

**Architect's Specification Guideline
For:
Hollow Metal Section 08 11 00
Wood Door Section 08 14 00
Aluminum Door/Frame Section 08 11 16
Door Hardware Section 08 71 00**



**The University of Texas at Dallas
Richardson, Texas**

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University of Texas at Dallas
Richardson, Texas

Metal Door & Frame Specification Guideline

The purpose of this guideline is to assist the design Architect in the proper selection of Metal Door & Frames and to ensure maintaining The University of Texas at Dallas standardization of door application. It is the Architect's responsibility to properly coordinate these products to meet applicable building codes, life safety codes and ADA requirements during preparation of Section 08 11 00-Metal Door & Frames.

The Architect is to consult with a representative of The University of Texas at Dallas during preparation of the Door Schedule to determine the function of each door and required locations of access control products.

The metal door & frame specification must contain the following:

1. Use of specified manufacturer's products that have continuous steel channel framed door construction (Curries 707/747/777 Trio E as reference standard). Exterior doors to be high energy efficiency doors with a full operable U value of .29 or better, 777 Trio E with kerf weather strip frames.
Acceptable Manufacturers
Mesker
Curries
CECO
2. Cross corridor door & frame assemblies to utilize low profile design, concealed vertical rod exit shall not be utilized.
 - 2.1. All double doors must have mullion set up, unless authorized by UTD FM team.
3. Destructive testing of random door(s) to confirm reinforcements for hardware is as specified; non-compliance acceptable basis for rejection of products supplied, in their entirety; compliant, replacement products supplied at no additional cost to Owner.
4. Minimum Gauge:
Frames-16 Gauge Galvanized at exterior openings
Interior Doors-18 Gauge Interior
Exterior Doors- 16 Gauge Galvanized
5. Electrical Wiring: Provide for all hollow metal doors and frames receiving electrical hardware preps; this includes but not limited to electric CEPT transfer hinges, electrical wiring harnesses, door position switches, electric strikes and magnetic locks as noted in door hardware sets in Division 08, "Door Hardware".
 - a. Electrified doors: All doors required for the application of electronic locks, remote monitoring, door position switches, electroluminescent egress marking systems, door mounted electric signage, etc. which require the door to have wires through the door shall be provided pre-wired with pre-drilled raceway. Raceway to accommodate concealed wiring harness and standardized Molex™ plug connectors on both ends to accommodate up to twelve wires. Coordinate connectors on end of the wiring harness to plug directly into the electrified hardware and the electric CEPT hinge specified in hardware sets in Division 08, "Door Hardware".
 - b. Electrified frames: Electrical Knock Out Boxes: Factory weld 18 gauge electrical knock out boxes to frame for electrical hardware preps; this includes but not limited to electric thru wire CEPT, electrical wiring harnesses, door position switches, electric strikes and magnetic locks as noted in door hardware sets in Division 08, "Door Hardware".
 - i. Provide electrical knock out boxes with a dual 1/2-inch and 3/4-inch knockouts.
 - ii. Conduit to be coordinated and installed in the field (Division 26 – Electrical) from middle hinge box and strike box to door position box to the junction box above the door header.

- iii. Wire to be pulled through conduit from a junction box to the hinge side of the door or strike side of door (as specified in hardware schedule). Cable to use standardized Molex™ plug connectors at hinge or strike location.
 - iv. Plenum wire to be pulled from the junction box back to the access control panel and power supply for all monitored doors (including but not limited to doors with Card Readers, electrified locks, DPS and/ or REX). Cable to allow for a single cable run that incorporates the four components (card reader, electric lock, DPS, REX). Provided within Division 26.
 - v. Electrical knock out boxes to comply with NFPA requirements and fit electrical door hardware as specified in hardware sets in Division 08, "Door Hardware".
 - vi. Electrical knock out boxes for continuous hinges should be located in the center of the vertical dimension on the hinge jamb.
- 6. Pre-Installation Conference: Conduct conference at Project site for hollow metal frames with electrical knockout boxes to verify installation of conduit on frames (Division 26).
 - 7. Frames & doors shall be certified as installed in accordance with SDI-122-99.
 - 8. Stairwell doors must have vision panels.

Wood Door Specification Guideline

The purpose of this guideline is assist the design Architect in the proper selection of Wood Doors and to ensure maintaining The University of Texas at Dallas (UTD) standardization of door application. It is the Architect's responsibility to properly coordinate these products to meet applicable building codes, life safety codes and ADA requirements during preparation of Section 08 14 00-Wood Doors.

