Introduction

How To Determine An Equal…

The longest running debate in the architectural hardware industry for architects and end users is the determination of product equality from one manufacturer's locks, closers, exit devices from those of a rival manufacturer.

In a perfect world, all hardware schedules would be written in a single manufacturer's products with full equals granted to like products from other manufacturers.

The number one question asked by architects and end users, "how do I know what's equal; I rely on my consultant" when being asked questions about granting or denying product equals.

Two associations play a key role with full participation from all major North America hardware manufacturer's, the Builders Hardware Manufacturer Association (BHMA) and American National Standards Institute (ANSI) in developing and publishing product standards in the architectural hardware industry.

"ANSI provides the machinery for creating voluntary standards. It serves to eliminate duplication of standards activity and to weld conflicting standards into single, nationally accepted standards under the designation, "American National Standard"."

BHMA, is an association comprised of members who manufacture architectural hardware product and collectively establish standards under the general classification of builders hardware which includes a wide variety of items which are divided into several categories.

A complete set of ANSI standards can be purchased through the Door and Hardware Institute and can be used as the definite guide to determining product equality, providing a cross reference for use with all major manufacturer's catalogues which list the individual products ANSI/BHMA standard it meets.

To provide you with a quick reference section, the following pages have been designed and include ANSI product cycle testing, expected frequency of door operation, fire door chart, hardware mounting locations, handing chart and a complete hardware finish list highlighting the most common one's used today.

American National Standards Institute

Directory, Program, Standards & Symbol

Standards

AMERICAN NATIONAL STANDARDS INSTITUTE

The Directory

Directories of certified products are published once a year, each edition superseding the last. It is intended that the dates of issue relate to the test conducted by ETL Testing Laboratories, Inc. of Cortland, New York. Each edition is effective for the specific period indicated on the cover of the Directory.

Supplements will be published as required in the event any listed products are decertified, additional products become certified, or new licensees enter the program.

The Program

This Certification Program was developed as a means for manufacturers to indicate compliance with the Builders Hardware Manufacturers Association Inc. sponsored American National Standards ANSI/BHMA. Participating manufacturers may certify compliance with the Standard based upon a continuing program of passing prescribed tests. ETL Testing Laboratories, Inc. is the administrative agency of this program for BHMA and make unannounced random selections of hardware from participants periodically. The program is open to all manufacturers of architectural hardware, whether or not members of BHMA.

The Standard

The Builders Hardware Manufacturers Association, Inc. sponsored American National Standards ANSI/BHMA are performance oriented standards having functional and finish test requirements. Products covered include locks, closers, exit devices, hinges, pulls, cylinders, etc.

The Symbol

Only participants in the Program are permitted to use the certification symbol. When used in advertising, the symbol may not be displayed in proximity to any product not certified under the Program.

ANSI/BHMA Standard Numbers

Cycle Testing

ANSI/BHMA STANDARD NUMBERS
&
GRADE CYCLE TESTING

Door Closers	Test Cycles	ANSI/BHMA
Grade 1	2,000,000 cycles	A156.4 - 1992 Door Controls - Closers
Grade 2	1,000,000 cycles	
Grade 3	500,000 cycles	A156.15 - 1986 Closer Holder Release Device

Exit Devices	Test Cycles	ANSI/BHMA
Grade 1	250,000 cycles	A156.3 Exit Devices
Grade 2	100,000 cycles	

Mortise Locks	Test Cycles	ANSI/BHMA
All Grades	800,000 cycles	A156.13 - 1987 Mortise Locks

Cylindrical Locks	Test Cycles	ANSI/BHMA
Grade 1	800,000 cycles	A156.2 - 1989 Bored & Preassembled Locks
Grade 2	400,000 cycles	
Grade 3	200,000 cycles	

Estimated Door Usage

Common Buildings

ESTIMATED DOOR USAGE OF COMMON BUILDING

Type*	Daily	Yearly	Frequency
Large department store entrance	**5,000**	**1,500,000**	**High**
Large office building entrance	**4,000**	**1,200,000**	**High**
Theater office building entrance	**1,000**	**450,000**	**High**
School entrance	**1,250**	**225,000**	**High**
School toilet door	**1,250**	**225,000**	**High**
Store or bank entrance	**500**	**150,000**	**High**
Office building toilet door	**400**	**118,000**	**High**
School corridor door	**80**	**15,000**	**Average**
Office building corridor door	**75**	**22,000**	**Average**
Store toilet door	**60**	**18,000**	**Average**
Residential entrance door	**40**	**15,000**	**Average**
Residential toilet door	**25**	**9,000**	**Low**
Residential hallway door	**10**	**3,600**	**Low**
Residential closet door	**6**	**2,200**	**Low**

*Type of building and door

Fire Door Class

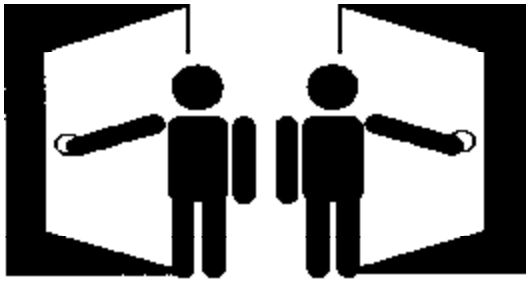
Identification Chart

FIRE DOOR CLASS IDENTIFICATION CHART

Class	Opening Location	Rating	Door Type
A	Divide Building into Fire Areas	3 Hour	Hollow Metal
B	Vertical Means of Communication 2 Hour, Partitions Providing Horizontal Fire Protection	1-1/2Hour (90min.)	Hollow Metal Wood
B	Vertical Means of Communication	1 Hour (60 min.)	Wood
C	Corridors & Room Partitions	3/4 Hour (45 min.)	Wood
D	Exterior Walls Subject to Sever Fire Exposure form Without	1-1/2 Hour (90min.)	Hollow Metal Wood
E	Exterior Walls Subject to Moderate to Light Fire Exposure from Without	3/4 Hour (45 min.)	Hollow Metal
E	Smoke Partitions Corridor Partitions	1/2 Hour (30 min.)	Wood
E	Smoke Partitions Corridor Partitions	1/3 Hour (20 min.)	Hollow Metal Wood

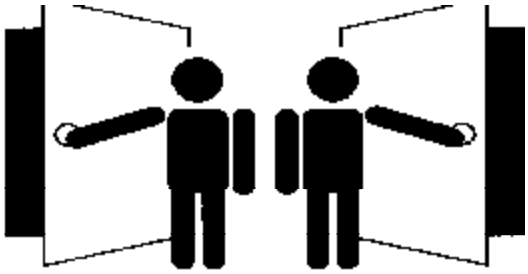
HANDING CHART

(Always take hand from outside)



Hand Of Door
Right Hand (RH)

Hand Of Door
Left Hand (LH)



Hand Of Door
Right Hand Reverse
(RHR)

Hand Of Door
Left Hand Reverse
(LHR)

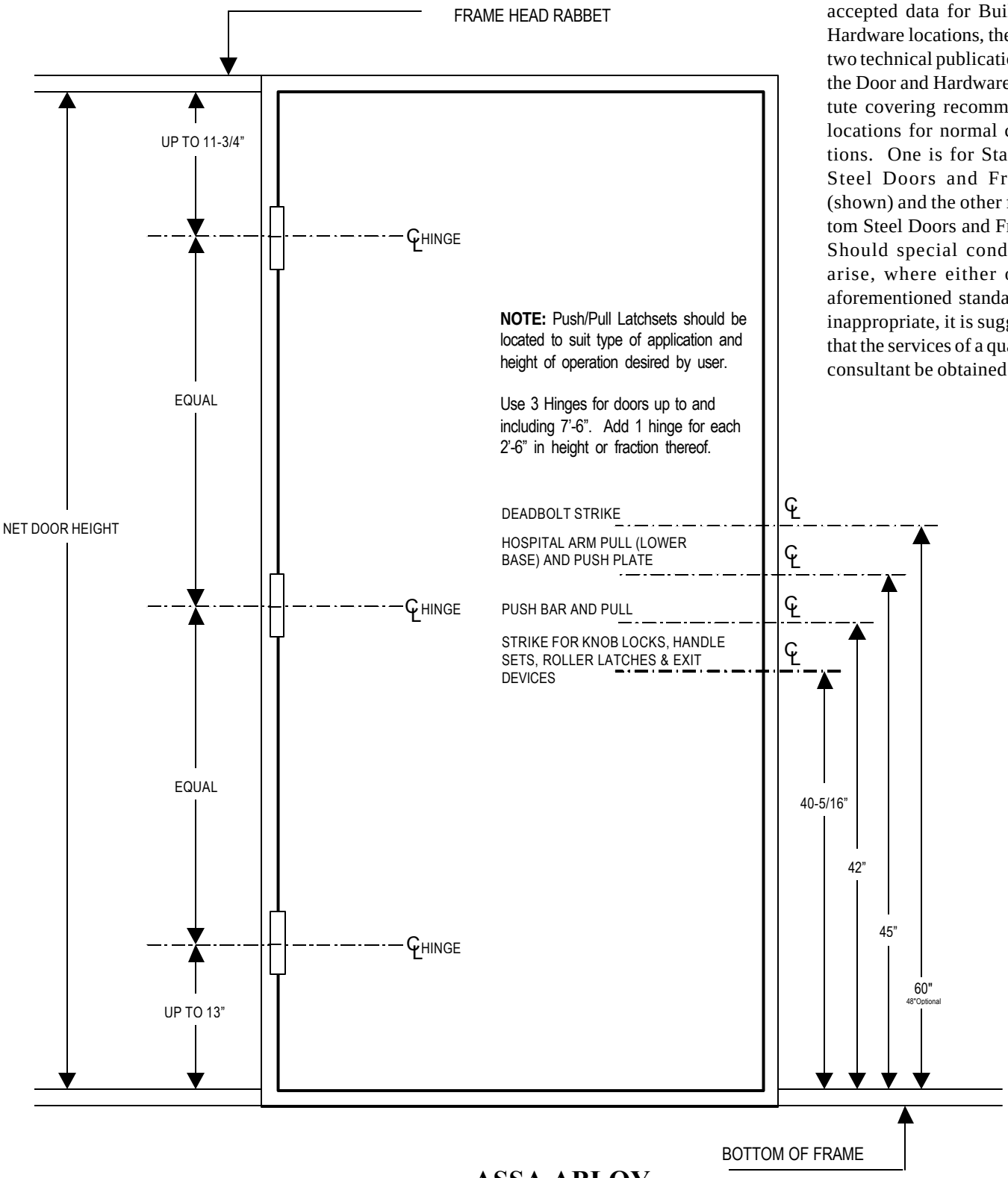
Rules

1. The hand of a door is always determined from the outside.
2. The outside of an exterior door is the street or entrance side
3. The outside of an auditorium door is the corridor or hall side
4. The outside of a room door is the corridor or hall side
5. The outside of a closet door is the room, corridor or hall side
6. The outside of a single communicating door is the side from which the butts are invisible when the door is closed
7. The outside of twin communicating doors is the space between the two doors

Mounting Locations

Standard Steel Doors & Frames

While there is no universally accepted data for Builder's Hardware locations, there are two technical publications by the Door and Hardware Institute covering recommended locations for normal conditions. One is for Standard Steel Doors and Frames, (shown) and the other for Custom Steel Doors and Frames. Should special conditions arise, where either of the aforementioned standards is inappropriate, it is suggested that the services of a qualified consultant be obtained.



Finishes

Finish Maintenance

Maintenance

Knowledge of builders' and security hardware finishes would be incomplete without being fully aware of follow-up maintenance.

The chart below was developed to provide an excellent reference for finish care.

Finish Care

Finishes treated with protective coatings will quickly deteriorate if the surface is broken. To prolong the life and maintain the original beauty of the finish it is important to avoid the use of paint removing solvents, acids or other strong caustic cleaning solutions.
Before painting doors, frames and woodwork, all hardware items should be removed and reinstalled after the paint is dry. Hardware for new installations should not be installed until after the final coat of paint has been applied and allowed to dry.

