

**SECTION 08 71 00**  
**DOOR HARDWARE**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. Door hardware and related items necessary for complete installation and operation of doors.

**1.2 RELATED WORK**

- A. Caulking: Section 07 92 00 JOINT SEALANTS.
- B. Application of Hardware: Section 08 14 00, WOOD DOORS and Section 08 11 13, HOLLOW METAL DOORS AND FRAMES .
- C. Painting: Section 09 91 00, PAINTING.

**1.3 GENERAL**

- A. All hardware shall comply with UFAS, (Uniform Federal Accessible Standards) unless specified otherwise.
- B. Hardware for application on metal and wood doors and frames shall be made to standard templates. Furnish templates to the fabricator of these items in sufficient time so as not to delay the construction.
- C. The following items shall be of the same manufacturer, if possible, except as otherwise specified:
  - 1. Mortise locksets.
  - 2. Mortise latchsets.
  - 3. Hinges for hollow metal.
  - 4. Surface applied overhead door closers.

**1.4 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Hardware Schedule: Prepare and submit hardware schedule in the following form:

Hardware Item	Quantity	Size	Reference Publication Type No.	Finish	Mfr. Name and Catalog No.	Key Control Symbols	UL Mark (if fire rated and listed)	ANSI/BHMA Finish Designation

C. Samples and Manufacturers' Literature:

1. Samples: All hardware items (proposed for the project) that have not been previously approved by Builders Hardware Manufacturers Association shall be submitted for approval. Tag and mark all items with manufacturer's name, catalog number and project number.
2. Samples are not required for hardware listed in the specifications by manufacturer's catalog number, if the contractor proposes to use the manufacturer's product specified.

D. Certificate of Compliance and Test Reports: Submit certificates that hardware conforms to the requirements specified herein. Certificates shall be accompanied by copies of reports as referenced. The testing shall have been conducted either in the manufacturer's plant and certified by an independent testing laboratory or conducted in an independent laboratory, within four years of submittal of reports for approval.

**1.5 DELIVERY AND MARKING**

A. Deliver items of hardware to job site in their original containers, complete with necessary appurtenances including screws, keys, and instructions. Tag one of each different item of hardware and deliver to Contracting Officer's Technical Representative (COTR), with approval of Contracting Officer, for reference purposes. Tag shall identify items by Project Specification number and manufacturer's catalog number. These items shall remain on file in the COTR's office until all other similar items have been installed in project, at which time the COTR will deliver items on file to Contractor for installation in predetermined locations on the project.

**1.6 INSTRUCTIONS**

A. Hardware Set Symbols on Drawings: Except for protective plates, door stops, mutes, thresholds and the like specified herein, hardware

requirements for each door are indicated on drawings by symbols. Symbols for hardware sets consist of letters "HW" followed by a number. Each number designates a set of hardware items applicable to a door type.

- B. Manufacturers' Catalog Number References: Where manufacturers' products are specified herein, products of other manufacturers which are considered equivalent to those specified may be used. Manufacturers whose products are specified are identified by abbreviations as follows:

	Adams-Rite	Adams Rite Mfg. Co.	Glendale, CA
Basis-of-Design	Best	Best Access Systems	Indianapolis, IN
	Glynn Johnson	Glynn Johnson Co.	Chicago, IL
Basis-of-Design	LCN	LCN Closers	Princeton, IL
	Firemark	Rixon-Firemark Co.	Chicago, IL
Basis-of-Design	Hager	Hager Hinge Company	Saint Louis, MO
Basis-of-Design	NGP	National Guard Products (Gaskets and Door bottoms)	
Basis-of-Design	Rockwood	Rockwood Manufacturing, Inc. (Door Protection)	Rockwood PA
	Stanley	The Stanley Works	New Britain, CT
	Trimco	Triangle Brass Mfg. Co.	Los Angeles, CA
	Unican	Simplex Security Systems	Collinsville, CT
	Von Duprin	Von Duprin Hardware Co.	Indianapolis, IN

- C. Keying: All cylinders shall be keyed into existing Grand Master keying system. Provide removable core cylinders that are removable only with a special key or tool without disassembly of knob or lockset. Cylinders shall be 7 pin type. Keying information shall be furnished at a later date by the COTR.