The Architect is to consult with a representative of The University of Texas at Dallas during preparation of the Door Schedule to determine the function of each door and required locations of access control products.

The wood door specification must contain the following:

1. Wood Doors shall be constructed of SCL Material and carry a life time warranty.
2. Wood doors shall match existing veneer and finish on renovation construction. Consult with UTD for veneer and finish for New Construction.
3. Wood doors shall comply with UL10C. Intumescent seals shall be supplied in the door on Rated Openings.
4. Acceptable Manufacturers:
 - Maiman Thermal Fused (For Laminate).
 - Graham.
 - 4.1. All double doors must have mullion set up, unless authorized by UTD FM team.
5. Electrical Wiring: Provide for all wood doors and frames receiving electrical hardware preps; this includes but not limited to electric CEPT hinge, electrical wiring harnesses, door position switches, and electric strikes as noted in door hardware sets in Division 08, "Door Hardware".
 - a. Electrified doors: All doors required for the application of electronic locks, remote monitoring, door position switches, electroluminescent egress marking systems, door mounted electric signage, etc. which require the door to have wires through the door shall be provided pre-wired with pre-drilled raceway. Raceway to accommodate concealed wiring harness and standardized Molex™ plug connectors on both ends to accommodate up to twelve wires. Coordinate connectors on end of the wiring harness to plug directly into the electrified hardware and the electric CEPT transfer hinges specified in hardware sets in Division 08, "Door Hardware".
6. Pre-Installation Conference: Conduct conference at Project site for wood door and hollow metal frames with electrical knockout boxes to verify installation of conduit on frames (Division 26 – Electrical).

Aluminum Door & Frame Specification Guideline

Aluminum Doors shall be used only upon the approval of The University of Texas at Dallas.

The purpose of this guideline is assist the design Architect in the proper selection of Aluminum Doors & Frames and to ensure maintaining The University of Texas at Dallas standardization of door application. It is the Architect's responsibility to properly coordinate these products to meet applicable building codes, life safety codes and ADA requirements during preparation of Section 08 11 16-Aluminum Door & Frames.

The Architect is to consult with a representative of The University of Texas at Dallas during preparation of the Door Schedule to determine the function of each door and required locations of access control products.

The aluminum door & frame specification must contain the following:

1. Acceptable Manufacturers: No Substitutions Allowed.
 - A. Kawneer 350 Tuff line
 - B. Vistawall Heavy Duty
 - C. Tubelite Heavy Duty
2. All Aluminum doors shall have a 6-inch stile (referred to as wide stile) with a minimum bottom rail of 10 inches, and a minimum top rail of 7 inches.
3. All Aluminum doors shall have a center cross rail shall be used for doors with exit devices.
 - 3.1. All double doors must have mullion set up, unless authorized by UTD FM team.
4. Electrical Wiring: Provide for all aluminum doors and frames receiving electrical hardware preps; this includes but not limited to electric thru wire CEPT hinges, electrical wiring harnesses, door position switches, and electric strikes and magnetic locks as noted in door hardware sets in Division 08, "Door Hardware".
 - A. Electrified doors: All doors required for the application of electronic locks, remote monitoring, door position switches, electroluminescent egress marking systems, door mounted electric signage, etc. which require the door to have wires through the door shall accommodate concealed wiring harness and standardized Molex™ plug connectors on both ends to accommodate up to twelve wires. Coordinate connectors on end of the wiring harness to plug directly into the electrified hardware and the electric thru wire hinge or pivot specified in hardware sets in Division 08, "Door Hardware".
 - B. Electrified frames: Conduit shall be installed for all electrical wiring from junction box at top of storefront framework to electrical hinge location. Conduit installed for all electrical hardware preps; this includes but not limited to electric thru wire CEPT hinge, electrical wiring harnesses, door position switches, and electric strikes as noted in door hardware sets in Division 08, "Door Hardware".
 - i. Conduit to be coordinated and installed in the field (Division 26 – Electrical) from middle hinge box and strike box to door position box to the top of the storefront framework.
 - ii. Wire to be pulled through conduit from a junction box to the hinge side of the door or strike side of door (as specified in hardware schedule). Cable to use standardized Molex™ plug connectors at hinge or strike location.
 - iii. Plenum wire to be pulled from the junction box back to the access control panel and power supply for all monitored doors (including but not limited to doors with Card Readers, electrified locks, DPS and/ or REX). Cable to allow for a single

cable run that incorporates the four components (card reader, electric lock, DPS, REX). Provided within Division 26.

