

McKINNEY offers the broadest range of full mortise hinges in a variety of metals, finishes, sizes, and weights to meet all your load bearing and security applications. They include two, three, and five knuckle styles, swing clear hinges, wide throw hinges, anchor hinges, electric hinges, institutional hinges, and pivots.

Full Mortise Hinges

McKINNEY offers the broadest range of full mortise hinges in a variety of metals, finishes, sizes, and weights to meet all your load bearing and security applications. They include two, three, and five knuckle styles, swing clear hinges, wide throw hinges, anchor hinges, electric hinges, institutional hinges, and pivots.

Full Surface Hinges

Choose from regular and swing clear models for heavy weight bearing or standard weight bearing applications in a choice of metals, gauges, and sizes. Two knuckle, three knuckle, and five knuckle styles are available.

Security Hinges

McKINNEY produces an assortment of electrical security hinges for a wide variety of control functions. Included are full mortise bearing hinges with either concealed circuitry or concealed switch. In addition, a unique, field-replaceable magnet monitoring hinge, featuring a magnetic reed concealed switch, is available. McKINNEY also produces full mortise institutional hinges for maximum security installations, and our full mortise single acting spring hinge is available with a Tamper Resistant Screw (TRS Option) which is screwed into the tension ratchet after proper tension has been set.

McKinney hinges conform to Government standards CS9-65 and SDI as well as the following standards approved by the Builders hardware Manufacturers / American National Standards Institute:
ANSI/BHMA Standard 156.1 - The American National Standard for Butts and Hinges

Half Mortise Hinges

Available in a choice of metals, gauges, and sizes for a wide range of door thicknesses. You may specify plain bearing, standard weight bearing, or heavy weight bearing models. Regular and swing clear applications. Two knuckle, three knuckle, as well as five knuckle styles are available.

Half Surface Hinges

Heavy weight bearing, standard weight bearing, and plain bearing hinges in a range of metals, gauges, and sizes. Regular and swing clear applications. Two knuckle, three knuckle, and five knuckle styles

Spring and Specialty Hinges

A full range of spring hinges are available for all types of door sizes, weights, and applications. Included are full mortise single acting hinges, single acting reverse spring hinges, full mortise double acting hinges, and half surface double acting hinges, plus our heavy duty spring butt hinge that permits doors to open 90° in either direction. In addition, McKINNEY produces a variety of hinges for special applications including anchor hinges, wide throw hinges, swing clear hinges, and pocket hinges.

ANSI/BHMA Standard 156.7 - The American National Standard for Template Hinge Dimensions
ANSI/BHMA Standard 156.17 - The American National Standard for Self-Closing Hinges & Pivots
ANSI/BHMA Standard 156.18 - The American National Standard for Material and Finishes

Continuous Hinges

McKINNEY self-aligning continuous hinges extend the full height of the door. These hinges bond the door and frame into an integrated unit and present a streamlined, no-gap surface, affording privacy, safety, and outstanding performance. The high load capacity of these hinges makes them ideal for use in high-frequency areas where hinges are subject to abuse. The hinge design affords resistance to vandalism. McKINNEY continuous geared hinges are warranted for the life of the building. UL listed in both the USA and Canada up to 3 hour (A label) application. These hinges are available in aluminum, stainless and steel.

Misc.

McKINNEY provides a standard duty center hung jamb mount pivot set.

Additionally, we provide emergency door stops, strikes, and stainless steel edge guards.

The most up to date Templates are available on our website @ www.mckinneyhinge.com

Oil Impregnated Bearing (TA)

One piece, non-ferrous, and self-lubricating bearings ensure even longer-lasting wear and resistance to clogging, corrosion, and hinge failure. This feature is standard and supplied on all five knuckle bearing hinges.



Ball Bearing (TB)

Ball bearings are available on all five knuckle bearing hinges.

These are furnished only upon written request to the factory stating that all bearings are to be ball bearings. Standard on institutional hinges, and all hinges over 6".



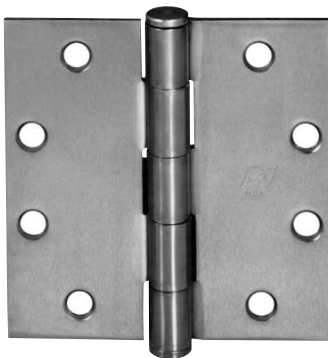
Concealed, anti-friction type bearings are available on all five knuckle bearing hinges, which provide long-lasting wear and consistency of hinge barrel design.

Note: All three and two knuckle bearing hinges are provided with concealed, anti-friction type bearings (designated TA).



Plain Bearing

This is the designation for non-bearing hinges. Knuckles are machined with bearing-like surfaces to move against one another. These are not recommended for high frequency doors or doors with closing devices. These hinges are not approved for use in labeled openings. An anti-friction component is provided on all McKINNEY three knuckle and Moderne (two knuckle) plain bearing hinges.



Number of Bearings (Five Knuckle Only)

Standard gauge McKINNEY three knuckle and five knuckle bearing hinges (.123 - .160) are supplied with two bearings. These hinges are intended for use on doors subjected to average traffic in residential and light commercial construction. Four bearings can be specified (T4A2714/T4A2314) on some five knuckle hinges.

Heavy gauge McKINNEY hinges (.180 - .203) are regularly furnished with four bearings. 8" five knuckle hinges supplied with six bearings. These hinges are intended for use on heavy doors and high frequency doors for all types of construction.

Note: One bearing carries the vertical load on two bearing hinges. On four bearing hinges, two bearings carry the load.

Door weight, height, width, thickness and frequency of operation are all factors in determining the proper hinge. Four bearing hinges should be specified whenever there is any question.

McKINNEY steel or stainless steel based Bearing Hinges are approved for use on Labeled Applications based upon Table 1 Reference NFPA-80 Table 2-8.1.1 1995 Builders hardware. See catalog page 17 for additional information.

Moderne Two Knuckle

This model offers the most security in a standard hinge. The bearing hinges have a concealed stainless steel oil-impregnated bearing. Also, an anti-friction bushing in the door leaf provides additional protection against vertical and lateral wear.

- Plain bearing hinges have an anti-friction component inserted between the two knuckles
- The Moderne two knuckle hinge is available in stainless steel
- Standard and heavy weight
- Pins in all bearing hinges are stainless steel
- Pins in plain bearing hinges are steel
Stainless steel pins are available.
- Standard hinges are packed with all machine by half wood screws
- By design, pins are non-rising, non-removable and tamper protected by a flush, non-removable cap at the end of the barrel. A door can not be removed when in the closed position, thus affording maximum security. Intermediate hinges can be ordered opposite hand and installed upside down, to inhibit removal of the door in an open position
- Available non-removable door (NRD) hinges have a dowel in the barrel. One NRD hinge can be ordered per set
- Two knuckle hinges are handed
- Template hinges are made to conform to U.S. Government standards*

*Template hinges are made in sizes, gauges, and with screw holes located to conform to ANSI/BHMA A156.7 and U.S. Government standards CS9-65 and SDI. Templates are available on request.