#### 1.7 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the

basic designation only. In text, hardware items are referred to by series, types, etc., listed in such specifications and standards, except as otherwise specified.

B. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI/BHMA):

A156.1-06.....Butts and Hinges  
A156.2-03.....Bored and Pre-assembled Locks and Latches  
A156.4-00.....Door Controls (Closers)  
A156.5-01.....Auxiliary Locks and Associated Products  
A156.6-05.....Architectural Door Trim  
A156.13-05.....Mortise Locks and Latches Series 1000  
A156.16-02.....American National Standard for Auxiliary  
Hardware  
A156.18-00.....Materials and Finishes  
A156.22-05.....Door Gasketing and Edge Seal Systems  
A250.8-03.....Standard Steel Doors and Frames

C. National Fire Protection Association (NFPA):

80-06.....Fire Doors and Fire Windows  
101-05.....Life Safety Code

D. Underwriters Laboratories, Inc. (UL):

Building Materials Directory (2007)

**PART 2 - PRODUCTS**

**2.1 BUTT HINGES**

A. ANSI A156.1. Provide only three-knuckle hinges, except five-knuckle where the required hinge type is not available in a three-knuckle version (e.g., some types of swing-clear hinges). The following types of butt hinges shall be used for the types of doors listed, except where otherwise specified:

1. Interior Doors: Type A8112 for doors 900 mm (3 feet) wide or less and Type A8111 for doors over 900 mm (3 feet) wide.

B. Provide quantity and size of hinges per door leaf as follows:

1. Doors up to 1210 mm (4 feet) high, including individual door leaves of dutch door assemblies: 2 hinges.

2. Doors 1210 mm (4 feet) to 2260 mm (7 feet 5 inches) high: 3 hinges minimum.

3. Doors up to 900 mm (3 feet) wide, standard weight: 114 mm x 114 mm (4-1/2 inches x 4-1/2 inches) hinges.

4. Doors over 900 mm (3 feet) to 1065 mm (3 feet 6 inches) wide,  
standard weight: 127 mm x 114 mm (5 inches x 4-1/2 inches).
5. Doors over 1065 mm (3 feet 6 inches) to 1210 mm (4 feet), heavy  
weight: 127 mm x 114 mm (5 inches x 4-1/2 inches).
6. Provide heavy-weight hinges where specified.
7. At doors weighing 70 kg (150 lbs.) or more, furnish 127 mm (5  
inch) high hinges.

## **2.2 OVERHEAD CLOSERS**

- A. Conform to ANSI A156.4, Grade 1.
- B. Closers shall conform to the following:
  1. The closer shall have 50 percent adjustable closing force over  
minimum value for that closer and have adjustable hydraulic back  
check effective between 60 degrees and 85 degrees of door opening.
  2. Size Requirements: Size closers in accordance with manufacturer's  
recommendations or provide multi-size closers, sizes 1 through 6.
  3. Material of closer shall be forged or cast iron or cast aluminum.
  4. Arm and brackets for closers shall be steel, malleable iron or high  
strength ductile cast iron.
  5. Closers shall have full size cover.
  6. Closers shall have adjustable hydraulic back-check and separate  
valves for closing and latching speed.

## **2.3 DOOR STOPS**

- A. Conform to ANSI A156.16.
- B. Provide door stops wherever an opened door or any item of hardware  
thereon would strike a wall, column, equipment or other parts of  
building construction.
- C. Where cylindrical locks with turn pieces or pushbuttons occur, equip  
wall bumpers Type L02251 (rubber pads having concave face) to receive  
turn piece or button.

