all spring hinges. U/L listed spring hinges are not available with reverse springs.





**LIFETIME
WARRANTY**

Standard Lengths

Cal-Royal continuous hinge length provides for actual threshold clearance, head clearance and door height allowances for carpeting. Other lengths may be ordered as non-standard items. Our standard actual lengths are 83" (7'0" opening), 95" (7'2" to 8'0" opening).

Special Lengths

Special lengths are considered non-standard items and may not be grouped with standard items or other Cal-Royal Products, to achieve a lower discount. Any Changes to the special length products may be subject to charges for work in process. Templates available on request and on website.

Field Modifications

Cal-Royal continuous hinges can be cut in the field, however, any product modifications may void all warranties. If field modifications must be made, cut only the underside or bottom of the hinge.

Standard Finishes

Cal-Royal continuous hinges are available in either Clear Anodized Aluminum (US28) or Dark Bronze Anodized (Duranodic 313 or equivalent). Special finishes are available subject to quantity & factory lead time

Fire Ratings - Underwriters Laboratory Fire Rating			
FIRE RATED CAL-ROYAL	FULL CONCEALED	HALF SURFACE	FULL SURFACE
SURFACE	FULL	U/L---FF	U/L---FF
SURFACE	U/L---FF	U/L---FF	U/L---FF
90 Minute Fire Rated Wood Door x Fire Rated Hollow Metal Frame	* U/L---Stud	U/L---Stud	U/L---Stud
90 Minute Fire Rated Metal Door x Fire Rated Hollow Metal Frame	U/L---FF	U/L---FF	U/L---FF
3 Hour Fire Rated Hollow Metal Door x Fire Rated Hollow Metal Frame	*U/L---Stud	U/L---Stud	U/L---Stud
Maximum Size of Single Rated Door Leaf 4'0" Wide x 10'0" High			
Maximum Rated Opening Size for Single Door 4'0" Wide x 10'0" High			

* Devices for which Studs are required

Cal-Royal continuous hinges are approved for use on swing type doors of hollow metal, tinclad, sheet-metal and steel covered composite type rated up to and including 3 hours. Wood composite doors rated up to and including 1½ hours.

Fully Concealed - These models are concealed between the rabbet of the frame and the hinge edge of the door.

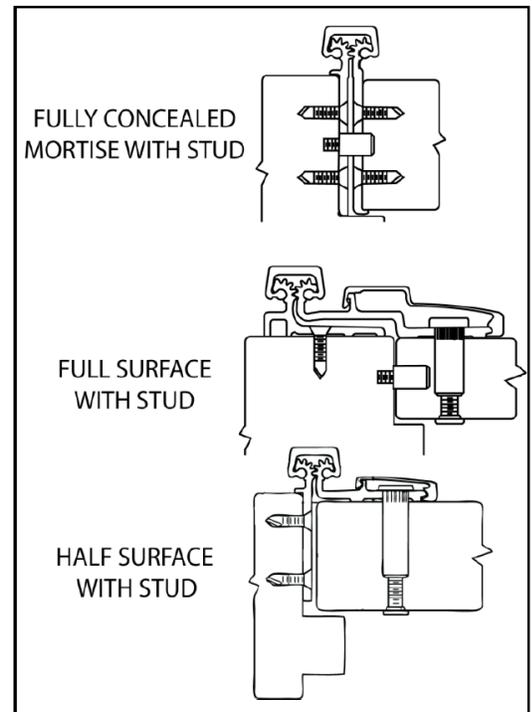
Models available: *CRHD781110, CRHD781120, CRHD782240*

Full Surface - These models have the frame leaf mounted to the face of the frame and the face of the door. The door leaf is mounted to the door with through bolts.

Models available: *CRHD780570, CRHD781570, CRHD782100*

Half Surface – These models have the frame leaf concealed between the rabbet of the frame and the edge of the door. The door leaf is mounted to the face of the door with sex bolts or screws.