Three Knuckle

Bearing hinges have concealed vertical and lateral thrust twin anti-friction type bearings at both joints.

- Plain bearing hinges have an anti-friction T bushing at both joints
- Pin stems in all non-ferrous bearing hinges are stainless steel
- Pins in all ferrous hinges are steel
- Pins in all hinges are non-rising type
- Standard hinges are packed with all machine by half wood screws
- Hinges are reversible for right or left hand except anchor hinges and certain electric hinges
- Template hinges are made to conform to U.S. Government standards*

PSF - Prison Safety Feature

A 7/16" diameter stud projects from the back of each leaf which slips into a hole in the hinge reinforcing plates in both the door and the frame. This prevents the hinge from being removed even if the screws have been sheared off. This option is available on the HTA786 steel and HTA386 stainless prison hinge only.



NOTE:
Dimensions and weights indicated throughout this catalog are in US/SI units; metric equivalents in millimeters and kilograms are shown in parenthesis.

Five Knuckle

Bearing hinges are furnished with either an oil-impregnated bearing (TA*) or ball bearing (TB). (TA is standard unless TB is specified.) Concealed bearings (TCA) are available.

- Pin stems in all non-ferrous bearing hinges are stainless steel
- Pins in all ferrous hinges are steel
- Pins in all hinges are non-rising type
- Pin caps are made of the same material as the hinge
- Template hinges are made to conform to U.S. Government standards*

* Refer to our website at www.mckinneyhinge.com for additional information regarding McKinney bearings.

SSF - Safety Stud Feature

A stud attached to the face of one leaf rotates into a cavity in the opposite leaf when the door is closed. This option interlocks the two leaves together, preventing the removal of the door even if the pin is removed.



Standard Tips

Button Tips and plugs are standard on McKINNEY five knuckle hinges and can be furnished on three knuckle hinges as an option. These tips can be specified on three knuckle hinges by adding the suffix "E.T." (exposed tip).

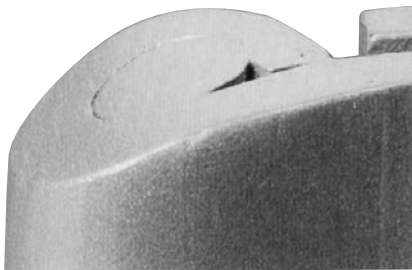


Flush pins and plugs are furnished on our two and three knuckle hinges.



Hospital Tips

Hospital tips which feature a one-piece non-removable pin with tapered tips. To order this option prefix our hinge number by "H". The hospital tip feature by design makes the pin virtually non-removable.



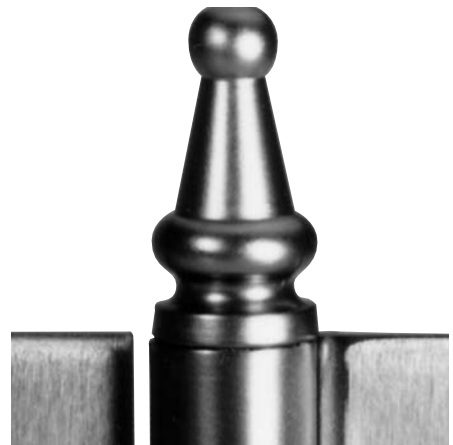
Ball Tips

Ball Tips, made of solid brass, are available on three and five knuckle hinges for a more decorative hinge appearance. To order this option add the suffix "BT" to the hinge number.



Steeple Tips

Steeple Tips, made of solid brass, are available on three and five knuckle hinges for a more decorative hinge appearance. To order this hinge option, add the suffix "ST" to the hinge number.



Pins, by design, are non-rising, non-removable and tamper protected by a flush, non-removable cap at the end of the barrel.

Two Knuckle

Plain Bearing pins are furnished in steel and can be ordered with stainless steel pins as an option. To order this option, add the suffix "SSP" to the hinge number. Pins on bearing hinges are furnished in stainless steel.



Three Knuckle

Pin stems in all non-ferrous bearing hinges are stainless steel. Pins in all ferrous hinges are steel.



Five Knuckle

Pins on all non-ferrous bearing hinges are stainless steel with the button tips manufactured of the same material as the hinge leaves.

Pins on all ferrous hinges are steel. These hinges are available with optional brass pins or stainless steel pins. To order these options, add the suffix "BR" (brass) or "SSP" (stainless).



Non-Removable Pins

NRP

A set screw is driven into the barrel of the hinge that is inaccessible when the door is in the closed position. To order, add the suffix "NRP" to the hinge number.

NRD

Two knuckle hinges are available with a non-removable pin which features a dowel which is force fitted into the jamb leaf. When the door is hung, the pin is completely concealed and impossible to remove. One doweled hinge is usually furnished per set of three. To order, add the suffix "NRD" to the hinge number.

McKINNEY Hinge Catalog

Hinge Selection

Common Flush Door/Wall/Frame Application

McKINNEY

1-800-346-7707

www.mckinneyhinge.com

This section will seek to address different variations of door, frame and wall conditions which you might encounter in hanging the door and the product solutions offered by McKINNEY.

Included are some of the more common conditions and some of the not-so-common conditions. The focus here will be on the type of hinge to use within a given door/frame/wall condition. The following examples are

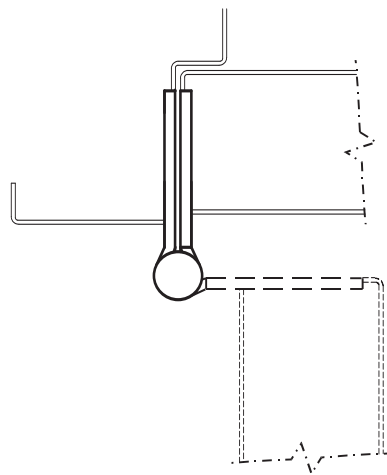
not intended to cover every possible situation in which a particular type hinge might be used, but only a representative sampling. Consult the factory for any unusual installation requirements not shown here.

Full Mortise Hinge

The most common application is a flush door/frame/wall condition using a hollow metal frame with a standard hollow metal or wood door which is flush or $\frac{1}{16}$ " inset from the face of the frame, with a wall which is either flush (or inset from the face of the frame. Recommended to hang door for 180° swing: **Full Mortise Hinge**. The same hinge could be used with a wood or aluminum frame provided the door/frame/wall conditions are flush.

Note: A fire labeled wood door requires sufficient hinge reinforcement to use this type hinge.

APPLICATION



MCK TA2714



Round Corner Option

Furnished as $\frac{1}{4}$ " radius unless specified otherwise. $\frac{5}{32}$ " may be specified on full mortise hinges $4\frac{1}{2}$ " or larger. Specify option "RC".

