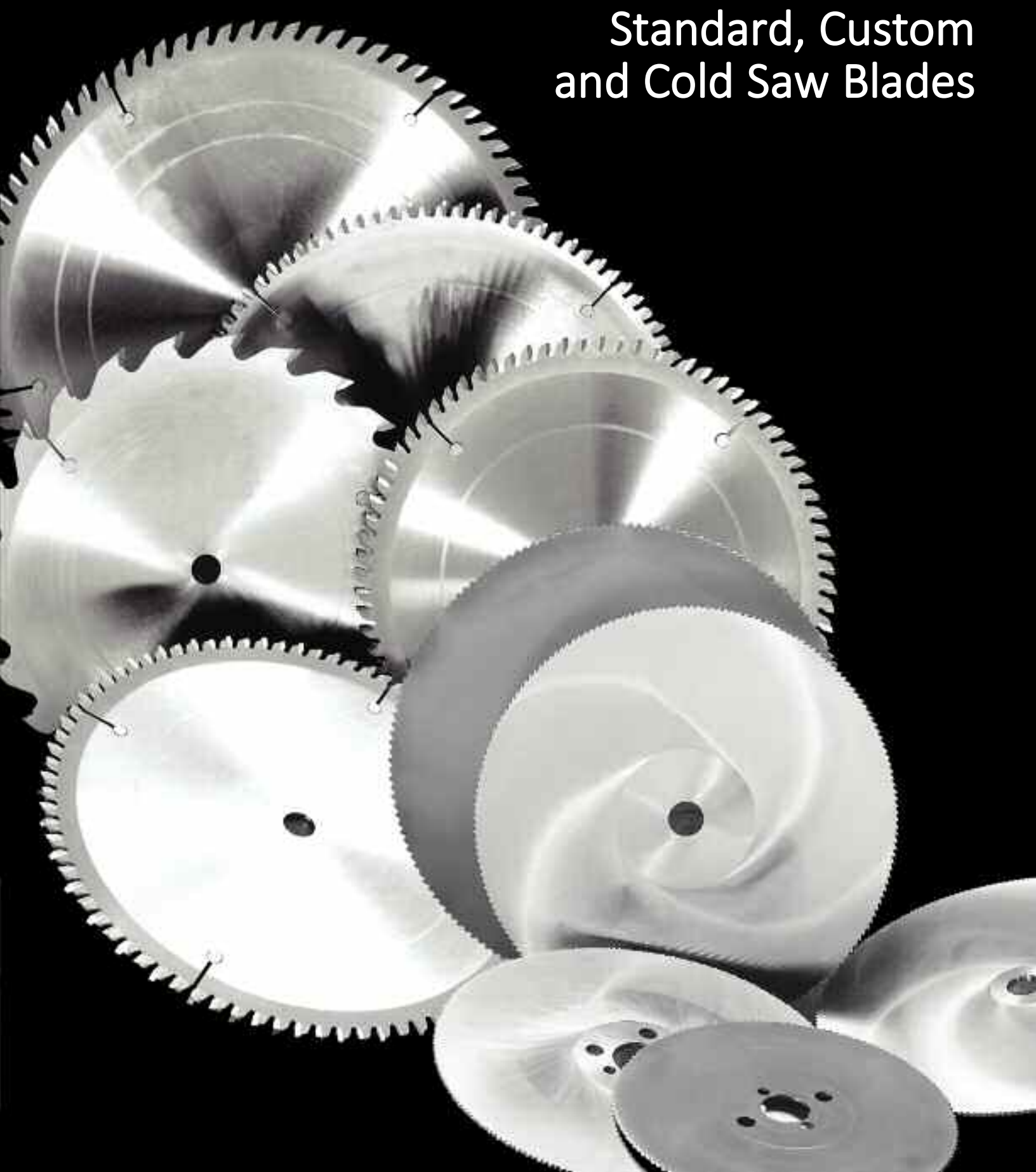
NAPGLADU

Delivering Productivity

Metalworking Saw Blades Standard, Custom and Cold Saw Blades



Customer Focused & Technology Driven

With a base of solid experience, the latest in technological advancements and a focus on the needs of the customer, NAP Gladu surpasses its goal of providing more than just a cutting tool. We are your application engineers, engineering department, problem solvers and partners in the drive to success.

Technology: The Competitive Edge

Interactive design...application engineering...problem solving: NAP Gladu dramatically expands your capabilities. With one of the most sophisticated engineering departments in the industry, NAP Gladu is able to provide solutions to your most challenging tooling needs. Our network of computer-controlled systems is capable of direct electronic feeds from off-site locations ... including yours. This enables us to measure tool patterns with precision for exact pattern duplication every time. When it comes to designing and manufacturing tooling for your specific application, NAP Gladu uses its experience, knowledge and technical expertise to ensure that you get tooling that meets or exceeds your expectations -- guaranteed.

Service: Speed & Precision

NAP Gladu offers unmatched reliability in the delivery of new and serviced tools. Customers depend on us for fast turnaround times. What's more, they can count on NAP Gladu to do the job right the first time, every time.

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Additional Charges

STANDARD SAWS

Description of Additional Charge / Items And Special Features
Open Bore
Pin Holes
Countersink Mounting Holes
Keyways

CUSTOM SAWS

Description of Additional Charge / Items And Special Features
More Teeth Than listed *Add on per tooth from the next lowest number of teeth*
Large Bore
Pin Holes
Keyways
Cooling Slots
Deading Slots w/Filler
Odd Diameter
Coatings

NOTE: Any modifications not found on this page must be by special quotation only.

Ordering Instructions

BORE SIZE
All tool numbers beginning with SC:
- Open boring is limited to 2” (50.8 mm) above listed bore size
- Additional charge for opening up the existing bore.

All tool numbers beginning with SP must have a specified bore size when ordering.
Spline bores available by special order only.

KERF
(i.e. Medium, Heavy, Extra-heavy, etc.)
You must make a special note if the kerf must be held to a specific size. Make this note in the kerf section of the new tool order form.

PLATE THICKNESS
Listed plate thickness cannot be modified. If desired plate thickness is not listed, blade must be special ordered.

MOUNTING HOLES
Need to know the quantity, size, and the bolt circle that they are located on. Only one bolt circle allowed per saw blade. If there is more than one mounting hole, you need to make a note of their position relative to each other (i.e. 4 mounting holes 90 degrees apart). If the holes are countersunk, you must specify which side of the saw body they are located on relative to top tooth face coming position.

SIZE AND NUMBER OF KEYWAYS
Make special note if keyways are to be staggered. Note the position of one relative to the other if more than one keyway is to be used (i.e. 180 degrees apart). Maximum 2 keyways per blade.

COLLAR SIZE
You must give the collar size diameter that the tool is going to run on. This is very important.

R.P.M.
Please give the RPM and the feed rate in feet per minute.

MATERIAL
Specify the type of material being cut.

DELIVERY INFORMATION
- Semi-stock saw blades:
  shipped in 10 working days from date of order.
- In-stock saw blades:
  shipped within 24 hours with listed bore size if order is placed before 2pm EST. Additional 24 hours required if bore size is not listed and mounting holes or keyways are required.
- Special order custom saw blades:
  3-4 weeks delivery.

Please Note:
- All graphic illustrations are for reference only. Your actual application may vary.
- Sizes depicted in this catalog are only representative of our product line. Additional sizes available upon request.
- All sizes available in English or Metric diameters and bore sizes.

COATING PROPERTIES

Coating	TiN	AlTiN	TiCN	DominizeR	ADC
Designation	7-22	7-13T	7-22C	DominizeR	ADC
Hardness	2900	4500	4000	3400	8000
Adhesion	70	70/80	62	70/80	70
Oxidation Temp	950 F	1450 F	750 F	1000	N/A
Coefficient of Friction	0.65	0.42	0.45	0.35	.1
Surface Roughness	0.2	0.15	0.18	0.25	Optical
Ductility %	1.09	1.2/1.5	0.2/0.3	1.2/1.5	1.0
Color	Gold	Black	Blue-Black	Silver	Black

RECOMMENDATION CHART

		Continuous Cutting	Interrupted Cutting
Steel		TiN / AlTiN	TiN / AlTiN
Aluminum		ADC	ADC
Copper		ADC	ADC
Bronze		ADC	ADC
Titanium		AlTiN / Dominizer	AlTiN / Dominizer
Cast Iron		AlTiN / Dominizer	AlTiN / Dominizer

COATING AND LOT SIZE

Diameter	Diameter	TiN	TiCN	AlTiN	DominizeR	Lot Size	ADC	Lot Size
160mm	6.30”					72		25
166mm	6.54”					72		25
200mm	7.87”					72		25
225mm	8.86”					72		25
250mm	9.84”					72		25
275mm	10.83					48		12
300mm	11.81”					48		12
315mm	12.40”					24		
350mm	13.78”					24		
370mm	14.57”					24		
400mm	15.75”					24		
415mm	16.34”					24		
450mm	17.72”					24		
500mm	19.69”					24		
550mm	21.65”					25		
610mm	24.00”					25		
>610mm	>24.00”					25		

Pricing is based upon the diameter based upon < or = to the listed size.

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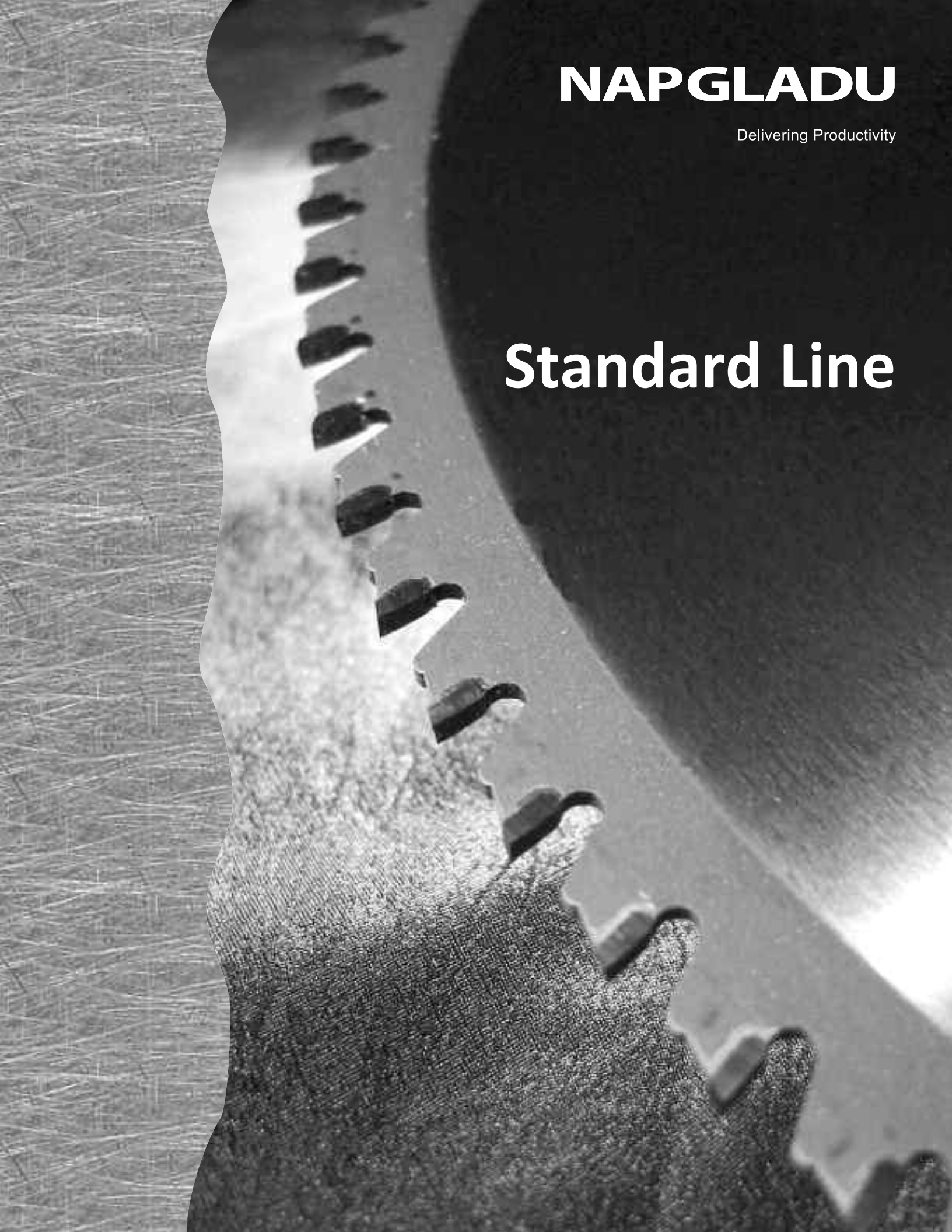

NAPGLADU

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Standard Line

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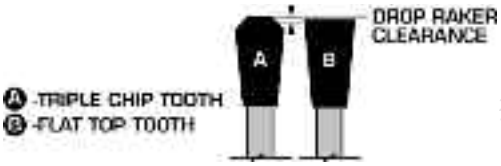
Standard Saw Blades

TCG NON-FERROUS METAL CUTTING

- An extensive selection of blades designed to cut brass, copper, aluminum and other non-ferrous metals.
- Excellent performance on sheets and extrusions.
- Heavier plates are used to withstand the rigors of non-ferrous metal cutting.
- All non-ferrous cutting should be aided by flood or spray lubricant.
- Mechanical clamping is recommended.



PART NO.	BLADE DIAMETER	NO. OF TEETH	BORE SIZE	HOOK ANGLE	KERF INCHES	PLATE INCHES
SC850	7”	40	5/8”	-5°	.115”	.085”
SC851	8”	60	5/8”	0°	.115”	.085”
SC852	8”	60	5/8”	-5°	.115”	.085”
SC853	8”	80	5/8”	-2°	.115”	.085”
SC854	9”	60	5/8”	0°	.115”	.085”
SC119Q	10”	40	5/8”	10º	.125”	.085”
SC855	10”	60	5/8”	0º	.125”	.085”
SC856	10”	60	5/8”	-5°	.125”	.085”
SC857	10”	80	5/8”	0°	.125”	.095”
SC149Q	10”	60	5/8”	10º	.125”	.085”
SC858	10”	80	5/8”	-5°	.125”	.095”
SC211	10”	80	5/8”	-5°	.125”	.095”
SC156Q	10”	80	5/8”	5º	.125”	.085”
SC859	10”	100	5/8”	0°	.125”	.095”
SC860	10”	100	5/8”	-5°	.125”	.095”
SC123	12”	48	1”	10º	.135”	.095”
SC861	12”	60	1”	0°	.125”	.095”
SC126Q	12”	60	1”	10º	.135”	.095”
SC862	12”	80	1”	0°	.125”	.095”
SC863	12”	80	1”	-5°	.125”	.095”
SC153Q	12”	80	1”	10º	.135”	.095”
SC864	12”	100	1”	0°	.125”	.095”
SC865	12”	100	1”	-5°	.125”	.095”
SC162Q	12”	100	1”	5º	.135”	.095”
SC866	12”	120	1”	-2°	.125”	.095”
SC867	14”	40	1”	0°	.160”	.110”
SC868	14”	60	1”	0°	.155”	.120”
SC869	14”	60	32mm	0°	.155”	.120”
SC870	14”	80	30mm	0°	.138”	.098”
SC871	14”	80	1”	0°	.138”	.098”
SC872	14”	80	1”	0°	.150”	.120”
SC873	14”	80	1”	-5°	.155”	.120”
SC874	14”	100	1”	0°	.138”	.098”
SC875	14”	100	1”	0°	.150”	.120”
SC876	14”	100	1”	-5°	.138”	.098”
SC199	14”	100	1”	-5°	.150”	.120”

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TCG NON-FERROUS METAL CUTTING

PART NO.	BLADE DIAMETER	NO. OF TEETH	BORE SIZE	HOOK ANGLE	KERF	PLATE
SC177Q	14”	100	1”	10º	.165”	.120”
SC877	14”	120	1”	-5°	.140”	.110”
SC878	15”	80	1”	0°	.160”	.120”
SC879	15”	100	1”	0°	.160”	.110”
SC880	16”	60	1”	0°	.165”	.120”
SC881	16”	60	1”	0°	.205”	.150”
SC882	16”	60	1”	-5°	.173”	.134”
SC883	16”	80	1”	0°	.150”	.120”
SC884	16”	80	1”	0°	.200”	.150”
SC885	16”	80	1”	-5°	.173”	.134”
SC886	16”	100	1”	0°	.155”	.120”
SC887	16”	100	1”	-5°	.173”	.134”
SC888	16”	120	1”	0°	.150”	.120”
SC889	16”	120	1”	-5°	.155”	.120”
SC890	18”	36	1”	0°	.205”	.150”
SC891	18”	60	1”	0°	.200”	.150”
SC892	18”	80	1”	0°	.173”	.134”
SC893	18”	80	1”	-5°	.200”	.150”
SC894	18”	100	1”	0°	.177”	.134”
SC895	18”	120	1”	0°	.173”	.134”
SC896	18”	120	1”	-5°	.173”	.134”
SC897	20”	80	1”	0°	.195”	.145”
SC898	20”	100	1”	0°	.173”	.134”
SC899	20”	100	1”	-5°	.173”	.134”
SC900	20”	120	1”	0°	.173”	.134”
SC901	20”	120	1”	-5°	.173”	.134”
SC902	20”	140	1”	-5°	.173”	.134”
SC903	24”	150	1”	5°	.210”	.150”
SC904	280mm	90	32mm	5°	3.2mm	2.4mm
SC906	330mm	90	32mm	5°	3.7mm	2.8mm
SC907	350mm	80	30mm	0°	3.5mm	2.5mm
SC908	350mm	80	32mm	0°	3.5mm	2.5mm
SC909	350mm	80	40mm	0°	3.5mm	2.5mm
SC910	350mm	100	32mm	0°	3.5mm	2.5mm
SC911	350mm	120	1”	0°	.140”	.110”
SC912	350mm	120	32mm	-5°	3.2mm	2.4mm
SC913	380mm	110	32mm	-5°	3.8mm	3.2mm
SC914	400mm	40	50mm	5°	3.5mm	2.5mm
SC915	400mm	60	50mm	5°	3.5mm	2.5mm
SC916	400mm	96	30mm	0°	3.8mm	3.2mm
SC917	400mm	96	50mm	0°	3.8mm	2.8mm
SC918	420mm	96	30mm	0°	4.4mm	3.2mm
SC919	450mm	100	50mm	5°	4.4mm	3.4mm
SC920	450mm	108	32mm	5°	4.0mm	3.0mm
SC921	420mm	120	30mm	0°	4.4mm	3.4mm
SC922	500mm	120	30mm	0°	4.4mm	3.4mm

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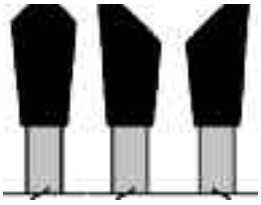
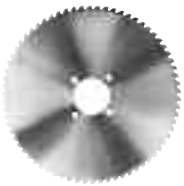
Standard Saw Blades



MODIFIED TCG
NON-FERROUS METAL CUTTING

PART NO.	BLADE DIAMETER	NO. OF TEETH	BORE SIZE	HOOK ANGLE	KERF	PLATE
SC930	10”	90	5/8”	-5°	.125”	.100”
SC931	12”	90	1”	-5°	.135”	.110”
SC932	12”	120	1”	-2°	.125”	.095”
SC933	14”	120	1”	-5°	.165”	.134”
SC934	16”	120	1”	-5°	.165”	.134”
SC935	300mm	96	30mm	-5°	3.2mm	3.2mm
SC936	350mm	90	40mm	-2°	3.8mm	3.0mm
SC937	350mm	108	40mm	-2°	3.8mm	3.0mm



STEEL CUTTING

PART NO.	BLADE DIAMETER	NO. OF TEETH	BORE SIZE	HOOK ANGLE	KERF	PLATE
SC940	7-1/4”	48	5/8” KO	0°	.075”	.059”
SC941	8”	50	5/8”	0°	.063”	.047”
SC942	9”	48	1”	0°	.080”	.063”
SC943	12”	60	1”	0°	.080”	.063”
SC944	12”	76	1”	0°	.080”	.063”
SC945	14”	84	1”	0°	.106”	.086”

SC942 max RPM 2700; SC943 & SC944 max RPM 1800; SC945 max RPM 1500

BOAT BUILDER BLADES

PART NO.	BLADE DIAMETER	NO. OF TEETH	BORE SIZE	HOOK ANGLE	KERF	PLATE
SC950	3.7/8”	20	3/8”	5°	.135”	.110”
SC951	4”	20	3/4”	0°	.125”	.095”
SC952	4”	20	7/8”	0°	.150”	.095”

