
SECTION 08 71 00
DOOR HARDWARE**PART 1- GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.
- B. This section includes the following:
1. Hinges.
 2. Lock cylinders and keys.
 3. Lock and latch sets.
 4. Wall, Floor Stops, & Bolts.
 5. Exit Devices.
 6. Push/pull units.
 7. Overhead Closers and Automatic Door Operators.
 8. Overhead Stops & Holders.
 9. Kick, Mop, and Armor Plates.
 10. Gasketing & Seals.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 6 Section "Interior Architectural Woodwork" for cabinet hardware.
 2. Division 8 Section "Standard Steel Doors and Frames" for silencers integral with hollow metal frames.
 3. Division 8 Section "Flush Wood Doors" for factory pre-fitting and factory pre-machining of doors for door hardware.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification sections.
- B. Product data including manufacturer's technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.

Final hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:

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- a. Type, style, function, size, and finish of each hardware item.
 - b. Name and manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of each hardware set cross referenced to indications on Drawings both on floor plans and in door and frame schedule.
 - e. Explanation of all abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for hardware.
 - g. Door and frame sizes and materials.
 - h. Keying information.
2. Submittal Sequence: Submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by door hardware, and other information essential to the coordinated review of schedule
 3. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks have been fulfilled.
- C. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawing of other work to confirm that adequate provision is made for locating and installing door hardware to comply with indicated requirements.
 - D. When matching an existing facility, an onsite coordinated walk through by door hardware supplier and general contractor shall take place. Lever style of locksets, lengths of hardware such as push bars & pull handles or any other unique hardware applications that may deviate from the specified hardware, shall be noted during the submittal to match for approval. Verification of these existing conditions, with intent of remaining with the same hardware manufacturers and finishes, is required prior to procurement.

1.4 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) From a single manufacturer
- B. Supplier Qualification: A recognized architectural door hardware supplier, with warehousing facilities within 50 miles of the job site that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that employs an experienced architectural hardware consultant who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.
 1. Require supplier to meet with Owner to finalize keying requirements and to obtain final instructions in writing.
- C. Fire-Rated Openings: Provide door hardware for fire-rated openings that comply with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to Protect tested by UL, Warnock Hersey, FM, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of door indicated in compliance with requirements of fire-rated door and door frame labels

1.5 PRODUCT HANDLING

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- A. Tag each item or package separately with identification related to final hardware schedule and include basic installation instructions with each item or package.
 - B. Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set number of approved hardware schedule. Two or more identical sets may be packed in same container.
 - C. Inventory door hardware jointly with representative of hardware supplier and hardware installer until each is satisfied that count is correct.
 - D. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).
 - E. Provide secure lock-up for door hardware delivered to the Project but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1.6 MAINTENANCE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include the following: (Manufacturer whose name is prefixed with an asterisk *, indicates the manufacturer whose products are listed in the schedule at the end of this section.)
 1. Hinges:
 - a. *Ives
 - b. McKinney
 - c. Hager
 2. Lock, Cylinders and Keys:
 - a. *Schlage ND Series
 - b. *Primus Level 8
 3. Wall, Floor Stops, & Bolts:
 - a. *Ives
 - b. Rockwood
 - c. Trimco
 4. Exit Devices, Trims, Mullions, Electric Strikes, Power Suppliers
 - a. *Von Duprin
 6. Push/Pull Units:
 - a. *Ives
 - b. Rockwood

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7. Overhead Closers and Automatic Door Operators:
 - a. *LCN
 8. Overhead Stops & Holders:
 - a. * Glynn Johnson
 9. Kick, Mop, and Armor Plates:
 - a. * Ives
 - b. Rockwood
 - c. Trimco
 10. Gasketing & Seals:
 - a. * NGP
 - d. Pemko
 - e. Hager

2.2 SCHEDULED HARDWARE

- A. Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of finish hardware are indicated in the "Hardware Schedule" at the end of this Section. Products are identified by using hardware designation numbers of the following:
 1. Manufacturer's Product Designation: The product designation and name of one manufacturer are listed for each hardware type required for the purpose of establishing minimum requirements. Provide either the product designated or, where more than one manufacturer is specified under the Article "Manufacturers" in Part 2 for each hardware type, the comparable product of one of the other manufacturers that complies with requirements.

2.3 MATERIALS AND FABRICATION

- A. Manufacturer's Name Plate: Do not use manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise acceptable to Architect.
 1. Manufacturer's identification will be permitted on rim of lock cylinders only.
- B. Base Metals: Produce hardware units of basic metal and forming method indicated using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware unit for finish designations indicated.
- C. Fastener: provide hardware manufactured to conform to published templated, generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.
- D. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.

