Nicholson®

FILES, SAWS AND MULTI-PURPOSE TOOLS



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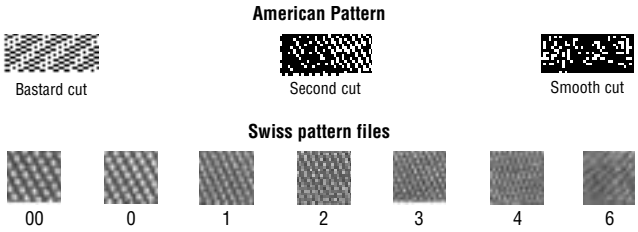
Safety Precautions



Always wear safety glasses. Warn workers nearby to stay clear before you make each cut.

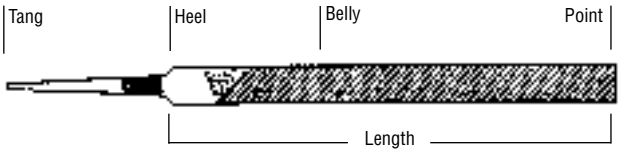
File Terminology

Coarseness



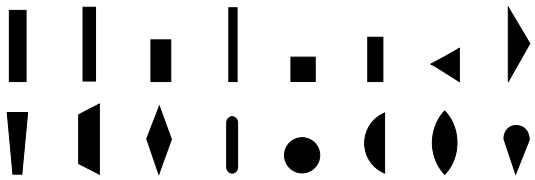
- Work to be accomplished, roughing or finishing, will determine type of teeth and coarseness for each application
- Most American pattern files are available with 3 grades of cut: bastard-cut, second-cut and smooth-cut
- Swiss pattern files are available in seven cuts: No. 00, 0,1, 2, 3, 4, and 6
- The degree of coarseness is greater in longer files, but differences between bastard, second and smooth are proportionate

Length



- Length is measured exclusive of tang, from point to heel, unless specified otherwise
- Desired stroke length, type of material and size will determine length required

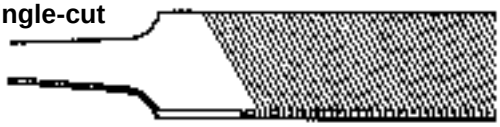
Shape



- Area to be filed will determine specific cross-section (round, square, flat, etc.) to be used

Kinds of Teeth

Single-cut



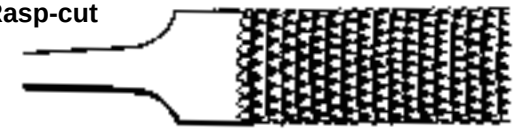
- Single set of parallel, diagonal rows of teeth
- Single-cut files are often used with light pressure to produce a smooth surface finish or to put a keen edge on knives, shears or saws

Double-cut



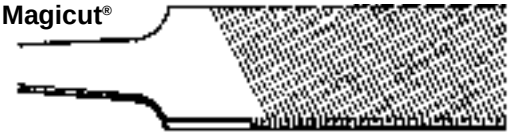
- 2 sets of diagonal rows of teeth
- Second set of teeth cut in opposite diagonal direction and on top of the first set
- First set of teeth is known as the overcut, second is known as upcut
- Upcut is finer than overcut
- Double-cut file is used with heavier pressure than the single-cut and removes material faster from the workpiece

Rasp-cut



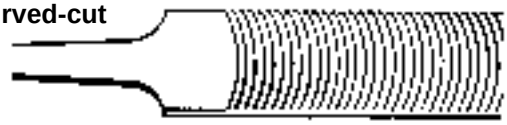
- Series of individual teeth which are formed by a single-pointed tool
- Produces a rough cut that is used primarily on wood, hooves, aluminum and lead

Magicut®



- Single cut teeth divided by angular serrations into shorter cutting edges, which free themselves readily from chips and perform roughing and smoothing at the same time

Curved-cut



- Teeth arranged in curved contours across the file face
- Curved-cut file is normally used in automotive body shops for smoothing body panels

Files with Ergonomic Handles





- Rubber coating and rounded shape eliminates pressure points
- Flared neck, raised ribs, and wide middle section keep your hand from slipping and provides maximum comfort and control
- Rear taper allows your hand to lock securely around the handle, increasing push force
- Hang hole for easy storage

Length Inch	mm	Cut	Packed	Code No.	Weight g	Shelf Pack
HAND						
6	150	Bastard	Carded	**0016100601**	104	6
6	150	2nd cut	Carded	**0016100602**	104	6
6	150	Smooth	Carded	**0016100603**	110	6
8	200	Bastard	Carded	**0016100801**	140	6
8	200	2nd cut	Carded	**0016100802**	140	6
8	200	Smooth	Carded	**0016100803**	215	6
10	250	Bastard	Carded	**0016101001**	350	6
10	250	2nd cut	Carded	**0016101002**	350	6
10	250	Smooth	Carded	**0016101003**	350	6
12	300	Bastard	Carded	**0016101201**	520	6
12	300	2nd cut	Carded	**0016101202**	530	6
12	300	Smooth	Carded	**0016101203**	520	6
HAND MAGICUT						
8	200	Magicut	Carded	**0016110800**	196	6
10	250	Magicut	Carded	**0016111000**	344	6
HALFROUND						
6	150	Bastard	Carded	**0016300601**	92	6
6	150	2nd cut	Carded	**0016300602**	99	6
8	200	Bastard	Carded	**0016300801**	176	6
8	200	2nd cut	Carded	**0016300802**	174	6
10	250	Bastard	Carded	**0016301001**	310	6
10	250	2nd cut	Carded	**0016301002**	296	6
12	300	Bastard	Carded	**0016301201**	487	6
12	300	2nd cut	Carded	**0016301202**	506	6
ROUND						
6	150	Bastard	Carded	**0016500601**	68	6
6	150	2nd cut	Carded	**0016500602**	68	6
8	200	Bastard	Carded	**0016500801**	102	6
8	200	2nd cut	Carded	**0016500802**	102	6
10	250	Bastard	Carded	**0016501001**	180	6
10	250	2nd cut	Carded	**0016501002**	180	6
12	300	Bastard	Carded	**0016501201**	238	6

Nicholson®

Files with Ergonomic Handles

Length Inch	Length mm	Cut	Packed	Code No.	Weight g	Shelf Pack
SQUARE						
6	150	Bastard	Carded	**0016400601**	75	6
6	150	2nd cut	Carded	**0016400602**	81	6
8	200	Bastard	Carded	**0016400801**	112	6
8	200	2nd cut	Carded	**0016400802**	120	6
10	250	Bastard	Carded	**0016401001**	230	6
10	250	2nd cut	Carded	**0016401002**	218	6
THREESQUARE						
6	150	Bastard	Carded	**0016600601**	117	6
6	150	2nd cut	Carded	**0016600602**	119	6
WARDING						
6	150	Bastard	Carded	**0016900601**	80	6
6	150	2nd cut	Carded	**0016900602**	65	6
MILL BLUNT 1 RE (1 Round Edge)						
6	150	2nd cut	Carded	**0015170602**	86	6
8	200	2nd cut	Carded	**0015170802**	144	6
10	250	2nd cut	Carded	**0015171002**	290	6
12	300	2nd cut	Carded	**0015171202**	434	6
MILL BLUNT 2 RE (2 Round Edges)						
8	200	2nd cut	Carded	**0015180802**	144	6
10	250	2nd cut	Carded	**0015181002**	290	6
SLIM TAPER						
6	150	Single cut	Carded	**0015090600**	104	6
HANDY FILE						
8	200	Single and double cut	Carded	**0017310800**	226	6
WOODCRAFT RASP						
8	200	Rasp and file cut	Carded	**0017000800**	258	6
WOOD RASP ROUND						
8	200	Bastard	Carded	**0017130800**	115	6
CABINET RASP REGULAR						
8	200	2nd cut	Carded	**0017090801**	168	6
10	250	2nd cut	Carded	**0017091001**	248	6
12	300	2nd cut	Carded	**0017091201**	470	6
5 PIECE SETS (HAND, ROUND, HALFROUND, SQUARE, THREESQUARE)						
8	200	2nd cut	Pouch	**0012990800**	750	6
10	250	2nd cut	Pouch	**0012991000**	810	6
HANDLE ONLY						
with 5 inserts/adapters		Carded		**0010000150**	90	6

Aluminum Files - Type “A” Flat



- Special tooth construction eliminates clogging when filing aluminum
- Flat shape
- Double-cut
- All sizes have same number of teeth per inch
- Smooth finish obtained by using shearing cut toward left

Length Inch	mm	Packed	Code No. Made in USA	Code No. Made in Brazil	Weight per doz. g	Shelf Pack
8	200	Boxed	**00024**	**0012030800**	1361	12
10	250	Boxed	**00047**	**0012031000**	3289	6

Aluminum Files - Type “A” Half Round



- Special tooth construction eliminates clogging when filing aluminum
- Half-round shape
- Double-cut
- Smooth finish obtained by using shearing cut toward left

Length Inch	mm	Packed	Code No.	Weight per doz. g	Shelf Pack
10	250	Boxed	**00161**	2608	6

Bodifiles



- For those who work on automobile bodies, particularly in blending solder with sheet metal
- Rectangular shape
- Files have teeth on convex side only
- Files have offset tangs for knuckle clearance in filing large sheet metal surfaces
- D/C refers to double-cut
- For fine finishing steel surfaces

Type	Teeth per Inch	Size Inch x Inch	Packed	Code No.	Bend ”R” Inch	Bend ”R” mm	Weight per doz. g	Shelf Pack
50-404 D/C	20	1 $^{11}/_{32}$" x $^{5}/_{16}$" -14 Flat Bent	Boxed	**03184**	196	4981	7541	6

Cabinet Files



- Used by cabinetmakers and woodworkers
- Files are half-round in section
- Teeth are slightly finer than those of wood files
- Radius is larger and thinner than regular half-round files

Length Inch	Length mm	Packed	Code No.	Weight per doz. g	Shelf Pack
10	250	Boxed	**0013081000**	2466	6

Cantsaw Files



- Used for sharpening crosscut saws with “M” teeth, circular saws and saw teeth with less than 60° angle
- Triangular shape
- Single-cut
- Edges set and cut
- Same number of teeth per inch as mill bastard files of equivalent length
- Supplied with “cut back”