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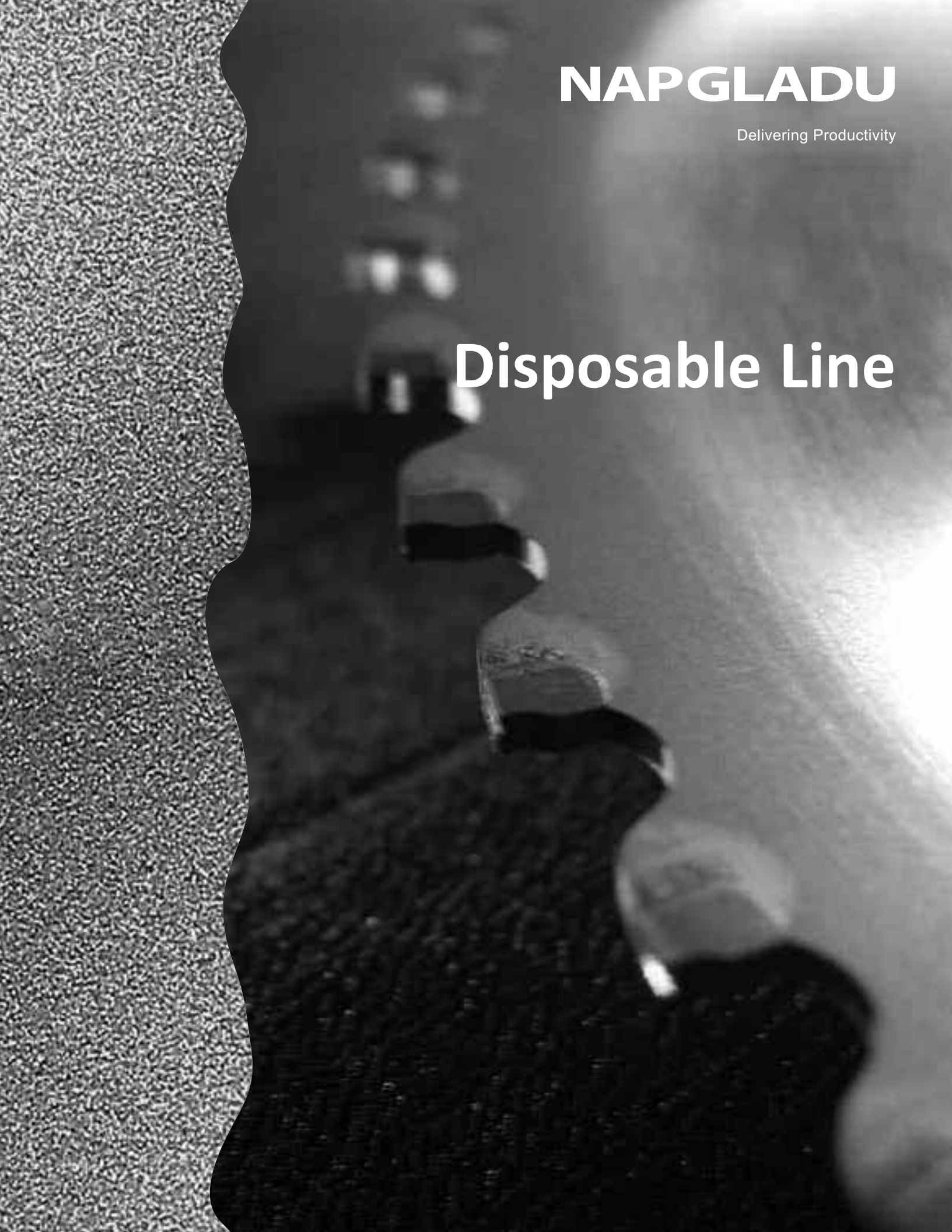

NAPGLADU

Delivering Productivity

Disposable Line

DISPOSABLE SAW BLADES

FEATURES OF THE F-90D

- Require less horsepower due to thin kerf geometry which reduces overall cutting pressures.
- Offers a direct reduction in chips to handle.
- Less material removed for increased savings of material.
- Minimized cutting pressure on material, reduced deformation when cutting small thin walled parts.
- Reduced bearing and machine loads. Requires less machine maintenance and repairs.
- Quiet operation (Approx. 80 dB (A))
- High quality cut produced with minimum burrs.
- Exceptional tool life.

DESIGNED TO FIT THESE AND OTHER MACHINERY MANUFACTURERS

Noritake	Nishijima	Kasto-Wagner
Amada	Tsune	Ends
Behringer-Eisele	Sinico	Webs
Exact-Cut		Kaltenbach

CARBIDE (TA)

This blade is designed for higher toughness of cutting edge. For interrupted cutting like tubing.

PART NO.	DIAMETER	BORE	KERF	NO. OF TEETH	PIN HOLES Qty/Dia/B.C.
F90D2857232TA	285mm	32mm	2.0mm	72	2/12/64 & 4/9/50
F90D2858032TA	285mm	32mm	2.0mm	80	4/9/50 & 2/11/63
F90D368040TA	360mm	40mm	2.6mm	80	4/11.5/90
F90D368050TA	360mm	50mm	2.6mm	80	4/11.5/90
F90D361040TA	360mm	40mm	2.6mm	100	4/11.5/90
F90D361050TA	360mm	50mm	2.6mm	100	4/16/80

DISPOSABLE SAW BLADES

CERMET (SA)

This blade is designed for abrasive wear and heat.

PART NO.	DIAMETER	BORE	KERF	NO. OF TEETH	PIN HOLES Qty/Dia/B.C.
F90D257232SAZ	250mm	32mm	2.0mm	72	4/11/63
F90D2856032SA	285mm	32mm	2.0mm	60	4/9/50
F90D2858040SA	285mm	40mm	2.0mm	80	4/11/80
F90D2859032SA	285mm	32mm	2.0mm	90	4/9/50 & 2/11/63
F90D366040SA	360mm	40mm	2.6mm	60	4/11.5/90
F90D366050SA	360mm	50mm	2.6mm	60	4/16/80
F90D368040SA	360mm	40mm	2.6mm	80	4/11.5/90
F90D368050SA	360mm	50mm	2.6mm	80	4/16/80
F90D361050SA	360mm	50mm	2.6mm	100	4/16/80
F90D466050SA	460mm	50mm	2.7mm	60	4/16/80






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Custom Line

FERROUS CUTTING SAW BLADES

APPLICATIONS

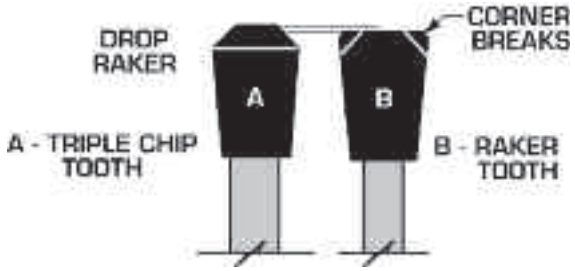
- F70 for ferrous sawing of rail, billets, and bars.
- F35 for ferrous cutting of plate steel.

TECHNICAL INFORMATION

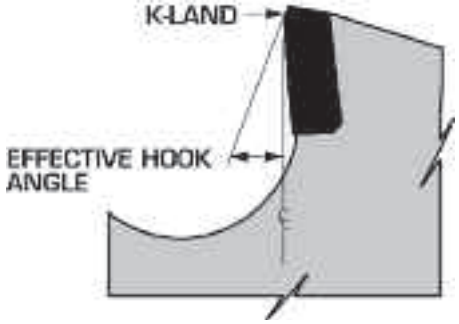
- Effective negative hook angle on the cutting edge strengthens the carbide and helps direct chip flow.
- Special tooth design breaks up the chip and stabilizes the blade in the cut.

ADVANTAGES

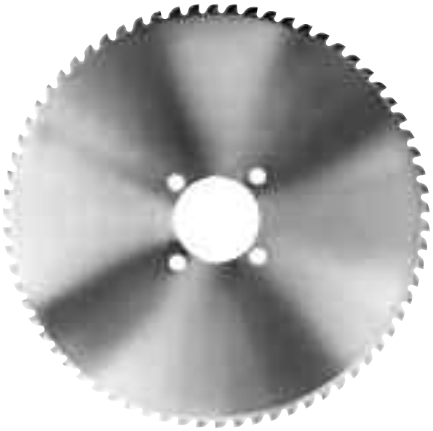
- Carbide fully supported to minimize breakage.
- Rapid, aggressive cutting.
- Available in English and Metric sizes.
- Laser cut saw plate.
- High nickel steel body to resist cracking.

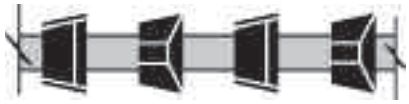


The triple chip tooth removes the center portion of the material while the raker tooth removes the final kerf width. The use of negative K-lands adds strength to the cutting edge and protects it from damage.



Both the F70 and F35 have an effective negative hook angle with the use of K-lands.





Straight faced with K-lands.

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FERROUS CUTTING SAW BLADES

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .134 Plate	MEDIUM .135-.180 Plate	HEAVY .181-.200 Plate
10"	60			
10"	70			
10”	80			
10”	90			
10”	100			
12”	60			
12”	70			
12”	80			
12”	90			
12”	100			
14”	60			
14”	70			
14”	80			
14”	90			
14”	100			
16”	60	PRICING WILL VARY DUE TO PLATE THICKNESS.		
16”	70			
16”	80			
16”	90			
16”	100			
18”	60			
18”	70			
18”	80			
18”	90			
18”	100			
20”	60			
20”	70			
20”	80			
20”	90			
20”	100			
20”	120			
22”	60			
22”	70			
22”	80			
22”	90			
22”	100			
22”	120			

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .180 Plate	MEDIUM .180-.200 Plate	HEAVY .201-.259 Plate
24”	60			
24”	70			
24”	80			
24”	90			
24”	100			
24”	120			
26"	60			
26”	70			
26”	80			
26”	90			
26”	100			
26”	120			
28”	60			
28”	70			
28”	80			
28”	90			
28”	100			
28”	120	PRICING WILL VARY DUE TO PLATE THICKNESS.		
30”	60			
30”	70			
30”	80			
30”	90			
30”	100			
30”	120			
32”	60			
32”	70			
32”	80			
32”	90			
32”	100			
32”	120			
34”	60			
34”	70			
34”	80			
34”	90			
34”	100			
34”	120			
36”	60			
36”	70			
36”	80			
36”	90			
36”	100			
36”	120			

NOTE:

- Saws over 36" diameter must be quoted through customer service.
- Saws outside the plate thickness must be quoted through customer service.

FERROUS CUTTING SAW BLADES

APPLICATIONS

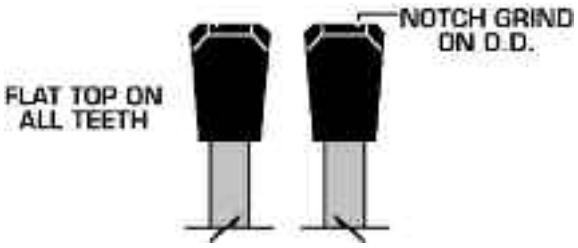
- Sawing heavy wall steel pipe, tubing, and structural shapes.

TECHNICAL INFORMATION

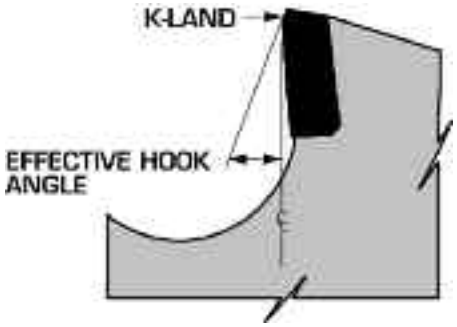
- Teeth are 100% effective in the cut.
- Tooth designed for minimum burr.
- Notch grind on cutting edge.

ADVANTAGES

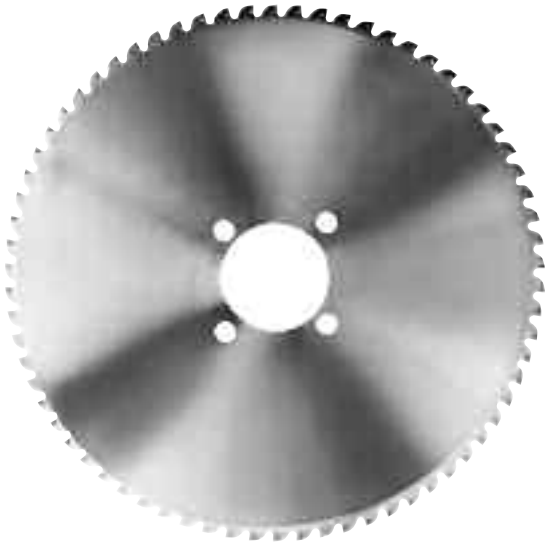
- Notch grind to break up the chip.
- Laser cut saw plate.
- Available in English and Metric sizes.
- Allows for faster feed rates.
- High nickel steel body to resist cracking.

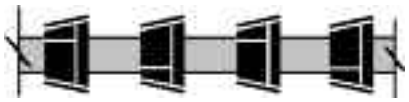


The F90 incorporates a flat top tooth configuration which is 100% effective in the cut. The notch grind on the O.D. breaks up the chip and aids in its removal.



The F90 saw style has an effective negative hook angle with the use of K-lands.





Straight faced with K-lands.

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FERROUS CUTTING SAW BLADES

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .134 Plate	MEDIUM .135-.180 Plate	HEAVY .181-.200 Plate
10"	60			
10"	70			
10”	80			
10”	90			
10”	100			
12”	60			
12”	70			
12”	80			
12”	90			
12”	100			
14”	60			
14”	70			
14”	80			
14”	90			
14”	100			
16”	60	PRICING WILL VARY DUE TO PLATE THICKNESS.		
16”	70			
16”	80			
16”	90			
16”	100			
18”	60			
18”	70			
18”	80			
18”	90			
18”	100			
20”	60			
20”	70			
20”	80			
20”	90			
20”	100			
20”	120			
22”	60			
22”	70			
22”	80			
22”	90			
22”	100			
22”	120			

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .180 Plate	MEDIUM .180-.200 Plate	HEAVY .201-.259 Plate
24”	60			
24”	70			
24”	80			
24”	90			
24”	100			
24”	120			
26"	60			
26”	70			
26”	80			
26”	90			
26”	100			
26”	120			
28”	60			
28”	70			
28”	80			
28”	90			
28”	100			
28”	120	PRICING WILL VARY DUE TO PLATE THICKNESS.		
30”	60			
30”	70			
30”	80			
30”	90			
30”	100			
30”	120			
32”	60			
32”	70			
32”	80			
32”	90			
32”	100			
32”	120			
34”	60			
34”	70			
34”	80			
34”	90			
34”	100			
34”	120			
36”	60			
36”	70			
36”	80			
36”	90			
36”	100			
36”	120			

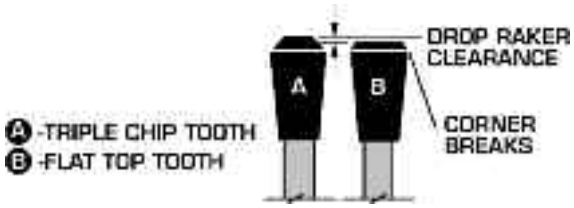
NOTE:
- Saws over 36" diameter must be quoted through customer service.
- Saws outside the plate thickness must be quoted through customer service.

FERROUS CUTTING SAW BLADES

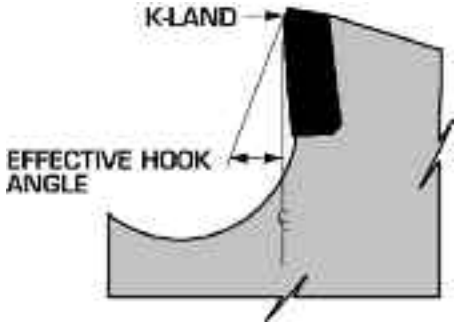
APPLICATIONS
- Plate sawing mild tool steel and alloy plate.

TECHNICAL INFORMATION
- Negative K-Lands reinforce the cutting edge and direct chip flow.
- Special tooth design breaks up the chip and stabilizes the saw blade while in the cut.
- Selected grade of carbide for extended tool life.
- Triple chip and flat tooth design efficiently breaks up the chip and stabilizes the blade while in the cut.

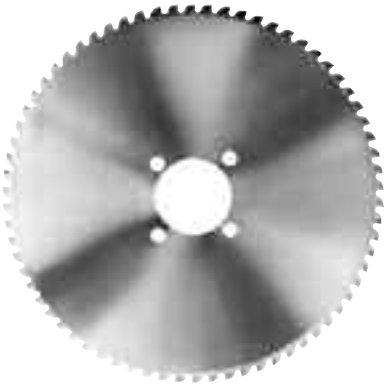
ADVANTAGES
- Carbide fully supported to minimize breakage.
- Laser cut saw plate.
- High nickel steel body to resist cracking.
- Available in English and Metric sizes.
- Rapid, aggressive cutting.

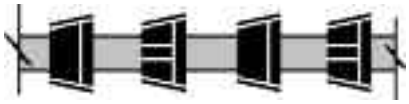


The triple chip tooth removes the center portion of the material while the flat top tooth cuts the final kerf width. The use of negative K-Lands adds strength to the cutting edge and protects it from damage.



The F40 style has an effective negative hook angle with the use of K-lands.





Straight faced with K-lands.

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FERROUS CUTTING SAW BLADES

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .134 Plate	MEDIUM .135-.180 Plate	HEAVY .181-.200 Plate
10"	60			
10"	70			
10”	80			
10”	90			
10”	100			
12”	60			
12”	70			
12”	80			
12”	90			
12”	100			
14”	60			
14”	70			
14”	80			
14”	90			
14”	100			
16”	60	PRICING WILL VARY DUE TO PLATE THICKNESS.		
16”	70			
16”	80			
16”	90			
16”	100			
18”	60			
18”	70			
18”	80			
18”	90			
18”	100			
20”	60			
20”	70			
20”	80			
20”	90			
20”	100			
20”	120			
22”	60			
22”	70			
22”	80			
22”	90			
22”	100			
22”	120			

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .180 Plate	MEDIUM .180-.200 Plate	HEAVY .201-.259 Plate
24”	60			
24”	70			
24”	80			
24”	90			
24”	100			
24”	120			
26"	60			
26”	70			
26”	80			
26”	90			
26”	100			
26”	120			
28”	60			
28”	70			
28”	80			
28”	90			
28”	100			
28”	120	PRICING WILL VARY DUE TO PLATE THICKNESS.		
30”	60			
30”	70			
30”	80			
30”	90			
30”	100			
30”	120			
32”	60			
32”	70			
32”	80			
32”	90			
32”	100			
32”	120			
34”	60			
34”	70			
34”	80			
34”	90			
34”	100			
34”	120			
36”	60			
36”	70			
36”	80			
36”	90			
36”	100			
36”	120			

NOTE:
- Saws over 36" diameter must be quoted through customer service.
- Saws outside the plate thickness must be quoted through customer service.

FERROUS CUTTING SAW BLADES

APPLICATIONS

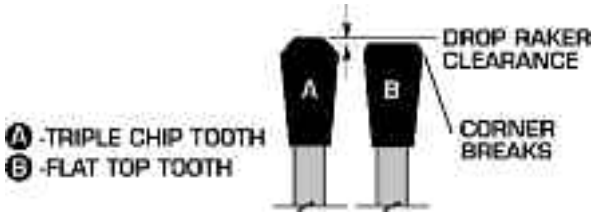
- The F45 saw blade is used for plate sawing of low to medium carbon steel.
- The F50 saw blade is used for plate sawing of stainless steel and high nickel alloy plate.

TECHNICAL INFORMATION

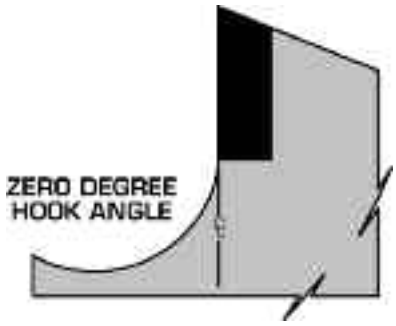
- Triple chip and flat tooth design efficiently breaks up the chip and stabilizes the blade while in the cut.
- Selected grade of carbide for application.
- Corner breaks on flat tooth.

ADVANTAGES

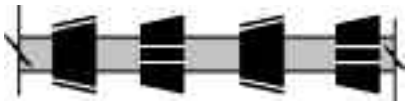
- Rapid, aggressive cutting.
- Laser cut saw plate.
- Corner breaks to strengthen the cutting edge.
- High nickel steel body to resist cracking.
- Available in English and Metric sizes



The F45 style saw blade incorporates a triple chip tooth that removes the center portion of the cut while the flat top tooth removes the final kerf cut. The flat top tooth also uses corner breaks to strengthen the outside cutting edge of the carbide to prevent breakage.



Zero hook angle is standard on the F45 style saw blade. 3º positive hook angle is standard on the F50.