2.4 HINGES, BUTTS, AND PIVOTS

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- A. Templates: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
 - B. Screws: Provide Phillips flat-head screws complying with the following requirements:
 - 1. For metal doors and frames install machine screws into drilled and tapped holes.
 - 2. For wood doors and frames install wood screws.
 - 3. For fire-rated wood doors install #12 x 1 1/4-inch (32mm), threaded-to-the-head steel wood screws.
 - 4. Finish screw heads to match surface of hinges or pivots
 - C. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
 - 1. Out-Swing Exterior Doors: Nonremovable pins.
 - 2. Interior Doors: Non rising pins.
 - 3. Tips: Flat button and matching plug, finished to match leaves, except where hospital tip (HT) indicated.
 - D. Number of Hinges: Provide number of hinges indicated but not less than 3 hinges per door leaf for doors 90 inches (2250mm) or less in height and one additional hinge for each 30 inches (750mm) of additional height.
 - 1. Fire-Rated Doors: Not less than 3 hinges per door leaf for doors 86 inches (2150mm) or less in height with same rule for additional hinges.

2.5 LOCK CYLINDERS AND KEYING

- A. Existing System: Provide Schlage Primus lock cylinders, keyed into the owner's existing Primus Level 8 keying system.

2.6 LOCKS, LATCHES, AND BOLTS

- A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set, unless otherwise indicated.
 - 1. Provide flat lip strikes for locks with 3-piece, antifriction latch bolts as recommended by manufacturer.
 - 2. Provide extra-long strike lips for locks used on frames with applied wood casing trim.
 - 3. Provide recess type top strikes for bolts locking into head frames, unless otherwise indicated.
- B. Lock Throw: Provide 5/8-inch (16mm) minimum throw of latch on pairs of doors. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.
 - 1. Provide 1/2-inch (13mm) minimum throw of latch for other bored and preassembled types of locks and 3/4-inch (19mm) minimum throw of latch for mortise locks. Provide 1-inch (25mm) minimum throw for all dead bolts.
- C. Flush Bolt Heads: Minimum of 1/2-inch (13mm) diameter rods of brass, bronze, or stainless steel with minimum 12-inch (300mm) long rod for doors up to 84 inches (2100mm) in heights. Provide longer rods as necessary for doors exceeding 84 inches (2100mm) in height.

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- D. Exit Device Dogging: Except on fire-rated doors where closers are provided on doors equipped with exit devices, equip the unit with keyed dogging device to keep the latch bolt retracted, when engaged.

2.7 PUSH/PULL UNITS

- A. Exposed Fasteners: Provide manufacturer's standard exposed fasteners for installation, thru bolted for matched pairs but not for single units.
- B. Concealed Fasteners: Provide manufacturer's special concealed fastener system for installation, thru bolted for matched pairs but not for single units.

2.8 CLOSERS AND DOOR CONTROL DEVICES

- A. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit depending on size of door, exposure to weather, and anticipated frequency of use.
 - 1. Where parallel arms are indicated for closers, provide closer unit one size larger than recommended for use with standard arms.
 - 2. Provide parallel arms for all overhead closers, except as otherwise indicated.
- B. Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped, provide adjustable units complying with ANSI A117.1 provisions for door opening force and delayed action closing.
- C. Combination Door Closers and Holders: Provide units designed to hold door in open position under normal usage and to release and close door automatically under fire conditions. Incorporate an integral electromagnetic holder mechanism designed for use with UL listed fire detectors, provided with normally closed switching contacts.

2.9 DOOR TRIM UNITS

- A. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units consisting of either machine screws or self-tapping screws.
- B. Fabricate edge trim of stainless steel to fit door thickness in standard lengths or to match height of protection plates.
- C. Fabricate protection plates not more than 2 inches less than door width on the push side by the height indicated.
 - 1. Metal Plates: Stainless Steel, .050 inch (U.S. 16 gage) (1.6mm).

2.10 HARDWARE FINISHES

- A. Match items to the manufacturer's standard color and texture finish for the latch and lock sets (for push-pull units if no latch or lock sets).
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

C. The designations used in schedules and elsewhere to indicate hardware finishes are the industry recognized standard commercial finishes, except as otherwise noted.

1. Rust-Resistant Finish: For iron and steel base metal required for exterior work and in areas shown as "High Humidity" areas (and when designed with the suffix-RR), provide 0.2ml (0.005mm) thick copper coating on base metal before applying brass, bronze, nickel, or chromium plated finishes.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Mount hardware units at heights indicated in following applicable publication, except as specifically indicated or required to comply with governing regulation and except as otherwise directed by Architect.
 1. "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Section. Do not install surface mounted items until finishes have been completed on the substrates involved.
- C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Joint Sealers."
- F. Weatherstripping and Seals: Comply with manufacturers' instructions and recommendations to the extent installation requirements are not otherwise indicated.

3.2 ADJUSTING, CLEANING, AND DEMONSTRATING

- A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Instruct Owner's personnel in proper adjustment and maintenance of door hardware and hardware finishes.