MCK RCT2714



McKINNEY Hinge Catalog

Hinge Selection

Uncommon Flush Door/Wall/Frame Applications

McKINNEY

1-800-346-7707

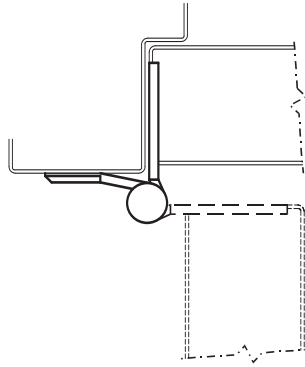
www.mckinneyhinge.com

Less common flush door/frame/wall conditions requiring different type hinges would include:

Half Mortise Hinge

A hollow metal or wood door with channel iron frame. Recommended to hang door for 180° swing:
Half Mortise Hinge.

APPLICATION



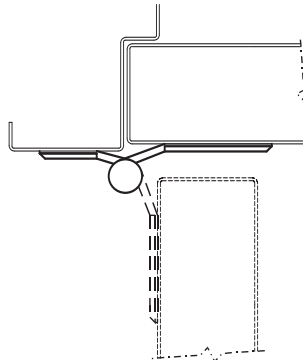
MCK TA2774



Full Surface Hinge

A fire labeled wood door (without sufficient hinge reinforcement) or a kalamein (metal-clad wood door) with channel iron frame. Recommended to hang door for 180° swing:
Full Surface Hinge. On fire labeled wood doors, the door leaf is hung using a back plate with grommet nuts and bolts. Another popular application for this type hinge is a tubular steel gate hung on a channel iron frame.

APPLICATION



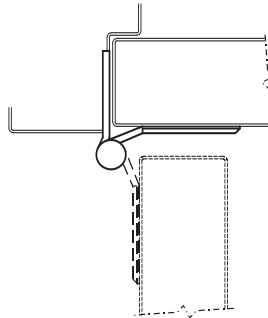
MCK TA2771



Half Surface Hinge

A fire labeled wood door (without sufficient hinge reinforcement) or a kalamein (metal-clad wood door) with hollow metal frame. Recommended to hang door for 180° swing:
Half Surface Hinge. On fire labeled wood doors, the door leaf is hung using a back plate with grommet nuts and bolts.

APPLICATION



MCK TA2772



McKINNEY Hinge Catalog

Hinge Selection

Special Flush Door/Wall/Frame Applications

McKINNEY

1-800-346-7707

www.mckinneyhinge.com

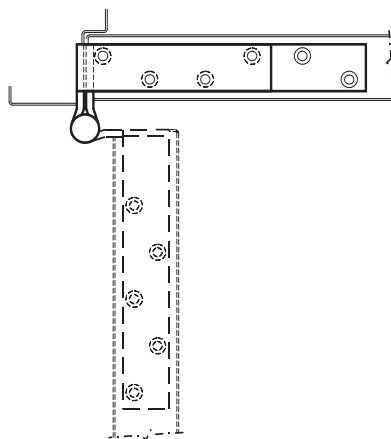
Variations of the basic hinge types may be needed to accommodate special situations in flush door/frame/wall conditions:

Note: General aforementioned guidelines regarding selection of basic hinge types with respect to door and frame types including fire labeled and applicable to any variations of those hinge types listed hereafter. Variations may not be listed or available in all basic hinge types. Consult the factory for availability.

Anchor Hinge

On high frequency and/or heavy wood or metal doors, additional anchoring of the hinges into the door and jamb may be necessary. This is a common application in schools, hospitals or any other buildings where heavy traffic and unusual strain on the doors, jamb and hinges is experienced. Recommended to hang door for 180° swing: **Full Mortise Anchor Hinge**. Sold in sets of one full mortise anchor hinge and two heavy weight full mortise hinges.

APPLICATION



MCK TA792



Note: Anchor hinges are handed and sold for either square edge doors on hinge side or beveled ($\frac{1}{8}$ " in 2") edge doors on hinge side. Hand and bevel (McKINNEY uses a "5" in front of the item number to indicate $\frac{1}{8}$ " in 2" bevel. Example: TA5792) should be specified.

Spring Hinge

Some door/frame/wall and even ceiling conditions make door closers impractical. An alternative closing device is the Spring Hinge. Generally, at least two hinges on a door must be spring hinges to provide adequate closing force. Note: NFPA requires a minimum of two (2) spring hinges on fire labeled doors. With adjustable spring tension on the hinge, the closing speed of the door is determined by the amount of closing force set on the hinge. Spring hinges may not be suitable for applications requiring a closing device with non-critical closing and latching speed adjustments. With respect to meeting ADA requirements for closing devices, carpeting and/or gasketing can interfere with latching. McKINNEY offers both **Full Mortise** and **Half Surface Spring Hinges**.

MCK 1502 (FULL MORTISE TYPE)



McKinney now offers a Reverse Action, 1502R, (by special request) which allows the door to remain in the open position. In addition, for high security applications, we offer the TRS option. This Tamper Resistant Screw is screwed into the tension ratchet after the proper tension has been set.

MCK 1572 (HALF SURFACE TYPE)



McKINNEY Hinge Catalog

Hinge Selection

Special Flush Door/Wall/Frame Applications

McKINNEY

1-800-346-7707

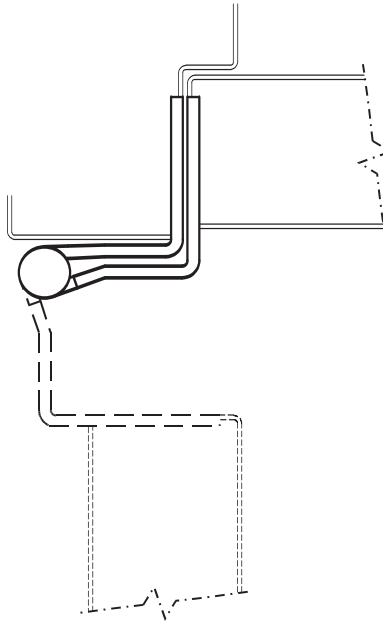
www.mckinneyhinge.com

Swing Clear Hinge

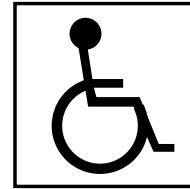
A condition which is common in barrier free openings, and especially in hospitals, is how to remove the door edge from the opening at 90° of swing with flush door/wall/ frame conditions. Recommended to hang door with swing to 180°: **Full Mortise Swing Clear Hinge**. The solution offered by this hinge is the offset of the hinge barrel to a location along the face of the hinge jamb, thereby removing the door edge and the barrel of the hinge as obstacles in the opening at 90° or more of swing. If the door is beveled on the hinge side, specify the appropriate beveled hinge and handing for your application*.

* Consult individual Swing Clear catalog pages for beveled hinge product numbers.