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FERROUS CUTTING SAW BLADES

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .134 Plate	MEDIUM .135-.180 Plate	HEAVY .181-.200 Plate
10"	60			
10"	70			
10”	80			
10”	90			
10”	100			
12”	60			
12”	70			
12”	80			
12”	90			
12”	100			
14”	60			
14”	70			
14”	80			
14”	90			
14”	100			
16”	60	PRICING WILL VARY DUE TO PLATE THICKNESS.		
16”	70			
16”	80			
16”	90			
16”	100			
18”	60			
18”	70			
18”	80			
18”	90			
18”	100			
20”	60			
20”	70			
20”	80			
20”	90			
20”	100			
20”	120			
22”	60			
22”	70			
22”	80			
22”	90			
22”	100			
22”	120			

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .180 Plate	MEDIUM .180-.200 Plate	HEAVY .201-.259 Plate
24”	60			
24”	70			
24”	80			
24”	90			
24”	100			
24”	120			
26"	60			
26”	70			
26”	80			
26”	90			
26”	100			
26”	120			
28”	60			
28”	70			
28”	80			
28”	90			
28”	100			
28”	120	PRICING WILL VARY DUE TO PLATE THICKNESS.		
30”	60			
30”	70			
30”	80			
30”	90			
30”	100			
30”	120			
32”	60			
32”	70			
32”	80			
32”	90			
32”	100			
32”	120			
34”	60			
34”	70			
34”	80			
34”	90			
34”	100			
34”	120			
36”	60			
36”	70			
36”	80			
36”	90			
36”	100			
36”	120			

NOTE:
- Saws over 36" diameter must be quoted through customer service.
- Saws outside the plate thickness must be quoted through customer service.

NON-FERROUS CUTTING SAW BLADES

APPLICATIONS

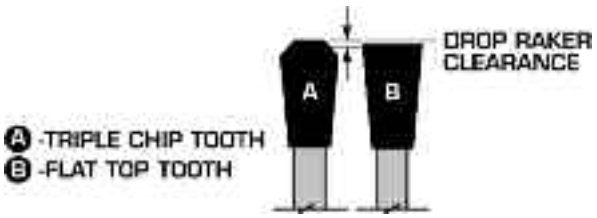
- General non-ferrous sawing, used on billet saws, plate saws, chop saws, cut-off saws, ingot saws, etc.
- Suited for cutting aluminum, brass, bronze, copper, magnesium, etc.

ADVANTAGES

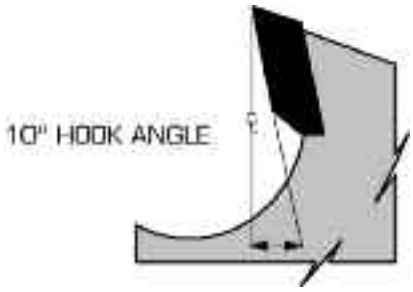
- Rapid, aggressive cutting.
- Laser cut saw plate.

TECHNICAL INFORMATION

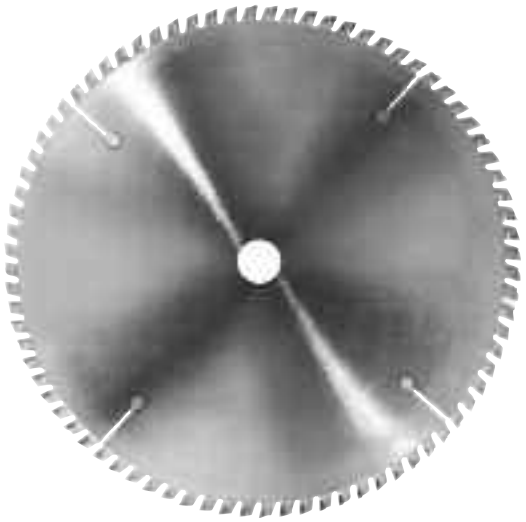
- Triple chip and flat tooth design breaks up the chip and stabilizes the blade while in the cut.
- 10º hook is standard. Additional hook angles can be ordered for climb cutting and overhead applications.

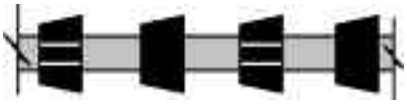


The A45 style saw blade incorporates a triple chip tooth that removes the center portion of the cut while the flat tooth removes the final kerf cut.



10º hook angle is standard on the A45 style saw blade.





Straight faced, no face shear.

NON-FERROUS CUTTING SAW BLADES

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .134 Plate	MEDIUM .135-.180 Plate	HEAVY .181-.200 Plate
10"	60			
10"	70			
10”	80			
10”	90			
10”	100			
12”	60			
12”	70			
12”	80			
12”	90			
12”	100			
14”	60			
14”	70			
14”	80			
14”	90			
14”	100			
16”	60	PRICING WILL VARY DUE TO PLATE THICKNESS.		
16”	70			
16”	80			
16”	90			
16”	100			
18”	60			
18”	70			
18”	80			
18”	90			
18”	100			
20”	60			
20”	70			
20”	80			
20”	90			
20”	100			
20”	120			
22”	60			
22”	70			
22”	80			
22”	90			
22”	100			
22”	120			

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .180 Plate	MEDIUM .180-.200 Plate	HEAVY .201-.259 Plate
24”	60			
24”	70			
24”	80			
24”	90			
24”	100			
24”	120			
26"	60			
26”	70			
26”	80			
26”	90			
26”	100			
26”	120			
28”	60			
28”	70			
28”	80			
28”	90			
28”	100			
28”	120	PRICING WILL VARY DUE TO PLATE THICKNESS.		
30”	60			
30”	70			
30”	80			
30”	90			
30”	100			
30”	120			
32”	60			
32”	70			
32”	80			
32”	90			
32”	100			
32”	120			
34”	60			
34”	70			
34”	80			
34”	90			
34”	100			
34”	120			
36”	60			
36”	70			
36”	80			
36”	90			
36”	100			
36”	120			

NOTE:

- Saws over 36" diameter must be quoted through customer service.
- Saws outside the plate thickness must be quoted through customer service.

NON-FERROUS CUTTING SAW BLADES

APPLICATIONS

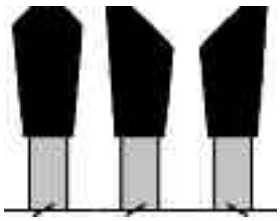
- Used on precision non-ferrous plate saw machines.
- May also be used in non-ferrous cut-off applications where a better finish is desired.

ADVANTAGES

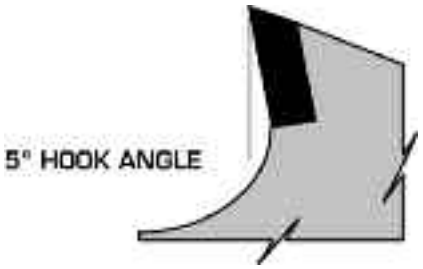
- Capable of 10 RMS finish.
- Eliminates secondary machining operations.
- Provides straight cuts to within thousandths of an inch.

TECHNICAL INFORMATION

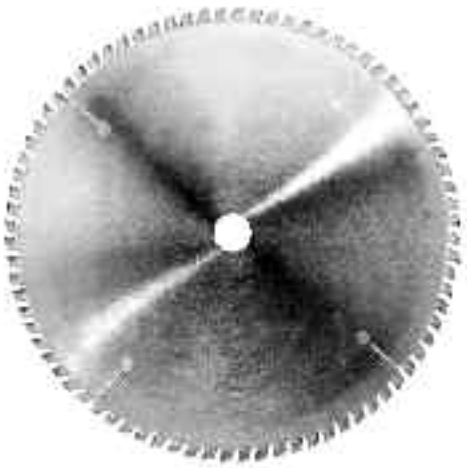
- Special 3 tooth configuration reduces the cutting pressures and stabilizes the blade in the cut.
- High precision tooth configuration.
- Minimum side body and tip runout for an excellent finish.



The A45P style saw blade incorporates a triple chip tooth which removes the center portion of the cut while the modified alternate top bevel teeth complete the final kerf cut. The minimum side clearances attribute to the smooth finish of the material being cut.



5º hook angle is standard on the A45P style saw blade. Other hook angles available upon request.



Straight faced, no face shear.

NON-FERROUS CUTTING SAW BLADES

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .134 Plate	MEDIUM .135-.180 Plate	HEAVY .181-.200 Plate
10"	60			
10"	81			
10”	90			
12”	60			
12”	81			
12”	90			
12”	102			
14”	81			
14”	90			
14”	102			
14”	120			
16”	81			
16”	90			
16”	102			
16”	120			
18”	81	PRICING WILL VARY DUE TO PLATE THICKNESS.		
18”	90			
18”	102			
18”	120			
20”	81			
20”	90			
20”	102			
20”	120			
22”	81			
22”	90			
22”	102			
22”	120			
24”	81			
24”	90			
24”	102			
24”	120			

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .180 Plate	MEDIUM .180-.200 Plate	HEAVY .201-.259 Plate
26"	81			
26”	90			
26”	102			
26”	120			
28”	81			
28”	90			
28”	102			
28”	120			
30”	81			
30”	90			
30”	102			
30”	120			
32”	81	PRICING WILL VARY DUE TO PLATE THICKNESS.		
32”	90			
32”	102			
32”	120			
34”	81			
34”	90			
34”	102			
34”	120			
36”	81			
36”	90			
36”	102			
36”	120			

NOTE:
- Saws over 36" diameter must be quoted through customer service.
- Saws outside the plate thickness must be quoted through customer service.

NON-FERROUS CUTTING SAW BLADES

APPLICATIONS

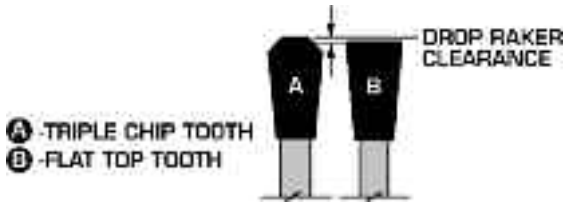
- Sawing very thin non-ferrous extrusions and tubing on hand and automatic feed operations.
- Suited for cutting aluminum, brass, bronze, copper, etc.

ADVANTAGES

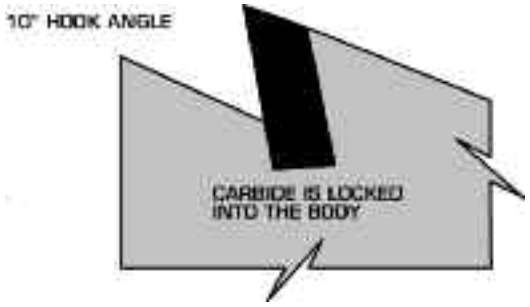
- Longer cutting life between sharpenings.
- Laser cut saw plate.

TECHNICAL INFORMATION

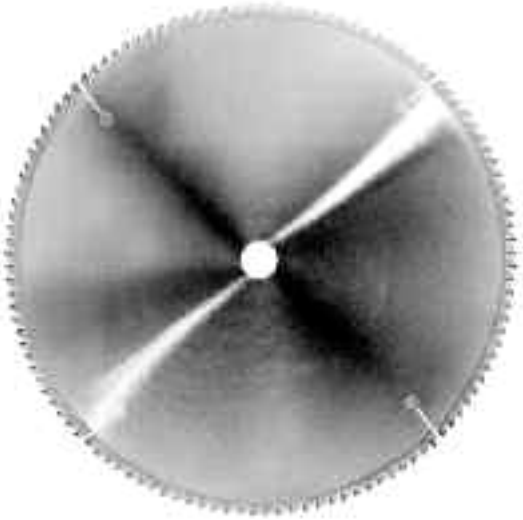
- Triple chip and flat tooth design breaks up the chip and stabilizes the blade while in the cut.
- Locked in tooth design gives added support and allows more teeth to be placed into the saw blade.
- 10º hook is standard.

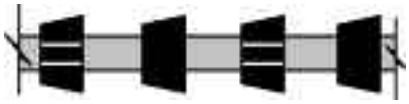


The A50 style saw blade incorporates a triple chip tooth that removes the center portion of the cut while the flat top tooth removes the final cutting width.



10º hook is standard on the A50 style saw blade.





Straight faced, no face shear.

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NON-FERROUS CUTTING SAW BLADES

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .134 Plate	MEDIUM .135-.180 Plate	HEAVY .181-.200 Plate
10"	80			
10"	90			
10”	100			
12”	80			
12”	90			
12”	100			
14”	80			
14”	90			
14”	100			
14”	110			
14”	120			
16”	80			
16”	90			
16”	100			
16”	110			
16”	120			
16”	140			
18”	80	PRICING WILL VARY DUE TO PLATE THICKNESS.		
18”	90			
18”	100			
18”	120			
18”	140			
18”	160			
20”	80			
20”	90			
20”	100			
20”	120			
20”	140			
20”	160			
22”	80			
22”	90			
22”	100			
22”	120			
22”	140			
22”	160			
24”	90			
24”	100			
24”	120			
24”	140			
24”	160			
24”	180			

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .180 Plate	MEDIUM .180-.200 Plate	HEAVY .201-.259 Plate
26"	90			
26”	100			
26”	120			
26”	140			
26”	160			
26”	180			
26”	200			
28”	90			
28”	100			
28”	120			
28”	140			
28”	160			
28”	180			
28”	200			
30”	90			
30”	100			
30”	120			
30”	140			
30”	160			
30”	180	PRICING WILL VARY DUE TO PLATE THICKNESS.		
30”	200			
32”	100			
32”	120			
32”	140			
32”	160			
32”	180			
32”	200			
34”	100			
34”	120			
34”	140			
34”	160			
34”	180			
34”	200			
36”	100			
36”	120			
36”	140			
36”	160			
36”	180			
36”	200			

NON-FERROUS CUTTING SAW BLADES

APPLICATIONS

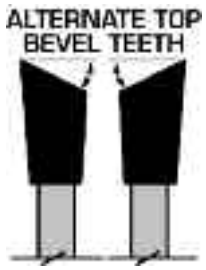
- Use when cutting thin walled non-ferrous extrusions and tubing where the wall thickness is .080" or less.
- Designed for use where close tolerances are required on the material.
- Designed for machines that have clamping mechanisms to hold the material to be cut.

TECHNICAL INFORMATION

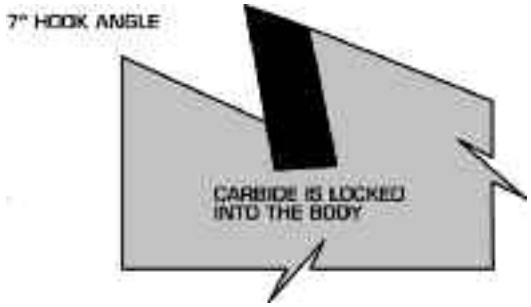
- 7º hook angle.
- 12º alternative top bevel grind produces excellent finishes.
- High precision side grind on cutting tips.
- Locked in tooth style with a very fine pitch (distance tooth to tooth).

ADVANTAGES

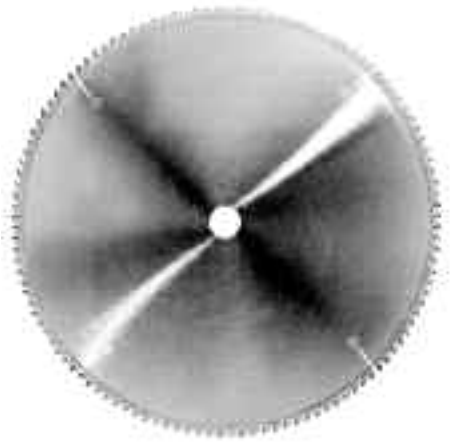
- Produces excellent finishes on the end of the material.
- Reduces or eliminates burrs on the material.
- Laser cut saw plate.
- Eliminates de-burring operations on the part.
- Eliminates deformation of the part caused by cutting pressure.
- Reduces noise level.

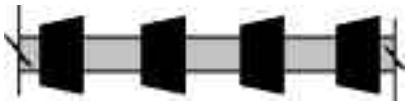


Alternate top bevel tooth configuration provides high shear cutting action.



7º hook angle is standard on the A15P style saw blade.





Straight faced, no face shear.

NON-FERROUS CUTTING SAW BLADES

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .134 Plate	MEDIUM .135-.180 Plate	HEAVY .181-.200 Plate
10"	80			
10"	90			
10”	100			
12”	80			
12”	90			
12”	100			
14”	80			
14”	90			
14”	100			
14”	110			
14”	120			
16”	80			
16”	90			
16”	100			
16”	110			
16”	120			
16”	140			
18”	80	PRICING WILL VARY DUE TO PLATE THICKNESS.		
18”	90			
18”	100			
18”	120			
18”	140			
18”	160			
20”	80			
20”	90			
20”	100			
20”	120			
20”	140			
20”	160			
22”	80			
22”	90			
22”	100			
22”	120			
22”	140			
22”	160			
24”	90			
24”	100			
24”	120			
24”	140			
24”	160			
24”	180			

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .180 Plate	MEDIUM .180-.200 Plate	HEAVY .201-.259 Plate
26"	90			
26”	100			
26”	120			
26”	140			
26”	160			
26”	180			
26”	200			
28”	90			
28”	100			
28”	120			
28”	140			
28”	160			
28”	180			
28”	200			
30”	90			
30”	100			
30”	120			
30”	140			
30”	160	PRICING WILL VARY DUE TO PLATE THICKNESS.		
30”	180			
30”	200			
32”	100			
32”	120			
32”	140			
32”	160			
32”	180			
32”	200			
34”	100			
34”	120			
34”	140			
34”	160			
34”	180			
34”	200			
36”	100			
36”	120			
36”	140			
36”	160			
36”	180			
36”	200			

NON-FERROUS CUTTING SAW BLADES

APPLICATIONS

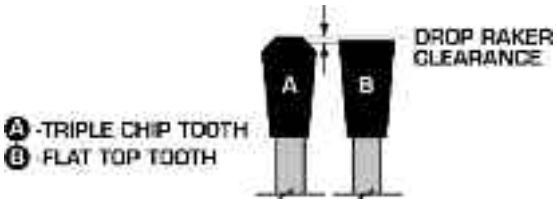
- Use when cutting thin walled non-ferrous extrusions and tubing where the wall thickness is .080" to .250" thick.
- Designed for use where close tolerances are required on the material.
- Designed for machines that have clamping mechanisms to hold the material to be cut.

ADVANTAGES

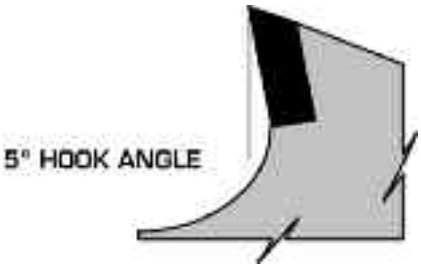
- Produces excellent finishes on the end of the material.
- Reduces or eliminates burrs on the material.
- Laser cut saw plate.
- Eliminates de-burring operations on the part.

TECHNICAL INFORMATION

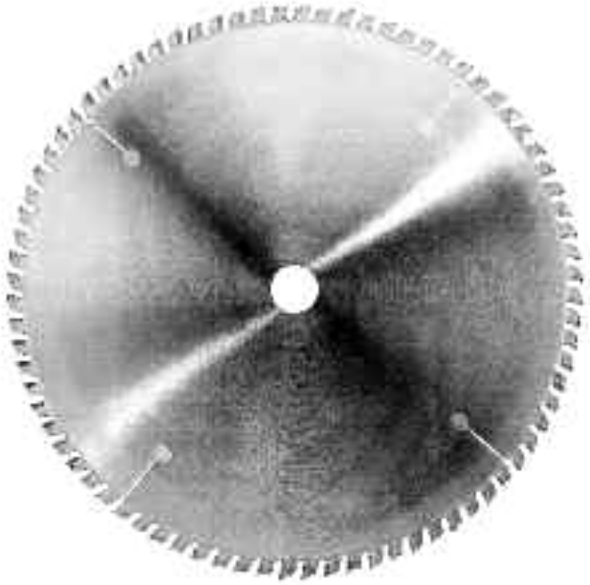
- 5º hook angle.
- Triple chip tooth design for extended tool life.
- High precision side grind on cutting tips.

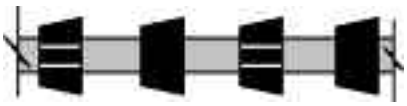


The A45E style saw blade incorporates a triple chip tooth that removes the center portion of the cut while the flat tooth removes the final kerf cut.



5º hook angle is standard on the A45E style saw blade.





Straight faced, no face shear.

NON-FERROUS CUTTING SAW BLADES

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .134 Plate	MEDIUM .135-.180 Plate	HEAVY .181-.200 Plate
10"	60			
10"	70			
10”	80			
10”	90			
10”	100			
12”	60			
12”	70			
12”	80			
12”	90			
12”	100			
14”	60			
14”	70			
14”	80			
14”	90			
14”	100			
16”	60	PRICING WILL VARY DUE TO PLATE THICKNESS.		
16”	70			
16”	80			
16”	90			
16”	100			
18”	60			
18”	70			
18”	80			
18”	90			
18”	100			
20”	60			
20”	70			
20”	80			
20”	90			
20”	100			
20”	120			
22”	60			
22”	70			
22”	80			
22”	90			
22”	100			
22”	120			

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .180 Plate	MEDIUM .180-.200 Plate	HEAVY .201-.259 Plate
24”	60			
24”	70			
24”	80			
24”	90			
24”	100			
24”	120			
26"	60			
26”	70			
26”	80			
26”	90			
26”	100			
26”	120			
28”	60			
28”	70			
28”	80			
28”	90			
28”	100			
28”	120	PRICING WILL VARY DUE TO PLATE THICKNESS.		
30”	60			
30”	70			
30”	80			
30”	90			
30”	100			
30”	120			
32”	60			
32”	70			
32”	80			
32”	90			
32”	100			
32”	120			
34”	60			
34”	70			
34”	80			
34”	90			
34”	100			
34”	120			
36”	60			
36”	70			
36”	80			
36”	90			
36”	100			
36”	120			

NOTE:
- Saws over 36" diameter must be quoted through customer service.
- Saws outside the plate thickness must be quoted through customer service.