Models available: *CRHD780530*

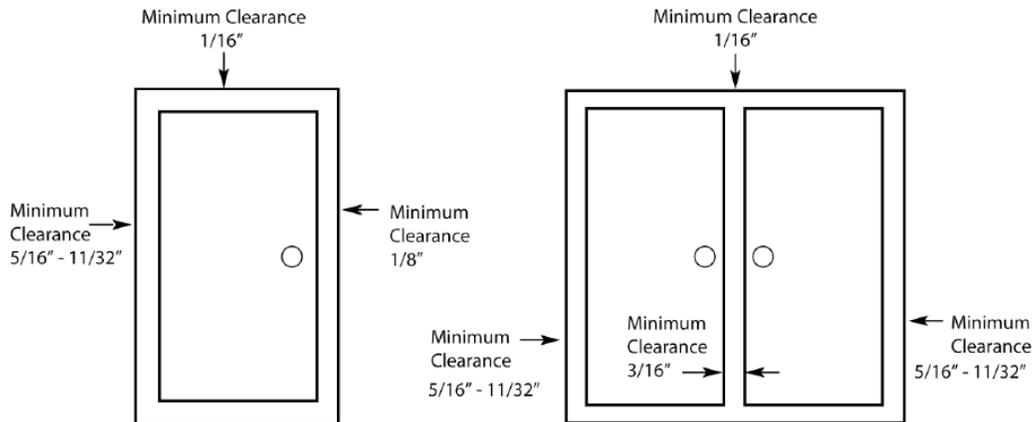


**Dimensioning Door and Frame ---- Full Concealed Mortised Models
CRHD781110, CRHD781120, CRHD782240**

The Above models are primarily used for new doors and frames. Both leaves are fully Mortised. They can also be used on renovations for a new door with an existing frame or an existing door with a new frame. These hinges will cover existing standard full Mortise hinge preps.

Required Clearance

Single Doors (Square Edged)	STANDARD		METRIC
A. Thickness of Hinge	5/16"	(10/32")	8.0 mm
B. Allowances for frame irregularities	1/32"	(1/32")	0.8 mm
C. Single Door Clearance on lock side	1/8"	(4/32")	3.2 mm
	Total	15/32"	12.0 mm
Single Doors (Beveled Edged)			
A. Thickness of Hinge	5/16"	(10/32")	8.0 mm
B. Allowances for frame irregularities	1/32"	(1/32")	0.8 mm
C. Single Door Clearance on lock side	1/8"	(4/32")	3.2 mm
D. Allowance for beveled edge	1/32"	(1/32")	0.8 mm
	Total	16/32"	12.8 mm
Pairs of Doors (Square Edged)			
A. Thickness of Hinge	5/16"	(10/32")	8.0 mm
B. Allowances for frame irregularities	1/32"	(1/32")	0.8 mm
C. Recommended Edge to Edge clearance	3/16"	(6/32")	4.8 mm
D. Second allowance for frame irregularities	1/32"	(1/32")	0.8 mm
E. Second hinge thickness	5/16"	(10/32")	8.0 mm
	Total	28/32"	22.4 mm
Pairs of Doors (Beveled Edge)			
A. Thickness of Hinge	5/16"	(10/32")	8.0 mm
B. Beveled Edge allowance	1/32"	(1/32")	0.8 mm
C. Allowances for frame irregularities	1/32"	(1/32")	0.8 mm
D. Recommended Edge to Edge clearance	3/16"	(6/32")	4.8 mm
E. Second allowance for frame irregularities	1/32"	(1/32")	0.8 mm
F. Second allowance for beveled edge	1/32"	(1/32")	0.8 mm
G. Second hinge thickness	5/16"	(10/32")	8.0 mm
	Total	30/32"	24.0 mm



Determining Door & Frame Dimensions - Full Surface Models
CRHD780570, CRHD781570, CRHD782100

The Above models require no special dimensioning, they are designed for retrofit applications. Full Surface models are designed to be mounted to the exposed surface of the door and frame. Additional clearance is not needed except for door and frame painting.