Condition	Cleansing Agent	Application
Normal atmospheric and construction dirt	Soap, or ammonia, or detergent and water	Sponge or rag; rinse with clear water; wipe dry
Heavier dirt containing oil or grease	Organic solvents; either, acetone, alcohol, benzol, benzine, xylol, etc. 5 to 15% caustic soda 6% solution of sodium metasilicate, trisodium phosphate, etc.	Sponge or rag; rinse with clear water Observe safety rules Same as above Observe safety rules
Rust discoloration from other materials	Oakite No.33, one part in two parts water	Clean cloth or sponge; let stand 20 min; rinse; repeat and let stand longer if necessary
Deposits which require scouring	Grade FFF Italian pumice, whiting, sourcing powder	Rub with damp cloth
	Liquid Nu-Steel Perma-pass	Rub with small amount on dry cloth
	Bright Steel	Rub with small amount on dry cloth
	Paste Nu-Steel or DuBois Temp	Rub with small amount on dry cloth
	Copper's Stainless Cleaner	Rub with damp cloth
	Allen Stainless Steel Polish	Rub with damp cloth
	Household Cleaners	Rub with damp cloth

Finishes

** Most commonly used finishes are highlighted

Code Description	Base Metal	Cat.	US Equivalent*
600 Primed for painting	Steel	D	USP
601 Bright Japanned	Steel	D	US1B
603 Zinc plated	Steel	D	US2G
604 Zinc plated and dichromate sealed	Steel	D	
605 Bright Brass, clear coated	**Brass**	**A**	**US3**
606 Satin Brass, clear coated	**Brass**	**A**	**US4**
607 Oxidized satin brass, oiled rubbed	Brass	B	
608 Oxidized satin brass, relieved, clear coated	Brass	C	
609 Satin brass, blackened, satin relieved, clear coated	**Brass**	**C**	**US5**
610 Satin brass, blackened, bright relieved, clear coated	Brass	C	US7
611 Bright bronze, clear coated	**Bronze**	**A**	**US9**
612 Satin bronze, clear coated	**Bronze**	**A**	**US10**
613 Dark oxidized satin bronze, oil rubbed	**Bronze**	**B**	**US10B**
614 Oxidized satin bronze, relieved clear coated	Bronze	C	
615 Oxidizedsatin bronze, relieved, waxed	Bronze	C	
616 Satin bronze, blackened, satin relieved, clear coated	Bronze	C	US11
617 Dark oxidized satin bronze, bright relieved, clear coated	Bronze	C	US13
618 Bright nickel plated, clear coated	Brass, Bronze	A	US14
619 Satin nickel plated, clear coated	**Brass, Bronze**	**A**	**US15**
620 Satin nickel plated, blackened, satin relieved, clear coated	Brass, Bronze	C	US15A
621 Nickel plated, blackened, relieved, clear coated	Brass, Bronze	C	US17A
622 Flat black coated	Brass, Bronze	A	US19
623 Light oxidized statuary bronze, clear coated	Bronze	C	US20
624 Dark oxidized statuary bronze, clear coated	Bronze	C	US20A
625 Bright chromium plated over nickel	**Brass, Bronze**	**A**	**US26**
626 Satin chromium plated over nickel	**Brass, Bronze**	**A**	**US26D**
627 Satin aluminum, clear coated	Aluminum	A	US27
628 Satin aluminum, clear anodized	Aluminum	A	US28
629 Bright stainless steel	Stainless Steel 300 series	A	US32
630 Satin stainless steel	**Stainless Steel 300 series**	**A**	**US32D**
631 Flat black coated	Steel	E	US19
632 Bright brass plated, clear coated	Steel	E	US3
633 Satin brass plated, clear coated	Steel	E	US4

*(Former US Equivalent)

Finishes

Code Description	Base Metal	Cat.	US Equivalent
634 Oxidized satin brass plated, oil rubbed	Steel	B	
635 Oxidized satin brass plated, relieved, clear coated	Steel	C	
636 Satin brass plated, blackened bright relieved, clear coated	Steel	C	US7
637 Bright bronze plated, clear coated	Steel	E	US9
638 Satin brass plated, blackened, satin relieved, clear coated	Steel	C	US5
369 Satin bronze plated, clear coated	Steel	E	US10
640 Oxidized satin bronze plated over copper plate, oil rubbed	Steel	B	US10B
641 Oxidized satin bronze plated, relieved, clear coated	Steel	C	
642 Oxidized satin bronze plated, relieved, waxed	Steel	C	
643 Satin bronze plated, blackened, satin relieved, clear coated	Steel	C	US11
644 Dark oxidized satin bronze plated, bright relieved, clear coated	Steel	C	US13
645 Bright nickel plated, clear coated	Steel	E	US14
646 Satin nickel plated, clear coated	Steel	E	US15
647 Satin nickel plated, blackened, satin relieved, clear coated	Steel	C	US15A
648 Nickel plated, blackened, clear coated	Steel	C	US17A
649 Light oxidized bright bronze plated, clear coated	Steel	C	US20
650 Dark oxidized statuary bronze plated, clear coated	Steel	C	US20A
651 Bright chromium plated over nickel	Steel	E	US26
652 Satin chromium plated over nickel	Steel	E	US26D
653 Bright stainless steel plated	Stainless Steel 400 series	E	US32
654 Satin stainless steel plated	Stainless Steel 400 series	E	US32D
655 Light oxidized satin bronze, bright relieved, clear coated	Bronze	C	US13
656 Light oxidized satin bronze plated, bright relieved, clear coated	Steel	C	US13
657 Dark oxidized copper plated, satin relieved, clear coated	Steel	C	
658 Dark oxidized copper plated, bright relieved, clear coated	Steel	C	
659 Light oxidized copper plated, satin relieved, clear coated	Steel	C	

*(Former US Equivalent)

Finishes

Code	Description	Base Metal	Cat.	US Equivalent*
660	Light oxidized copper plated, bright relieved, clear coated	Steel	C	
661	Oxidized satin copper plated, relieved, clear coated	Steel	C	
662	Satin brass plated, browned satin re lieved, clear coated	Steel	C	
663	Zinc plated with clear chromate seal	Steel	D	
664	Cadmium plated with clear chromate seal	Steel	D	
665	Cadmium plated with iridescent dichromate	Steel	D	
666	Bright brass plated, clear coated	Aluminum	E	US3
667	Satin brass plated, clear coated	Aluminum	E	US4
668	Satin bronze plated, clear coated	Aluminum	E	US10
669	Bright nickel plated	Aluminum	E	US14
670	Satin nickel plated	Aluminum	E	US15
671	Flat black coated	Aluminum	E	US19
672	Bright chromium plated over nickel	Aluminum	E	US26
673	Aluminum clear coated	Aluminum	D	
674	Primed for painting	Zinc	D	USP
675	Dichromate sealed	Zinc	D	
676	Flat black coated	Zinc	A	US19
677	Bright brass plated, clear coated	Zinc	E	US3
678	Satin brass plated, clear coated	Zinc	E	US4
679	Bright bronze plated, clear coated	Zinc	E	US9
680	Satin bronze plated, clear coated	Zinc	E	
681	Bright chromium plated over nickel	Zinc	E	US10
682	Satin chromium plated over nickel	Zinc	E	US26
683	Oxidized satin brass plated, oil rubbed	Zinc	B	
684	Black chrome plated, bright	Brass, Bronze	C	US26D
685	Black chrome plated, satin	Brass, Bronze	C	
686	Black chrome plated, bright	Steel	C	
687	Black chrome plated, satin	Steel	C	
688	Satin aluminum, gold anodized	Aluminum	E	US4
689	Aluminum painted	Any	E	US28
690	Dark bronze painted	Any	E	US20
691	Light bronze painted	Any	E	US10
692	Tan painted	Any	D	
693	Black painted	Any	A	Black AL hard coat
694	Medium bronze painted	Any	A	Med. Bronze AL haed coat

*(Former US Equivalent)

Finishes

Code Description	Base Metal	Cat.	US Equivalent*
695 Dark bronze painted	Any	A	Dark bronze AL hard coat
696 Satin brass plated, clear coated	Any	E	US4
697 Bright brass plated, clear coated	Plastic	E	US3
698 Satin brass plated, clear coated	Plastic	E	US4
699 Satin bronze plated, clear coated	Plastic	E	US10
700 Bright chromium plated over nickel	Plastic	E	US26
701 Satin chromium plated over nickel	Plastic	E	US26D
702 Satin chromium plated over nickel	Aluminum	E	US26D
703 Oxidized satin bronze plated, oil rubbed	Aluminum	E	US10B
704 Oxidized satin bronze plated, oil rubbed	Zinc	E	US10B
705 Bright bronze plated, clear coated	Aluminum	E	US9
706 Gold Painted	Any	E	
707 Bright brass anodized	Aluminum	E	US3
708 Bright bronze anodized	Any	E	US9
709 Satin bronze anodized	Aluminum	E	US10
710 Dark oxidized satin bronze anodized	Aluminum	E	US10B
711 Flat black anodized	Aluminum	E	US19
712 Bright chromium anodized	Aluminum	E	US26
713 Satin chromium anodized	Aluminum	E	US26D
714 White painted	Aluminum	D	
715 Primed for painting	Aluminum	D	USP
716 Bright gold anodized	Aluminum	E	US3
717 Bright aluminum uncoated	Aluminum	B	US26
718 satin aluminum uncoated	Aluminum	B	US27
719 Mill finish aluminum uncoated	Aluminum	B	US27
720 Mill finish brass uncoated	Architectural Bronze	B	US4
721 Bright brass uncoated	Architectural Bronze	B	US3
722 Dark oxidized bronze oil rubbed	Architectural Bronze	B	US10A

*(Former US Equivalent)

Keying Systems & Terminology

The establishment of the proper level of control for a master key system is of a great importance. One of the main reasons many master key systems are allowed to disintegrate is the fact that they were not established at the proper level when planned originally.

This section of the Specification Guide will guide you through the steps of structuring a keying system supported by illustrated variations of master keying for a school, hospital and an apartment building.

Particularly interesting you will find a collection of general truisms about keying, which apply regardless of the make or type of cylinder or key involved in a system.

We invite you to read and refer to this chapter, that includes levels of control in master keying, planning a master key system, explanation of master key coding, and below described Professional Glossary of Terms and Definitions.

The Professional Glossary of Terms & Definitions

The Professional Glossary of Terms and Definitions is one of the most significant additions to this specification guide. This highly accurate and definitive summary of keying terminology was developed by the members of the master keying group of the ALOA sponsored National Task group for Certified Training Programs.

This standardized list of terms was intended to eliminate the inconsistencies in the language used to describe keying nomenclature.

The benefits of this document are enormous for all members of the hardware industry.
The access to widely accepted terms and definitions will allow you to become more competitive, it eliminates redundancy and therefore many errors that could develop as a direct result of miscommunication.

LEVELS OF CONTROL IN MASTER KEYING

The following is a suggested guide in determining or selecting the proper level of control:

One Level - Change Key

All locks operated by Change Keys only, and keyed different or alike as required. Example: Homes, Stores, etc.

Two Levels - Master Key

All locks operated by Change Keys and Master Key. Example: Small (Single Department) Schools, Apartments, etc.

Three Levels - GMK

All locks operated by Change Keys, Master Keys and Grand Master Key. Example: Office Buildings, Large (Multi-Department) Schools, Small (Community or Single-Story) Hospitals, etc.

Four Levels - GGMK

All locks operated by Change Keys, Master Keys, Grand Master Keys and Great Grand Master Key. Example: Large (Multi-Story and/or Multi Building) Hospitals, Hotels, Colleges, etc.

Five Levels - GGMK

All locks operated by Change Keys, Master Keys, Grand Master Keys, Great Grand Master Keys and Great Grand Master Key. Example: Large University Complexes; Large (Multi-Operational or Multi-Building) Industrial Complexes, etc.

PLANNING A MASTER KEY SYSTEM

One of the finest services a truly professional architect can render to an owner, is the design of a practical and efficient keying system for a building.

This is where a consultant's services are most valuable to the architect, guiding the organization of the keying, so it will function properly, be simple to understand, and be concise enough so it will survive years of usage.

The following steps are recommended in the structuring of the keying system:

A) Research the building function: how it will be used, when it will be used, and by whom will it be used?
B) Prepare a diagram of your concept, suggesting the appropriate keying system, based on the building function.
C) Present, explain and sell your concept of the system to the owner and architect.
D) Accept input and modifications when necessary.
E) Make a final detailed keying schedule for the manufacturer
F) Finalize your schematic diagram of the system to be turned over for use by the owner's representatives.

Before starting to plan a keying schedule, keep in mind there are several general truisms about keying systems which will apply regardless of the make or type of cylinder or key involved in your system.

1. The greatest security is in the cylinder which has the fewest number of keys operating the cylinder. Since each different key operates on a different shearline, it follows that the more shearlines the easier is the task to pick the cylinder or have it opened accidentally by unauthorized keys.
2. The greatest longevity of a cylinder for trouble-free service again is the one which has the fewest number of keys.
3. In every keying system there is a fixed budget on how many different keys can operate under a master and how many different masters can operate under a grandmaster. The wise consultant recognizes this budget when planning a system, and uses the different changes as sparingly as possible.
4. All keys within a keying system are interrelated to each other and interrelated to the system as a whole.
5. The more complicated the design of the keying system, the shorter will be its usable life by the owner. Remember, you are keying a building to perform its function and not keying individuals on an organization chart.

A) Research the Building Function
B) Prepare a Diagram of Your Concept: Remember you are on a budget of available different change keys, use them sparingly. The owner will thank you in years to come because this will leave flexibility to his system, so he can make minor additions and modifications without having to re-do the entire system. Don't start out with a preconceived idea that this must have a great grand or grandmasterkey in your proposal. Build from the bottom up and let the requirements dictate where it is appropriate to move into the higher key levels. Since you are keying the building, not people, do not be concerned if on occasion some person might have to carry 2 or more keys. This is far more preferable to having a system where 1 key crosses over into different masterkey systems (usually refereed to as cross-keying). If this cross-keying is permitted in your system, it rapidly eliminates many available change keys which must be discarded and not used on the project.

A) The presentation: In the presentation of your system to the owner, it is most effective to use the alphanumeric designation and the schematic charts as explained and illustrated in this guide. Explain your concept of the function and traffic flow of the building as you have analyzed and conceived it. Typically, there will be attempts by the owner to introduce "People Keying". Try to deal with this intelligently and discourage them whenever possible. Usually an owner can understand that his people and relationship to the building are temporary in nature. There is no quicker way to nullify a keying system than have it oriented around existing people. Usually in your presentation, you should be prepared to explain and recommend some of the many options available in keying systems, such as visual key control, removable core cylinders, construction keying, etc. In fairness, it is your obligation to present both the pros and cons of these options, thus letting the owner decide which of them is important to him.
B) Accept Input: (after the presentation and listening to the desires of the owner)
C) Final Detailing: Reduce all of the information developed during the planning sessions to a final door by door keying schedule for the use of the lock manufacturer.
D) Final Diagram: As a final step to complete your work , it is appropriate to prepare a final schematic chart of the keying system after it has been acknowledged by the hardware manufacturer.

EXPLANATION OF CODING SYSTEM

Where Grand Master Keys are used, double letter symbols should be used to identify the Grand Master Key sets. The Grand Master symbol should be the first letter, followed by the Master symbol.

Symbol			
AA	=	Grand Master Key "A"	Master "AA"
AB	=	Grand Master Key "A"	Master "AB"
AC	=	Grand Master Key "A"	Master "AC"
BD	=	Grand Master Key "B"	Master "BD"
BE	=	Grand Master Key "B"	Master "BE"

Key symbols using this Key Code System automatically indicate the function of each key in the keying system, without having to write any further explanation. Each key has a different key symbol. Key symbol "AA1" indicates a lock operated by AA1 Change Key, AA Master, A Grand Master, and GGM - Great Grand Master. "AA1" in this case is a keyed different change. In the case of an alike change, AA2, etc., this change or symbol is merely repeated next to each set using this change key.

Keying Systems

Keying Nomenclature

Exceptions

This Key Code System allows for exceptions. Examples of a few are listed herein.

