

Architectural Woodwork Standards

APPENDIX A

TABLE OF CONTENTS

1	Reference Source Directory	337
2	Reference Source Listings	338
3	Preservative & Water-Repellent Treatments	340
4	Fire-Retardant Coatings	340
5	Fire Codes	340
6	ADA Requirements	340
7	Rated Fire Door Assemblies	340
8	Building Code Requirements	340
9	Seismic Fabrication & Installation Requirements.	341
10	Adhesives Guidelines	341
11	Specific Gravity & Weight of Hardwoods	342
12	ANSI/BHMA Cabinet Hardware References	343
13	Joinery Details	347
14	SEFA Chemical and Stain Resistance.	349
15	Casework Design Series (CDS)	351
16	Casework Integrity	371
17	Fraction/Decimal/Millimeter Conversion Table	376
18	Miscellaneous Conversion Factors	377

REFERENCE SOURCE DIRECTORY

CONTINUING EDUCATION

- AIA** - American Institute of Architects
- AIBD** - American Institute of Building Design
- BHMA** - Builders Hardware Manufacturers Association
- CRA** - California Redwood Association
- IDC** - Interior Design of Canada
- IIDA** - International Interior Design Association
- RAIC** - Royal Architectural Institute of Canada

STANDARDS & REGULATION

- ANSI** - American National Standards Institute
- ARE** - Association for Retail Environments
- ASID** - American Society of Interior Designers
- AWI** - Architectural Woodwork Institute
- AWMAC** - Architectural Woodwork Manufacturers Association of Canada
- CSC** - Construction Specifications Canada
- CSI** - Construction Specifications Institute
- ICC** - International Code Council
- IWPA** - International Wood Products Association
- NFPA** - National Fire Protection Association
- NHLA** - National Hardwood Lumber Association
- NIST** - National Institute of Standards & Technology
- SCS** - Scientific Certification Systems (Green Cross)
- SEFA** - Scientific Equipment & Furniture Association
- SFI** - Sustainable Forest Initiative
- UL** - Underwriters' Laboratories
- WI** - Woodwork Institute
- WMMPA** - Wood Moulding and Millwork Producers Association
- WWPA** - Western Wood Products Association

MANUFACTURING

- AF&PA** - American Forest & Paper Association
- AHFA** - American Home Furnishings Alliance
- CFPC** - Certified Forest Products Council
- NAM** - National Association of Manufacturers
- NEMA** - National Electrical Manufacturers Association
- WDMA** - Window & Door Manufacturers Association

TESTING AND GRADING

- APA** - The Engineered Wood Association
- ASTM** - American Society for Testing and Materials
- ITS** - Intertek Testing Services/Warnock Hersey

SUSTAINABLE BUILDING

- FSC** - Forest Stewardship Council - United States
- LEED** - Leadership in Energy and Environmental Design
- SMART WOOD** - The Rainforest Alliance
- TFF** - Tropical Forest Foundation
- USGBC** - U.S. Green Building Council

SPECIALIZED PRODUCT

- HPVA** - Hardwood Plywood & Veneer Association
- KCMA** - Kitchen Cabinet Manufacturers Association
- LMA** - Laminating Materials Association, Inc.
- NHLA** - National Hardwood Lumber Association
- WDMA** - Window & Door Manufacturers Association
- WRCLA** - Western Red Cedar Lumber Association

REFERENCE SOURCE LISTINGS

(Page 1 of 3)

- AF&PA** - American Forest & Paper Association
1111 19th Street NW, Suite 800
Washington, DC 20036
Ph: 800-878-8878 ● Fax: 202-463-2700
www.afandpa.org
- AHFA** - American Home Furnishings Alliance
Box HP-7
High Point, NC 27261
Ph: 336-884-5000 ● Fax: 336-884-5303
www.ahfa.us
- AIA** - American Institute of Architects
1735 New York Avenue NW
Washington, DC 20006
Ph: 800-242-3837 ● Fax: 202-626-7547
www.aia.org
- AIBD** - American Institute of Building Design
7059 Blair Road NW, Suite 201
Washington, DC 20012
Ph: 800-366-2423 ● Fax: 202-249-2473
www.aibd.org
- ANSI** - American National Standards Institute
25 West 23rd Street, 4th Floor
New York, NY 10036
Ph: 212-642-4900 ● Fax: 212-398-0023
www.ansi.org
- APA** - The Engineered Wood Association
7011 South 19th Street
Tacoma, WA 98466
Ph: 253-565-6600 ● Fax: 253-565-7265
www.apawood.org
- ARE** - Association for Retail Environments
4651 Sheridan Street, Suite 407
Hollywood, FL 33021-3657
Ph: 954-893-7300 ● Fax: 954-893-7500
www.are.org
- ASID** - American Society of Interior Designers
608 Massachusetts Avenue NE
Washington, DC 20002-6006
Ph: 202-546-3480 ● Fax: 202-546-3240
www.asid.org
- ASTM** - American Society for Testing and Materials
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959
Ph: 610-832-9585 ● Fax: 610-832-9555
www.astm.org
- AWI** - Architectural Woodwork Institute
46179 Westlake Drive, Suite 120
Potomac Falls, VA 20165
Ph: 571-323-3636 ● Fax: 571-323-3630
www.awinet.org
- AWMAC** - Architectural Woodwork Manufacturers Association of Canada
516 - 4 Street West
High River, Alberta, Canada, T1V 1B6
Ph: 403-652-7685 ● Fax: 403-762-7384
www.awmac.com
- BHMA** - Builders Hardware Manufacturers Association
355 Lexington Avenue, 15th Floor
New York, NY 10017
Ph: 212-297-2122 ● Fax: 212-370-9047
www.buildershardware.com
- CFPC** - Certified Forest Products Council
1306 NW Hoyt Street, Suite 403
Portland, OR 97209
Ph: 503-224-2205 ● Fax: 503-224-2216
www.metafore.org
- CPA** - Composite Panel Association
19465 Deerfield Avenue, Suite 306
Leesburg, VA 20176
Ph: 703-724-1128 ● Fax: 703-724-1588
www.pbmdf.com
- CRA** - California Redwood Association
818 Grayson Road, Suite 201
Pleasant Hill, CA 94523
Ph: 925-935-1499 ● Fax: 925-935-1496
www.calredwood.org
- CSC** - Construction Specifications Canada
120 Carlton Street, Suite 312
Toronto, ON, M5A 4K2, Canada
www.csc-dcc.ca
- CSI** - Construction Specifications Institute
99 Canal Center Plaza, Suite 300
Alexandria, VA 22314
Ph: 800-689-2900 ● Fax: 703-684-8436
www.csinet.org
- DHI** - The Door and Hardware Institute
14150 Newbrook Drive, Suite 200
Chantilly, VA 20151-2223
Ph: 703-222-2010 ● Fax: 703-222-2410
www.dhi.org
- FSC** - Forest Stewardship Council - United States
11100 Wildlife Center Drive, Suite 100
Reston, VA 20190
Ph: 703-438-6401 ● Fax 703-438-3570
www.fscus.org
- HPVA** - Hardwood Plywood & Veneer Association
1825 Michael Faraday Drive
Reston, VA 20190
Ph: 703-435-2900 ● Fax: 703-435-2537
www.hpva.org
- ICC** - International Code Council
500 New Jersey Avenue NW, 6th Floor
Washington, DC 20001-2070
Ph: 888-422-7233 ● Fax: 202-783-2348
www.iccsafe.org
- IDC** - Interior Design of Canada
220-6 Adelaide Street East
Toronto, Ontario, M5C 1H6, Canada
Ph: 416-594-9310 ● Fax: 416-921-3660
www.interiordesigncanada.org

REFERENCE SOURCE LISTINGS

(Page 2 of 3)

IIDA - International Interior Design Association
13-122 Merchandise Mart
Chicago, IL 60654-1104
Ph: 312-467-1950 ● Fax: 312-467-0779
www.iida.org

ITS - Intertek Testing Services
Ph: 800-967-5352
www.intertek-etlsemko.com

IWPA - International Wood Products Association
4214 King Street West
Alexandria, VA 22302
Ph: 703-820-6696 ● Fax: 703-820-8550
www.iwpawood.org

KCMA - Kitchen Cabinet Manufacturers Association
1899 Preston White Drive
Reston VA 20191-5435
Ph: 703-264-1690 ● Fax: 703-620-6530
www.kcma.org

LEED - Leadership in Energy and Environmental Design
(see **USGBC - U.S. Green Building Council**)

NAM - National Association of Manufacturers
1331 Pennsylvania Avenue NW
Washington, DC 20004-1790
Ph: 202-637-3000 ● Fax: 202-637-3182
www.nam.org

NEMA - National Electrical Manufacturers Association
1300 North 17th Street, Suite 1752
Rosslyn, Virginia 22209
Ph: 703-841-3200 ● Fax: 703-841-5900
www.nema.org

NFPA - National Fire Protection Association
P.O. Box 9101
Quincy, MA 02269
Ph: 617-770-3000 ● Fax: 617-770-0700
www.nfpa.org

NHLA - National Hardwood Lumber Association
6830 Raleigh-Lagrange Road
Memphis, TN 38184-0518
Ph: 901-377-1818 ● 901-382-6419
www.natlhardwood.org

NIST - National Institute of Standards & Technology
100 Bureau Drive, Stop 3460
Gaithersburg, MD 20899-3460
Ph: 301-975-6478 ● Fax: 301-926-1630
www.nist.gov

RAIC - Royal Architectural Institute of Canada
330-55 Murray Street
Ottawa, Ontario, K1N 5M3, Canada
Ph: 631-241-3600 ● Fax: 613-241-5750
www.raic.org

SCS - Scientific Certification Systems (Green Cross)
2000 Powell Street, Suite 1350
Emeryville, CA 94608
Ph: 510-452-8003 ● Fax: 510-452-8001
www.scs1.com

SEFA - Scientific Equipment & Furniture Association
1205 Franklin Avenue, Suite 320
Garden City, NJ 11530
Ph: 516-294-54248 ● Fax: 516-294-2758
www.sefalabfurn.com

SFI - Sustainable Forest Initiative
(see **AF&PA**)
www.aboutsfi.org

Smart Wood - The Rainforest Alliance
Goodwin-Baker Building, 65 Millet Street, Suite 201
Richmond, VT 05477
Ph: 802-434-5491 ● Fax: 802-434-3116
www.smartwood.org

TFF - Tropical Forest Foundation
2121 Eisenhower Avenue, Suite 200
Alexandria, VA 22314
Ph: 703-518-8834 ● Fax: 703-518-8974
www.tropicalforestfoundation.org

UL - Underwriters' Laboratories
333 Pfingsten Road
Northbrook, IL 60062-2096
Ph: 847-272-8800 ● Fax: 847-272-8129
www.ul.com

USGBC - U.S. Green Building Council
1015 18th Street NW, Suite 805
Washington, DC 20036
Ph: 202-828-7422 ● Fax: 202-828-5110
www.usgbc.org

WDMA - Window & Door Manufacturers Association
1400 East Touhy Avenue, Suite 470
Des Plaines, IL 60118
Ph: 800-223-2301 ● Fax: 847-299-1286
www.wdma.com

WH - Warnock - Hersey
(see **ITS - Intertek Testing Services**)
www.warnockhersey.com

WI - Woodwork Institute
P.O. Box 980247
West Sacramento, CA 95798
Ph: 916-372-9943 ● Fax: 916-372-9950
www.woodworkinstitute.com

WMMPA - Wood Moulding and Millwork Producers Association
507 First Street
Woodland, CA 95695
Ph: 530-661-9591 ● Fax: 530-661-9586
www.wmmpa.com

REFERENCE SOURCE LISTINGS

(Page 3 of 3)

WRCLA - Western Red Cedar Lumber Association
1200 - 555 Burrard Street
Vancouver, BC, Canada V7X 1S7
Ph: 604-684-0266 ● Fax: 604-687-4930
www.wrcla.org.

WWPA - Western Wood Products Association
Yeon Building, 522 SW Fifth Avenue
Portland, OR 97204-2122
Ph: 503-224-3930 ● Fax: 503-224-3934
www.wwpa.org

PRESERVATIVE & WATER-REPELLENT TREATMENTS

Within the United States, preservative and water-repellent treatments are governed under I.S. - 4, latest edition, as published by the Window and Door Manufacturers Association (WDMA), www.wdma.com, subject to any applicable EPA or local Air Quality Management District's restrictions on what may be used for the project location. Within Canada, they are governed by the National Building Code of Canada, Section 3.8, Appendix A. Contact the National Research Council Canada at www.nrc.ca.

FIRE-RETARDANT COATINGS

Fire-retardant coatings are typically subject to listing by an accredited testing laboratory and require a registration number for approval recognized by fire inspectors.

FIRE CODES

Within the United States, fire codes are primarily governed by the International Code Council, Inc. (ICC), www.iccsafe.org, and the National Fire Protection Association (NFPA), www.nfpa.org. Within Canada, they are governed by the National Building Code of Canada, Section 3.8, Appendix A. Contact the National Research Council Canada at www.nrc.ca.

ADA REQUIREMENTS

Within the United States, ADA requirements are governed by the Federal Americans with Disabilities Act (ADA) subject to any applicable state or local requirements that might be more stringent for the project location. For further information regarding national regulations: a) in the United States, contact the Access Board at www.access-board.gov, and b) in Canada, see the National Building Code of Canada, Section 3.8, Appendix A. Contact the National Research Council Canada at www.nrc.ca.

RATED FIRE DOOR ASSEMBLIES

Within the United States, rated fire door assemblies are governed in accordance with the National Fire Protection Association's Publication NFPA 80, "Standard for Fire Doors and Fire Windows," subject to any applicable state or local requirements that might be more stringent for the project location. Within Canada, governance is by the National Building Code of Canada, Section 3.8, Appendix A, which can be reviewed at www.nrc.ca.

BUILDING CODE REQUIREMENTS

Within the United States, building code requirements are governed by the National Uniform Building Code (UBC), subject to any applicable state or local requirements that might be more stringent for the project location. Within Canada, they are governed by the National Building Code of Canada, Section 3.8, Appendix A. Contact the National Research Council Canada at www.nrc.ca.

SEISMIC FABRICATION & INSTALLATION REQUIREMENTS

A

Within the United States, seismic fabrication and installation requirements are governed by the International Building Code (IBC), subject to any applicable state or local requirements that might be more stringent for the project location. Within Canada, they are governed by the National Building Code of Canada, Section 3.8, Appendix A. Contact the National Research Council Canada at www.nrc.ca.

ADHESIVES GUIDELINES

PERFORMANCE RATINGS:

Type I	Fully Waterproof (Exterior)	Two-Cycle Boil/Shear Test
Type II	Water-Resistant (Interior)	Three-Cycle Soak Test

GENERAL INFORMATION:

GENERIC NAME	BONDING	RATING	CHARACTERISTICS
ALIPHATIC (Carpenter's Glue)	Wood to wood	Type II	Non-toxic; non-flammable; non-staining; water-resistant
CASEIN	Wood to wood	Type II	Water-resistant
CONTACT ADHESIVE	HPDL and wood veneer to wood	Type II	Water-resistant
EPOXY	Wide range; wood; wood to metals	Type I	Two-part system; fully waterproof
HOT-MELT Polyurethane Reactive (PUR)	Wide variety of materials	*	Liquefies when heated; bonds in a liquid state; solidifies as it cools.
PVA (Polyvinyl Acetate)	Wood to wood Wood to HPDL	*	General purpose
PVA (Polyvinyl Acetate - Catalyzed)	Wood to wood	Type I	Fully waterproof
PVC (Polyvinyl Chloride)	Wide variety of materials	*	Crystal clear; fast drying.
RESORCINOL RESIN	Wood to wood and laminates	Type I	Fully waterproof; purple glue line; two-part system; limited pot life (3 hours)
UREA RESIN	Wood to wood	Type II	Mixes with water; must be clamped; 3 to 7 hours of drying time at 70° F (21.1° C).
PANEL/CONSTRUCTION ADHESIVE	Wide variety of materials	Type II	Plastic epoxy base; liquid state; dries fast; difficult to remove; can be used to set adjustment screws in European-type hinges.

* Check manufacturer's rating.

SPECIFIC GRAVITY & WEIGHT OF HARDWOODS

SPECIES	SPECIFIC GRAVITY ¹	WEIGHT ²	SPECIES	SPECIFIC GRAVITY ¹	WEIGHT ²
ALDER, RED Alnus rubra	.37	28	MAPLE, RED Acer rubrum	.49	38
ASH, WHITE Average of 4 species	.54	41	MAPLE, SILVER Acer saccharinum	.44	33
ASPEN Populus tremuloides	.35	27	MAPLE, SUGAR Acer saccharum	.57	44
AVODIRE Turraeanthus africanus	n/a	36	MYRTLE Umbellularia Californica	.51	39
BASSWOOD Tilia americana	.32	26	NARRA Pterocarpus indicus	.52	42
BEECH Fagus grandifolia	.56	45	OAK, COMMERCIAL RED Average of 9 species	.56	44
BIRCH, SWEET Betula lenta	.60	46	OAK, COMMERCIAL WHITE Average of 6 species	.59	47
BIRCH, YELLOW Betula alleghaniensis	.55	43	ORIENTAL WOOD Endiandro palmerstoni	n/a	44
BUBINGA Guibourtia demeusil	n/a	55	OSAGE-ORANGE Maclura pomifera	.76	n/a
BUTTERNUT Juglans cinerea	.36	27	PADUAK (AFRICAN) Pterocarpus soyauxii	n/a	43
CATALPA, NORTHERN Catalpa speciosa	.38	29	PADUAK (ANDAMAN) Pterocarpus dalbergioides	.62	45
CATIVO Prioria copaifera	.40	29	PADUAK (BURMA) Pterocarpus macrocarpus	.75	54
CHERRY, BLACK Prunus serotina	.47	35	PALDAO Dracontomelum dao	.59	44
CHESTNUT Castanea dentata	.40	30	PECAN Carya illinoensis	.60	47
COTTONWOOD, EASTERN Populus deltoides	.37	28	PEARWOOD (EUROPEAN) Purus communis	n/a	43
CUCUMBER TREE, YELLOW Magnolia acuminata	.44	34	PHILIPPINE HARDWOODS		
CYPRESS (BALD CYPRESS) Taxodium distichum	.42	32	RED LAUAN	.40	36
DOGWOOD, FLOWERING Cornus florida	.64	51	Shorea negrosensis		
EBONY (NIGERIAN) Diospyros crassiflora	n/a	63	WHITE LAUAN	n/a	36
ELM, AMERICAN Ulmus Americana	.46	36	Pentacme contorta		
SWEETGUM (RED AND SAP) Liquidambar styraciflua	.44	34	TANGUILE Shorea polysperma	.53	39
TUPELO, WATER Nyssa aquatica	.46	35	POPLAR, YELLOW (TULIPTREE) Liriodendron tulipifera	.38	28
HACKBERRY Celtis occidentalis	.49	37	PRIMAVERA Cybistax donnell-smithii	.40	30
HICKORIES, TRUE Average of 4 species	.65	51	ROSEWOOD (BRAZIL) Dalbergia nigra	n/a	50
HOLLY Ilex opaca	.50	40	SAPELE Entandrophragma cylindricum	.54	40
LIMBA Terminalia superba	.45	34	SATINWOOD (EAST INDIAN) Chloroxylon swientenio	.83	67
LOCUST, BLACK Robinia pseudoacacia	.66	48	SONORA (MANGGASINORO) Shorea philippinensis	.42	31
MAHOGANY, AFRICAN Khaya ivorensis	.43	31	SYCAMORE Platanus accidentalis	.46	35
MAHOGANY, CUBAN Swietenia mahogany	.57	41	TEAK Tectona grandis	.60	43
MAHOGANY, CENTRAL AMERICAN Swietenia species	.45	32	TIGERWOOD Lavoa klaineana	.45	34
MAKORE Tieghemella heckelii		40	WALNUT, AMERICAN (BLACK) Juglans nigra	.51	39
			WILLOW, BLACK Salix nigra	.34	26
			ZEBRAWOOD Microberlinia brazzavillensis	.62	48

The data for native species as furnished on this chart are from the U.S. Forest Products Laboratory's Technical Bulletin 158.