## **2.4 LOCKS AND LATCHES**

- A. Conform to ANSI A156.2. Locks and latches for doors 45 mm (1-3/4 inch)  
thick or over shall have beveled fronts. Lock cylinders shall have not  
less than seven pins. Cylinders for all locksets shall be removable  
core type. Cylinders shall be furnished with construction removable  
cores and construction master keys. Cylinder shall be removable by  
special key or tool. Construct all cores so that they will be  
interchangeable into the core housings of all mortise locks, rim locks,  
cylindrical locks, and any other type lock included in the Grand Master

Key System. Disassembly of lever or lockset shall not be required to remove core from lockset. Provide temporary keying device or construction core of allow opening and closing during construction and prior to the installation of final cores.

- B. In addition to above requirements, locks and latches shall comply with following requirements:
1. Mortise Lock and Latch Sets: Conform to ANSI/BHMA A156.13. Mortise locksets shall be series 1000, minimum Grade 2. All locksets and latchsets shall have lever handles similar to Falcon S-lever Design. Lever handle shall be fabricated from wrought stainless steel. No substitute lever design or material shall be accepted. All locks and latchsets shall be furnished with curved lip strike and wrought box. Furnish armored fronts for all mortise locks.
  2. Cylindrical Lock and Latch Sets: levers shall meet ADA (Americans with Disabilities Act) requirements. Cylindrical locksets shall be series 4000 Grade I. Knobs for series 4000 lock and latch sets shall have 57 mm (2-1/4 inch) diameters.
  3. Auxiliary locks, including deadbolts, shall be as specified under hardware sets and conform to ANSI A156.5.

## 2.5 KEYS

- A. Stamp all keys with change number and key set symbol. Furnish keys in quantities as follows:

Locks/Keys	Quantity
Cylinder locks	2 keys each
Cylinder lock change key blanks	10 each different key way
Master-keyed sets	6 keys each
Control key	1 key

## 2.6 PROTECTION PLATES.

- A. Conform to ANSI Standard A156.6.
- B. Provide protective plates as specified below:
1. Kick-mop plates: stainless steel.
  2. Provide kick-mop plates for both sides of each new door, except where noted as not required. Kick-mop plates shall be 200 mm (8 inches) high. On push side of doors where jamb stop extends to floor, make combination kick-mop plates 1-1/2 inches less than width of door, Extend all other combination kick-mop plates to within 1/4

inch of each edge of doors. Kick mop plates shall butt astragals.

For jamb stop requirements, see specification sections pertaining to door frames.

3. Kick-mop plates are not required on following door sides:

a) Armor plate side of doors;

4. Armor plates for doors are listed under Article "Hardware Sets".

Armor plates shall be 875 mm (35 inches) high and 38 mm (1-1/2 inches) less than width of doors. Where top of intermediate rail of door is less than 875 mm (35 inches) from door bottom, extend armor plates to within 13 mm (1/2 inch) of top rail.

## **2.7 AUTOMATIC DOOR BOTTOM SEAL AND RUBBER GASKET DOOR SEALS**

A. Conform to ANSI A156.22.

B. Automatic Door Bottom Seal: Provide mortise or under-door type. For mortise automatic door bottoms, provide type specific for hollow metal door construction.

C. Gasketing shall be installed at the inside edge of the hinge and head and latch sides of door frame. Frames shall be toleranced for a 3 mm (1/8 inch) clearance between door and frame. Frames shall be treated with tape primer prior to installation.

## **2.8 MISCELLANEOUS HARDWARE**

A. Access Doors (including Sheet Metal, Screen and Woven Wire Mesh Types): Equip each single or double metal access door with Lock Type E76213, conforming to ANSI A156.5. Key locks as directed. Ship lock prepaid to the door manufacturer. Hinges shall be provided by door manufacturer.

B. Mutes: Conform to ANSI A156.16. Provide door mutes or door silencers Type L03011, of white or light gray color, on each steel door frame. Furnish 3 mutes for single doors. Mutes shall be adhered to door frames. Do not drill into door frames.