1. Single Master Key Systems:
   - Always use symbol “AA” for the master key and PREFIX the change key number. Example: 1AA, 2AA, etc. (indicates no Grand Master Key).
2. Grand Master Key Systems:
   - Always use symbol “AA” for the master key and SUFFIX the change key number. Example: AA1, AA2, etc.
3. Symbol “A” only is subject to the “A” Grand only (no Change Key).
4. Symbol “AA” only is subject to the “AA” Master and “A” Grand only (no Change Key).
5. Symbol “A1”, “A2”, etc. These changes are under the “A” Grand only. (Note: Always start these changes with the number ”1”).
6. Symbol “GGM1”, “GGM2”, etc. These changes are under the Great Grand Master only. (Note: Always start these changes with the number “1”).
7. Symbol “1AA”, “2AA”, etc. used in a Great Grand Master Key System. The change numbers are prefixed on all locks operated by Master Keys under the Great Grand Master Key only - no Grand Master.
8. Symbol “1A”, “2A”, etc. used in a Great Grand Master Key System. The change numbers are prefixed on all locks operated by the Grand Master Key only - no Great Grand Master.
9. Symbol “SKD1”, “SKD2”, (Single Keyed) etc. used for locks in a Master, Grand or Great Grand Master Key System but not masterkeyed. Example: Narcotics cabinet, food storage.
10. Where cylinders are to be cross keyed, prefix (example only) Letter “X” to key set and then explain total symbol. Example: XXA1, operated by AA2, MKAA, GMKA

Contrary to the belief of many people, there are definite mathematical limitations to any key system, depending on several factors, such as the number of different master keys, the number of pins in the cylinder, the number of different keyways used, and the spacing or variation in the depth of the cuts in the keys.

A key system, whether it be modest or large in scope, should be analyzed carefully by everyone concerned. This should include the architect, the owner, the lock supplier and the manufacturer.

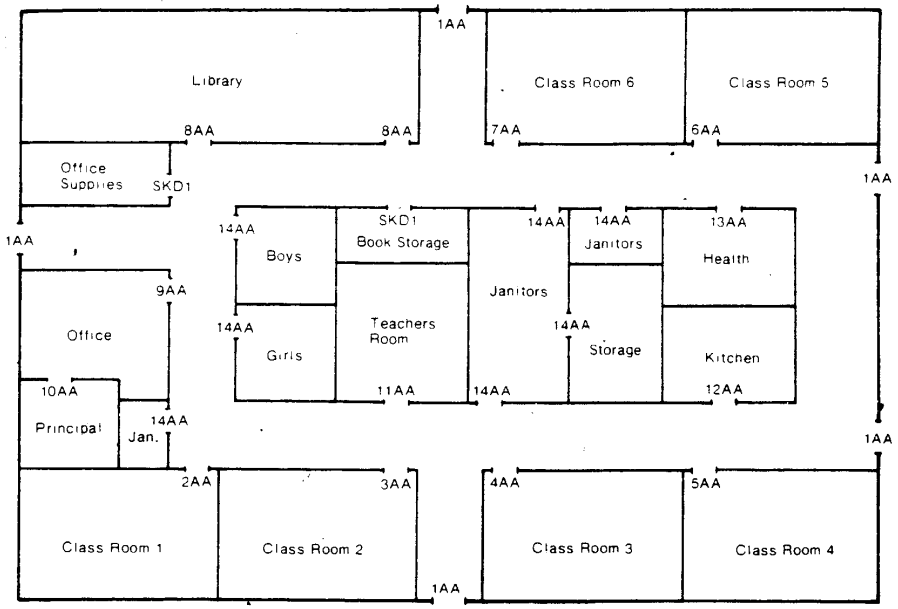
The owner or user of the building or buildings to be placed under a key system should be consulted so that his requirements can be determined carefully. Then these requirements should be reviewed thoroughly by the keying engineers of the cylinder manufacturer to be certain the manufacturer can meet these requirements practically and adequately.

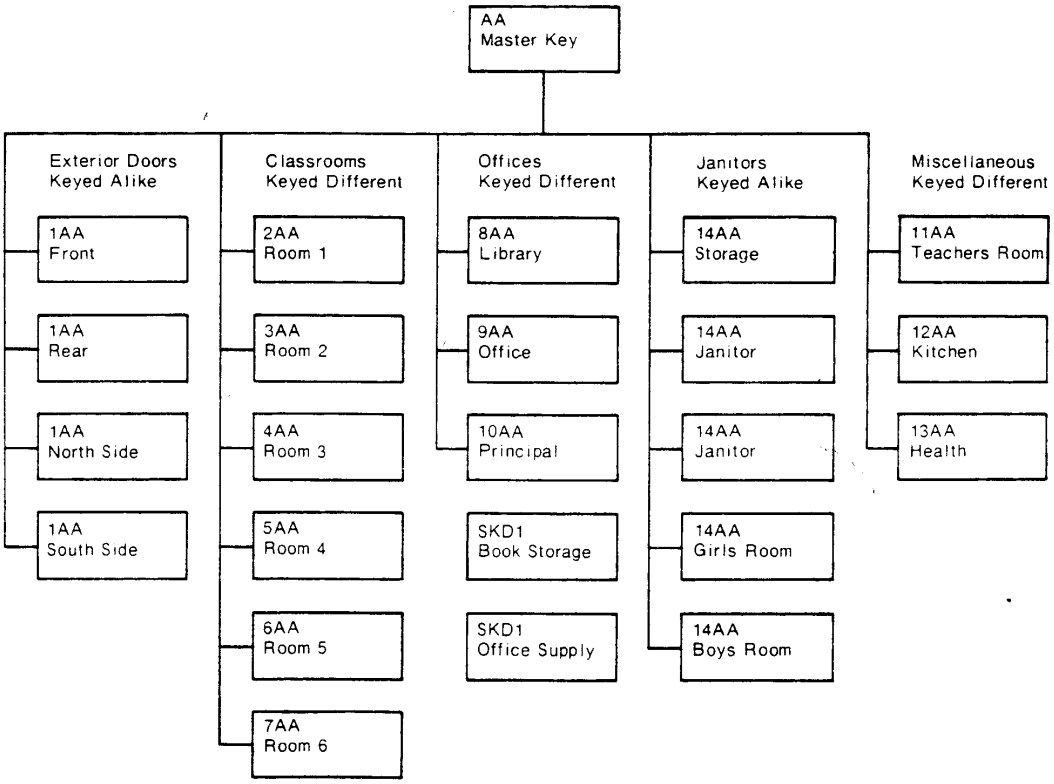
The requirements should not only provide for the building or buildings presently proposed, but also take care of any future building additions which might be contemplated by the owner.

Intricate key systems may be secured but too often it has been found by experience they are not always necessary for proper control. Further, using an intricate system where it is not required may limit future extensions to the system because such systems can reduce the number of available individual changes and master keys.

SIMPLE MASTER KEY SYSTEM FOR A SCHOOL

Zoom In For A Closer Look





TYPICAL MASTER KEY SYSTEM FOR A SCHOOL

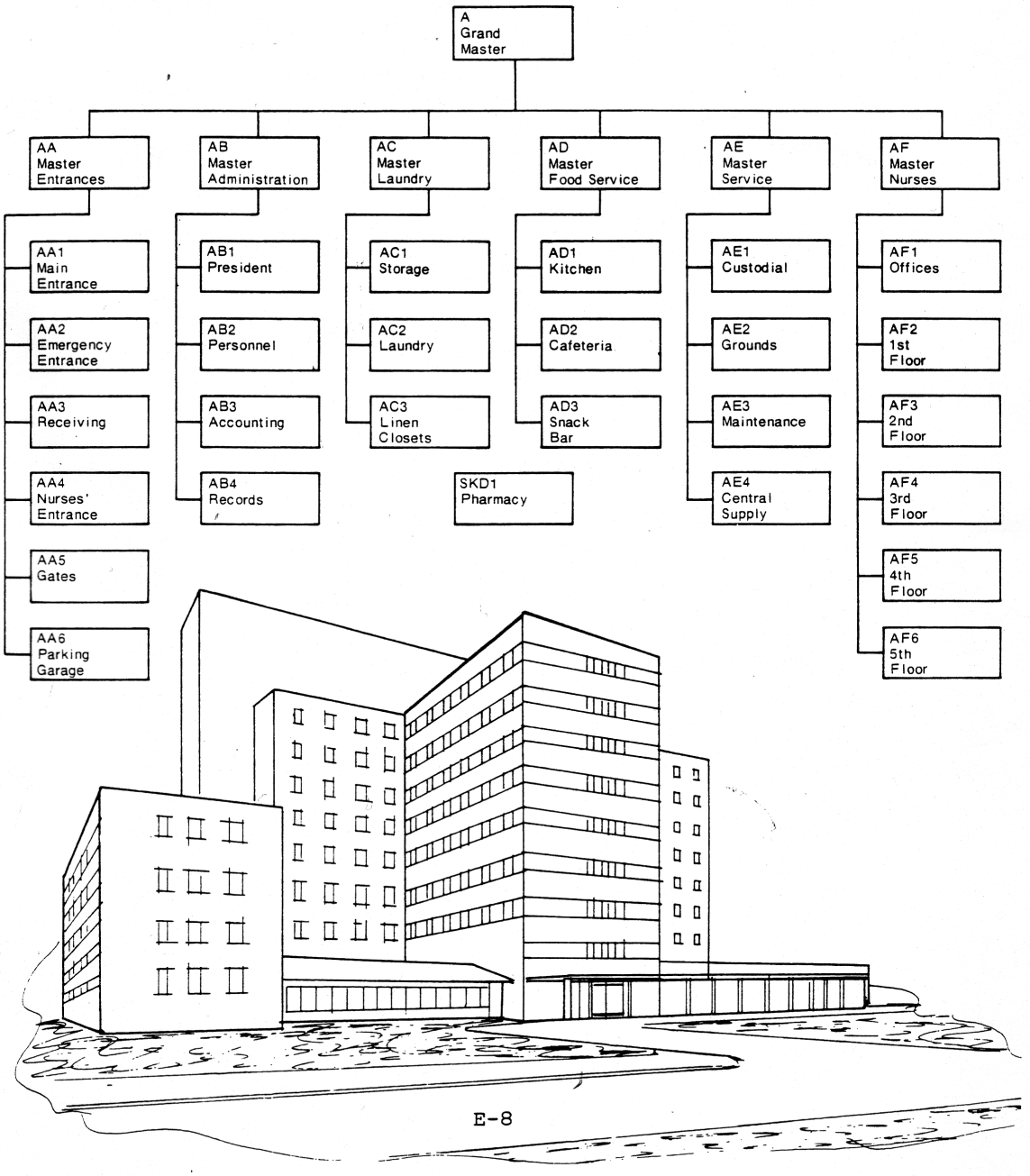
Explanation of the school master key system.

Shown below is an extract from a Hardware Schedule which illustrates how key symbols should be used:

TYPICAL ABBREVIATED HARDWARE SCHEDULE

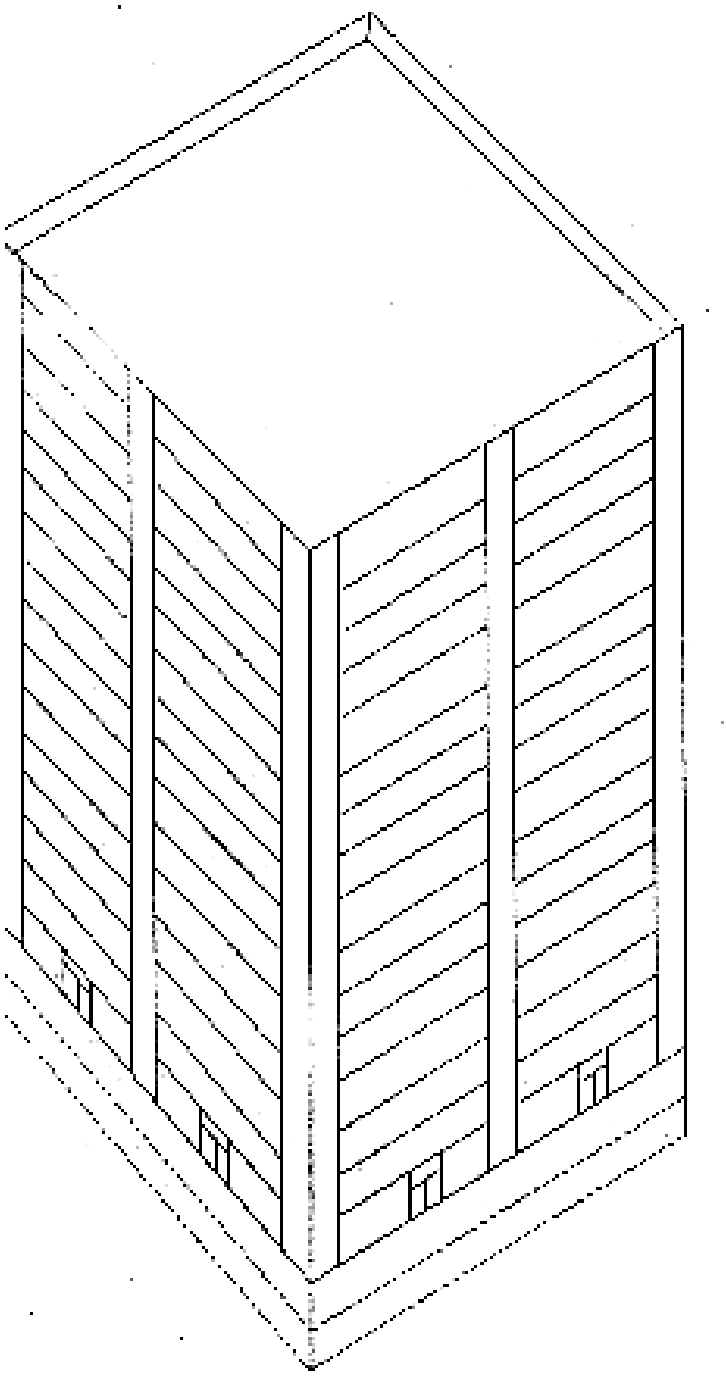
Item Number	Key Symbol	
1		**Heading 1**
	1AA	Exterior from corridors 5 Exit Devices
2		**Heading 2**
	2AA thru 7AA	Corridor from classrooms 6 Locksets
3		**Heading 3**
	SKD1	Corridor to office supply room 1 Lockset
4		**Heading 4**
	14AA	Corridor from Janitor's Room 1 Lockset
5		**Heading 5**
	14AA	Corridor to girl's room 1 Lockset

TYPICAL MASTER KEY SYSTEM FOR A HOSPITAL
Zoom In For A Closer Look



TYPICAL MASTER KEY SYSTEM FOR AN OFFICE AND APARTMENT BUILDINGS

Masters	Floor
AS	14
AR	13
AP	12
AN	11
AM	10
AL	9
AK	8
AJ	7
AH	6
AG	5
AF	4
AE	3
AD	2
AC	1
AB	B
AA	SB



Keying Terminology

The Professional Glossary of Terms & Definitions

Author's Preface

This definitive work was undertaken by the members of the master keying study group of the Associated Locksmiths of America (ALOA) Sponsored National Task Group for Certified Training Programs. The master keying study group set out in 1979 to establish a standardized curriculum for the teaching of professional key making and an introduction to master keying. Members of our study group come from both the locksmithing and lock manufacturing sectors.