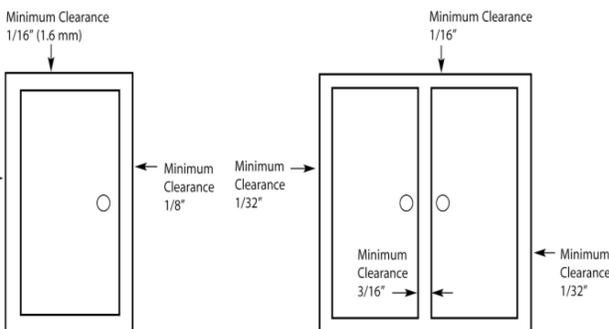
Required Clearance

Single Doors (Square & Beveled Edge)	STANDARD		METRIC
A. Thickness of Hinge	0"	(0")	0.0 mm
B. Additional allowance for door and frame painting (optional)	1/32"	(1/32")	0.8 mm
C. Clearance for Single Door Lock side	1/8"	(4/32")	3.2 mm
	TOTAL	5/32"	4.0 mm

Required Clearance

Single Doors (Square & Beveled Edge)	STANDARD		METRIC
A. Thickness of Hinge	0"	(0")	0.0 mm
B. Frame Irregularities, additional allowance	1/32"	(1/32")	0.8 mm
C. Recommended clearance, edge to edge	3/16"	(6/32")	4.8 mm
D. Frame irregularities, second allowance	1/32"	(1/32")	0.8 mm
E. Second hinge thickness	0"	(0")	0.0 mm
	TOTAL	8/32"	6.4 mm

Note: Additional clearance may be required for paint or weatherstripping



Determining Door & Frame Dimensions - Half Surface Models
CRHD780530

The Above model is designed for use in new doors and frames wherein one leaf is concealed and one leaf is surface mounted. This can also be used in retrofit applications in cases where a new door is installed on an existing frame. Half Surface models are designed for one leaf to be mounted to the exposed surface of the door and the other leaf is concealed on the frame.

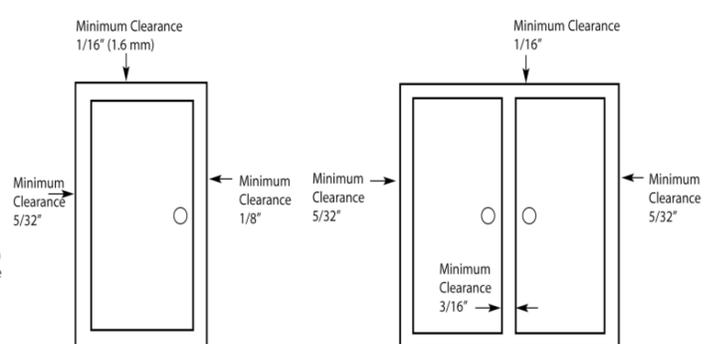
Required Clearance

Single Doors (Square & Beveled Edge)	STANDARD		METRIC
A. Thickness of Hinge	1/8"	(4/32")	3.2 mm
B. Additional allowance for door and frame painting (optional)	1/32"	(1/32")	0.8 mm
C. Clearance for Single Door Lock side	1/8"	(4/32")	3.2 mm
	TOTAL	9/32"	7.2 mm

Required Clearance

Single Doors (Square & Beveled Edge)	STANDARD		METRIC
A. Thickness of Hinge	1/8"	(4/32")	3.2 mm
B. Frame Irregularities, additional allowance	1/32"	(1/32")	0.8 mm
C. Recommended clearance, edge to edge	3/16"	(6/32")	4.8 mm
D. Frame irregularities, second allowance	1/32"	(1/32")	0.8 mm
E. Second hinge thickness	1/8"	(4/32")	3.2 mm
	TOTAL	8/32"	12.8 mm