¹ Based on green volume and oven dry weight.

² Based on pounds per cubic foot at 12% moisture content.

ANSI/BHMA - A156.9-01

CABINET HARDWARE REFERENCES

(Page 1 of 4)

The following illustrations and tables are from ANSI/BHMA's - A156.9-01: Cabinet Hardware Standards (one of a series of standards running from A156.1 through A156.24) and are reproduced with permission as a reference guide.

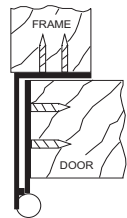
The following will help you understand the numbering system. Using the first item listed below as an example, "B01011":

- B = Product class (as designated by BHMA)
- 0 = Optional material (predominant base material)
- 1 = Hinge (product type)
- 01 = Semi-concealed (function/description)
- 1 = Grade 1 (performance level)

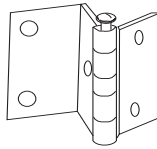
For further information, clarification, or copies of the ANSI/BHMA Standards, you may contact BHMA at:

Builders Hardware Manufacturers Association
 355 Lexington Avenue, Suite 1700, New York, NY 10017
www.buildershardware.com

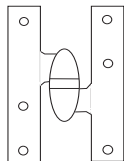
REFERENCE BY ILLUSTRATION



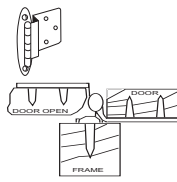
BO1011-3



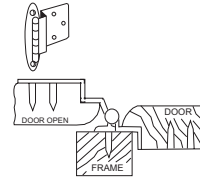
BO1201-3



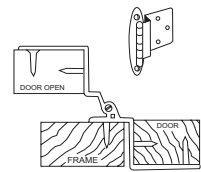
BO1241-3



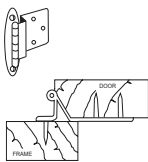
BO1251-3



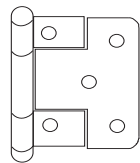
BO1261-3



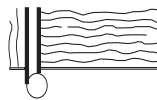
BO1301-3



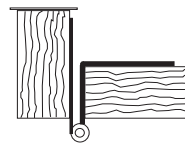
BO1311-3



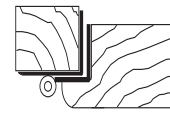
BO1341-3



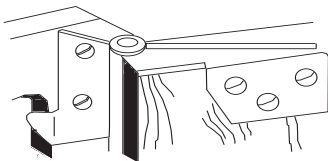
BO1351-3



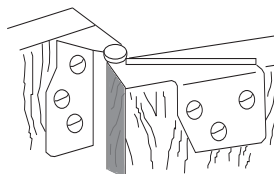
BO1361-3



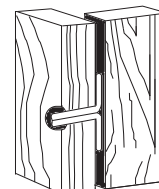
BO1371-3



BO1411-3 & BO1421-3



BO1431-3 & BO1441-3



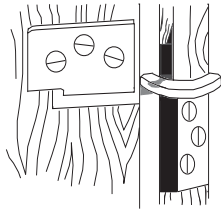
BO1451-3 & BO1461-3

A

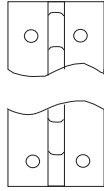
ANSI/BHMA - A156.9-01 CABINET HARDWARE REFERENCES

(Page 2 of 4)

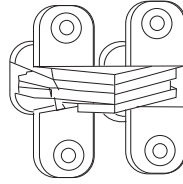
REFERENCE BY ILLUSTRATION (continued)



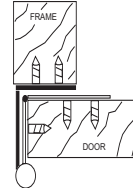
BO1471-3 & BO1481-3



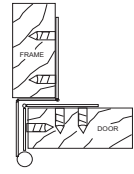
BO1491-3



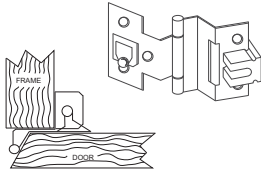
BO1501-3



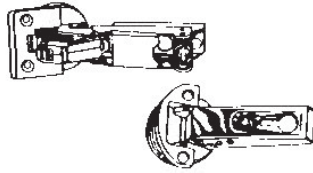
BO1511-3



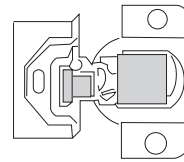
BO1521-3



BO1581-3



BO1602 & 3



BO1612 & 3



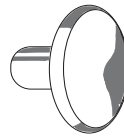
BO2011



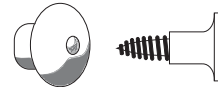
BO2031



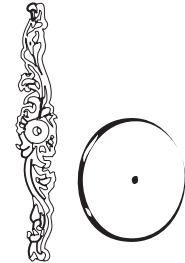
BO2041



BO2131



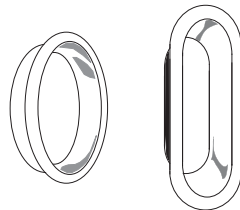
BO2141



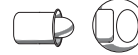
BO2181



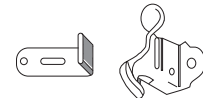
BO2191



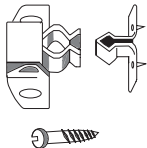
BO2201



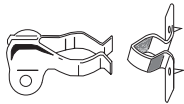
BO3013



BO3023



BO3033



BO3043



BO3053

ANSI/BHMA - A156.9-01 CABINET HARDWARE REFERENCES

(Page 3 of 4)

REFERENCE BY DESCRIPTION

ANSI/ BHMA #	CABINET	DOOR	DESCRIPTION
BO1011-3	Face	Edge	Hinge, Semi-concealed, Overlay Doors, Locked, Knurled or Loose Pin, Rounded or Button Tip
BO1201-3	Edge	Edge/Back	Hinge, Semi-concealed, Flush Door, Loose or Fast Pin
BO1241-3	Face	Face	Hinge, Exposed, Flush Door, Olive Knuckle
BO1251-3	Face	Back	Hinge, Semi-concealed, Overlay Door
BO1261-3	Face	Back	Hinge, Semi-concealed, Inset Lipped Door
BO1301-1	Face	Back	Hinge, Semi-concealed, Flush Door
BO1311-3	Face	Back	Hinge, Semi-concealed, Reverse Bevel Door
BO1331-3	Edge	Back	Hinge, Semi-concealed, Inset Lipped Door
BO1341-3	Face	Back	Hinge, Semi-concealed, Overlay Door
BO1351-3	Edge	Edge	Hinge, Semi-concealed, Flush Door, Locked, Knurled or Loose Pin, Rounded or Button Tip
BO1361-3	Edge	Back	Hinge, Semi-concealed, Flush Door, Locked, Knurled or Loose Pin, Rounded or Button Tip
BO1371-3	Edge	Back	Hinge, Semi-concealed, Inset Lipped Door, Locked, Knurled or Loose Pin, Rounded or Button Tip
BO1411-3	Face	Back	Hinge, Pivot, Overlay Door, Top and Bottom Door Mount, Vertical Frame Mount
BO1421-3	Face	Back	Hinge, Same as Above with Bearing at Joint
BO1431-3	Face	Back	Hinge, Pivot, Overlay Door, Top and Bottom Door Mount, Horizontal Frame Mount
BO1441-3	Face	Back	Hinge, Same as Above with Bearing at Joint
BO1451-3	Edge	Back	Hinge, Pivot, Overlay Door, Mid-Door Edge Mount
BO1461-3	Edge	Back	Hinge, Same as Above with Bearing at Joint
BO1471-3	Edge	Back	Hinge, Pivot, Lipped Door, Mid-Door Edge Mount
BO1481-3	Edge	Back	Hinge, Same as Above with Bearing at Joint
BO1491-3	Face/Edge	Face/Edge/Back	Hinge, Continuous (Piano)
BO1501-3	Edge	Edge	Hinge, Concealed (Soss)
BO1511-3	Face	Edge/Back	Hinge, Semi-concealed, Overlay Door, Locked, Knurled or Loose Pin, Rounded or Button Tip
BO1521-3	Edge	Edge/Back	Hinge, Semi-concealed, Overlay Door, Locked, Knurled or Loose Pin, Rounded or Button Tip
BO1581 & 3	Face/Edge	Back	Hinge, Semi-concealed, Reverse Bevel Door, with Catch
BO1602 & 3	Edge	Back	Hinge, Concealed, European - Frameless
BO1612 & 3	Edge	Back	Hinge, Concealed, European - Face Frame
BO2011	n/a	Back	Pull, 3" (76.2 mm) Center Standard
BO2031	n/a	Back	Pull, Drop, Swing, or Fixed
BO2041	n/a	Face	Pull
BO2131	n/a	Back	Knob

A

ANSI/BHMA - A156.9-01 CABINET HARDWARE REFERENCES

(Page 4 of 4)

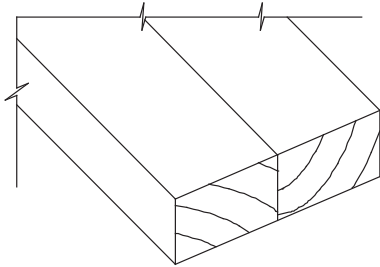
REFERENCE BY DESCRIPTION (continued)

ANSI/ BHMA #	CABINET	DOOR	DESCRIPTION
BO2141	n/a	Face	Knob
BO2181	n/a	n/a	Backing Plate for Knobs
BO2191	n/a	n/a	Backing Plate for Pulls
BO2201	n/a	Face	Flush Pull, Mortised into Door Face
BO3013	Edge	Edge	Catch, Bullet or Ball Friction
BO3023	Edge	Back	Catch, Elbow
BO3033	Edge	Back	Catch, Friction
BO3043	Edge	Back	Catch, Friction
BO3053	Edge	Back	Catch, Roller Spring, Under Shelf Mount
BO3063	Edge	Back	Catch, Friction Spring
BO3071 & 2	Edge	Back	Catch, Roller
BO3091 & 2	Edge	Back	Catch, Roller
BO3112	Edge	Back	Catch, Roller
BO3131 & 2	Face	Back	Catch, Magnetic, Push-In
BO3141 & 2	n/a	Back	Catch, Magnetic, Under Shelf Mount
BO3151-2	n/a	Back	Catch, Magnetic, Door Mount
BO3161-2	n/a	Back	Catch, Magnetic, Under Shelf Mount, Double Door
BO3171-2	Edge	Back	Catch, Magnetic, Heavy Duty
BO3243	Face	Face	Latch, Cupboard
BO3282	Edge		Pusher, for Use with Secret/Touch Latches
BO3333	Edge	Back	Latch, Secret/Touch
BO3343	Edge	Back	Latch, Child-Resistant
BO3352	Face	Face	Latch/Pull, Positive
BO3363	Edge	Back	Latch, Secret/Touch
BO4013			Shelf Rests, Cabinet, for Bored Holes
BO4063	Edge		Shelf Standard, Cabinet, Adjustable, Non-mortising
BO4073	Edge		Shelf Standard, Cabinet, Adjustable, Surface or Mortise Mounted
BO4081 & 3			Shelf Rest, Cabinet, Closed, for Metal Standard
BO4091 & 3			Shelf Rest, Cabinet, Open, for Metal Standard
BO4102 & 3			Shelf Standard, Slotted, Wall, Adjustable
BO4112 & 3			Shelf Bracket, for Slotted Standard
BO5011-3			Drawer Slide, Side Mount Bottom Capture
BO5081-3			Drawer Slide, Center Bottom Mount
BO5061-3			Drawer Slide, Center Top Mount
BO5051-3			Drawer Slide, Side Mount

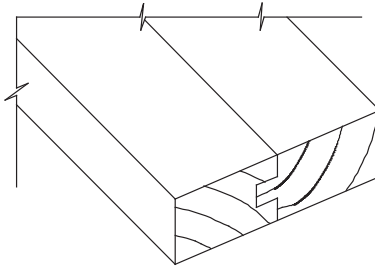
A

JOINERY DETAILS

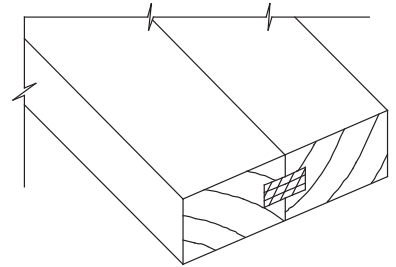
(Page 1 of 2)



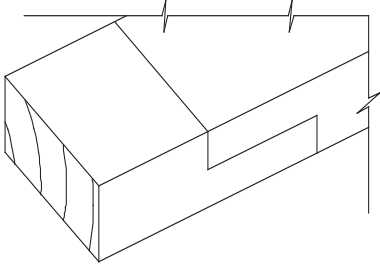
BUTT



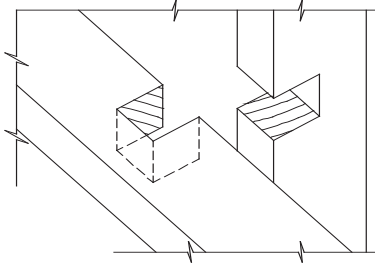
TONGUE & GROOVE



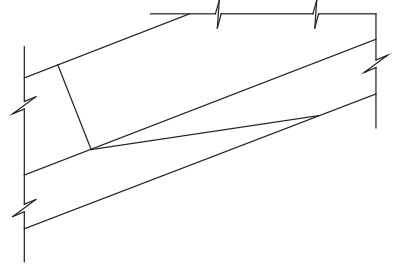
SPLINE



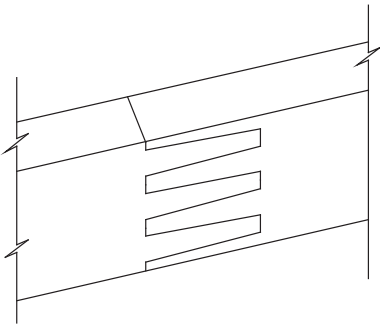
HALF LAP



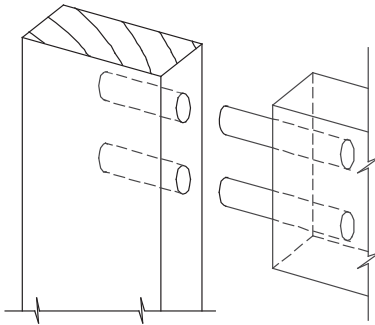
HALF LAP



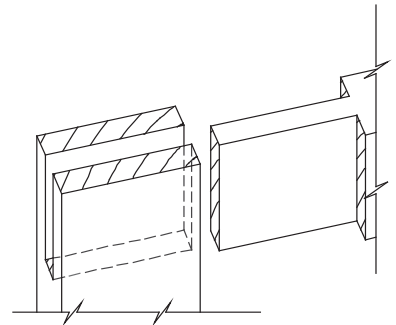
SCARF



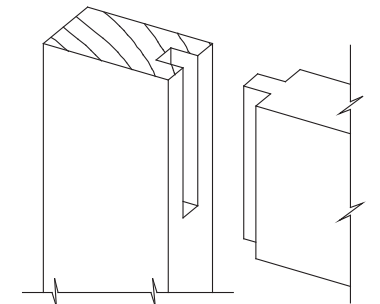
FINGER



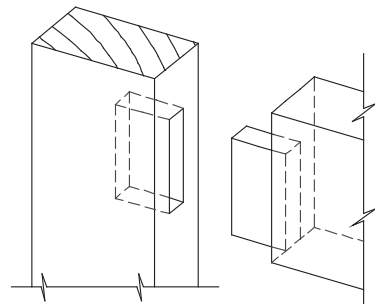
DOWELED



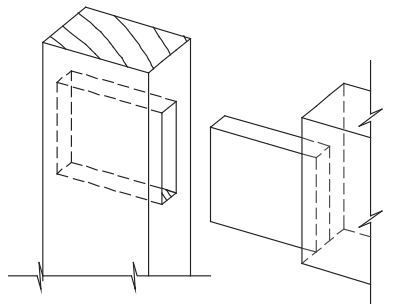
SLOTTED MORTISE & TENON



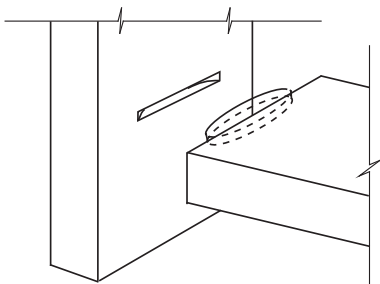
STUB MORTISE & TENON



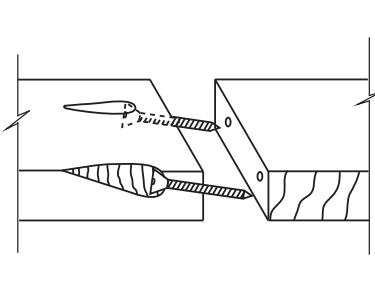
BLIND MORTISE & TENON



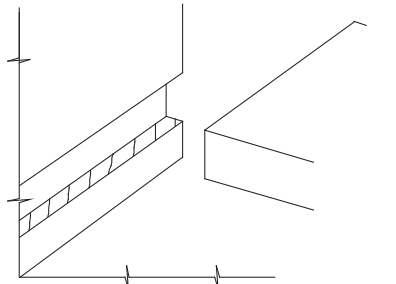
THROUGH MORTISE & TENON



BISCUIT



POCKET SCREW



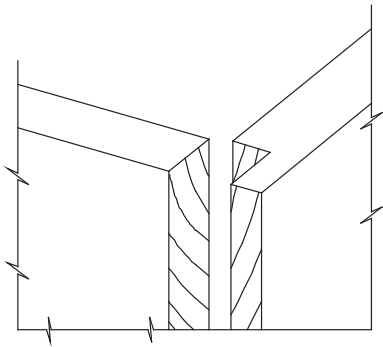
PLOVED IN

A

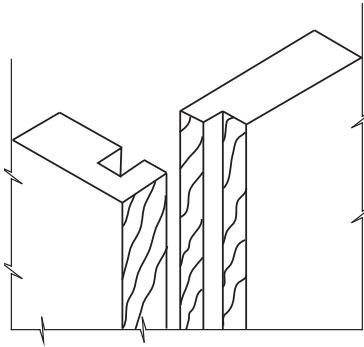
JOINERY DETAILS

(Page 2 of 2)