Length Inch	Length mm	Packed	Code No.	Weight per doz. g	Shelf Pack
6	150	Boxed	**01327**	652	12

Chain Saw Files - Round Smooth



- Round shape
- Smooth-cut
- Carded files, 3 files on card

Length Inch	Length mm	Diameter Inch	Diameter mm	Type	Code No.	Packed	Weight per Shelf Pack g	Shelf Pack
6	150	1/8	3,20	**610**	**0011266100**	Boxed	90	6
6	150	1/8	3,20	**610**	**0015266100**	Carded	200	4
6	150	9/64	3,60	**615**	**0011266150**	Boxed	110	6
6	150	9/64	3,60	**615**	**0015266150**	Carded	220	4
6	150	5/32	4,00	**620**	**0011266200**	Boxed	120	6
6	150	5/32	4,00	**620**	**0015266200**	Carded	260	4
8	200	5/32	4,00	**825**	**0011268250**	Boxed	130	6
8	200	5/32	4,00	**825**	**0015268250**	Carded	340	4
8	200	11/64	4,50	**827**	**0011268270**	Boxed	150	6
8	200	11/64	4,50	**827**	**0015268270**	Carded	380	4
8	200	3/16	4,80	**83**	**0011268300**	Boxed	180	6
8	200	3/16	4,80	**83**	**0015268300**	Carded	440	4
8	200	13/64	5,20	**832**	**0011268320**	Boxed	210	6
8	200	13/64	5,20	**832**	**0015268320**	Carded	500	4
8	200	7/32	5,60	**835**	**0011268350**	Boxed	240	6
8	200	7/32	5,60	**835**	**0015268350**	Carded	560	4
8	200	1/4	6,40	**84**	**0011268400**	Boxed	260	6

Chain Saw Files - Flat



- Used for cutter-raker type (2 round edges) chain saw
- Rectangular shape

Type	Length Inch	Length mm	Packed	Code No.	Weight per doz. g	Shelf Pack
16	6	150	Boxed	**0011251600**	767	12
18	8	200	Boxed	**0011251800**	1304	12

Crosscut - Great American



- Used for sharpening saws of Great American type and varieties of crosscut saws
- Triangular shape
- Single-cut
- Rounded back and thin edge are cut
- Same number of teeth per inch as mill bastard files of equivalent length
- Rounded back used to deepen rounded gullets of saw teeth

Length Inch	Length mm	Packed	Code No. Made in USA	Code No. Made in Brazil	Weight per doz. g	Shelf Pack
8	200	Boxed	**02435**	**0011340800**	1474	12
10	250	Boxed	**02465**	**0011341000**	2835	12

Double Ender Files



- Triangular shape
- Sides and edges are single-cut from points to center giving full use of file
- All files supplied with handles
- Single-cut

Length Inch	Length mm	Packed	Code No.	Weight per doz. g	Shelf Pack
6	150	Boxed	**02884M**	312	12
7	175	Boxed	**02905M**	369	12
8	200	Boxed	**02926M**	567	12
9	225	Boxed	**02949M**	907	12
10	250	Boxed	**02969M**	1077	12

Farmer's Own Files



- General purpose file suited for agricultural use
- Rectangular shape
- Single-cut
- Safe edges
- Length measured exclusive of handle
- Convenient hang up hole

Length Inch	Length mm	Packed	Code No. Made in USA	Code No. Made in Brazil	Weight per doz. g	Shelf Pack
8	200	Boxed	**06649**	**0013290800**	2155	12
10	250	Boxed	**06668**	**0013291000**	4508	12

Flat Files



- Used by machinists, machinery builders, ship and engine builders, repairman and others who require rapid removal of metal
- Rectangular in cross section and taper slightly towards point in width
- Double-cut on sides, single-cut on edges
- American pattern, available in bastard, second and smooth-cut
- Boxed

Length		Bastard Cut Code No.		Second Cut Code No.		Smooth Cut Code No.		Weight per doz.	Shelf Pack
Inch	mm	Made in USA	Made in Brazil	Made in USA	Made in Brazil	Made in USA	Made in Brazil	g	
4	100	**03367**	**0012000401**	**03401**	**0012000402**	**03434**	**0012000403**	255	12
6	150	**03467**	**0012000601**	**03500**	**0012000602**	**03533**	**0012000603**	709	12
8	200	**03566**	**0012000801**	**03599**	**0012000802**	**03632**	**0012000803**	1701	12
10	250	**03665**	**0012001001**	**03698**	**0012001002**	**03731**	**0012001003**	3261	6
12	300	**03764**	**0012001201**	**03797**	**0012001202**	**03830**	**0012001203**	5103	6
14	350	**03863**	**0012001401**	**03896**	**0012001402**	**03929**	**0012001403**	7541	6

Half Round Files



- Used on concave, convex and flat surfaces
- Rounded on 1 side, flat on opposite
- Backs of all half-round bastard files are double-cut
- Backs of all half-round second-cut files longer than 6" are double-cut
- Backs of all 4 and 6" files are single-cut
- Backs of all half-round smooth files are single-cut
- Flat sides of all half-round files are double-cut
- Boxed

Length		Bastard Cut Code No.		Second Cut Code No.		Smooth Cut Code No.		Weight per doz.	Shelf Pack
Inch	mm	Made in USA	Made in Brazil	Made in USA	Made in Brazil	Made in USA	Made in Brazil	g	
4	100	**04695**	**0012300401**	**04729**	**0012300402**	**04762**	**0012300403**	284	12
6	150	**04795**	**0012300601**	**04828**	**0012300602**	**04861**	**0012300603**	709	12
8	200	**04896**	**0012300801**	**04927**	**0012300802**	**04960**	**0012300803**	1503	12
10	250	**04995**	**0012301001**	**05026**	**0012301002**	**05059**	**0012301003**	2750	6
12	300	**05094**	**0012301201**	**05125**	**0012301202**	**05158**	**0012301203**	4763	6
14	350	**05194**	**0012301401**	**05225**	**0012301402**	**05258**	**0012301403**	7371	6

Hand Files



- Rectangular shape
- Double-cut
- 1 safe edge
- Same coarseness as flat files of corresponding lengths
- Boxed

Length		Bastard Cut Code No.		Second Cut Code No.		Smooth Cut Code No.		Weight per doz.	Shelf
Inch	mm	Made in USA	Made in Brazil	Made in USA	Made in Brazil	Made in USA	Made in Brazil	g	Pack
4	100	**05652**	**0012100401**	**05675**	**0012100402**	**05698**	**0012100403**	397	12
6	150	**05738**	**0012100601**	**05771**	**0012100602**	**05804**	**0012100603**	794	12
8	200	**05853**	**0012100801**	**05886**	**0012100802**	**05919**	**0012100803**	1758	12
10	250	**05968**	**0012101001**	**06001N**	**0012101002**	**06034**	**0012101003**	3402	6
12	300	**06084**	**0012101201**	**06117**	**0012101202**	**06150**	**0012101203**	7768	6
14	350	**06198**	-	-	-	-	-	7836	6

Handy File



- One side is single-cut for use in tool sharpening and smoothing metal surfaces, reverse side is double-cut for general filing and rapid stock removal
- Rectangular shape
- 1 cut edge, 1 safe edge
- Length measured exclusive of handle
- Boxed

Length			Weight per doz.	Shelf
Inch	mm	Code No.	g	Pack
8	200	**0013310801**	2581	12

Plastics File



- Used for filing wide range of plastics and other soft materials
- Rectangular shape
- Easily cleaned
- Finish easily varied by user
- Laboratory tests were performed on Masonite, C-Grade Phenolic, UHMW Polyethylene, Nylon and Acrylic with outstanding results
- Boxed

Length			Weight per doz.	Shelf
Inch	mm	Code No.	g	Pack
8	200	**06610**	1150	6

Knife Files



- Used primarily by tool and die makers with work having acute angles
- Triangular shape
- Double-cut on sides, single-cut on sharp edge
- Knife files are supplied with safe backs
- Boxed

Length		Bastard Cut Code No.		Second Cut Code No.		Smooth Cut Code No.		Weight per doz.	Shelf
Inch	mm	Made in USA	Made in Brazil	Made in USA	Made in Brazil	Made in USA	Made in Brazil	g	Pack
4	100	**06711**	**0012700401**	**06742**	**0012700402**	**06773**	**0012700403**	170	12
6	150	**06804**	**0012700601**	**06836**	**0012700602**	**06867**	**0012700603**	539	12
8	200	**06898**	**0012700801**	**06930**	**0012700802**	**06961**	**0012700803**	1134	12
10	250	**06992**	**0012701001**	**07023**	**0012701002**	**07054**	**0012701003**	2098	12

Long Angle Lathe Files - Bastard



- Rapid, free cutting files designed for lathe filing
- Rectangular shape
- Single-cut
- Safe edges to protect shoulder or dog
- Made on flat blanks in bastard-cut
- Cut faster than regular mill files and leave smoother finish
- Boxed

Length		Code No.	Code No.	Weight per doz.	Shelf
Inch	mm	Made in USA	Made in Brazil	g	Pack
10	250	**07657**	**0012191001**	3260	6
12	300	**07688**	**0012191201**	5103	6
14	350	**07719**	**0012191401**	7541	6

Long Angle Lathe Files - Fine



- Specially designed for finishing rapid stock removal on lathe work
- Rectangular shape
- Safe edges
- Cut faster than regular mill files and leave smoother finish
- Boxed

Length		Code No.	Code No.	Weight per doz.	Shelf
Inch	mm	Made in USA	Made in Brazil	g	Pack
10	250	**07842**	**0012191002**	1730	6
12	300	**07851**	**0012191202**	2638	6
14	350	**07863**	**0012191402**	3998	6

Magicut® Files - Flat

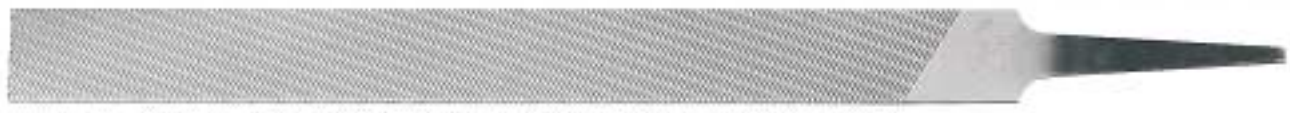




- Used by machinists as all-purpose file to remove stock rapidly and to leave a smooth finish
- Tapered point in width
- File features a pattern of narrow chip breakers created by steep and angled serrations for rapid removal and smoother finish
- Boxed