It became evident very early that there were many inconsistencies in the language used to discuss and demonstrate our subject. Before the class could be designed therefore, we had to standardize the terminology to be used. Naturally, this meant creating a glossary of terms relating to cylinders, keys and master keying.

Over three years were spent in the research and development of this glossary, and every attempt was made to include all terms in common use in the trade. Upon completion of the first draft, more that 150 copies were sent to local locksmith associations, lock manufacturers and other recognized security specialists. The results of their evaluations virtually doubled the size of this glossary.

It will be noted that many terms are defined as "see (another term)". This is to guide the reader to the primary term. Terms were established as primary because 1) they more closely describe the particular item or concept; and/or 2) they are more widely used, rather than limited to any particular geographic area.

As a group and individually, we now feel that the glossary is the most nearly complete and accurate ever compiled on this subject. We have agreed to endorse it for publication and distribution throughout our industry.

The accepted use of these terms and definitions will be a major step in the direction of universal understanding among locksmiths and lock manufacturers alike.

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G.L. Finch
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Keying Terminology

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A, AA, AA1, 1AA, etc.
1. see “key symbol”
2. see “keying symbol”
3. see “standard key coding system”

across-the-key-progression
n. see “total position progression”

actuator
n. a device, usually connected to a cylinder, which, when activated, may cause a lock mechanism to operate

adjacent cut differential
n. see “maximum adjacent cut specification”

adjustable mortise cylinder
n. any mortise cylinder whose length can be adjusted for a better fit in doors of varying thickness

AFTE
abb. Association of Firearm and Toolmark Examiners

AHC
abb. Architectural Hardware Consultant (as certified by DHI)

all-section key blank
n.the key section which enters all keyways of a multiplex key system

ALOA
abb. Associated Locksmiths of America

angle of cut
n. 1. see “cut angle” #1
2. see “degree of rotation”

angularly bitted key
n. a key which has cuts made into the blade at various degrees of rotation from the perpendicular

ANSI
abb. American National Standards Institute

armored front
n. see “face plate” #1

ASIS
abb. American Society for Industrial Security

associated change key
n. a change key which is related directly to particular master key(s) through the use of constant cuts

associated master key
n. a master key which has particular change keys related directly to its combination through the use of constant cuts

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ASTM
abb. American Society for Testing and Materials

back of blade
n. a thin piece of metal, usually with a concave portion, used with machine screws to fasten certain types of cylinders to a door

backed off blade
n. see “radiused blade bottom”

ball bearing
n. 1. a metal ball used in the pin stack to accomplish some types of hotel or construction keying
2. a ball, usually made of steel, used by some lock manufacturers as the bottom element in the pin stack in one or more pin chambers
3. any metal ball used as a tumbler’s primary component

ball end pin
n. see “bottom pin”

barrel
n. see “cylinder plug”

Bell type key
n. a key whose cuts are in the form of wavy grooves milled into the flat sides of the key blade. The grooves usually run the entire length of the blade.

BHMA
abb. Builders Hardware Manufacturers Association

bible
n. that portion of the cylinder shell which houses the pin chambers, especially those of a key-in-knob cylinder or certain rim cylinders

bicentric cylinder
n. a cylinder which has two independent plugs, usually with different keyways. Both plugs are operable from the same face of the cylinder. It is designed for use in extensive master key systems.

bi-directional cylinder
n. a cylinder which may be operated in a clockwise and counterclockwise direction by a single key

binary cut key
n. a key whose combination only allows for two possibilities in each bitting position: cut/no cut

binary type cylinder or lock
n. a cylinder or lock whose combination only allows for two bitting possibilities in each bitting position

bit
1. n. the part of the key which serves as the blade, usually for use in a warded or lever tumbler lock
2. n. see”key cuts”
3. v. to cut a key

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bitting
n. 1. the number(s) which represent(s) the dimensions of the key cut(s)
2. the actual cut(s) or combination of key

bitting depth
n. the depth of a cut which is made into the blade of a key

bitting list
n. a listing of all the key combinations used within a system. The combination are usually arranged in order of the blind code, and/or key symbol.

bitting position
n. 1. the location of a key cut
2. see "spacing"

blade tumbler
n. see "disk tumbler"

blank
1. n see"key blank"
2. adj. uncut

blind code
n. a designation, unrelated to the bitting, assigned to a particular key combination for future reference when additional keys or cylinders may be needed.

block master key
n. the one pin masterkey for all combinations listed as a block in the standard progression format

blocking ring
n. see "cylinder collar"

blockout key
n. see "lockout key"

bottom of blade
n. the portion of the blade opposite the cut edge of a single bitted key

bottom pin
n. usually a cylindrical shaped tumbler which may be conical ball shaped or chisel pointed on the end which makes contact with the key

bow
n. the portion of the key which serves as a grip or handle

bow stop
n. a type of stop located near the key bow

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broach
1. n. a tool used to cut the keyway into the cylinder plug
2. v. to cut the keyway into a cylinder plug with a broach

builders' master key
n. see "construction master key"

building master key
n. a master key which operates all or most master keyed locks in a given building

bypass key
n. the key which operates a key override cylinder

cam
n. a flat actuator or locking bolt attached to the rear of a cylinder perpendicular to its plug and rotated by the key

cam lock
n. a complete locking assembly in the form of a cylinder whose cam is the actual locking bolt

cap
1. n. a spring cover for a single pin chamber
2. n. a part which may serve as a plug retainer and/or a holder for the tailpiece
3. v. to install a cap

capping block
n. a holding fixture for certain interchangeable cores which aids in the installation of the caps

cell
n. see "pin chamber"

central key system
n. see "selective key system"

chamber
n. any cavity in a cylinder plug and/or shell which houses the tumbler(s)

change key
n. 1. a key which operates only one cylinder or one group of keyed alike cylinders in a keying system
2. see " reset key" #1

change key constant
n. see "constant cut"

change key section
n. see "single key section"

control cut
n. 1. any bitting which operates the retaining device of an interchangeable or removable core
2. see "constant cut" #1

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control key
n. 1. a key whose only purpose is to remove and/or install an interchangeable or removable core
2. a bypass key used to operate and/or reset some combination type locks
3. a key which allows disassembly of some removable cylinder locks

control lug
n. that part of interchangeable or removable core retaining device which locks the core into its housing

control sleeve
n. the part of an interchangeable core retaining device which surrounds the plug

controlled cross keying
n. a condition in which two or more different keys of the same level of keying and under the same higher level key(s) operate one cylinder by design; eg. XAA1 operated by AA2 (but not XAA1 operated by AB1)
NOTE: This condition could severely limit the security of the cylinder and the maximum expansion of the system when (1) more than a few of these different keys operate a cylinder, or (2) more than a few differently cross keyed cylinders per system are required

core
n. a complete unit, often with a figure 8 shape, which usually consists of the plug, shell, tumblers, springs, plug retainer and spring cover(s). It is primarily used in removable and interchangeable core cylinders and locks.

CPP
adj. see “cross keying”

cross keying
n. the deliberate process of combinating a cylinder (usually in a master key system) two or more different keys which would not normally be expected to operate it together. See also “controlled cross keying” and “uncontrolled cross keying”.

CSI
abb. Construction Specifiers Institute

cut
1. n. see “key cut(s)”
2. v. to make cuts into a key blade

cut angle
n. 1. a measurement, usually expressed in degrees, for the angle between the two sides of a key cut
2. see “degree of rotation”

cut depth
n. 1. see “bitting depth”
2. see “root depth”

cut edge
n. the portion of the key blade which contains the cuts

cut key
n. a key which has been bitted or combinated

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cut profile
n. see “key cut profile”

cut root
n. the bottom of a key cut

cut root shape
n. the shape of the bottom of a key cut. It may have a flat or radius of a specific dimension, or be a perfect “V”

cut rotation
n. see “degree of rotating”

cutter
n. the part of a key machine which makes the cuts into the key blank

cylinder
n. a complete operating unit which usually consists of the plug, shell, tumblers, springs, plug retainer, a cam/tailpiece or other actuating device, and all other necessary operating parts

cylinder assembly
n. see “cylinder”

cylinder bar
n. see “tailpiece”

cylinder blank
n. a dummy cylinder which has a solid face and no operating parts

cylinder clip
n. a spring steel device used to secure some types of cylinders

cylinder collar
n. a plate or ring installed under the head of a cylinder to improve appearance and/or security

cylinder guard
n. a protective cylinder mounting device

cylinder key
n. a broad generic term including virtually all pin and disc tumbler keys

cylinder plug
n. see “plug”

cylinder ring
n. see “ cylinder collar”

cylinder rose
n. see “cylinder collar”

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day key
n. see “change key” #1

declining step key
n. a key whose cuts are progressively deeper from bow to tip

decode
v. to determine a key combination by physical measurement of a key and/or cylinder parts

degree of rotation
n. a specification for the angle at which a cut is made into a key blade as referenced from the perpendicular; eg. right (R or 2), left (L or 1) or centre (=perpendicular) (C). this specification is typically used for some high security keys.

department master key
n. a master key which operates all or most keyed locks of a given department

depth
n. 1. see “bitting depth”
2. see “root depth”

depth key set
n. a set of keys used to make a code original key on a key duplicating machine to lock manufacturer’s given set of key bitting specifications. Each key is cut with the correct spacing to one depth only in all bitting positions, with one key for each depth.

derived series
n. a series of blind codes and bittings which are directly related to those of another bitting list

detainer disc
n. see “rotary tumbler”

DHI
abb. Door and Hardware Institute

dimple
n. key cut in a dimple key

dimple key
n. a key whose cuts are drilled or milled into its blade surfaces. The cuts normally do not change the blade silhouette

direct code
n. a designation assigned to a particular key which includes the actual combination of the key

disc
n. 1. see “disc tumbler”
2. see “master pin” #1
3. see “rotary tumbler”

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disc tumbler
n. 1. a flat tumbler which must be drawn into the cylinder plug by the proper key so that none of its extremities extends into the shell
2. a flat, usually rectangular tumbler with a gate which must be aligned with a sidebar by the proper key

display key
n. a special change key in a hotel master key system which will allow access to one designated guest room, even if the lock is in the shut out mode. It may also act as a shut out key for that room.

double bitted key
n. a key bitted on two opposite surfaces

double pin
v. to place more than one master pin in a single pin chamber

double sided key
n. see "double bitted key"

driver
n. see "top pin"

driver spring
n. a spring placed on top of the pin stack to exert pressure on the pin tumblers

drop
n. 1. see "increment"
2. a pivoting or swinging dust cover

dummy cylinder
n. a non-functional facsimile of a rim or mortise cylinder used for a appearance only, usually to conceal a cylinder hole

duplicate
1. n. see "duplicate key"
2. v. to copy

duplicate blank
n. see "non-original key blank"

duplicate key
n. any key reproduced from a pattern key

dust cover
n. a device designed to prevent foreign matter from entering a mechanism through the keyway

dustproof cylinder
n. a cylinder designed to prevent foreign matter from entering either end of the keyway

effective plug diameter
n. the dimension obtained by adding the root depth of a key cut to the length of its corresponding bottom pin which establishes a perfect shear line. This will not necessarily be the same as the actual plug diameter.

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ejector hole
n. a hole found on the bottom of certain interchangeable cores under each pin chamber. It provides a path for the ejector pin.

ejector pin
n. a tool used to drive all the elements of a pin chamber out of certain interchangeable cores

emergency key
n. 1. see "emergency master key"
2. the key which operates a privacy function lockset

emergency master key
n. a special master key which usually operates all guest room locks in a hotel master key system at all times, even in the shut out mode. This key may also act as a shut out key.