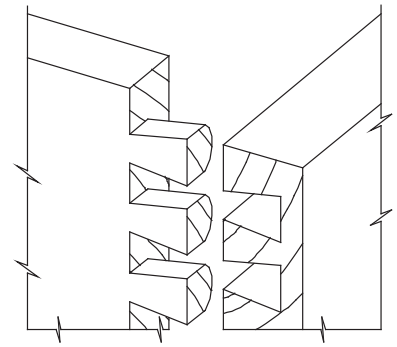
AWS Edition 1, 2009 - [WI WebDoc [10/09]]



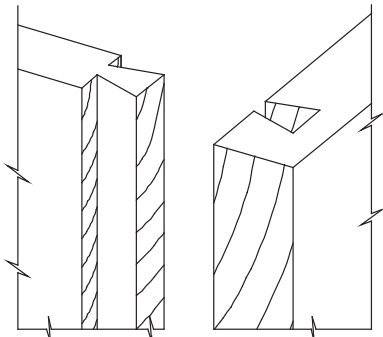
RABBET



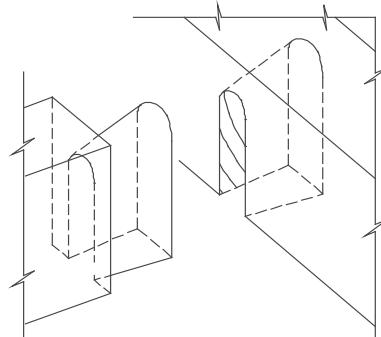
LOCK SHOULDER



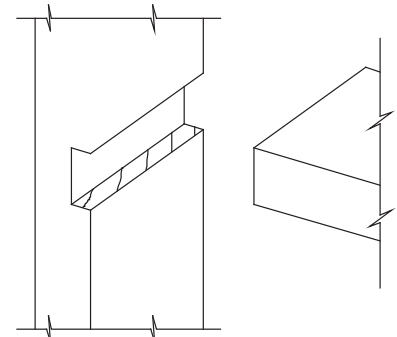
DOVETAIL



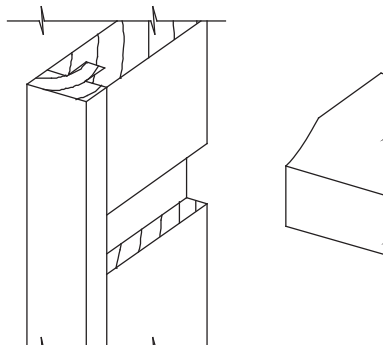
DOVETAIL (French) DADO



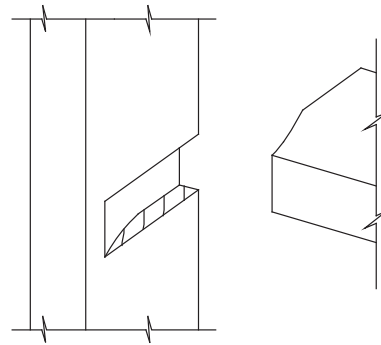
BLIND DOVETAIL



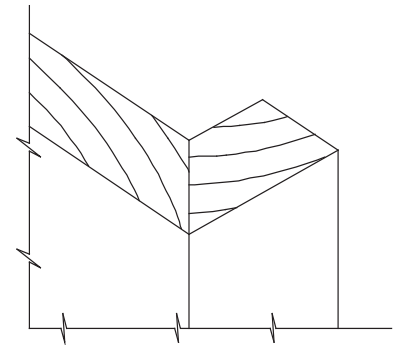
DADO



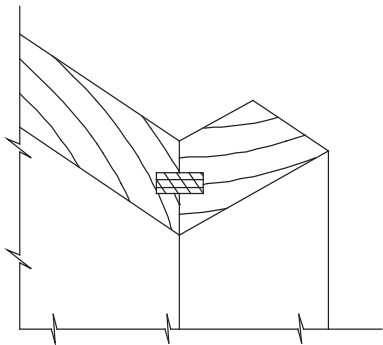
DADO, BLIND OR STOPPED



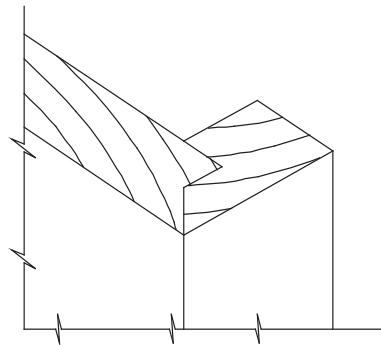
DADO, BLIND OR STOPPED



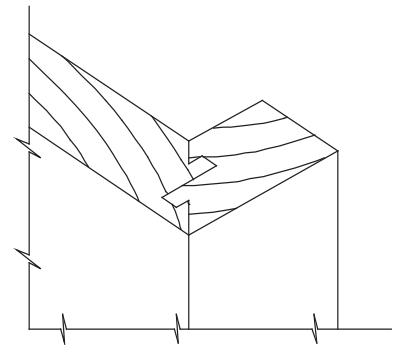
MITER



SPLINED MITER



SHOULDER MITER



LOCK MITER

A

SEFA CHEMICAL AND STAIN RESISTANCE

(Page 1 of 2)

If chemical and/or stain resistance is a concern, users should consider the chemical and staining agents that might be used on or near casework or countertop surfaces. Common guidelines can be found in NEMA LD3 (latest edition) for chemical resistance and ASTM D3023 and C1378 (latest editions) for stain resistance. Because chemical and stain resistance is affected by concentration, time, temperature, humidity, housekeeping, and other factors, it is recommended that actual samples are tested in a similar environment with those agents that are of concern.

In lieu of actual sample testing to evaluate the resistance a finish has to chemical spills, these standards have adopted SEFA's (Scientific Equipment and Fixture Association) standard list of 49 chemicals/concentrations, their required methods of testing, and their minimum acceptable results as the means of establishing a minimum acceptable chemical resistance for exposed and semi-exposed surfaces where required by specification.

REQUIREMENT:

Exposed horizontal surfaces, such as countertops, are required to pass a 24-hour exposure test, whereas exposed vertical surfaces and semi-exposed surfaces are required to pass a 1-hour exposure test.

TEST PROCEDURE:

Obtain one sample panel measuring 14" x 24" (356 mm x 610 mm) and test for chemical resistance as described herein:

Place the panel on a flat surface, clean with soap and water, and blot dry. Condition the panel for 48 hours at 73° ±3° F (20° ±2° C) and 50% ±5% relative humidity. Test the panel for chemical resistance using the 49 different chemical reagents (listed on the following page) by one of the following methods:

METHOD A - Test volatile chemicals by placing a cotton ball saturated with reagent in the mouth of a 1-oz. (29.574 cc) bottle and inverting the bottle on the surface of the panel.

METHOD B - Test non-volatile chemicals by placing five drops of the reagent on the surface of the panel and covering with a 24 mm watch glass, convex side down.

For both of the above methods, leave the reagents on the panel for a period of:

One (1) hour for exposed vertical surfaces and semi-exposed surfaces.

Twenty-four (24) hours for exposed horizontal surfaces such as countertops.

Wash off the panel with water, clean with detergent and naphtha, and rinse with deionized water. Dry with a towel and evaluate after 24 hours at 73° ±3° F (20° ±2° C) and 50% ±5% relative humidity using the following rating system:

RESULT CLASSIFICATIONS:

LEVEL 0 - No detectable change.

LEVEL 1 - Slight change in color or gloss.

LEVEL 2 - Slight surface etching or severe staining.

LEVEL 3 - Pitting, cratering, swelling, or erosion of coating; obvious and significant deterioration.

ACCEPTANCE LEVEL:

Results will vary from product to product, and suitability for a given application is dependent upon the chemicals used in a given laboratory setting. Without specification requiring otherwise, an acceptable level of chemical and stain resistance for products requiring such in accordance with these standards and a project's specifications shall be:

FINISHES with test results **SHOWING NO MORE THAN** four of the Level 3 Result Classifications.

A

SEFA CHEMICAL AND STAIN RESISTANCE

(Page 2 of 2)

	CHEMICAL REAGENT	TEST METHOD
1	Acetate, Amyl	A
2	Acetate, Ethyl	A
3	Acetic Acid, 98%	B
4	Acetone	A
5	Acid Dichromate, 5%	B
6	Alcohol, Butyl	A
7	Alcohol, Ethyl	A
8	Alcohol, Methyl	A
9	Ammonium Hydroxide, 28%	B
10	Benzene	A
11	Carbon Tetrachloride	A
12	Chloroform	A
13	Chromic Acid, 60%	B
14	Cresol	A
15	Dichlor Acetic Acid	A
16	Dimethylformamide	A
17	Dioxane	A
18	Ethyl Ether	A
19	Formaldehyde, 37%	A
20	Formic Acid, 90%	B
21	Furfural	A
22	Gasoline	A
22	Hydrochloric Acid, 37%	B
24	Hydrofluoric Acid, 48%	B
25	Hydrogen Peroxide, 3%	B

	CHEMICAL REAGENT	TEST METHOD
26	Iodine, Tincture of	B
27	Methyl Ethyl Ketone	A
28	Methylene Chloride	A
29	Mono Chlorobenzene	A
30	Naphthalene	A
31	Nitric Acid, 20%	B
32	Nitric Acid, 30%	B
33	Nitric Acid, 70%	B
34	Phenol, 90%	A
35	Phosphoric Acid, 85%	B
36	Silver Nitrate, Saturated	B
37	Sodium Hydroxide, 10%	B
38	Sodium Hydroxide, 20%	B
39	Sodium Hydroxide, 40%	B
40	Sodium Hydroxide, Flake	B
41	Sodium Sulfide, Saturated	B
42	Sulfuric Acid, 33%	B
43	Sulfuric Acid, 77%	B
44	Sulfuric Acid, 96%	B
45	Sulfuric Acid, 77% and Nitric Acid, 70% - equal parts	B
46	Toluene	A
47	Trichloroethylene	A
48	Xylene	A
49	Zinc Chloride, Saturated	B

CASEWORK DESIGN SERIES (CDS)

(Page 1 of 20)

THESE CASEWORK ILLUSTRATIONS ARE PROVIDED TO ASSIST DESIGN PROFESSIONALS AND CASEWORK USERS IN SELECTING TYPICAL DESIGNS. THESE ILLUSTRATIONS ARE NOT INTENDED TO LIMIT OR RESTRICT CREATIVITY, OR TO BE ALL-INCLUSIVE.

When **UTILIZING THE CDS NUMBERING SYSTEM**, it is not necessary to show casework elevations in your architectural drawings. However, it is necessary to show a plan view with each **CDS** number indicated along with the width, height, and depth in inches or millimeters (example: 102-36"x30"x18" [102-914 mm x 762 mm x 457 mm]). Cabinet dimensions indicate the nominal outside dimension (floor to top of countertop for height and face of finished wall to face of cabinet door for depth). Manufacturers are permitted a tolerance of plus/minus 1/2" (12.7 mm) in width only.

When **DESIGNS OTHER THAN THOSE PROVIDED FOR IN THE CDS SYSTEM ARE DESIRED**, they may be indicated by selecting the **CDS** number most closely representing the desired design, followed by the letter "M" and a description or illustration of the design modification (example: 102M - 2 shelves - 36"x30"x18" [102M - 2 shelves - 914 mm x 762 mm x 457 mm] or 102M - no shelves -36"x30"x18" [102M - no shelves -914 mm x 762 mm x 457 mm]). It is suggested that a standard number/ dimension convention similar to that shown below, is used.

If the **CDS** numbering system is **USED IN CONJUNCTION WITH CABINET ELEVATIONS** on architectural drawings, the cabinet elevations shall govern on any conflict between the requirements of the elevation and the **CDS** number.

CDS cabinets are intended for **TYPE A** construction with integral finished ends and scribes at wall-to-wall installations not exceeding 1-1/2" (38.1 mm) in width.

The following **BASE CASEWORK HEIGHTS** are recommended for various school grades, subject to ADA requirements:

Kindergarten - Grade 1	24" (610 mm)
Grades 2 - 3	27" (686 mm)
Grades 4 - 6	30" (762 mm)
Grades 7 - 9	33" (838 mm)
Grades 10 and above	36" (914 mm)

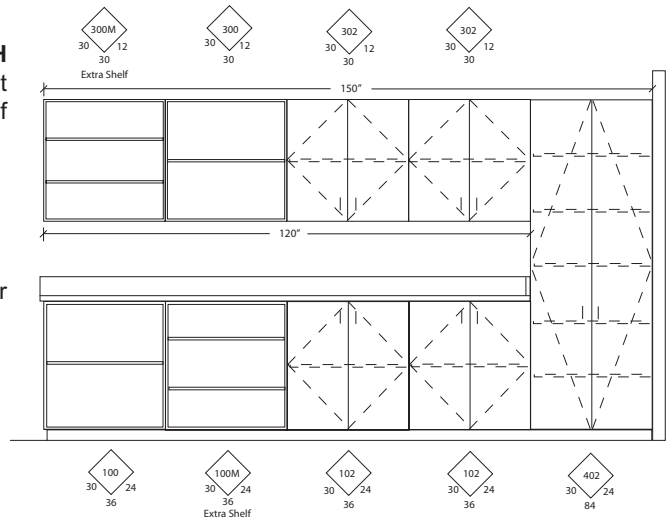
The **CDS** is subdivided as follows:

Base Cabinets w/o Drawers	100 Series	Tall Wardrobe Cabinets	500 Series
Base Cabinets w/ Drawers	200 Series	Library Cabinets	600 Series
Wall-Hung Cabinets	300 Series	Moveable Cabinets	700 Series
Tall Storage Cabinets	400 Series		

HARDWARE and **ACCESSORIES** shall be as provided for in these standards.

GENERAL NOTES:

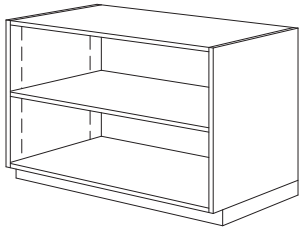
- 100 or 200 Series cabinets may be converted into moveable cabinets by prefixing a "7" to the number. (Example: 7-102-36"x30"x18" [7-102-914 mm x 762 mm x 457 mm]).
- Moveable cabinets shall be equipped with adequate approved casters for the intended load capacity.
- CDS #'s 728, 729, 735, 736, 737, 738, and 739 require metal angle reinforced corners.
- Carts and rolling tall storage cabinets with doors, lacking any horizontal and/or vertical stabilizing dividers, require a diaphragm bottom; specifically CDS #'s 702, 712, 716, 722, 743, 744, 746, 747, 750, and 751.
- Wardrobe cabinets (500 Series) with doors require a framed mirror on one door, and cabinets # 533 and 534 require a paper roller/cutter and slide-out tilting paper shelves.
- Cart storage cabinets are required to have hardwood side guides, specifically CDS #'s 160, 161, and 162.
- Ceramics drying cabinets are required to have galvanized metal frame shelves with wire mesh, specifically CDS #'s 198 199, and 459.
- File drawers require full-extension slides and a file-hanging system, specifically CDS #'s 223, 224, 230, 231, 240, 242, 253, 255, 531, 532, and 533.
- Wardrobe cabinets are required to have a shelf, pole, and framed mirror when closed with hinged doors, specifically CDS #'s 501, 511, 512, 522, 530, 531, 532, and 552.