1. Floor closers are not permitted

2. Pre-Installation Conference: Conduct conference at Project site for aluminum frames with electrical conduit to verify installation of conduit and wire pulling on frames (Division 26).
3. Geared continuous hinges
4. Surface mounted continuous hinges need to be used when able
5. Concealed continuous hinges may be used when specs will not allow surface mounted
6. Pivot hinges are to be used as last resort effort.
7. All hinge work needs to follow our Spec of Page 8 section 2.03

FRP Door Specification Guideline

The purpose of this guideline is assist the design Architect in the proper selection of Fiberglass Reinforced Doors & Frames and to ensure maintaining The University of Texas at Dallas standardization of door application. It is the Architect's responsibility to properly coordinate these products to meet applicable building codes, life safety codes and ADA requirements during preparation of Section 08 16- Aluminum Door & Frames. Fiberglass Reinforced Doors must be used for food preparation areas, as well as high-humidity loading docks.

The Architect is to consult with a representative of The University of Texas at Dallas during preparation of the Door Schedule to determine the function of each door and required locations of access control products.

The FRP door & frame specification must contain the following:

1: Acceptable Manufacturers: No Substitutions Allowed.

- A. Ceco
- B. Curries
- C. Special-Lite

2. FRP Doors must have skins at least .120" thick.

3. FRP Doors shall have 3 sided aluminum frames.

4. Electrical Wiring: Provide for all aluminum doors and frames receiving electrical hardware preps; this includes but not limited to electric thru wire CEPT hinge, electrical wiring harnesses, door position switches, electric strikes and magnetic locks as noted in door hardware sets in Division 08, "Door Hardware".

A. Electrified doors: All doors required for the application of electronic locks, remote monitoring, door position switches, electroluminescent egress marking systems, door mounted electric signage, etc. which require the door to have wires through the door shall accommodate concealed wiring harness and standardized Molex™ plug connectors on both ends to accommodate up to twelve wires. Coordinate connectors on end of the wiring harness to plug directly into the electrified hardware and the electric thru wire hinge or pivot specified in hardware sets in Division 08, "Door Hardware".

B. Electrified frames: Conduit shall be installed for all electrical wiring from junction box at top of storefront framework to electrical hinge location. Conduit installed for all electrical hardware preps; this includes but not limited to electric thru wire CEPT hinge, electrical wiring harnesses, door position switches, electric strikes and magnetic locks as noted in door hardware sets in Division 08, "Door Hardware".

- iv. Conduit to be coordinated and installed in the field (Division 26 – Electrical) from middle hinge box and strike box to door position box to the top of the storefront framework.
- v. Wire to be pulled through conduit from a junction box to the hinge side of the door or strike side of door (as specified in hardware schedule). Cable to use standardized Molex™ plug connectors at hinge or strike location.

Plenum wire to be pulled from the junction box back to the access control panel and power supply for all monitored doors (including but not limited to doors with Card Readers, electrified locks, DPS and/ or REX). Cable to allow for a single cable run that incorporates the four components (card reader, electric lock, DPS, REX). Provided within Division 26

Door Hardware Specification Guideline

The purpose of this guideline is to assist the design Architect in the proper selection of Door Hardware and to ensure maintaining The University of Texas at Dallas (UTD) standardization of door hardware. It is the Architect's responsibility to properly coordinate these products to meet applicable building codes, life safety codes and ADA requirements during preparation of the Hardware Sets when developing Section 08 71 00-Finish Hardware.

The Architect is to consult with a representative of The University of Texas at Dallas during preparation of the Hardware Sets to determine the function of each door and required locations of access control products.

The door hardware specification must contain the following:

Part 1 – General:

1.01 QUALITY ASSURANCE

- A. Pre-Installation Conference for Hardware: Prior to installation of mechanical and electronic hardware, arrange a conference between manufacturer's representatives, hardware supplier, hardware installers and related trades to review materials, procedures and coordinating related work.
- B. Hardware specification shall be reviewed and approved by UTD.

1.02 EXTRA MATERIALS

- i. Provide for Owner's maintenance department stock:
 - 1. Provide 2 of each lock function.
 - 2. Provide 2 of each exit device function.
 - 3. Provide 2 of each closer arm application used.