APPLICATION



MCK TA2895



Meets or exceeds
ANSI A117.1 - 1986
*Providing Accessibility
and Usability for
Physically
Handicapped People*

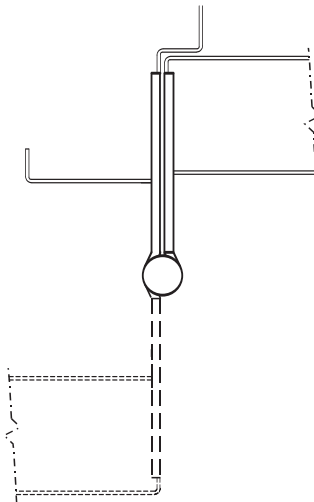
Not all door/frame/wall conditions are flush and, in order to hang the door, other variations on the basic hinge types may be needed.

Wide Throw Hinge

If the door is not flush with the frame, is sitting back in a deep reveal from the face of the frame with or without additional obstacles created by applied trim on the face of the frame or a deeper reveal caused by a projecting wall, and the door is to swing 180°, then a **Full Mortise Wide Throw Hinge** may be used in hanging the door.

Important in this regard is how to calculate the proper width of a wide throw hinge (rounded to the next higher whole number if result is not a whole number: e.g., 6", 7", 8", etc.)

APPLICATION



MCK TA2798



How to Calculate

1. If the door is sitting inside a deep frame reveal with no other obstacles (i.e., projecting trim or wall), add the depth of the reveal (distance from the face of the frame to the face of the door) to the recommended width of hinge used under flush conditions.
Example: A 6" wide (wide throw) hinge would replace a 4½" wide regular mortise hinge (used under flush conditions) if the depth of the reveal is 1½".
2. If the door is to clear projecting trim or wall **and the barrel of the hinge is not obstructed**, then calculate as follows:

- (a) double the size of the door
- (b) subtract ½" if the door thickness is less than or equal to 2¼" or subtract ¾" if the door thickness is greater than 2¼"
- (c) add for the additional depth from the face of the obstruction to the face of the door
- (d) add for clearance between the door and the face of the obstruction at 180° of swing (generally 1" or more).

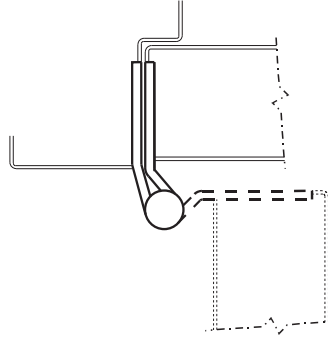
If, for instance, you have a 1¾" thick door:

- (a) 1¾" door thickness x 2 = 3½"
- (b) less ½" equals 3"
- (c) plus 3" for the additional depth from the face of the wall to the face of the door equals 6"
- (d) plus 1" for the clearance between the door and the face of the obstruction at 180° of swing equals 7" overall hinge width.

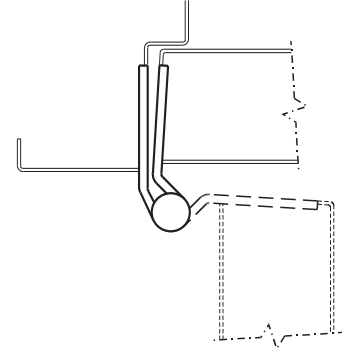
Raised Barrel Hinge

If the door is not flush with the frame but rather is sitting back in a deep reveal from the face of the frame a **Full Mortise Raised Barrel Hinge** may be used in hanging the door. The solution offered by this hinge is the offset of the hinge barrel away from the hinge jamb. Bevel of door edge should be specified.

RAISED BARREL SQUARE EDGE DOOR



RAISED BARREL BEVELED EDGE DOOR

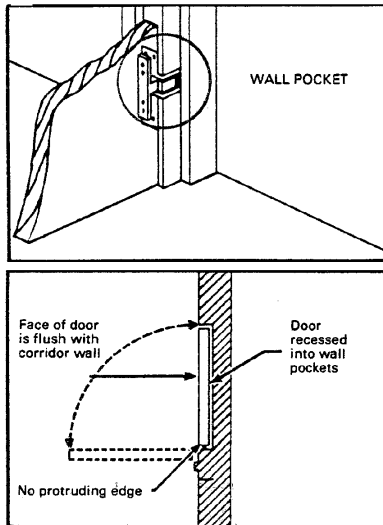


Pocket Hinge

An increasingly popular door, frame and wall condition in corridors is cross-corridor or double egress pairs of doors standing in wall pockets at 90° of swing, so as to be clear of the initial opening and out of the corridor altogether. Solution: **Pocket Hinge**.

As corridor doors are often fire labeled, the hardware must be approved for use in fire labeled openings. Solution: the **McKINNEY PH-4 Pocket Hinge**. U.L. approved for use on both hollow metal and steel covered composite fire doors rated up to 3 hours and on wood core type fire doors rated 20 minutes.

APPLICATION



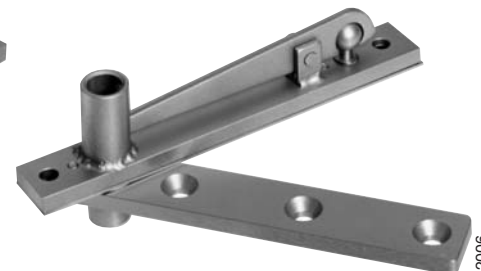
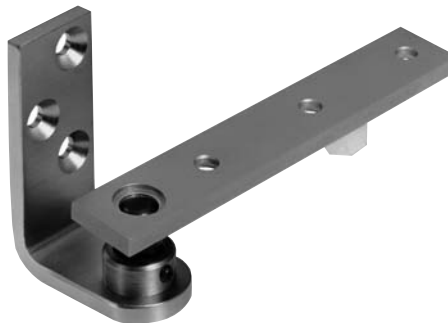
MCK PH-4



Pivots

Recommended for use on average frequency double acting doors in schools, hospitals, institutions and other public buildings. Not for use on labeled doors and frames.

EP-5J



Aluminum Continuous Hinges – GUARANTEED FOR THE LIFE OF THE OPENING

McKINNEY Aluminum Continuous Hinges consist of two anodized, full-height, bearing-gearled leaves that are held together by a full-length channel cap. This design provides proper alignment and eliminates premature wear. The geared construction and full-length channel cap seals the gap between the door and frame and provides privacy and security against prying. This feature also provides safety against pinched fingers especially in public areas where children are apt to move throughout the opening. The gear design ensures identical operation of each leaf, and even-distribution of load stress along the full length of the

door and frame which eliminates door sag and binding. Mortising is not necessary, and the hinge doubles as weather stripping on the hinge side. These hinges are tested and **certified by UL® (USA & CANADA)** to standards UL 10C and UBC7.2 (positive pressure) for up to a 3-hour (A-Label) Fire Listing for all 4'0"x10'0" and 8'0"x10'0" door and frame assemblies. Fire testing certification applies to all approved hollow metal and wood door assemblies in dry wall or masonry wall construction. FirePins™ are now only required on **3-Hour (A-label) Assemblies**. These hinges have been

cycle tested using a 150 lb. Door and are now certified fully functional after 1.5 million cycles. The screw hole locations on these hinges are ideally suited for use on **lead lined** doors (i.e. hospital X-ray rooms). Refer to the Aluminum Continuous Hinge page section for additional information.