Note: Additional clearance may be required for paint or weatherstripping



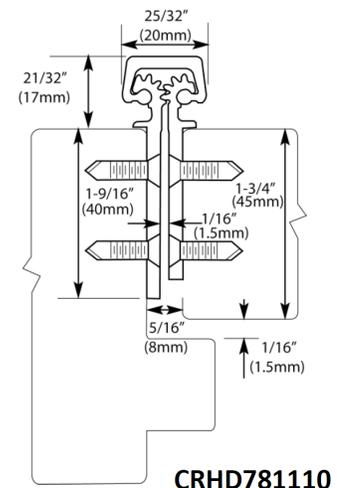
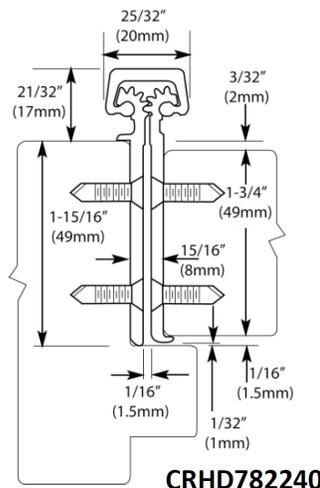
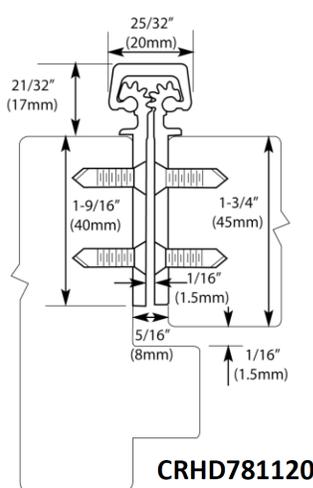
Concealed / Mortise Leaf • Any Door Material • Heavy Duty

Heavy Duty for high frequency 1 3/4" doors or heavy medium frequency doors up to 450 lbs.

CRHD781110 (Heavy Duty), CRHD781120 (Heavy Duty), CHRHD782240 (Heavy Duty)

MODEL#	LENGTH		SCREW COUNT		CLEARANCE
	IN	CM	DOOR	JAMB	
CRHD781110	83	210.8	19	19	5/16" (8mm) hinge side plus standard lockside clearance
CRHD781110	95	241.3	19	19	
CRHD781120	83	210.8	19	19	
CRHD781120	95	241.3	19	19	
CRHD782240	83	210.8	19	19	
CRHD782240	95	241.3	19	19	

- FASTENERS:** Self-Tapping screws
Full Mortise Hinges
 - All fasteners are No. 12-24 x 1/16" Type C, FHUC
 - Heavy Duty Hinges - 10 required for each leaf
 - Wood Screw - on request (specify on order)
- LENGTH OPTIONS:** 83" & 95"
- DOOR REINFORCEMENT:** None needed to 200lbs.
Use 16 gauge channel over 200 lbs.
- FIRE RATING:** Up to 3 Hours
- SPECIAL FEATURES:** For new construction
For renovation with new doors and/or frames
No mortising of doors or frames required
Will cover hinge cut outs in frames
Flush mount no inset
Frame and door leaf alignment ribs for proper hinge location
- ELECTRIFICATION:** Available. See page 25



Full Surface • Any Door Material • Heavy Duty

Heavy Duty for high frequency 1 3/4" doors or heavy medium frequency doors up to 450 lbs.

CRHD781570 (Heavy Duty), CRHD782100 (Heavy Duty), CRHD780570 (Heavy Duty)

MODEL#	LENGTH		SCREW COUNT		CLEARANCE
	IN	CM	DOOR	JAMB	
CRHD781570	83	210.8	19	19	1/32" (1mm) minimum recommended for hinge side plus standard lock case clearance
CRHD781570	95	241.3	20	20	
CRHD782100	83	210.8	19	19	1/32" (1mm) minimum recommended for hinge side plus standard lock case clearance 1 5/8" (41mm) minimum frame face required plus 3/16" (5mm) rotational clearance
CRHD782100	95	241.3	20	20	
CRHD780570	83	210.8	8	8	1/32" (1mm) minimum required between doors
CRHD780570	95	241.3	9	9	

FASTENERS:

Self-Tapping screws

Full Surface Hinges

<p>1) Frame Portion</p> <p>a) All fasteners are No. 12-24 x 1/16" Type C, FHUC</p> <p>i) Heavy Duty Hinges - 10 required for each leaf</p> <p>ii) Wood Screw - on request (specify on order)</p>	<p>2) Door Portion</p> <p>a) Thrubolt 1/4"-20 x 1 5/8" PCH</p> <p>i) Heavy Duty Hinges – 6 required for each leaf</p> <p>b) Shoulder bolt 1/4"-20 x 1" PCH</p> <p>i) Heavy Duty Hinges – 6 required</p> <p>c) Pan Head Self Drilling No. 12 x 3/4"</p> <p>i) Heavy Duty Hinges – 4 required</p>
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LENGTH OPTIONS:

83" & 95"

DOOR REINFORCEMENT:

None needed

FRAME REINFORCEMENT:

None needed to 200 lbs.