NON-FERROUS CUTTING SAW BLADES

APPLICATIONS

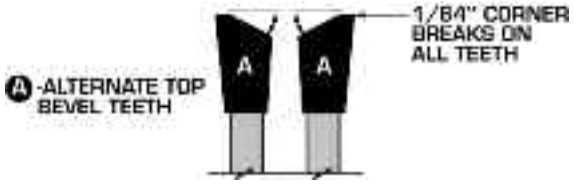
- Use when cutting thin walled non-ferrous extrusions and tubing where the wall thickness is .080" to .250" thick.
- Designed for use where close tolerances are required on the material.
- Designed for machines that have clamping mechanisms to hold the material to be cut.

ADVANTAGES

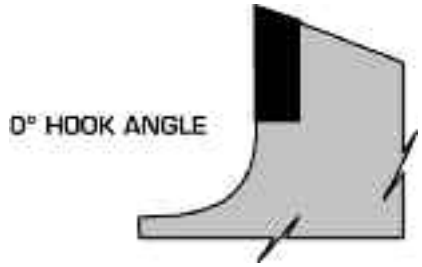
- Produces excellent finishes on the end of the material.
- Reduces or eliminates burrs on the material.
- Laser cut saw plate.
- Eliminates de-burring operations on the part.

TECHNICAL INFORMATION

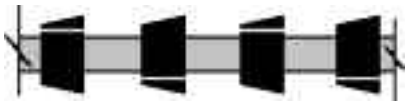
- 0º hook angle.
- Modified alternate top bevel with corner breaks.
- Corner breaks allow the saw to handle more aggressive cutting.



The modification of corner breaks on the alternate top bevel teeth reduces the vulnerability of the carbide therefore allowing the A15E to handle more abusive applications.



0º hook angle is standard on the A15E style saw blade.



Straight faced, no face shear.

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NON-FERROUS CUTTING SAW BLADES

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .134 Plate	MEDIUM .135-.180 Plate	HEAVY .181-.200 Plate
10"	60			
10"	70			
10”	80			
10”	90			
10”	100			
12”	60			
12”	70			
12”	80			
12”	90			
12”	100			
14”	60			
14”	70			
14”	80			
14”	90			
14”	100			
16”	60			
16”	70			
16”	80			
16”	90			
16”	100			
18”	60			
18”	70			
18”	80			
18”	90			
18”	100			
20”	60			
20”	70			
20”	80			
20”	90			
20”	100			
20”	120			
22”	80			
22”	90			
22”	100			
22”	120			
22”	140			
22”	160			

PRICING WILL VARY DUE TO PLATE THICKNESS.

BLADE DIAMETER	NUMBER OF TEETH	LIGHT up to .180 Plate	MEDIUM .180-.200 Plate	HEAVY .201-.259 Plate
24”	80			
24”	90			
24”	100			
24”	120			
24”	140			
24”	160			
26"	80			
26”	90			
26”	100			
26”	120			
26”	140			
26”	160			
28”	80			
28”	90			
28”	100			
28”	120			
28”	140			
28”	160			
30”	80			
30”	90			
30”	100			
30”	120			
30”	140			
30”	160			
32”	80			
32”	90			
32”	100			
32”	120			
32”	140			
32”	160			
34”	80			
34”	90			
34”	100			
34”	120			
34”	140			
34”	160			
36”	80			
36”	90			
36”	100			
36”	120			
36”	140			
36”	160			

PRICING WILL VARY DUE TO PLATE THICKNESS.

NOTE:

- Saws over 36" diameter must be quoted through customer service.
- Saws outside the plate thickness must be quoted through customer service.

Safety Guides for the operation of Carbide Tipped Saw Blades

Read Completely before attempting to operate Carbide Tipped Saw Blades.

This leaflet of safety and operating instructions is not intended to be and is not totally comprehensive; that is, it does not, and cannot, cover every possible safety problem which may arise in using specialized and standard tooling on varying machines and applications. This information is rather intended to generally describe many of the basic safety and operating procedures which should be followed, and to describe the types of safety considerations which should be considered in operating cutting tools.

None of the statements or information presented in this section should be interpreted to imply any warranty or safety protection.

The drawings do not depict any particular design, type, or size of tools, equipment or machines. The drawings are illustrative only and are not to be construed to establish any exact mode, method, or procedure.

All Federal and State laws and regulations having jurisdiction covering the safety requirements of cutting tools at the point of usage take precedence over the statements and information presented in this section. Users of cutting tools must, of course, adhere to all such regulations. As an aid to cutting tool users a number of such regulations are listed below. The list does not include all regulations that may apply:

1) The Federal Register dated June 27, 1974, Dept. of Labor, Office of Safety and Health Administration (The OSHA Act)

2) American National Standards Institute, 01.1-1975 (Safety Regulations for Woodworking Machinery)

3) American National Standards Institute, 02.1-1969 (Safety Requirements for Sawmills)

4) American National Standards Institute, P1.1-1969 (Safety Requirements for Pulp, Paper and Paperboard Mills)

5) Other ANSI, State and/or Federal Codes and Regulations which may apply in your operation.

Safety Rules which apply to the operation of all Carbide Tipped Cutting Tools

1) Always inspect the cutting tool completely before mounting. Never attempt to operate a tool which has chipped or bent teeth or cutting edges or teeth that are not sharp. You must be familiar with normal wear conditions for the type of tooling to be used. The tool must be completely clean to allow proper visual inspection.

2) Do not attempt to operate cutting tools or machinery with which you are not familiar or have not received operational training -- get assist-ance from your supervisor, his designated representative or a trainer who is familiar and properly trained and experienced on the machine to insure your safety. Become completely familiar with all of the machinery manufacturer's written instructions, guides and manuals before operating machine. You must use and be familiar with all controls, safety devices and emergency stop mechanisms to operate a machine safely.

3) Never operate a cutting tool that is not properly aligned to the direction of feed. Do not allow sideward, twisting or other than forward pressure on the cutting tool in feeding material into a cut.

4) Make sure the tool is mounted to rotate in the proper direction before cutting any material. The tool must rotate against, rather than with, the direction of feed on all hand feed machines. Do not climb on hand feed machines.

5) Do not cut material of a type, hardness[1] or density[2] other than that which the cutting tool was designed to cut. Never attempt to cut materials with a tool unless you have personally checked with your supervisor to make sure the cutting tool was designed for the specific type of material you wish to cut, and for the depth of cut desired. This is particularly important when attempting to cut "stacked" material, i.e., cutting more than one piece at a time.

6) Never force-feed materials into a cutting tool such that it causes the tool or machine motor to slow down below operating speeds. A safe and proper cutting operation will not require much force in feeding material. If material begins to "ride up" on the cutting tool, or requires undue pressure to feed the material into the tool, or if undue vibration is experienced, do not continue the cut -- turn off all power and correct the condition.

7) Keep body and clothing well clear of all cutting tools and other moving parts while the machine is in operation. Use work holding fixtures and mechanical feed devices in all possible cases. When cutting material of such size, shape or type that it necessitates close approximation to the cutter and mechanical feed mechanisms cannot be used, use a wood "push stick" to feed the material so that no part of your body or clothing comes close to the cutting tool.

8) Never attempt to clean a cutting tool or clear pieces of material from the cutting area while machine power is "on" or when cutting tools, material or any

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1. **Hardness** is the resistance of a material to being cut or the strength of a material to resist tearing or breaking.
2. **Density** is the compactness of a material compared to its volume.

part of the machine is moving. Allow cutter rotation to stop by itself, or by use of a brake if supplied on the machine. Never attempt to stop or slow a rotating cutting tool by applying a hand-held or any other object to the cutter, arbor, spindle or drive as a brake.

9) Do not place your body in the rotational path of a cutting tool unless absolutely necessary, and then only if there is a complete and adequate barrier between you and the cutting tool. Remember that carbide tips are very hard and, therefore, brittle. The tips can break away under incorrect side thrust or twisting forces, or if foreign material is allowed to contact the tips. An operator can reduce the danger of being hurt by a "kickback" of the material if he always stands beside the material he is feeding into the machine rather than in back of it.

10) Never leave machines unattended while cutting tools are still rotating or any part of the machine or material is moving.

11) Never operate a machine without using all of the hoods, guards, hold-downs and safety devices for the machine being operated.

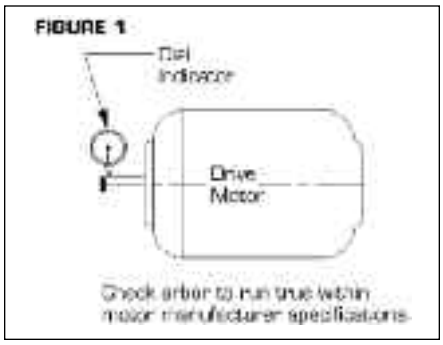
12) Machines must be maintained to the manufacturer's standards and current safety standards.

13) Always wear safety glasses or face shield to completely protect your eyes when operating cutting tools.

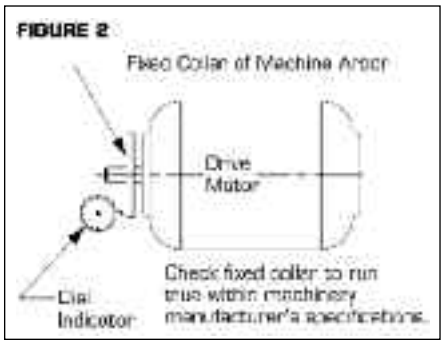
Circular Saw Blades and Saw Machine Tools Mounting Instructions

1) Turn off and lock out all machine power. Clean the saw arbor, saw collars, sleeve and arbor nut. Remove nicks and burrs by very lightly honing any nicked or burred area. (Do not use coarse files or abrasives).

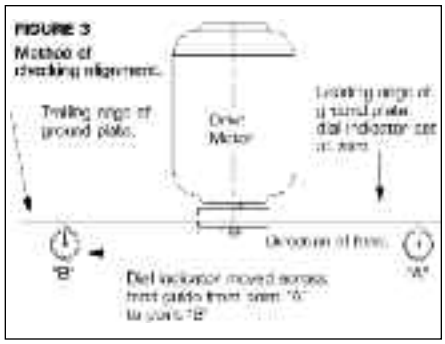
2) With all machine power off and locked out, pull and push on the machine arbor sideways in and out by hand (without rotating the arbor). There should be no feeling of movement. Next, rotate the arbor by hand. If the bearings are in proper condition, the arbor should turn freely with no sticking or rubbing. To check the arbor, set up a dial indicator as shown in Fig. 1. The arbor should run true within the motor manufacturer's specifications. Set the



dial indicator to bear on the fixed collar of the arbor and turn the arbor (Fig. 2). The collar should run true within the machine manufacturer's specifications.



3) With all power off and locked out, align the saw blade with the direction of feed. A method of checking alignment is to mount a flat ground plate of 10 or 12 inches diameter by 1/4 inch thick on the saw arbor in the same manner as a saw blade. (see Fig.3). Set up a dial indicator so it can be moved by hand along the guide rail or feed mechanism. Position the dial indicator so it can traverse across the plate either above or below the mounting collars. Set the dial indicator to zero at the leading edge of the plate (Position A. Fig. 3) and move it across the plate to the trailing edge (Position B, Fig. 3). Any error in the plate flatness can be eliminated by rotating the plate by hand so that point A is moved to point B when reading the indicator. Any deviation in angularity between the saw blade and the direction of feed should be maintained within the machine manufacturer's recommendations. On double cut-off and panel trim machines any slight angularity in alignment should be controlled so that the trailing edge of the saw blades do not re-cut the material.

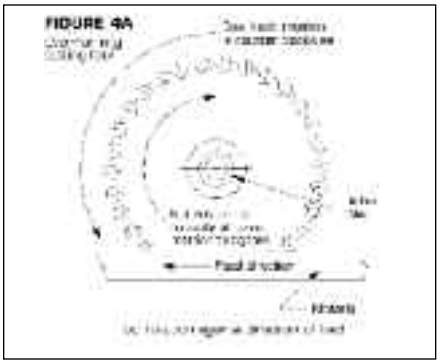


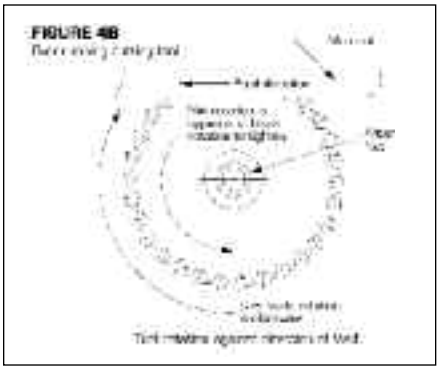
4) With all machine power off and locked out, inspect the saw blade before mounting. The bore (center hole) must be the correct size and fit snugly. Do not force a saw or other type of tool on an arbor. Do not tighten mounting screws unequally, or use incorrectly fitted keys. Incorrect mounting of saws or other tools can cause tool breakage and create dangerous operating conditions. Never mount a saw blade with a damaged (deeply scored or out of round) bore or arbor. Inspect the teeth carefully. Do not mount blades with damaged bodies, dull or damaged (bent or chipped) teeth. Never use anything other than accurate metal shims or spacers if saw blades have to be positioned on the arbor. Never use shims to "wobble" a saw blade.[3] Be sure that all saw collars used match exactly in diameter. Closely check to see that the arbor nut threads are not worn and the wrench surfaces of the arbor nut are not rounded off.

5) With all machine power off and locked out, mount the saw blade on the arbor making sure that the saw blade is turning in the correct rotation and that the arbor nut tightens in a direction

3. Mounting a saw blade to "wobble" means to shim the blade body unequally on one side, throwing the saw out of alignment with the arbor. This causes the saw to make a wider cut and dangerously increases pressures on the tool.

opposite to the blade rotation (See Fig. 4A & 4B). Unless the machine is specifically designed for such cutting, never mount saw machine tools to "climb cut" (teeth cutting in the same direction of feed) on manually fed machines. Never use saw blades on operations for which they were not designed; for example, do not use rip design blades to cut across the grain, etc.





Circular Saw Blades and Saw Machine Tools Start-Up Procedure

1) Turn off and lock out all machine power. Never assume previously set machine or tool conditions to be correct. Be sure that the tool is correctly mounted, properly locked on the arbor (See Fig. 4A & 4B), turns freely (no foreign objects in tool rotation path) and is properly positioned for the cutting operation required (See Fig. 3). Check to see that the cutting tool is not dull or damaged. Check to see that the body of the saw blade is not cracked.[4] Take special precaution to check "stacked cutters" to be sure that all bolts, pins and threaded parts are not worn or damaged, and are properly mounted. Be sure that hubs on all "split" circular tools are properly fitted and pinned and that the locking collars are in place fit properly. Do not use locking collars that are not matched to the "split tool." Split collars on split tools are not recommended.

2) With all machine power off and locked out, insure that you are not attempting to operate tools that do not conform to the machine manufacturer's machine load specifications in either size or weight, or that do not mount according to the machine design limitations. Operate saw machine tools only on the type of materials, cutting loads and operation applications for which the tools were designed. (If you don't know this information, ask your supervisor.) Do not operate saw blades or saw machines tools in excess of the machine or tool manufacturer's specifications, or current applicable OSHA standards, or in excess of 18,000 sfm (surface feet per minute).[5] (See charts A & B following).

3) With all machine power off and locked out, position the cutting tool, material guides and material hold-downs so that the material to be cut is fully supported. This will insure there will be minimal material vibration. Next, follow the machine manufacturer's instructions to mount all guards over the tools such that the guards are close to, but properly clear, the material being cut. Mount and activate all of the machine safety devices such as anti-kickback mechanisms, spreaders, dust hoods and safety switches. Make sure all personnel and all loose or foreign objects are clear of the machine and cutting tools.

4) Turn on machine power. Start the tool rotating slowly before feeding material. This is done by "jogging" (that is, pressing the start button and immediately after that pressing the stop button). At a safe distance, observe the operating condition of the tools (by sight and sound) as they rotate slowly. Next, Turn all machine power OFF and locked out, wait until all cutting tools stop rotating by themselves (do not attempt to stop their rotation yourself unless a brake is specifically provided for that purpose on the machine), and make any necessary corrections. Go through all steps noted in paragraph 3, just above, before you turn the machine power ON. Press the start button and allow the machine to operate at full speed for at least one minute before feeding material.

CHART A

18,000 SFM (surface feet per minute) maximum RPM rotating speeds for carbide tipped circular saw blades typical of commercial design, thickness and grade standards. (Do NOT operate carbide tipped circular saw blades above the rpm rotating speeds shown.)

SAW DIA. (INCHES)	MAXIMUM RPM	SAW DIA. (INCHES)	MAXIMUM RPM	SAW DIA. (INCHES)	MAXIMUM RPM
6	11538*	24	2885	44	1573
7	9890*	26	2663	46	1505
8	8654*	28	2473	48	1442
10	6923*	30	2308	50	1385
12	5769*	32	2163	52	1331
14	4945*	34	2036	54	1282
16	4327*	36	1923	56	1236
18	3846*	38	1822	58	1194
20	3461	40	1731	60	1154
22	3147	42	1648		

*Operation of saw blades in excess of 3600 RPM is not recommended and will generally result in poor tool life and cut quality. NOTE: Most materials will cut better with longer tool life at speeds well below the maximum RPM rotating speed.

CHART B

Maximum rim speeds, in surface feet per minute (SFM), for carbide tipped circular saw blades cutting the materials listed below.

MAGNESIUM	COPPER	LEAD	UNDER 150 BRINELL BRASS	UNDER 150 BRINELL BRONZE
15,000 SFM	10,000 SFM	14,000 SFM	10,000 SFM	12,000 SFM

Soft & Medium Hard Aluminum 18,000 SFM	Hard, Anodized Aluminum 12,000 SFM	Note: Most metals, including those listed, will cut better with longer tool life at speeds below the maximum surface feet per minute (sfm) rim speeds.

4. "All cracked saws shall be removed from service," Department of Labor OSHA Standards, Federal Register 29 CFR Part 1910.213(S) (7)
5. The term "surface feet per minute" refers to the peripheral or rim speed of a cutting tool. See "Operating Speeds for Carbide Tipped Rotary Cutting Tools" below.
6. **Toughness** is the resistance of a material to being cut or the strength of a material to resist tearing or breaking.
7. **Density** is the compactness of a material compared to its volume.

Operating Speeds for Carbide Tipped Circular Saw Blades

Carbide tipped circular saw blades of the types commonly used in the machining of materials typical of the toughness and density range of most wood species, composition boards, medium hard plastics, and the softer non-ferrous metals must never be operated in excess of the machinery or tool manufacturer's recommendations, or current applicable OSHA standards, or in excess of 18,000 sfm (surface feet per minute) whichever is lowest. Surface feet per minute (sfm) refers to the peripheral or rim speed of a cutting tool, that is, the speed at which the outer cutting teeth are rotating when the tool is at full speed. This speed increases as the tool diameter and/or motor arbor or spindle rpm increase. The maximum speed of 18,000 sfm is allowable only when the machinery being used is in excellent operating condition and is excellently maintained. When using older or worn machinery, or when cutting materials of an unusual toughness or density the surface feet per minute or material feed rate, or both, should be reduced to speeds where the tool cuts easily and freely without excessive vibration or high tooth impact shock. Most woods, plastics and the medium-hard nonferrous metals will cut better with longer tool life at surface feet per minute ranging from 8,000 sfm to 16,000 sfm depending on the hardness and machining characteristics of the material being cut. As the rim speed (surface feet per minute) of a circular saw blade is decreased, feed rates must be decreased accordingly to prevent the forcing of material into the cutting tool and overloading of the cutting teeth.

The method of determining the surface feet per minute (sfm) of a rotary cutting tool is as follows:

.26 x D x RPM =	SFM
where D =	diameter of the tool in inches
RPM =	rotating speed, in revolutions per minute
SFM =	rim speed, in surface feet per minute
.26 =	this number is used to convert the tool circumference from inches to feet (3.14 divided by 12)

Remember that changing to a larger diameter cutting tool at the same machine spindle or arbor speed increases the surface feet per minute rim speed of the tool. Never make assumptions as to any machine motor rpm since machines and individual motors can be modified. Without any cutting tools mounted on the machine, check the rpm of each motor using an rpm tachometer- meter. Once the cutting tool diameter and motor rpm are known, you can check Chart A to see if a saw blade will be operating within the 18,000 surface feet per minute maximum rim speed specified. For diameters not covered by Chart A, use the sfm (surface feet per minute) formula above. For the circular sawing of magnesium, copper, lead, brass, or bronze, note the LOWER surface speed limitations on Chart B. For harder or more difficult to cut materials, consul the tool manufacturer.