Length Inch	Length mm	Code No. Made in USA	Code No. Made in Brazil	Weight per doz. g	Shelf Pack
8	200	**07894**	**0012010800**	1701	12
10	250	**07917**	-	3260	6
12	300	**07941**	-	5103	6

Magicut® Files - Hand



- Used by machinists as all-purpose file to remove stock rapidly and to leave a smooth finish
- Rectangular shape
- Parallel edges full length
- File features a pattern of narrow chip breakers created by steep and angled serrations for rapid removal and smoother finish
- Boxed

Length Inch	Length mm	Code No. Made in USA	Code No. Made in Brazil	Weight per doz. g	Shelf Pack
8	200	-	**0012110800**	1740	12
10	250	-	**0012111000**	3360	6
12	300	**08204**	-	7768	6

Magicut® Files - Halfround



- Used by machinists as all-purpose file to remove stock rapidly and to leave a smooth finish
- Used on concave, convex or flat surfaces
- Rounded on one side, flat on the other side
- File features a pattern of narrow chip breakers created by steep and angled serrations for rapid removal and smoother finish
- Boxed

Length Inch	Length mm	Code No.	Weight per doz. g	Shelf Pack
8	200	**0012310800**	1560	12
10	250	**0012311000**	2940	6
12	300	**0012311200**	4960	6

Mill Blunt Files



- Used for sharpening mill or circular saws
- Also for draw-filing and finishing metals
- Rectangular shape
- Single-cut on sides and edges
- 1 or 2 round edges and parallel edges
- Boxed

Length Inch	Length mm	Type Cut	Two Square Edges Code No.	One Round Edge Code No.	Two Round Edges Code No.	Weight per doz. g	Shelf Pack
6	150	Bastard	**0011160601**	-	-	600	12
8	200	Bastard	**0011160801**	-	-	1320	12
10	250	Bastard	**0011161001**	-	-	2640	12
12	300	Bastard	**0011161201**	-	-	4440	6
8	200	2nd cut	**0011160802**	-	-	1380	12
10	250	2nd cut	**0011161002**	-	-	2640	12
12	300	2nd cut	**0011161202**	-	-	4380	6
8	200	Bastard	-	**0011170801**	-	1260	12
10	250	Bastard	-	**0011171001**	-	2520	12
6	150	2nd cut	-	**0011170602**	-	600	12
8	200	2nd cut	-	**0011170802**	-	1320	12
10	250	2nd cut	-	**0011171002**	-	2580	12
12	300	2nd cut	-	**0011171202**	-	4320	6
6	150	2nd cut	-	-	**0011180602**	540	12
8	200	2nd cut	-	-	**0011180802**	1320	12
10	250	2nd cut	-	-	**0011181002**	2400	12
12	300	2nd cut	-	-	**0011181202**	4260	6
Mill Blunt Heavy							
8	200	-	-	**0011210800**	-	2160	12
10	250	-	-	**0011211000**	-	3540	6
8	200	-	-	-	**0011220800**	2040	12
10	250	-	-	-	**0011221000**	3480	6

Pillar File



- Used mostly by machinists for filing slots and keyways
- Similar to hand files but narrower
- Rectangular cross section
- 1 safe edge

Length Inch	Length mm	Packed	Type Cut	Code No.	Weight per doz. g	Shelf Pack
8	200	Boxed	Bastard	**11118**	1673	12

Square Files



- Used on slots, keyways and general surface filing
- Square shape
- Double-cut
- Tapered slightly towards point
- Larger sizes frequently preferred to corresponding flat files because of heavier section and 4 filing surfaces
- Boxed

Length		Diameter		Bastard Cut Code No.		Second Cut Code No.		Smooth Cut Code No.		Weight per doz.	Shelf Pack
Inch	mm	Inch	mm	Made in USA	Made in Brazil	Made in USA	Made in Brazil	Made in USA	Made in Brazil	g	
4	100	5/32	4	**12790**	**0012400401**	**12824**	**0012400402**	**12857**	**0012400403**	113	12
5	125	3/16	5	**-**	**0012400501**	**-**	**0012400502**	**-**	**0012400503**	240	12
6	150	1/4	6	**12967**	**0012400601**	**13000**	**0012400602**	**13033**	**0012400603**	482	12
8	200	5/16	8	**13081**	**0012400801**	**13114**	**0012400802**	**13147**	**0012400803**	879	12
10	250	3/8	10	**13196**	**0012401001**	**13229**	**0012401002**	**13262**	**0012401003**	1758	12
12	300	1/2	13	**13310**	**0012401201**	**13343**	**0012401202**	**13376**	**0012401203**	3799	6

Round Files



- Primarily used to file circular openings or concave surfaces
- Round shape
- All 4, 5, 6, 8, 10, 12" files are single-cut
- 14" bastard file is double-cut
- Tapered slightly towards point
- Boxed

Length		Diameter		Bastard Cut Code No.		Second Cut Code No.		Smooth Cut Code No.		Weight per doz.	Shelf Pack
Inch	mm	Inch	mm	Made in USA	Made in Brazil	Made in USA	Made in Brazil	Made in USA	Made in Brazil	g	
4	100	1/8	3	**11526**	**0012500401**	**11559N**	**0012500402**	**11592N**	**0012500403**	113	12
5	125	3/16	5	**11637**	**0012500501**	**11665**	**0012500502**	**-**	**0012500503**	255	12
6	150	1/4	6	**11716**	**0012500601**	**11748**	**0012500602**	**11781**	**0012500603**	397	12
8	200	5/16	8	**11904**	**0012500801**	**11936**	**0012500802**	**11969**	**0012500803**	624	12
10	250	3/8	10	**12019**	**0012501001**	**12051**	**0012501002**	**12084**	**0012501003**	1446	12
12	300	1/2	13	**12134**	**0012501201**	**12166**	**0012501202**	**12199**	**0012501203**	3090	6
14	350	5/8	16	**12248**	**0012501401**	**12282**	**0012501402**	**-**	**-**	5415	6

Taper (Triangular) Saw Files

Number of Saw Points	Files Recommended
5	7"/178 mm Taper Regular
5 1/2	7"/178 mm Taper Regular
6	7"/178 mm or 8"/200 mm Slim
7	6"/150 mm or 7"/178 mm Slim
8	6"/150 mm Slim
	7"/178 mm Extra Slim
	8"/200 mm Double Extra Slim
9	6"/150 mm Extra Slim
	7"/178 mm Double Extra Slim
10	5"/127 mm of 6"/150 mm Extra Slim
11	5"/127 mm Extra Slim
	6"/150 mm Double Extra Slim
12	5"/127 mm Extra Slim
13 and 14	5"/127 mm Double Extra Slim
15 and 16	4"/102 mm Double Extra Slim

- Made for filing saws with 60° angle teeth
- Triangular shape
- Single-cut
- Edges set and cut for filing gullets between saw teeth
- In filing handsaws, it is important to select the right file
- In general, the table lists suggested size and type of file that will give best results

Taper Files - Regular and Heavy



- Triangular shape
- Boxed
- Edges set and cut for filing gullets between saw teeth
- Tapers slightly towards the point

Length Inch	Length mm	Code No. Made in USA	Code No. Made in Mexico	Weight per doz. g	Shelf Pack
Regular					
3 1/2	88	-	**0011000350**	180	12
4	100	**13727M**	**0011000400**	311	12
4 1/2	113	**13750M**	**0011000450**	425	12
5	125	**13772M**	**0011000500**	567	12
6	150	**13807**	**0011000600**	907	12
7	175	**13841**	**0011000700**	1332	12
8	200	**13875**	**0011000800**	1956	12
9	225	-	**0011000900***	2520	12
10	250	**13930**	**0011001000***	3402	12
Heavy					
6	150	-	**0011070600***	1200	12
7	175	-	**0011070700**	1680	12
8	200	-	**0011070800**	2400	12

* Made in Brazil

Taper Files - Slim



- Triangular shape
- Boxed
- Edges set and cut for filing gullets between saw teeth

Length Inch	Length mm	Code No. Made in USA	Code No. Made in Mexico	Weight per doz. g	Shelf Pack
4	100	**14106**	**0011090400**	170	12
4 1/2	113	**14139**	**0011090450**	226	12
5	125	**14162**	**0011090500**	255	12
6	150	**14224**	**0011090600**	482	12
7	175	**14255**	**0011090700**	765	12
8	200	**14290**	**0011090800***	1191	12

*Made in Brazil

Taper Files - Extra Slim



- Triangular shape
- Boxed
- Edges set and cut for filing gullets between saw teeth

Length Inch	Length mm	Code No. Made in USA	Code No. Made in Mexico	Weight per doz. g	Shelf Pack
4	100	**14547**	**0011100400**	113	12
4 1/2	113	**14579**	**0011100450***	141	12
5	125	**14599**	**0011100500**	170	12
6	150	**14665**	**0011100600**	312	12
7	175	**14698**	**0011100700**	539	12
8	200	**14729**	**0011100800***	851	12

*Made in Brazil

Taper Files - Double Extra Slim



- Triangular shape
- Boxed
- Edges set and cut for filing gullets between teeth

Length Inch	Length mm	Packed	Code No.	Weight per doz. g	Shelf Pack
4	100	Boxed	**0011120400**	82	12
5	125	Boxed	**0011120500**	142	12

Taper Files - Bandsaw Regular and Heavy



- For filing and sharpening bandsaws
- Triangular shape
- Edges set and cut for filing gullets between saw teeth
- Boxed

Length Inch	Length mm	Code No.	Weight per doz. g	Shelf Pack
REGULAR				
5	125	**0011010500**	540	12
6	150	**0011010600**	900	12
7	175	**0011010700**	1320	12
8	200	**0011010800**	1920	12
HEAVY				
6	150	**0011080600**	1080	12
7	175	**0011080700**	1640	12
8	200	**0011080800**	2360	12

Taper Files - Machine Bandsaw Blunt



- File is blunt over the whole body length
- Triangular shape
- Edges set and cut for filing gullets between saw teeth
- Boxed

Length Inch	Length mm	Code No.	Weight per doz. g	Shelf Pack
8,5	210	**0011060850**	1980	12