EMK
abb. emergency master key

encode
v. see"combinate"

ENG
symbol for engineer's key

engineer's key
n. a selective master key which is used by maintenance personnel to operate many locks under different master keys in a system of three or more levels of keying

escutcheon
n. a surface mounted trim which enhances the appearance and/or security of a lock installation

extractor key
n. a tool which normally removes a portion of a two-piece key or blocking device from a keyway

face plate
n. 1. a mortise lock cover plate exposed in the edge of the door
2 see "scalp"

factory original key
n. the cut key furnished by the lock manufacturer for a lock or cylinder

false plug
n. see "plug follower"

fence
n. 1. a projection on a lock bolt which prevents movement of the bolt unless it can enter gates of properly aligned tumblers
2. see "sidebar"

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file key
n. see “pattern key” #1

finish
n. a material, colouring and/or texturing specification

fireman’s key
n. a key used to override normal operation of elevators, bring them to the ground floor

first generation duplicate
n. a key which was duplicated using a factory original key or a code original keys as a pattern

first key
n. any key produced without the use of a pattern key

five column progression
n. a process wherein key bittings are obtained by using the cut possibilities in five columns of the key bitting array

five pin master key
n. a master key for all combinations obtained by progressing five bitting positions

flexible head mortise cylinder
n. an adjustable mortise cylinder which can be extended against spring pressure to a slightly longer length

floating master key
n. 1. see “unassociated master key”
2. see “selective master key”

floor master key
n. a master key which operates all or most master keyed locks on a particular floor of a building

follower
n. see “plug follower”

formula
n. see “key bitting array”

four column progression
n. a process wherein key bittings are obtained by using the cut possibilities in four columns of the key bitting array

four pin master key
n. a master key for all combinations obtained by progressing four bitting positions

gate
n. a notch cut into the edge of a tumbler to accept a fence or sidebar

gauge key
n. 1. see ”depth key set”
2. see ”set-up key”

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genuine key blank
n. see “original key blank”

GGGMK
abb. great great grand master key

GGM
abb. great grand master key

GGMK
abb. great grand master key

GGMK’d
abb. great grand master keyed

ghost key
n. see “incidental master key”

GM
abb. grand master key

GMK
abb. grand master key

GMK section
abb. grand master key section

GMK’d
abb. grand master keyed

graduated drivers
n. 1. a set of top pins of different lengths. Usage is based on the height of the rest of the pin stack, in order to achieve a uniform pin stack height.
2. see “compensate drivers” #1

grand master key
n. the key which operates two or more separate groups of locks, which are each operated by a different master key

grand master key section
n. 1. see”multi-section key blank”
2. see”all section key blank”

grand master key system
n. a master key system which has exactly three levels of keying

grand master keyed
adj. of or pertaining to a lock or cylinder which is or is to be keyed into a grand master key system

great grand master key
n. the key which operates two or more separate groups of locks which are each operated by a different grand master key

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great grand master key system
n. a master key system which has exactly four levels of keying

great grand master keyed
adj. of or pertaining to a lock or cylinder which is or is to be keyed into a great grand master key system

great great grand master key
n. the key which operates two or more separate groups of locks which are operated by different great grand master keys

great great grand master key system
n. a master key system which has five or more levels of keying

grooving
n. see " key milling"

guard key
n. a key in a hotel master key system which is normally used to unlock only the one guest room for which it was intended, but will not operate the lock in the shut out mode

guide
n. that part of a key machine which follows the cuts of a pattern key or template during duplication

guide keys
n. pl. see "depth key set"

hardware schedule
n. a listing of the door hardware used on a particular job. It includes the types of hardware, manufacturers, locations, finishes, and sizes. It should include a keying schedule specifying how each locking device is to be keyed.

HGM
abb. horizontal group master key

high security cylinder
n. a cylinder which offers a greater degree of resistance to any or all of the following: picking, impressioning, key duplication, drilling or other forms of forcible entry

high security key
n. a key for a high security cylinder

HKP
abb. housekeeper's key

hold and vary
n. see "rotating constant method"

hold open cylinder
n. a cylinder provided with a special cam which will hold a latch bolt in the retracted position when so set by the key

holding fixture
n. a device which holds cylinder plugs, cylinders, housing, and/or cores to facilitate the installation of tumblers, springs and/or spring cores.

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hollow driver
n. a top pin hollowed out on one end to receive the spring, typically used in cylinders with extremely limited clearance in the pin holders

horizontal group master key
n. the two pin master key for all combinations listed in all blocks in a line across the page in the standard progression format

housekeeper's key
n. that part of a locking device which is designed to hold a core

housing
n. that part of a locking device which is designated to hold a core

imitation blank
n. see "non-original key blank"

impression
1. n. the mark made by a tumbler on its key cut
2. v. to fit a key by the impression technique

impression technique
n. a means of fitting a key directly to a locked cylinder by manipulating a blank in the keyway and cutting the blank where the tumblers have made marks

incidental master key
n. a key cut to an unplanned shearline created when the cylinder is combinated to the top matched by a corresponding change in the tumblers

indicator
n. a device which provides visual evidence that a deadbolt is extended or that a lock is in the shut out mode

indirect code
n. see "blind code"

individual key
n. 1. an operating key for a lock or cylinder which is not part of a keying system
2. see "change key" #1

interchange
n. see "key interchange"

interchangeable core
n. a key removable core which can be used in all or most of the core manufacturer's product line. No tools (other than the control key) are required for removal of the core.

interlocking pin tumbler
n. a type of pin tumbler which is designed to be linked together with all other tumblers in its chamber when the cylinder plug is in the locked position

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jiggle key
n. see “manipulation key”

jumbo cylinder
n. a rim or mortise cylinder of 1-1/2” diameter

k
symbol for “keys” used after a numerical designation of the quantity of the keys requested to be supplied with the cylinder; eg. 1k, 2k, 3k, etc. It is usually found in hardware/keying schedules.

KA
abb. keyed alike

KA1, KA2, etc.
symbol used to indicate the quantity of locks or cylinders in keyed alike groups. These groups are usually formed from a larger quantity; eg. 30 cylinders KA/2

KBA
abb. key bitting array

key
n. a properly combinated device which is, or most closely resembles, the device specifically intended by the lock manufacturer to operate the corresponding lock

key bitting array
n. a matrix (graphic) display of all possible bittings for change keys and master keys as related to the top master key

key bitting specifications
n. pl. the technical data required to bit a given (family of) key blank(s) to the lock manufacturer’s dimensions

key bitting punch
n. a manually operated device which stamps or punches the cuts into the key blade, rather than grinding or milling them

key blank
n. any material manufactured to the proper size and configuration which allows its entry into the keyway of a specific locking device. A key blank has not yet been combinated or cut.

key bypass
n. and adj. see “key override”

key change number
n.
1. see “blind code”
2. see “direct code”
3. see “key symbol”

key changeable
adj. of or pertaining to a lock of cylinder which can be recombinated without disassembly, by the use of a key. The use of a tool may also be required.

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key changes
n. pl. 1. see “practical key changes”
2. see “theoretical key changes”

key coding machine
n. a key machine designed for the production of code keys. it may or may not also serve as a duplicating machine.

key control
n. 1. any method or procedure which limits unauthorized acquisition of a key and /or controls distribution of authorized keys
2. a systematic organization of keys and key records

key cut(s)
n. the portion of the key blade which remains after being cut an which aligns the tumbler(s)

key cut profile
n. the shape of a key cut, including the cut angle and the cut root shape

key duplicating machine
n. a key machine which is designed to make copies from a pattern key

keygauge
n. a usually flat device with a cutaway portion indexed with a given set of depth or spacing specifications. It is used to help determine the combination of a key.

key-in-knob cylinder
n. a cylinder used in a key-in-knob lockset

key interchange
n. an undesirable condition, usually in a master key system, whereby a key unintentionally operates a cylinder or lock

key machine
n. any machine designed to cut keys. See also “key coding machine” and “key duplicating machine”

key manipulation
n. manipulation of an incorrect key in order to operate a lock or cylinder

key milling
n. the grooves machined into the length of the key blade to allow its entry into the keyway

key override
1. n. a provision allowing interruption or circumvention of normal operation of a combination lock or electrical device
2. adj. of or pertaining to such a provision, as in “key override cylinder”

key override cylinder
n. a lock cylinder installed in a device to provide a key override function

key picking
n. see “key manipulation”

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key pin
n. see “bottom pin”

key profile
n. see “key section”

key pull position
n. any position of the cylinder plug at which the key can be removed

key records
n. pl. records which typically include some or all of the following: bitting list, key bitting array, key system schematic, end user, number of keys/cylinders issued, names of persons to whom keys were issued, hardware/keying schedule

key retaining
adj. 1. of or pertaining to a lock which must be locked before its key can be removed
2. of or pertaining to a cylinder or lock which may prevent removal of a key without the use of an additional key and /or tool

key section
n. the exact cross sectional configuration of a key blade as viewed from the bow toward the tip

key stop
n. see “stop (of a key)”

key symbol
n. a designation used for a key combination in the standard key coding system, eg. A, AA, AA1, etc.

key system schematic
n. a drawing with blocks utilizing keying symbols, usually illustrating he hierarchy of all keys within a master key system. It indicates the structure and total expansion of the system.

key trap core/cylinder
n. a special core or cylinder designed to capture any key to which it is combinated, once that key is inserted and turned slightly

keyed
adj. 1. combinated
2. having provision for operation by key

keyed common
adj. see “maison key system”

keyed alike
adj. of or pertaining to two or more locks or cylinders which have or are to have the same combination. They may or may not be part of a keying system.

keyed different
adj. of or pertaining to a group of locks or cylinders, each of which is or is to be combinated differently from the others. They may or may not be part of a keying system.

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keyed random
adj. of or pertaining to a cylinder or group of cylinders selected from a limited inventory of different key changes. Duplicate bittings may occur.

keying
n. any specification for how a cylinder or group of cylinders are or are to be combinated in order to control access

keying chart
n. 1. see “pinning chart”
2. see “progression list”
3. see “bitting list”
4. see “key system schematic”

keying diagram
n. see “key system schematic”

keying kit
n. a compartmented container which holds an assortment of tumblers, springs and/or other parts

keying levels
n. pl. see “levels of keying”

keying schedule
n. a detailed specification of the keying system listing how all cylinders are to be keyed and the quantities; markings, and shipping instructions of all keys and/or cylinders to be provided

keying symbol
n. a designation used for a lock or cylinder combination in the standard key coding system; eg. AA1, XAA1, X1X, etc.

keyset
n. 1. see “key symbol”
2. see “keying symbol”

keyway
n. 1. the opening in a lock or cylinder or cylinder which is shaped to accept a key bit or blade of a proper configu ration
2. the exact cross sectional configuration of a key as viewed from the front. It is not necessarily the same as the key section

keyway shutter
n. see “dust cover”

keyway unit
n. the plug of certain binary type disc tumbler key-in-knob locks

KR
1. abb. keyed random
2. abb. key retaining

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KWY
abb. keyway

layout board
n. see "layout tray"

layout tray
n. a compartmented container used to organize cylinder parts during keying or servicing

lazy cam/tailpiece
n. a cam or tailpiece designed to remain stationary while the cylinder plug is partially rotated and/or vice versa

level (of a cut)
n. 1. see "bitting depth"
2. see "root depth"

levels of keying
n. pl. the divisions of a master key system into hierarchies of access, as shown in the following tables. Note that the standard key coding system has been expanded to include key symbols for systems of more than four levels of keying.

TWO LEVEL SYSTEM

level keying	key name	abb.	key symbol
Level II	master key	MK.	AA
Level I	change key	CK	1AA, 2AA, etc.

THREE LEVEL SYSTEM

level of keying	key name	abb.	key symbol
Level III	grand master key	GMK	A
Level II	master key	MK	AA, AB, etc.
Level I	change key	CK	AA1, AA2, etc.

FOUR LEVEL SYSTEM

level of keying	key name	abb.	key symbol
Level IV	great grand master key	GGMK	GGMK
Level III	grand master key	GMK	A,B, etc.
Level II	master key	MK	AA, AB, etc.
Level I	change key	CK	AA1, AA2, etc.

FIVE LEVEL SYSTEM

level of keying	key name	abb.	key symbol
Level V	great great grand master key	GGGMK	GGGMK
Level VI	great grand master key	GGMK	A,B, etc.
Level III	grand master key	GMK	AA, AB, etc.
Level II	master key	MK	AAA, AAB, etc.
Level I	change key	CK	AAA1, AAA2, etc.

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SIX LEVEL SYSTEM

level of keying	key name	abb.	key symbol
Level VI	great great grand master key	GGGMK	GGGMK
Level V	great grand master key	GGMK	A,B, etc.
Level IV	grand master key	GMK	AA, AB, etc.
Level III	master key	MK	AAA, AAB, etc.
Level II	sub-master key	SMK	AAAA, AAAB, etc.
Level I	change key	CK	AAAA1, AAAA2, etc.

lever tumbler
n. a flat, spring-loaded tumbler which pivots on a post. It contains a gate which must be aligned with a fence to allow movement of the bolt.

loading tool
n. a tool which aids installation of cylinder components into the cylinder shell

lockout
n. any situation in which the normal operation of a lock or cylinder is prevented

lockout key
n. a key made in two pieces. One piece is trapped in the keyway by the tumblers when inserted and blocks entry of any regula key. The second piece is used to remove the first piece.

MACS
abb. maximum adjacent cut specification

maid's master key
n. the master key in a hotel master key system given to the maid. It operates only cylinders of the guest rooms and linen closets in the maid's designated area.

maintenance master key
n. see "engineer's key"

maison key system
n. [from the French, meaning "house" key system] a keying system in which one or more cylinders are operated by every key (or relatively large numbers of different keys) in the system; e.g., main entrances of apartment buildings operated by all individual suite keys of the building

manipulation key
n. any key other than a correct key which can be variably positioned and /or manipulated in a keyway to operate a lock or cylinder

master
n. see "master key" #1

maser blank
n. 1. see "multi-section key blank"
2. see "all-section key blank"

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master chip
n. see"master pin" #1

master disc
n. 1. see"master pin" #1
2. see"stepped tumbler"
3. see"a special disc tumbler with multiple gates to receive a sidebar"

master key
1. n. a key which operates all the master keyed locks or cylinders in a group, each lock cylinder usually operated by its own change key
2. v. to combinate a group of locks or cylinders such that each is operated by its own change key as well as by a master key for the entire group.

master key changes
n. the number of different usable keys available under a given master key

master key constant
n. see"constant cut"#1

master key section
n. 1. see "multi-section key blank"
2. see "all-section key blank"

master key system
n. 1. any keying arrangement which has two or more levels of keying
2. a keying arrangement which has exactly two levels of keying

master keyed
adj. of or pertaining to a cylinder or group of cylinders which are or are to be combinated so that all may be operated by their own change key(s) and by additional key(s) known as master key(s)

master keyed only
adj. of or pertaining to a lock or cylinder which is or is to be combinated only to a master key

master keying
v. see "master key" #2

master level
n. a level tumbler which can align some or all other levers in its lock so that their gates are at the fence. It is typically used in locker locks.

master pin
n. 1. usually a cylindrical shaped tumbler, flat on both ends, placed between the top and bottom pin to create an additional shear line
2. a pin tumbler with multiple gates to accept a sidebar

master ring
n. a tube shaped sleeve located between the plug and shell of certain cylinders to create a second shear line. Normally the plug shear line is used for change key combinations and the shell shear line is used for master key combinations.