FULL SURFACE CENTER PIVOT 58 SERIES



FULL SURFACE 22 SERIES

may be used as swing clear



FULL MORTISE 12, 14, 25 SERIES



HALF-SURFACE 54 SERIES



Steel and Stainless Steel Continuous Hinges – GUARANTEED FOR THE LIFE OF THE OPENING

McKINNEY Steel or Stainless Continuous Hinges are fabricated from independently machined 14 gauge cold rolled steel and finished in prime coat, or 304 stainless steel door leaves. The concealed Teflon-coated stainless steel pin and twin self-lubricated nylon bearings at each knuckle provides for proper alignment and smooth operation.

These hinges are **UL® (USA & CANADA)** up to a 3-hour (A-label) Fire Listing for 4'0"x8'0" single doors and 8'0"x8'0" pairs of doors. The non-handed, slim barrel design is recommended for new construction and retrofit installations. Refer to the Steel and Stainless Continuous Hinge page section for additional information.

FULL SURFACE MCK-FS302



SWING CLEAR MCK-HG311



FULL MORTISE MCK-FM300, MCK-HG305, MCK-HG315



HALF MORTISE MCK-HM304, MCK-HG306



Note: Not all products shown. Refer to pages 113 - 122 for additional information.

Quick Reference Chart

Door, Frame Wall Conditions	Frame Type	Door Type	Hinge Type	Variation of Basic Hinge Type Shown Below (See Note 2)	McKINNEY Example (See Note 3)
Flush*	Wood or Metal	Wood or Metal	Full Mortise	(not applicable)	TA2714
Flush*	Channel Iron	Wood or Metal	Half Mortise	(not applicable)	TA2774
Flush*	Channel Iron	Kalamein or Fire Labeled Wood Door (see Note 1)	Full Surface	(not applicable)	TA2771
Flush*	Metal	Kalamein or Fire Labeled Wood Door (see Note 1)	Half Surface	(not applicable)	TA2772
Flush*	Metal	Heavy and/or High Frequency Wood or Metal	Anchor	Full Mortise	TA792
Flush*	Wood or Metal	Wood or Metal Requiring Alternative Closing Device	Spring	Full Mortise Half Surface	1502, 1572
Flush*	Wood or Metal	Wood or Metal Required to Clear Opening at 90° of Swing	Swing Clear	Full Mortise	TA2895
Deep Frame Reveal	Wood or Metal	Wood or Metal with Maximum Swing of 90° to 110°	Raised Barrel	Full Mortise	RBTA2714
Deep Frame Reveal with or without Trim on the Face of the Frame or a Projecting Wall	Wood or Metal	Wood or Metal with swing to 180°	Wide Throw	Full Mortise	TA2798
Wall Pocket at 90° of swing	Metal	Wood or Metal	Pocket Hinge	(not applicable)	PH-4

* Includes door and frame conditions of up to 1/8" inset

Notes:

(1) Fire labeled wood door without sufficient hinge reinforcement. Door leaf is hung using back plate with grommet nuts and bolts.

(2) The four basic hinge types are full mortise, half mortise, full surface and half surface. Variations (i.e. anchor, swing clear, raised barrel, wide throw) are available in the basic types shown above but may not be available in all basic hinge types. Consult individual catalog pages for availability.

(3) Consult individual catalog pages for available sizes, weights, materials, versions, bearings and finishes. Hinges for doors beveled (1/8" in 2") on hinge side use 5000 series for 3K hinges (e.g. TA5792); use 4000 series for 5K hinges (e.g., TA4895).

Door Weights

The following wood and metal door weights are provided as a convenience to catalog users. They are approximate and will vary slightly among door manufacturers. The weight of the door hardware should be added to the weights listed below. For any thickness not shown, the individual manufacturer's catalog should be consulted.

Door Weights (Based upon 3'0"x7'0" Door Size) (Weights do not include hardware)				
Hollow Metal Door Weights by Gauge		Wood Door Weights by Door Thickness		
Door Gauge -	# Per Square Foot		# Per Square Foot	
20 Gauge Door	4	Door Thickness	1-3/8"	1-3/4"
18 Gauge Door	5	Particle/Mineral Core	4.75	5.25
16 Gauge Door	6	Stave Core Wood	3.75	4.25
14 Gauge Door	7	Hollow Core Wood	1.3	1.5

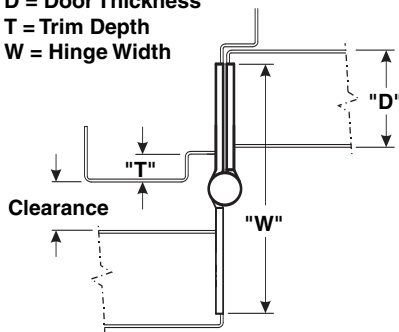
How to Determine the Proper Hinge Width

Knowing the door thickness and trim projection, use the following formula for determining minimum hinge width of all full mortise hinges:

- (1) Door thickness
- (2) Backset
- (3) Required Clearance
- (4) Inset

Door thickness minus the backset multiplied by 2, plus the required clearance, plus the inset (if applicable) will equal the proper hinge width.

D = Door Thickness
T = Trim Depth
W = Hinge Width



For doors up to 2 1/2" thick:
 $W = (2 \times D) + T$
For doors 2 1/2" to 3" thick:
 $W = (2 \times D) + (2 \times T) + 1/4"$

Trim Clearance		
Door Thickness	Hinge Width	Max Clearance Provided
1 3/8"	3 1/2"	1 1/4"
	4"	1 3/4"
1 3/4"	4"	1"
	4 1/2"	1 1/2"
	5"	2"
	6"	3"
2"	4 1/2"	1"
	5"	1 1/2"
	6"	2 1/2"
2 1/4"	5"	1"
	6"	2"

The table above indicates the trim clearance provided by hinges of specified widths on flush doors, not inset, of standard thickness. For doors of other thicknesses, apply the proper formula.

The hinge widths of half mortise, half surface and full surface hinges are standard, depending on the hinge length. Note that in these hinge types, the amount of clearance available is determined by the amount of offset and not by the hinge width.

Installation Type	Expected Frequency		
	Daily	Yearly	
COMMERCIAL			
Commercial Store Entrance	5,000	1,500,000	High
Office Building Entrance	4,000	1,200,000	
Theatre Entrance	1,000	450,000	
School Entrance	1,250	225,000	
School Restroom Door	1,250	225,000	
Store or Bank Entrance	500	150,000	
Office Building Restroom Door	400	118,000	Average
School Corridor Door	80	15,000	
Office Building Corridor Door	75	22,000	
Store Restroom Door	60	18,000	
RESIDENTIAL			
Entrance	40	15,000	Low
Restroom Door	25	9,000	
Corridor Door	10	3,600	
Closet Door	6	2,200	

Note: We recommend that bearing hinges be used on all above categories other than "Residential".