Three Square Files



- For general use by machinists for filing internal angles more acute than right angles, clearing out square corners and filing taps and gutters
- Triangular shape
- Double-cut
- Sharp corners are slightly set and cut
- Cut to the point
- Boxed

Length		Bastard Cut Code No.		Second Cut Code No.		Smooth Cut Code No.		Weight per doz.	Shelf
Inch	mm	Made in USA	Made in Brazil	Made in USA	Made in Brazil	Made in USA	Made in Brazil	g	Pack
4	100	**15803M**	**0012600401**	-	**0012600402**	-	**0012600403**	340	12
5	125	-	**0012600501**	-	**0012600502**	-	**0012600503**	540	12
6	150	**15925**	**0012600601**	**15958**	**0012600602**	**15991**	**0012600603**	879	12
8	200	**16036**	**0012600801**	**16069**	**0012600802**	**16102**	**0012600803**	1928	12
10	250	**16147**	**0012601001**	**16180**	**0012601002**	**16213**	**0012601003**	3402	12
12	300	**16258**	**0012601201**	**16291**	**0012601202**	-	**0012601203**	5216	6

Tungsten Point Files



- Designed for dressing distributor points that are tipped with tungsten, iridium and similar metals
- Thin rectangular shape
- Double-cut
- 5 1/4" overall
- Chisel tip of file enters slots or gaps easily
- Approximate size 5/16"/8 mm x 0,044"/1,10 mm
- Available with attractive carded display
- Code No. 02381 contains 12 files

Length				Weight per doz.	Shelf
Inch	mm	Packed	Code No.	g	Pack
5 1/4	133	Boxed	**02373**	1134	12
5 1/4	133	1/cd	**02375**	567	6
5 1/4	133	12/cd	**02381**	1588	12

Warding Files



- Used primarily by locksmiths in repairing and filing ward notches in keys
- Thin rectangular shape
- Double-cut on sides, single-cut on edges
- Also suited for use in narrow spaces where other files will not fit

Length		Bastard Cut Code No.		Second Cut Code No.		Smooth Cut Code No.		Weight per doz.	Shelf
Inch	mm	Made in USA	Made in Brazil	Made in USA	Made in Brazil	Made in USA	Made in Brazil	g	Pack
4	100	**16507**	**0012900401**	**16540**	**0012900402**	**16573**	-	142	12
6	150	**16663**	-	**16696**	-	**16729**	-	369	12
8	200	**16761**	-	**16794**	-	**16827**	-	737	12

Hoof Knife File



- Specially designed to sharpen hoof knives
- Rectangular shape
- Both sides single-cut
- 2 round cut edges
- Contoured to sharpen entire knife, even at hook end
- Boxed

Length			Weight per doz.	Shelf
Inch	mm	Code No.	g	Pack
8	200	**10626**	1361	12

Cabinet Rasps



- Used by cabinetmakers and woodworkers
- Half-round
- Single-cut on edges
- Curved side of rasps similar to half-round rasps but has larger radius
- Boxed

Length		Regular (Second Cut) Code No.		Smooth Cut Code No.		Weight per doz.	Shelf
Inch	mm	Made in USA	Made in Brazil	Made in USA	Made in Brazil	g	Pack
8	200	**17615**	**0013090801**	-	-	1361	12
10	250	**17683**	**0013091001**	**17718**	**0013091003**	2466	6
12	300	**17751**	**0013091201**	**17786**	**0013091203**	4224	6

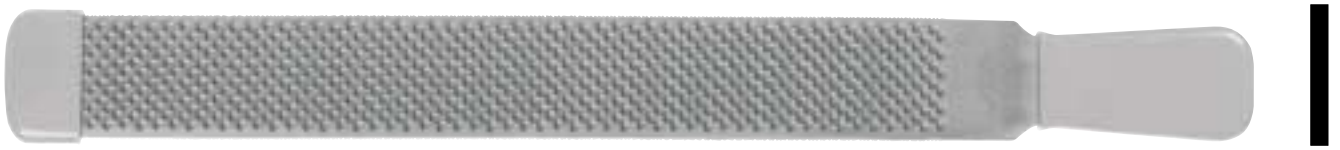
Horse Rasp - Plain 1/2 File



- Some farriers prefer this thin fine-toothed rasp for shoeing racetrack, riding horses and ponies
- Plain horse rasps are double-ended with rasp teeth on 1 side, file teeth on opposite
- Rectangular shape
- Boxed

Length				Weight per doz.	Shelf
Inch	mm	Type	Code No.	g	Pack
14	350	Regular	**17903**	8902	6

Farrier's Handy Rasp



- Rectangular shape
- Single-cut on edges
- Comfortable cushion grip at point and handle
- Rasp teeth on 1 side, file teeth on opposite
- Rasp cut is 6 teeth per row (other horse rasps have 5 teeth per row)
- Body is the same as the 14" Plater's Special
- Boxed

Length			Weight per doz.	Shelf
Inch	mm	Code No.	g	Pack
14	350	**18155**	8591	5

Horse Rasps - Tanged



- Rectangular shape
- Single-cut on edges
- Tanged
- Rasp teeth on 1 side, file teeth on opposite
- Thicker than Plater's Special - ideal for hot rasping
- Boxed

Length Inch	Length mm	Code No.	Weight per doz. g	Shelf Pack
12	300	**18035**	8165	6
14	350	**18057**	12020	6

Farrier Rasp - Double Extra Thin



- Primarily for race track and other horses with light shoes
- Both sides are safe $^{7}/_{8}$"/22 mm at point
- Rasp teeth on 1 side, file teeth on opposite
- Rasp cut is 6 teeth per row (other horse rasps have 5 teeth per row)
- Rectangular shape
- 18" rasp is specially designed for draft horses
- Sharper than regular horse rasps
- Double extra thin
- Boxed

Length Inch	Length mm	Code No.	Weight per doz. g	Shelf Pack
14	350	**18156N***	7428	6
14	350	**18157**	7428	6
14	350	**HR14**	7428	6
18	450	**18180**	9639	6

* Aggressive cut – Black Diamond® Brand

Magicut® Plater's Special Horse Rasp



- Maximum cutting surface design gives rapid removal and smoother finish
- Single-cut on edges
- Opposite side has Nicholson's® unique Magicut® file pattern of narrow chip breakers created by steep and angled serrations
- Rectangular shape
- Tooth design is cut deeper to last longer and cut much faster than conventional horse rasps
- Rasp cut is 6 teeth per row (other horse rasps have 5 teeth per row)
- Boxed

Length Inch	Length mm	Code No.	Weight per doz. g	Shelf Pack
14	350	**18130**	7144	6

Pattern Maker's Cabinet Rasp



- Used primarily by cabinetmakers
- Half-round shape
- Narrow pattern, cut edges
- Used when smooth wood finish is required
- Boxed

Length Inch	Length mm	Type	Cut	Code No.	Weight per doz. g	Shelf Pack
10	250	49	Second cut	**18846**	1644	6

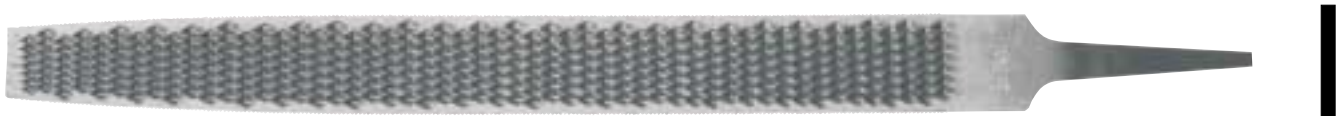
4-in-Hand® (Formerly Shoe Rasp)



- For the homeowner, home craftsman, boat builder and mechanic
- Half-round shape
- Has file section and rasp section on both flat side and half-round side
- Boxed

Length Inch	Length mm	Code No.	Weight per doz. g	Shelf Pack
8	200	**18924**	1871	6

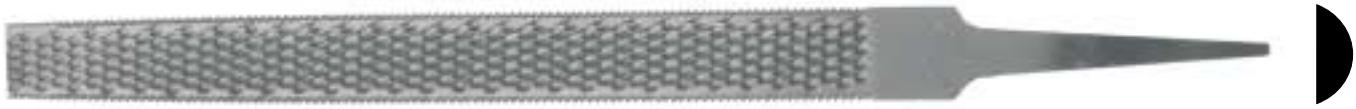
Wood Rasps - Flat Bastard



- Flat shape
- Bastard-cut
- Boxed

Length Inch	Length mm	Code No. Made in USA	Code No. Made in Brazil	Weight per doz. g	Shelf Pack
10	250	**19136**	**0013151001**	3402	6

Wood Rasps - Half Round



- Used by woodworkers, hobbyists and plumbers
- Half-round shape
- Single-cut file teeth on edge
- For use on wood and soft metals
- Boxed

Length Inch	Length mm	Bastard Cut Code No. Made in USA	Bastard Cut Code No. Made in Brazil	Second Cut Code No. Made in USA	Second Cut Code No. Made in Brazil	Weight per doz. g	Shelf Pack
8	200	**19394**	**0013140801**	**19575**	**0013140802**	1559	12
10	250	**19427**	**0013141001**	**19593**	**0013141002**	2948	6
12	300	**19460**	**0013141201**	**19611**	**0013141202**	4763	6

Wood Rasps Round Bastard



- Used for same purpose as regular wood rasps in places for which their shapes make them particularly effective
- Round shape
- Bastard-cut
- Made from same size steel as round files
- Boxed

Length		Diameter			Weight per doz.	Shelf
Inch	mm	inch	mm	Code No.	g	Pack
8	200	5/16	8	**19846**	624	12
10	250	3/8	10	**19875**	1474	12

Nicholson® X.F® Files Swiss Pattern

- Made to more exacting measurements than American pattern files
- Made in finer cuts, which vary from No. 00 (coarsest) to No. 6 (finest)
- Used by tool and die makers, jewelers, model makers and home craftsman
- Recommended for those who do superfine precision filing

Barrette Files



- Double-cut, wide flat sides
- Flat on 1 side, backs are beveled on edges as indicated by cross section
- Back and beveled edges are safe
- Included angle is 33°
- Boxed

Length				Weight per doz.	Shelf
Inch	mm	Code No.	Cut No.	g	Pack
4	100	**35025**	00	255	12
4	100	**35031**	0	255	12

Half Round Files



- Used by tool and die makers, jewelers, model makers and home craftsman
- Half-round shape
- Double-cut on both flat and half-round sides
- Taper in thickness and width to point
- Boxed