WOOD MACHINERY MANUFACTURERS OF AMERICA
Cutting Tool Manufacturers' Division

Service Process for Saw Blades

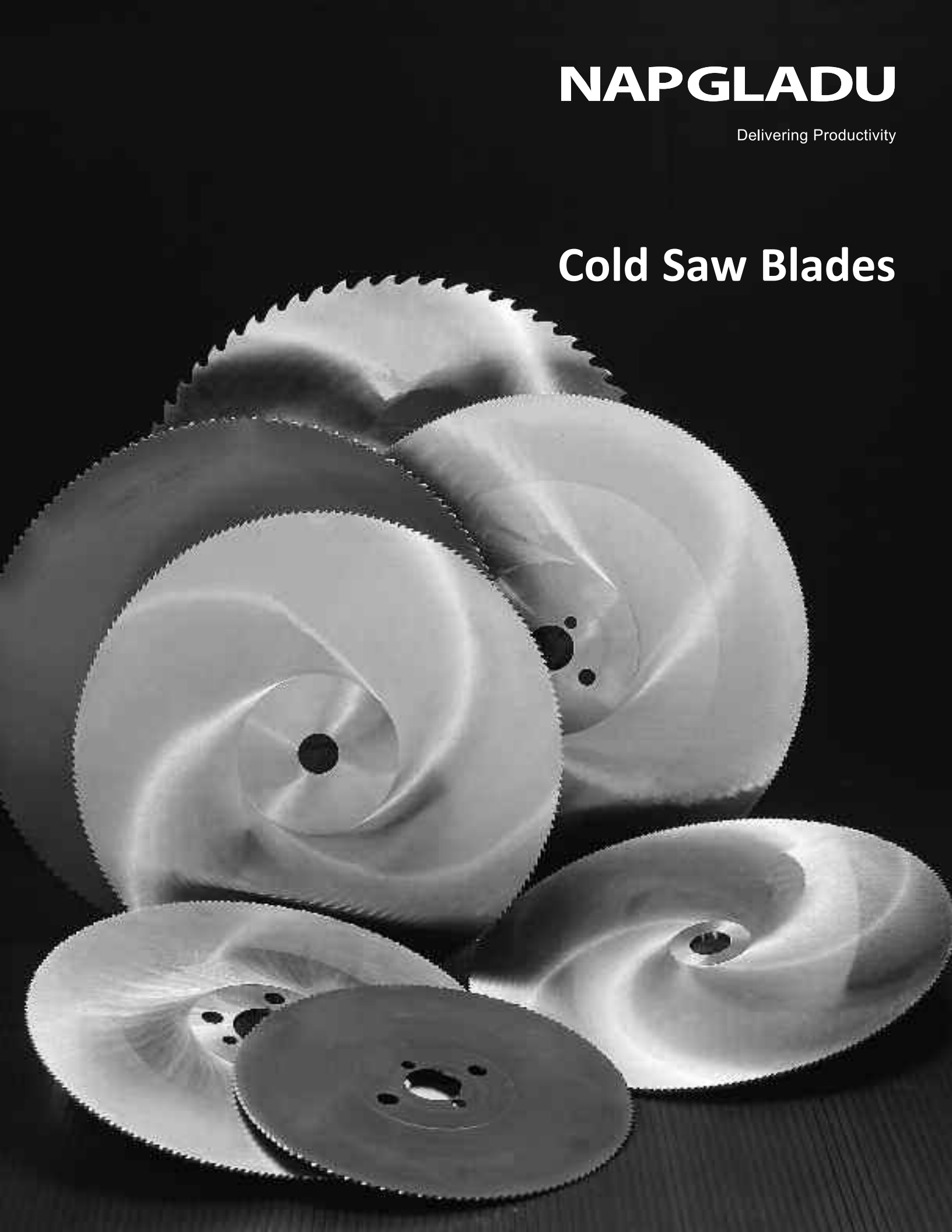
From simple tooth sharpening to extensive tool repair, NAP Gladu's six-step service process returns worn, dull tools to their original working condition.

1) **Inspection.** Following ultrasonic cleaning, tools undergo a thorough inspection for repairs. If tool damage is more significant than the tool's worth, you will be advised.
2) **Tip Replacement.** NAP Gladu uses only the highest quality carbide and silver solder. Damaged tips are replaced with new ones and ground to exact specifications.
3) **Straightening.** Utilizing close-tolerance testing, even the slightest misalignment on saw blades is corrected.
4) **Sharpening.** Our exclusive, high precision grinding process machines each tooth on the face, top and sides, then hones it to the sharpest cutting edge possible.
5) **Retensioning.** Rarely offered by other companies, this process realigns a sawblade's molecular structure to restore proper tension to the saw body. This can increase cutting life by up to 40%.
6) **Cleaning/Polishing.** For better cuts and less drag, all cutting tools are completely cleaned and polished to put the finishing touch on our comprehensive program.

NAPGLADU

Delivering Productivity

Cold Saw Blades



ORDERING INSTRUCTIONS

In order to select the correct blade for your application, the following information is required on every new tool order.

TOOL NUMBER
Enter the tool number into the style block of your new tool order.

NUMBER OF TEETH
Specify the required number of teeth from the selection charts on pages 44 & 45.

TOOTH STYLE
Utilize the chart found on pages 44 & 45 and also from page 46 in order to determine the best tooth style required.

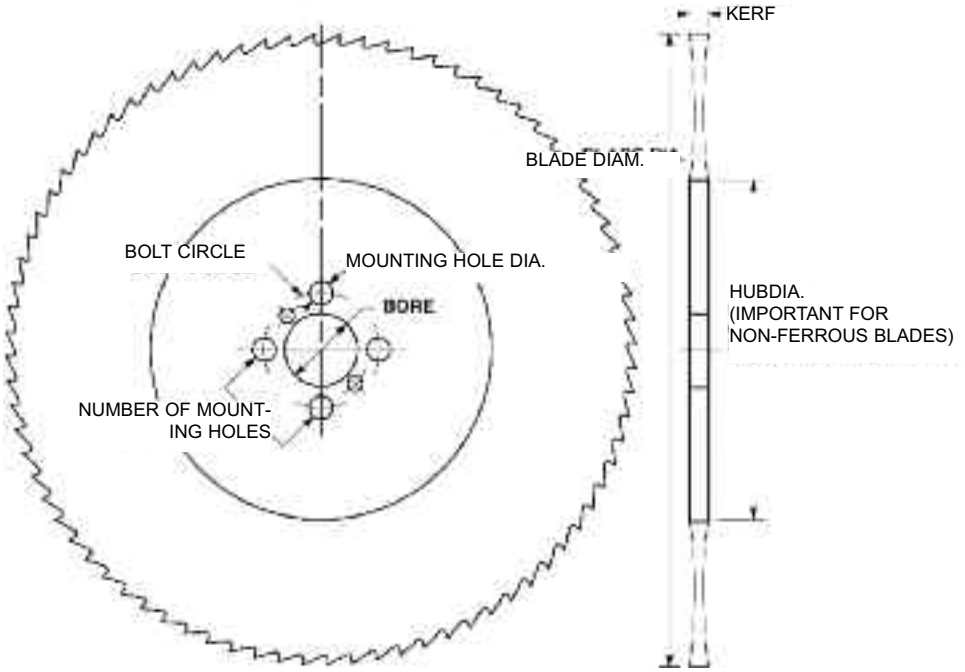
HUB DIAMETER
Be sure to check the hub diameters listed on page 60 to accommodate the maximum depth of cut.

MOUNTING HOLES AND SPACING
- Quantity (Specify the number of mounting holes req'd.)
- Diameter (Specify the diameter of the mounting holes.)
- Bolt Circle (Specify the bolt circle diameter.)
- Specify the spacing of the mounting holes (i.e. 180º apart)

MATERIAL BEING CUT
Specify the type of material being cut and its dimensions and/or wall thickness.

RPM
You must specify the RPM.

COATINGS
If you require a coating please refer to page 5, 61, 64 & 65 for NAP Gladu's offering and additional charges.



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SELECTING THE RIGHT COLD SAW BLADE FOR YOUR APPLICATION

Ferrous and Stainless Steel Cutting Cold Saws

Step One
Refer to pages 44 & 45 and find the material thickness/and or wall thickness that corresponds to the material you are going to cut on the left hand side of the chart. Follow this line across to the corresponding saw blade diameter you wish to use. This block of information will give you the number of teeth required as well as the tooth style.

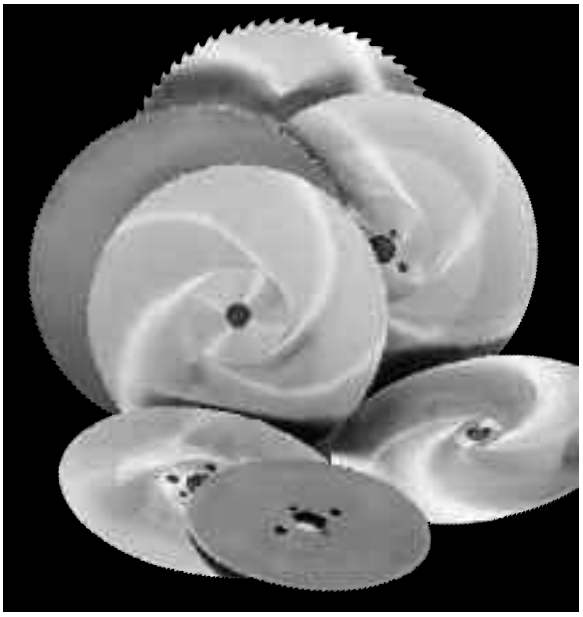
Example: Cutting Ferrous Tubing that is 2" diameter x .100" wall thickness. You are using a 300mm diameter cold saw. The recommended number of teeth is 220 and the tooth style is a “C.” Tooth styles are shown on page 46.

Step Two
The availability of this tool can be found on pages 47 & 48 for Standard Cold Saw Blades and pages 49 & 50 for Cobalt Cold Saw Blades.

Example: A 300mm diameter Ferrous or Stainless Steel cutting Cutting Cold Saw with a 40mm bore and a kerf of 2.5mm would be tool number CF654 on page 47. Looking at the right of item CF654 you will notice the Pinhole specifications. Please be sure that your requirements for pinholes can be found in this column.

Step Three
Refer to the checklist on page 42 to determine the information required for a Cold Saw Blade order.

Note: Most of the applications will be a duplicate of what you are presently using; however, the number of teeth and kerfs in our standard product offering may vary slightly. This variation will not be significant enough to affect the quality of the cut or tool life.



CUTTING FERROUS SOLID STOCK MATERIAL

(Number of Teeth and Grind Style Selection Chart)

	COLD SAW BLADE DIAMETER						
Thickness of Solid Material in inches	225mm 9”	250mm 10”	275mm 10-3/4”	300mm 12	315mm 12-1/2”	350mm 14”	400mm 16”
1/4” - 3/4”	180BW	180C	200C	220BW	220BW	280BW	320BW
3/4” - 1-1/4”	120C	120C	140C	180C	180C	240BW	220BW
1-1/4” - 1-3/4”	100C	100C	120C	140C	140C	200C	180C
1-3/4” - 2-1/4”	80C	80C	100C	120C	120C	140C	120C
2-1/4” - 2-3/4”	60C	60C	70C	80C	80C	90C	80C
2-3/4” - 3-1/2”				60C	60C	80C	60C

When cutting stainless use the same chart and multiply the number of teeth by a factor of 1.2.

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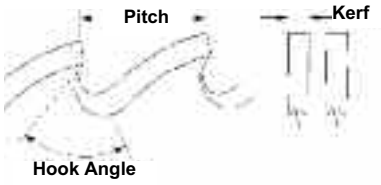
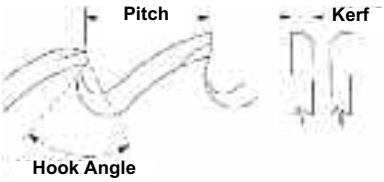
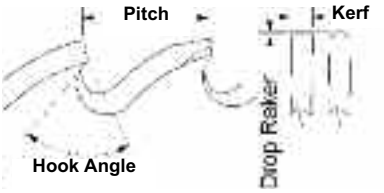
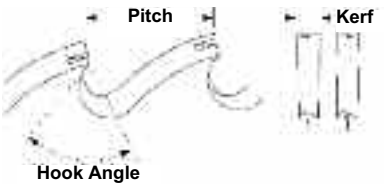
CUTTING FERROUS TUBING, PIPE AND STRUCTURAL SHAPES

(Number of Teeth and Grind Style Selection Chart)

		COLD SAW BLADE DIAMETER						
Tube Diameter	Wall Thickness	225mm 9”	250mm 10”	275mm 10-3/4”	300mm 12”	315mm 12-1/2”	350mm 14”	400mm 16”
1/2”	.030” - .090”	220BW	240BW	280BW	300BW	300BW	320BW	340BW
1/2”	.090” - .150”	200BW	220BW	240BW	280BW	280BW	300BW	320BW
1”	.030” - .060”	220BW	240BW	280BW	300BW	300BW	320BW	340BW
1”	.060” - .090”	220BW	220BW	240BW	280BW	280BW	300BW	320BW
1”	.090” - .150”	180BW	220BW	220BW	240BW	240BW	280BW	300BW
1-1/2”	.030” - .060”	220BW	240BW	260BW	300BW	300BW	320BW	340BW
1-1/2”	.060” - .090”	200BW	220BW	240BW	280BW	280BW	300BW	320BW
1-1/2”	.090” - .150”	180BW	200BW	220BW	240BW	240BW	280BW	300BW
1-1/2”	.150” - .250”	140C	160C	180C	200C	200C	220C	240BW
2”	.030” - .060”	240BW	260BW	280BW	300BW	300BW	320BW	340BW
2”	.060” - .090”	180BW	200BW	220BW	240BW	240BW	280BW	300BW
2”	.090” - .180”	140C	160C	180C	220C	200C	220C	240BW
2”	.180” - .300”	120C	140C	160C	180C	180C	200C	220C
2”	.300” - .500”	100C	110C	120C	140C	140C	160C	180C
2-1/2”	.030” - .060”	240BW	260BW	280BW	300BW	300BW	320BW	340BW
2-1/2”	.060” - .090”	200BW	220BW	240BW	260BW	260BW	280BW	300BW
2-1/2”	.090” - .150”	180BW	160C	180C	200C	200C	220C	240BW
2-1/2”	.150” - .250”	120C	140C	160C	180C	180C	200C	220C
2-1/2”	.250” - .400”	100C	110C	120C	140C	140C	160C	180C
2-1/2”	.400” - .500”	90C	100C	110C	120C	120C	140C	160C
3”	.030” - .060”			280BW	300BW	300BW	320BW	340BW
3”	.060” - .090”			240BW	260BW	260BW	280BW	300BW
3”	.090” - .150”			180C	200C	200C	220C	240BW
3”	.150” - .250”			160C	180C	180C	200C	220C
3”	.250” - .400”			120C	140C	140C	160C	180C
3”	.400” - .500”			100C	120C	120C	140C	160C
3-1/2”	.030” - .060”				300BW	300BW	320BW	340BW
3-1/2”	.060” - .090”				260BW	260BW	280BW	300BW
3-1/2”	.090” - .150”				200C	200C	220C	240BW
3-1/2”	.150” - .250”				180C	180C	200C	220C
3-1/2”	.250” - .400”				140C	140C	160C	180C
3-1/2”	.400” - .500”				120C	120C	140C	160C

When cutting stainless use the same chart and multiply the number of teeth by a factor of 1.2.

AVAILABLE TOOTH STYLES FOR FERROUS SAW BLADES

Description of Teeth	Tooth Style	Profile of Tooth Style	Comments for use of Particular Tooth Style
Single or Curved Teeth	**B**		Used especially for thin kerf saws of 2mm and less. Works well on small profiles and thin tubes and where changes in wall thickness is encountered.
Acme Curved Teeth	**BW**		Used for cutting thin walled steel tubing. It has an alternate top bevel. Ideally suited for fine tooth pitch of 4mm or less.
Heller or Cochrane Teeth High Output	**C**		Most commonly used tooth style for cutting Ferrous material. The triple chip design splits the cutting pressure between two teeth. For solid sections and thick wall tubing. Generally used on open tooth pitch of 5mm and larger.
Tooth B with Chipbreaker (Notch Grind)	**BS**		A new generation of tooth forms specifically designed for cutting thin-walled tubes and profiles with a maximum wall thickness of .098" (2.5mm). Primarily used on ferrous but also suited for hard tempered non-ferrous materials. The notch provides chip relieve with-out sacrificing the number of effective cutting teeth on the sides. Increased cutting speed and improved cut finish are possible compared to conventional BW & C grinds. This grind is limited to a kerf of 2.2mm and larger with a tooth pitch of 4mm or larger. This tooth style should only be used for production cutting on stable machines with power feed.

Safety Warning: ***Ferrous Cold Saw Blades must not to exceed 1,000 SFM.***
Cobalt Ferrous Cold Saw Blades not to exceed 1,250 SFM.
SFM=.262 X Diameter X RPM

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FERROUS AND STAINLESS STEEL

HSS/DMo5 (M2) Fully Hardened and Tempered to 63/65Rc. Black Finish (BL-OV) Steam Oxide Vapor Treatment Standard.

Part Number	Diameter mm	Diameter in.	Kerf mm	Bore Size	Pinholes Qty./Dia./B.C.	Hub Diameter
CF600A	160mm	6.30”	1.2mm	32mm	1/8/50 1/9/60	99mm
CF602A	160mm	6.30”	1.5mm	32mm	1/8/50 1/9/60	99mm
CF604A	200mm	7.87”	2.0mm	32mm	2/8.5/45 2/12/64	90mm
CF606A	200mm	7.87”	2.0mm	32mm	2/8.5/45 4/9/50 2/12/64	90mm
CF608A	225mm	8.86”	1.6mm	32mm	2/8.5/45 4/9/50 2/12/64	90mm
CF610A	225mm	8.86”	1.6mm	40mm	2/9/55 4/12/64	140mm
CF612A	225mm	8.86”	2.0mm	32mm	2/8.5/45 4/9/50 2/12/64	90mm
CF614A	225mm	8.86”	2.0mm	32mm	2/8.5/45 2/12/64	90mm
CF616A	225mm	8.86”	2.0mm	40mm	2/9/55 4/12/64	140mm
CF618A	250mm	9.84”	1.6mm	40mm	2/9/55 4/12/64	90mm
CF620A	250mm	9.84”	1.6mm	32mm	2/8.5/45 2/12/64	90mm
CF622A	250mm	9.84”	2.0mm	32mm	2/8.5/45 2/12/64	90mm
CF624A	250mm	9.84”	2.0mm	32mm	2/8.5/45 4/9/50 2/12/64	110mm
CF626A	250mm	9.84”	2.0mm	40mm	2/9/55 4/12/64	90mm
CF628A	250mm	9.84”	2.5mm	32mm	2/8.5/45 2/12/64	90mm
CF630A	250mm	9.84”	2.5mm	32mm	2/8.5/45 4/9/50 2/12/64	110mm
CF632A	250mm	9.84”	2.5mm	40mm	2/9/55 4/12/64	90mm
CF634A	275mm	10.83”	2.0mm	32mm	2/8.5/45 2/12/64	100mm
CF636A	275mm	10.83”	2.0mm	40mm	2/9/55 4/12/64	100mm
CF638A	275mm	10.83”	2.5mm	32mm	2/8.5/45 2/12/64	100mm
CF640A	275mm	10.83”	2.5mm	32mm	2/8.5/45 4/9/50 2/12/64	110mm
CF642A	275mm	10.83”	2.5mm	40mm	2/9/55 4/12/64	100mm
CF644A	275mm	10.83”	3.0mm	32mm	2/8.5/45 2/12/64	100mm
CF646A	275mm	10.83”	3.0mm	40mm	2/9/55 4/12/64	100mm
CF648A	300mm	11.81”	2.5mm	32mm	2/8.5/45 2/12/64	100mm
CF650A	300mm	11.81”	2.5mm	32mm	2/8.5/45 4/9/50 2/12/64	110mm
CF652A	300mm	11.81”	2.5mm	38mm	2/9/55	100mm
CF654A	300mm	11.81”	2.5mm	40mm	2/9/55 4/12/64	100mm
CF656A	300mm	11.81”	3.0mm	32mm	2/8.5/45 4/9/50 2/12/64	100mm
CF658A	300mm	11.81”	3.0mm	40mm	2/9/55 4/12/64	100mm
CF660A	300mm	11.81”	3.5mm	32mm	2/8.5/45 2/12/64	100mm
CF662A	300mm	11.81”	3.5mm	40mm	2/9/55 4/12/64	100mm

A = Available Item Shipped within 8 working days from the time the order is placed.
Bore sizes and mounting holes not listed are available by special quote only.
The number of teeth in Ferrous and Stainless Cutting Cold Saws are to be taken from the chart on page 44 & 45.

NAPGLADU
Delivering Productivity

Ferrous Standard Saw Blades

FERROUS AND STAINLESS STEEL

HSS/DMo5 (M2) Fully Hardened and Tempered to 63/65Rc. Black Finish (BL-OV) Steam Oxide Vapor Treatment Standard.