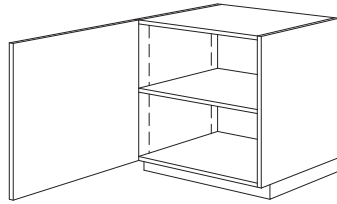
CASEWORK DESIGN SERIES (CDS)

(Page 2 of 20)

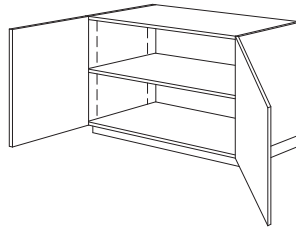
100 SERIES - BASE CABINETS w/o DRAWERS



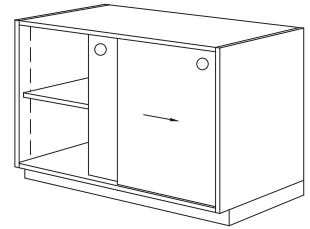
100



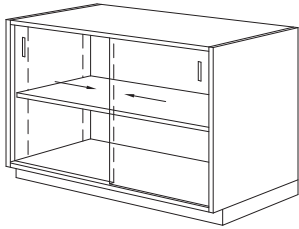
101



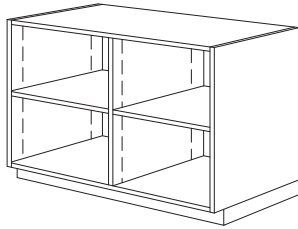
102



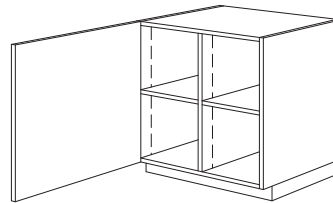
106



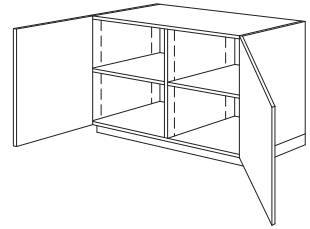
107



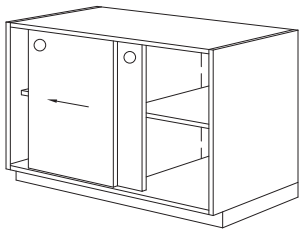
110



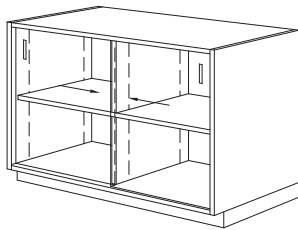
111



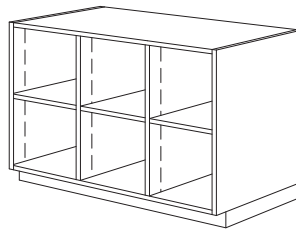
112



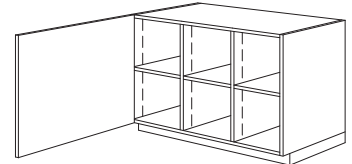
116



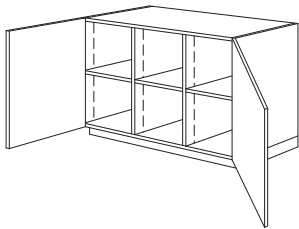
117



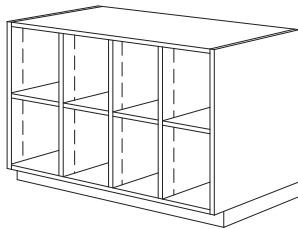
120



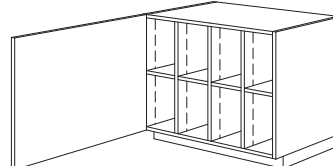
121



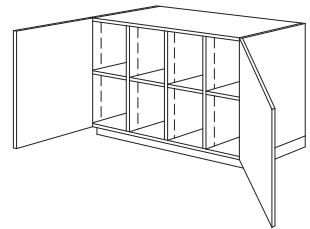
122



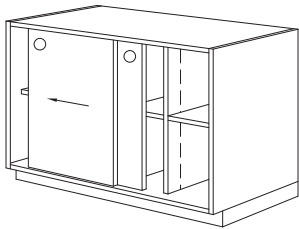
130



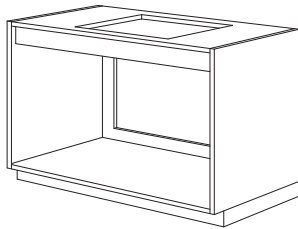
131



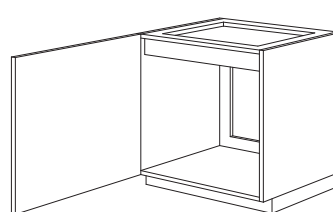
132



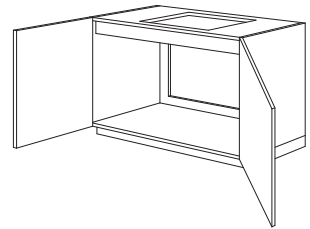
136



140
Removable Back



141
Removable Back



142
Removable Back

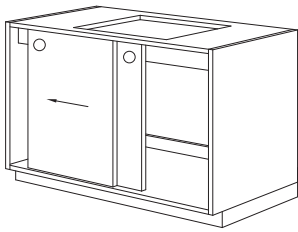
AWS Edition 1, 2009 - [WI WebDoc [10/09]]

CASEWORK DESIGN SERIES (CDS)

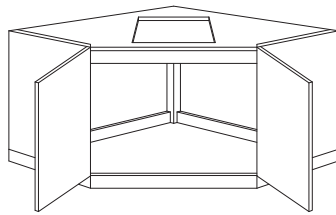
(Page 3 of 20)

100 SERIES - BASE CABINETS w/o DRAWERS

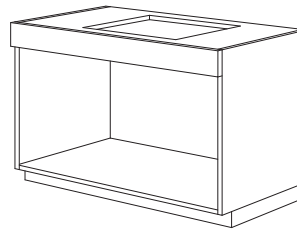
(continued)



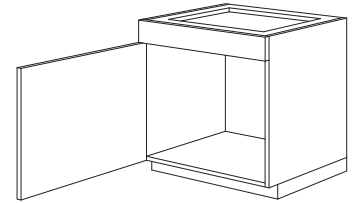
146
Removable Back



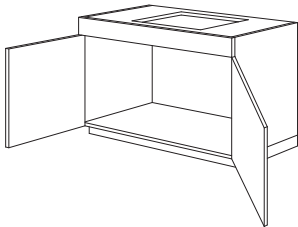
148
Removable Back



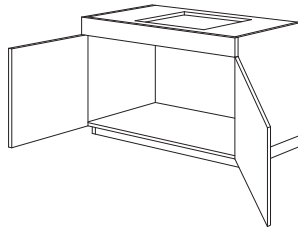
150



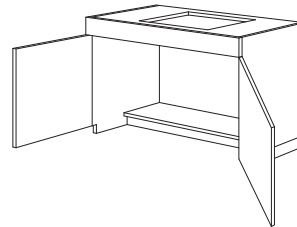
151



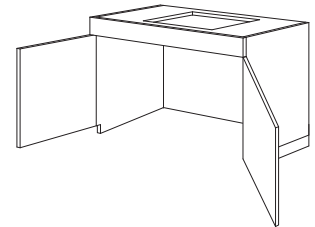
152



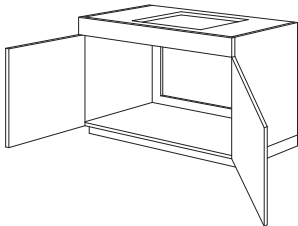
153
Removable Base/Toe



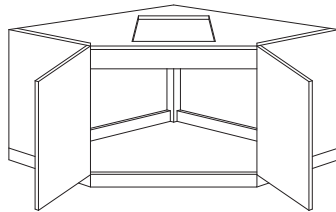
154



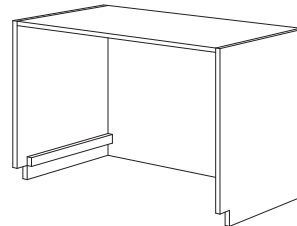
155



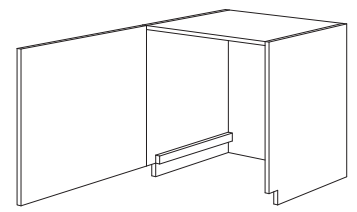
156
Removable Back



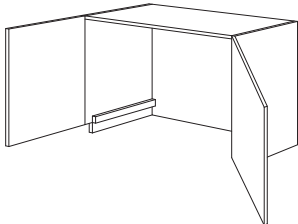
157
Removable Back



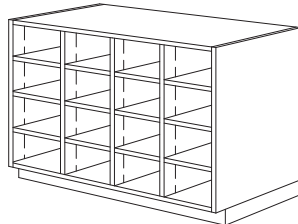
160
Cart Storage



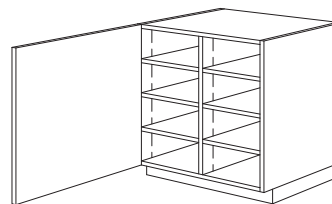
161
Cart Storage



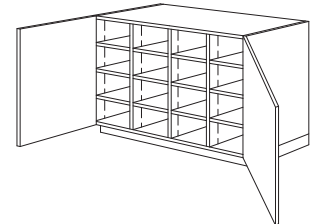
162
Cart Storage



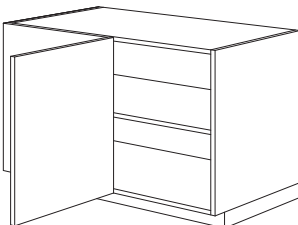
170



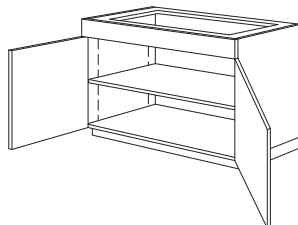
171



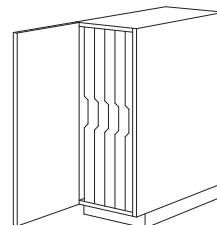
172



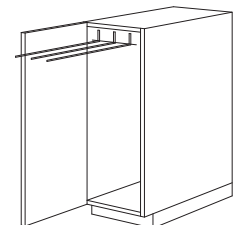
176



177



178



179
Retractable Towel Rack

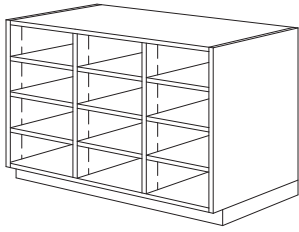
A

AWS Edition 1, 2009 - [WI WebDoc [10/09]]

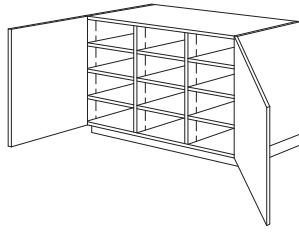
CASEWORK DESIGN SERIES (CDS)

(Page 4 of 20)

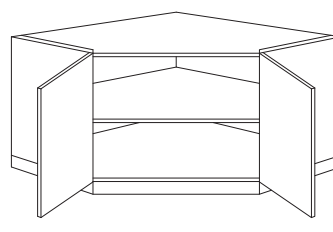
100 SERIES - BASE CABINETS w/o DRAWERS (continued)



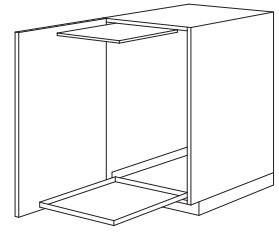
180



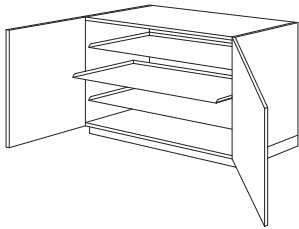
182



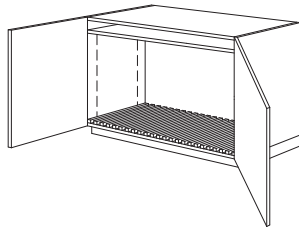
186



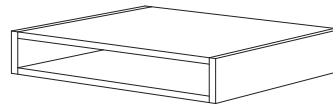
187
Sliding Tray & Lift Shelf



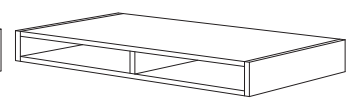
188



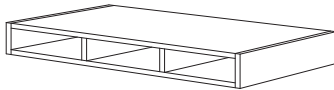
189
Drawing Board Rack



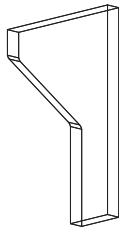
190



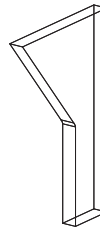
191



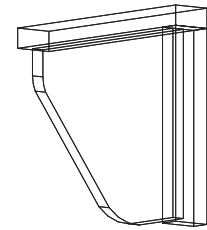
192



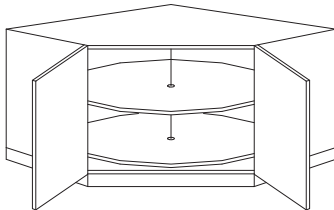
193



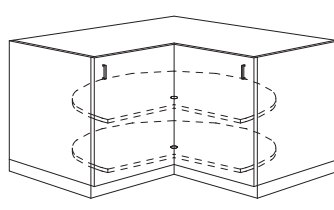
194



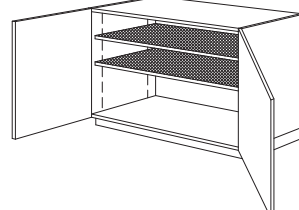
195



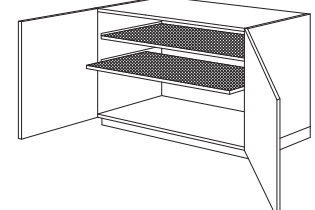
196



197



198



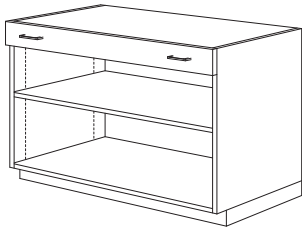
199

AWS Edition 1, 2009 - [WI WebDoc [10/09]]

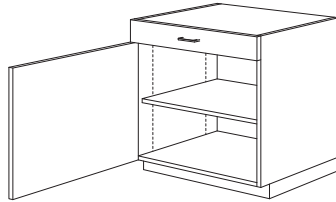
CASEWORK DESIGN SERIES (CDS)

(Page 5 of 20)

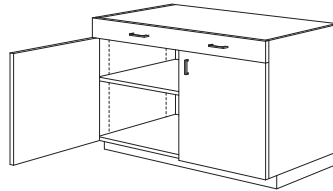
200 SERIES - BASE CABINETS w/ DRAWERS



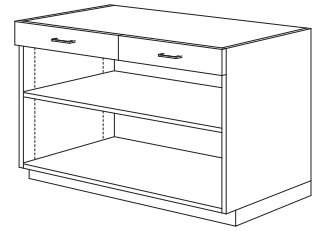
210



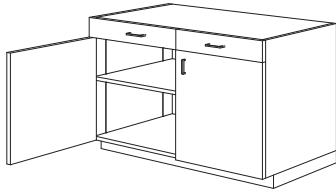
211



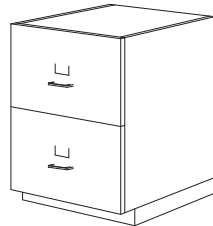
212



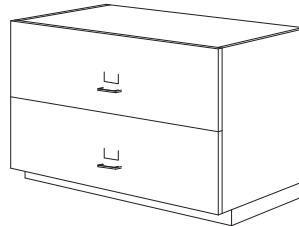
220



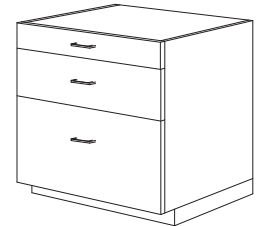
222



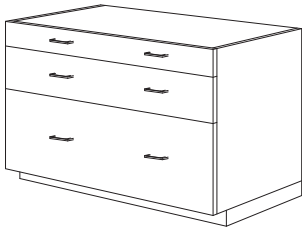
223



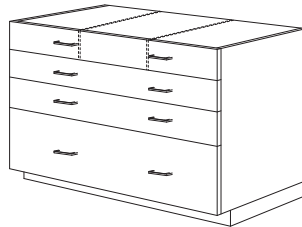
224



230



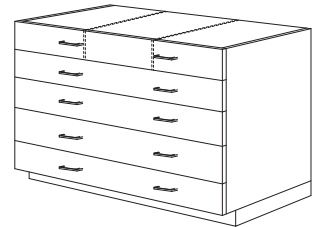
231



240



242



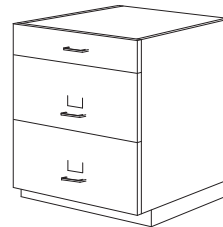
250



251



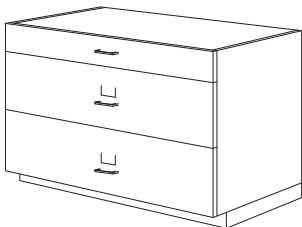
252



253



254



255



260



261



262

A

CASEWORK DESIGN SERIES (CDS)

(Page 6 of 20)

200 SERIES - BASE CABINETS w/ DRAWERS (continued)



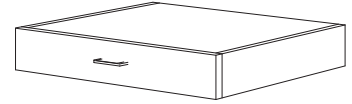
270



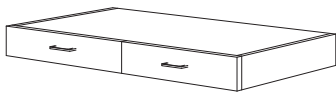
271



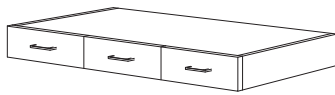
272



290



291

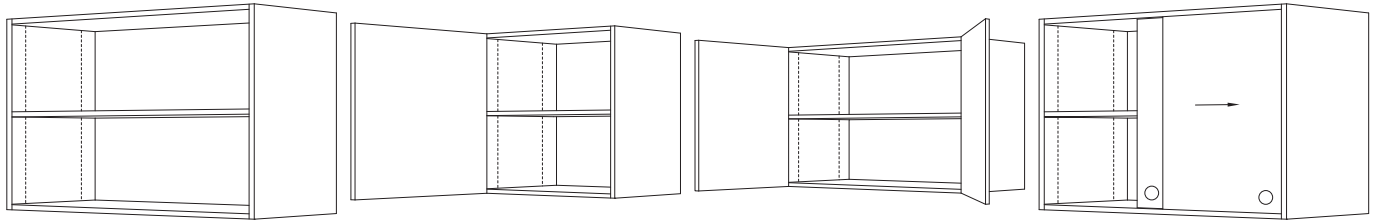


292

CASEWORK DESIGN SERIES (CDS)

(Page 7 of 20)