## **2.9 FINISHES**

A. Exposed surfaces of hardware shall have ANSI A156.18, finishes as specified below. Finishes on all hinges, pivots, closers, thresholds, etc., shall be as specified below under "Miscellaneous Finishes."

B. 626 or 630: All surfaces on interior of buildings, except where other finishes are specified.

C. Miscellaneous Finishes:

1. Hinges --interior doors: 630.

2. Door Closers: Factory applied paint finish, Dull or Satin Aluminum color.

3. Other primed steel hardware: 652.

D. Hardware Finishes for Existing Buildings: U.S. Standard finishes shall match finishes of hardware in (similar) existing spaces except where otherwise specified.

## **2.10 BASE METALS**

Apply specified U.S. Standard finishes on different base metals as following:

Finish	Base Metal
652	Steel
626	Brass or bronze
630	Stainless steel

## **PART 3 - EXECUTION**

### **3.1 HARDWARE HEIGHTS**

- A. For existing buildings locate hardware on doors at heights to match existing hardware. The Contractor shall visit the site, verify location of existing hardware and submit locations to COTR for approval.
- B. Hardware Heights from Finished Floor: Unless noted otherwise, mount hardware as indicated below:
1. Locksets and latch sets centerline of strike 1000 mm (40-5/16 inches).
  5. Push plates and push-pull shall be 1250 mm (50 inches) to top of plate.
  2. Locate other hardware at standard commercial heights.

### **3.2 INSTALLATION**

- A. Closer devices shall be equipped and mounted to provide maximum door opening permitted by building construction or equipment. Closers shall be mounted regular arm. Where closers are mounted on doors they shall be mounted with sex nuts and bolts; foot shall be fastened to frame with machine screws.
- B. Substitute parallel arm or top jamb mounting for regular arm mounting where the following conditions occur:
1. Where door swing, in full open position, would be limited to less than 90 degrees due to partition construction and closer location.
  2. Where door to room opens outward into corridor .



C. Hinge Size Requirements:

Door Thickness	Door Width	Hinge Height
45 mm (1-3/4 inch)	900 mm (3 feet) and less	113 mm (4-1/2 inches)
45 mm (1-3/4 inch)	Over 900 mm (3 feet) but not more than 1200 mm (4 feet)	125 mm (5 inches)

D. Hinge leaves shall be sufficiently wide to allow doors to swing clear of door frame trim.

E. Hinges Required Per Door:

Doors over 1500 mm (5 ft) high and not over 2280 mm (7 ft 6 in) high	3 butts
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F. Fastenings: Suitable size and type and shall harmonize with hardware as to material and finish.

G. After locks have been installed; show in presence of the Contracting Officer's Technical Representative (COTR), with approval of the Contracting Officer, that keys operate their respective locks in accordance with keying requirements. (All keys, Master Key level and above shall be sent Registered Mail to the Medical Center Director along with the bitting list. Also a copy of the invoice shall be sent to the COTR for his records.) Installation of locks which do not meet specified keying requirements shall be considered sufficient justification for rejection and replacement of all locks installed on project.

**3.3 HARDWARE SETS**

A. Following sets of hardware correspond to hardware symbols shown on drawings. Only those hardware sets that are indicated in Division 08 Section "Door Schedule" will be required. Disregard hardware sets listed in specifications but not shown on drawings.

HARDWARE SETS
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HARDWARE SETS	
<u>HW 01</u> Butts (as required for Dutch doors) Mortise Lockset (F07 function) at bottom leaf Deadbolt top leaf/strike on bottom leaf. Kick-mop plate on pull side Armor plate on push side. Wall stop	<u>HW 02</u> Butts as required Latchset (F01 function) Closer Door gaskets Automatic Door Bottom seal. Kick-mop plate Wall stop
<u>HW 03</u> Butts as required Latchset (F01 function) Closer Set Seals Kick-mop plate on pull side Armor plate on push side.	<u>HW 04</u> Butts as required Mortise Lockset (F07 function) Closer Kick-mop plate

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