Keying Terminology

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master ring lock/cylinder
n. a lock or cylinder equipped with a master ring

master wafer
n. 1. see"master pin" #1
2. see"stepped tumbler"
3. a ward used in certain binary type tumbler key-in-knob locks

maximum adjacent cut differential
n. see "maximum adjacent cut specification"

maximum adjacent cut specification
n. the maximum allowable difference between adjacent cut depths

maximum opposing cut specification
n. the maximum allowable depths to which opposing cuts can be made without breaking through the key blade. This is typically a consideration with dimple keys.

milling (of a key)
n. 1. see "key section"
2. see "key milling"

mis-cut
1. adj. of or pertaining to a key which has been cut incorrectly
2. n. a mis-cut key

MK
abb. master key

MK'd
abb. master keyed

MK'd only
abb. master keyed only

MK section
abb. master key section

MOCS
abb. maximum opposing cut specification

mogul cylinder
n. a very large pin tumbler cylinder whose pins, springs, key, etc. are also proportionally increased in size. It is typically used in prison locks.

mortise cylinder
n. a threaded cylinder typically used in mortise locks of American manufactures

mortise cylinder blank
n. see "cylinder blank"

Keying Terminology

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movable constant
n. see"rotating constant"

multi-section key blank
n. a key section which enters more than one, but not all keyways in a multiplex key system

multiple gating
n. a means of master keying by providing a tumbler with more than one gate

multiplex key blank
n. any key blank which is part of a multiplex key system

multiplex key system
n. 1. a series of different key sections which may be used to expand a master key system by repeating bittings on additional key sections. This keys of one key section will not enter the keyway of another key section. This type of system always includes another key section which will enter more than one, or all of the keyways.
2. a keying system which uses such keyways and key sections

mushroom driver
n. see"mushroom pin"

mushroom pin
n. a pin tumbler, usually a top pin which resembles a mushroom. It is typically used to increase pick resistance.

NCK
symbol for "no change key", primarily used in hardware schedules

negative locking
n. locking achieved solely by spring pressure or gravity which prevents a key cut too deeply from operating a lock or cylinder

NKR
a keying symbol which means "not master keyed" and is suffixed in parentheses to the regular key symbol. It indicates that the cylinder is not to be operated by the master key(s) specified in the regular key symbol; eg. AB6(NMK)

non key retaining
adj. of or pertaining to a lock whose key can be removed in both the locked and unlocked positions

non-keyed
adj. having no provision for key operation
NOTE: this term also includes privacy function locksets operated by an emergency key.

non-original key blank
n. any key blank other than original key blank.

O Bitted
adj. see "zero bitted"

odometer method
n. a means of progressing key bittings using a progression sequence of right to left

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one bitted
adj. of or pertaining to a cylinder which is or is to be combinated to keys cut to the manufacturer's reference number one bitting

one column progression
n. a process wherein key bittings are obtained by using the cut possibilities in one column of the key bitting array

one pin master key
n. a master key for all combinations obtained by progressing only one bitting position

open code
n. see "direct code"

operating key
n. 1. any key which will properly operate a lock or cylinder to lock or unlock the lock mechanism and is not a control key or reset key.
2. see"change key"#1

original key
n. 1. see"factory original key"
2. see"code original key"

original key blank
n. a key blank supplied by the lock manufacturer to fit that manufacturer's specific product

page master key
n. the three pin master key for all combinations listed on a page in the standard progression format

paracentric
adj. 1. of or pertaining to a keyway with one or more wards on each side projecting beyond the vertical centre line of the keyway to hinder picking
2. of or pertaining to key blank made to enter such a keyway

pattern key
n 1. an original key kept on file to use in a key duplicating machine when additional keys are required
2. any key which is used in a key duplication machine to create a duplicate key

peanut cylinder
n. a mortise cylinder of 3/4" diameter

phantom key
n. see"incidental master key"

pick
1.n. a tool or instrument, other than the specifically designed key, made for the purpose of manipulating tumblers in a lock or cylinder into the locked or unlocked position through the keyway, without obvious damage.
2.v. to manipulate tumblers in a keyed lock mechanism through the keyway, without obvious damage, by means other than the specifically designed key.

Keying Terminology

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pick key
n. a type of manipulation key, cut or modified to operate a lock or cylinder

pin
1. n. see ”pin tumbler”
2.v. to install pin tumblers into a cylinder and /or cylinder plug

pin cell
n. see ”pin chamber”

pin chamber
n. the corresponding hole drilled into the cylinder shell and/or plug to accept the pin(s) and spring

pin kit
n. a type of keying kit for a pin tumbler mechanism

pin segment
n. see “pin tumbler”

pin set
v. see “pin”#2

pin stack
n. 1. all the tumblers in a given pin chamber
2. see “pin stack height”

pin stack height
n. the measurement of a pin stack, often expressed in units of the lock manufacturer’s increment or as an actual dimension

pin tray
n. see “layout tray”

pin tumbler
n. usually a cylindrical shaped tumbler. Three types are normally used: bottom pin, master pin and top pin

pin tweezers
n. pl. a tool used in handling tumblers and springs

pining
v. see “pin”#2

pinning block
n. a holding fixture which assists in the loading of tumblers into a cylinder plug

pinning chart
n. a numerical diagram which indicates the sizes and order of installation of the various pins into a cylinder. The sizes are usually indicated by a manufacturer’s reference number which equals the quantity of increments a tumbler represents.

Keying Terminology

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plug
n. the part of a cylinder which contains the keyway, with tumbler chambers usually corresponding to those in the cylinder shell

plug follower
n. a tool used to allow removal of the cylinder plug while retaining the top pins, springs, and /or other components within the shell

plug holder
n. a holding fixture which assists in the loading of tumblers into a cylinder plug

plug iron
n. 1. see "plug follower"
2. see "set-up plug"

plug retainer
n. the cylinder component which secures the plug in the shell

plug set-up chart
n. see "pinning chart"

plug vise
n. see "plug holder"

positional master keying
n. a method of master keying typical of certain binary type disc tumbler key-in-lever knob locks and of magnetic and dimple key cylinders. Of all possible tumbler positions within a cylinder, only a limited number contain active tumblers. The locations of these active tumblers are rotated among all possible positions to generate key changes. High level keys must have more cuts or magnets than lower.

positive locking
n. the condition brought about when a key cut which is too high forces its tumbler into the locking position. This type of locking does not rely on gravity or spring pressure

practical key changes
n. pl. the total number of usable different combinations available for a specific cylinder or lock mechanism

prep key
n. a type of guard key for a safe deposit box lock with only one keyway. It must be turned once and withdrawn before the renter's key will unlock the unit.

privacy key
n. 1. a key which operates an SKD cylinder
2. see"keyway" #2

profile cylinder
n. a cylinder with a usually uniform cross section, which slides into place and usually is held by a mounting screw. It is typically used in mortise locks of non-U.S. manufacture.

Keying Terminology

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program key
n. see "reset key" #1

progress
v. to select possible key bittings from the key bitting array, usually in numbered order

progression
n. a logical sequence of selecting possible key bittings, usually in numerical order from the key bitting array.

progression column
n. a listing of the key bitting possibilities available in one bitting position as displayed in a column of the key bitting array

progression formula
n. see "key bitting array"

progression list
n. see "sequence of progression"

progressive
n. any bitting position which is progressed rather than held constant

proprietary
adj. of or pertaining to a keyway and key section assigned exclusively to one end used by the lock manufacturer. it may also be protected by law from duplication.

quadrant master key
n. see"four pin master key"

radiused blade bottom
n. the bottom of a key blade which has been radiused to conform to the curvature of the cylinder plug it is designed to enter

random master keying
n. any undesirable process used to maser key which uses unrelated keys to create a system

rap
v. 1. to unlock a plug from its shell by striking sharp blows to the spring of the cylinder while applying tension to the plug
2. to unlock a padlock shackle from its case by striking sharp blows to the sides in order to disengage the locking dogs.

read key
n. a key which allows access to the sales and/or customer data on certain types of cash control equipment (eg. cash registers)

recode
v. see "recombinate"

recombinate
v. to change the combination of a lock, cylinder, or key

Keying Terminology

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recore
v. to rekey by installing a different core

register groove
n. the reference point on the key blade from which some manufacturers locate bitting depths

register number
n. 1. a reference number typically assigned by the lock manufacturer an entire master key system
2. a blind code assigned by some lock manufacturers to higher level keys in a master key system

rekey
v. to change the existing combination of a cylinder or lock

removable core
n. a key removable core which can be installed in one type of cylinder housing eg. rim cylinder or mortise cylinder or key-in-knob lock

removable cylinder
n. a cylinder which can be removed from a locking device by a key and/or tool

removal key
n. 1. the part of a two piece key which is used to remove its counterpart from a keyway
2. see " control key" #1 and #3
3. see " construction breakout key"

renter's key
n. a key which must be used together with a guard key, prep key or electronic release to unlock a safe deposit lock. It is usually different for every unit within an installation

repin
v. to replace pin tumblers, with or without changing the existing combination

reserved
adj. see "restricted"

reset
v. see "recombinate"

reset key
n. 1. a key used to set some types of cylinders to a new combination. Many of these cylinders require the additional use of tools and/or the new operating key to establish the new combination
2. a key which allows the tabulations on various types of cash control equipment (eg. cash registers) to be cleared from the records of the equipment

restricted
adj. of or pertaining to a keyway and corresponding key blank whose sale and/or distribution is limited by the lock manufacturer in order to reduce unauthorized key proliferation.

retainer
n. see "plug retainer"

Keying Terminology

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reversible key
n. a symetrical key which may be inserted either way up to operate a lock

rim cylinder
n. a cylinder typically used with surface applied locks and attached with a black plate and machine screws. It has a tailpiece to actuate the lock mechanism

rocker key
n. see "manipulation key"

root depth
n. the dimension from the bottom of cut on a key to the bottom of the blade

root of cut
n. see "cut root"

rose
n. a usually circular escutcheon

rotary tumbler
n. a circular tumbler with one or more gates. Rotation of the proper key aligns the tumbler gates at a sidebar, fence or shackle slot

rotating constant
n. one or more cut(s) in a key of any level which remain constant throughout all levels and are identical to the top master key cuts in their corresponding positions. The positions were the top master key cuts are held constant may be moved, always in a logical sequence.

rotating constant method
n. a method used to progress key bitting in a master key system, wherein at least one cut in each key is identified to the corresponding cut in the top master key. The identical cut(s) is moved to different locations in a logical sequence until each possible planned position has been used.

row master key
n. the one pin master key for all combinations listed on the same line across a page in the standard progression format

S/A
abb. sub-assembled

safety factor
n. see "maximum adjacent cut specification"

sample key
n. see "pattern key"

scalp
n. a thin piece of metal which is usually crimped or spun onto the front of cylinder. It determines the cylinder's finish and may also serve as the plug retainer.

schematic
n. see "key system schematic"

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second generation duplicate
n. a key reproduced from a first generation duplicate

sectional key blank
n. see “multiplex key blank”

sectional keyway system
n. see “multiplex key system”

security collar
n. 1. a protective cylinder collar
2. see “cylinder guard”

segmented follower
n. a plug follower which is sliced into sections which are introduced into the cylinder shell one at a time. It is typically used with profile cylinders

selective key system
n. an unassociated master key which can be made to operate any specific lock(s) in the entire system in addition to the regular master key(s) and/or change key(s) for the cylinder without creating key interchange.

sequence of progression
n. the order in which bitting positions are progressed to obtain change key combinations

series wafer
n. a type of disc tumbler used in certain binary type disc tumbler key-in-lever knob locks. Its presence requires that no cut be made in that position on the operating key(s)

set
v. see “combinate”

set-up key
n. a key used to calibrate some types of key machines

set-up plug
n. a type of loading tool shaped like a plug follower. It contains pin chambers and is used with a shove knife to load springs and top pins into a cylinder shell.

seven column progression
n. a process wherein key bittings are obtained by using the cut possibilities in seven columns of the key bitting array

seven pin master key
n. a master key for all combinations obtained by progressing seven bitting positions

shaved blade
n. see “ radiused blade bottom”

shear line
n. a location in cylinder at which specific tumbler surfaces must be aligned, removing obstruction(s) which prevented the plug from moving

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shedding key
n. see " declining step key"

shell
n. the part of the cylinder which surrounds the plug and which usually contains tumbler chambers corresponding to those in the plug

shim
1. n. a thin piece of material used to unlock the cylinder plug from the shell by separating the pin tumblers at the shear line, one at a time
2. v. to unlock a cylinder plug from its shell by using a shim

shoulder
n. 1. any key stop other than a tip stop
2. see"bow stop"

shouldered pin
n. a bottom pin whose diameter is larger at the flat end to limit its penetration into a counter bored chamber

shove knife
n. a tool used with a set-up plug which pushes the springs and pin tumblers into the cylinder shell

shut out key
n. usually used in hotel keying systems, a key which will make the lock inoperative to all other keys in the system except the emergency master key, display key, and some types of shut out keys

shout out mode
n. the state of a hotel function lockset which prevent operation by all keys except the emergency master key, display key, and some types of shut out keys

shutter
n. see "dust cover"

sidebar
n. a primary or secondary locking device in a cylinder. When locked, it extends along the plug beyond its circumference. It must enter gates in the tumblers in order to clear the shell and allow the plug to rotate

simplex key section
n. a single independent key section which cannot be used in a multiplex key system

single key section
n. an individual key section which can be used in a multiplex key system

single step progression
n. a progression using a one increment difference between bittings of a given position

six column progression
n. a process wherein key bittings are obtained by using the cut possibilities in six columns of the key bitting array

Keying Terminology

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six pin master key
n. a master key for all combinations obtained by progressing six bitting positions

SKD
symbol for “single keyed”, normally followed by a numerical designations in the standard key coding system; eg. SKD1, SKD2, etc. It indicates that a cylinder or lock is not master keyed but is part of the keying system

skew
n. see”degree of rotation”

slide
n. see”spring cover”