Length				Weight per doz.	Shelf
Inch	mm	Code No.	Cut No.	g	Pack
6	150	**36533**	2	539	12
6	150	**36545**	4	539	12

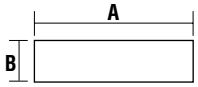
Hand Files

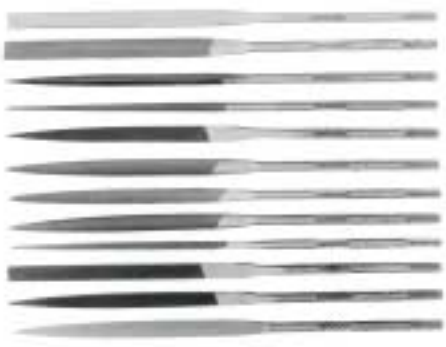


- Used by tool and die makers, jewelers, model makers and home craftsman
- Rectangular shape
- Double-cut sides
- Cut numbers 0 and 2 are single-cut on 1 edge, other is safe
- Parallel in width but taper in thickness
- Boxed

Length Inch	Length mm	Code No.	Cut No.	Weight per doz. g	Shelf Pack
6	150	**36743**	0	1049	12
6	150	**36755**	2	1049	12
8	200	**36785**	0	2070	6
8	200	**36797**	2	2070	6

Needle Files

- Used primarily by jewellers, die makers, watchmakers and fine toolmakers
- With round, knurled handles
- 



Assortments of 12 Shapes Packed in Protective Pouch

Length Inch	Length mm	Code No.	Cut No.	Weight per doz. g	Shelf Pack
4	100	**0014470402**	2	116	1
5 1/2	140	**0014470552**	2	138	1
6 1/4	160	**0014470600**	0	148	1
6 1/4	160	**0014470602**	2	150	1

	Length mm	A x B mm
Pillar	100	3,5 x 0,9
	140	4,8 x 1,1
	160	5,4 x 1,2
Halfround	100	3,8 x 1,1
	140	5,1 x 1,5
	160	5,6 x 1,7
Crossing	100	3,5 x 1,4
	140	4,4 x 1,8
	160	5,1 x 2,0

	Length mm	A x B mm
Knife	100	4,0 x 1,1
	140	5,0 x 1,4
	160	5,4 x 1,5
Flat	100	3,4 x 0,9
	140	4,8 x 1,1
	160	5,4 x 1,2
Threesquare	100	2,8
	140	3,5
	160	3,8

	Length mm	A x B mm
Square	100	1,7
	140	2,2
	160	2,4
Round	100	2,1
	140	2,8
	160	2,9
Barrette	100	3,7 x 1,4
	140	4,7 x 1,7
	160	5,1 x 1,8

	Length mm	A x B mm
Slitting	100	4,6 x 1,6
	140	5,5 x 1,9
	160	6,1 x 2,1
Joint File round edges	100	3,8 x 1,0
	140	4,8 x 1,2
	160	5,4 x 1,3
Halfround, cut on back only	100	3,8 x 1,2
	140	5,1 x 1,5
	160	5,6 x 1,8

Assortments of 6 Shapes Packed in Protective Plastic Pouch

Length Inch	Length mm	Code No.	Cut No.	Weight g	Shelf Pack
6 1/4	160	**0014471602**	2	65	1

Pillar

Halfround

Flat

Threesquare

Square

Round

Needle Files

8 Individual Shapes, 12 Files in a Box

Shape	Length Inch	Length mm	Code No.	Cut No.	Weight g	Shelf Pack
Pillar	6 1/4	160	**0014210600**	0	108	12
	6 1/4	160	**0014210602**	2	96	12
Flat	6 1/4	160	**0014220600**	0	108	12
	6 1/4	160	**0014220602**	2	96	12
Halfround	6 1/4	160	**0014230600**	0	108	12
	6 1/4	160	**0014230602**	2	108	12
Threesquare	6 1/4	160	**0014240600**	0	96	12
	6 1/4	160	**0014240602**	2	96	12
Square	6 1/4	160	**0014250600**	0	84	12
	6 1/4	160	**0014250602**	2	84	12
Round	6 1/4	160	**0014260600**	0	84	12
	6 1/4	160	**0014260602**	2	84	12
Knife	6 1/4	160	**0014270600**	0	96	12
	6 1/4	160	**0014270602**	2	96	12
Crossing	6 1/4	160	**0014280600**	0	120	12
	6 1/4	160	**0014280602**	2	120	12

Pillar Files



- Rectangular in shape
- Double-cut on 2 sides only
- Safe edges
- Tapered in thickness
- Similar in shape to hand files but only 2/3 as wide
- Boxed

Length Inch	Length mm	Code No.	Cut No.	Weight per doz. g	Shelf Pack
6	150	**39899**	0	737	12
6	150	**39905**	1	737	12
6	150	**39911**	2	737	12
6	150	**39923**	4	737	12
8	200	**39935**	0	1588	6
8	200	**39947**	2	1588	6

Pillar Narrow Files



- Rectangular shape
- Narrow
- Double-cut on 2 sides only
- Safe edges
- Similar to pillar files but are narrower for their length
- Boxed

Length Inch	mm	Code No.	Cut No.	Weight per doz. g	Shelf Pack
6	150	**40070**	00	567	12
6	150	**40076**	0	567	12
6	150	**40088**	2	567	12
8	200	**40127**	2	1191	6

Three Square Files



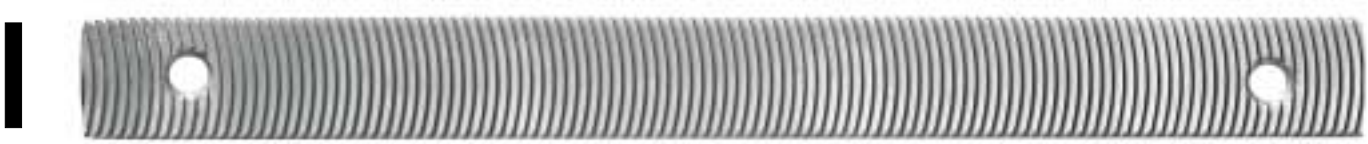
- Triangular in section with angles of 60°
- Double-cut on three sides, single-cut on edges
- Taper to point and have sharp corners
- Boxed

Length Inch	mm	Code No.	Cut No.	Weight per doz. g	Shelf Pack
6	150	**41498**	2	737	12
6	150	**41506**	4	737	12
8	200	**41524**	1	1191	12
8	200	**41530**	2	1191	12

Nicholson® Curved Tooth Files

- Made on specially designed and improved Nicholson® machinery
- Fitted for smooth, rapid work on cast iron, bronze, lead, babbit, aluminum, zinc, plastics and any steel up to the hardness of annealed tool steel
- Pitch and rake designed to avoid pinning and to provide smoothest finish
- Superior® milled tooth files

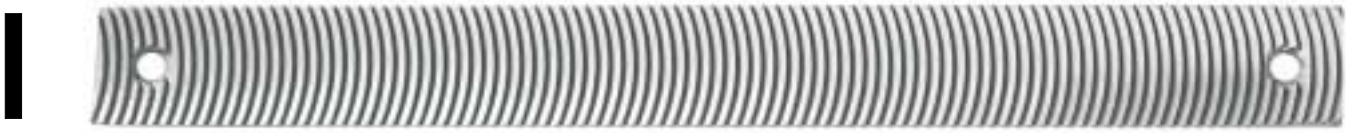
Flexible Files (Without Tang)



- Ideal for smooth, rapid work on cast iron, bronze, lead, babbitt, aluminum, zinc, plastics and any steel up to the hardness of annealed tool steel
- Rectangular shape
- Curved-cut
- Pitch and rake designed to avoid pinning and to provide smoothest finish
- Boxed

Length Inch	Length mm	Code No.	No. of Teeth Per Inch/Cut	Weight per doz. g	Shelf Pack
12	300	**20138**	10/Standard	2495	6
14	350	**20205**	12/Fine	3204	6

Milled Tooth Bodifiles



- Ideal for smooth, rapid work on cast iron, bronze, lead, babbitt, aluminum, zinc, plastics and any steel up to the hardness of annealed tool steel
- Rectangular shape
- Curved-cut
- Pitch and rake designed to avoid pinning and to provide smoothest finish
- Boxed

Length Inch	Length mm	Type	Code No.	No. of Teeth Per Inch/Cut	Weight per doz. g	Shelf Pack
14	350	**50-908**	**20189**	8/Standard	3204	6

Flat Files - Rigid Type (With Tang)



- Ideal for smooth, rapid work on cast iron, bronze, lead, babbitt, aluminum, zinc, plastics and any steel up to the hardness of annealed tool steel
- Rectangular shape
- Curved-cut
- Rigid type with tang
- Pitch and rake designed to avoid pinning and to provide smoothest finish
- Boxed

Length Inch	Length mm	Code No.	No. of Teeth Per Inch/Cut	Weight per doz. g	Shelf Pack
12	300	**20342**	10/Standard	4224	6
14	350	**20393**	8/Standard	6747	6

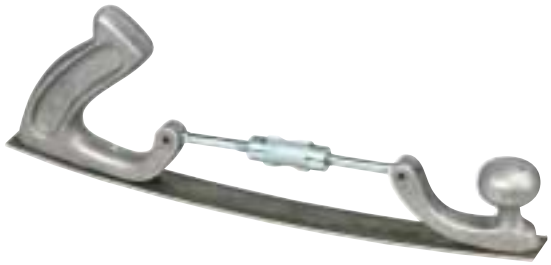
Super Shear®



- A double purpose milled curved tooth file - different and exclusive with Nicholson®
- Rectangular shape
- Curved-cut
- Teeth cut in an off center arc to permit fast cutting
- Wide industrial usage on flat and convex surfaces of aluminum, brass, babbitt, bronze, copper, magnesium, iron, annealed steel, soft metal alloys, plastics, hard rubber and hardwood
- Smooths as it roughs
- Boxed

Length Inch	Length mm	Code No.	No. of Teeth Per Inch/Cut	Weight per doz. g	Shelf Pack
10	250	**21067**	12/Standard	2665	6
12	300	**21118**	10/Standard	4224	6

Adjustable Flexible File Holder No. 25



- For curved tooth files without tang
- Can be used with either 12" or 14" files
- Easily adjusted for curving file outward or inward
- Boxed