Part Number	Diameter mm	Diameter in.	Kerf mm	Bore Size	Pinholes Qty./Dia./B.C.	Hub Diameter
CF664A	315mm	12.40”	2.5mm	32mm	2/8.5/45 4/9/50 2/12/64	100mm
CF666A	315mm	12.40”	2.5mm	32mm	2/8.5/45 2/12/64	100mm
CF668A	315mm	12.40”	2.5mm	40mm	2/9/55 4/12/64	100mm
CF670A	315mm	12.40”	3.0mm	32mm	2/8.5/45 4/9/50 2/12/64	100mm
CF672A	315mm	12.40”	3.0mm	32mm	2/8.5/45 2/12/64	100mm
CF674A	315mm	12.40”	3.0mm	40mm	2/9/55 4/12/64	100mm
CF676A	325mm	12.80”	2.5mm	32mm	2/8.5/45 2/12/64	100mm
CF678A	325mm	12.80”	2.5mm	40mm	2/9/55 4/12/64	100mm
CF680A	325mm	12.80”	3.0mm	40mm	2/9/55 4/12/64	100mm
CF682A	350mm	13.78”	2.5mm	32mm	2/8.5/45 4/9/50 2/12/64	120mm
CF684A	350mm	13.78”	2.5mm	32mm	2/8.5/45 2/12/64	120mm
CF686A	350mm	13.78”	2.5mm	40mm	2/9/55 4/12/64	120mm
CF688A	350mm	13.78”	2.5mm	50mm	4/15/80 4/15/85	120mm
CF690A	350mm	13.78”	3.0mm	32mm	2/8.5/45 2/12/64	120mm
CF692A	350mm	13.78”	3.0mm	32mm	2/8.5/45 4/9/50 2/12/64	120mm
CF694A	350mm	13.78”	3.0mm	40mm	2/9/55 4/12/64	120mm
CF696A	350mm	13.78”	3.0mm	50mm	2/9/55 4/12/64	120mm
CF698A	370mm	14.57”	3.0mm	32mm	2/8.5/45 2/12/64	120mm
CF700A	370mm	14.57”	3.0mm	40mm	2/9/55 4/12/64	120mm
CF702A	370mm	14.57”	3.0mm	50mm	4/15/80 4/15/85	120mm
CF704A	400mm	15.75”	3.0mm	40mm	2/9/55 4/12/64	120mm
CF706A	400mm	15.75”	3.0mm	50mm	4/15/80 4/15/85	120mm
CF708A	400mm	15.75”	3.5mm	40mm	2/9/55 4/12/64	120mm
CF710A	400mm	15.75”	3.5mm	50mm	4/15/80 4/15/85	120mm
CF712A	425mm	16.73”	3.5mm	40mm	2/9/55 4/12/64	120mm
CF714A	425mm	16.73”	3.5mm	50mm	4/15/80 4/15/85	120mm
CF716A	450mm	17.72”	3.5mm	40mm	2/9/55 4/12/64	130mm
CF718A	450mm	17.72”	4.0mm	40mm	2/9/55 4/12/64	130mm
CF720A	450mm	17.72”	3.5mm	50mm	4/15/80 4/15/85	130mm

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Bore sizes and mounting holes not listed are available by special quote only.
The number of teeth in Ferrous and Stainless Cutting Cold Saws are to be taken from the chart on page 44 & 45.

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FERROUS AND STAINLESS STEEL

SCX HSS -E-Cobalt M35 Fully Hardened and Tempered to 64/66Rc. Black Finish (BL-OV) Steam Oxide Vapor Treatment Standard.

Part Number	Diameter mm	Diameter in.	Kerf mm	Bore Size	Pinholes Qty./Dia./B.C.	Hub Diameter
CQ400A	160mm	6.30”	1.2mm	32mm	1/8/50 1/9/60	99mm
CQ402A	160mm	6.30”	1.5mm	32mm	1/8/50 1/9/60	99mm
CQ404A	200mm	7.87”	2.0mm	32mm	2/8.5/45 2/12/64	90mm
CQ406A	200mm	7.87”	2.0mm	32mm	2/8.5/45 4/9/50 2/12/64	90mm
CQ408A	225mm	8.86”	1.6mm	32mm	2/8.5/45 4/9/50 2/12/64	90mm
CQ410A	225mm	8.86”	1.6mm	40mm	2/9/55 4/12/64	140mm
CQ412A	225mm	8.86”	2.0mm	32mm	2/8.5/45 4/9/50 2/12/64	90mm
CQ414A	225mm	8.86”	2.0mm	32mm	2/8.5/45 2/12/64	90mm
CQ416A	225mm	8.86”	2.0mm	40mm	2/9/55 4/12/64	140mm
CQ418A	250mm	9.84”	1.6mm	40mm	2/9/55 4/12/64	90mm
CQ420A	250mm	9.84”	1.6mm	32mm	2/8.5/45 2/12/64	90mm
CQ422A	250mm	9.84”	2.0mm	32mm	2/8.5/45 2/12/64	90mm
CQ424A	250mm	9.84”	2.0mm	32mm	2/8.5/45 4/9/50 2/12/64	110mm
CQ426A	250mm	9.84”	2.0mm	40mm	2/9/55 4/12/64	90mm
CQ428A	250mm	9.84”	2.5mm	32mm	2/8.5/45 2/12/64	90mm
CQ430A	250mm	9.84”	2.5mm	32mm	2/8.5/45 4/9/50 2/12/64	110mm
CQ432A	250mm	9.84”	2.5mm	40mm	2/9/55 4/12/64	90mm
CQ434A	275mm	10.83”	2.0mm	32mm	2/8.5/45 2/12/64	100mm
CQ436A	275mm	10.83”	2.0mm	40mm	2/9/55 4/12/64	100mm
CQ438A	275mm	10.83”	2.5mm	32mm	2/8.5/45 2/12/64	100mm
CQ440A	275mm	10.83”	2.5mm	32mm	2/8.5/45 4/9/50 2/12/64	110mm
CQ442A	275mm	10.83”	2.5mm	40mm	2/9/55 4/12/64	100mm
CQ444A	275mm	10.83”	3.0mm	32mm	2/8.5/45 2/12/64	100mm
CQ446A	275mm	10.83”	3.0mm	40mm	2/9/55 4/12/64	100mm
CQ448A	300mm	11.81”	2.5mm	32mm	2/8.5/45 2/12/64	100mm
CQ450A	300mm	11.81”	2.5mm	32mm	2/8.5/45 4/9/50 2/12/64	110mm
CQ452A	300mm	11.81”	2.5mm	38mm	2/9/55	100mm
CQ454A	300mm	11.81”	2.5mm	40mm	2/9/55 4/12/64	100mm
CQ456A	300mm	11.81”	3.0mm	32mm	2/8.5/45 4/9/50 2/12/64	100mm
CQ458A	300mm	11.81”	3.0mm	40mm	2/9/55 4/12/64	100mm
CQ460A	300mm	11.81”	3.5mm	32mm	2/8.5/45 2/12/64	100mm
CQ462A	300mm	11.81”	3.5mm	40mm	2/9/55 4/12/64	100mm

A = Available Item Shipped within 8 working days from the time the order is placed.
Bore sizes and mounting holes not listed are available by special quote only.
The number of teeth in Ferrous and Stainless Cutting Cold Saws are to be taken from the chart on page 44 & 45.

NAPGLADU
Delivering Productivity

Ferrous Cobalt Saw Blades

FERROUS AND STAINLESS STEEL

SCX HSS -E-Cobalt M35 Fully Hardened and Tempered to 64/66Rc. Black Finish (BL-OV) Steam Oxide Vapor Treatment Standard.

Part Number	Diameter mm	Diameter in.	Kerf mm	Bore Size	Pinholes Qty./Dia./B.C.	Hub Diameter
CQ464A	315mm	12.40”	2.5mm	32mm	2/8.5/45 4/9/50 2/12/64	100mm
CQ466A	315mm	12.40”	2.5mm	32mm	2/8.5/45 2/12/64	100mm
CQ468A	315mm	12.40”	2.5mm	40mm	2/9/55 4/12/64	100mm
CQ470A	315mm	12.40”	3.0mm	32mm	2/8.5/45 4/9/50 2/12/64	100mm
CQ472A	315mm	12.40”	3.0mm	32mm	2/8.5/45 2/12/64	100mm
CQ474A	315mm	12.40”	3.0mm	40mm	2/9/55 4/12/64 2/12.5/75 PH	100mm
CQ476A	325mm	12.80”	2.5mm	32mm	2/8.5/45 2/12/64	100mm
CQ478A	325mm	12.80”	2.5mm	40mm	2/9/55 4/12/64	100mm
CQ480A	325mm	12.80”	3.0mm	40mm	2/9/55 4/12/64	100mm
CQ482A	350mm	13.78”	2.5mm	32mm	2/8.5/45 4/9/50 2/12/64	120mm
CQ484A	350mm	13.78”	2.5mm	32mm	2/8.5/45 2/12/64	120mm
CQ486A	350mm	13.78”	2.5mm	40mm	2/9/55 4/12/64	120mm
CQ488A	350mm	13.78”	2.5mm	50mm	4/15/80 4/15/85	120mm
CQ490A	350mm	13.78”	3.0mm	32mm	2/8.5/45 2/12/64	120mm
CQ492A	350mm	13.78”	3.0mm	32mm	2/8.5/45 4/9/50 2/12/64	120mm
CQ494A	350mm	13.78”	3.0mm	40mm	2/9/55 4/12/64	120mm
CQ496A	350mm	13.78”	3.0mm	50mm	2/9/55 4/12/64	120mm
CQ498A	370mm	14.57”	3.0mm	32mm	2/8.5/45 2/12/64	120mm
CQ500A	370mm	14.57”	3.0mm	40mm	2/9/55 4/12/64	120mm
CQ502A	370mm	14.57”	3.0mm	50mm	4/15/80 4/15/85	120mm
CQ504A	400mm	15.75”	3.0mm	40mm	2/9/55 4/12/64	120mm
CQ506A	400mm	15.75”	3.0mm	50mm	4/15/80 4/15/85	120mm
CQ508A	400mm	15.75”	3.5mm	40mm	2/9/55 4/12/64	120mm
CQ510A	400mm	15.75”	3.5mm	50mm	4/15/80 4/15/85	120mm
CQ512A	425mm	16.73”	3.5mm	40mm	2/9/55 4/12/64	120mm
CQ514A	425mm	16.73”	3.5mm	50mm	4/15/80 4/15/85	120mm
CQ516A	450mm	17.72”	3.5mm	40mm	2/9/55 4/12/64	130mm
CQ518A	450mm	17.72”	4.0mm	40mm	2/9/55 4/12/64	130mm
CQ520A	450mm	17.72”	3.5mm	50mm	4/15/80 4/15/85	130mm

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FERROUS AND STAINLESS STEEL

Recommended SFM, Feed Rate, Hook and O.D. Clearance Angles

Material	Hook Angle	O.D. CL. Angle		STOCK DIAMETER RANGE 1/4" - 3/4"	3/4" - 1-1/2"	1-1/2" - 2-1/2"	2-1/2" - 3-1/2"
Grey Cast Iron	12°	8°	SFM	82	75	72	66
			Feed Rate	4"/Min.	4"/Min.	3.5"/Min.	3"/Min.
Mild Steel	20°	8°	SFM	160	150	150	130
			Feed Rate	6.3"/Min.	5.9"/Min.	5.5"/Min.	5.1"/Min.
Med. Hard Steel	18°	8°	SFM	100	100	80	80
			Feed Rate	5.1"/Min.	4.7"/Min.	4.3"/Min.	4.3"/Min.
Hard Steel	15°	8°	SFM	66	66	60	57
			Feed Rate	4.3"/Min.	4.3"/Min.	4"/Min.	3.5"/Min.
Stainless Steel	15°	6°	SFM	66	63	60	57
			Feed Rate	2"/Min.	1.75"/Min.	1.75"/Min.	1.5"/Min.

ORDERING INSTRUCTIONS

In order to select the correct blade for your application, the following information is required on every new tool order.

TOOL NUMBER
Enter the tool number into the style block of your new tool order.

NUMBER OF TEETH
Specify the required number of teeth from the selection charts on pages 54 & 55.

TOOTH STYLE
Utilize the chart found on pages 54 & 55 and also from page 56 in order to determine the best tooth style required.

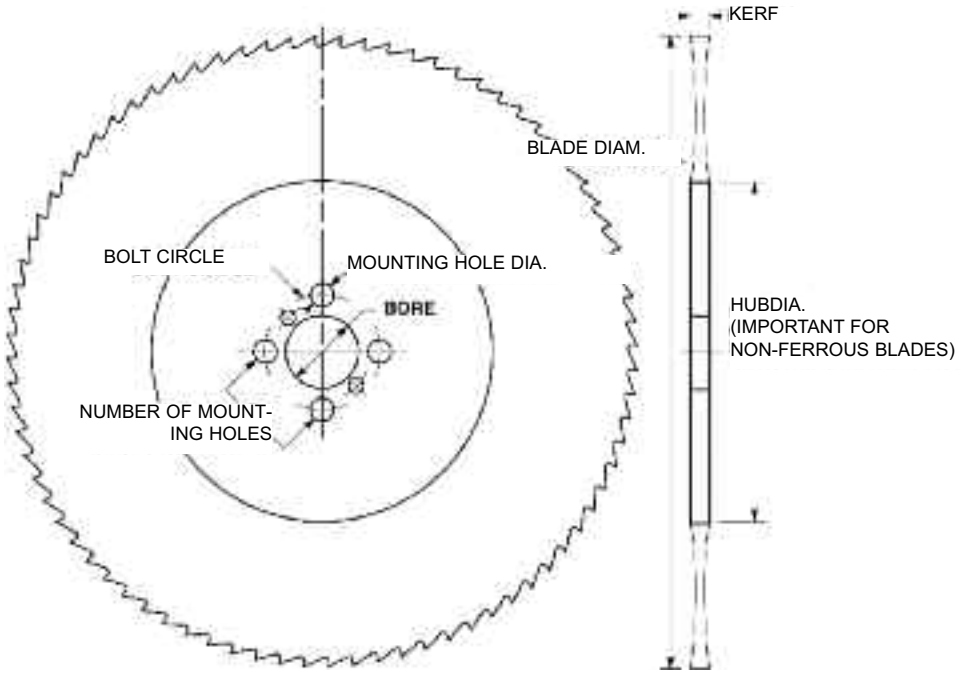
HUB DIAMETER
Be sure to check the hub diameters listed on page 60 to accommodate the maximum depth of cut.

MOUNTING HOLES AND SPACING
- Quantity (Specify the number of mounting holes req'd.)
- Diameter (Specify the diameter of the mounting holes.)
- Bolt Circle (Specify the bolt circle diameter.)
- Specify the spacing of the mounting holes (i.e. 180º apart)

MATERIAL BEING CUT
Specify the type of material being cut and its dimensions and/or wall thickness.

RPM
You must specify the RPM.

COATINGS
If you require a coating please refer to page 5, 61, 64 & 65 for NAP Gladu's offering and additional charges.



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SELECTING THE RIGHT COLD SAW BLADE FOR YOUR APPLICATION

Non-Ferrous Cutting Cold Saws

Step One
Refer to page 54 & 55 and find the material and size that you are going to cut on the left hand side of the chart. Follow this line across to the corresponding saw blade diameter you wish to use. This block of information will give you the number of teeth required as well as the tooth style.

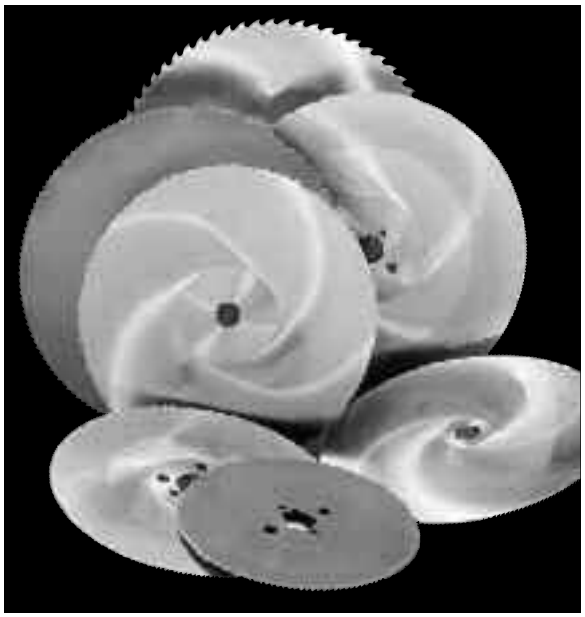
Example: Cutting Non-Ferrous solid stock that is 1-1/4" diameter. You are using a 12.5” diameter cold saw. The recommended number of teeth is 165 and the tooth style is a “BW.” Tooth styles are shown on page 56.

Step Two
The availability of this tool can be found in pages 57 & 58. Once you have located the diameter and bore, follow the line across to the desired kerf for the correct tool number. Example: A 12.5" diameter Non-Ferrous Cutting cold Saw with a 32mm bore and a kerf of 2.5mm would be tool number CM882. Looking at the bottom of page 60, you will find the mounting hole configurations for the popular machines on the market. Specify the correct mounting hole configuration for the machine on which the blade will run.

Mounting hole configurations and number of teeth other than shown in this catalog must be specially quoted and will have a higher cost with longer delivery times.

Step Three
Refer to the checklist on page 52 to determine the information required for a Cold Saw Blade order.

Note: Most of the applications will be a duplicate of what you are presently using; however, the number of teeth and kerfs in our standard product offering may vary slightly. This variation will not be significant enough to affect the quality of the cut or tool life.



CUTTING NON-FERROUS SOLID STOCK MATERIAL

(Number of Teeth and Grind Style Selection Chart)

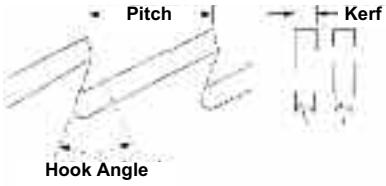
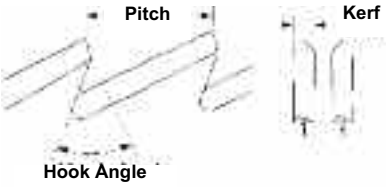
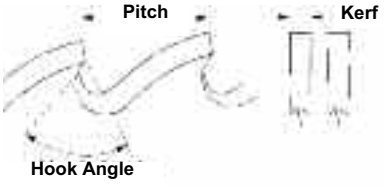
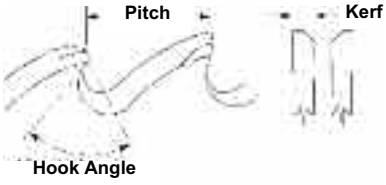
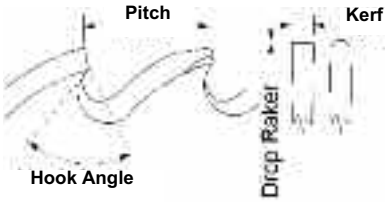
	COLD SAW BLADE DIAMETER						
Thickness of Solid Material in inches	225mm 9”	250mm 10”	275mm 10-3/4”	300mm 12	315mm 12-1/2”	350mm 14”	400mm 16”
1/4” - 3/4”	135BW	135C	150C	165BW	165BW	210BW	240BW
3/4” - 1-1/4”	90C	90C	105C	135C	135C	180BW	165BW
1-1/4” - 1-3/4”	75C	75C	90C	105C	105C	150C	135C
1-3/4” - 2-1/4”	60C	60C	75C	90C	90C	105C	90C
2-1/4” - 2-3/4”	45C	45C	55C	60C	60C	70C	60C
2-3/4” - 3-1/2”				45C	45C	60C	45C

CUTTING NON-FERROUS TUBING, PIPE AND STRUCTURAL SHAPES

(Number of Teeth and Grind Style Selection Chart)

		COLD SAW BLADE DIAMETER						
Tube Diameter	Wall Thickness	225mm 9”	250mm 10”	275mm 10-3/4”	300mm 12”	315mm 12-1/2”	350mm 14”	400mm 16”
1/2”	.030” - .090”	165BW	180BW	210BW	225BW	225BW	240BW	255BW
1/2”	.090” - .150”	150BW	165BW	180BW	210BW	210BW	225BW	240BW
1”	.030” - .060”	165BW	180BW	210BW	225BW	225BW	240BW	255BW
1”	.060” - .090”	165BW	165BW	180BW	210BW	210BW	225BW	240BW
1”	.090” - .150”	135BW	165BW	165BW	180BW	180BW	210BW	225BW
1-1/2”	.030” - .060”	165BW	180BW	195BW	225BW	225BW	240BW	255BW
1-1/2”	.060” - .090”	150BW	165BW	180BW	210BW	210BW	225BW	240BW
1-1/2”	.090” - .150”	135BW	150BW	165BW	180BW	180BW	210BW	225BW
1-1/2”	.150” - .250”	105C	120C	135C	150C	150C	165C	180BW
2”	.030” - .060”	180BW	195BW	210BW	225BW	225BW	240BW	255BW
2”	.060” - .090”	135BW	150BW	165BW	180BW	180BW	210BW	225BW
2”	.090” - .180”	105C	120C	135C	165C	150C	165C	180BW
2”	.180” - .300”	90C	105C	120C	135C	135C	150C	165C
2”	.300” - .500”	75C	85C	90C	105C	105C	120C	135C
2-1/2”	.030” - .060”	180BW	195BW	210BW	225BW	225BW	240BW	255BW
2-1/2”	.060” - .090”	150BW	165BW	180BW	195BW	195BW	210BW	225BW
2-1/2”	.090” - .150”	135BW	120C	135C	150C	150C	165C	180BW
2-1/2”	.150” - .250”	90C	105C	120C	135C	135C	150C	165C
2-1/2”	.250” - .400”	75C	85C	90C	105C	105C	120C	135C
2-1/2”	.400” - .500”	70C	75C	85C	90C	90C	105C	120C
3”	.030” - .060”			210BW	225BW	225BW	240BW	255BW
3”	.060” - .090”			180BW	195BW	195BW	210BW	225BW
3”	.090” - .150”			135C	150C	150C	165C	180BW
3”	.150” - .250”			120C	135C	135C	150C	165C
3”	.250” - .400”			90C	105C	105C	120C	135C
3”	.400” - .500”			75C	90C	90C	105C	120C
3-1/2”	.030” - .060”				225BW	225BW	240BW	255BW
3-1/2”	.060” - .090”				195BW	195BW	210BW	225BW
3-1/2”	.090” - .150”				150C	150C	165C	180BW
3-1/2”	.150” - .250”				135C	135C	150C	165C
3-1/2”	.250” - .400”				105C	105C	120C	135C
3-1/2”	.400” - .500”				90C	90C	105C	120C

AVAILABLE TOOTH STYLES FOR NON-FERROUS SAW BLADES

Description of Teeth	Tooth Style	Profile of Tooth Style	Comments for use of Particular Tooth Style
Flat Top Teeth	**A**		Used for Plastics and Non-Ferrous cutting and slotting. This tooth style is used for small tooth pitches and shallow cuts.
Acme Straight Teeth	**AW**		Used for Non-Ferrous cutting of thin sections. It has an alternate top bevel. This tooth style is similar to straight tooth but used where fewer teeth are required.
Single or Curved Teeth	**B**		Used especially with thin kerf saws of 2mm and less for Non-Ferrous cutting. This is a high strength tooth and works well on light profiles and thin tubes and where changes in wall thickness is encountered. Improved chip exhaust over "A" tooth forms.
Acme Curved Teeth (Notch Grind)	**BW**		Used for cutting thin walled Non-Ferrous Tubing. It has an alternate top bevel. Tooth pitch of 4mm and less.
Heller or Cochrane Teeth High-Output	**C**		Most commonly used tooth style for cutting Ferrous and Non-Ferrous material. The triple chip design splits the cutting pressure between two teeth. For solid sections and thick wall tubing. Tooth pitch of 5mm and greater.