1.03 ELECTRONIC HARDWARE SYSTEMS

Provide complete wiring diagrams prepared by an authorized factory employee for each opening requiring electronic hardware, except openings where only magnetic hold-open devices are specified. Provide a copy with each hardware schedule submitted after approval.

Provide complete operational descriptions of electronic components listed by opening in the hardware submittals. Operational descriptions to detail how each electrical component functions within the opening incorporating all conditions of ingress and egress. Provide a copy with each hardware schedule submitted for approval.

Provide elevation drawings of electronic hardware and systems identifying locations of the system components with respect to their placement in the door opening. Provide a copy with each hardware schedule submitted for approval.

Prior to installation of electronic hardware, arrange conference between supplier, installers, and related trades to review materials, procedures and coordinating related work.

The electrical products contained within this specification represent a complete engineered system. If alternate electrical products are submitted, it is the responsibility of the distributor to bear the cost of providing a complete and working system including re-engineering of electrical diagrams and system

layout, as well as power supplies, power transfers and all required electrical components. Coordinate with electrical engineer and electrician to ensure that line voltage and low voltage wiring is coordinated to provide a complete and working system.

For each item of electrified hardware specified, provide standardized Molex™ plug connectors to accommodate up to twelve (12) wires. Molex plug connectors shall plug directly into through-door wiring harnesses, frame wiring harnesses, electric locking devices and power supplies.

Part 2 – Products:

2.01 KEYING

- A. **Keying Meeting:** Prior to the release of orders to the lockset manufacturer, meet with the UTD Key Shop to review the keying requirements.
- B. Cores should be small format interchangeable core, 7 pin, BEST patented Cormax MK1 or ML1 keyway. BEST Keying Specialist to confirm keyway prior to ordering.
- C. UTD will provide key tree for pinning of cores.
- D. Keys are to be delivered, blank, to the UTD Sign and Key Shop. For the Keyshop to input all information into system with correct labeling.

2.02 Cores—Match Owners Existing Key Systems. No Substitutions Accepted

- A. Acceptable Manufacturers:
 - 1. BEST
- B. Renovation work—Check with UTD FM Keyshop before changing cores. Depending on which building and how many cores, may be transferred to new A2 system.
- C. Locksets shall be ordered with permanent cores but provided with construction cores during the construction period.
- D. Permanent cores are to be provided at the end of the construction period to the UTD Key Shop at no cost.

2.03. **Hinges:** Acceptable Products: Heavy weight; No Substitutions Allowed

<u>BEST</u>	<u>McKinney</u>	<u>Hager</u>
FBB199	T4A3386	BB1199
FBB199	T4A3786	BB1168
FBB191	TA2314	BB1191
FBB179	TA2714	BB1279

- A. All hinges to be five knuckle, in accordance with manufacturers guidelines, ball-bearing type.
- B. Hinges shall be Stainless Steel material on exterior doors. Steel Material on interior doors.
- C. Provide NRP hinges on all doors. (NRP- non removable pins)

- D. Furnish four (4) hinges up to 84 inches high and one (1) additional hinge for every 30 inches or fraction thereof.
- E. Provide size 4-1/2-inch x 4-1/2 inch for all 1-3/4-inch-thick doors up to and including 36 inches wide. Doors over 36 inches wide provide 5-inch x 4-1/2-inch hinges.
- F. Where required to clear trim or permit doors to swing 180 degrees, furnish hinges of sufficient throw.
- G. Substitutions per Section 01 31 00
- H. Where electrically operated locksets and exit devices are required, furnish continuous circuit hinges with the number of wires required by electrical hardware it supports plus two additional wires for future considerations. All electric hinges shall be furnished with a Quick Connect feature to insure compatibility with the electrical hardware.
- I. No butt hinges or pivots are to be used on aluminum doors.
- J. No pivots or continuous hinges to be used on wood doors.

2.04. **Pivots:** Acceptable Products:

- A. Pivots and Intermediate pivots on Aluminum Doors are currently not authorized by the owner**

2.05. **Lockets:** Acceptable Products: No Substitutions Allowed

- A. Mortise Locks:
Sargent 8200 LNJ
- B. Lock Functions. Sargent

1. Classrooms	8237 70-V04-8205-LN-J-626-Handing
2. Offices	8255 70-8205-LN-J-626-Handing
3. Storerooms	8204 70-8204-LN-J-626-Handing
4. Non-Locking	8215
5. Restrooms	8265 Set up for unisex // single use only
6. Large classroom panic	70-49-LD-8816-F-HANDING-26D-26D-36"

- C. Keypad Locks are not allowed.**

2.06. **Exit Devices:** Acceptable Products: No Substitutions Allowed

Approved Manufacturer:

- 1. Von Duprin 99 Series Along with 99 series exit trim with L lever or pull handle only
- A. Exit Devices shall be used at all Exterior Egress doors and Fire Exit Doors and Stairwell Doors.
- B. Provide pull trim at exterior doors. Provide Lever trim for interior applications.