300 SERIES - WALL-HUNG CABINETS

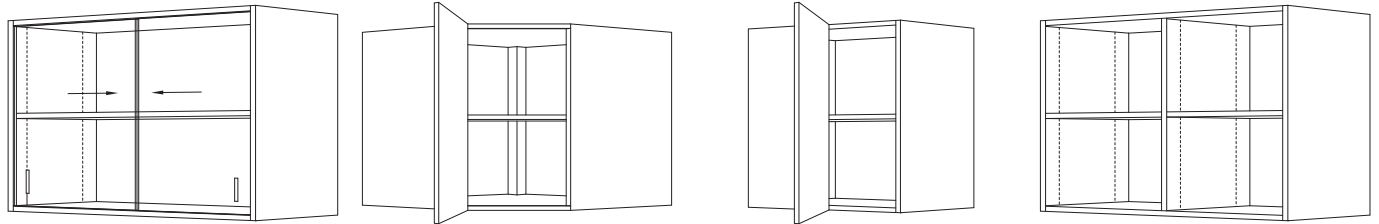


300

301

302

306

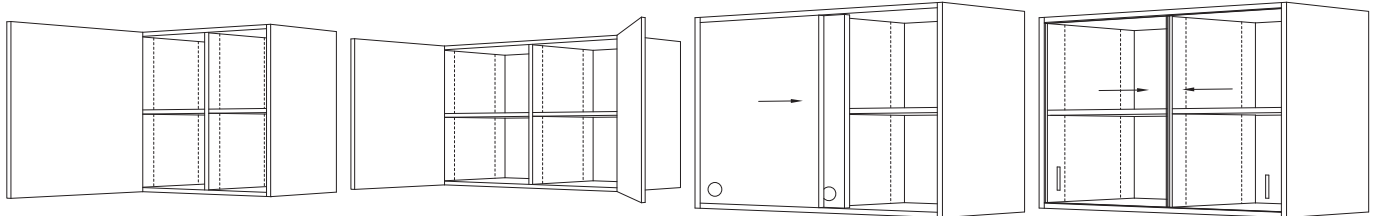


307

308
Angle Corner

309
Blind Corner

310

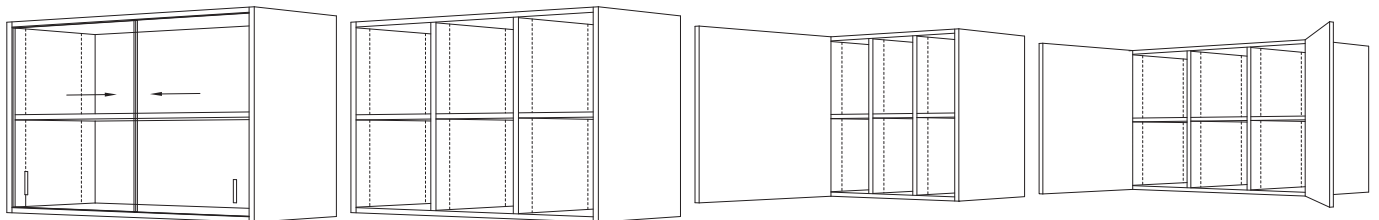


311

312

316

317

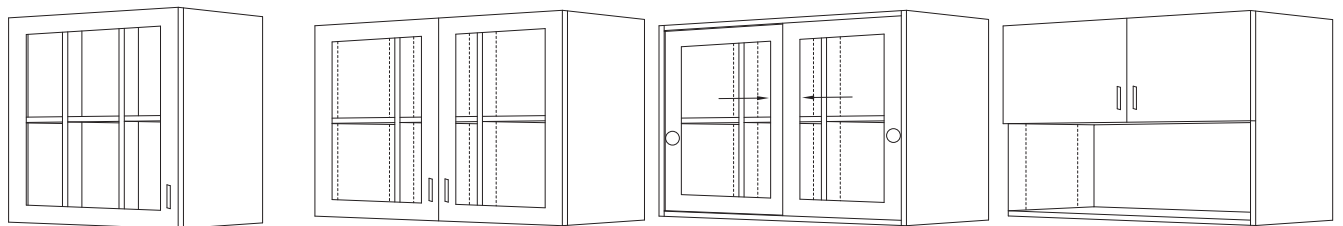


318

320

321

322



323

324

325

326

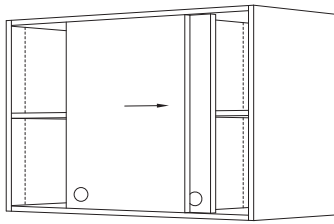
AWS Edition 1, 2009 - [WI WebDoc [10/09]]

A

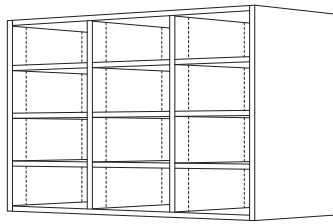
CASEWORK DESIGN SERIES (CDS)

(Page 8 of 20)

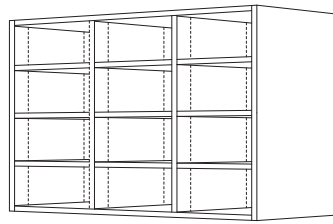
300 SERIES - WALL-HUNG CABINETS (continued)



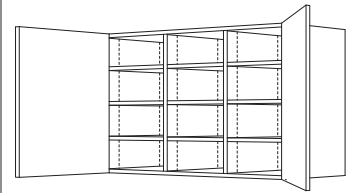
336



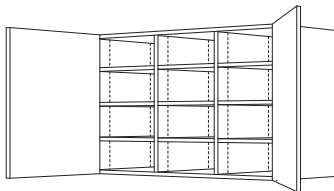
340



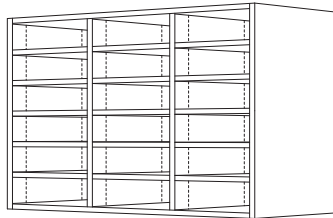
341
Open Back



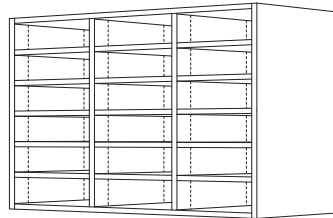
342



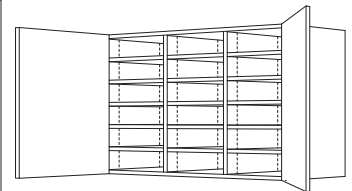
343
Open Back



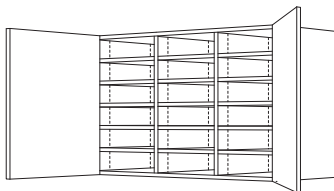
350



351
Open Back



352



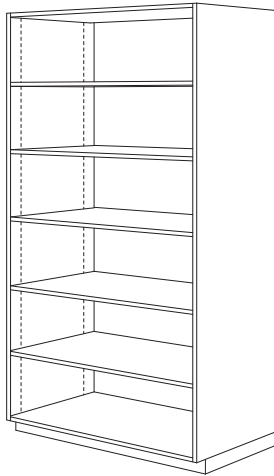
353
Open Back

AWS Edition 1, 2009 - [WI WebDoc [10/09]]

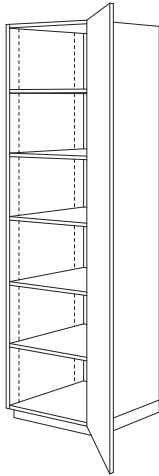
CASEWORK DESIGN SERIES (CDS)

(Page 9 of 20)

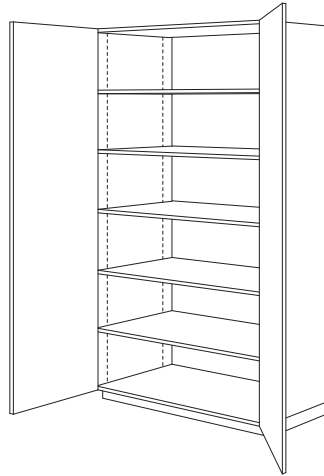
400 SERIES - TALL STORAGE CABINETS



400



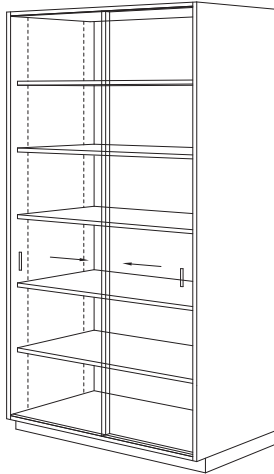
401



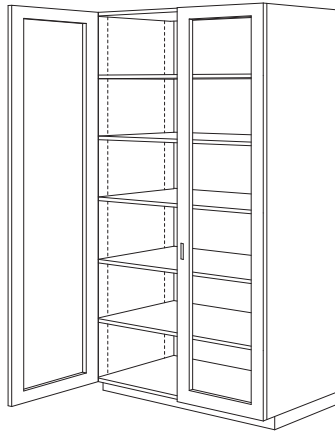
402



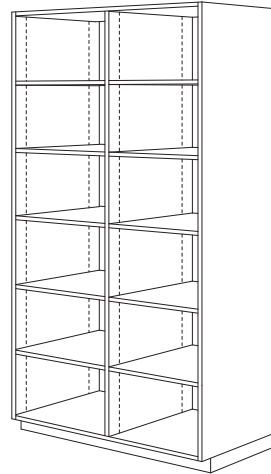
406



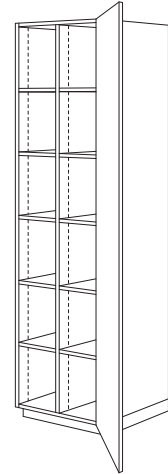
407



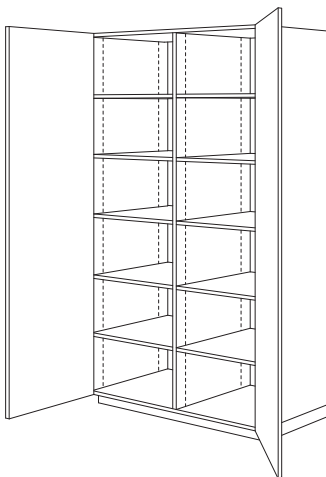
408



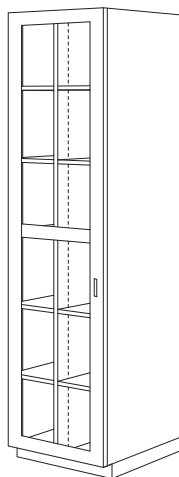
410



411



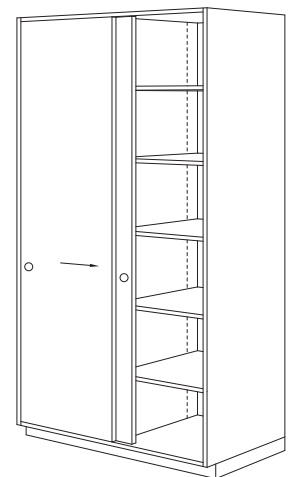
412



413



414



416

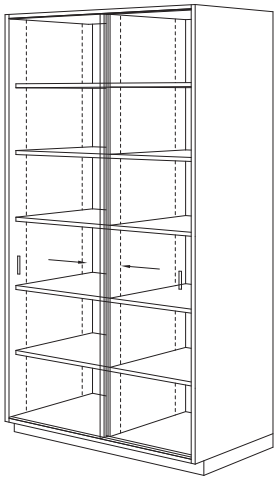
A

CASEWORK DESIGN SERIES (CDS)

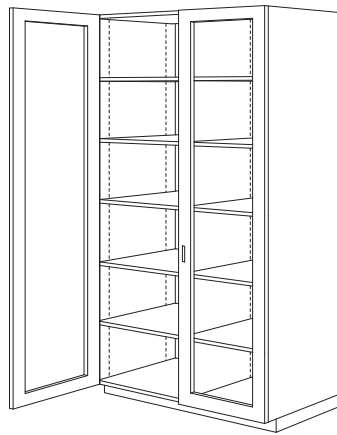
(Page 10 of 20)

400 SERIES - TALL STORAGE CABINETS (continued)

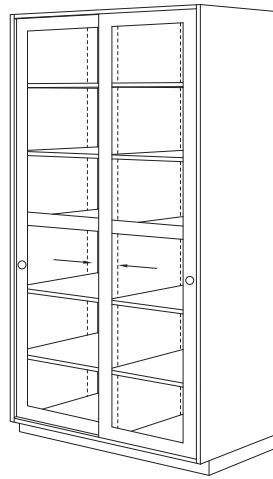
AWS Edition 1, 2009 - [WI WebDoc [10/09]]



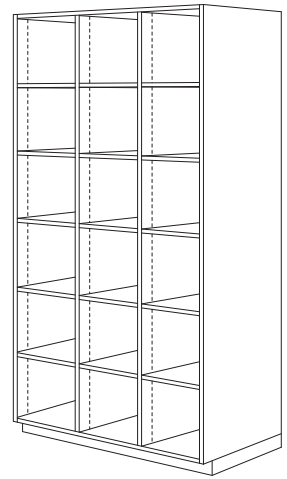
417



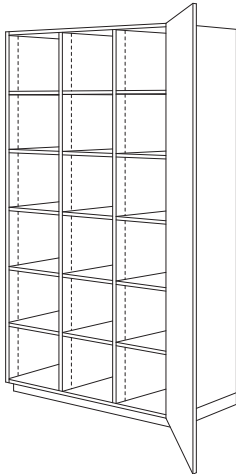
418



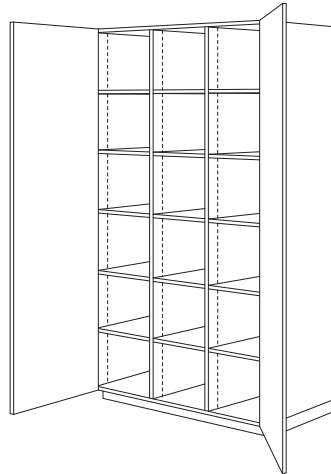
419



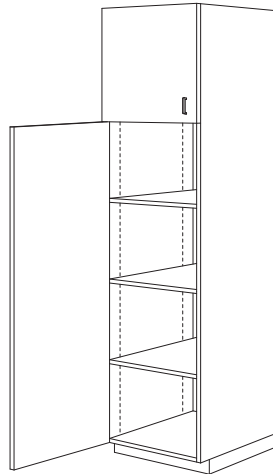
420



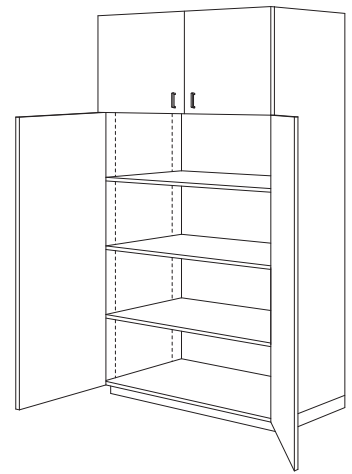
421



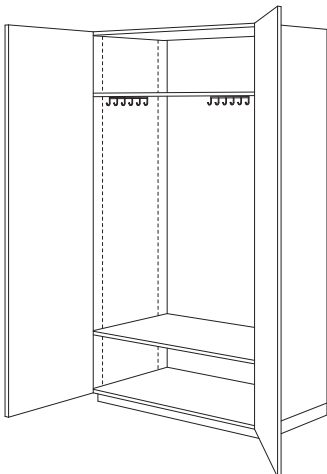
422



423

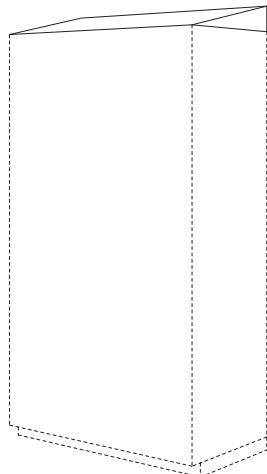


424

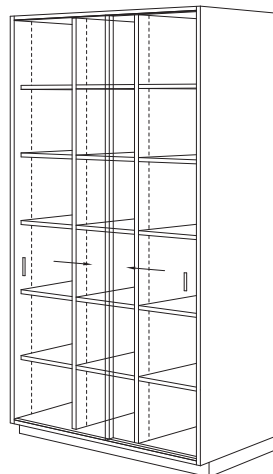


425

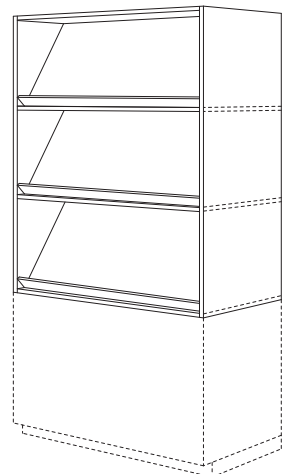
Dust Panel, Integral or Separate



426



427



429

Hutch w/ Fixed Shelves

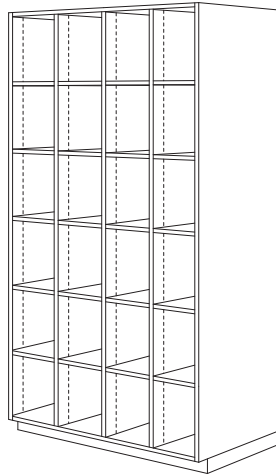
A

CASEWORK DESIGN SERIES (CDS)

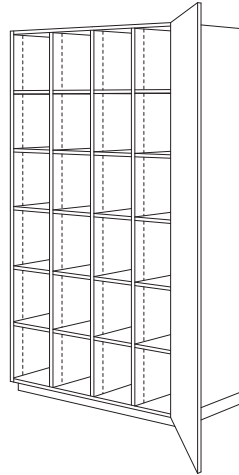
(Page 11 of 20)

400 SERIES - TALL STORAGE CABINETS

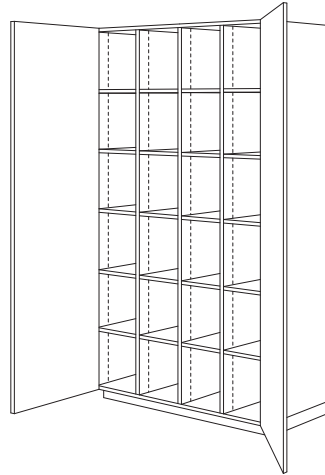
(continued)