3.3 ELECTRONIC DOOR HARDWARE (RESPONSIBILITY)

- A. Hardware supplier is responsible to furnish and install all low voltage wiring for all electronic door hardware provided in this section, including electronic exit devices, power supplies, power

transfers, electric strikes, electric locks, automatic door operators, operator push button or hands-free actuators, and other electronic door hardware specified and provided as part of this specification section. Hardware supplier is also required to install automatic door operators and actuators with factory trained installers and return at completion of project to make final adjustments and instruct owner in use/adjustment of equipment.

- B. Installers are required to be factory trained/certified by manufacturers of electronic door hardware.
- C. Electrical Contractor (EC) is responsible to furnish and install 120VAC power to all power supplies, automatic operator headers, and other locations required, noted herein, and/or shown on the electrical drawings.
 - 1. EC is also responsible to provide and install all conduit and/or wire chases for low voltage wiring, and all required electrical boxes and junction boxes for electronic hardware – including, but not limited to: Electric Strikes, Electric Power Transfers (EPT), Key Switches, Automatic Door Operators, Push or Hands-Free Actuators.
 - 2. EC is also responsible for all low voltage wiring of Door Position Switches (DPS). Frame and door contacts to be factory concealed/mortised but will not be installed or wired by frame/door supplier.
- D. Hardware Supplier is to meet with Electrical Contractor (EC) early during the construction period to instruct EC in requirements for power and for low voltage conduit/chases. Hardware supplier and EC are to communicate continually during construction as necessary to coordinate power with low voltage electronic hardware requirements.
- E. Access Control System and all materials by the Division 28 security contractor are to be furnished, installed and wired by that contractor for all access control and security hardware devices – including, but not limited to: All Power Supplies. Credential Readers (CR) where mounted on frame jamb faces, or door integrated hardware access CRs. All templates for concealed/mortised hardware in frames and doors need to be provided to the Architect and returned with frame/door/hardware submittals to be included during procurement of Division 08 materials.

3.4 HARDWARE SCHEDULE

- A. General: Provide hardware for each door to comply with requirements of Section “Door Hardware,” hardware set numbers indicated in door schedule, and in the following schedule of hardware sets.

3.5 HARDWARE SETS

Set #001

Doors: 101A

Set #001

1	Continuous Hinge	112HD 83" EPT	628	IV
1	Exit Device	QEL RX-LC 99L x 996L-R&V 299	US26D	VO
1	Rim Cylinder	20-710	626	SC
1	Closer	4040XP RW62A	689	LC
1	Overhead Stop	904S	US32D	GL
1	Electric Power Transfer	EPT 10	SP28	VO
1	Power Supply	PS914 900-2RS		VO
1	Gasketing Set	160 V 3' X 7'		NA
1	Drip Cap	16 A 40"		NA
1	Door Sweep	D698 A 36"		NA
1	Saddle Threshold	425 36"	AL	NA

NOTE: Door to remain normally closed and latched. Presentation of a valid credential energizes the electrified exit device retracting the latch to permit entry; egress is always available by depressing the exit device.

Set #002

Doors: 103

3	Hinges	5BB1 4 1/2 x 4 1/2	652	IV
1	Lockset	ND50L RHO 10-025	626	SC
1	Cylinder	20-765	626	SC
1	Wall Stop	WS406/407CCV	US32D	IV

Set #003

Doors: 104, 105

3	Hinges	5BB1 4 1/2 x 4 1/2	652	IV
1	Deadlock	B664P6 10-087	626	SC
NOTE: Cylinder side of Deadbolt on push side of door				
1	Cylinder	20-765	626	SC
1	Pull Plate	107 X 70C	US32D	RO
1	Push Plate	70C-RKW 4 X 16	US32D	RO
1	Closer	1461 RW62A	AL	LC
1	Overhead Stop	454S	US32D	GL

Set #004

Doors: 101B

3	Hinges	5BB1 4 1/2 x 4 1/2	652	IV
1	Exit Device	99L-BE x 996L-BE-R&V	US26D	VO
1	Closer	1461 REGARM	AL	LC
1	Wall Stop	WS406/407CVX	US32D	IV

Set #005

Doors: 101C

Set #005

3 Hinges	5BB1 4 1/2 x 4 1/2	652	IV
1 Leverset	ND10 RHO 10-025	626	SC
1 Closer	1461 REGARM	AL	LC
1 Overhead Stop	454S	US32D	GL

Set #006

Doors: 106

3 Hinges	5BB1 4 1/2 x 4 1/2	652	IV
1 Lockset	ND80L RHO 10-025	626	SC
1 Cylinder	20-765	626	SC
1 Closer	1461 REGARM	AL	LC
1 Wall Stop	WS406/407CCV	US32D	IV