Recommended Number of Hinges per Door 3'0" Wide (Wood or Metal)	
Door Height in Inches (MM)	# of Hinges Per Door
Up to 60 (1524)	2
60 to 90 (1524 to 2286)	3
90 to 120 (2286 to 3048)	4

One Cycle = one complete opening and closing

* Heavy weight hinges should be used on all extra heavy doors or those exposed to high frequency use. Consult the factory for doors wider than 3'0". Five knuckle heavy weight hinges are four bearing. The following gauges of metal may apply:

Heavy weight 4-1/2" (114) high = .180 gauge
Heavy weight 5" (127) high = .190 gauge
Heavy weight 6" (152) high = .203 gauge

Note:

Five knuckle 8" (203) high hinges have six bearings.

Note:

On hinge size the dimension shown is the hinge height. Where full mortise or other hinges with two dimensions are used, the first dimension given is always the height. The second dimension is the hinge width when open.

Recommended Size of Hinges per Door (Wood or Metal)

Door Thickness in Inches (MM)	Door Width in Inches (MM)	Hinge Height in Inches (MM)	Hinge Gauge
1 3/8 (35)	Up to 36 (914)	3 1/2 (89)	.123
1 3/8 (35)	Over 36 (914)	4 (102)	.130
1 3/4 (44)	Up to 36 (914)	4 1/2 (114)	.134
1 3/4 (44)	Over 36 - 48 (914 - 1219)	5 (127)	.134
1 3/4 (44)	Over 48 (1219)	6 (152)	.160
2 - 2 1/2 (51 - 64)	Up to 42 (1067)	5 (127) HW	.190
2 - 2 1/2 (51 - 64)	Over 42 (1067)	6 (152) HW	.203

Underwriters' Laboratories Requirements

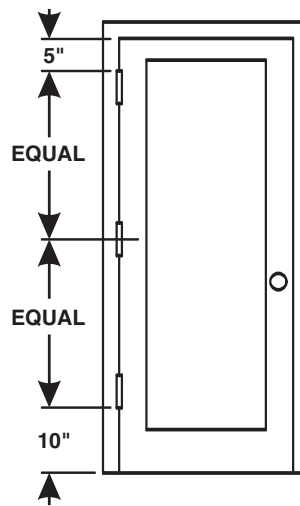
The requirements of the Underwriters' Laboratories, Inc., for fire door hardware are determined by door label, which in turn is established by the location of the opening. The following are the classifications of Underwriter's Laboratories, Inc.

Door Situation	Location
Class A	Fire Walls
Class B	Vertical Shafts
Class C	Corridor & Room Partitions
Class D	Exterior Walls (severe fire exposure)
Class D	Exterior Fire Escapes (severe fire exposure)
Class E	Exterior Walls (moderate fire exposure)
Class E	Exterior Fire Escapes (moderate fire exposure)

On all public and some private heavy construction three hinges are required for each door. This practice is standard under U.S. Government specifications and is required under most building codes and Fire Underwriters' specifications.

Three hinges assure proper door alignment and enable other hardware

to function properly. There is less door warping and less hinge wear. On light wood doors the alignment problem is as great as on heavy doors so less than three hinges should never be considered.



The top of the top hinge should be 5" from the jamb header.

The bottom of the bottom hinge should be 10" from the finished floor.

The center of the center hinge should be equidistant from the other two.

EXCEPTION:

The McKINNEY Anchor Hinge mounts at the very top of the door. On doors over 7'6" high, four hinges are required.

Table 1 Reference NFPA-80 Table 2-8.1.1 1995 Builders Hardware

Mortise and Surface Hinges, Pivots or Spring Hinges for Swinging Doors. Doors up to 60" (1.52 m) in height shall be provided with two hinges and an additional hinge for each additional 30" (0.76 m) of door height or fraction thereof. The distance between hinges shall be permitted to exceed 30" (0.76 m). Where spring hinges are used, at least two shall be provided.

Door Rating, Hr.	Maximum Door Size			Minimum Hinge Size		Type Hinge				
	Width ft. (m)	Height ft. (m)	Height in. (mm)	Thickness in. (mm)						
For 1 3/4" (44.5mm) or Thicker Doors										
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
3	1 1/2	1	3/4	1/2	1/3	4 (1.22)	8 (2.44)	4 1/2 (114.3)	0.134 (3.40)	Steel, Mortise or Surface
	1 1/2	3/4		1/2	1/3	3'2" (0.96)	8 (2.44)	6 (152.4)	0.225 (5.72)	Steel-Olive Knuckle or Paumelle
3	1 1/2	3/4		1/2	1/3	4 (1.22)	10 (3.05)	4 (101.6)	0.225 (5.72)	Steel Pivots (including top, bottom and intermediate)
	1 1/2	1	3/4	1/2	1/3	3 (0.91)	5 (1.52)	4 (101.6)	0.130 (3.30)	Steel Mortise or Surface
	1 1/2	1	3/4	1/2	1/3	2 (0.61)	3 (0.91)	3 (76.2)	0.092 (2.34)	Steel, Mortise or Surface
3	1 1/2	1	3/4	1/2	1/3	3 (0.91)	7 (2.13)	4 1/2 (114.3)	0.134 (3.40)	Steel, Mortise or Surface (labeled self closing spring type)
3	1 1/2	1	3/4	1/2	1/3	3 (0.91)	7 (2.13)	4 (101.6)	0.105 (2.67)	Steel, Mortise or Surface (labeled self closing spring type)
For 1 3/8" (34.93mm) Doors										
3	1 1/2		3/4	1/2	1/3	3 (0.91)	7 (2.13)	3 1/2 (88.9)	0.123 (3.12)	Steel, Mortise or Surface
3	1 1/2	1	3/4	1/2	1/3	2'8" (0.81)	7 (2.13)	3 1/2 (88.9)	0.105 (2.67)	Steel, Mortise (spring closing)

Notes:

(1) All hinges or pivots, except spring hinges, shall be of the ball-bearing type. Hinges or pivots employing other antifriction bearing surfaces are permitted if they meet the test requirements of ANSI A156.1, *Standard for Butts and Hinges*. Spring hinges shall be labeled.

(2) 4 1/2" (114mm) high, 0.180" (4.57mm) thick hinges shall be permitted for use on wide and heavy doors or doors that are subjected to heavy use or unusual stress.

(3) Some manufacturers can provide fire doors with hinges of lighter weight that are not of the ball bearing type where they are part of a listed assembly and meet the test requirements of ANSI

A156.1, *Standard for Butts and Hinges*, and have been tested to a minimum of 350,000 cycles.

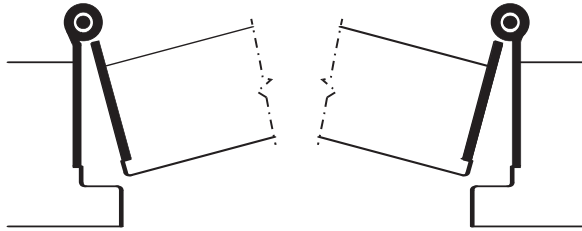
(4) Pivot sets made up of components that are smaller and/or of a lighter gauge than shown in Table 2-8.1.1 shall be permitted to be used, provided they meet the requirements of ANSI A156.4, *Door Controls (Closers)* and are in accordance with the manufacturers' labeled service procedures.