- C. Provide through bolts for all exit devices. (Wood door application)
- D. Provide standard hex-key dogging on all non-fire rated exit devices. Cylinder dogging shall be used only at the request of the Owner.
- E. Vertical Rod Exit Devices are not permitted unless required by code. Rim Exit Device and removable mullion to be provided and installed wherever possible. When vertical rod exit devices are used, provide and install interior surface mount vertical rod exit devices as Less Bottom Rod (LBR) unless otherwise indicated.
- F. All exterior doors requiring access control shall be furnished with Precision MLR (motorized latch retraction) or 56- function (Electric Latch Retraction). Provide 24 Volt, 1 amp for each device, power supply for Precision MLR option to be RPSMLR2B or Securitron or Sargent for the Sargent 56.
- G. Provide (CEPT) Electric Power Transfer on all doors with Latch Retraction.
- H. Provide Key Removable Mullions as Required by Owner.
- I. Provide all doors with factory documented three (3) year warranty.

2.07. **Door Closers:** Acceptable products: No Substitutions Allowed.

- 1. Interior Doors
 - A. LCN 4040XP
- 2. Exterior Doors:
 - A. LCN 4040XP
- A. **Thru bolts shall NOT be utilized unless required by Door Manufacturer at rated openings or Wood doors.**
- B. Provide spring cushion arm on all exterior applications and interior out swinging corridor applications where a wall stop cannot be used. (No wall stops used on sheetrock walls)
- C. Supply appropriate arm assembly and drop plates where required for each closer so that closer body and arm are mounted on non-public side of door opening and on the interior side of exterior openings, except where required otherwise in the hardware sets.
- D. Provide blade stop spacers and fifth screw hole supports where required by frame conditions.
 - B. All door closers shall have a factory documented twenty-five (25) year warranty.
 - C.

2.08. **Automatic Operators** Acceptable products: No Substitutions Allowed

- 1. LCN 4630/4640 Series

- A. All door closers shall be ANSI 156.19, Grade 1 Certified.
- B. Units shall have adjustments for door closing force and back check, motor assist from 0 to 30 seconds, motor start up delay, vestibule interface delay, electric lock delay, and door hold open delay up to 30 seconds.
- C. Operator units shall provide conventional door closer opening and closing forces unless the power operator motor is activated by an initiating device with door closer assembly having adjustable spring size, back check valve, sweep valve, latch valve, speed control valve, and pressure adjustment valve to control door closing.
- D. Operators shall all have push assist installed with them. Units shall have a presence detector input to prevent a closed door from opening or a door that is fully opened from closing and shall have a hold open toggle input to allow remote activation for indefinite hold open; door shall close the second time the input is activated.
- E. Operators shall have a SPDT relay for interfacing with latching or locking devices.
- F. All controlling operator switches must be hardwired from push button to the operator.
- G. All controlling operator switches shall be wall mounted, **not pedestal or bollard post.**
- H. Button must be installed on opposite door of auto opener

2.09. **Door Stops:** Acceptable products:

	<u>Rockwood</u>	<u>Trimco</u>
Exterior Doors	467	1209
Interior Doors	441	1210
Wall Stops	409	236
	<u>Rixson</u>	<u>ABH</u>
Overhead Stops	9 Series	9000 Series
	10 Series	3300 Series

- A. Furnish a wall stop at all interior doors where no sheetrock walls are used. Provide overhead stop where there is no wall to stop door and a cushion stop arm is not being used on the closer.
- B. Floor stops to be used at exterior doors and at rooms that carry unoccupied space.
- C. Substitutions per Section 01600

2.10. **Flat Goods:** Acceptable products:

	<u>Rockwood</u>	<u>Hager</u>
Pulls	108	33E
Push Plates	70C 6 x 16	30S

- A. All kick plates shall be 10" high x 2" less door width on single doors, 1" less door width on pairs of doors.
- B. All armor plates shall be a maximum 40" high or as high as possible without

conflicting with locksets and exit devices, and 2" less door width on single doors, 1" less door width on pairs of doors.