Use 16 gauge channel over 200 lbs

FIRE RATING:

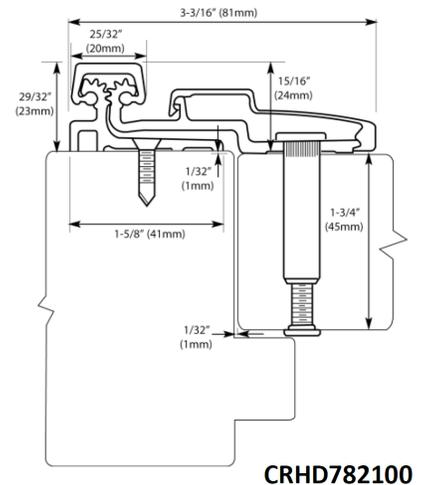
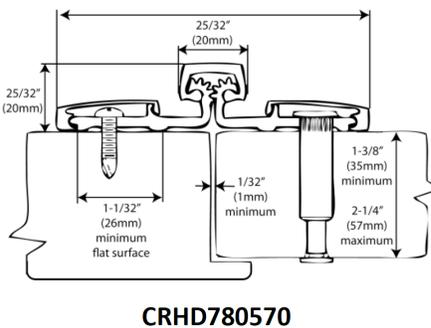
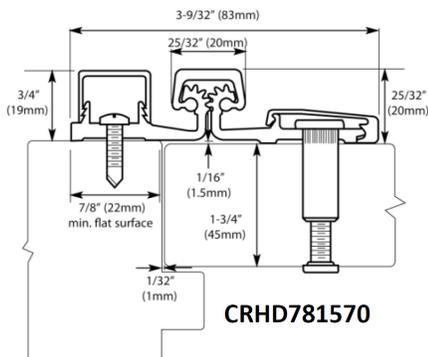
Up to 3 Hours.

SPECIAL FEATURES:

Replacement for existing doors and frames

7/8" minimum frame

1/16" inset



Half Surface • Any Door Material • Heavy Duty

Heavy Duty for high frequency 1 3/4" doors or heavy medium frequency doors up to 450 lbs.

CRHD780530 (Heavy Duty)

MODEL#	LENGTH		SCREW COUNT		CLEARANCE
	IN	CM	DOOR	JAMB	
CRHD780530	83	210.8	8	9	5/32" (4mm) minimum recommended hinge side plus standard lockside clearance
CRHD780530	95	241.3	19	19	

FASTENERS:

Self-Tapping screws

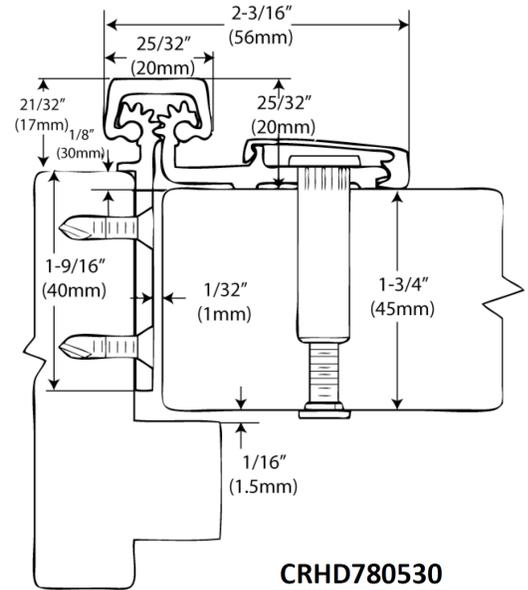
Full Surface Hinges

1) Frame Portion

- a) All fasteners are No. 12-24 x 1/16" Type C, FHUC
 - i) Heavy Duty Hinges - 10 required for each leaf
 - ii) Wood Screw - on request (specify on order)

2) Door Portion

- a) Thru-bolt 1/4 -20 x 1 5/8" PCH
 - i) Heavy Duty Hinges – 6 required for each leaf
- b) Shoulder bolt 1/4 -20 x 1" PCH
 - i) Heavy Duty Hinges – 6 required
- c) Pan Head Self Drilling No. 12 x 3/4"
 - i) Heavy Duty Hinges – 4 required