No.	Code No.	Weight per doz. g	Shelf Pack
25	**21272**	907	1

Ergonomic File Handle

NEW PRODUCT



- 5 Interchangeable cushion inserts are designed to fit most popular files
- Rubber-coated ergonomic shape for better comfort and control
- Rear taper, wide middle and flared neck increases push force
- Carded

Code No.	Description	Weight per Shelf Pack g	Shelf Pack
0010000150	Ergonomic File handle and inserts	350	6

File Handles - Plastic



- Handle made of strong high-impact material, contoured to fit hand for straight, lathe and draw filing
- Non-slip textured finish for easier grip
- Bulk packed
- Suitable for file:
  No. 1: 6“ files, 8“ round and square
  No. 2: 8“ and 10“ files, 6“ threesquare and regular taper
  No. 3: 12“ files

Type	Code No.	Description	Weight g	Shelf Pack
No. 1	**0010000116**	File handle with insert	25	10
No. 2	**0010000118**	File handle with insert	32	10
No. 3	**0010000120**	File handle with insert	50	10

Wooden File Handles - Metal Ferruled

- Made from close grain hardwood with strong nickel-plated metal ferrules
- Varnished finish
- Bulk packed



Length mm	Diameter mm	Code No.	For File Length Inch	mm	Weight g	Shelf Pack
110	12	**0010000012**	4	100	56	1
111	14	**0010000014**	5	125	60	1
113	16	**0010000016**	6	150	64	1
117	18	**0010000018**	7	175	68	1
120	20	**0010000020**	8	200	72	1
134	22	**0010000022**	9	225	76	1
134	24	**0010000024**	10	250	80	1
140	26	**0010000026**	12	300	84	1
140	28	**0010000028**	14	350	88	1

Sleeves for Files - Plastic

- For files without handle
- With hang hole for easy storage

Code No.	For File Length Inch	mm	Weight per doz. g	Shelf Pack
0010000204	4	100	24	12
0010000206	6	150	38	12
0010000208	8	200	72	12
0010000210	10	250	108	12
0010000212	12	300	156	12

5 Piece Ergonomic File Set

- Assortment of machinist's files
- With ergonomic, co-molded handle
- Consist of Square, Round, Halfround, Hand and Threesquare



Type	Length Inch	mm	Cut	Code No.	Weight g	Shelf Pack
NFK1	8	200	2nd cut	**0012990800**	750	1
NFK2	10	250	2nd cut	**0012991000**	930	1

4“/100 mm File Assortment



- With wooden handle
- Six files in metal box or in plastic pouch
- Consist of Hand, Warding, Half Round, Square, Round and Slim Taper

Length Inch	Length mm	Packed	Cut	Code No.	Weight g	Shelf Pack
4	100	Metal Box	Bastard	**0012991410**	150	1
4	100	Plastic Pouch	Bastard	**0012991411**	110	1
4	100	Metal Box	2nd cut	**0012991420**	150	1
4	100	Plastic Pouch	2nd cut	**0012991422**	110	1
4	100	Metal Box	Smooth	**0012991430**	150	1
4	100	Plastic Pouch	Smooth	**0012991433**	110	1

Hobby Files



- Assortment of 6 miniature files with fine cut for intricate work
- Consist of Equaling, Half Round, Flat, Round, Square, and Threesquare
- Handy vinyl case vacuum packed on hang up card
- Ideal for handycrafts and hobbies

Length Inch	Length mm	Description	Code No.	Weight per Shelf Pack g	Shelf Pack
5 $^{1}/_{2}$	140	Assorted	**42030**	340	3

Nicholson®

MultiMax Mini

- Universal mini tool made from particularly high-grade steel
- 11 tools included:
  - Drop Point Blade
  - Needle-Nose Plier
  - Regular Plier
  - 2 Slotted Screwdrivers
  - Wire Cutter
  - Bottle Opener
  - Nail File
  - Nail Cleaner
  - Inch Ruler
  - Metric Ruler
  - Lanyard Keyring
- Carded blister pack



Type	Code No.	Description	Length when closed Inch	Length when closed mm	Width when closed Inch	Width when closed mm	Weight g	Shelf Pack
NMP4V	**NMP4V**	MultiMax Mini	2 1/2	63	3/4	19	125	3

MultiMax Pro

- 14 tools in one
- All stainless steel components
- Adjustable/replaceable tool components
- Blades open up from closed handles
- Tool comes with nylon pouch that can be used in vertical or horizontal position on belt
- 14 tools included:
  - Needle-Nose/Regular Pliers
  - Wire Cutter
  - 2 Slotted Screwdrivers
  - Phillips® Screwdriver
  - Drop Point Blade
  - Serrated Edge Blade
  - Metric/English Ruler (measures up to 8"/20 cm)
  - Lanyard Ring
  - Can/Bottle Opener
  - Metal/Wood File
- Code No. 0010020265 packed in box
- Code No. 0010020266 packed on card



Type	Code No.	Description	Length when closed Inch	Length when closed mm	Width when closed Inch	Width when closed mm	Weight g	Shelf Pack
NMP12	**0010020265**	MultiMax Pro	4	100	1 3/16	30	240	6
NMP12	**0010020266**	MultiMax Pro	4	100	1 3/16	30	275	6

MultiMax Pro XL



- 15 tools in one
- All stainless steel components
- Adjustable/replaceable tool components
- Blades open up from closed handles
- Tool comes with nylon pouch that can be used in vertical or horizontal position on belt
- 15 tools included:
  - Large Plier Head
  - Wire Cutter
  - Wire Crimper
  - Serrated Drop Point Blade
  - 3 Slotted Screwdrivers (small, medium, large)
  - Phillips® Screwdriver
  - Can/Bottle Opener
  - Lanyard Ring
  - Metal/Wood File
  - Metric/English Ruler
  - Saw
  - Awl
- Code No. 0010020268 packed in box
- Code No. 0010020269 packed on card

Type	Code No.	Description	Length when closed Inch	Length when closed mm	Width when closed Inch	Width when closed mm	Weight g	Shelf Pack
NMP15	**0010020268**	MultiMax Pro XL	4 1/2	113	1 3/8	35	270	6
NMP15	**0010020269**	MultiMax Pro XL	4 1/2	113	1 3/8	35	305	6

Display for MultiMax Pro and MultiMax Pro XL



- Capacity for 12 pcs. of boxed NMP12 or NMP15 plus a demonstration model which can be attached by a chain to the anti-theft device on the display
- With a base of 15 x 13 cm and a height of 56 cm, this counter display requires only a small space
- Consist of acrylic display (unstocked), header and chain for demonstration model
- If ordering 12 pcs. of NMP12 or NMP15, display is free of charge

Code No.	Description	Weight g	Shelf Pack
0055627499	Display for 12 pcs. NMP12	870	1
0055644599	Display for 12 pcs. NMP15	870	1

Nicholson®

Spare Parts for MultiMax NMP12 and NMP15

• All stainless steel components

Code No.	Description	Application NMP12	Application NMP15	Shelf Pack
237100	Awl		x	1
237101	Can/Bottle Opener	x	x	1
237102	File	x	x	1
237103	Drop Point Blade	x		1
237104	Serrated Edge Blade	x		1
237105	Lanyard Ring	x	x	1
237106	Combination Plier	x		1
237107	Phillips® Screwdriver	x	x	1
237108	Slotted Screwdriver-Medium	x	x	1
237109	Slotted Screwdriver-Large	x	x	1
237110	Slotted Screwdriver-Small		x	1
237111	Saw		x	1
237112	Combination Plier		x	1
237113	Serrated Edge Blade		x	1
E966	Nylon Pouch	x		1
E972	Nylon Pouch		x	1
0055643600	Operating Instruction		x	1
0055618100	Operating Instruction	x		1

Bi-Metaloy® Holesaws

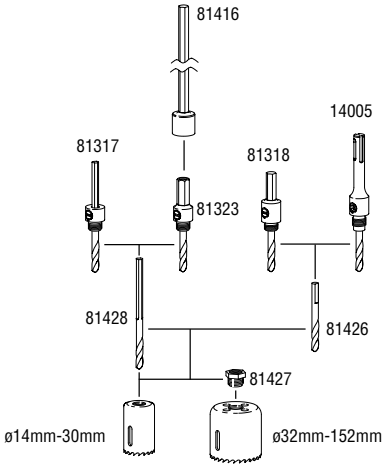


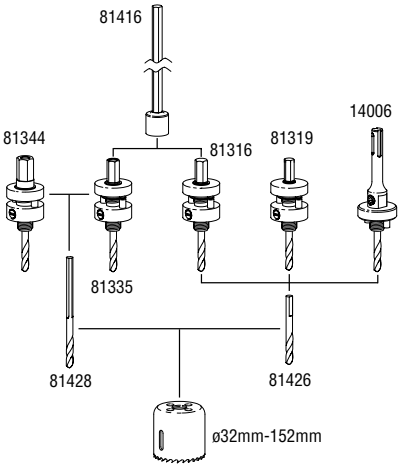
- The variable pitch design has varying numbers of teeth per inch (from 4 TPI to 6 TPI) and different gullet depths. These variations help break up the harmonics and therefore reduce vibration and noise. The teeth of the VP holesaws have a 7° positive rake angle compared to a 0° angle on the standard holesaw. The positive rake angle allows faster cutting rates. Plus the smoother cutting makes it easier to cut faster
  The reduced vibration helps increase blade life. However the main reason for the increased life is the thicker base. All VP holesaws have a stronger, thicker base
  The main cause of failure in holesaws is the failure of the pin holes in the base. The new stronger base makes this virtually impossible
  The reduced vibration and the more aggressive tooth design result in a smoother, cleaner hole
- Cuts holes from $^{9}/_{16}$"/14 mm to 6"/152 mm in diameter 1 $^{1}/_{8}$"/28 mm deep