Safety Warning: ***Non-Ferrous Cold Saws not to exceed 10,000 SFM in light thin walled extrusions.***
Non-Ferrous Cold Saws not to exceed 5,000 SFM in rounds or solids.

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NON-FERROUS

HSS M2 Steel - Bright Finish - Fully Hardened and Tempered to 56Rc.

Tool Number	Diameter mm	Diameter in.	Kerf mm	Bore Size	Hub Diameter
CM800A	152mm	6”	1.5mm	1/2”	2-1/2”
CM802A	152mm	6”	1.5mm	5/8”	2-1/2”
CM804A	152mm	6”	1.5mm	1”	2-1/2”
CM806A	203mm	8”	0.9mm	5/8”	3-1/2”
CM808A	203mm	8”	0.9mm	1”	3-1/2”
CM810A	203mm	8”	1.2mm	5/8”	4”
CM812A	203mm	8”	1.2mm	1”	4”
CM814A	203mm	8”	1.6mm	5/8”	4”
CM816A	203mm	8”	1.6mm	1”	4”
CM818A	203mm	8”	2.0mm	5/8”	4”
CM820A	203mm	8”	2.0mm	1”	4”
CM822A	203mm	8”	2.5mm	5/8”	4”
CM824A	203mm	8”	2.5mm	1”	4”
CM826A	229mm	9”	1.2mm	5/8”	4”
CM828A	229mm	9”	1.2mm	1”	4”
CM830A	229mm	9”	1.6mm	5/8”	4”
CM832A	229mm	9”	1.6mm	1”	4”
CM834A	229mm	9”	2.0mm	5/8”	4”
CM836A	229mm	9”	2.0mm	1”	4”
CM838A	229mm	9”	2.5mm	5/8”	4”
CM840A	229mm	9”	2.5mm	1”	4”
CM842A	254mm	10”	1.2mm	5/8”	4”
CM844A	254mm	10”	1.2mm	1”	4”
CM846A	254mm	10”	1.6mm	5/8”	4”
CM848A	254mm	10”	1.6mm	1”	4”
CM850A	254mm	10”	2.0mm	5/8”	4”
CM852A*	254mm	10”	2.0mm	1”	4”
CM854A	254mm	10”	2.5mm	5/8”	4”
CM856A	254mm	10”	2.5mm	1”	4”
CM858A	254mm	10”	2.5mm	32mm	4”
CM860A	275mm	11”	1.6mm	32mm	110mm
CM862A	275mm	11”	2.0mm	32mm	110mm
CM864A	275mm	11”	2.5mm	32mm	110mm

**NOTE: CM852A - 4 mounting holes, 9mm dia., 50mm bolt circle, 90° apart*

A = Available Item Shipped within 8 working days from the time the order is placed.

NON-FERROUS

HSS M2 Steel - Bright Finish - Fully Hardened and Tempered to 56Rc.

Tool Number	Diameter mm	Diameter in.	Kerf mm	Bore Size	Hub Diameter
CM866A	305mm	12”	1.6mm	5/8”	4”
CM868A	305mm	12”	1.6mm	1”	4”
CM870A	305mm	12”	2.0mm	5/8”	4”
CM872A	305mm	12”	2.0mm	1”	4”
CM874A	305mm	12”	2.5mm	5/8”	4”
CM876A	305mm	12”	2.5mm	1”	4”
CM878A	305mm	12”	3.0mm	5/8”	4”
CM880A	305mm	12”	3.0mm	1”	4”
CM882A	315mm	12.5”	2.5mm	32mm	110mm
CM884A	355mm	14”	1.6mm	1”	5”
CM886A	355mm	14”	2.5mm	1”	5”
CM888A	355mm	14”	2.5mm	32mm	5”
CM890A	355mm	14”	3.0mm	1”	5”
CM892A	355mm	14”	3.0mm	32mm	5”
CM894A	406mm	16”	2.5mm	1”	6”
CM896A	406mm	16”	3.0mm	1”	6”
CM898A	508mm	20”	3.5mm	1”	6”

A = Available Item Shipped within 8 working days from the time the order is placed.
See page 60, center boxes marked Bore Mounting Hole Patterns.
Bore Sizes and Mounting Holes not listed on page 60 are available by special quote only.
For Hub Diameters on Non-Ferrous Cold Saws see page 60.
The number of teeth in Non-Ferrous Cutting Cold Saws are to be taken from the specification chart on pages 54 & 55.
NOTE: Other kerf sizes available by special quote. Minimum order quantity may apply.

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NON-FERROUS

Recommended SFM, Feed Rate, Hook and O.D. Clearance Angles

Material	Hook Angle	O.D. CL. Angle		STOCK DIAMETER RANGE 1/4" - 3/4"	3/4" - 1-1/2"	1-1/2" - 2-1/2"	2-1/2" - 3-1/2"
Aluminum	24°	12°	SFM	6500	6200	6000	5000
			Feed Rate	100"/Min.	85"/Min.	80"/Min.	75"/Min.
Light Alloys (with Cu, Mg, Zn)	22°	10°	SFM	3600	3300	3000	2600
			Feed Rate	70"/Min.	65"/Min.	63"/Min.	60"/Min.
High Alloys	20°	8°	SFM	650	600	550	550
			Feed Rate	16"/Min.	16"/Min.	14"/Min.	12"/Min.
Copper	20°	10°	SFM	1300	1150	1000	800
			Feed Rate	24"/Min.	24"/Min.	22"/Min.	22"/Min.
Phosphor Bronze	15°	8°	SFM	1300	1300	1150	100
			Feed Rate	31"/Min.	28"/Min.	28"/Min.	24"/Min.
Hard Bronze	10°	8°	SFM	400	360	325	300
			Feed Rate	6.3"/Min.	6"/Min.	5.5"/Min.	5.1"/Min.
Cu Zn Brass	16°	8°	SFM	2000	2000	1800	1800
			Feed Rate	43"/Min.	43"/Min.	39"/Min.	35"/Min.
Alloyed Brass	12°	8°	SFM	1650	1300	1150	1150
			Feed Rate	27.5"/Min.	23.5"/Min.	23.5"/Min.	20"/Min.

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Hub and Mounting Holes

HUB DIAMETERS FOR ALL COLD SAW BLADES

SAW BLADE DIAMETER (mm)	SAW BLADE DIAMETER (In.)	STANDARD HUB DIAMETER (mm)	STANDARD HUB DIAMETER (In.)
160mm Hydromat	6.29"	99mm	3.89"
200mm	7.87"	90mm	3.54"
200mm Hydromat	7.87"	140mm	5.51"
225mm	8.85"	90mm	3.54"
225mm Hydromat	8.85"	140mm	5.51"
250mm	9.84"	90mm	3.54"
250mm Hydromat	9.84"	140mm	5.51"
250mm Wagner	9.84"	110mm	4.33"
275mm	10.82"	100mm	3.93"
300mm	11.81"	100mm	3.93"
315mm	12.40"	100mm	3.93"
350mm	13.77"	120mm	4.72"
400mm	15.74"	120mm	4.72"
425mm	16.73"	120mm	4.72"
450mm	17.71"	130mm	5.11"
500mm	19.68"	140mm	5.51"

NOTE: All Other Hub Diameters Not Listed Above Are By Special Quote Only.

MOUNTING HOLE CONFIGURATIONS FOR ALL COLD SAW BLADES

Bore Size	Pinhole Spacing Qty./Dia./B.C.
*32mm	2/8.5/45 + 2/12/64 2/8.5/45 + 2/12/64 + 4/9/50 2/8.5/45 + 2/12/64 + 2/12.5/75
32mm Hydromat	1/8.5/50 + 1/9/60
**38mm	2/9/55
***40mm	2/9/55 + 4/12/64 2/9/55 + 4/12/64 + 2/15/80
50mm	4/15/80 + 4/15/85

* Designed to fit the following machines:
Amer Brown, Bewo, Brown, IBP, Kalamazoo, Pedrazolli, Soco, Startrite, Scotchman, Thomas, Wagner, Adige, Robejo, Rohbi, Sinico, and Brobo.
** Designed to fit the Brobo machine.
*** Designed to fit the following machines: Brobo, Eisele, Emerson, Haberle and Scotchman, Bewo, Trennjaeger.
**** Designed to fit a variety of machines including Gernetti, Kaltenbach and Trennjaeger.

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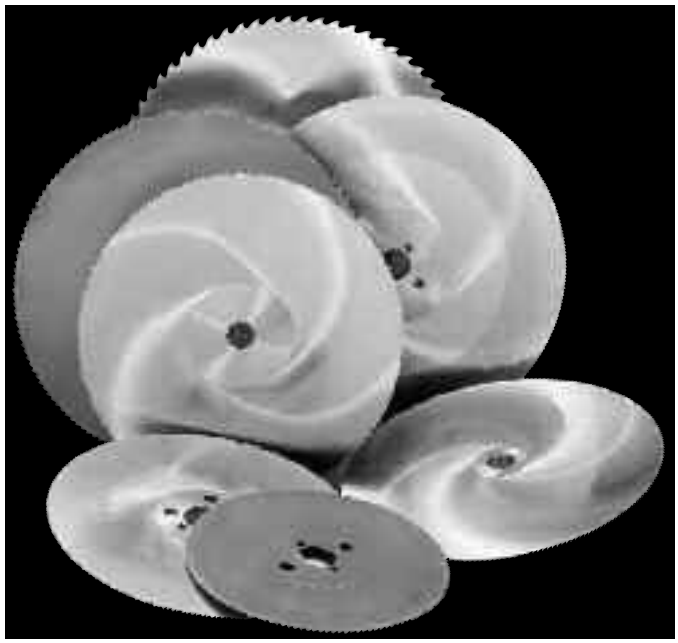
FOR ALL COLD SAW BLADES

TiN (Titanium Nitrate)			
Diameter mm	Diameter in.	Mask Ring Diameter mm	Mask Ring Diameter in
152mm	5.98”	90	3.54”
160mm	6.30”	99	3.90”
200mm	7.87”	90	3.54”
203mm	8”	90	3.54”
225mm	8.86”	90	3.54”
229mm	9”	90	3.54”
250mm	9.84”	90	3.54”
254mm	10”	90	3.54”
275mm	10.83”	100	3.94”
300mm	11.81”	100	3.94”
305mm	12”	100	3.94”
315mm	12.40”	100	3.94”
325mm	12.80”	100	3.94”
350mm	13.78”	120	4.72”
355mm	14”	120	4.72”
370mm	14.57”	120	4.72”
400mm	15.75”	120	4.72”
406mm	16”	120	4.72”
425mm	16.73”	120	4.72”
450mm	17.72”	130	5.12”
508mm	20”	140	5.51”

AlTiN (Titanium Aluminum Nitrate)			
Diameter mm	Diameter in.	Mask Ring Diameter mm	Mask Ring Diameter in
152mm	5.98”	90	3.54”
160mm	6.30”	99	3.90”
200mm	7.87”	90	3.54”
203mm	8”	90	3.54”
225mm	8.86”	90	3.54”
229mm	9”	90	3.54”
250mm	9.84”	90	3.54”
254mm	10”	90	3.54”
275mm	10.83”	100	3.94”
300mm	11.81”	100	3.94”
305mm	12”	100	3.94”
315mm	12.40”	100	3.94”
325mm	12.80”	100	3.94”
350mm	13.78”	120	4.72”
355mm	14”	120	4.72”
370mm	14.57”	120	4.72”
400mm	15.75”	120	4.72”
406mm	16”	120	4.72”
425mm	16.73”	120	4.72”
450mm	17.72”	130	5.12”
508mm	20”	140	5.51”

TiCN (Titanium Carbon Nitrate)			
Diameter mm	Diameter in.	Mask Ring Diameter mm	Mask Ring Diameter in
152mm	5.98”	90	3.54”
160mm	6.30”	99	3.90”
200mm	7.87”	90	3.54”
203mm	8”	90	3.54”
225mm	8.86”	90	3.54”
229mm	9”	90	3.54”
250mm	9.84”	90	3.54”
254mm	10”	90	3.54”
275mm	10.83”	100	3.94”
300mm	11.81”	100	3.94”
305mm	12”	100	3.94”
315mm	12.40”	100	3.94”



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Machine Cross Reference Chart

MACHINE NAME	DIAMETER MM	BORE MM	PINHOLES (MM) QTY / DIA / B.C.
ADIGE-SALA	200-250 275-315 350 400-425	32 32 40 50	4/9/50 2/12/64 4/12/64 4/15/80
BATER	175-250	32	Keyways Required
BEWO	250-300 315 315 350	32 40 40 40	2/8.5/45 2/9/55 Man. 4/12/64 Auto. 4/12/64 Man.
BIMAX	100-300	32	2/8.5/45
BONAK	250-350	40	2/8.5/45, 4/12/64
BROBO-WALDOWN	250 300 300-400 500	32 38 40 40	2/8.5/45 2/9/55 2/8.5/45, 4/12/64 2/8.5/45, 4/12/64, 2/12/80
CONNI	400-425 400-425	40 50	4/12/64 4/15/80
DAKE	315-350 400-525	32 50	2/12/64, 2/12/75 4/15/80
DEMURGER	160-300 200-250 225-300	25.4 32 40	 2/8.5/45, 4/12/64 2/8.5/45, 4/12/64
DONG-JIN	300-370	40	2/8.5/45, 4/12/64
DORINGER	315-350	40	2/12/64
EISELE	210-225 250-350 370-450 500	40 40 40 40	2/8.5/45 2/8.5/45, 4/12/64 2/12/64, 2/15/80 2/15/80, 2/15/100
FABRIS	225-350	32	2/8.5/45, 4/12/64
FEMI	225-315	32	2/8.5/45, 4/12/64
FONG-HO	250-275 300-400 380	32 32 40	2/8.5/45, 2/9/50, 2/12/64 4/12/64 2/12/64, 3/11/65
HAEBERLE	225-315	40	2/9/55
IBP PEDRAZOLLI	200-350 425	32 50	2/12/64 4/15/80
IMET	250-350 315-350	32 40	2/8.5/45, 2/12/64 2/8.5/45, 4/12/64
KALTENBACH	225-250 350-370	32 50	 4/50/80
KASTO	425	50	4/50/80
MACC	225-350	32	2/8.5/45, 2/12/64
MACO	425	50	5/15/80
MAIR	300-350 300-350	32 40	2/8.5/45, 2/12/64 2/8.5/45, 4/12/64
MEP	225-350	32	2/8.5/45, 2/12/64
METORA	250-350	32	2+2 Universal Slots
OMES	250-300	32	2/8.5/45, 2/12/64
O.M.P.	250-370 400-525	32 50	2/8.5/45, 2/12/64 4/15/80
R.G.A.	250 275-370	24.4 40	 2/8.5/45, 2/12/64
ROBJO	250-350	32	2/8.5/45, 2/12/64
ROHBI	175-250	32	2/8.5/45
SCHOTCHMAN	250-275-300 275-315-350	32 40	2/8.5/45, 2/12/64 2/9/55, 4/12/64
SIMEC	250-350	32	2/12/64
SINCO	350 370	32 32	2/8.5/45, 2/12/64 2/8.5/45, 2/12/64
SOCO	250-350	32	2/12/64
STARBRITE	250 300-315	32 32	2/9/55 2/12/80
STAYER	225	32	
THOMAS	225-300 315-350	32 32	2/8.5/45, 2/12/64 2/12/64, 2/12/75
TOMET	200-315	32	2/8.5/45, 2/12/64
TRENNJAEGER	250-275 315-350 400	40 50 50	4/12/64 4/15/85 4/15/85
ULMIA	180-250 250-400	32 40	 4/12/64
VIEMME	250-350	32	2/8.5/45, 2/12/64
VOUCHER	275	35	2/13.5/57.2
WAGNER	200-315 350	32 50	4/9/50 4/15/80
WHALEN	250-400	40	2/8.5/45, 2/12/64
WEIDMANN	210-275	32	2/8.5/45
WINTER	250-315	40	2/8.5/45, 4/12/64
WUNSCH	210-250 210-300 315-400	32 40 40	2/8.5/45 2/8.5/45 2/8.5/45, 4/12/64

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INTRODUCTION

The Cold Saw market is one of the most rapidly growing of all metal cutting circular saw blade markets. This market is estimated to have had a growth of 8% per year during the 1990's and is expected to continue at this rate in the foreseeable future. Cold sawing machinery is relatively affordable and adaptable to a wide variety of metal cutting applications, as compared to other sawing techniques.

NAP Gladu offers a wide variety of sizes which demonstrates the commitment to this growing industry. NAP Gladu has also invested in the latest technology utilizing state of the art CNC grinding equipment to satisfy the ever growing demands for accuracy and longevity of the cold saw market.

ADVANTAGES OF COLD SAW BLADES

- Milling action of multiple teeth
- Accuracy of cut
- Good surface finish
- Shorter cutting time / more productive cutting
- Increased tool life / lower cost per cut

TYPES OF COLD SAW BLADES

- **NON-FERROUS** cutting cold saws: Made from M2 HSS - 54/56 HRc. Usually sold in inch sizes and almost always with a Bright finish. Because of lower Rockwell Hardness, these saws can be operated safely up to 10,000 SFM in extrusions and 6,000 SFM in heavy solids.
- **FERROUS M2** cutting cold saws: Made from M2 which is the same as the European DMo5 - 62/64 HRc. The Steam Oxide (or black) finish is found to be the most common. The Ferrous M2 cold saw is also available with a bright finish for use in tougher non-ferrous cutting applications. We also offer five special surface coatings for specialty applications. Ferrous cutting cold saw blades are almost always specified in Metric dimensions. Due to their high hardness, these saws are more brittle and should not be operated over 500 SFM in steels. They can be operated up to 1,500 SFM in copper and non-ferrous alloys with the bright finish.
- **FERROUS M35** (Cobalt)cutting cold saws: Made from M35 Cobalt HSS / European SCX - 64/66 HRc. Similar to above except M35 is a very tough tool steel which can be heat treated to a higher Rockwell and has excellent edge retention under heat. The M35 is a premium grade cold saw for demanding applications.