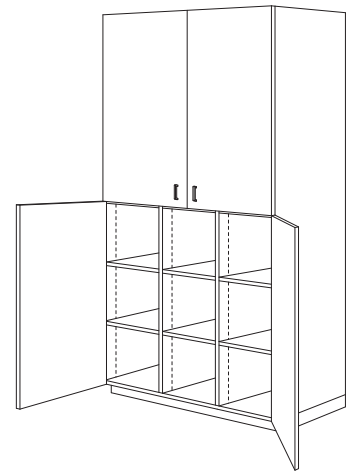
430



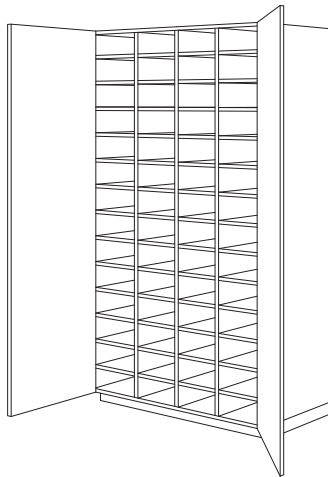
431



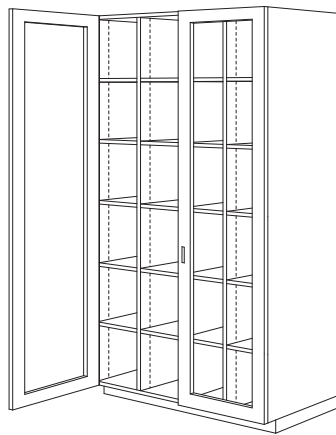
432



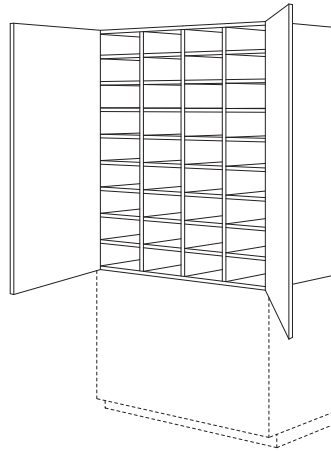
434



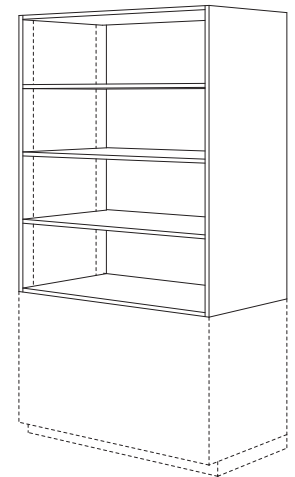
435



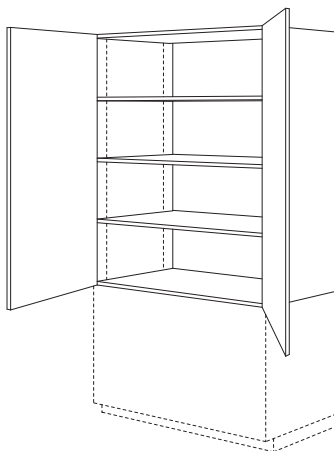
438



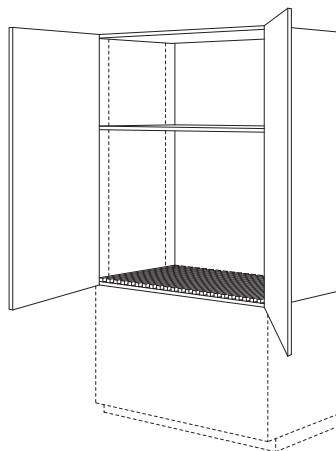
439
Hutch



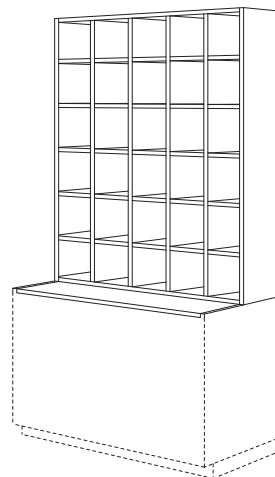
440
Hutch



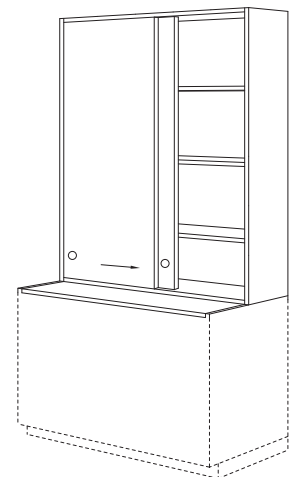
441
Hutch



443
Hutch



444
Hutch



445
Hutch

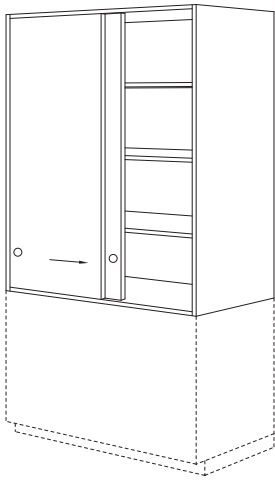
A

CASEWORK DESIGN SERIES (CDS)

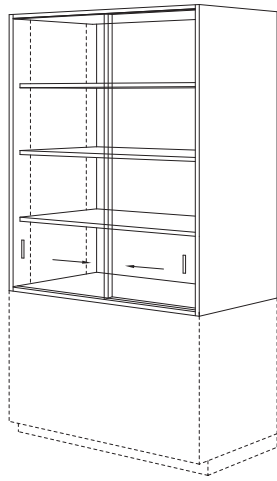
(Page 12 of 20)

400 SERIES - TALL STORAGE CABINETS (continued)

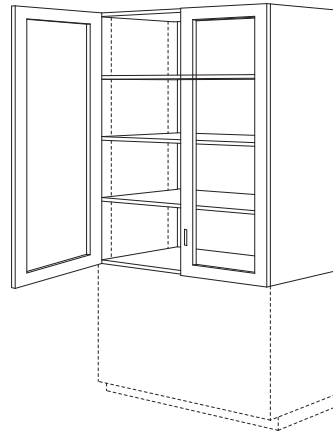
AWS Edition 1, 2009 - [WI WebDoc [10/09]]



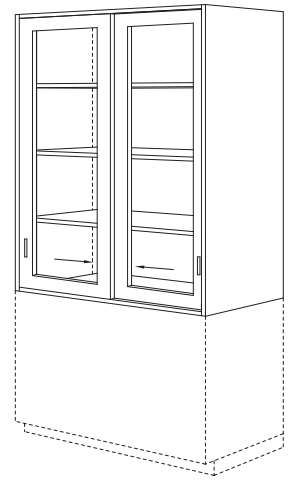
446
Hutch



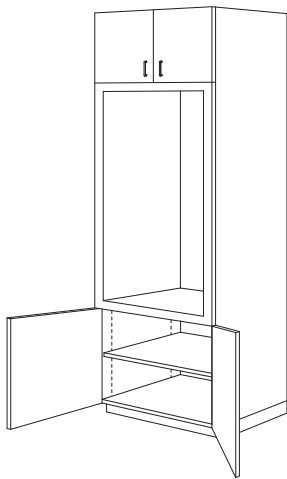
447
Hutch



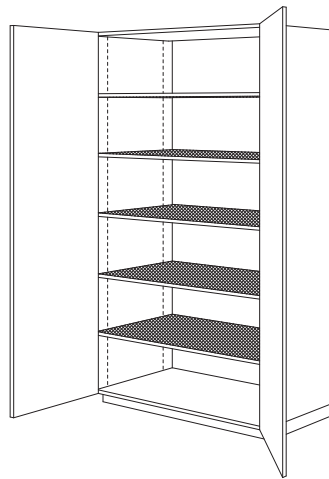
448
Hutch



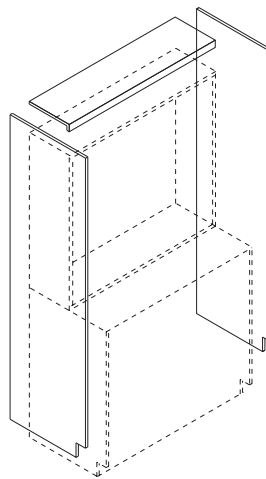
449
Hutch



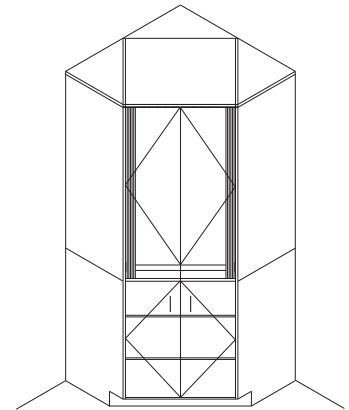
454



459



460

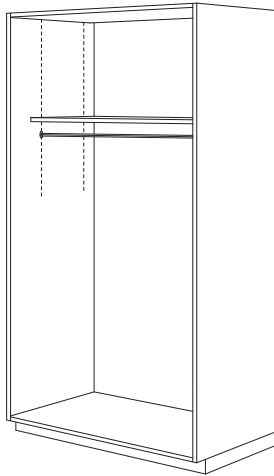


461

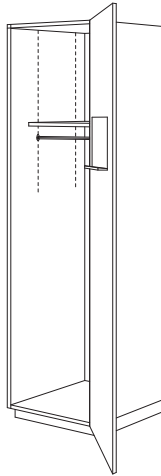
CASEWORK DESIGN SERIES (CDS)

(Page 13 of 20)

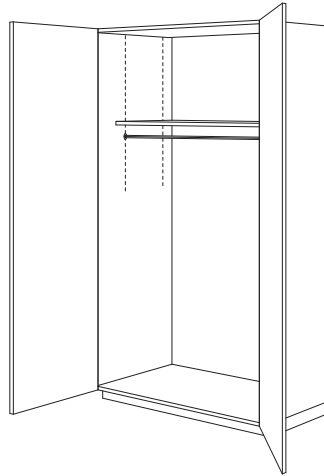
500 SERIES - WARDROBE CABINETS



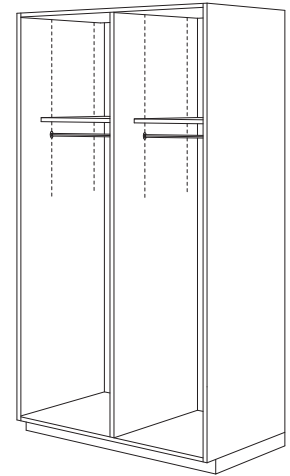
500



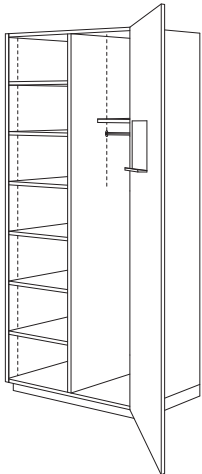
501



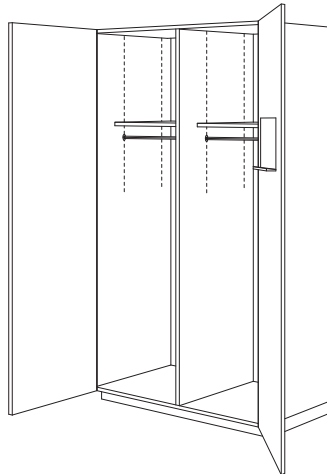
502



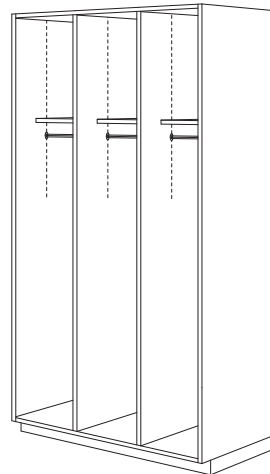
510



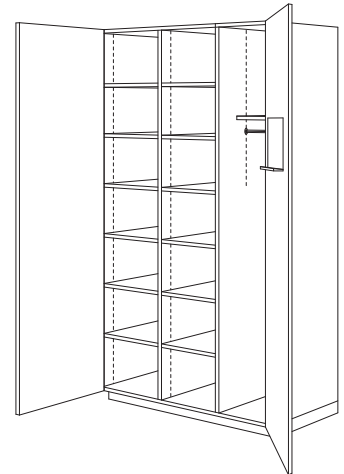
511



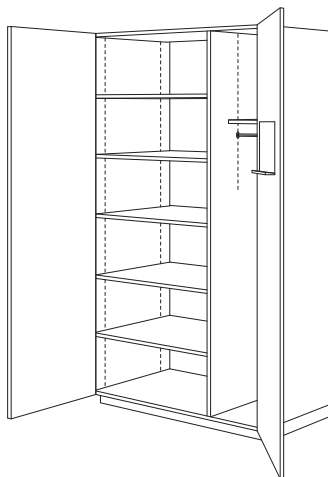
512



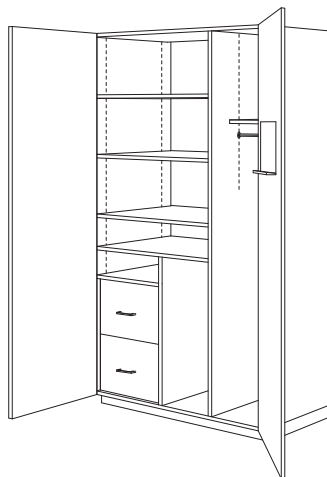
520



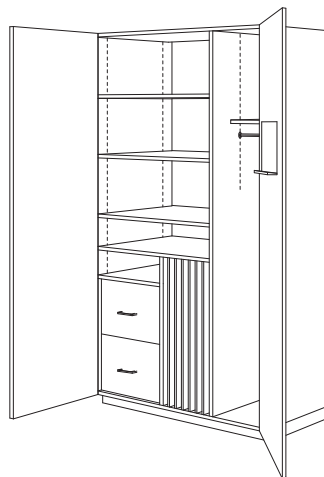
522



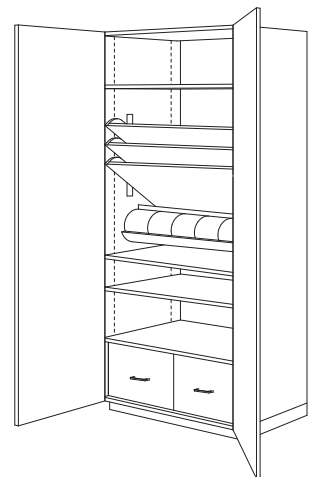
530



531



532



533

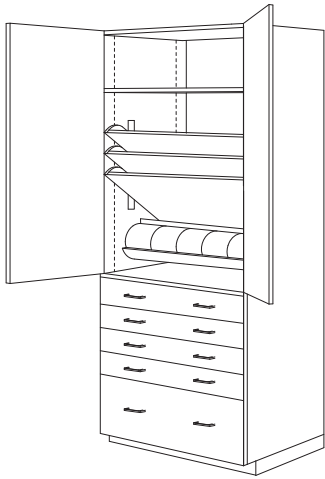
See General Notes

A

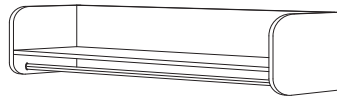
CASEWORK DESIGN SERIES (CDS)

(Page 14 of 20)

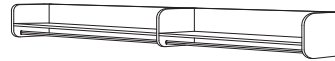
500 SERIES - WARDROBE CABINETS (continued)



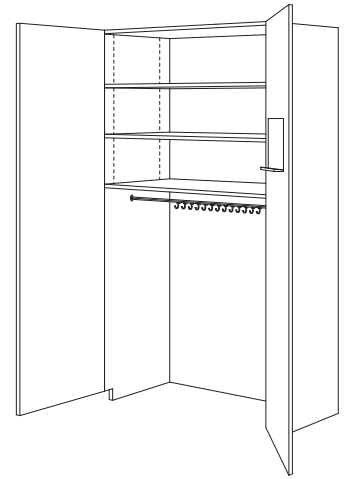
534
See General Notes



540



541



552
Pole w/ Wall Hooks

AWS Edition 1, 2009 - [WI WebDoc [10/09]]

CASEWORK DESIGN SERIES (CDS)

(Page 15 of 20)

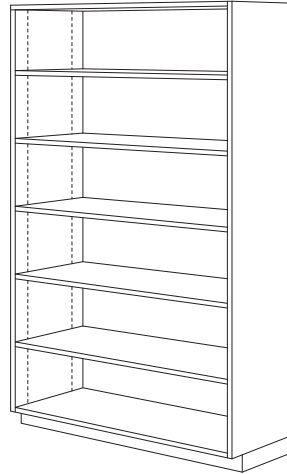
600 SERIES - LIBRARY CABINETS



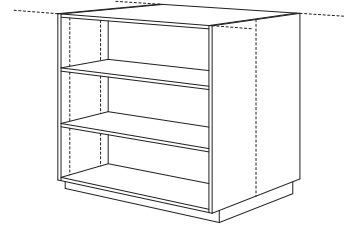
600
605 w/o Back



601
606 w/o Back



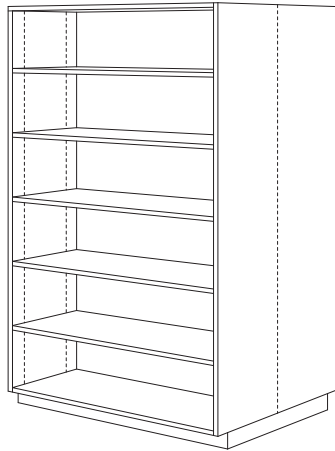
602
607 w/o Back



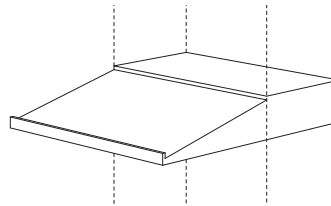
620
625 w/o Back



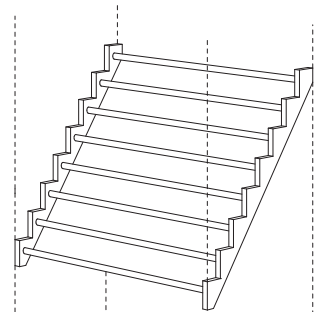
621
626 w/o Back



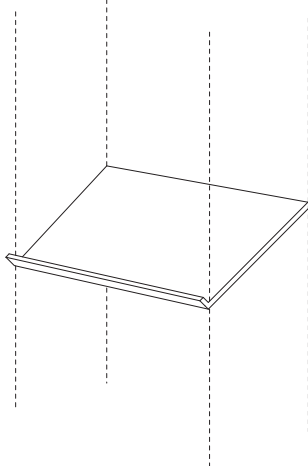
622
627 w/o Back



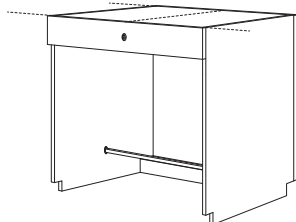
614
Library of Congress Shelf



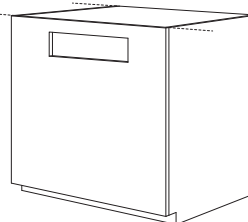
624
Newspaper Rack



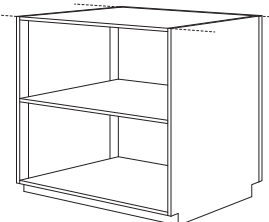
634
Display Shelf



640
Charge Desk



641
Book Return



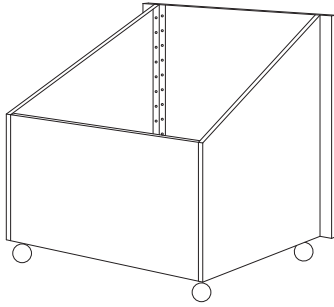
644

A

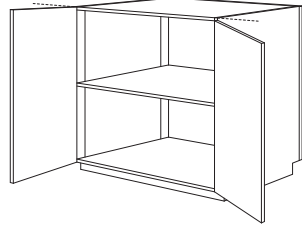
CASEWORK DESIGN SERIES (CDS)

(Page 16 of 20)

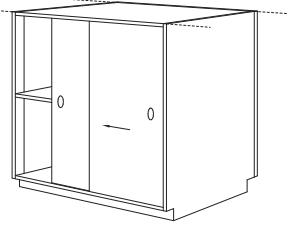
600 SERIES - LIBRARY CABINETS (continued)