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Hand of Doors

All doors are handed - right or left. The following illustrations indicate clearly this "handing" as it is understood within the hardware industry.

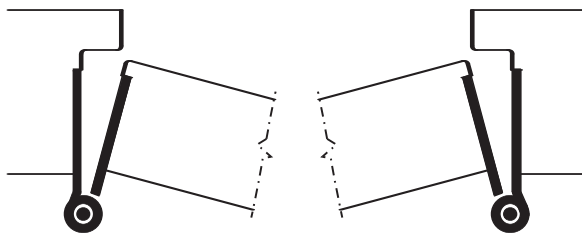
REGULAR DOORS OPENING IN



OUTSIDE
Left Hand Door takes left hand hinges

OUTSIDE
Right Hand Door takes right hand hinges

REVERSE DOORS OPENING OUT

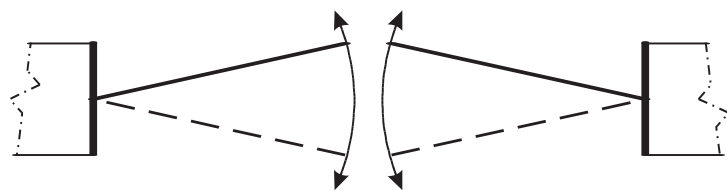


OUTSIDE
Left Hand Reverse Door takes right hand hinges

OUTSIDE
Right Hand Reverse Door takes left hand hinges

DOUBLE ACTING

Right Side of Hinge Left Side of Hinge



Left Side of Hinge
Left Hand Door

Outside

Right Side of Hinge
Right Hand Door

(Hand of door is determined from the outside)

When standing on outside of door and hinges are on the right, it is right hand.
When hinges are on the left, it is left hand.

A double acting door opens from you and toward you, therefore it is not called reverse like a single acting door.

Hand of Hinges

McKINNEY Anchor Hinges are handed right or left as are McKINNEY Moderne, Olive, Knuckle, Paumelle, Beveled Edge and CS Electric type hinges. Full surface, half surface and half mortise hinges with set screw (NRP) in the barrel are manufactured as reversibles (with no hole in plug).



A simple method of determining the hand of all loose joint hinges is to open the hinge full with the countersunk screw holes in view. If the hinge can be held by the right hand leaf and it does not fall apart, it is a right hand (RH) hinge. If the hinge must be held by the left hand leaf to keep it from falling apart, it is a left hand (LH) hinge.

The hand of hinges may be specified by suffixing the symbols RH or LH to the catalog number.

Swaging is the slight offset in the hinge leaves which permits them to close to a parallel position as the door closes.

Full Mortise

All hinges for full mortise applications are swaged. Normal swaging on standard and heavy gauge hinges provides a clearance of $\frac{1}{16}$ " when the leaves are parallel. Full mortise wide throw hinges have a clearance of $\frac{3}{32}$ ".



Hinge Opened



Hinge Closed

Full Surface

Hinges for full surface applications are not swaged. Blank hinges are for full surface welded application and are always furnished "flat back" unless specified otherwise when ordered.



Hinge Opened



Hinge Closed

Beveled Door

Hinges for beveled door applications have one leaf swaged at an angle of $3\frac{1}{2}^\circ$ ($\frac{1}{8}$ " in 2") to maintain proper door and frame clearance when doors are beveled on the hinge side. Specify handing on these hinges.



Hinge Opened



Hinge Closed

One Leaf Swaged

When only one leaf is swaged, the non-swaged leaf is approximately $\frac{1}{16}$ " shorter as a standard. For all hollow metal door and frame applications, both leaves must be the same width. On your order, specify "Leaves must be equal".



Hinge with One Leaf Swaged

One Leaf Swaged Flat

When only one leaf is swaged flat, the non-swaged leaf is approximately $\frac{3}{32}$ " shorter as a standard. For all hollow metal door and frame applications, both leaves must be the same width. On your order, specify "Leaves must be equal".



Hinge with One Leaf Swaged Flat

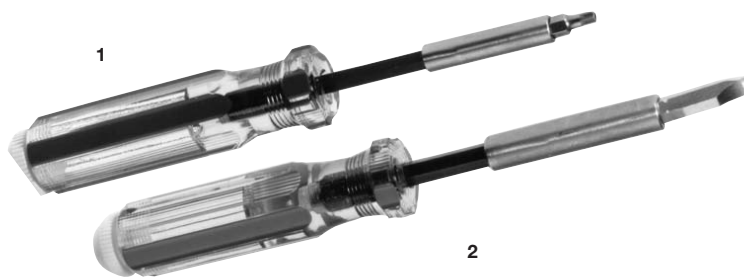
McKINNEY hinges are manufactured with templated screw hole locations and tolerances which conform to the American National Standards Institute (ANSI/BHMA A-156.7). McKINNEY publishes a complete listing of templates which list the overall hinge size, material gauge and exact screw hole location. The most current templates are found on our website @ www.mckinneyhinge.com. These templates should be consulted prior to any door or frame preparation.

TEMPLATED SCREW HOLES



McKINNEY offers a wide variety of screws and fasteners.

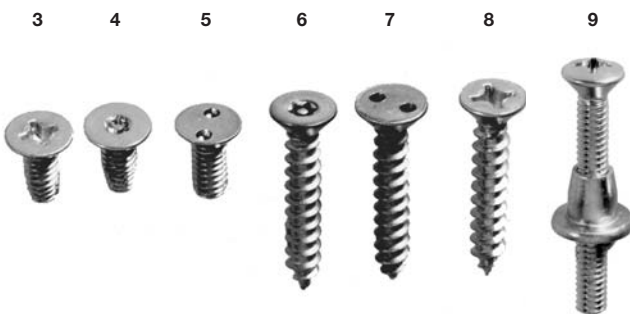
TORX DRIVER & SPANNER DRIVER



Shown:

1. Torx Bit and Driver
2. Spanner Bit and Driver
3. Phillips Head Machine Screw
4. Torx Head Machine Screw
5. Spanner Head Machine Screw
6. Torx Head Wood Screw
7. Spanner Head Wood Screw
8. Phillips Head Wood Screw
9. Oval Phillips Head Machine Screw with Grommet Nut