COLD SAW BLADE TERMINOLOGY

- **DIAMETER**: Specified in mm for Ferrous Cut Saws and in Inches for Non-Ferrous cold saw blades.
- **KERF**: On a new saw blade, the kerf at the cutting edge will be same as the hub thickness. As diameter is reduced from sharpening, kerf will also be marginally reduced. Again, ferrous saws are usually specified in mm 2.0, 2.5, 3.0, and 3.5 most common and non-ferrous saws usually sold in fractions such as 1/8".
- **BORE**: 32mm, 40mm, and 50mm bores are most common in ferrous cutting saw blades. 5/8" & 1" bores are most popular in non-ferrous cutting saw blades. One common exception is the non-ferrous Wagner machine which has a 32mm bore.
- **DRIVE PIN**: Usually not required on non-ferrous saws. For ferrous saws it is common industry practice to provide multiple patterns on a blade to accommodate more than one machine. A complete list of available patterns is listed in this catalog.
- **HUB**: This dimension is fairly standardized in the industry and usually is not a concern. Two common exceptions are the Wagner machines which require a 110 mm hub and Hydro-Mat machine which requires a 140 mm hub on 250mm diameter saws. NAP Gladu stocks special blanks for these two machines.

TOOTH TERMINOLOGY

- **RAKE**: Also commonly called hook angle in other types of cutting tools. 15º to 18º rake is universal and common on most off the shelf grinds. Generally the softer the material being cut the greater the rake angle and inversely for harder materials.
- **RELIEF**: Commonly called O.D. clearance in other types of cutting tools. 8º to 12º range most common.
- **PITCH**: The distance from tooth to tooth typically measured in thousandths of an inch.
- **GULLET**: Standard radius is 25% of tooth pitch and standard depth is 40% of tooth pitch but both can be varied for specific applications.
- **GRIND**: A, AW, B, BW, C, CNS, Notch, and Vari-pitch grinds are available. BW and C make up 95% of ferrous market. A and B grinds are most common in the non-ferrous market.

THE NAP GLADU ADVANTAGE

CNC GRINDING EQUIPMENT

Quality Service saves customers money. Cold saw blades should always be re-sharpened on machines that secure an even index or tooth pitch. This results in a uniform dull line when the saw is used and in turn, requires less stock removal to re-sharpen. As a result, the customer enjoys longer run times between sharpenings, and secondly, more sharpenings between saw replacements. NAP Gladu's state of the art CNC and NC grinding cells provides these benefits and more.

SHARPENING WITH COOLANTS

Re-sharpening with a coolant is very important as it improves edge quality and saw blade life. All of NAP Gladu's machines utilize a generous flow of coolant to the grinding area. By utilizing a coolant, the saw blade never reaches a critical hot state where the "temper" or hardness is jeopardized or lost. This means that as a customer of NAP Gladu, your tools will retain their original hardness throughout the life of the tool.

ENGINEERING

Tooth geometry can be engineered to the specific work piece and the customer's application. Equally important is NAP Gladu's ability to consistently repeat a successful tooth geometry grind.

For example, when production cutting stainless steel, alloys, and difficult to machine materials, a special tooth form may be required which will yield better results for the customer than a standard "off the shelf saw blade grind". NAP Gladu offers both the human technical knowledge, and world class CNC grinding machines resulting in constant repeatability.

INVENTORY

We maintain a large inventory of new saw blanks. Over 70 of the most popular sizes for ferrous cutting applications in M2 and M35 grade materials are available. We stock these blank bodies so they can be toothed and finished to our customer's exact specifications.

FAST DELIVERY

Delivery for special sizes and 5 Special Coatings is available through NAP Gladu.

Although NAP Gladu's inventory stock program should handle most order requirements, you can be assured that when specials are necessary, we have the capability to deliver these also.

COMPETITIVELY PRICED

NAP Gladu's investment and commitment to the cold saw industry is only part of the picture. Our pricing is competitive within the cold saw industry. Simply contact your local sales representative or our corporate headquarters in Jasper, Indiana and request a quotation. Please include all necessary information located at the front of this literature. Also include the quantity used since pricing can vary with volume orders.

CUTTING DATA

1) **CHOICE OF TOOTH PITCH**: (distance from tooth to tooth) Tooth pitch is measured as the distance from tooth tip to tooth tip. In European countries, it is normal to specify a saw by it's pitch. Tooth pitch is expressed as a "T number". Therefore, "T5" is a 5mm pitch, T10 is 10mm pitch, etc. The smallest standard pitch offered for cold saws is T3 (3mm or .118") and largest standard is T16 (16mm or .630").

2) **NUMBER OF TEETH**: In the USA market, we are accustomed to specifying a saw by the number of teeth. This is usually expressed as a "Z number". If you see "Z180" etched on a cold saw, it was manufactured as a 180 tooth saw. As a rule there should be 3-6 teeth in the cut. However, this rule is not used when cutting thin walled tubing, profiles, brass, copper and aluminum. For these conditions, the number of teeth in the cut will generally be less and the cutting speed should be higher. The best tooth pitch to use depends on the work piece size and the type of material being cut. The charts included in this literature will guide you in the proper tooth selection based upon the material being cut, saw blade diameter and material thickness. As a cold saw blade is resharpened, the tooth pitch is reduced. Therefore, re-toothing should be done occasionally to restore original tooth pitch and gullet size.

3) **FEED**: Feed rate is independent of the RPM (revolutions per minute) of the saw blade. The correct feed can theoretically be calculated as 0.1 mm (.004" chip load) per tooth per revolution. In practice, the maximum feed rate is directly related to the stability of the machine, the part clamping capabilities and the capability of the drive motor. The maximum feed is typically found by gradually increasing the feed rate until a vibration starts in the blade and/or motor. When the vibration occurs, reduce the feed until stable cutting is obtained. The chips produced by the cutting action are also an important factor when determining the correct feed rate. Using the correct feed rate will produce chips that are bright in color, even in size and nicely rounded.

4) **BLADE SPEED** (RPM): The ideal choice of blade speed (RPM) depends on the material being cut. For standard construction steel, the RPM should be about 50 when using a 11" diameter saw blade. Detailed charts depicting the recommended RPM for various materials and saw blade diameters are available throughout this literature. Many machines offer limited RPM settings, therefore it is necessary to choose the setting that best matches the material from these charts. Too large a deviation will result in a shorter tool life and reduced cutting ability. Generally, a slower RPM is better than too high an RPM. If the deviation is too large, a frequency changer sometimes can be installed in order to get variable RPM's on the machine. Frequency changers can be supplied and installed by most electricians.

5) **CHIP FORMATION**

With too low a feed rate,
- You produce an improper chip formation, only metal powder.
- The blade is worn excessively and life is reduced substantially.

Too high a feed rate:
- Discolored chips that weld in the gullets.
- There is great risk that the blade will break.

The correct feed:
- The chips are nicely rounded, uniform and bright in color.
- Maximum use and tool life for the blade.

GENERAL INFORMATION

6) **CUTTING FLUIDS**: Use recognized products designed for cutting the material and follow the suppliers instructions carefully. Sawing is a "hard" machining process that demands a mixture of 6-10% by volume. Fluids should be applied in generous amounts on both sides of the blade during the cutting cycle. The nozzles must be pointed directly at the cutting area and the cutting process must never be commenced without the cutting fluid actively flooding the cutting region and material.

7) **FIXTURE AND CLAMPING STABILITY**: A stable circular saw is the most important basis for obtaining good cutting results. Stability must be present in the machine bearings, support column and clamping vice. A lack of stability leads to vibrations in the machine and/or blade. This vibration leads to substantial loss in tool life or at worst blade breakage. Any type of movement in either the part(s) or the mechanics of the machine will result in undesirable results. When cutting various profile shapes or tubes, a special formed vice can be

beneficial. A pipe vice geometry will keep round parts from turning. Custom jaws that match the part(s) being cut are generally the best means of clamping the material.

8) **CLEANING AND MOUNTING OF SAW BLADES**: Thorough cleaning of the blade and flanges (hubs) before mounting is very important. A single chip between the blade and flange can lead to excessive side run out as well as reduced machine stability and cut quality. Backlash in the drive pins must also be taken out before tightening the saw blade in the collars. This can be done by putting slight pressure against the face of the tooth in a direction opposite of the saw blade rotation as the blade is being tightened. Failure to remove this backlash will result in excessive saw breakage.

9) **RUNNING IN**: Re-sharpened blades yield longer life if they are "run in" or "broke in" before production cutting. Make 6-8 cuts with normal RPM blade speed but at only 25/50% of normal feed rate. Gradually increase the feed until normal feed is achieved. This "run in" procedure hones the tooth tips by removing the sharp edges thus increasing saw blade tool life. Always encourage the use of "the run in procedure" for re-sharpened blades to obtain maximum tool life.

10) **COATINGS**: A coating can have large effects on the tool life, the number of cuts, the quality of cut and the reduction of "pick up". Various coatings can be used for different applications. See page 5 for NAP Gladu coating offerings and pricing.
NAP Gladu can supply the following coatings:

TiN Titanium Nitrate: PVD coating for cutting medium alloy steels, structural steels, tubing, various profiles and combination steel-plastic configurations
- Surface hardness 2900 ± 200 HV0.05
- Friction coefficient 0.65
- Oxidation temperature 950º F (500º C)

TiCN Titanium Carbon Nitrate: PVD coating for cutting tubing and interrupted cut applications. Also used for cutting stainless steel for extended tool life.
- Surface hardness 4000 ± 400 HV0.05
- Friction coefficient 0.45
- Oxidation temperature 750º F (400º C)

TiAlN Titanium Aluminum Nitrate: PVD coating for cutting applications where there is high heat generated. Typically used for solid materials.
- Surface hardness 2600 ± 400 HV0.05
- Friction coefficient 0.70
- Oxidation temperature 1450º F (800º C)

Typically a 10 piece min. order is required for special coatings. Delivery time is 1-2 weeks.

11) **SPECIAL GRINDS AND TOOTH FORMS**: There are a number of special grinds and tooth forms available that can optimize the cutting process when cutting specific types and sizes of material. The grind styles and recommendations can be found in both the ferrous and non-ferrous sections of this literature.

Tooth form A: Primarily used for cutting thin-walled aluminum profiles. Only ground upon request. Usually replaced by other tooth geometry's.

Tooth form AW: Primarily used for cutting plastic materials and a combination of materials consisting of aluminum.

Tooth form B: Very rarely used. Can be used for cutting plastic or for friction cutting.

Tooth Form BW: Used for cutting profiles and work pieces with small dimensions. Used in all types of materials. Ground in T<5 as standard. This tooth form is self-centering.

Tooth Form C: (HZ): Primarily used for cutting work pieces with larger dimensions. Ground in T>5 as a standard. Tooth form C is a triple chip tooth form with a pre cutter tooth and is self centering.

Chip Breaker: All teeth are ground with a chip breaker. The tooth pitch has to be T>3.8 and the kerf > 2.2 mm. Used for cutting all kinds of materials. The tooth form is only used for cutting thin-walled profiles with a wall thickness of 1.5-2.5 mm. The chip breaker tooth form increases the tool life, improves the cut quality and reduces burrs on the material. Should only be used for production cutting on stable machines. Also commonly called a Notch Grind.

SPECIAL TOOTH FORMS: Tooth forms with altered tooth depths or angles can always be ground for specific applications. These special tooth forms are ground on special request only. The above tooth forms above can be ground with specific rake (hook) angles for materials such as stainless, aluminum, brass, copper and plastic. By using special types of grinding for non-standard applications, a substantial improve-ment in cutting ability and life can be obtained.

12) **RE-TOOTHING**: As a saw blade is re-sharpened several times, the tooth pitch (distance from tooth to tooth) is reduced. Therefore it can be necessary to occasionally re-tooth the blade in order to obtain the correct tooth pitch for the job. This is especially important for high production cutting when chips wedge themselves into the gullets of the blade.

13) **PICKUP/GALLING**: Pick up is one of the most common problems when cutting steel with HSS circular saw blades. Pick up has occurred when bright pieces/deposits of material are welded to the side of the blade. This makes the side of the blade uneven and substantially reduces the cutting ability of the saw blade. Pick up occurs due to friction between the blade and the material. Pick up is a problem especially when cutting stainless steel and other gummy materials. Pick up occurs as a consequence of these cutting conditions:

- Lack of or wrong cooling/lubrication
- Too small a tooth pitch
- Too heavy a feed
- Lack of cleaning away the chips (brush)
- Lack of cutting ability/grinding
- Material pinching the saw blade after cut

Pick up will increase the thickness of the blade and result in the blade breaking. When pick up occurs, the machine must

be stopped at once, the blade dismantled and re-toothed below pick up line. Pick up cannot be prevented by a special grinding of the blade and can only be removed by re-toothing the blade. Grinding or other mechanical actions to the side of the blade will not solve the problem and it can easily make it worse.

14) **CUTTING BRASS, COPPER ALLOYS, AND OTHER NON-FERROUS MATERIALS**: These are traditionally materials that demands that the revolutions and feed rates be correct. The feed must be relatively high or heavy vibration occurs resulting in blade breakage.

15) **BLADE QUALITY**: When buying HSS cold saw blades; it is essential to be aware of the following:
- Blades must be manufactured in M2 steel.
- Side run out should not exceed 1% of the O.D.
- Center bore should be H7 tolerance for accuracy.
- Blades should have a surface coating such as the standard steam oxide treatment (black surface) to reduce friction.

16) **Re-Sharpening Quality**: Correct re-sharpening is extremely important for the life and cutting ability of a blade. Minimum demands for re-sharpening include:
- Correct geometry (tooth pitch, form & depth)
- Uniform tooth pitch
- Re-sharpening with coolant
- Roundness tolerance max. .03 mm (.002")
- Correct beveling tooth form BW and HZ)
- Minimal yet adequate re-sharpening to remove dull line/wear land.

TROUBLESHOOTING

Problem: Tear or score marks on the material
Reason(s):
- Poor material clamping
- Dull saw blade
- Improper coolant used
- The feed rate is too high
- Backlash has not been removed
- Saw blade has side run-out
- Dirty collars in clamping region

Problem: Uneven cuts or "out-of-square" cutting
Reason(s):
- Dull saw blade
- Improper collars used
- Dirty collars in the clamping region
- Bent stock material
- Material not clamped square to the blade
- Improper tooth pitch
- Galling on one side of the saw blade
- Material clamping surfaces dirty
- Saw blade has side run-out

FROM SIMPLE TOOTH SHARPENING TO EXTENSIVE TOOL REPAIR

NAP Gladu's five-step service process returns worn, dull tools to their original working condition.

1) **Inspection.** Following ultrasonic cleaning, tools undergo a thorough inspection for repairs. If tool damage is more significant than the tool's worth, you will be advised.

2) **Straightening.** Utilizing close-tolerance testing, even the slightest misalignment on saw blades is corrected.

3) **Sharpening.** Our exclusive, high precision grinding process machines each tooth on the face, top and sides, then hones it to the sharpest cutting edge possible.

4) **Retensioning.** Rarely offered by other companies, this process realigns a sawblade's molecular structure to restore proper tension to the saw body. This can increase cutting life by up to 40%.

5) **Cleaning/Polishing.** For better cuts and less drag, all cutting tools are completely cleaned and polished to put the finishing touch on our comprehensive program.

Heavy Grind: Dull Line / Stock Removal exceeds 1.0mm (.040") or 35% of gullet depth.

Spindown/Retoothing: Tooth Damage or Dull Line exceeds 70% of gullet depth.

Hammering: Routine Saw Maintenance = NO CHARGE
Excessive Hammering to remove dish or excessive runout see chart below.

Note: Service of these products is not available at all locations. Allow 3 days in house for servicing blades. Additional freight charges and extended delivery times may apply.

Please refer to your Benchmark Service Price Book for sharpening prices.

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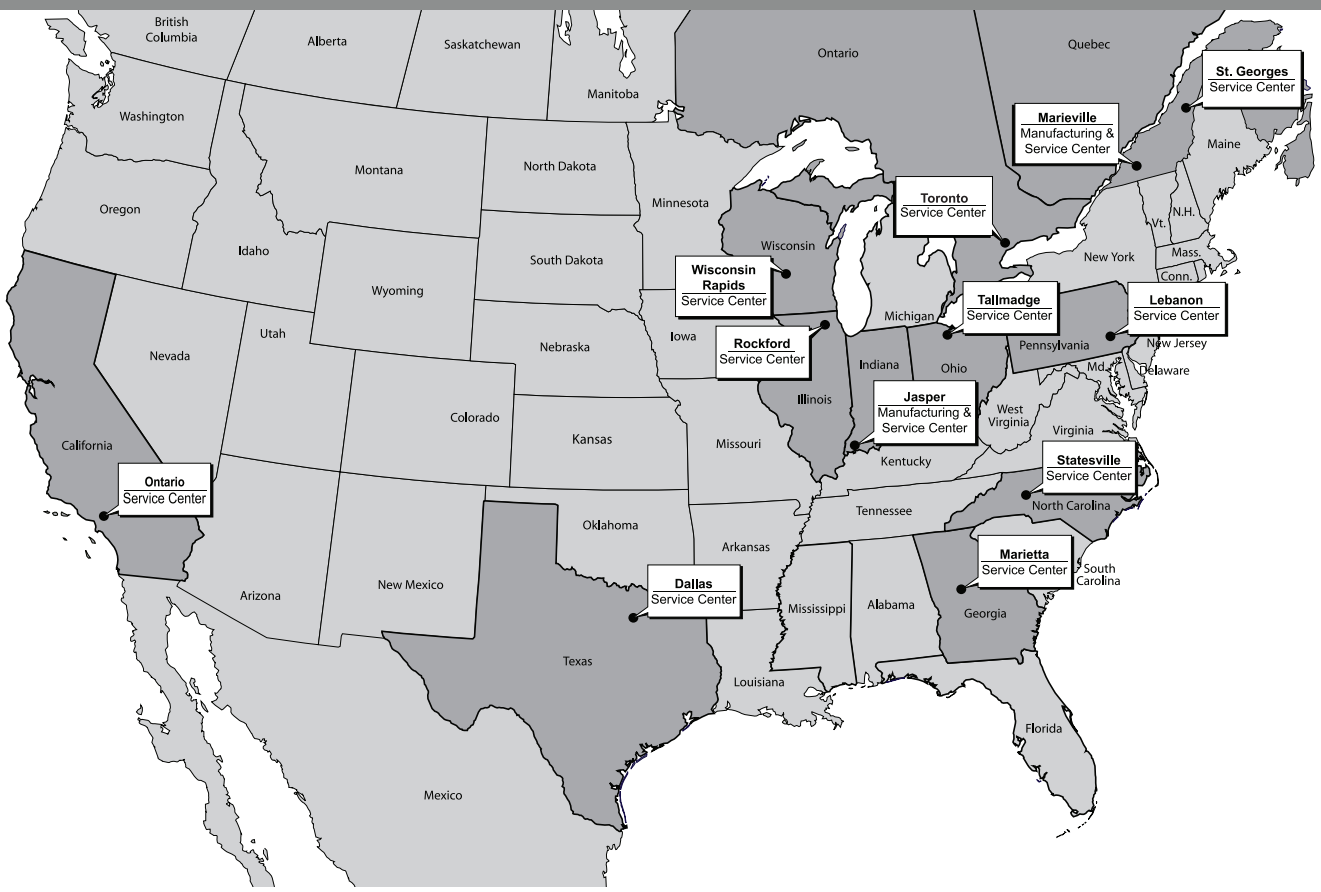
NAPGLADU

Delivering Productivity

Coast to Coast Coverage



US OPERATIONS

CORPORATE HEADQUARTERS
INDIANA MANUFACTURING
& SERVICE CENTER
1180 Wernsing Road
Jasper, IN 47546
Phone: 812-482-2000 / 800-457-7468
Fax: 800-457-7458

CALIFORNIA SERVICE CENTER
1941 S. Baker Avenue
Ontario, CA 91761
Phone: 909-930-5990
Fax: 909-930-5996

GEORGIA SERVICE CENTER
1257 D. Kennestone Circle N.E.
Marietta, GA 30066
Phone: 770-426-1100
Fax: 770-426-1994

ILLINOIS SERVICE CENTER
7955 Burden Rd.
Machesney Park, IL 61115
Phone: 815-877-7011
Fax: 815-877-7013

NORTH CAROLINA SERVICE CENTER
169 Crawford Road
Statesville, NC 28625
Phone: 704-872-9571
Fax: 704-872-9575

OHIO SERVICE CENTER
411 Geneva Avenue
Tallmadge, OH 44278
Phone: 330-633-0599
Fax: 330-633-0791

PENNSYLVANIA SERVICE CENTER
11 Keystone Drive
LV Business Park
Lebanon, PA 17042
Phone: 717-273-9301
Fax: 717-274-3764

TEXAS SERVICE CENTER
4647 Leston Avenue #603
Dallas, TX 75247
Phone: 214-637-4849
Fax: 214-637-5012

WISCONSIN SERVICE CENTER
3211 Industrial Street
Wisconsin Rapids, WI 54495
Phone: 888-221-8665
Fax: 715-424-1920

CANADIAN OPERATIONS

MARIEVILLE MANUFACTURING
& SERVICE CENTER
2115 Saint-Cesaire Street
Marieville, Quebec J3M 1E5 CANADA
Phone: 800-363-9117
Fax: 450-460-2655

TORONTO SERVICE CENTER
222 Evans Ave.
Toronto, Ontario M8Z 1J8 CANADA
Phone: 416-251-2236 / 888-251-2236
Fax: 416-251-7268

SAINT - GEORGES SERVICE CENTER
3020 95th Street
Saint - Georges, Quebec G6A 1E2 CANADA
Phone: 888-270-2248
Fax: 418-228-7503

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