- **LENGTH OPTIONS:** 83" & 95"
- **DOOR REINFORCEMENT:** None needed
- **FRAME REINFORCEMENT:** None needed to 200 lbs. Use 16 gauge channel over 200 lbs
- **FIRE RATING:** Up to 3 Hours.
- **SPECIAL FEATURES:**
 - For new construction
 - For renovation with new doors and / or frames
 - No mortising of doors or frames required
 - Will cover hinge cut outs in frames
 - Flush mount no inset
 - Frame and door leaf alignment ribs for proper hinge location

► **Electrification**

CODE	NO. OF WIRES	CONTINUOUS HINGE ELECTRIFICATION MODIFICATIONS FOR CRHD781120 AND CRHD782240 ONLY
CET8	8	Removable 12" Aluminum Gear Hinge. Can be removed for adjustment and service.
EPT	--	Cut-out according to Von Duprin Part # EPT-10 and Cal-Royal CRPT-10, CRPT-10C and CRPT-2 location

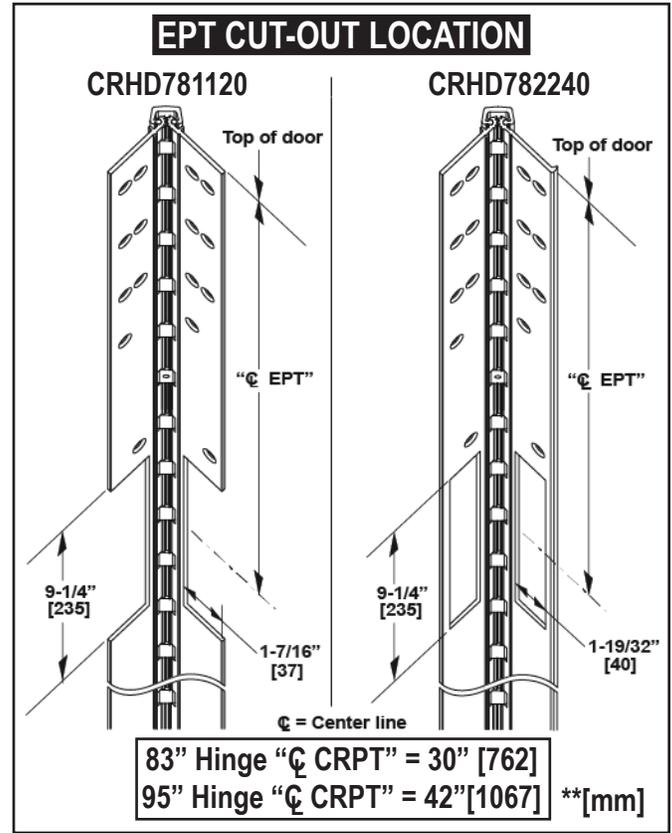
TO ELECTRIFY: Prefix **CODE** before **PART#**.
For Example: To order 8-wire on 1 piece of CRHD781120 ALUM Gear hinge with a length of 83", use "**CET8CRHD78112083 CLEAR**"



CET8CRHD782240



CET8CRHD781120



♦♦♦FOR OTHER LOCATIONS CONSULT FACTORY♦♦♦

CONTINUOUS HINGE MODEL CROSS REFERENCE

CAL-ROYAL	ROTON	PEMKO	MARKAR	MCKINNEY	ZERO	STANLEY	ABH	SELECT
CRHD781120	780-112HD	FMSLFHD	FM2000	MCK12HD	910DB	661HD	A110HD	SL11HD
CRHD782240	780-224HD	FMHD	FM2001	MCK25HD	914DB	662HD	A240HD	SL24HD
CRHD781570	780-157HD	FSCPHD	---	MCK58HD	935DB	664HD	A570HD	SL57HD
CRHD782100	780-210HD	FSHD	FM2009	MCK22HD	930DB	665HD	A210HD	SL21HD
CRHD781110	780-111HD	FMSLIHD	---	MCK-14HD	---	---	A111HD	SL18HD
CRHD780530	780-053HD	---	---	---	925DB	---	A530HD	SL53HD
CRHD780570	---	---	FS 2002	---	---	---	A571HD	SL60HD