SMK
abb. sub-master key

spacing
n. the dimensions from the stop to the enter of the first cut and/or the centres of successive cuts

special application cylinder
n. any cylinder other than a mortise, rim, key-in-knob or profile cylinder

split pin
n. see “master pin” #1

split pin master keying
n. a method of master keying a pin tumbler cylinder by installing master pins into one or more pin chambers

spool pin
n. usually a top pin which resembles a spool, typically used to increase pick resistance

spring cover
n. a device for sealing one or more pin chambers

stack height
n. see “pin stack height”

standard key coding system
n. an industry standard and uniform method of designating all keys and/or cylinders in a master key system. The designation automatically indicates the exact function and keying level of each key and /or cylinder in the system, usually without further explanation.

standard progression format
n. a systematic method of listing and relating all change key combinations to all master key combinations in a master key system. The listing is divided into segments known as blocks, horizontal groups, vertical groups, rows, and pages, for levels of control

step
n. see”increment”

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step pin
n. a spool or mushroom pin which has had a portion of its end machined to a smaller diameter than the opposite end. It is typically used as a top pin to improve pick resistance by some manufacturers of high security cylinders

step tolerance
n. see " maximum adjacent cut specification"

stepped tumbler
n. a special (usually disc) tumbler used in master keying. It has multiple bearing surfaces for blades of different key sections.

stop (of a key)
n. the part of a key from which all cuts are indexed and which determines how far the key enters the keyway

sub-assembled
adj. see "uncombinated" #1

sub-master key
n. the master key level immediately below the master key in a system of six or more levels of keying

tailpiece
n. an actuator attached to the rear of the cylinder, parallel to the plug, typically used on rim, key-in-lever knob or special purpose cylinders

template keys
n. pl. see"depth key set"

theoretical key changes
n. pl. the total possible number of different combinations available for a specific cylinder or lock mechanism

thimble
n. see"plug holder"

threaded cylinder
n. see"mortise cylinder"

three column progression
n. a process wherein key bittings are obtained by using the cut possibilities in three columns of the key bitting array

three pin master key
n. a master key for all combinations obtained by progressing three bitting positions

thumb turn cylinder
n. a cylinder with a turn knob rather than a keyway and tumbler mechanism

tip
n. the portion of stop located at or near the tip of the key

tolerance
n. the deviation allowed from a given dimension

Keying Terminology

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top master key
n. the highest level master key in a master key system

top of blade
n. the bitted edge of a single bitted key

top pin
n. usually a cylindrical shaped tumbler, usually flat on both ends and installed directly under the spring in the pin stack

total position progression
n. a process used to obtain key bittings in a master key system wherein bittings of change keys differ from those of the top master key in all bitting positions

total stack height
n. see “pin stack”

trim ring
n. 1. see “cylinder collar”
2. see “rose”

try-out key
n. a manipulation key which is usually part of a set, used for a specific series, keyway, and/or brand lock

tubular key
n. a key with a tumbler blade. The key cuts are made into the end of the blade, around its circumference

tumbler
n. a movable obstruction of varying size and configuration in a lock or cylinder which makes direct contact with the key or another tumbler and prevents an incorrect key or torquing device from activating the lock or other mechanism.

tumbler spring
n. any spring which acts directly on a tumbler

two column progression
n. a progression using a two increment difference between bittings of a given position

UL
abb. Underwriters Laboratories

unassociated change key
n. a change key which is not related directly to a particular master key through the use of certain constant cuts

unassociated master key
n. a master key which does not have change keys related to its combination through the use of constant cuts

uncoded
adj. see “uncombianted”

Keying Terminology

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uncombinated
adj. 1. of or pertaining to a cylinder which is or is to be supplied without keys, tumblers and springs
2. of or pertaining to a lock, cylinder or key in which the combination has not been set

uncontrolled cross keying
n. a condition in which two or more different keys under different higher level keys operate one cylinder by design; eg. XAA1 operated by AB, AB1
NOTE: This condition severely limits the security of the cylinder and the maximum expansion of the system, and often leads to key interchange

undirectional cylinder
n. a cylinder whose key can turn in only one direction from the key pull position, often not making a complete rotation

universal keyway
n. see “composite keyway”

vertical group master key
n. the two pin master key for all combinations listed in all blocks in a line down a page in the standard progression format

VGM
abb. vertical group master key

visual key control
n. a specification that all keys and the visible portion of the front of all lock cylinders be stamped with standard keying symbols

VKC
abb. visual key control

wafer
n. 1. see”disc tumbler”
2. see”master pin”#1

ward
n. a usually stationary obstruction in a lock or cylinder which prevents the entry and/or operation of an incorrect key

ward cut
n. a modification of a key which allows it to bypass a ward

wiggle key
n. see “manipulation key”

X
symbol used in hardware schedules to indicate a cross keyed condition for a particular cylinder; eg. XAA2, X1X (but not AX7)

zero bitted
adj. of or pertaining to a cylinder which is or is to be combinated to keys cut to the manufacturer’s reference number “0” bitting

Industry Abbreviations

As we see it, standardization, connectivity and globalization are changing the way of today's business. Norms, abbreviations and symbols became common in the hardware industry and are being frequently used by leading designers, architects, contractors, housing associations and local authorities on various projects.

Unmistakably, without standardization of codes and symbols used on architectural hardware schedules and guidelines, it would be almost impossible to obtain quotes on a "like-for-like" basis.

Hardware scheduling and interpretation of hardware specifications is a laborious and time-consuming process, it requires extensive libraries and in-depth knowledge of the industry abbreviations and symbols.

This section of the Specification Guide pertains specifically to the most frequently used industry abbreviations and symbols, for your reference.

The enclosed glossary is designed in an alphabetical sequence allowing fast and easy access to the required information. A listing outlining majority of common hardware schedule abbreviations was added for your convenience.

Industry Abbreviations

Symbols

A

Act.	Active
Adj.	Adjustable
AF	Armored front (of a lock)
AFB	Anti -friction bearing
AH	Allen head (screws); usually followed by MS or WS to denote screw type
AHC	Architectural Hardware Consultant
AL	Aluminium
AMS	All machine screws
ANSI	American National Standards
AWS	All wood screws

B

BB	Ball bearing
B3E	Beveled on 3 edges, usually top and 2 sides (kick, mop and armor plates)
B4E	Beveled on 4 edges (kick, mop and armor plates)
Bev.	Beveled (as lock front or door edge)
BP	Brass pin (in hinges)
BPl.	Back plate (half surface hinges in composite doors)
BS	Backset (of a lock); distance from front to center of hub or keyhole
B&S	Brown & Sharp (gauges)
BT	Ball tip (on hinges)
BTB	Back to back (as pulls), *also used B. to B.*

C

C	Center or centerline (dimension point), *also used: /C*
CB	Cement box
CBS	Cast box strike, *also used: CBX*
C/C	Cut for cylinder
CCTV	Closed circuit television
CFBK	Cut for bit key, *also used: C/BK*
CFC	Cut for cylinder (plate)
C.I.	Channel iron (door frame)
CK	Construction key
Corr.	Corridor
CTC	Centerline to centerline (location)
CTE	Center to end; measurement from center to latch hole to end of lip (lock strike)
Ctsk.	Countersunk, *also used: CS*
Cyl.	Cylinder (of a lock)

Industry Abbreviations

Symbols

D

D.A.	Double acting
Dbl.	Double, *also used: Dble.*
D.D.B.	Dutch door bolt
Deg.	Degree
DH	Double hung (generally, sash)
DK	Display key
DP	Dust proof, e.g., DPS for dust proof strike
Dr.	Door
Dr. Pt.	Door part (that part of product which attaches to door)
DS	Door size
DT	Dummy trim

E

Ea.	Each
El. Clsr.	Electric Closer
El. Hge.	Electric Hinge
El. Mag. Hld.	Electro-magnetic holder
El. Pvt.	Electric pivot
El. Str.	Electric strike
EMK	Emergency master key, *also used: E.K.*
EMkd.	Emergency masterkeyed (hotel lock), *also used: EMK and EM*
E.S.	Expansion shield, *also used: Exp. sh.*
Esc.	Escutcheon
Ex.	Extra
Ext.	Exterior

F

F	Front or face (of a lock)
FBT	flat button tip (on hinges)
F dr.	Fire door
FH	Flat head (screws)
FL	Fusible link (on a closing device)
Fl.	Floor
Fr.	Frame (of a door or sash); commonly used with prefix to indicate material; as WD Fr., HM Fr., etc.
Ft.	Foot (of a door closer or door holder); the terminal member of a closer holder arm, being the end which fastens to door or frame

Industry Abbreviations

Symbols

G

Ga.	Gauge
GGMkd.	Great grand masterkeyed; indicates a cylinder or bitted lock operable by at least four categories of keys, ie., change, master, grand master and great grand masterkey; also used GGM and GGMk
GGMK	Great grand masterkey (s)
GMkd.	Grand masterkeyed; indicates a cylinder or bitted lock operable by at least three categories of keys, ie., change, master and grand master; also used GM and GMk
GMK	Grand master key(s)
GN	Grommet nut
Grp.	Group
GYM	Gymnasium

H

HB	Head bolt
HC	Hollow core
Hdg.	Heading
Hdl.	Handle
HM	Hollow metal, *also used M and Met.*
HO	Hold open
HOA	Hold open arm; designates closing device with hold-open arm mechanism
Hr.	Hour (as 3/4hr fire door ratings)
HT	hospital (or asylum) tip (on hinge or pivot)

I

ID	Inside diameter
Ins. T.	Inside trim
Int.	Interior

J

J	Jamb

Industry Abbreviations

Symbols

K

k.	Keys
Kal.	Kalamein, *also used: K*
KA	Keyed alike; operable by identical change keys
KD	Keyed different; operable by different change keys
K.D.	Knocked down; packed unassembled
Kit.	Kitchen
KV	Key valve (on a closing device)

L

L.	lip (of a lock strike); e.g., “L. 1-1/8” to c.” means “strike measures 1-1/8” from end of lip to center of latch bolt hole”.
L. to C.	Lip (of a lock strike) to center of latch bolt hole
LAB	Laboratory
LAV	Lavatory
LBR	Less bottom rod (of a vertical rod type exit device)
L/C	Less cylinder; denotes lock without cylinder
LH	Left hand
LHR	Left hand reverse bevel; also used LHRB
L.L.	Lead lining (of a door)
LP	Light proof (door)
LS	Lead Shield

M

M	Metal
MC	Metal clad
M Dr. x MF	Metal door by metal frame
Mtl.	Material
Max.	Maximum
Min.	Minimum
Mkd.	Masterkeyed; indicates a cylinder or bitted lock operable by two categories of keys, ie. change and master
Mk	Master key(s)
Mn.C	Mineral Core
MS	Machine screws

Industry Abbreviations

Symbols

N

NCK	No change key(s)
NRP	Non-removable pin (in hinges), denotes set screw in barrel
N St.	Narrow stile

O

OA	Overall
OBS	Open back strike with back cut away for use on pairs of doors, permitting inactive leaf to be opened independently
OD	Outside diameter
O.H.	Overhead
Ov. H.	Oval head (screws)
OS	Outside
OSKP	Outside knob pinned
OSKR	Outside knob rigid
OST	Outside trim; *also used OS/T*

P

P	Plastic faced
Pa	Parallel arm (on a closing device)
PBS	Protected back strike
PH	Phillips head (screw), *also used: Ph. H*
Pl.	Plate
Pr.	Pair
Pvt.	Pivot

R

Rab.	Rabbeted
Rad.	Radius
RB	Reverse bevel
RC	Rounded corners
RF	Rounded (or radius) front, denotes lock or flush bolt with convex front for application in door having rounded edge

Industry Abbreviations

Symbols

RF & Str.	Rounded front and strike; for use with pairs of doors having rounded meeting edges
Reg.	Regular
Rem. Mul.	Removable mullion (for use with exit device); *also used ; RM*
RH	Right hand
RHR	Right hand reverse bevel; also used: RHRB
Rm.	Room
R. Rm.	Rest room
R. Sprg.	Reverse spring

S

SA	Single acting
SB	Sex bolt
SC	Solid core (door)
Scr.	Screw or screws
Sgl.	Single
Sh.	Shield
Sl.	Sleeve
SNB	Sex nut and bolt
SP	Sound proof
Sp. Hd.	Spanner head (screws)
Spdl.	Spindle
Sprg.	Spring
SS	Stainless steel
St.	Stile
Std.	Standard
STMS	Strike to template with machine screws
Str.	Strike, that part of a lock or other fastening device which receives the bolt(s) when projected
STScr.	Self-tapping screws
Sw.	Swivel (spindle)

T

TB	Through bolts
TBGN	Through bolts and grommet nuts
TG	Tempered glass
TgB	Toggle bolts

Industry Abbreviations

Symbols

Thrs.	Threshold
TK	Turn knob
TMS	To template with machine screws; *also used: tms*
TP	Thumb piece or turn piece

u

UC	Undercut
UL	Underwriters' Laboratories
US	United States; commonly used as prefix to a number to denote it as taken from United States federal standard stock catalogs

v

Vest.	Vestibule

w

WBS	Wrought box strike; *also used: WBX*
WD	Wood
WD x MF	Wood door by metal frame
WD x WF	Wood door by wood frame
Whstp.	Weatherstrip
Wrt.	Wrought
WS	Woodscrews

x

X	Indicates "by" or "with", eg., WD x MF, lock x TMS, etc.
X-bar	Cross bar (on exit device)
XL	Wood screw and lead expansion shield, *also used: WS & ES*
XS	Machine screw and expansion sleeve, *also ussed: MS & ES*

Industry Abbreviations

Abbreviations

INDUSTRY ABBREVIATIONS USED ON HARDWARE SCHEDULES

TMS	To template with machine screws
JPTMS	Jamb plate to template with machine screws
STMS	Strike to template with machine screws
SMS	Sheet metal screws
TBGN	Thru bolts by grommet nuts
SNB	Sex nuts and bolt
Sp. Hd.	Spanner head screws
WBS	Wrought box strike
NRP	Non-removable pin
BB	Ball bearing
Bev	Beveled edge
DA	Double acting
CB	Cement box
RF	Rounded front
Rab	Rabbeted front
Rad	Radius front
MK	Master keyed
GMK	Grand master keyed
GGMK	Great grand master keyed
WD x WD	Wood door & wood frame
HM x HM	Hollow metal door & hollow metal frame
WD x HM	Wood door & hollow metal frame
Kal	Kalamein door
CIF	Channel iron frame
LH	Left hand
RH	Right hand
LHR	Left hand reverse
RHR	Right hand reverse

SECTION 08710 FINISHING HARDWARE

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

1. Comply with requirements listed in Division 1

1.2 RELATED WORK

1.	Hardware for millwork:	Section 06220
2.	Installation of finishing hardware:	Section 06220
3.	Hardware for sectional overhead doors	Section 08360
4.	Hardware for entrances:	Section 08400
5.	Washroom accessories:	Section 10800
6.	Electrical back boxes, conduit, wire runs and 115VAC hook up for electrical hardware and security:	Division 16

1.3 QUALITY ASSURANCE

1. Meet all requirements of the local building code and all other applicable regulations.
2. Products listed in Part 2 of this specification establish the minimum requirements for this project. approved alternate products are listed. Deviation from specified products will require the supply and installation of correct products, any/all associated costs.
3. Qualified suppliers must have in their employ an Certified A.H.C. (Architectural Hardware Consultant) as licensed by the Door and Hardware Institute. The supplier must have a minimum of two (2) years experience furnishing hardware for similar projects. Only firms that can extend manufacturers warranty to the project are to be considered as suppliers. Inspection of supplied Finishing Hardware will be done by a Certified A.H.C. A complete Site Inspection Report will be issued to the Architect.