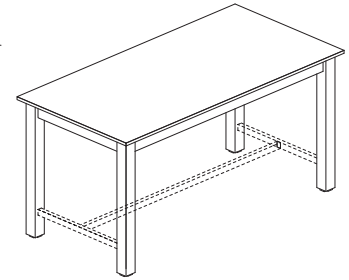
651
Book Cart



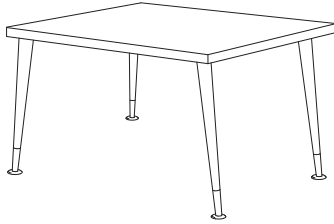
654



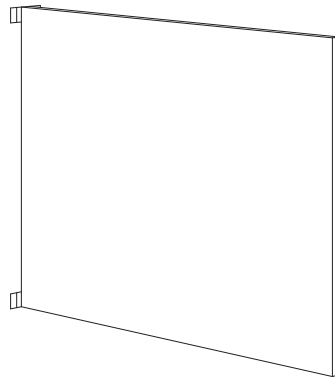
664



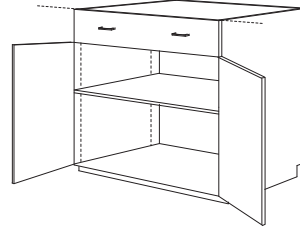
671a
671b w/ Lateral Bracing



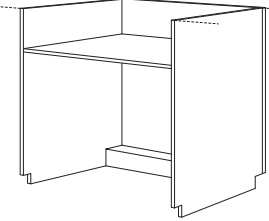
672



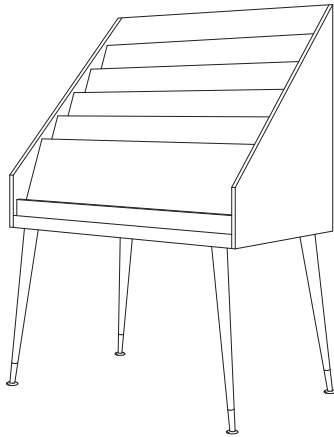
673
Gate



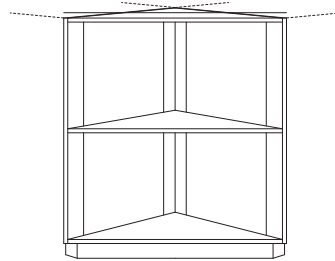
674



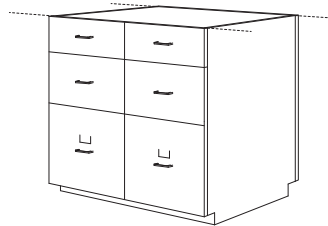
681



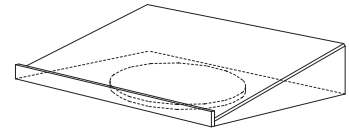
682 / 692
Magazine Rack



683



684



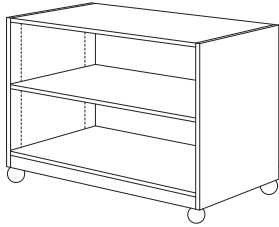
693
Dictionary Stand

AWS Edition 1, 2009 - [WI WebDoc [10/09]]

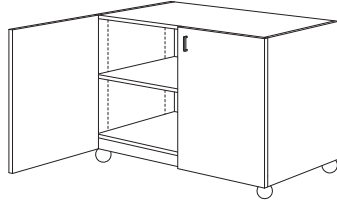
CASEWORK DESIGN SERIES (CDS)

(Page 17 of 20)

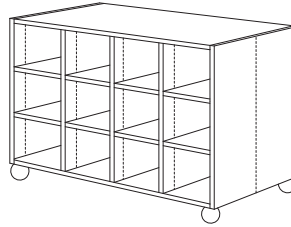
700 SERIES - MOVEABLE CABINETS



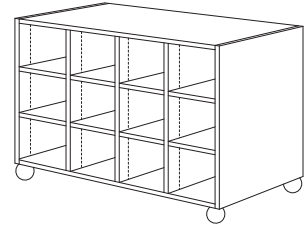
700



702



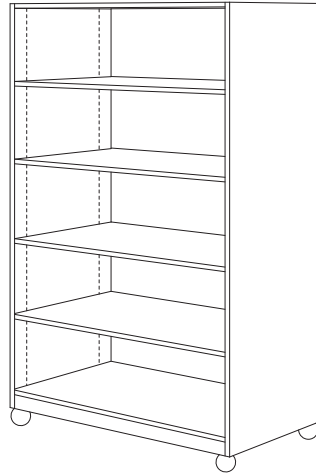
703



704



707



710



712

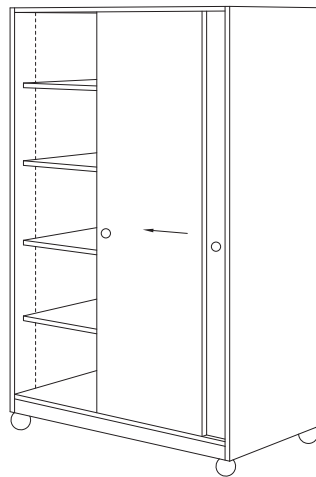


714

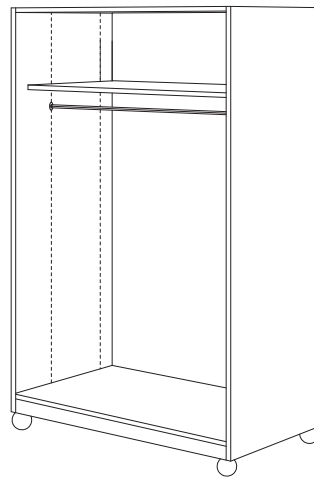


715

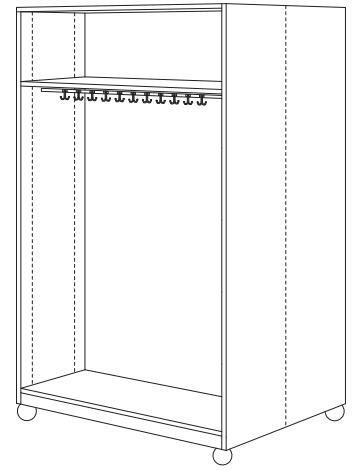
Slide-Out Tilting Paper Shelves



716



720

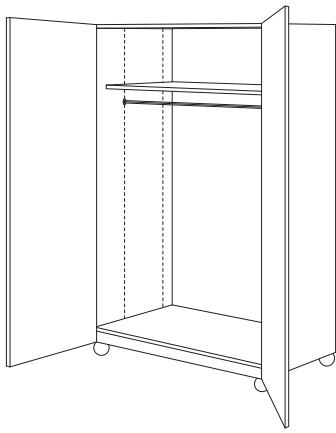


721

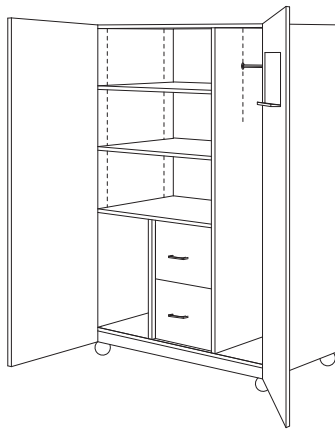
CASEWORK DESIGN SERIES (CDS)

(Page 18 of 20)

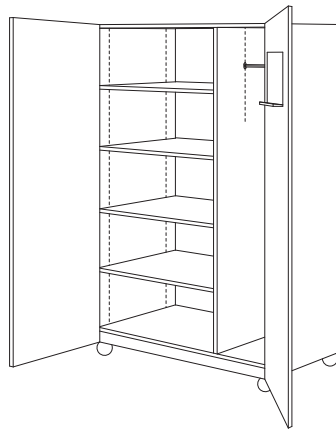
700 SERIES - MOVEABLE CABINETS (continued)



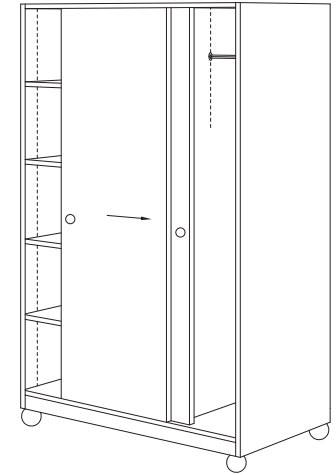
722



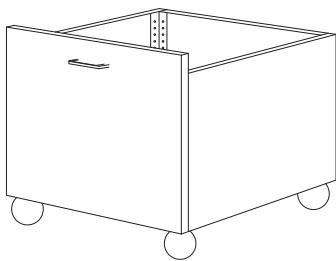
724



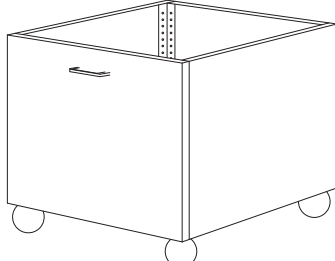
725



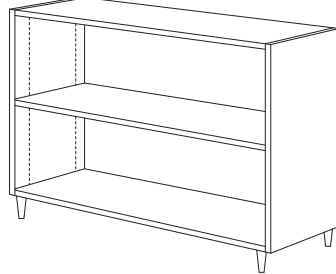
726



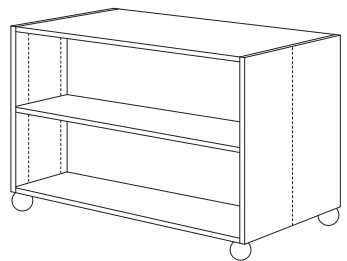
728
Toy Cart



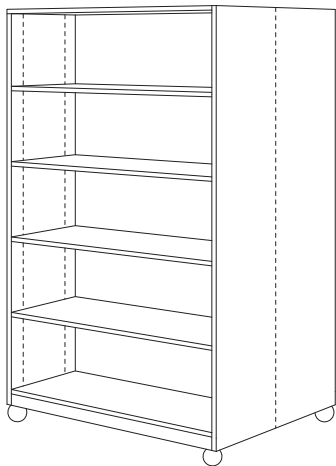
729
Toy Cart



730



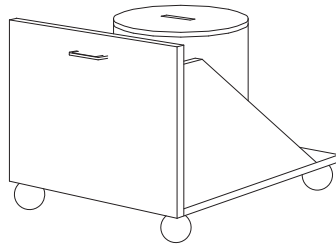
731



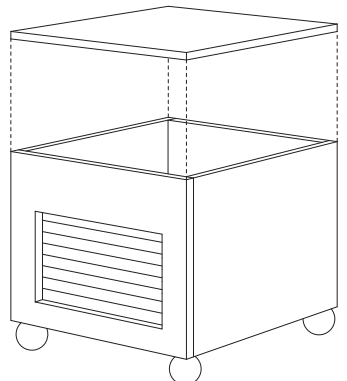
732



734



735
Clay Cart, Tin NIC



736
Metal-Lined Clay Cart

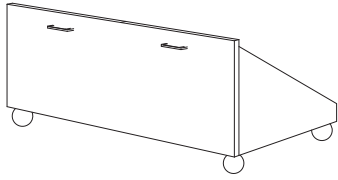
AWS Edition 1, 2009 - [WI WebDoc [10/09]]

CASEWORK DESIGN SERIES (CDS)

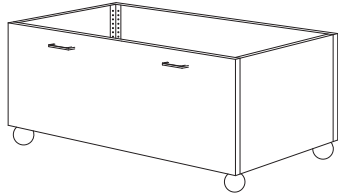
(Page 19 of 20)

700 SERIES - MOVEABLE CABINETS (continued)

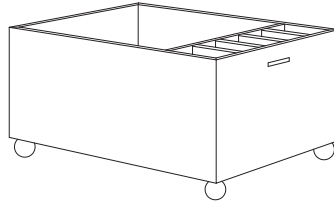
AWS Edition 1, 2009 - [WI WebDoc [10/09]]



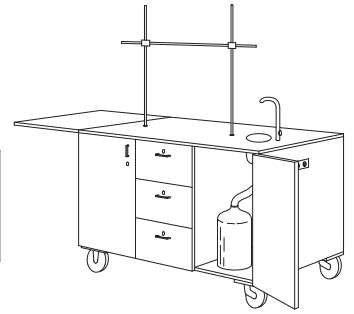
737
Block Cart



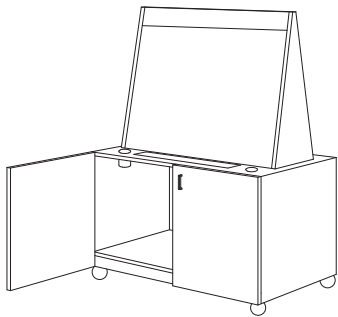
738
Block Cart



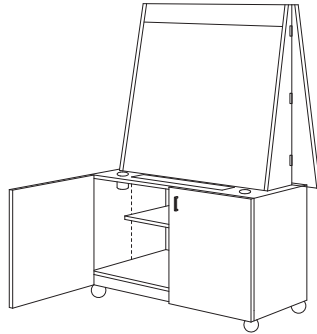
739
Ball & Bat Cart



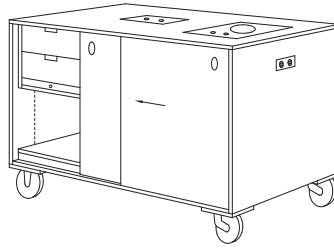
742
Lab Demonstration Cart



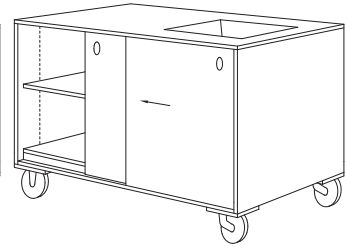
743
Two-Sided Easel



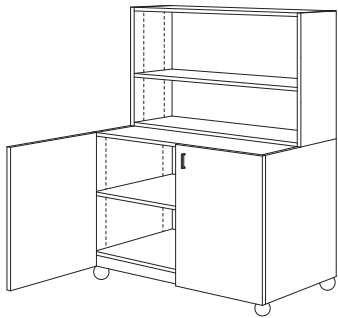
744
Single-Sided Easel



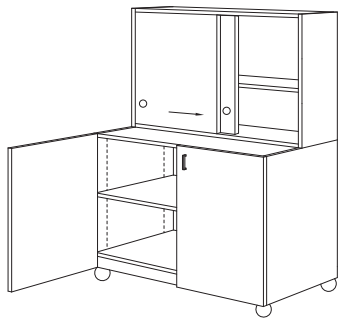
746
Cooking Demonstration Cart



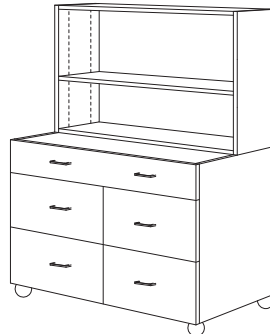
747
Nature Demonstration Cart



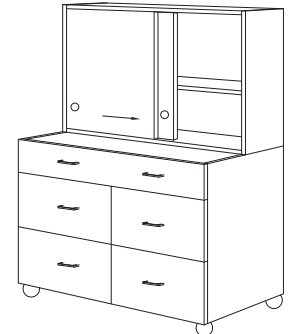
750



751



752



753

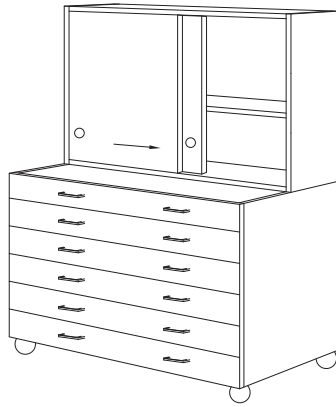
CASEWORK DESIGN SERIES (CDS)

(Page 20 of 20)

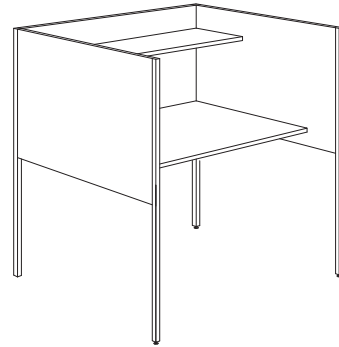
700 SERIES - MOVEABLE CABINETS (continued)



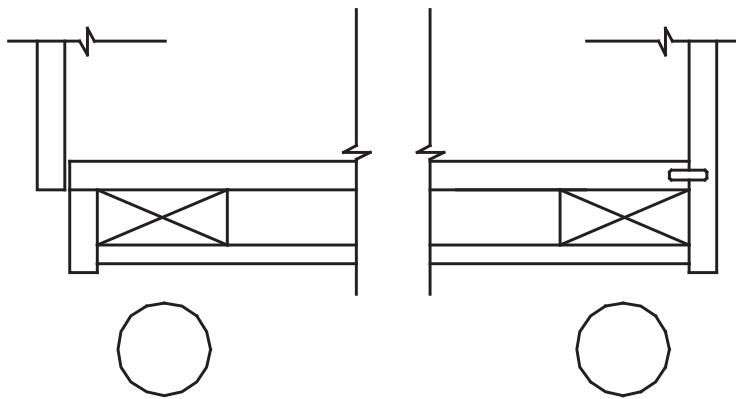
754



755



760
Study Carrel



Typical Diaphragm Bottom Detail

CASEWORK INTEGRITY

(Page 1 of 5)

To evaluate the overall integrity of casework, these standards have adopted **SEFA's** (Scientific Equipment and Fixture Association) methods of testing and acceptable results as the minimum acceptable level of integrity for casework conforming to all **GRADES**.

TEST LISTING

Structural Integrity - Base Cabinet
Concentrated Load - Base Cabinet
Torsion - Base Cabinet
Base Submersion
Structural Integrity - Wall Cabinet
Door Durability
Door Impact

Door Hinge
Drawer Bottom Impact
Drawer Support
Drawer and Door Pull
Drawer Rolling Load
Drawer Load Cycle
Shelf Load
Structural Integrity - Table

BASE CABINET TEST UNIT - Shall be 48" (1219 mm) wide, 36" (914 mm) high, and 22" (559 mm) deep with one full-width drawer (approximately one-fourth the height of the cabinet's face opening) and two doors. Cabinet shall be designed to provide unobstructed entry into the cabinet interior with the doors open and shall contain one adjustable shelf. For **LABORATORY USE**, the cabinet back shall be removable and tested with the cabinet back removed.

The cabinet shall be free-standing, squared, and set level. A piece of 1" (25.4 mm) thick medium-density fiberboard shall be positioned on the cabinet without glue or fasteners of any kind, of such dimensions that it will overhang the cabinet perimeter by 1" (25.4 mm), and its weight shall be included in the test as live load. Doors and the drawer should be free-moving, and the door shall latch properly.

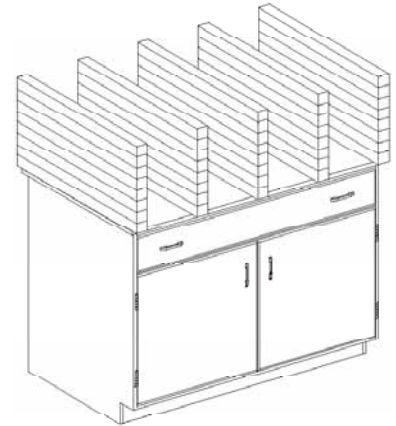


STRUCTURAL INTEGRITY TEST - BASE CABINET

CHALLENGES the load-bearing capability of a cabinet's construction.