MACHINE AND WOOD SCREWS



Full Mortise Hinges

Size of Hinge	Machine Screws	Wood Screws
3½ x 3½	½ x 10-24	1 x 10
3½ x 5	½ x 10-24	1 x 10
4 x 4	½ x 12-24	1¼ x 12
4½ x 4	½ x 12-24	1¼ x 12
4½ x 4½	½ x 12-24	1¼ x 12
4 x 6	½ x 12-24	1¼ x 12
4 x 7	½ x 12-24	1¼ x 12
4½ x 6	½ x 12-24	1¼ x 12
4½ x 7	½ x 12-24	1¼ x 12
4½ x 8	½ x 12-24	1¼ x 12
5 x 4	½ x 12-24	1¼ x 12
5 x 4½	½ x 12-24	1¼ x 12
5 x 5	½ x 12-24	1¼ x 12
5 x 7	½ x 12-24	1¼ x 12
5 x 8	½ x 12-24	1¼ x 12
6 x 5	½ x ¼-20	1¼ x 14
6 x 6	½ x ¼-20	1¼ x 14
8 x 6	½ x ¼-20	1¼ x 14
8 x 8	½ x ¼-20	1¼ x 14

Half Mortise Hinges

Size of Hinge	Machine Screws
4½	½ x 12-24
5	½ x 12-24
6	½ x ¼-20

Swing Clear Hinges

Size of Hinge	Machine Screws	Thru Bolts
4½	½ x 12-24	2 x ¼-20
5	½ x 12-24	2 x ¼-20

Full Surface Hinges

Size of Hinge	Machine Screws	Thru Bolts & Grommet Nut
4½	½ x 12-24	2 x ¼-20
5	½ x 12-24	2 x ¼-20
6	½ x ¼-20	2 x ¼-20

Half Surface Hinges

Size of Hinge	Machine Screws	Thru Bolts & Grommet Nut
4½	½ x 12-24	2 x ¼-20
5	½ x 12-24	2 x ¼-20
6	½ x ¼-20	2 x ¼-20

Packing:

All five knuckle 4½ x 4½ full mortise steel hinges (except US-P) are packed all machine (8 ea.) x all wood (8 ea.) screws. Two and three knuckle, as well as all other sizes of five knuckle steel full mortise and all non-ferrous full mortise hinges are packed with all machine (8 ea.) x ½ wood (4 ea.) screws.

McKINNEY and Government Finish Symbols

U.S. Finish	Description	McKINNEY
USP	Primed for Painting	P
US 2C	Zinc Plated, Commercial	2C
US 2G	Zinc Plated, Governmental	2G
US 3	Bright Brass	3
US 4	Dull Brass	4
US 5	Dull Brass, Oxidized	5
US 7	Brass, Nickel Oxidized, Bright Relieved	7
US 9	Bright Bronze	9
US 10	Dull Bronze	10
US 10A	Antiqued Bronze, Oiled and Lacquered	10A
US 10B	Antiqued Bronze, Oiled	10B
US 11	Dull Bronze, Oxidized	11
US 14	Bright Nickel Plated	14
US 15	Dull Nickel Plated	15
US 15A	Nickel Oxidized Relieved	15A
US 17A	Half Polished Iron, Smooth	17A
US 20	Statuary Bronze, Light	20
US 20A	Statuary Bronze, Dark	20A
US 26	Bright Chromium	26
US 26D	Dull Chromium	26D
US 32	Polished Stainless Steel	32
US 32D	Dull Stainless Steel	32D

Every effort is made by McKINNEY to furnish finishes which do comply with the U.S. Standard. However, we cannot guarantee that our finish will match other manufacturers' finish. Where a special finish or a matched finish is required, a sample must be submitted with the order.

McKINNEY Powder Coat Finishes

Aluminum	AP
Beige	PB
Gold	PG
Grey Tone	GT
White	PW
Bright Brass with Clear Powder Coat	3-C
Dull Brass with Clear Powder Coat	4-C
Dull Nickel with Clear Powder Coat	15-C
Co-LaQ - Dark	D-3
Co-LaQ - Black	D-4
Custom Polymer Coating	*

McKINNEY's electrostatically applied polyester powder finishes have been tested to exceed all recommended salt-spray testing requirements. These finishes have also been proven to be by far the best finish for steel hinges in areas where hardware is susceptible to corrosion such as caused by high humidity, moisture or coastal environments.

McKINNEY and B.H.M.A. Finish Symbols

B.H.M.A. Code	Finish Description	Base Material	McKINNEY Equivalent
600	Primed for Painting	Steel	USP
602	Zinc Plated, Commercial	Steel	US2C
603	Zinc Plated, Governmental	Steel	US2G
605	Bright Brass	Brass	US3
606	Dull Brass	Brass	US4
609	Dull Brass, Oxidized	Brass	US5
610	Brass, Nickel Oxidized, Bright Relieved	Brass	US7
611	Bright Bronze	Bronze	US9
612	Dull Bronze	Bronze	US10
613	Antiqued Bronze, Oiled	Bronze	US10B
616	Dull Bronze, Oxidized	Bronze	US11
618	Bright Nickel Plated	Brass, Bronze	US14
619	Dull Nickel Plated	Brass, Bronze	US15
620	Nickel Oxidized Relieved	Brass, Bronze	US15A
621	Half Polished Iron, Smooth	Brass, Bronze	US17A
623	Statuary Bronze, Light	Bronze	US20
624	Statuary Bronze, Dark	Bronze	US20A
625	Bright Chromium	Brass, Bronze	US26
626	Dull Chromium	Brass, Bronze	US26D
629	Polished Stainless Steel	Stainless Steel 300 Series	US32
630	Dull Stainless Steel	Stainless Steel 300 Series	US32D
632	Bright Brass	Steel	US3
633	Dull Brass	Steel	US4
636	Dull Brass, Oxidized	Steel	US7
637	Bright Bronze	Steel	US9
639	Dull Bronze	Steel	US10
640	Antique Bronze, Oiled	Steel	US10B
643	Dull Bronze, Oxidized	Steel	US11
645	Bright Nickel Plated	Steel	US14
646	Dull Nickel Plated	Steel	US15
647	Nickel Oxidized Relieved	Steel	US15A
648	Half Polished Iron, Smooth	Steel	US17A
649	Statuary Bronze, Light	Steel	US20
650	Statuary Bronze, Dark	Steel	US20A
651	Bright Chromium	Steel	US26
652	Dull Chromium	Steel	US26D

McKINNEY hinge finishes meet or exceed the American National Standards for materials and finishes (ANSI/BHMA - A156.18 and BHMA 1301).

Ferrous Base

Steel base hinges which are polished and plated are dipped in lacquer, baked and dried. US4 Finish over steel, a purely decorative finish which in the past was susceptible to pitting is now furnished with a nickel base for added durability, and followed by 20 minutes of brass and then lacquered. This new process allows McKinney to have one of the best US4 finish in the industry. However, brass finishes over steel should not be cleaned with any type of paint remover or abrasive method which will remove the lacquer.

Our US10B is a true oil rubbed finish. However, due to excessive handling on installation of electric hinges and sample cards, we use a 10BL with a very light lacquer to protect the finish.

Steel hinges which are supplied in prime coat are finished with Powder Coat Prime finish which is ready for painting in the field, or durable enough to let stand on its own.

Non-Ferrous Base (should be used for exterior installations).

Brass or Bronze hinges are polished and plated.

Stainless Steel hinges are passivated to remove any impurities in the stainless material, then polished to a satin finish (US32D) or can be polished to a bright finish (US32).