1.4 SUBMITTALS

1. Upon request, provide mounted samples of hardware items to be supplied.
2. Prepare and submit two (2) copies of a detailed hardware schedule listing product numbers, size and finishes. Include two (2) sets of catalog cuts.
3. Furnish other sections with two (2) complete sets of hardware templates for related fabricating and installation.
4. Submit for owner review and comments two (2) key schedules listing the door number, hardware heading or item, and the key group.
5. Where electrical hardware is to be supplied, provide wiring diagrams showing all wire termination points. Where electrical hardware is to be supplied and installed provide the contractor with riser diagrams listing the correct wire runs and back box sizes as well as 115 VAC requirements.
6. Where required in Division 1, provide two (2) operating manuals for the owners use. Include copies of the hardware schedule, templates, installation instructions and all maintenance data.

1.5 PRODUCT DELIVERY, HANDLING, AND STORAGE

1. Deliver each hardware item in its original package complete with all fasteners, keys, templates, and installation instructions required for installation.
2. Clearly mark each container with the door opening number and the hardware schedule item or heading number.
3. The contractor must store hardware delivered in a secure area. The storage area must contain adequate shelf space to hold all the hardware off the floor. Ensure the area is kept dry and clean.
4. When requested, package items of hardware separately for delivery to other fabricators for their installation.

1.6 WARRANTY

1. Provide a written warranty for a period of one (1) year for all hardware supplied and a five (5) year warranty for the door closers.
2. When requested provide extended warranties listed in Division 1.

PART 2 PRODUCTS

2.1 BUTT HINGES

1. All butt type hinges will be three knuckle. Use concealed bearing hinges for all doors with door closers.
2. Exterior out swing doors must be non-ferrous and have non-removable pins (NRP).
3. Where the door width exceeds 3'0" (914mm) supply 5" (127) high hinges.
4. Supply two (2) hinges for doors up to 5'0" (1525 mm) high and an additional hinge for each 2'5" (760 mm) or fraction thereof in door height.

2.2 CONTINUOUS HINGES

1. All full height hinges must be knuckle type with nylon bearings between each knuckle.
2. Supply an aluminum hinge for out swinging exterior doors and any door that requires the integral hinge guard.

2.3 LOCKS AND LATCHSETS

1. Locks and latchsets are to be mortise lever sets. Latch bolts will be two pieces anti friction with separate latch guard, ULC labels for all fire rated doors and 3/4" throw. Auxiliary dead bolts are to have hardened steel pin inserts.
2. Where lever trim is required, trim must have concealed through bolt mounting and the lever is to be sold cast or forged material with a return to the door face.
3. All locksets are to be keyed to a registered factory system. When construction keying is listed, deliver the permanent keys in individually marked envelopes with door numbers and keying information. When listed, supply a key cabinet with a two (2)-tag control system.

2.4 EXIT DEVICES

1. All exit devices will be low profile push pad style devices. Outside trim will have the same trim design as the locksets. Exit hardware must have the correct life safety or fire rated labels attached to the active case. Ensure that the actuating push pad covers 1/2 of the door opening.
2. Exit devices installed on exterior doors must have dead latching bolts to ensure tamper proof security.
3. Where pairs of doors are detailed to have two (2) vertical rod exit devices, ensure that no over lapping astragal is used by the door manufacturer.

2.5 DOOR CLOSERS

1. Door closers will all have full adjustment features including back check, general speed, and latch speed control.
2. All interior door closers will have reduced opening force spring power to meet the barrier free codes of 22N (5 lbs.)
3. Surface mounted door closers are to be located on the room side of the door whenever possible or as directed by the architect.
4. Provide all mounting plates for door closers required to mount on special door and frame conditions.
5. Where listed, door closers are to have full body covers to match the project finishes. Installation instructions must be inside all door closer covers.

2.6 DOOR OPERATORS

1. Door operators will be SUPPLIED AND INSTALLED by this section. The operator must include hydraulic door control features including back check and latch speed. Installation will include hook up of all wire runs and all hook up to related releasing hardware (i.e.: electric strike).
2. Pneumatic door operators will be supplied with all required pneumatic tubing, compressor, door controller and switches.
3. Supply the activating switches as required to suit the details shown in elevation or as listed in the hardware schedule.
4. On pair of door applications provide a matching unit featuring the same model heavy duty closer as the Door Operator. The matching unit shall have the same cover as the Door Operator.

2.7 PULLS AND PLATES

1. Supply door trim as listed in the hardware schedule. Pulls are supplied with back to back (BTB) or through bolt mounting as required. When push plates are listed with door pulls, install the push plate to conceal the through bolt.
2. All kickplates, push plates, and bumper plates must have all sides beveled and the corners rounded to ensure there are no sharp edges. Supply plates with tape mounting or if screws are listed, with counter sunk screw holes. The plates will be .050 thick unless listed otherwise. Size to suit door width. Kickplate will be door width less 1.5" (35 mm) for single door and less 1" (25 mm) for pairs of doors.

2.8 DOOR STOPS AND HOLDERS

1. Wall stops are only to be used on proper wall conditions such as block or masonry. Supply floor stops with sufficient height to suite the floor condition or undercut of doors.
2. Overhead stops and holders will be surface mounted unless there is a conflict with door closers or other hardware. Provide door stays with friction action in locations that do not have door closers. Install all overhead stops and holders for 90 DEG stop unless otherwise specified.
3. Electro-magnetic door holders will be supplied tri-voltage and be connected to fire alarm system to release the door when signaled

2.9 DOOR SEALS

1. Perimeter seals must be supplied to fully cover all gaps between the door, frame, and floor condition to seal against weather, sound, or smoke.
2. Frame gasketing must be closed cell neoprene. The extruded housing must have a rib to prevent distortion during installation. Aluminum frames will be equipped with felt inserts by the frame supplier.
3. Door bottoms will be heavy duty and have an adjustment screw to ensure proper contact with the floor. Supply the correct drop insert for carpet where required.
4. Thresholds must be installed to ensure the door bottom makes full contact. Supply thermally broken thresholds for all exterior door openings.

PART 3 EXECUTION

3.1 INSPECTION

1. The hardware supplier must inspect all the door openings to ensure that installation is complete and that all items are operating as intended. When requested, provide a written report on all site inspections made.

3.2 INSTALLATION

1. The general contractor shall obtain a copy of ANSI/DHI A115.1G-94, "Installation Guide for Doors and Hardware". It is the intent of this document to be used as a reference guide in the proper handling, storage, and installation of finishing hardware, and doors and frames. This document can be obtained through the Door and Hardware Institute.
2. Other trades installing hardware must follow all manufacturers instructions including door closer adjustment, handing of locksets as required, and degree of door swing. Advise the consultants if door frames are not square and plumb and prevent proper door installation.
3. Mount hardware to suit door elevations. Unless otherwise directed by the consultant, install hardware at the following mounting heights:

Locksets	40"(1015mm)
Exit device	40"(1015mm)
Push/Pull	42"(1065mm)
Deadlock	48"(1200mm)

4. When requested, the hardware supplier will instruct the installer as to how various newer or unusual items that are required to be installed for proper performance.

Meeting A.D.A Requirements

Note: The following information concerning the Americans With Disabilities Act (A.D.A) has been extracted from ANSI A117.1 and the Federal Register, Part III, published by the Department of Justice, Office of the Attorney General, 28CFR, Part 36, and NFPA 101. The information provided here is an interpretation of the requirements, which must be met for door opening accessibility by the handicapped or disabled. Please refer to ANSI A117.1 and the Federal Register, Vol. 56, No. 144, dated July 26 1991, and NFPA 101 for specific details.

Door Opening Width

Double-Leaf Doorways: If doorways have two independently operated door leaves, then at least one leaf shall meet the minimum clear opening width criteria. That leaf shall be the active leaf.

Single-Leaf Doorways: Doorways shall have a minimum clear opening of 32in. (815mm) with the door open 90 degrees, measured between the face of the door and the opposite stop.

Door Opening Force

The maximum force for pushing or pulling open a door shall be as follows:

1. Fire doors shall have the minimum opening force allowable by the appropriate administrative authority.
2. Other doors
   a. exterior hinged doors; (Reserved)
   b. interior hinged doors: 5lbf (22.2N)
   c. sliding or folding doors: 5lbf (22.2N)

   These forces do not apply to the force required to retract latch bolts or disengage other devices that may hold the door in a closed position.

Door Controls General Information

Fire Doors (NFPA 101)
The forces required to fully open any door manually in a means of egress shall not exceed 15lbf (67N) to release the latch, 30lbf (133N) to set the door in motion, and 15lbf (67N) to open the door to the minimum required width. These forces shall be applied width. These forces shall be applied at the latch stile.

Note: The pound forces stated above should be reduced **where possible** to comply with exterior hinged door and interior hinged door requirements as indicated in 2.a. and 2.b. above. However, door-closing capability must not be compromised.

Door Closing Speed
If a door has a closer, then the sweep period of the closer shall be adjusted to that from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 in. (75mm) from the latch, measured to the leading edge of the door.

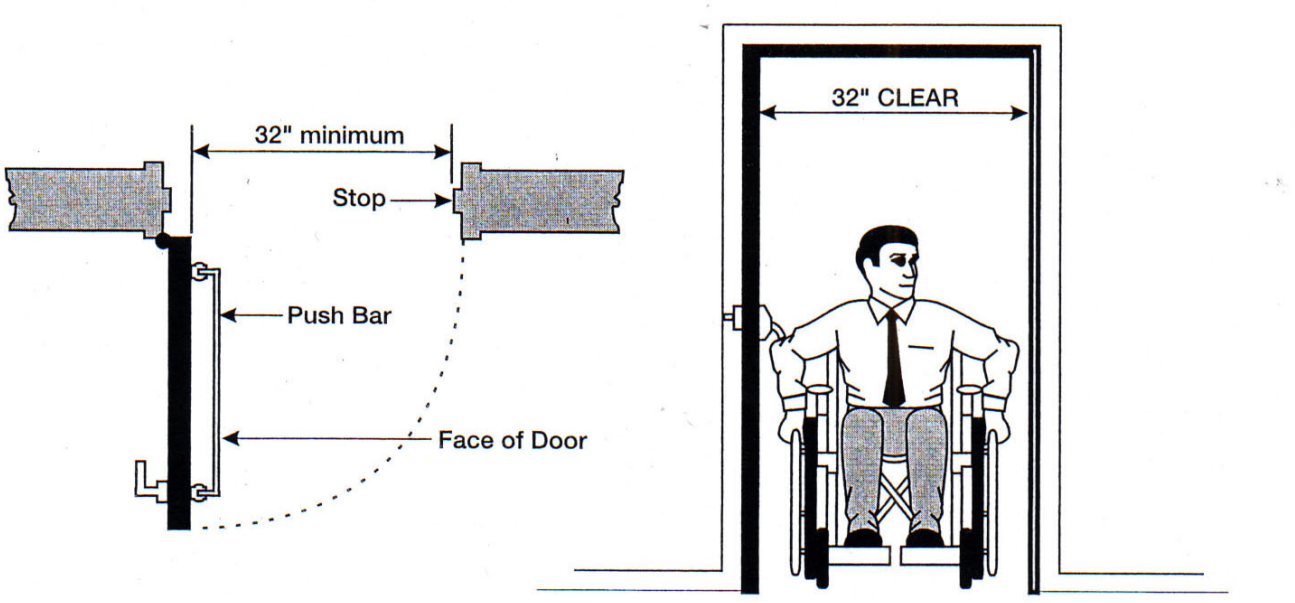
Delayed Action
Although the optional delayed action feature is extremely beneficial to the severely handicapped, it is not a requirement of A.D.A.

Door Opening Force
Opening forces may be measured with a spring scale as follows:

1. **Hinged doors**. Apply force perpendicular to the door at the actuating device (lockset/pull) or 30in. (760mm) from the hinged side, whichever is farthest from the hinge**.**
2. **Application of the Force.** Apply force gradually so that the applied force does not exceed the resistance of the door. Air-pressure differential, especially in high-rise buildings, can have an adverse effect on door opening force. Accessible openings located in these areas will sometimes require the use of automatic or power-assisted doors to comply with allowable forces given.

Additional force to overcome the inertia of a door will exceed that required to maintain movement of the door. In general, only a momentary auxiliary force should be permitted to exceed the force indicated above.

Door Controls General Information



32” minimum clear opening leaves room for hands and elbows

Hinged Doors

The 32-inch opening is measured from the stop on the door jamb on the latch side of the face of the door when standing open in the 90 degree position. Push bars and panic type hardware may protrude into this space if they are mounted high enough to allow the wide part of the wheelchair to pass below.