PROCEDURE - Load the cabinet top by using 2000 lbs (907 kg) of solid steel bars stacked four high and evenly spaced for a time period of 10 minutes, then unload the cabinet.

ACCEPTANCE LEVEL - Cabinet shall have no signs of permanent failure. If used, inspect the levelers; any deformation shall not interfere with the function of the leveling system.

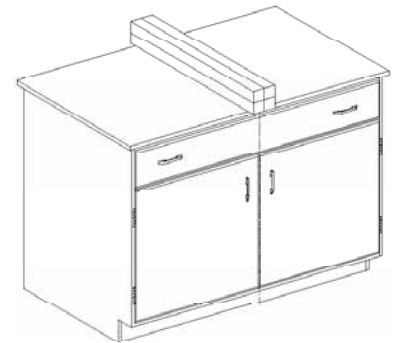


CONCENTRATED LOAD TEST - BASE CABINET

CHALLENGES the functional characteristics of the cabinet when subjected to a concentrated load on the center of the cabinet top.

PROCEDURE - Using solid weights or 10 lb (4.53kg) sand bags, apply a total of 200 lbs (90.7 kg) to the top of the cabinet along the cabinet centerline. Operate the doors and the drawer.

ACCEPTANCE LEVEL - Door and drawer operation shall be normal under condition of test load and there shall be no signs of permanent distortion to the front rail, cabinet joinery, doors, or the drawer after load is removed.



A

CASEWORK INTEGRITY

(Page 2 of 5)

TORSION TEST - BASE CABINET

CHALLENGES the structural integrity of the cabinet construction when subjected to a torsional load.

PROCEDURE - The cabinet shall be tested in its normal upright position, raised not less than 4" (101.6 mm) off the floor, and supported on both rear corners and one front corner. The area of support under the cabinet shall be located not more than 6" (152.4 mm) in from each supported corner. Secure the cabinet diagonally from the unsupported corner with seven solid steel bars (350 lbs [159 kg]) on the top of the cabinet to prevent overturning. Apply four solid steel bars (200 lbs [90.7 kg]) to the unsupported corner for a period of 15 minutes. Remove the weight, and place the cabinet on the floor in its normal upright position. Observe the cabinet joinery. Level the cabinet and measure the face and back of the cabinet across the diagonal corners.

ACCEPTANCE LEVEL - When returned to the normal position, the operation of the cabinet shall be normal without any signs of permanent damage. The difference between the two measurements taken from measuring the diagonal corners shall be no more than 1/8" (3.2mm).



SUBMERSION TEST - BASE CABINET

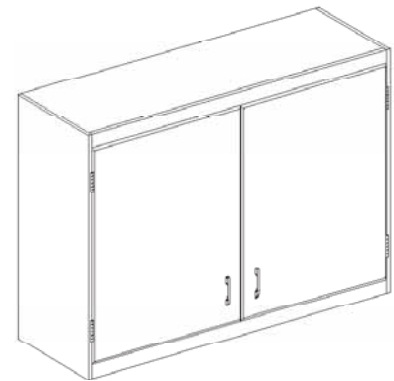
(Only applicable to casework specified for laboratory use)

CHALLENGES the cabinet's resistance to standing water and is only applicable to cabinets whose bases are within 2" (50.8 mm) of the finished floor.

PROCEDURE -The material thickness along the perimeter of the cabinet shall be measured on 6" (152.4 mm) increments. Record the thickness of the material to be submerged in water. Calculate the arithmetic mean of the data taken. Place the entire test cabinet in its upright position so that the cabinet is submerged in a pan filled with 2" (50.8 mm) of water. After 4 hours, remove the unit from the water and immediately measure the thickness of the material at the same points measured initially. Calculate the new arithmetic mean. After the unit has been allowed to dry, inspect for other damage.

ACCEPTANCE LEVEL - The cabinet will show no signs of permanent deformation or deterioration. Any increase in thickness of the base material shall not exceed 4% of the initial mean measurements.

WALL CABINET TEST UNIT - Shall be 48" (1219 mm) wide, 36" (914 mm) high, and 12" (305 mm) deep with two swinging doors and one shelf, and shall be designed in such a way that when the doors are open, access to the cabinet is unobstructed.

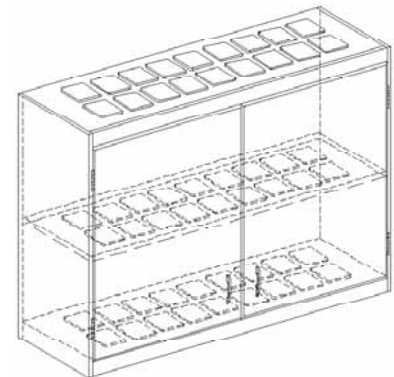


STRUCTURAL INTEGRITY TEST - WALL CABINET

CHALLENGES the strength of the back of the wall cabinet as well as the joinery of the cabinet and the function of the doors when the wall-mounted unit is subjected to load.

PROCEDURE - Using sand or shot bags weighing 10 lbs (4.5 kg) each, load the cabinet bottom, shelf, and top uniformly to a maximum of 200 lbs (90.7 kg) each, with the maximum load not exceeding 600 lbs (272 kg).

A **ACCEPTANCE LEVEL** - With weights in place, operate the doors through full travel to verify the normal operation of the doors. Remove the weights and operate the doors to verify normal operation. Verify that there is no significant permanent deflection of the cabinet top, cabinet back, cabinet bottom, or shelf. After the weights are removed, the cabinet shall show no permanent damage to the cabinet, cabinet bottom, or shelf.



CASEWORK INTEGRITY

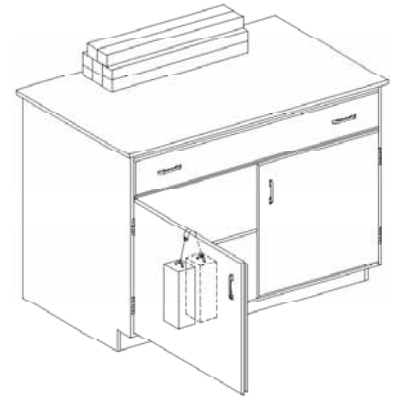
(Page 3 of 5)

DOOR DURABILITY TEST

CHALLENGES the durability of the door and its hardware (hinge leaf, screws, etc.) to an applied load of 200 lbs (90.7 kg).

PROCEDURE - Remove the shelf for this test. With the unit and top set, add sufficient weight to the top in order to prevent overturning. With the cabinet door open 90 degrees, hang a sling made up of two 100-lb (45.4 kg) weights (shot bags or solid weights) over the top of the door at a point 12" (305 mm) out from the hinge centerline. Slowly move the door through the full cycle of the hinge, up to a 160-degree arc. Remove the weight, swing the door through its full intended range of motion, and close the door.

ACCEPTANCE LEVEL - The open door shall withstand a load of 200 lbs (90.7 kg) when applied at a point 12" (305 mm) from the hinge centerline without significant permanent distortion that will cause binding of the door or hinges or that will adversely affect the operation of the catch.

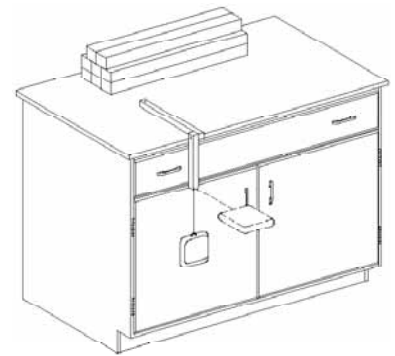


DOOR IMPACT TEST

CHALLENGES the resistance of a 240 inch-pound impact to the door face and is applicable only to cabinet doors that extend below the work surface, excluding glass doors.

PROCEDURE - With the unit and top set, add sufficient weight to the top in order to prevent overturning. A 20-lb (9 kg) sand bag shall be suspended and dropped to provide an impact of 240 inch-pounds at the center of the closed door.

ACCEPTANCE LEVEL - After the test, the door and catch shall operate normally and show no signs of permanent damage.



DOOR HINGE TEST

CHALLENGES the durability of the door hinge hardware to withstand 100,000 cycles as a reliable measure for longevity.

PROCEDURE - This test shall be in conformance to the ANSI test procedure A156.9, Grade 1, requirements for cycle testing of doors. A cycling mechanism shall swing the door 90 degrees. The door shall operate for 100,000 cycles with a speed not greater than 15 cycles per minute.

ACCEPTANCE LEVEL - The door shall operate for the full cycle period without deterioration that will significantly affect the function of the door. The door shall operate freely without binding.

DRAWER BOTTOM IMPACT TEST

CHALLENGES the resistance to impact of the drawer bottom and slide mechanism.

PROCEDURE - Open the drawer to 13" (330 mm) of travel. Drop a 10-lb (4.5 kg) sand or shot bag from a height of 24" (610 mm) into the bottom of the drawer at the center of the width of the drawer and 6" (152 mm) back from the inside face of the drawer. Remove the sand or shot bag.

ACCEPTANCE LEVEL - Operate the drawer through the full cycle. The drawer shall operate normally. Any deformation will not cause binding or interfere with the operation of the drawer.

DRAWER SUPPORT TEST

CHALLENGES the ability to support a point load given to the front of the drawer and will challenge the attachment of the drawer head to the drawer.

PROCEDURE - With the unit and top set, add sufficient weight to the top in order to prevent overturning. Open the drawer to 13" (330 mm) of travel and hang 150 lbs (68 kg) from the drawer head at the centerline of the drawer for 5 minutes. Remove the weight and operate the drawer through the full cycle.

ACCEPTANCE LEVEL - There shall be no interference with the normal operation of the drawer.

A

CASEWORK INTEGRITY

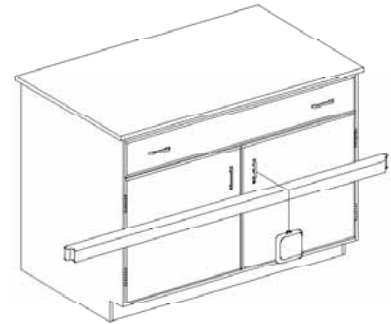
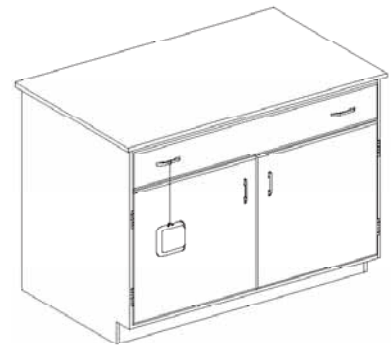
(Page 4 of 5)

DRAWER AND DOOR PULL TEST

CHALLENGES the strength of the pull hardware.

PROCEDURE - Pulls are to be installed in accordance with the manufacturer's practice, using the specified attaching hardware and method. Block the door and the drawer closed. Using a cable pulley-and-weight assembly, apply a force of 50 lbs (22.7 kg) perpendicular to each pull. Revise the setup to hang weight from each pull.

ACCEPTANCE LEVEL - The pulls shall resist force and support weight without breakage. After completion of the test and removal of the weight, there shall be no significant permanent distortion. Some pull designs will require variations to set up apparatus. These pulls shall be tested in conformance to the applied pull forces.

**DRAWER ROLLING LOAD TEST**

CHALLENGES the strength of the drawer head, bottom, and back as a result of opening and closing the drawer with a rolling load.

PROCEDURE - Position the drawer on a table at a 45-degree angle. Place a 2" (50.8 mm) diameter by 12" (305 mm) long steel rod (approximately 10 lbs [4.5 kg]) 13" (330 mm) from the target impact area (so that the rod will roll freely to impact the back) of the drawer. Subject the back to three impacts, and reverse the drawer to subject the front to three additional impacts.

ACCEPTANCE LEVEL - The drawer shall show no signs (other than minor scratches and dents) of permanent damage. All joinery shall be intact, and the drawer, when replaced in the unit, shall operate normally. Minor scratches and dents are acceptable.



SHELF TEST UNIT - Shelves, both fixed and/or adjustable, regardless of material or application, shall be tested using the following procedure. This is inclusive of shelves in wall cabinets, base cabinets, full-height cabinets, wall-mounted shelves, and free-standing shelves.

SHELF LOAD TEST

CHALLENGES the ability of a shelf and its mounting hardware to support normal loads.

PROCEDURE - The shelf shall be mounted as designed. Measure the distance from the underside of the shelf to a reference point perpendicular to the center of the shelf. Using shot or sand bags weighing 10 lbs (4.5 kg) each, uniformly load the shelf to a maximum of 200 lbs (90.7 kg). Measure the deflection on the shelf by measuring the distance to the reference point and calculating the difference between the two measurements.

A ACCEPTANCE LEVEL - The maximum deflection shall be 1/180 of the span, not to exceed 1/4" (6.4 mm).

CASEWORK INTEGRITY

(Page 5 of 5)

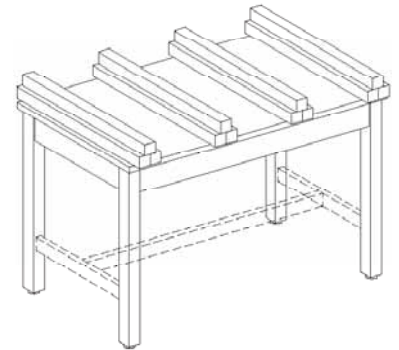
TABLE TEST UNIT - Shall be 48" (1219 mm) long, 24" (610 mm) deep, and 36" (914 mm) high. A top of 1"-(25.4 mm) thick medium-density fiberboard shall be positioned on the table so that it will overhang the frame perimeter by 1" (25.4 mm), and its weight shall be included in the test as live load. Tables are represented by a large range of styles and designs, including free-standing tables, desks, aprons mounted between two fixed areas (such as a wall or casework), mobile tables (free-standing tables on wheels or casters), and mobile under-counter units.

TABLE STRUCTURAL INTEGRITY TEST

CHALLENGES the table components to a normal load.

PROCEDURE - Load the table top with an evenly distributed load of no less than 300 lbs (136 kg) for mobile, 600 lbs (272 kg) for free-standing, and 2000 lbs (907 kg) for fixed. Include the weight of the working surface as a live load by using solid steel bars, each weighing 50 lbs (22.7 kg).

ACCEPTANCE LEVEL - No structural breakage shall occur, and the apron rails shall not deflect more than 1/8" (3.2 mm). In the case of a table with a drawer, the deflection of the rail shall not interfere with the function of the drawer.



FRACTION/DECIMAL/MILLIMETER CONVERSION TABLE

FRACTION	DECIMAL	MILLIMETER
1/64	0.01563	0.3969
1/32	0.03125	0.7938
3/64	0.04688	1.1906
1/16	0.06250	1.5875
5/64	0.07813	1.9844
3/32	0.09375	2.3813
7/64	0.10937	2.7781
1/8	0.12500	3.1750
9/64	0.14063	3.5719
5/32	0.15625	3.9688
11/64	0.17188	4.3656
3/16	0.18750	4.7625
13/64	0.20312	5.1594
7/32	0.21875	5.5563
15/64	0.23438	5.9531
1/4	0.25000	6.3500
17/64	0.26563	6.7469
9/32	0.28125	7.1438
19/64	0.29688	7.5406
5/16	0.31250	7.9375
21/64	0.32813	8.3344
11/32	0.34375	8.7313
23/64	0.35938	9.1281
3/8	0.37500	9.5250
25/64	0.39063	9.9219
13/32	0.40625	10.3188
27/64	0.42188	10.7156
7/16	0.43750	11.1125
29/64	0.45313	11.5094
15/32	0.46875	11.9063
31/64	0.48438	12.3031
1/2	0.50000	12.7000

FRACTION	DECIMAL	MILLIMETER
33/64	0.51563	13.0969
17/32	0.53125	13.4938
35/64	0.54688	13.8906
9/16	0.56250	14.2875
37/64	0.57813	14.6844
19/32	0.59375	15.0813
39/64	0.60938	15.4781
5/8	0.62500	15.8750
41/64	0.64063	16.2719
21/32	0.65625	16.6688
43/64	0.67188	17.0656
11/16	0.68750	17.4625
45/64	0.70313	17.8594
23/32	0.71875	18.2563
47/64	0.73438	18.6531
3/4	0.75000	19.0500
49/64	0.76563	19.4469
25/32	0.78125	19.8438
51/64	0.79688	20.2406
13/16	0.81250	20.6375
53/64	0.82813	21.0344
27/32	0.84375	21.4313
55/64	0.85938	21.8281
7/8	0.87500	22.2250
57/64	0.89063	22.6219
29/32	0.90625	23.0188
59/64	0.92188	23.4156
15/16	0.93750	23.8125
61/64	0.95313	24.2094
31/32	0.96875	24.6063
63/64	0.98438	25.0031
1	1.00000	25.4000

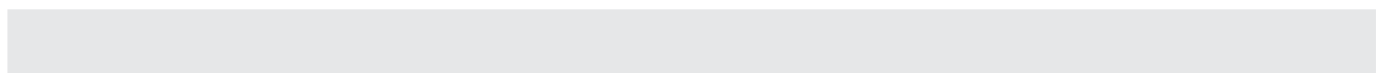
MISCELLANEOUS CONVERSION FACTORS

▼ WHEN KNOWN ▼	▼ MULTIPLY BY ▼	▼ TO FIND ▼
Inches	2.54	Centimeters
Inches	25.4	Millimeters
Square Inches	6.452	Square Centimeters
Feet	30.48	Centimeters
Square Feet	.0929	Square Meters
Yards	.9144	Meters
Square Yards	.8361	Square Meters
Miles	1.6	Kilometers
Square Miles	2.59	Square Kilometers
Acres	.4047	Hectares
Ounces	28.349527	Grams
Pounds	.4536	Kilograms
Pressure	.0703	Bar
Radius	2	Diameter
Diameter	.5	Radius
Diameter	3.1416	Circumference
Diameter	.8862	Side of an Equal Square
Circumference	.31831	Diameter
Circumference	.15915	Radius
Circumference	.2821	Side of an Equal Square
Square of Diameter	.7854	Area of Circle
Square of Diameter	3.1416	Square of Sphere of Globe
Square of Circumference	.07958	Area of Circle
Square of Radius	3.1416	Area of Circle

▲ TO FIND ▲

▲ DIVIDE BY ▲

▲ WHEN KNOWN ▲



▼ WHEN KNOWN ▼	▼ MULTIPLY BY ▼	▼ TO FIND ▼
Fahrenheit	0.556 after subtracting 32	Celsius
Celsius	1.8 and add 32	Fahrenheit

NOTES