Type/ Code No.	Diameter Inch	mm	Shelf Pack
81152	$^{9}/_{16}$	14,3	1
81155	$^{5}/_{8}$	15,9	1
81158	$^{11}/_{16}$	17,5	1
81161	$^{3}/_{4}$	19,1	1
81450	$^{7}/_{9}$	20	1
81164	$^{13}/_{16}$	20,6	1
81167	$^{7}/_{8}$	22,2	1
81170	$^{15}/_{16}$	23,8	1
81173	1	25,4	1
81176	1 $^{1}/_{16}$	27	1
81179	1 $^{1}/_{8}$	28,6	1
81182	1 $^{3}/_{16}$	30,2	1
81188	1 $^{1}/_{4}$	31,8	1
81191	1 $^{5}/_{16}$	33,3	1
81197	1 $^{3}/_{8}$	34,9	1
81200	1 $^{7}/_{16}$	36,5	1
81206	1 $^{1}/_{2}$	38,1	1
81209	1 $^{9}/_{16}$	39,7	1
81212	1 $^{5}/_{8}$	41,3	1
81215	1 $^{11}/_{16}$	42,9	1
81218	1 $^{3}/_{4}$	44,5	1
81451	-	45	1
81455	1 $^{3}/_{16}$	46	1
81224	1 $^{7}/_{8}$	47,6	1
81452	-	50	1
81227	2	50,8	1
81230	2 $^{1}/_{16}$	52,4	1
81233	2 $^{1}/_{8}$	54	1
81453	-	55	1
81236	2 $^{1}/_{4}$	57,2	1
81239	2 $^{5}/_{16}$	58,7	1

Type/ Code No.	Diameter Inch	mm	Shelf Pack
81242	2 3/8	60,3	1
81245	2 1/2	63,5	1
81248	2 9/16	65,1	1
81251	2 5/8	66,7	1
81460	2 11/16	68	1
81461	2 6/8	68,5	1
81254	2 3/4	69,9	1
81257	2 7/8	73	1
81260	3	76,2	1
81263	3 1/8	79,4	1
81266	3 1/4	82,6	1
81269	3 3/8	85,7	1
81272	3 1/2	88,9	1
81275	3 5/8	92,1	1
81278	3 3/4	95,3	1
81281	3 7/8	98,5	1
81284	4	101,6	1
81287	4 1/8	104,8	1
81290	4 1/4	108	1
81296	4 1/2	114,3	1
81299	4 3/4	120,7	1
81302	5	127	1
81308	5 1/2	139,7	1
81314	6	152,4	1
Pilot Drill			
81428	1/4	6,35 (Length 103 mm)	1
81426	1/4	6,35 (Length 85 mm)	1

Mandrels/Arbors for Bi-Metaloy® Holesaws





Type/ Code No.	For Holesaws Diameter mm	Shank	Shelf Pack
81317	14 - 30	6,35 mm round	1
81318	14 - 30	8,75 mm hexagon	1
81323	14 - 30	11 mm hexagon	1
81335	32 - 152	11 mm hexagon	1
81316	32 - 152	11 mm hexagon, solid	1
81319	32 - 152	8,75 mm hexagon, solid	1
81344	32 - 152	16 mm hexagon	1
81416	Lengthening (304 mm)	11 mm hexagon	1
81427	Adapter for holder 81317, 81318, 81323		
14005/0026814005	14 - 30	SDS Plus	1
14006/0026814006	32 - 152	SDS Plus	1

Hole Edge Core Drill



- For fitting cavity wall outlets with exactly flush borders
- The ideal tool for every electrician
- Resharpenable cutting edges guarantee long service life and all-purpose use
- Consist of:
  1 hole saw Bi-Metaloy® ø 68 mm
  1 mandrel / arbor 81335
  1 hole edge core drill

For Holesaws Type	Code No.	Description	Shelf Pack
LSS-68-3	**0026814460**	Holesaw kit with edge core drill	1

Nicholson®

Hard Metal Holesaws - Flat-Cut

- Design:
  Hard metal-faced holesaws with ejection spring for manual- and upright drills, will cut anything. Can be used on all machinable materials. Sturdy construction guarantees high running precision. The special cut, ground axially and radially, ensures optimum cutting results along with good chip clearance. Resharpenable, long service life.
- Applications:
  Steel, stainless steel, glass fibre, aluminium etc.
- Flat-cut for material strength up to 4 mm and stainless steel up to 2 mm
- Packed in plastic box with hang-up hole



Type	Code No.	Diameter mm	Shank Diameter mm	Tank Thread	Shelf Pack
HM-F15,2	**0022015200**	15,2	10	PG9	1
HM-F16	**0022016000**	16	10		1
HM-F17	**0022017000**	17	10		1
HM-F18	**0022018000**	18	10		1
HM-F18,6	**0022018600**	18,6	10	PG11	1
HM-F19	**0022019000**	19	10		1
HM-F20	**0022020000**	20	10		1
HM-F20,4	**0022020400**	20,4	10	PG13	1
HM-F21	**0022021000**	21	10		1
HM-F22	**0022022000**	22	10		1
HM-F22,5	**0022022500**	22,5	10	PG16	1
HM-F23	**0022023000**	23	10		1
HM-F24	**0022024000**	24	10		1
HM-F25	**0022025000**	25	10		1
HM-F26	**0022026000**	26	10		1
HM-F27	**0022027000**	27	10		1
HM-F28	**0022028000**	28	10		1
HM-F28,3	**0022028300**	28,3	10	PG21	1
HM-F29	**0022029000**	29	10		1
HM-F30	**0022030000**	30	10		1
HM-F32	**0022032000**	32	10		1
HM-F33	**0022033000**	33	10		1
HM-F34	**0022034000**	34	10		1
HM-F35	**0022035000**	35	10		1
HM-F36	**0022036000**	36	10		1
HM-F37	**0022037000**	37	10	PG29	1
HM-F38	**0022038000**	38	10		1
HM-F40	**0022040000**	40	10		1
HM-F42	**0022042000**	42	10		1
HM-F44	**0022044000**	44	10		1
HM-F45	**0022045000**	45	10		1
HM-F47	**0022047000**	47	10	PG36	1
HM-F48	**0022048000**	48	10		1
HM-F50	**0022050000**	50	10		1
HM-F52	**0022052000**	52	13		1

Type	Code No.	Diameter mm	Shank Diameter mm	Tank Thread	Shelf Pack
HM-F55	0022055000	55	13		1
HM-F60	0022060000	60	13	PG48	1
HM-F65	0022065000	65	13		1
HM-F70	0022070000	70	13		1
HM-F75	0022075000	75	13		1
HM-F80	0022080000	80	13		1
HM-F85	0022085000	85	13		1
HM-F90	0022090000	90	13		1
HM-F95	0022095000	95	13		1
HM-F100	0022100000	100	13		1
HM-F110	0022110000	110	13		1

Other diameters on request

Replacement drill

Type	Code No.	For Holesaw Diameter mm	Diameter x Length mm
HSS	0022065200	15 - 74	6 x 62
HSS	0022085200	75 - 150	8 x 52
HM	0022165200	15 - 74	6 x 62
HM	0022185200	75 - 150	8 x 52

Hard Metal Holesaws - Deep-Cut



- Design:
  Hard metal-faced holesaws for manual- and upright drills, will cut anything. Can be used on all machinable materials. Sturdy construction guarantees high running precision. The special cut, ground axially and radially, ensures optimum cutting results along with good chip clearance. Resharpenable, long service life.
- Applications:
  Steel, stainless steel, glass fibre, aluminium etc.
- Deep-cut for cuts into pipes and curved surfaces, for material strength up to 4 mm and stainless steel up to 2 mm
- Packed in plastic box with hang-up hole

Type	Code No.	Diameter mm	Shank Diameter mm	Shelf Pack
HM-T18	0022018010	18	10	1
HM-T20	0022020010	20	10	1
HM-T21	0022021010	21	10	1
HM-T22	0022022010	22	10	1
HM-T23	0022023010	23	10	1
HM-T25	0022025010	25	10	1
HM-T26	0022026010	26	10	1
HM-T27	0022027010	27	10	1
HM-T28	0022028010	28	10	1
HM-T30	0022030010	30	10	1
HM-T32	0022032010	32	10	1
HM-T33	0022033010	33	10	1

Type	Code No.	Diameter mm	Shank Diameter mm	Shelf Pack
HM-T34	**0022034010**	34	10	1
HM-T35	**0022035010**	35	10	1
HM-T37	**0022037010**	37	10	1
HM-T39	**0022039010**	39	10	1
HM-T40	**0022040010**	40	10	1
HM-T42	**0022042010**	42	10	1
HM-T43	**0022043010**	43	10	1
HM-T45	**0022045010**	45	10	1
HM-T46	**0022046010**	46	10	1
HM-T48	**0022048010**	48	10	1
HM-T49	**0022049010**	49	10	1
HM-T55	**0022055010**	55	13	1
HM-T60	**0022060010**	60	13	1
HM-T65	**0022065010**	65	13	1
HM-T70	**0022070010**	70	13	1
HM-T75	**0022075010**	75	13	1
HM-T80	**0022080010**	80	13	1
HM-T85	**0022085010**	85	13	1
HM-T90	**0022090010**	90	13	1

Other diameters on request

Replacement drill

Type	Code No.	For Holesaw Diameter mm	Diameter x Lenth mm
HSS	**0022067710**	16 - 60	6 x 77
HSS	**0022081040**	61 - 100	8 x 104
HM	**0022167710**	16 - 60	6 x 77
HM	**0022181040**	61 - 100	8 x 104

Holesaw Kits - Bi-Metaloy®

Professional Holesaw Kit



Type	Description	Diameter mm	Code No.	Shelf Pack
81433	Professional Holesaw Kit, complete		**0026814330**	1
includes:				
81155	Holesaw	15,9		
81161	Holesaw	19,1		
81167	Holesaw	22,2		
81173	Holesaw	25,4		
81179	Holesaw	28,6		
81188	Holesaw	31,8		
81197	Holesaw	34,9		
81206	Holesaw	38,1		
81218	Holesaw	44,5		
81227	Holesaw	50,8		
81245	Holesaw	63,5		
81260	Holesaw	76,2		
81323	Mandrel	-		
81335	Mandrel	-		
81428	3 Pilot Drills	6,35/Length 103 mm		

Journeyman's Holesaw Kit



Type	Description	Diameter mm	Code No.	Shelf Pack
81429	Journeyman's Holesaw Kit, complete		**0026814290**	1
includes:				
81161	Holesaw	19,1		
81167	Holesaw	22,2		
81179	Holesaw	28,6		
81197	Holesaw	34,9		
81206	Holesaw	38,1		
81218	Holesaw	44,5		
81227	Holesaw	50,8		
81236	Holesaw	57,2		
81245	Holesaw	63,5		
81317	Mandrel	-		
81335	Mandrel	-		
81427	Adaptor	6,35		
81428	Pilot Drill	6,35/Length 103 mm		