- C. All protection plates shall be 16-gauge (.050) inch thick.
- D. All protection plates shall have countersunk holes and all 4 edges beveled.

2.11. **Flush Bolts & Coordinators:** Acceptable Products: **(No Automatic Flush Bolts).**

	<u>Rockwood</u>	<u>Hager</u>
Flush Bolts	555	282D

2.11.1. when installing bottom flush bolt no dust proof strike shall be used, instead we have a regular strike plate installed on floor.

2.12. **Electromechanical Products:** Acceptable products:

Quick Connect
Electrolynx: Dormakaba products
ASSA ABLOY products

Preferred Electronic Locks:
Sargent 8271

Preferred Electric Latch Retraction: Von duprin 99 QEL

Power Supplies:
Precision RPSMLR2B
Sargent 3510, BPS24
Securitron AccuPower

Preferred Magnetic Holders:
Dorma EM504 Series
Rixson FM998

Magnetic Holders shall be tied to FACP and meet all city and fire code requirements.

Auto Operators: LCN 4640 Series

A minimum of 1 paired opening per building shall have an Automatic opening.

Electric Power Transfers: Precision EPT-12C
Securitron CEPT

Key Pad Locksets: Are not allowed

Magnetic Locks: Must have UTD FM approval

Electric Strikes:
HES 9600, 5000,

2.13. **Seals and Gasketing:** Acceptable products: Pemko Preferred

	<u>Pemko</u>	<u>National Guard</u>
Thresholds	171A	425E
Weatherstrip	315CR	130NA
Smoke Seals	S88	2525
Drip Caps	346	16
Sweeps	345AP, 18041CP	C627
Astragal	305N	125N

- A. To comply with UL 10C, UBC test 7-2, provide category "A" Intumescent as part of the fire rated wood door assembly. This material shall be specified in Section 08 14 00- Wood Doors.
- B. Substitutions per Section 01 30 00

2.14. Padlocks: Acceptable products: BEST - B Series

- A. Must be SFIC (small format interchangeable core)

Part 3 – Execution:

1 QUALITY ASSURANCE

A. Post-Installation Inspection for Hardware: Upon completion of installation of all door hardware and prior to Owner acceptance of the project, arrange a post-installation inspection of all mechanical and electrical door hardware. Inspection shall include the Contractor, Architect, Hardware Supplier and hardware manufacturer's representative. Repair or replace any product found to be installed improperly or functioning incorrectly. Any additional costs related to repair or replacement shall not be the responsibility of the Owner.

Sliding Door Specs

3.01 Sliding door needs shall follow the specs put forth

3.02 Sliding door products to be used

3.02.1 Assa Abloy SL500 CGL Commercial entrance

3.02.2 The ASSA ABLOY SL500 CGL sliding commercial glass door features the same powerful operator found in the standard ASSA ABLOY SL500 sliding door system including 4" anti-riser derailment guides and dual tandem carriage wheels for superior performance. The dazzling aesthetics extend right up to the door header, with a sleek, tapered header design that sits flush mounted to both the interior and exterior for seamless integration. Altogether, this sliding all-glass entry door lets you create an entrance with unique and memorable appeal. Suited for two applications:

- Interior application
- Exterior application

3.03 file:///C:/Users/NDS230001/Downloads/BR_AA_SL500CGL_TechData_0819.pdf

Link for Assa Abloy Spec on sliding door info and sizing chart

Spec sheet part links

- Von duprin 99 Panic hardware
https://www.vonduprin.com/content/dam/allegion-us-2/web-files/von-duprin-/information-documents/Von_Duprin_98.99_Series_Catalog_106590.pdf
- Von duprin alarm exit
<https://www.vonduprin.com/content/dam/allegion-us-2/web-files/von-duprin-/information-documents/Von-Duprin-GUARD-X-Data-Sheet-110107.pdf>
- LCN 4040xp closer page 36
https://www.lcnclosers.com/content/dam/allegion-us-2/web-files/lcn/information-documents/LCN_4000_Series_Surface_Mounted_Closers_Catalog_Section_109509.pdf
- LCN 4630/4640 auto operators
https://www.lcnclosers.com/content/dam/allegion-us-2/web-files/lcn/information-documents/LCN_Automatic_Operators_Catalog_Section_109510.pdf