Maintenance Holesaw Kit



Type	Description	Diameter mm	Code No.	Shelf Pack
81430	Maintenance Holesaw Kit, complete		**0026814300**	1
includes:				
81167	Holesaw	22,2		
81173	Holesaw	25,4		
81179	Holesaw	28,6		
81188	Holesaw	31,8		
81206	Holesaw	38,1		
81317	Mandrel	-		
81427	Adaptor	-		

Electrician's Holesaw Kit



Type	Description	Diameter mm	Code No.	Shelf Pack
81431	Electrician's Holesaw Kit, complete		**0026814310**	1
includes:				
81167	Holesaw	22,2		
81179	Holesaw	28,6		
81197	Holesaw	34,9		
81218	Holesaw	44,5		
81227	Holesaw	50,8		
81245	Holesaw	63,5		
81323	Mandrels	-		
81335	Mandrels	-		
81428	Pilot Drill	6,35/Length 103 mm		

Plumber's Holesaw Kit



Type	Description	Diameter mm	Code No.	Shelf Pack
81432	Plumber's Holesaw Kit, complete		**0026814320**	1
includes:				
81161	Holesaw	19,1		
81167	Holesaw	22,2		
81179	Holesaw	28,6		
81206	Holesaw	38,1		
81218	Holesaw	44,5		
81236	Holesaw	57,2		
81317	Mandrel	-		
81335	Mandrel	-		
81428	Pilot Drill	6,35/Length 103 mm		

Plumber's Holesaw Kit No. 2



Type	Description	Diameter mm	Code No.	Shelf Pack
81442	Plumber's Holesaw Kit No. 2, complete		**0026814420**	1
includes:				
81167	Holesaw	22,2		
81179	Holesaw	28,6		
81206	Holesaw	38,1		
81218	Holesaw	44,5		
81236	Holesaw	57,2		
81251	Holesaw	66,7		
81323	Mandrel	-		
81335	Mandrel	-		

Electrician's Holesaw Kit No. 1



Type	Description	Diameter mm	Code No.	Shelf Pack
81443	Electrician's Holesaw Kit No. 1, complete		**0026814430**	1
includes:				
81197	Holesaw	34,9		
81460	Holesaw	68		
81257	Holesaw	73		
81335	Mandrels	-		
81428	Pilot Drill	6,35/Length 103 mm		

Electrician's Holesaw Kit No. 2



Type	Description	Diameter mm	Code No.	Shelf Pack
81444	Electrician's Holesaw Kit No. 2, complete		**0026814440**	1
includes:				
81167	Holesaw	22,2		
81173	Holesaw	25,4		
81188	Holesaw	31,8		
81227	Holesaw	50,8		
81460	Holesaw	68		
81323	Mandrel	-		
81335	Mandrel	-		

Electrician's Holesaw Kit No. 3



Type	Description	Diameter mm	Code No.	Shelf Pack
81445	Electrician's Holesaw Kit No. 3, complete		**0026814450**	1
includes:				
81450	Holesaw	20		
81173	Holesaw	25,4		
81188	Holesaw	31,8		
81197	Holesaw	34,9		
81227	Holesaw	50,8		
81460	Holesaw	68		
81257	Holesaw	73		
81323	Mandrel	-		
81335	Mandrel	-		

Nicholson®

Cushion Grip Hacksaw Frame

NEW PRODUCT

Professional and Industrial

- Unique cushioned rubber grip reduces slippage for better control and comfort
- Rugged, sturdy frame built for professional tool users
- High tension technology for tightening the blade to 30.000 PSI
- Blade can be positioned for 45˚ or 90˚ cutting
- Patended quick change blade design



Code No.	Type	Blade Inch	Blade mm	Weight per Shelf Pack g	Shelf Pack
80965	Cushion Grip High Tension	12	300	903	1

High Tension Hacksaw Frame

- Quick changing blades
- Adjustable crank handle for tension up to 30.000 PSI torque and micro-adjustment
- Spare blades can be stored inside frame
- Blade can be positioned for 45° or 90° cutting
- End of frame can be used as a jab saw



Code No.	Type	Blade Inch	Blade mm	Weight per Shelf Pack g	Shelf Pack
80956	High Tension Adjustable	12	300		1

General Purpose Hacksaw Frame

- Instantly adjustable for 10"/250 mm to 12"/300 mm blades
- Adjusts 90° for vertical or horizontal cuts



Code No.	Type	Blade Inch	Blade mm	Weight per Shelf Pack g	Shelf Pack
80951	Adjustable	10 and 12	250 and 300	4196	10

Economy Hacksaw Frame



- Adjustable from 10"/250 mm to 12"/300 mm
- Cuts to 2,75"/70 mm in depth
- For DIY and home use

Code No.	Type	Blade Inch	Blade mm	Weight per Shelf Pack g	Shelf Pack
80950	Adjustable	10 and 12	250 and 300	4196	10

Little-Nic® Utility Hacksaw



- For professionals and homeowners
- Ergonomic cushioned handle
- Gets into small places, makes difficult cutting jobs easy
- Overall length 10"/254 mm, will fit into any tool box
- Uses any standard size hacksaw blade
- Blister packed on attractive card with suggested uses on back

Code No.	Packed	Blade Inch	Blade mm	Weight per Shelf Pack g	Shelf Pack
80968	Carded	10	250	652	6

Jab Saw



- Special saw always needed for the difficult jobs: those narrow, hard-to-reach areas
- Jab saw will work with any standard size hacksaw blade
- Can replace worn blade easily: Untighten adjusting saw, remove worn blade and replace with a new Nicholson® blade, re-tighten the adjusting screw
- A must for all tool boxes

Code No.	Packed	Blade Inch	Blade mm	Weight per Shelf Pack g	Shelf Pack
80969	Carded	10	250	1701	12

Nicholson®

Bi-Metaloy® Hand Hacksaw Blades



Standard Packs

- Molybdenum alloy tool steel edge
- Tough flexible high carbon steel backing
- Lasts twice as long as high-speed steel
- Lasts up to ten times longer than carbon steel
- Operates 20% to 50% faster
- High tooth hardness and shock resistance
- Boxed: 100 blades per box

Type	Set Type	Code No.	Length Inch	Length mm	Teeth Per Inch	Width Inch	Width mm	Gauge Inch	Gauge mm	Weight per 100 Boxed kg
NF1218	Wavy	**62723**	12	304	18	1/2	12,70	0,025	0,65	2,050
NF1224	Wavy	**62749**	12	304	24	1/2	12,70	0,025	0,65	2,050
NF1232	Wavy	**62776**	12	304	32	1/2	12,70	0,025	0,65	2,050

Solid Flexible Carbon Steel



- Solid high carbon steel
- Tempered to provide hard edge with flexible back
- Specially hardened to induce toughness
- Economy blade for sawing light to medium-hard materials
- A good balance of wear resistance and mechanical shock absorbing properties
- Virtually unbreakable
- Boxed: 100 blades per box

Type	Set Type	Code No.	Length Inch	Length mm	Teeth Per Inch	Width Inch	Width mm	Gauge Inch	Gauge mm	Weight per 100 Boxed kg
MH1812	Wavy	**0023151812**	12	304	18	1/2	12,70	0,025	0,65	2,050
MH2412	Wavy	**0023152412**	12	304	24	1/2	12,70	0,025	0,65	2,050
MH3212	Wavy	**0023153212**	12	304	32	1/2	12,70	0,025	0,65	2,050

Hand Hacksaw Blade – Care and Servicing

Blade Breakage
1. Lack of tension. Tighten until taut.
2. Too much tension. Loosen slightly.
3. Cutting in awkward position. Use flexible type blades.
4. Jamming in cut. Hold work securely – stock should fall free after cut. In soft material teeth may be binding because they are too fine.

Pinhole Breakage
1. Too much tension. Loosen slightly.
2. Worn pins causing pressure on eyeholes. Replace pins.

Rounded Teeth - Premature Wear
1. Blade not cutting. Use slower stroke and apply heavier feed.
2. Dragging on return stroke. Lift saw.
3. Material too hard. Select proper blade.

Crooked Cutting
1. Too much pressure. Reduce feed.
2. Blade out of alignment. Check frame and blade tension.
3. Blade worn out. Replace.

Tooth Breakage
1. Teeth too coarse. Keep three teeth in the work.
2. Too much feed, teeth loading. Ease feed pressure.
3. Teeth too fine, clogging. Change to coarser tooth.
4. Starting cut on sharp corner. Reposition work.

General Tooth Recommendations
18 Tooth: For general shop use, when same blade is used on several jobs.
24 Tooth: For cross section $^{1}/_{16}$"/1,58 mm – $^{1}/_{4}$"/6,35 mm such as pipe, angles, small drill rod.
32 Tooth: To cut stock up to $^{1}/_{16}$"/1,58 mm such as light tubing, sheet metal, BX.

At least three teeth should be in contact with the work at all times.

Choose the Right Number of Teeth Per Inch
The sketches below (figure 1) show how coarseness of teeth affects blade efficiency. Speed varies according to material being cut and saw blade coarseness.

Starting the Cut
If possible, avoid starting cut on a sharp corner. When unavoidable, begin with light pressure and use a steady forward stroke. As many teeth as possible should be in contact with the cutting area and at least three teeth must be engaged. Note cutting angles shown below (figure 2).

Fig. 1

Right Wrong



Fig. 2

Right Wrong



LifeElectronics
Живое партнерство

ООО «ЛайфЭлектроникс» **“LifeElectronics” LLC**

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- *Конкурентоспособные цены и скидки постоянным клиентам.*
- *Специальные условия для постоянных клиентов.*
- *Подбор аналогов.*
- *Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.*

- *Приемлемые сроки поставки, возможна ускоренная поставка.*
- *Доставку товара в любую точку России и стран СНГ.*
- *Комплексную поставку.*
- *Работу по проектам и поставку образцов.*
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- *Сертификаты соответствия на поставляемую продукцию (по желанию клиента).*
- *Тестирование поставляемой продукции.*
- *Поставку компонентов, требующих военную и космическую приемку.*
- *Входной контроль качества.*
- *Наличие сертификата ISO.*

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Конструкторский отдел помогает осуществить:

- *Регистрацию проекта у производителя компонентов.*
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